

Globalization and the Colonial Origins of the Great Divergence

Pim de Zwart

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Globalization and the Colonial Origins of the Great Divergence Intercontinental Trade and Living Standards in the Dutch East India Company's Commercial Empire, c. 1600-1800

Globalisering en de Koloniale Oorsprong van de *Great Divergence*: Intercontinentale Handel en Levensstandaarden in het Handelsimperium van de Verenigde Oost-Indische Compagnie, ca. 1600-1800
(met een samenvatting in het Nederlands)

Proefschrift

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door

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te Amstelveen

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‘It is astonishing what foolish things one can temporarily believe if one thinks too long alone’

- John Maynard Keynes

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Chapter 1: Introduction

1.1. Trade and growth

This study is about the long-distance trade of the Dutch East India Company (*Verenigde Oost-Indische Compagnie*; VOC) and the development of living standards in its commercial empire around the Indian Ocean in the early modern era. The relationship between international trade and economic development has been central to economists and economic historians ever since Adam Smith's *Inquiry into the Nature and Causes of the Wealth of Nations* (first published in 1776).¹ Smith was the first to point out the potential benefits of trade through workings of absolute advantage and specialization. Following Smith, advocates of globalization today claim that global free trade promotes economic growth and growth in turn reduces poverty.² Such voices also resonate in the public domain as in a recent edition of *The Economist*, founded in 1843 to spread and popularize free trade views,³ it is claimed that capitalism and free trade were the most important factors in the alleviation of poverty in the past decade as

¹ Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (New York: Bantam Classic, 2003 [Original: 1776]); also see: Pim de Zwart, Daan Marks, Alexandra M. de Pleijt and Jan Luiten van Zanden, 'Trade and Economic Development: Indonesia in the Long-Run', in: Alicia Schrikker and Jeroen Touwen (eds.) *Promises and Predicaments. Trade and entrepreneurship in colonial and independent Indonesia in the 19th and 20th Centuries* (Singapore: NUS Press, forthcoming 2014)

² See e.g.: Jagdish Bhagwati and T. N. Srinivasan, 'Trade and Poverty in the Poor Countries,' *American Economic Review* 92 (2002) pp. 180-183.

³ Dani Rodrik, *The Globalization Paradox. Democracy and the Future of the World Economy* (New York: W. W. Norton & Company, 2011) p. 27.

they ‘enabled economies to grow – and it was growth, principally, that has eased destitution’.⁴ At the same time, critics of globalization warn that intercontinental trade widens the income gap both between and within countries.⁵

Both proponents and opponents of globalization have relied on cross-country regressions to investigate the relationship between trade and economic growth. Jagdish Bhagwati and T. N. Srinivasan, prominent advocates of globalization, point out many problems with such regressions, like poor data quality. As these regressions are greatly dependent on choices regarding period and the sample of countries they advise reluctance in using them ‘as plausible “scientific” support’.⁶ Instead, they suggest that nuanced in-depth case studies are a better tool to analyse the relationship between trade and economic development. At the same time, Dani Rodrik, one of their most conspicuous opponents,⁷ takes up a historical perspective in some of his works.⁸ Historical research into globalization can shed more light on long-term patterns in the relationship between globalization and economic growth and allows investigating what factors influenced this relationship: when did globalization have negative effects on growth? When were these effects positive? How are these effects distributed between and within countries?

Whereas economists may debate the consequences of current globalization, historians are still discussing the question of when globalization began. As a study of long-distance trade of the VOC, by far the largest of the early modern trading companies, and living standards in its commercial empire (thereby employing a lot of new archival data), this study is well placed to contribute to the debate about globalization’s origins,⁹ as well as the two other big discussions in economic history: the ‘Great Divergence’ debate and the debate on the colonial origins of development.

1.1.1. Globalization

According to Smith, ‘the discovery of America, and then of a passage to the East Indies by the Cape of Good Hope, are the two greatest and most important events in the recorded history of mankind.’¹⁰ In the three centuries after these events

⁴ ‘Towards the End of Poverty,’ *The Economist*, June 1, 2013.

⁵ E.g. Dani Rodrik, *Has Globalization Gone Too Far?* (Washington DC: Institute for International Economics, 1997); *ibid.*; Joseph E. Stiglitz, *Globalization and Its Discontents* (New York: W. W. Norton, 2002).

⁶ T. N. Srinivasan and Jagdish Bhagwati, ‘Outward-Oriented and Development: Are Revisionists Right?’ *Center Discussion Paper No. 806* (Yale University, 1999) p. 38; also see: Jagdish Bhagwati, *In Defense of Globalization* (New York etc.: Oxford U. P., 2004).

⁷ See e.g.: Rodrik, *Has Globalization?*; *ibid.*, *One Economics, Many Recipes: Globalization, Institutions and Economic Growth* (Princeton: Princeton U. P., 2007); *ibid.*, *The Globalization Paradox*.

⁸ E.g. Rodrik, *The Globalization Paradox*, Chs. 1 and 2.

⁹ The economic history debate has recently also been picked up by *The Economist*: ‘When did Globalisation Start?’, *The Economist*, September 23, 2013.

¹⁰ Smith, *Wealth of Nations*, p. 793.

intercontinental trade grew at roughly one percent annually. This advance is remarkable compared with the development of world trade in the centuries before, as well as relative to the growth of other economic indicators; trade grew almost twice as fast as national income.¹¹

In the 1970s and early 1980s scholars like Immanuel Wallerstein and Andre Gunder Frank emphasized the importance of long-distance trade. This trade had been instrumental in bringing about intercontinental specialization and a global division of labour, with Western Europe being pushed towards industrialization and high living standards, whilst the periphery was pushed towards primary production and low levels of per capita income. As such, international trade played an important role in the rise of global economic inequality in this period, it was argued.¹² This process was aided by a decline in international transport costs,¹³ which brought markets closer together. This view fell out of grace in the later 80s and 90s, when it became ‘commonplace among economic historians to argue that long-distance trade has been overemphasized by students of the early modern period’¹⁴ as ‘the international economy was poorly integrated before 1800.’¹⁵

In a series of publications in the 2000s, Kevin O’Rourke, Jeffrey Williamson and various co-authors questioned whether early modern trade growth should be seen as a first stage of globalization.¹⁶ They have suggested that due to war, monopolies, and the limited advance in transport technology, there was little room for prices to converge across the globe, a process they see as paramount to globalization. Long-distance trade was carried out in non-competing luxury goods and the effects on the European economy were negligible. As a consequence they have dismissed globalization before the nineteenth century. Only after the Napoleonic wars, the

¹¹ Ronald Findlay and Kevin H. O’Rourke, *Power and Plenty. Trade, War, and the World Economy in the Second Millennium* (Princeton: Princeton U. P., 2007) p. 305.

¹² Immanuel Wallerstein, *The Modern World System* (New York: Academic Press, 1974) and *The Capitalist World Economy* (Cambridge: Cambridge U. P., 1979), Andre Gunder Frank, *World Accumulation, 1492-1789* (London: Macmillan, 1978) and *Dependent Accumulation and Underdevelopment* (London: Macmillan, 1979); also see: Patrick K. O’Brien, ‘European Economic Development: The Contribution of the Periphery’, *Economic History Review* 35 (1982) pp. 1-18.

¹³ Douglass C. North, ‘Ocean Freight Rates and Economic Development, 1750-1913’, *Journal of Economic History* 18 (1958) pp. 537-555; *ibid.*, ‘Sources of Productivity Change in Ocean Shipping, 1600-1850’, *Journal of Political Economy* (1968) pp. 953-970.

¹⁴ Russel Menard, ‘Transport Costs and Long-Range Trade, 1300-1800: Was There a European “Transport Revolution” in the Early Modern Era?’ in: J. D. Tracy (ed.) *Political Economy of Merchant Empires* (Cambridge: Cambridge U. P., 1991) pp. 228-275, there p. 228.

¹⁵ *Ibid.*

¹⁶ Kevin H. O’Rourke and Jeffrey G. Williamson, ‘When did globalisation begin?’ *European Review of Economic History* 6 (2002) pp. 23-50; *ibid.*, ‘After Columbus: Explaining Europe’s Overseas Trade Boom, 1500-1800’, *Journal of Economic History* 62 (2002) pp. 417-456; *ibid.*, ‘Once More: When did Globalisation Begin?’, *European Review of Economic History* 8 (2004) pp. 109-117; *ibid.*, ‘Did Vasco da Gama matter to European Markets?’ *Economic History Review* 62 (2009) pp. 665-684; *ibid.*: ‘From Malthus to Ohlin: Trade, Growth, and Distribution since 1500’, *Journal of Economic Growth* 10 (2005) pp. 5-34; Ronald Findlay and Kevin H. O’Rourke, ‘Commodity market integration, 1500-2000’ in: Michael D. Bordo, Alan M. Taylor and Jeffrey G. Williamson (eds.) *Globalization in Historical Perspective* (Chicago: University of Chicago Press, 2003); Findlay and O’Rourke, *Power and plenty*.

steamship, canals and the relative lack of large (naval) conflicts led to an integrated world economy. O'Rourke and Williamson's works have become very influential and it has become textbook knowledge that the nineteenth century was the first era of globalization.¹⁷ Not everyone is convinced and a variety of studies has appeared in the past few years that cast doubts on their findings.¹⁸

1.1.2. The Great Divergence

The issue is related to another big debate in economic history, regarding the *when* and *why* of the rise in economic inequality between Western Europe and the rest of the world. After the book by Kenneth Pomeranz, this is now generally known as the 'Great Divergence' debate.¹⁹

Until the late 1990s the question *when* some countries became rich (while others remained poor) was not very interesting; it was generally assumed that Western Europe was economically more developed than the rest since at least the late Middle Ages.²⁰ This interpretation was backed by estimates of GDP per capita indicating that incomes in Western Europe had already exceeded those in the rest of the world long before the Industrial Revolution (figure 1.1). The question that remained was *why* this had happened? Next to the role played by international trade, answers to this question emphasized Western Europe's exceptionality as it had more beneficial demographic patterns,²¹ more 'inclusive' institutions and secure property rights,²² a more rational scientific culture,²³ and a more efficient market system.²⁴

¹⁷ See, e.g. the chapter on international trade in a recent textbook: Kevin H. O'Rourke, Leandro Prados de la Escosura and Guillaume Daudin, 'Trade and Empire', in: Stephen Broadberry and Kevin H. O'Rourke (eds.) *The Cambridge Economic History of Modern Europe* (Cambridge: Cambridge U. P., 2010) pp. 96-121.

¹⁸ Klas Rönnbäck, 'Integration of global commodity markets in the early modern era', *European Review of Economic History* 13 (2009) pp. 95-120; Rafael Dobado-Gonzales, Alfredo Garcia-Hiernaux, and David E. Guerrero, 'The Integration of Grain Markets in the Eighteenth Century: Early Rise of Globalization in the West', *Journal of Economic History* 72 (2012) pp. 671-707; Paul Sharp and Jacob Weisdorf, 'Globalization revisited: market integration and the wheat trade between North America and Britain from the eighteenth century', *Explorations in Economic History* 50 (2013) pp. 88-98.

¹⁹ Kenneth Pomeranz, *The Great Divergence. China, Europe and the Making of the Modern World Economy* (Princeton: Princeton U. P., 2000).

²⁰ See: Robert C. Allen, 'Agricultural Productivity and Rural Incomes in England and the Yangtze Delta, c. 1620-1820', *Economic History Review* 62 (2009) pp. 525-526.

²¹ Thomas Malthus, *An Essay on the Principle of Population, as it Affects the Future Improvement of Society with Remarks on the Speculations of Mr. Godwin, M. Condorcet, and Other Writers* (1998 [Original 1798]); J. Hajnal, 'European Marriage in Perspective', in: D. V. Glass and D. E. C. Eversley (eds.), *Population in History* (1965) pp. 101-143; Eric L. Jones, *The European Miracle: Environments, Economies and Geopolitics in the History of Europe and Asia* (Cambridge: Cambridge U. P., 1981) pp. 13-21; Tine de Moor and Jan Luiten van Zanden, 'Girl Power: The European Marriage Pattern and labour markets in the North Sea region in the late medieval and early modern period', *Economic History Review* 63 (2010) pp. 1-33.

²² See e.g. Douglass C. North and Robert P. Thomas, *The Rise of the Western World: A New Economic History* (Cambridge: Cambridge U. P., 1973), and: Douglass C. North and Barry Weingast,

These views came under attack by a number of revisionist scholars, collectively known as the ‘California School’ (referring to the fact that a number of these scholars was employed by the University of California). Pomeranz argued that the Great Divergence occurred only after 1800, and that before that date, Europe and Asia were on a similar level of economic development, as measured by various indicators.²⁵ On the basis of evidence on e.g. consumption Pomeranz concluded that ‘it seems likely that average incomes in Japan, China, and parts of Southeast Asia were comparable to (or higher than) those in Western Europe even in the late eighteenth century’.²⁶ Similar claims were made by Prasannan Parthasarathi regarding India, who found that Indian wages could pay for about the same amount of Indian grain as wages in Britain could purchase British grain.²⁷

Rather than emphasizing the differences between Europe and Asia, these scholars paint a picture of a world of ‘surprising resemblances’.²⁸ It is clear that if the divergence had occurred much later, different factors than those highlighted by previous historical research must have caused it. Pomeranz claimed that the divergence between China and Europe was not the consequence of the fundamental differences, but rather a fortuitous spin-off of the large colonies of a few Western European countries, combined with the advantage of favourably located coal. Parthasarathi concluded that the challenge of Indian cotton textiles and the shortage of wood provided instrumental pressures that led to Britain’s economic ascendance.²⁹ The past decade has seen contributions that have both disputed and confirmed these claims.³⁰ A

‘Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England,’ *Journal of Economic History* 49 (1989) pp. 803-832.

²³ Max Weber, *The Protestant Work Ethic and the Spirit of Capitalism* (1905 [2002]), Joel Mokyr, *The Lever of Riches: Technological Creativity and Economic Progress* (Oxford and New York: Oxford U. P., 1990); *ibid.*, *The Enlightened Economy. An Economic History of Britain 1700-1850* (New Haven and London: Yale U. P., 2009), David S. Landes, *The Unbound Prometheus: Technological Change and Industrial Development in Western Europe from 1750 to the Present* (Cambridge: Cambridge University Press, 1969).

²⁴ For classic works on European exceptionalism see: Jones, *European Miracle*, David S Landes, *The Wealth and Poverty of Nations: Why Some are So Rich and Some So Poor* (London: Little/Brown, 1998). This list is not exhaustive, also see: Roman Studer, ‘India and the Great Divergence: Assessing the Efficiency of Grain Markets in Eighteenth- and Nineteenth-Century India’, *Journal of Economic History* 68 (2008) pp. 393-437, there, p. 393.

²⁵ Pomeranz, *The Great Divergence*.

²⁶ Pomeranz, *The Great Divergence*, p. 49.

²⁷ Prasannan Parthasarathi, ‘Rethinking Wages and Competitiveness in the Eighteenth Century: Britain and South India’, *Past and Present* 158 (1998) pp. 79-109.

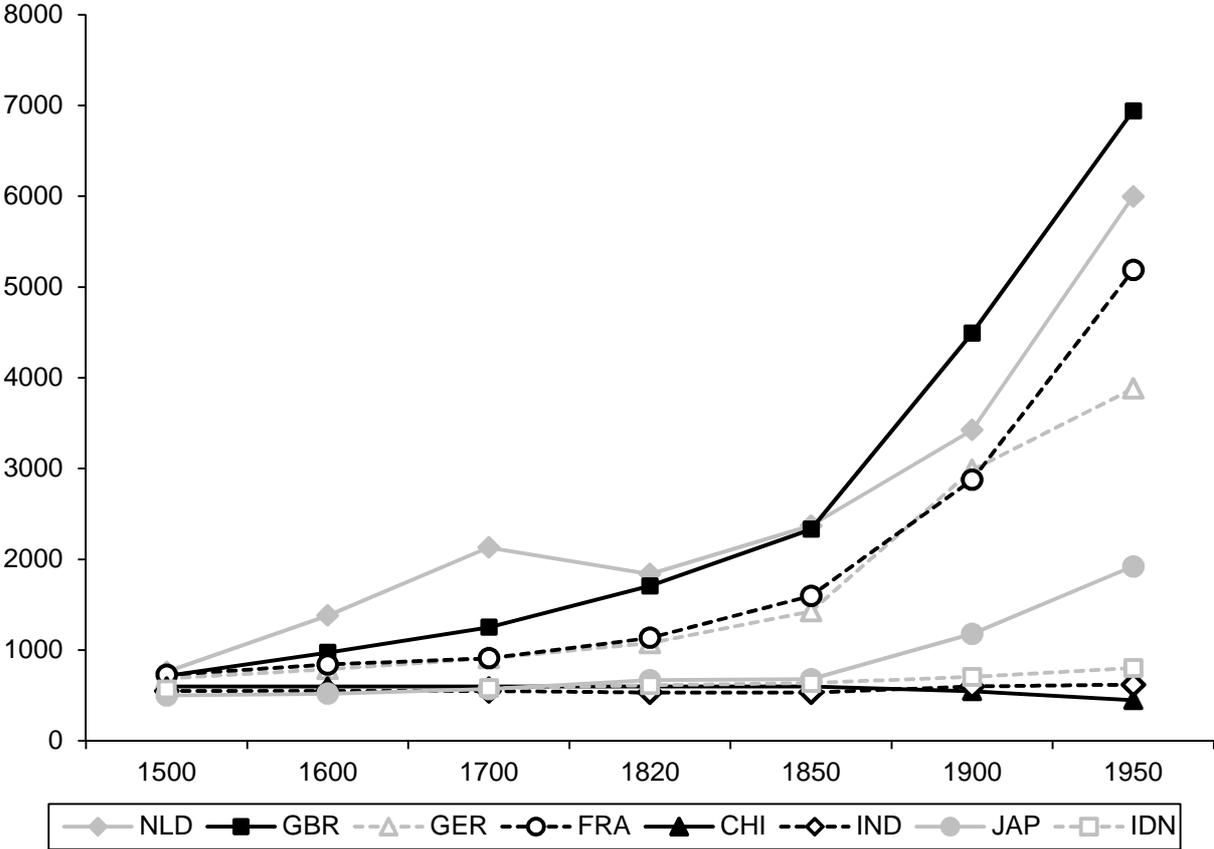
²⁸ Pomeranz, *The Great Divergence*, Pt. 1.

²⁹ Prasannan Parthasarathi, *Why Europe Grew Rich and Asia Did Not. Global Economic Divergence, 1600-1850* (Cambridge: Cambridge U. P., 2011) p. 2.

³⁰ Confirming the revisionist views include: Allen, ‘Agricultural Productivity’ and Sashi Sivramkrishna, ‘Ascertaining Living Standards in Erstwhile Mysore, Southern India, from Francis Buchanan’s Journey of 1800-01: An Empirical Contribution to the Great Divergence Debate’, *Journal of the Economic and Social History of the Orient* 52 (2009) 695-733. Refuting ‘revisionist’ claims include: Robert C. Allen, ‘India in the Great Divergence’, in: Timothy J. Hatton, Kevin H. O’Rourke, and Alan M. Taylor, *The New Comparative Economic History. Essays in Honor of Jeffrey G. Williamson* (Cambridge MA: MIT Press, 2007) pp. 111-130; Robert C. Allen, Jean-Pascal Bassino, Debin Ma, Christine Moll-Murata, and Jan

major obstacle to consensus has been the lack of quantitative evidence. This dissertation fills some of this hiatus by presenting extensive new quantitative data on a number of Asian economies before the nineteenth century.

FIGURE 1.1: THE ‘GREAT DIVERGENCE’: GDP PER CAPITA IN EUROPE AND ASIA, 1500-1950.



Source: Angus Maddison, ‘Statistics on World Population, GDP and Per Capita GDP, 1-2008 AD’, Groningen Growth and Development Centre: <http://www.ggdc.net/>

1.1.3. Colonialism and development

At the same time as historians became increasingly interested in global comparisons over long periods of time, economists became more aware of the importance of history.³¹ From their ranks has emerged a new empirical literature testing whether

Luiten van Zanden, ‘Wages, prices, and living standards in China, 1738-1925: in comparison with Europe, Japan, and India’, *Economic History Review* 64 (2011) pp. 8-38; Stephen Broadberry and Bishnupriya Gupta, ‘The early modern great divergence: wages, prices and economic development in Europe and Asia, 1500-1800’, *Economic History Review* 59 (2006) pp. 2-31; Tirthankar Roy, ‘Economic Conditions in Early Modern Bengal: A Contribution to the Divergence Debate’, *Journal of Economic History* 70 (2010) pp. 179-194.

³¹ Also see the survey by: Nathan Nunn, ‘The importance of history for economic development’, *Annual Review of Economics* 1 (2009) pp. 65-92.

historical events, most notably colonialism and associated institutions, still can be found to have effects on current economic development outcomes.

The literature is already too vast to discuss at greater length here, but it will be helpful to discuss the most famous studies that have highlighted different channels through which colonialism has affected economic development outcomes. In a seminal contribution, Rafael La Porta, Florencio Lopez de Silanes, Andrei Shleifer and Robert Vishny argued that the identity of the colonizer influenced economic development as it determined whether a Roman civil law or British common law legal system was established in a colony. As the common law system offered greater protection for investors it was more conducive to long-term economic growth.³² Others have stressed the negative effects of colonialism on ethnic fragmentation. High ethnic diversity is closely associated with low levels of education, underdeveloped financial systems, distorted foreign exchange markets, and insufficient infrastructure, which lowered economic growth.³³ In another important contribution, Stanley L. Engerman and Kenneth L. Sokoloff argued that the different paths of economic development between Northern and Southern America can be explained by initial differences in factor endowments.³⁴ Those regions (the Caribbean and Southern America) suitable for growing sugar and other highly valued commodities associated with large scale production on plantations using slave labour, were characterized by significant political and economic inequality that persisted through its institutional development. These institutions and a high degree of inequality negatively affected economic growth.

Closely related to Engerman and Sokoloff's thesis are the works by Daron Acemoglu, Simon Johnson and James Robinson, who claim that those countries colonized by European powers that were relatively rich 500 years ago, are now relatively poor, and vice versa, and argue that this reversal reflects an 'institutional reversal' caused by the colonial powers.³⁵ In those areas that were relatively prosperous and densely settled in 1500, the Europeans introduced (or maintained already existing) extractive institutions to profit from this wealth, whereas in sparsely populated areas, Europeans themselves settled in large numbers, and created 'inclusive' institutions that safeguarded private property, thereby encouraging commerce and industry.³⁶ Acemoglu et al.'s work both stimulated further research by other social scientists as well as attracted a significant amount of criticism. Some critics

³² R. La Porta, F. Lopez-de-Silanes, A. Shleifer and R. Vishny, 'Law and finance', *Journal of Political Economy* 106 (1998) pp. 1113-1155.

³³ William Easterly and Ross Levine, 'Africa's Growth Tragedy: Policies and Ethnic Divisions', *Quarterly Journal of Economics* 112 (1997) pp. 1203-1250.

³⁴ Kenneth L. Sokoloff and Stanley L. Engerman, 'History Lessons: Institutions, Factor Endowments and Paths of Development in the New World', *Journal of Economic Perspectives* 14 (2000) pp. 217-232.

³⁵ Daron Acemoglu, Simon Johnson and James A. Robinson, 'The Colonial Origins of Comparative Development: An Empirical Investigation', *American Economic Review* 102 (2001) pp. 3077-3110.

³⁶ Daron Acemoglu, Simon Johnson and James A. Robinson, 'Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution', *Quarterly Journal of Economics* 117 (2002) pp. 1231-1294, there p. 1279.

have questioned the quality of the data,³⁷ while others have pointed out some methodological shortcomings of the thesis and/or raised theoretical objections.³⁸ While there is no need to reproduce all these critiques here, for the purposes of this dissertation, it is important to discuss what Gareth Austin called the ‘compression of history’.³⁹ He suggests that Acemoglu et al. compare two moments in history, 1500 and 1995, that had so much of history in between that it overlooks much of the heterogeneity of colonialism over time and over space. Related is the critique of the simple contrast between ‘settler’ colonies that had inclusive institutions and ‘non-settler’ colonies with extractive regimes.⁴⁰ Africanists, for example, argue that this dichotomy clearly distorts the history of colonial Africa. A more common typology used by historians therefore distinguishes between colonies of settlement (where the majority of land was appropriated for European use), colonies of concession (where lands were operated by foreign companies) and colonies of trade (colonies that did not experience large-scale European settlement).⁴¹

A variation on this tripartite distinction will also be employed in this dissertation as the VOC colonization across the Indian Ocean roughly differed according to these three categories (see table 1.1 below). Furthermore, rather than relating initial conditions to current outcomes, it will be investigated what happened over time in these areas. Thereby this study is able to distinguish various forms of colonialism and its different effects over time and across space.

In this dissertation, I aim to connect these debates through the research question: did globalization and colonialism contribute to the Great Divergence in the early modern period and what influenced this connection? In order answer this question we first need to establish whether there is evidence of globalization in early modern era and what drove this process. Second, it needs to be identified when the gap in economic performance between Western Europe and the Rest occurred and what factors may have influenced the unequal development. Third, we have to investigate how variations in colonialism may have affected living standards at the time and how it relates to globalization. By focussing on these issues, this thesis hopefully

³⁷ Regarding the 1500 A.D. baseline for Africa, Gareth Austin claims that although some empirical evidence exists, ‘it is very limited, and the best of it is not quantitative,’ see Gareth Austin, ‘The “Reversal of Fortune” Thesis and the Compression of History: Perspectives from African and Comparative Economic History’, *Journal of International Development* 20 (2008) pp. 996-1027, there: 998.

³⁸ See for example: Edward Glaeser, R. La Porta, F. Lopez-de-Silanes, A. Shleifer, ‘Do Institutions cause Growth?’, *Journal of Economic Growth* 9 (2004) pp. 271-303; where it is claimed that human capital rather than institutions have dominant long term effects on economic growth.

³⁹ Austin, ‘The “Reversal”’.

⁴⁰ Austin, ‘The “Reversal”’, p. 1008, Anthony G. Hopkins, ‘The New Economic History of Africa’, *Journal of African History* 50 (2009) pp. 155-177, there pp. 167-169.

⁴¹ Austin, ‘The “Reversal”’, p. 1008. Hopkins, ‘The New Economic’, p. 168; Sue Bowden, Blessing Chiripanhura and Paul Mosley, ‘Measuring and Explaining Poverty in Six African Countries: A long-period approach,’ *Journal of Economic Development* 20 (2008) pp. 1049-1079; Hla Myint, *The Economics of the Developing Countries* (London, 1964) and: Jürgen Osterhammel, *Colonialism: a theoretical overview* (Princeton: Princeton U. P., 1999).

provides new insights for all three aforementioned debates. Finally, I do not wish to suggest that this thesis will provide conclusive answers to these big questions, but rather that it will make a small yet significant contribution to the literature on these issues. This will be done by concentrating on the role of the Dutch East India Company in these processes and by putting a number of different VOC colonies in a global comparative framework.

1.2. Linking the debates: the Dutch East India Company

Established in 1602, the Dutch East India Company existed for almost two centuries until insolvency at the end of the eighteenth century. The VOC was by far the most important trading company in the Euro-Asian trade between 1600 and 1800: of a total of 9,641 ships in that trade, 4,720 were Dutch,⁴² while its nearest competitor, the English East India Company (EIC) sent little over half that number (2,676). Furthermore, Dutch ships were generally larger than those of other European companies and over 60 percent of the total volume of the return trade was transported on Dutch ships.⁴³ Also in terms of manpower the VOC dwarfed its competitors, as almost a million Europeans were sent to Asia aboard VOC ships,⁴⁴ nearly 100,000 more than all its competitors combined.⁴⁵ In addition, it hired in total 366,900 Asians over the course of the seventeenth and eighteenth centuries.

In total, these men transported over 2.5 million tons of Asian goods. Furthermore, despite the VOC policy to pay for goods for the European markets preferably by the sales proceeds from the intra-Asian trade, the Company also poured over half a billion guilders in precious metals into the Asian economies (over 5,500 billion Euro when converted to current prices).⁴⁶ To facilitate this trade the VOC opened over 30 trading posts between Cape Town (South Africa) and Nagasaki (Japan).⁴⁷ While in some of these places VOC presence was very limited indeed, in others the Company came to establish colonial rule over large stretches of land inhabited by large numbers of indigenous peoples. Dutch presence in Ceylon (present day Sri-Lanka) and different parts of Southeast Asia are among the earliest examples of European imperialism in Asia.⁴⁸

⁴² F. S. Gaastra and Jaap R. Bruijn, 'The Dutch East India Company's Shipping, 1602-1795, in a comparative perspective', in: *ibid.* (eds.) *Ships, Sailors and Spices. East India Companies and their Shipping in the 16th, 17th and 18th centuries* (Amsterdam: NEHA, 1993) pp. 177-208, there p. 183.

⁴³ Jan de Vries, 'Connecting Europe and Asia: a quantitative analysis of the Cape-route trade, 1497-1795', in: D. O. Flynn, A. Giraldez, and R. von Glahn (eds.), *Global connections and monetary history, 1470-1800* (Aldershot, 2003) pp. 35-106, there pp. 56-59.

⁴⁴ F. S. Gaastra, *De Geschiedenis van de VOC* (Zutphen: Walburg Pers, 2002) p. 91.

⁴⁵ M. W. van Boven, 'Towards a New Age of Partnership (TANAP): An Ambitious World Heritage Project UNESCO Memory of the World', *VOC Archives Appendix 2* (2002) p.14.

⁴⁶ Gaastra, *De Geschiedenis*, p. 149; and IISH calculator: <http://www.iisg.nl/hpw/calculate2.php/>

⁴⁷ For a full list of VOC establishments with surviving data see: <http://databases.tanap.net/vocrecords/>

⁴⁸ Findlay and O'Rourke, *Power and Plenty*, p. 181.

A study of trade and living standards in the Dutch East India Company's commercial empire bears on all three of the abovementioned debates. First of all, while a few recent studies have shown evidence of price convergence in the trans-Atlantic trade before the nineteenth century,⁴⁹ De Vries reasonably notes that because the institutions in the New World were specifically moulded to serve the interests of export and long-distance trade 'the real test of early modern globalization, by any definition, requires a study of Eurasia.'⁵⁰

For Adam Smith, the Dutch East India Company was the epitome of everything that was wrong with state-backed chartered companies.⁵¹ It was a huge company, however, and it transported millions of kilos of goods between Asia and Europe over the course of two centuries. Despite the impressive amount of research that has been done on the VOC,⁵² as well as on the price history of the Netherlands,⁵³ the data from the Dutch-Asiatic trade that have been brought to bear on the issue of globalization have been meagre: decadal average prices for only 3 products: cloves, coffee and pepper.⁵⁴ While pepper and cloves were certainly of great importance to the VOC in the early seventeenth century, by the 1660s they had already been surpassed by textiles in terms of total invoice value of the return cargoes.⁵⁵ The importance of coffee did increase over the eighteenth century, but the rise of a global market for coffee in the eighteenth century is still subject to debate.⁵⁶ Clearly, an elaborate study of prices in the Dutch-Asiatic trade is instrumental to formulate answers to questions of when globalization began, and what drove this process.

Second, Pomeranz suggests that economically the seventeenth- and eighteenth-century world was one of 'surprising resemblances'. Yet, despite the occasional leaps to other parts of Asia, Pomeranz is generally comparing the most advanced parts of Asia (the Yangzi Delta) with the most advanced parts of Europe (England). This

⁴⁹ Dobado-Gonzales et al., 'The Integration'; Rönnebeck, 'Integration of world'; Sharp and Weisdorf, 'Globalization revisited'.

⁵⁰ Jan de Vries, 'The Limits of Globalization in the Early Modern World', *Economic History Review* 63 (2010) pp. 710-733, there pp. 715-6.

⁵¹ Alex MacGillivray, *A Brief History of Globalization* (London: Constable & Robinson, 2006) p. 102.

⁵² To mention only a few examples: J.R. Bruijn, F.S. Gaastra and I. Schöffer, *Dutch-Asiatic Shipping in the 17th and 18th Centuries*. Vols. 1-3 (The Hague: Nijhoff, 1979-1987); Kristof Glamann, *Dutch-Asiatic Trade 1620-1740* (The Hague: Nijhoff, 1981); Els M. Jacobs, *Merchant in Asia: The Trade of the Dutch East India Company During the Eighteenth Century* (Leiden: CNWS Publications, 2013); Gaastra, *De Geschiedenis*.

⁵³ See e.g. the extensive datasets by: N.W. Posthumus, *Nederlandsche Prijsgeschiedenis* (Leiden: Brill, 1943).

⁵⁴ O'Rourke and Williamson, 'When did globalisation?'; Rönnebeck, 'Integration of global'.

⁵⁵ Om Prakash, *European Commercial Enterprise in India* (Cambridge: Cambridge U. P., 1998) p. 115.

⁵⁶ David Bulbeck, Anthony Reid, Lay Cheng Tan and Yiqi Wu, *Southeast Asian exports since the 14th century. Cloves, pepper, coffee and sugar* (Leiden: KITLV, 1998) p. 169; Anne McCants, 'Poor consumers as global consumers: the diffusion of tea and coffee drinking in the eighteenth century' *Economic History Review* 61 (2008) pp. 172-200; Steven Topik, 'The Integration of the World Coffee Market', in: William Gervase Clarence-Smith and Steven Topik (eds.) *The Global Coffee Economy in Africa, Asia, and Latin America, 1500-1989* (Cambridge: Cambridge U. P., 2003) pp. 21-49; Rönnebeck, 'Integration of global'.

dissertation especially aims to integrate other parts of Asia in the comparisons, as others have already included other parts of Europe.⁵⁷ Furthermore, Pomeranz generally makes cross-country comparisons for a few benchmark years, and could not show any time trends. The current research will trace trends over time, which not only allows the analysis of such trends, thus providing further clues regarding the question of what caused the divergence, but also adds robustness to the comparisons: to what extent are benchmark comparisons representative or ‘normal’ years, rather than outliers?

Third, the Great Divergence cannot be understood properly without taking into account that at the same time as incomes diverged, intercontinental trade took a leap. As Jan de Vries notes, there may be a clear connection between globalization and the Great Divergence:

When all is said and done, we are presented with two simultaneous developments – the establishment and development of a global maritime trading system under western European direction and the divergent growth of the western European economies – and are asked to believe that a causal link exists connecting the first to the second.⁵⁸

For Pomeranz, a divergence would not have taken place without efficient intercontinental trade, or what may be called ‘globalization’, as Britain would not have benefitted from the ‘ghost acreages’ in the New World.⁵⁹ Along similar lines, Parthasarathi suggests that Britain would not have felt the need to innovate in textile manufacturing, as it would not have suffered from the competitive pressure of Indian textiles.⁶⁰ Others have emphasized the importance of this global trade for Europe’s advance through e.g. its effects on institutional change,⁶¹ urbanization,⁶² and work ethics.⁶³ Williamson has connected the debates on Globalization and the Great Divergence in some of his work.⁶⁴ He suggests that the rise in global inequality between ‘core’ (Western Europe) and ‘periphery’ (the rest of the world, minus North America, Australia and New Zealand) in the nineteenth and twentieth centuries can to

⁵⁷ Most notably: Robert C. Allen, ‘The Great Divergence in European Wages and Prices from the Middle Ages to the First World War’, *Explorations in Economic History* 38 (2001) pp. 411-447.

⁵⁸ De Vries, ‘The Limits’, p. 712.

⁵⁹ Pomeranz, *The Great Divergence*; also see: Kenneth Pomeranz and Steven C. Topik, *The World That Trade Created: Society, Culture and the World Economy, 1400 to the Present* (Armonk: Sharpe, 1999).

⁶⁰ Parthasarathi, *Why Europe*.

⁶¹ Daron Acemoglu, Simon Johnson, and James A. Robinson, ‘The Rise of Europe: Atlantic Trade, Institutional Change, and Economic Growth’, *American Economic Review* 95 (2005) pp. 546-579.

⁶² Robert C. Allen, ‘Progress and Poverty in Early Modern Europe’, *Economic History Review* 56 (2003) pp. 403-443; *ibid.*, *The British Industrial Revolution in Global Perspective* (Cambridge: Cambridge U. P., 2009).

⁶³ Jan de Vries, ‘The Industrial Revolution and the Industrious Revolution’, *Journal of Economic History* 54 (1994) pp. 249-270; *ibid.*, *The Industrious Revolution: Consumer Demand and the Household Economy, 1650 to the Present* (Cambridge: Cambridge U. P., 2008).

⁶⁴ Jeffrey G. Williamson, *Trade and Poverty: When the Third World Fell Behind* (Cambridge MA: MIT Press, 2011); *ibid.*, ‘Globalization and the Great Divergence: Terms of Trade Booms, Volatility and the Poor Periphery, 1782-1913’, *European Review of Economic History* 12 (2008) pp. 355-391.

some extent be explained by the growth of intercontinental trade. While secular increases in the terms of trade (the price of exports over the price of imports) had positive effects on the economic growth of Europe, it had no impact in the periphery. At the same time, terms of trade volatility had significant negative effects in the periphery, but had no impact on growth in the core, hence: divergence.⁶⁵ But, as Williamson believes that globalization started in the 1820s, his assessment does not stretch back further than the nineteenth century. Yet, considering the recent evidence on the occurrence of a Great Divergence already in the early modern period,⁶⁶ as well as the possibility of globalization taking off before the 1800s,⁶⁷ it is important to investigate the possible connection for the seventeenth and eighteenth centuries.

Finally, there is a connection between globalization and colonialism. While several scholars have argued that empire was a powerful tool for globalization in the nineteenth century,⁶⁸ this relationship was different in the early modern period when colonialism followed trade rather than the other way around. However, the relationship is not straightforward. Global trade was followed by colonialism and 'extractive' institutions in some cases, but not in others. A causal connection, or the absence of it, may be driven by initial factor endowments,⁶⁹ and/or disease environment and pre-colonial wealth.⁷⁰ Clearly, the relationship between trade and economic development differed between areas where different types of institutions were implemented. It is obvious that European presence was felt throughout many parts of Asia already in the eighteenth century. It is difficult to imagine that while this would have persistent effects on economic development today,⁷¹ it would not have affected economic development and living standards at the time. Furthermore, the economics literature on the long-term effects of colonialism tends to view history as a linear development from roughly 1500 to today, while a lot of – not always linear – developments occurred in between. Rather than a one-way highway, this historical road was full of bumps and holes, as well as many junctions. In order to chart this bygone route, of which the destination was obviously not yet clear in 1500, it is important to trace it back across those years.

In order to contribute to these issues this dissertation sets out a quantitative approach. The focus of the data collection will be on wages and prices, the 'DNA of economies'.⁷² The price data will be employed to analyze patterns of global trade

⁶⁵ Williamson, *Trade and Poverty*, pp. 191-193.

⁶⁶ Allen et al., 'Wages, prices'.

⁶⁷ Flynn and Giraldez, 'Cycles of silver'; Rönnbäck, 'Integration'; Dobado-Gonzales et al., 'The Integration'; Sharp and Weisdorf, 'Globalization revisited'; De Vries, 'The limits'.

⁶⁸ See e.g.: Niall Ferguson, *Empire: How Britain Made the Modern World* (London: Allen Lane, 2002).

⁶⁹ Sokoloff and Engerman, 'History Lessons'.

⁷⁰ Acemoglu et al., 'Colonial Origins'; *ibid.*, 'Reversal of Fortune'.

⁷¹ *Ibid.*; Nunn, 'The Importance'; Melissa Dell, 'The Persistent Effects of Peru's Mining Mita', *Econometrica* 78 (2010) pp. 1863-1903.

⁷² Jan Luiten van Zanden, 'The Skill Premium and the "Great Divergence"', *European Review of Economic History* 13 (2009) pp. 121-153, there 121.

through the study of price convergence. In addition, prices of basic commodities will be used to calculate consumer price indices for different regions. These indices will be combined with information on wages, using a method that will allow the assessment of living standards over time and across space. Furthermore, wages provide additional information on the process of human capital formation via an analysis of disparities in the remuneration of skilled and unskilled labour. These figures will be combined with data on demographic developments and labour markets, which are often seen as important factors influencing living standards. Many of the figures unearthed for this dissertation represent the first consistent serial and comparative information about four economies (Bengal, the Cape Colony, Ceylon and Java) in the pre-1800 period.

1.3. Sources and Data

A common feature of the three big debates mentioned in the previous sections is that the results (largely) rest on shaky data.⁷³ While we know relatively much about the development of the economies in Western Europe, (reliable) quantitative data for most parts of the non-Western world – with the possible exception of Japan – before the later nineteenth century are generally lacking. In this dissertation, I will contribute to these three related debates via the study of new materials collected from the VOC archives. These archives, which until the later decades of the twentieth century have mainly been used to shed light on the institutional history of the VOC as an early modern trading company, form a real treasure trove of information for the economic history of various regions around the Indian Ocean,⁷⁴ as well as the accompanying histories of globalization, colonialism and divergence before the nineteenth century.

As a commercial company, the VOC employed large numbers of clerks who recorded sales and purchases, as well as profits and expenses made per establishment. Where the VOC held extensive administrative power, the data are more abundant and may contain further information on demographic developments (such as proto-censuses for taxation purposes) or production figures. At the end of the accounting year, copies of this administration, packed in huge tomes, were sent from the local trading posts to the Asian headquarters in Batavia, as well as to the Company's Chambers in Amsterdam and Zeeland. This collection of 'Letters and documents

⁷³ In case of the debate on the long-term effects of colonialism; it is mostly the data for the 1500 AD benchmark that can be questioned. Although some of the GDP figures for 1995 may not be as reliable as often assumed: see e.g. Morten Jerven, *Poor Numbers: How We Are Misled by African Development Statistics and What to Do About It* (Cornell: Cornell U. P., 2013).

⁷⁴ As can also be seen from Om Prakash' influential dissertation *The Dutch East India Company and the Economy of Bengal 1630-1720* (Princeton: Princeton University Press, 1985); as well as the various monographs that appeared under the auspices of the TANAP (Towards a New Age in Partnership in Dutch East India Company archives and research) project, see: <http://www.brill.com/publications/tanap-monographs-history-asian-european-interaction>.

received from the East Indies' (from now on: VOC-OBP)⁷⁵ is part of the VOC archives kept at the Dutch National Archives in The Hague. The TANAP project has digitized the content lists of this administration, and has thematically ordered the documents per establishment, making it possible to effectively search for specific data, such as wages and prices, in the different areas of VOC presence.

In addition to the VOC-OBP, the separate archives of the VOC Bookkeeper-General in Batavia (BGB) constitute an important source of prices in Asia.⁷⁶ In the General Ledgers of the BGB, the trade in the entire VOC charter area was recorded.⁷⁷ Fifty-five volumes of the eighteenth century have been preserved which, for a single financial year, recorded all products and their quantities and values that were shipped between the Dutch Republic and Asia, and among the colonies and trading posts in Asia themselves.

Another separate series of the VOC archives used in this dissertation are the Muster Rolls. The rolls are a well-known source for studying the (European) Company personnel aboard the ships, as well as in the different establishments in Asia.⁷⁸ The Muster Rolls were sent to the Chambers of Amsterdam and Zeeland and are still available for the period 1691-1791.⁷⁹ Most important for this study is that these rolls state monthly wages of European and Asian company servants employed at the different VOC establishments in the East Indies. Next to the data collected from the primary VOC administration, various published primary sources and secondary literature were employed to gather additional data. At the same time, some of the published primary sources, such as the memoirs of VOC governors or other European contemporaries, were also used as qualitative sources to put the observed trends in the quantitative series in their appropriate context. These qualitative sources are also important considering the problems of reliability and representativeness associated with the quantitative materials. Source issues will be dealt with extensively throughout this dissertation.

1.4. The Case Studies

1.4.1. Data availability

This book takes up a global perspective and the next chapter will contain an analysis of (almost) the entire Dutch-Asiatic trade in the early modern period. Ideally, the study

⁷⁵ In Dutch: *Overgekomen Brieven en Papieren uit Indië* (OBP), NA VOC: 1.04.02.

⁷⁶ NA BGB 1.04.02.12.

⁷⁷ BGB: *Generale Journalen*. Recently made available online by the Huygens ING Project Bookkeeper-General Batavia: <http://bgb.huygens.knaw.nl/>

⁷⁸ See e.g. F. LeQuin, *Het personeel van de Verenigde Oost-Indische Compagnie in Azië, meer in het bijzonder de vestiging Bengalen* (Leiden, 1982).

⁷⁹ VOC 5168-5239 (Amsterdam), VOC 11534-11705 (Zeeland).

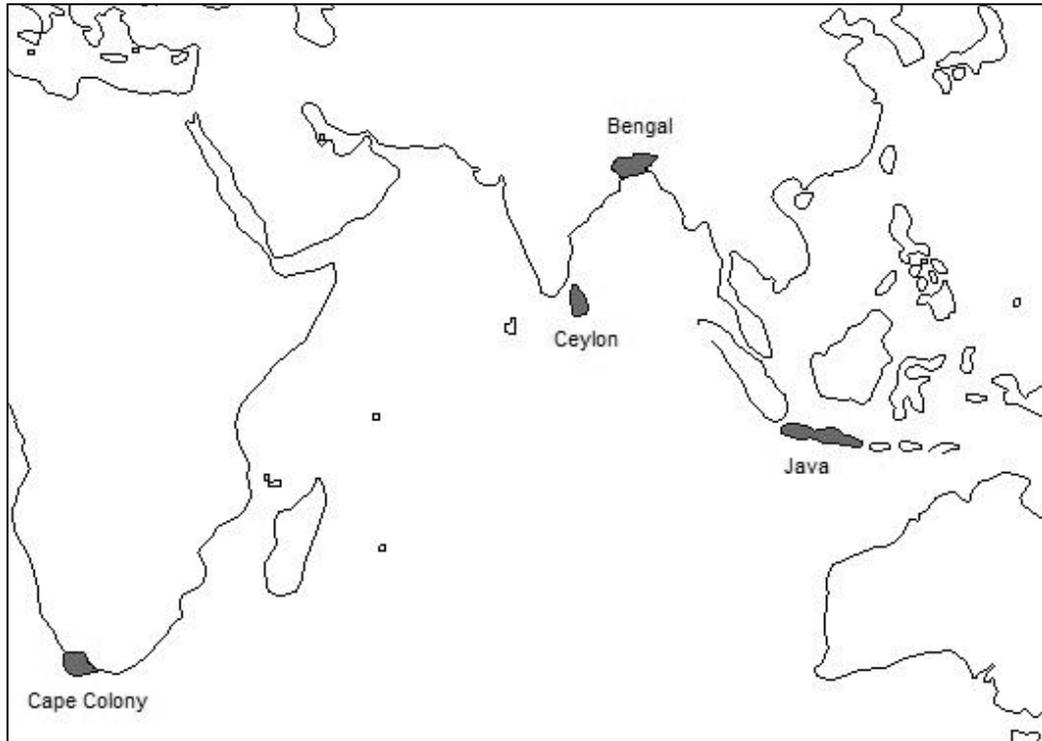
would have included an investigation of the development of living standards in all areas where the Company established itself. While comparisons will be made with others parts of the world, as a result of time constraints and limited data availability, the focus of the collection of new data and the analysis will be on four case studies: Bengal, the Cape Colony, Ceylon and Java. These cases were selected on the basis of the availability of data, as well as their position within the larger debates and the differences in the ‘type’ of colony (as introduced above): where Bengal represents a ‘peasant export’ colony, the Cape Colony a ‘settler’ colony, and Ceylon and Java exemplify ‘concession’ colonies (see section 1.4.5 and table 1.1 below). Thereby this study hopes to contribute both to the big debates mentioned above, as well as to make a valuable contribution to the historiographies of each of these regions.

First of all, data availability played an important role in selecting these case studies. Through the TANAP website, it is possible to create a PDF-file with the sorted information related to a specific establishment. The number of kilobytes per PDF-inventory provides a rough clue regarding the amount of wage and price evidence available for a specific region. This is only a crude indication, however, as theoretically there might be more wage and price data available for stations with less overall documentation (as e.g. in the case of the Cape Colony). By far the largest volume of documents in the VOC-OBP collection is related to Java and Ceylon, as the largest territories under direct VOC control (see figure 1.3). The four VOC establishments in India – Coromandel, Malabar, Bengal, and Surat – also left significant documentation. For Bengal, price series were already available through other sources, while the VOC documents on Bengal turned out to be particularly rich in wage data (which have been very scarce for India in general). While far fewer documents pertain to the Cape Colony (720 Kb, or 406 pages, of inventory), its function as a provisioning station for ships sailing to and from the East Indies led to the documentation of prices for a number of basic commodities, indispensable for the calculation of real wages.

Secondly, via the study of these different regions, this dissertation also includes various ‘types’ of colonies as administered by the VOC. While the VOC was present in over thirty different areas, the form of its presence could differ substantially. While in the later eighteenth century the Company had over 5,400 employees permanently stationed in Java, only 12 people manned the island of Deshima in Nagasaki.⁸⁰ The next sections will briefly introduce these case studies.

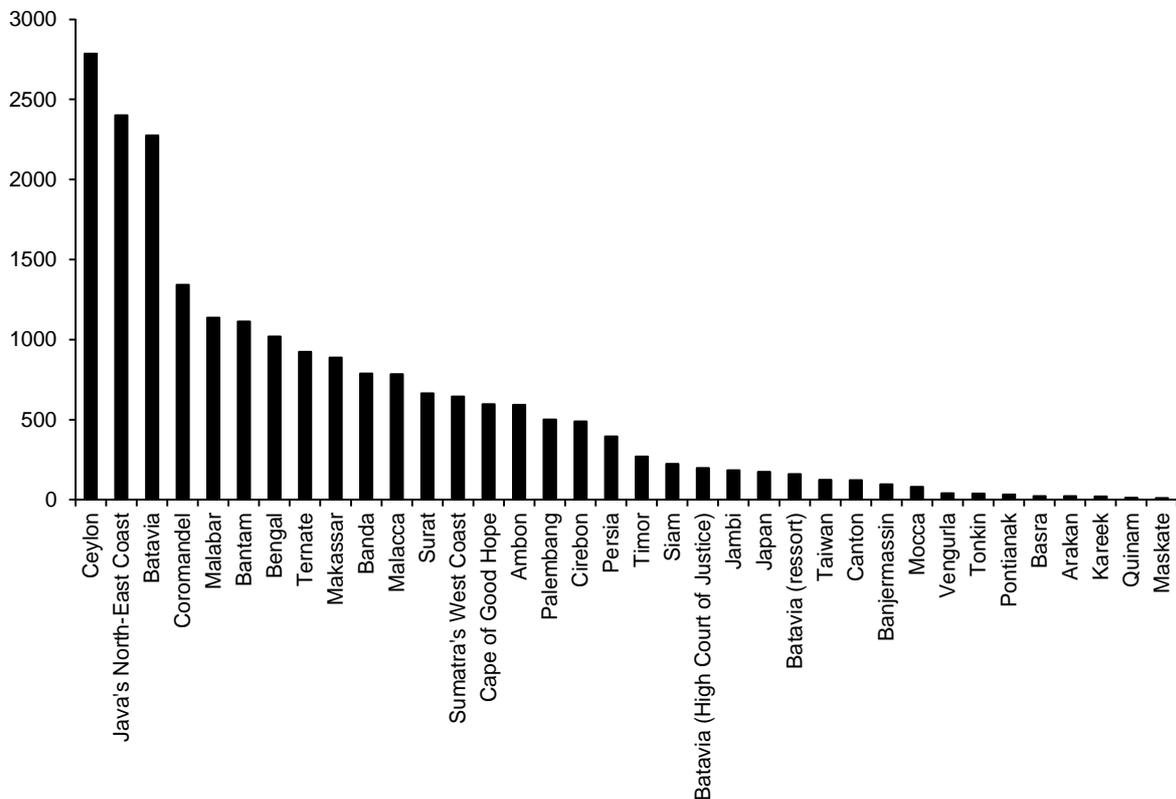
⁸⁰ Gaastra, *De Geschiedenis*, p. 94.

FIGURE 1.2: MAP OF THE INDIAN OCEAN WITH THE CASE STUDIES.



Sources: author's own projections.

FIGURE 1.3: ALL DOCUMENTS PERTAINING TO VOC ESTABLISHMENTS, KBS PER PDF-INVENTORY.



Sources: 'Reconstruction of the archives of the VOC establishments', *TANAP database of VOC documents*: <http://databases.tanap.net/vocrecords/> Last visited: 22 October 2014.

1.4.2. Bengal

In terms of manpower, Bengal was one of the smaller establishments of the VOC (employing around 200 people in the eighteenth century),⁸¹ yet looking at total turnover Bengal was one of the most important trading establishments during the late seventeenth and early eighteenth centuries. Goods purchased in Bengal accounted for 36 percent of the total Asian cargo exported to the Dutch Republic at the end of the seventeenth century and for 39 percent of it in the second decade of the eighteenth century.⁸²

India in general, and Bengal specifically, also featured prominently in recent contributions to the Great Divergence debate, yet the evidence that has been put forward so far is ambiguous. While Parthasarathi and Sivramkrishna have suggested that before 1800 living standards were at least comparable with those in the most advanced parts of Europe,⁸³ Allen, Broadberry and Gupta, as well as Roy have provided data suggesting otherwise.⁸⁴ Parthasarathi notes that the quantitative data are inconclusive, because wages ‘obtained from primary sources are radically different from the scattered earnings data found in the secondary literature’.⁸⁵ Without pointing out the cause for these differences, he suggests that this indicates the need for more research into primary sources. Roy agrees that the wage evidence is difficult to read unless we obtain more data on who were paying these wages and for what work’.⁸⁶ Bengal provides a good case-study, as it was one of the richest regions of India, ‘containing fertile land, plentiful water, and a large cotton textile industry’⁸⁷ and incomes in Bengal may thus reflect ‘an upper bound of the plausible range of income for the South Asia region as a whole’.⁸⁸

The effects of the European companies’ trade (both the Dutch and English) on the Bengal economy have been subject to further debate. K.N. Chaudhuri has emphasized the role of the Companies in Bengal’s export trade in his seminal work on the English East India Company claiming that in the first half of the eighteenth century Europe was ‘unquestionably Bengal’s chief trading partner, and its textile industry had not only expanded at a rapid rate to keep pace with the increased demand

⁸¹ Gaastra, *De Geschiedenis*, p. 94.

⁸² Om Prakash, ‘European Trade and South Asian Economies: some regional contrasts, 1600-1800’, in: Leonard Blussé and Femme S. Gaastra, (eds.), *Companies and Trade* (Leiden: Leiden University Press, 1981) pp. 189-205, there p. 196.

⁸³ Regarding Southern India: Parthasarathi, ‘Rethinking wages’; and Sivramkrishna, ‘Ascertaining Living Standards’; Bengal: Prasannan Parthasarathi, ‘Agriculture, labour, and the standard of living in 18th century India’, in: Robert C. Allen, Tommy Bengtsson and Martin Dribe (eds.), *Living Standards in the Past: New Perspectives on Well-Being in Asia and Europe* (Oxford: Oxford U. P., 2005) pp. 99-110; and: *ibid.*, *Why Europe*, pp. 38-46.

⁸⁴ Allen, ‘India in the Great Divergence’; Broadberry and Gupta, ‘The early modern’; Roy, ‘Economic Conditions’.

⁸⁵ Parthasarathi, *Why Europe*, p. 45.

⁸⁶ Tirthankar Roy, *An Economic History of Early Modern India* (Abingdon: Routledge, 2013) p. 137.

⁸⁷ Roy, ‘Economic conditions’, p. 180.

⁸⁸ *Ibid.*

but had also fully adjusted its output to the specifications required for selling in Europe'.⁸⁹ Om Prakash, an expert of the VOC trade with Bengal, suggested that 'the Dutch (and English) trade in Bengal was a net contribution to the growth of the trade from the region', that it generated 'a significant increase of income, output and employment' and created between 87 and 110 thousand new jobs in the textile industry.⁹⁰ His conclusions have been adopted by scholars like P.J. Marshall, John F. Richards and Niels Steensgaard.⁹¹ On the other hand, Sushil Chaudhury argued that the 'European export of Bengal textiles was in all probability a small fraction of the total output'.⁹²

Another important aspect of the Bengal station is the fact that, in contrast to the other case studies, the VOC did not have access to any significant special privileges in matters of trade, nor did it have any political power. The company therefore operated within existing power structures and did not create institutional changes; its only influence on the Bengal economy was through the increased demand of its goods. After the Battle of Plassey (1757), however, the English East India Company (EIC) took over *de facto* power in Bengal from the independent Nawab. Bengal thereby became the first Indian region where the British introduced direct colonial rule. The role of the Mughal decline, the subsequent period of wars and the eventual British colonial intervention in India's economic decline in the eighteenth and nineteenth centuries has been an important subject in the literature.⁹³ Both traditional Indian historiography⁹⁴ and recent econometric studies⁹⁵ have suggested that with the advent of British colonial power, Indian economic fortunes took a turn for the worse. Employing new detailed data for the examination of living standards in Bengal, this dissertation is thus able to contribute to our understanding of the development of the

⁸⁹ K.N. Chaudhuri, *The Trading World of Asia and the English East India Company, 1660-1760* (Cambridge: Cambridge U. P., 1978).

⁹⁰ Om Prakash, 'Bullion for Goods: International Trade and the Economy of Early Eighteenth Century Bengal', *Indian Economic and Social History Review* 13 (1976) pp.159-187; *ibid.*, *The Dutch East India Company*, pp. 242-248.

⁹¹ P. J. Marshall, *Bengal – the British Bridgehead* (Cambridge: Cambridge University Press, 1987) pp. 65-7; John F. Richards, 'The Seventeenth-Century Crisis in South Asia', *Modern Asian Studies* 24 (1990) pp. 625-638; and: Niels Steensgaard, 'Asian Trade and World Economy from the 15th to the 18th centuries', in: T. R. de Souza (ed.), *Indo-Portuguese History: Old Issues, new Questions* (New Delhi, 1985) p. 232.

⁹² Sushil Chaudhury, 'European Companies and the Bengal Textile Industry in the Eighteenth Century: The Pitfalls of Applying Quantitative Techniques', *Modern Asian Studies* 27 (1993) pp. 321-340.

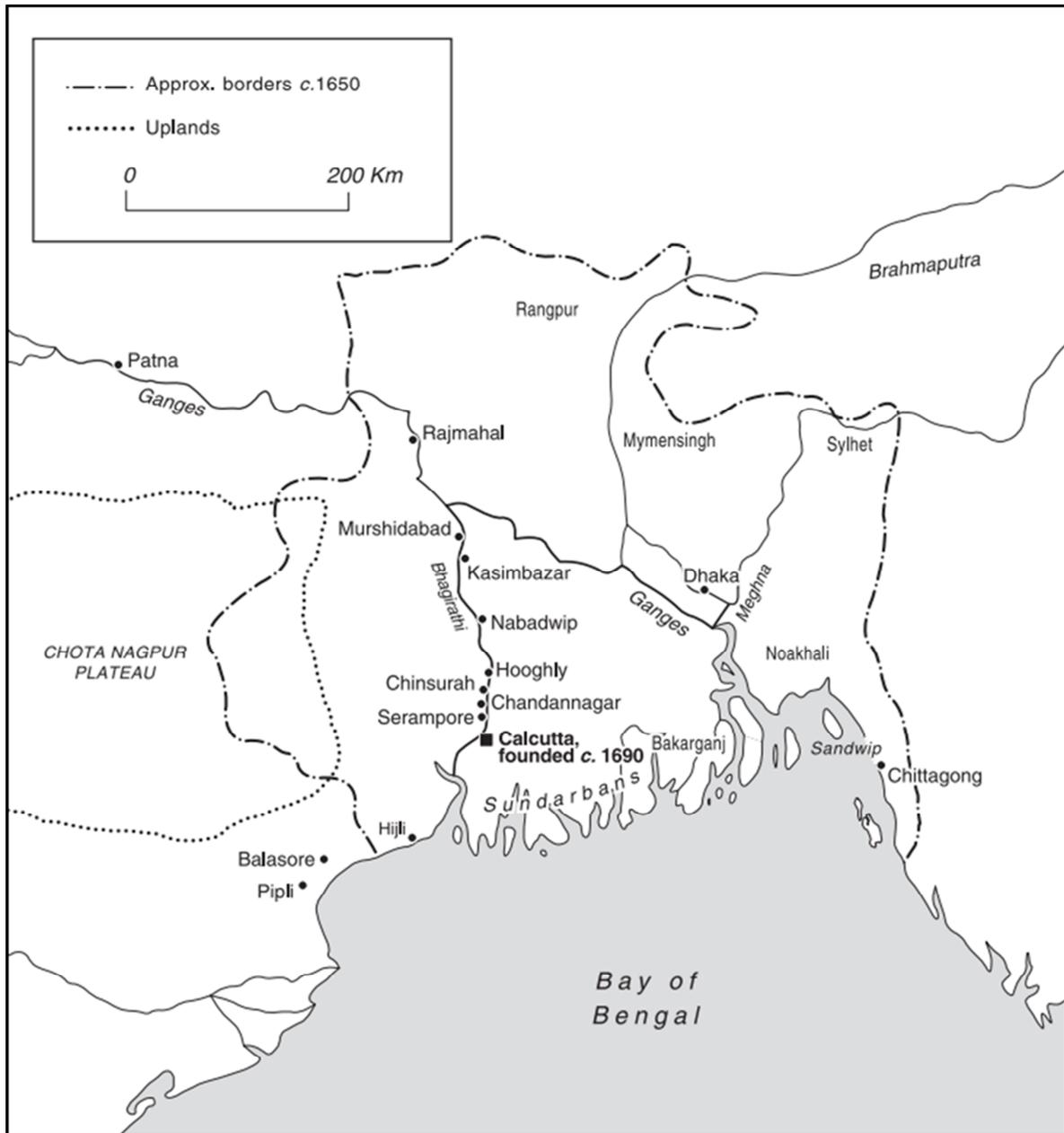
⁹³ C. A. Bayly, *Rulers, Townsmen and Bazaars: North Indian Society in the Age of British Expansion, 1770-1870* (Cambridge: Cambridge U. P., 1983); David Clingingsmith and Jeffrey G. Williamson, 'Deindustrialization in 18th and 19th century India: Mughal decline, climate shocks and British industrial ascent,' *Explorations in Economic History* 45 (2008) pp. 209-234.

⁹⁴ For a discussion see: Tirthankar Roy, 'Economic History and Modern India: Redefining the Link', *Journal of Economic Perspectives* (2002) pp. 109-130, and: C. A. Bayly, 'Indigenous and colonial origins of comparative economic development: the case of colonial India and Africa', *World Bank Policy Research Working Paper* 4474 (2008).

⁹⁵ E.g.: Abjith Banerjee and Lakshmi Iyer, 'History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India', *American Economic Review* 95 (2005) pp. 1190-1213.

Bengal economy over the eighteenth century in relation to trade, the effects of early British colonial rule, as well as Bengal's comparative position in the Great Divergence debate.

FIGURE 1.4: BENGAL IN THE SEVENTEENTH CENTURY.



Source: Tirthankar Roy, 'Where is Bengal?: situating an Indian region in the early modern world economy', *Past and Present* 213 (2011) pp. 115-146.

1.4.3. Java and Ceylon

In contrast to Bengal, the VOC came to exert significant power in Java and Ceylon. In Java, the Company expanded its power from its small base in Batavia and immediate surroundings at the beginning of the seventeenth century to govern over two-thirds of the island at the end of the eighteenth, the remainder of the island being occupied by

the Mataram Sultanate.⁹⁶ In order to gain profit from the island, the VOC stimulated coffee, sugar, cotton and indigo cultivation. In Ceylon, the Company came to control an extensive territorial area that was inhabited by (probably) over 800,000 people at the end of the eighteenth century.⁹⁷ The island was host to the VOC on the coasts, as well as an Asian kingdom (Kandy) in the interior. It was a crucial possession for the Company, both due to its strategic position within the Company's trade network, and because it was the only region in the world that produced an exceptionally fine quality of cinnamon.⁹⁸

The development of living standards in Java, and Southeast Asia in general, has been a subject of scholarly interest for quite some time.⁹⁹ Pomeranz occasionally included Southeast Asia in his comparisons, referring mainly to the works of Anthony Reid, who suggests that Southeast Asians' 'lives were no more squalid, their health no more wretched and their physical stature no worse than those of eighteenth century Europeans'.¹⁰⁰ At the same time, Acemoglu and Robinson have recently pointed out Southeast Asia as a region where Europeans (mainly the Dutch in this case) introduced extractive institutions that led to 'reversing development'.¹⁰¹ Their story is also influenced by Reid who claimed that between 1600 and 1800 Southeast Asian living standards declined dramatically, mostly as a result of changing patterns of trade (brought about by the Europeans, and specifically the Dutch) and climate changes. While research over the past decades has led to a relative wealth of information on the nineteenth and twentieth centuries,¹⁰² Southeast Asia remains one of the major blind spots in our knowledge on living standards in Asia before 1800. As the development of living standards in Java may have been more or less representative for those in other parts of Southeast Asia,¹⁰³ this dissertation fills an important gap in our knowledge. Such information will shed light on both debates on the Great Divergence and the early effects of colonialism.

⁹⁶ After the Treaty of Giyanti in 1755 Mataram was split in two Sultanates: Surakarta and Yogyakarta.

⁹⁷ See chapter 5 and appendix 7.

⁹⁸ Jurrien van Goor, *Jan Kompenie as schoolmaster. Dutch education in Ceylon 1690-1795* (Groningen: Wolters-Noordhoff, 1978) p. 7.

⁹⁹ The part on Java will, in part, be published as joined work with Jan Luiten van Zanden: Pim de Zwart and Jan Luiten van Zanden, 'Labour, wages and living standards in Java, 1680-1914', *European Review of Economic History* (accepted, forthcoming).

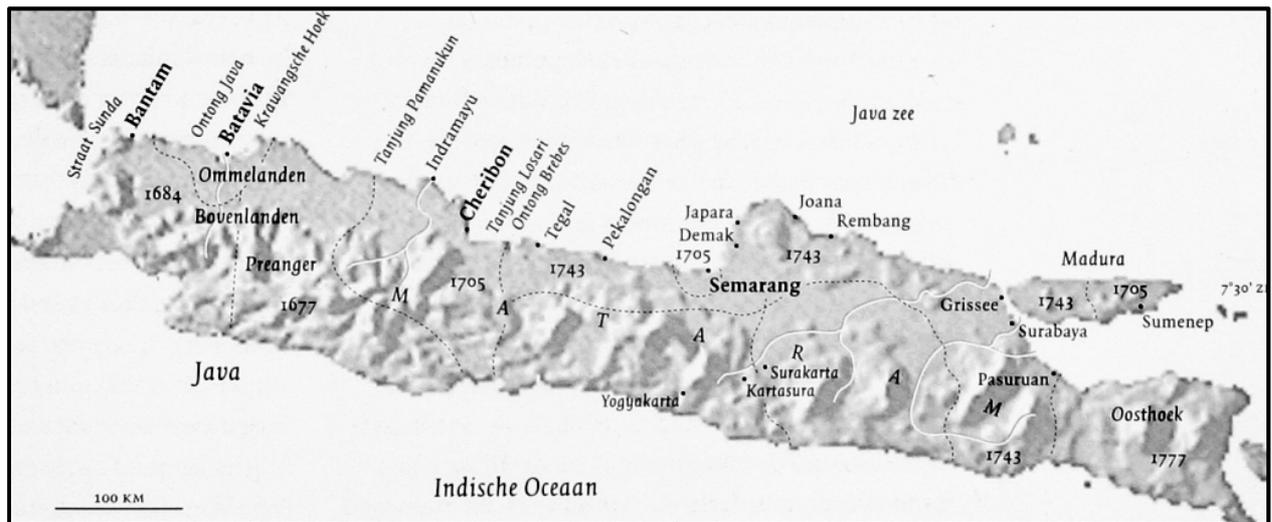
¹⁰⁰ Anthony Reid, 'Economic and Social Change, c. 1400-1800', *Cambridge History of Southeast Asia, Vol. 1. From Early Times to c. 1800* (Cambridge: Cambridge U. P., 1992) pp. 460-507, there pp. 503-4.

¹⁰¹ Daron Acemoglu and James A. Robinson, *Why Nations Fail. The Origins of Power, Prosperity, and Poverty* (2012) pp. 248-273.

¹⁰² E.g.: Jörg Baten, M. Stegl, and P. van der Eng, 'The biological standard of living and body height in colonial and post-colonial Indonesia, 1770-2000', *Journal of Bioeconomics* 15 (2013) pp. 103-122; Jan Luiten van Zanden, 'Rich and Poor before the Industrial Revolution, a Comparison between Java and the Netherlands at the Beginning of the Nineteenth Century', *Explorations in Economic History* 40 (2003) pp. 1-23; Jan Luiten van Zanden and Daan Marks, *An Economic History of Indonesia, 1800-2010* (London: Routledge, 2011).

¹⁰³ In terms of GDP per capita according to estimates by Maddison. This was suggested by: Van Zanden, 'Rich and Poor', p. 4.

FIGURE 1.5: JAVA WITH SEVENTEENTH- AND EIGHTEENTH-CENTURY BORDERS.



Source: Jacobs, *Merchant in Asia*.

Ceylon has thus far been neglected in the comparisons between Europe and Asia.¹⁰⁴ Yet it provides an interesting case study for this dissertation. Considering its institutional history it is perhaps best compared with Java,¹⁰⁵ while in terms of geography and culture it stands closer to India. Most of the historiography on Ceylon in the VOC period has been concerned with administrative, political, and social changes, however.¹⁰⁶ Some of the (traditional) literature, as in the case of India and Indonesia, has blamed Dutch (and British) colonizers for holding back development of the island.¹⁰⁷ The imposition of monopolies on trade in the seventeenth centuries reduced the volume of trade.¹⁰⁸ But, as most monopolies, except that on cinnamon, were a failure, the restrictive policies were relaxed in the later seventeenth century. Nonetheless, the growth of international trade and increased demand for Ceylon's produce in the eighteenth century, especially cinnamon, did not benefit the local population, due to the Company's mercantilist policies.¹⁰⁹ Dutch attempts to increase

¹⁰⁴ Apart from a paper that was written as a part of this dissertation: Pim de Zwart, 'Population, labour and living standards in early modern Ceylon: an empirical contribution to the Divergence debate', *Indian Economic and Social History Review* 49 (2012) pp. 365-398.

¹⁰⁵ Alicia Schrikker, *Dutch and British Colonial Intervention in Sri Lanka, 1780-1815: Expansion and Reform* (Leiden and Boston: Brill, 2007) p. 3.

¹⁰⁶ K. W. Goonewardena, *The Foundation of Dutch Power in Ceylon, 1638-1658* (Amsterdam: Djambatan, 1958); Sinnappah Arasaratnam, *Dutch Power in Ceylon, 1658-1687* (Amsterdam: Djambatan, 1958); Sinnappah Arasaratnam, 'Elements of social and economic change in Dutch maritime Ceylon (Sri Lanka) 1658-1796', *Indian Economic and Social History Review* 22 (1985) pp. 35-54; Schrikker, *Dutch and British*.

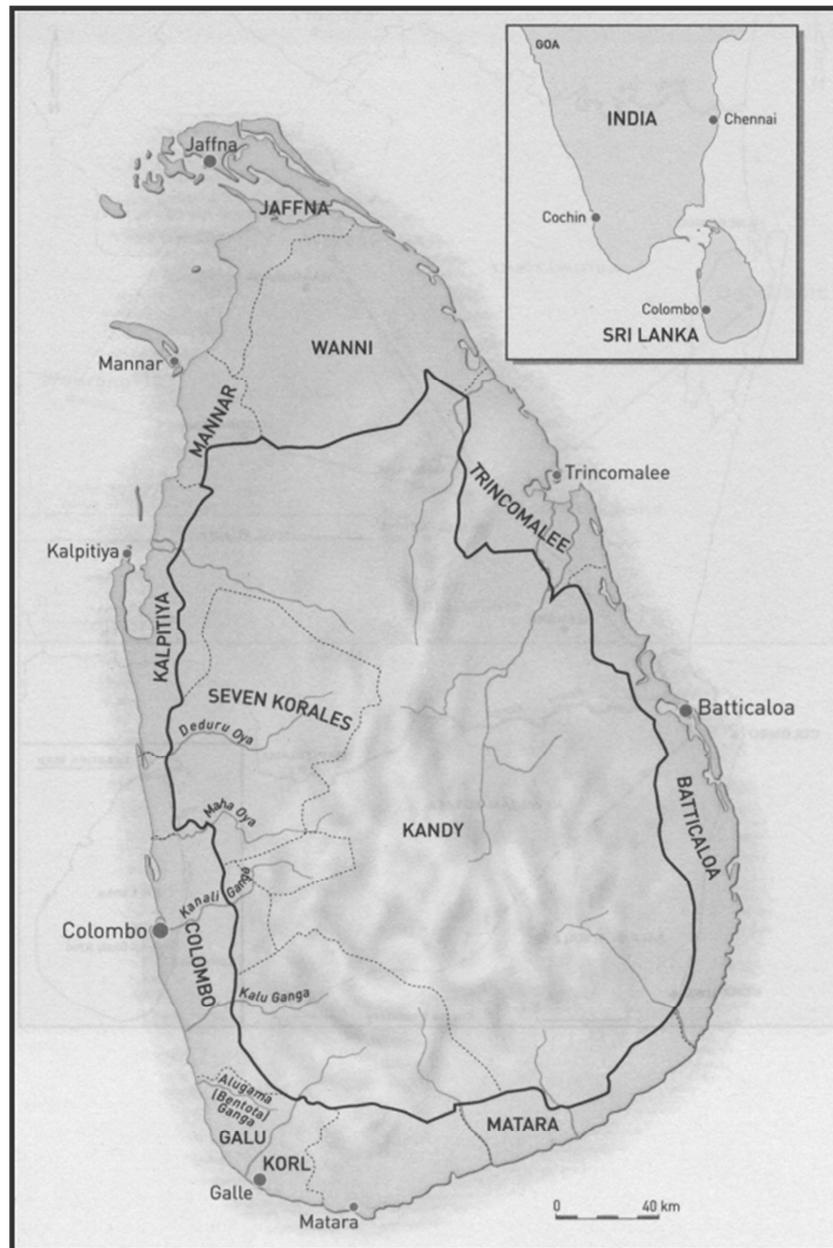
¹⁰⁷ See: Schrikker, *Dutch and British*, p. 2

¹⁰⁸ Sinnappah Arasaratnam, 'Dutch Commercial Policy and Its Effects on the Indo-Ceylon Trade (1690-1750)', *Indian Economic and Social History Review* 4 (1967) pp. 109-130.

¹⁰⁹ Sinnappah Arasaratnam, 'Ceylon in the Indian Ocean Trade: 1500-1800', in A. Das Gupta and M. N. Pearson (eds.) *India and the Indian Ocean 1500-1800* (Calcutta: Oxford U. P. 1999) pp. 224-239, there 238.

agricultural production and the cultivation of cash crops have also been evaluated as harmful to the population on the basis of evidence of growing unrest and rebellion.¹¹⁰

FIGURE 1.6: CEYLON, 1766 BORDERS.



Source: Nirmal Ranjith Dewasiri, *The Adaptable Peasant. Agrarian Society in Western Sri Lanka under Dutch Rule, 1740-1800* (Leiden & Boston: Brill, 2008) p. xxiii.

Yet in general, relatively little is known about the overall trend in economic growth, or the developments in living standards over the seventeenth and eighteenth centuries. As the most prominent expert on Dutch Ceylon, Sinnappah Arasaratnam, noted, ‘there are no precise indicators by which [the well-being of people] can be measured’ and

¹¹⁰ D. A. Kotelawela, ‘Agrarian Policies of the Dutch in South-west Ceylon 1743-1767’, *A.A.G. Bijdragen* 14 (1967) pp. 3-34. Schrikker, *Dutch and British*, p. 71.

‘[a]ll that can be done is to make some impressionist assessment of qualitative changes’.¹¹¹ By estimating developments in living standards in Ceylon from the late seventeenth to the late eighteenth century, this dissertation thus adds to this historiography. Furthermore, it compares these developments in the light of the bigger debates: did living standards mimic those in neighbouring Southern India, or were trends more akin to those in Java where the Company fulfilled a similar imperialist role?

1.4.4. The Cape Colony

The Cape Colony was the VOCs main settlement colony, founded in 1652 as a refreshment station for VOC ships on their way to and from the East Indies.¹¹² Whereas it was initially thought that a small station could provide the ships with the necessary provisions by trading with indigenous inhabitants of the area, the Khoesan, it quickly turned out that this trade was insufficient to meet the expanding needs of the Company. As a result, the European population of the colony expanded quickly, from some 1,300 in 1700 to around 22,000 at the end of the eighteenth century. In addition to the free white settler population, a large part of the work force in this colony consisted of slaves that were imported from eastern Africa, India and Southeast Asia. Were living standards in this settler colony higher than those in the other case studies, as we would expect on the basis of the works by Acemoglu and co-authors, or were other factors paramount in the development of living standards?

There has been significant debate about the condition of the early modern Cape economy. Traditionally, the Cape Colony has been regarded as a backward economy, almost entirely dependent on agriculture.¹¹³ Whereas Acemoglu et al. suggest that in settler colonies institutions were introduced that created the right incentives for investment and economic growth, in the case of the Cape Colony, the restrictive policies of the VOC have frequently been highlighted as the main cause of economic retardation and the population’s misery. The Company placed numerous restrictions on external trade. As a result there was ‘virtually no foreign trade and very little internal trade.’¹¹⁴ Consequently, there was no outlet for farmers’ surplus produce, which meant that in good years the farmers were hurt by a surplus of agricultural products leading to low prices, while in bad years they suffered from drought and crop

¹¹¹ Arasaratnam, ‘Elements of social’, p. 51.

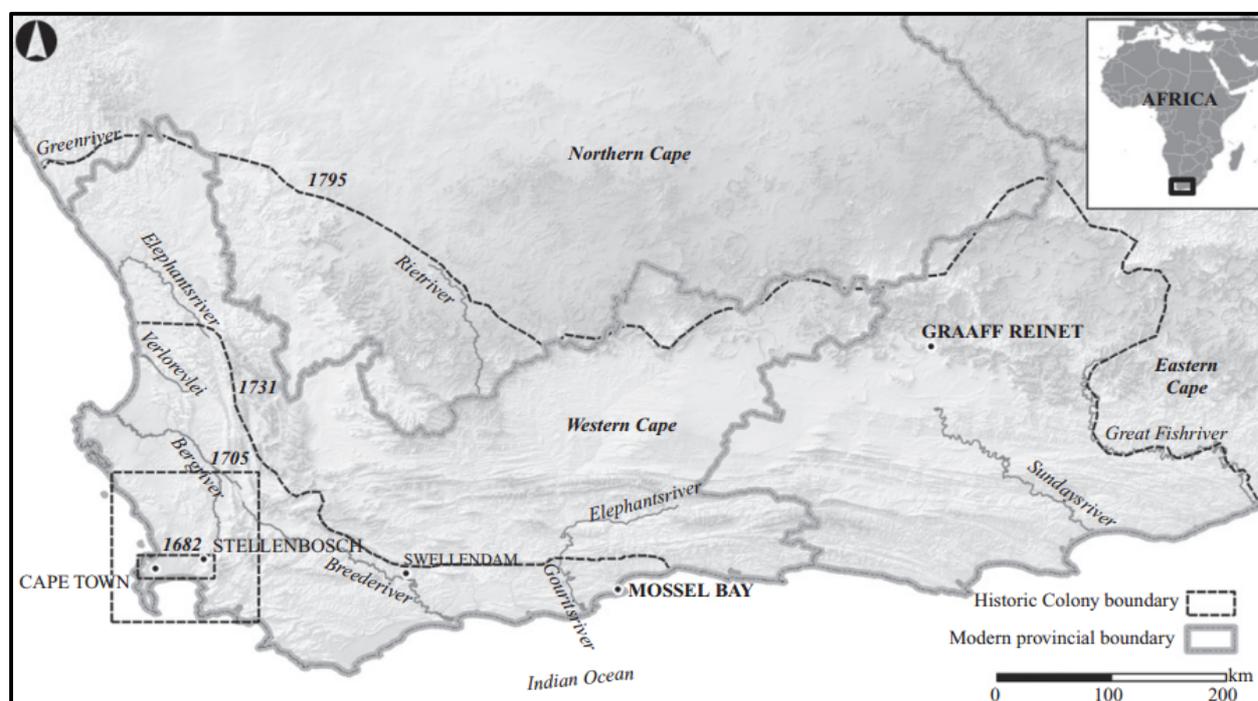
¹¹² The part of the Cape Colony has been published as: Pim de Zwart, ‘Real wages at the Cape of Good Hope: a long term perspective, 1652-1912’, *Low Countries Journal of Social and Economic History* 10 (2013) pp. 28-58.

¹¹³ C.W. de Kiewiet, *A History of South Africa. Social and Economic* (London: Oxford U.P., 1972); Leonard Guelke, ‘Frontier Settlement in Early Dutch South Africa’, *Annals of the Association of American Geographers* 66 (1976) pp. 25-42; and: Gerrit Schutte, ‘Company and colonists at the Cape’, in: Richard Elphick and Hermann Giliomee (eds.), *The Shaping of South African Society, 1652-1820* (London: Longman, 1979) pp. 173-210.

¹¹⁴ M. H. de Kock, *Economic History of South Africa* (Cape Town: Juta, 1924) pp. 39-40.

failure.¹¹⁵ Allowing private exports would have raised the prices obtainable by farmers, which would have made it difficult for the VOC to keep prices at the Cape low, thereby jeopardizing the initial purpose of the Cape as a refreshment station. In addition, the VOC made no significant capital investments, and lacking an appropriate export crop like the American colonies,¹¹⁶ the Cape suffered from the relatively high costs and low quality of its products, as well as its remote geographic location. As recently as 2005, this view was put forward by Charles Feinstein, claiming that before the discovery of diamonds and gold in the late nineteenth century ‘markets were small, conditions difficult, and progress slow’.¹¹⁷

FIGURE 1.7: THE CAPE COLONY, WITH SEVENTEENTH- AND EIGHTEENTH-CENTURY BORDERS.



Source: Fourie, ‘The Remarkable’, p. 421.

This view has been contested by a number of scholars. Pieter van Duin and Robert Ross argue that ‘any description of the Cape’s economic life in terms of “overproduction” must be not only empirically false, but also conceptually absurd, since it is difficult to imagine any entrepreneurs who would continue to produce for a structurally glutted market, on which, presumably, they would continually be operating at a loss’.¹¹⁸ They suggest that the Cape economy was much more dynamic,

¹¹⁵ Charles H. Feinstein, *An Economic History of South Africa. Conquest, Discrimination and Development* (Cambridge and New York: Cambridge University Press, 2005) p. 24.

¹¹⁶ E.g. cotton, sugar and tobacco.

¹¹⁷ Feinstein, *An Economic History*, p. 3.

¹¹⁸ Pieter van Duin and Robert Ross, ‘The Economy of the Cape Colony in the Eighteenth Century’, *Intercontinenta* 7 (Leiden: Centre for the History of European Expansion, 1987) p. 3.

and demonstrate a steady growth in the supply of, and demand for, the Cape's agricultural products: a process that was driven to a large extent by the growth of its internal market.¹¹⁹ A third position was taken up recently by Liam Brunt, who claims that economic growth only took off after the British seized control over the colony in 1795, and was further stimulated after 1843 when property rights in land became more secure.¹²⁰ Was the Cape as impoverished as suggested by the traditional literature? Does the evidence on living standards point to growth or stagnation in the eighteenth century? These questions will be addressed in this dissertation.

1.4.5. Colony Types

In table 1.1 the different types of colonies, their characterizing features and the corresponding cases are reported. This typology is based on the literature,¹²¹ but adjusted for the purposes of this dissertation. It is not claimed that this scheme should be applied to all periods or regions of the world. Instead, it is merely an attempt to bridge the gap between the theoretical literature and the case studies of this dissertation.

TABLE 1.1: COLONY TYPES AND CASE STUDIES.

Type	Features	Case
Peasant Export	The Company as trader, works within pre-existing power structures, large indigenous population.	Bengal
Concession	The Company as 'merchant and king', takes over existing power structures, large indigenous population.	Ceylon and Java
Settler	The Company as trader and political power; builds completely new power structures, large European population	Cape Colony

Sources: adaption from Austin, 'The "Reversal"', Hopkins, 'The New Economic', Myint, *The Economics* and Osterhammel, *Colonialism*.

The combination of these four case studies will show how trends in living standards differed in the context of variations in VOC political power, the development of labour markets, demography and long-distance trade. These case studies will also be compared with the existing studies on other parts of India, China,

¹¹⁹ Robert Ross, 'The Cape of Good Hope and the world economy, 1652-1835', in: Richard Elphick and Hermann Giliomee (eds.) *The Shaping of South African Society, 1652-1840* (Cape Town: Maskew Miller Longman, 1989) pp. 243-282.

¹²⁰ Liam Brunt, 'Property rights and economic growth: evidence from a natural experiment', *CEPR Discussion Paper no. 6404* (2007).

¹²¹ See above and: Acemoglu et al., 'Colonial Origins'; *ibid.*, 'Reversal of Fortune'; Austin, 'The "Reversal"'; Hopkins, 'The New Economic', Myint, *The Economics*; Osterhammel. *Colonialism*.

Japan and Europe in order to get a better picture of the Great Divergence, globalization and colonialism in the early modern period.

1.5. Outline

This dissertation is set up as follows. Chapter 2 examines whether the early modern period can be assessed as a first age of globalization. After a brief discussion on the definitions of globalization, it is suggested that the process of price convergence provides a good indicator of globalization taking place. In order to test whether there was any price convergence in this period, new data on prices were assembled for the sixteen most important products transported by the VOC between Europe and Asia in the seventeenth and eighteenth centuries. The chapter will also attempt to explain the trends in these price series through a discussion of transport costs, piracy, wars and maritime competition. Most of the analysis will focus on conditions in the different commodity markets in Asia: to what extent did various degrees of colonial control influence the patterns of international trade, and what explains the degree of colonial control in these areas?

Chapter 3 investigates the consequences of this globalization by discussing price developments in Bengal, the Cape Colony, Ceylon and Java. A discussion of different measures of living standards shows the advantages of looking at real wages in order to analyse long-term comparative well-being in the past. In order to insert all four case studies in the international picture, appropriate consumption baskets will be created that reflect both local consumption patterns and allow international comparison. Issues related to the new price data, regarding e.g. reliability, representativeness, and regional price differentials are extensively discussed before price levels are compared internationally. Was the cost of living in some areas higher than in others, and why? Do the trends in prices spell periods of economic growth or decline? Did globalization lead to inflation, or were local determinants more important drivers of price developments?

Chapter 4 computes new estimates of wage trends over the seventeenth and eighteenth centuries for the areas under discussion. As, due to the relative scarcity of data, the construction of such series is by no means straightforward, the procedures and limitations in doing so are discussed at length. Does the inclusion of real wage figures for Bengal, the Cape Colony, Ceylon and Java in the global comparisons support the 'conventional' or 'revisionist' view in the Great Divergence debate? What do the trends and the comparative real wages in these different types of colonies imply for our understanding of the effects of colonialism? Finally, it will also be discussed what these figures imply for the historiographies of these regions.

In the penultimate chapter, demographic developments and labour markets are studied in order to both explain the developments in real wages, and to engage with

some of the critiques that have been raised against the real wage approach as an appropriate way to gauge the standard of living in pre-modern (colonial) societies. In order to do so, this chapter estimates total population figures for the case-studies in the seventeenth and eighteenth centuries. It discusses average household sizes and develops some data on the earnings of additional family members in order to assess whether the assumptions of the Allen-model of computing real wages hold in these international comparisons. Through a discussion of commercialization, occupational structures, labour relations and the labour market, it is investigated whether real wages reflect the standard of living of an important part of the population at the lower end of the income distribution.¹²² It will also be discussed what such numbers entail in a global comparative perspective.

Chapter 6 concludes with the contribution of this dissertation to the three big debates introduced in the pages above. Finally, the dissertation also contains extensive appendices which describe the procedures of estimating series of wages and prices for these early modern societies for which almost no consistent long-run series of data on the economy were available hitherto.

¹²² As suggested in other real wage studies: Allen et al., ‘Wages, prices’.

Chapter 2: The Dutch East India Company and pre-modern Globalization

2.1. Introduction

In the past decades, the discussion on the importance of long-distance trade in the early modern period has grown into one of the major debates in economic history. Kevin O'Rourke, Jeffrey Williamson and co-authors addressed the issue whether the 'Voyages of Discovery' ushered in a first age of globalization in various publications between 2000 and 2009.¹²³ They define globalization as the integration of markets across space, and commodity markets reflect one important dimension of this. The best evidence of commodity market integration is 'the extent to which prices of the same commodities converge over time worldwide.'¹²⁴ Since they do not find evidence of commodity price convergence before the nineteenth century, they conclude that no market integration took place during the early modern period. Instead, these authors argue, the 1820s should be seen as the starting point of globalization, as after that date technological innovations and declining trade barriers led to a decline in transaction costs and the integration of global commodity markets. Their work has become very influential and the nineteenth century is now generally referred to as the 'first era of globalization'.¹²⁵

¹²³ O'Rourke and Williamson, 'When did globalisation?'; *ibid.*: 'After Columbus', *ibid.*: 'Did Vasco da Gama', *ibid.*: 'Once More' *ibid.*: 'From Malthus to Ohlin'; Findlay and O'Rourke, 'Commodity market integration'; Findlay and O'Rourke, *Power and plenty*.

¹²⁴ O'Rourke and Williamson, 'Once More', p. 109.

¹²⁵ E.g. Martin Uebele, 'National and international market integration in the 19th century: Evidence from comovement', *Explorations in economic history* 48 (2011) pp. 226-242; Moritz Schularick and

Not everyone is convinced, however. Dennis O. Flynn and Arturo Giráldez have suggested that globalization started in 1571 with the foundation of Manila and direct trade between the Americas and Asia.¹²⁶ While they raise serious doubts regarding the narrow definition employed by O'Rourke and Williamson, they also join the same game when they find several 'cycles' in which the price of silver converged globally. Klas Rönnbäck found signs of global price convergence from the late seventeenth century onwards.¹²⁷ A study by Paul Sharp and Jacob Weisdorf finds some long-term market integration in the wheat trade between the US and the UK from the eighteenth century. They stress, however, that this is not evidence of globalization *per se*, as they only show integration between the United States and the United Kingdom.¹²⁸ Dobado-Gonzalez et al. recently studied grain prices in the Americas and Europe more generally and concluded that globalization also started in the eighteenth century.¹²⁹ In his review of the debate, Jan de Vries takes up a nuanced view suggesting that globalization in this period faced clear limits, but that it was an era of globalization nonetheless.¹³⁰

As became clear from the introductory chapter, I will contribute to the debate on the origins of globalization via a study of price trends in the Dutch-Asiatic trade. This is not to claim that this is the only important trade in this period. While substantial work has already been done by Chaudhuri,¹³¹ further research is currently being undertaken regarding the Anglo-Asian trade.¹³² The collection of more evidence from the Portuguese *Carreira da India* or the French *Compagnie des Indes* and other companies could certainly lead to important insights. Yet there are good arguments for studying the Dutch East India Company's trade, as the VOC was by far the most important company operating in the Euro-Asian trade between 1600 and 1800: 49 percent of all ships sailing to Asia in the seventeenth and eighteenth century were Dutch. In the second part of the eighteenth century the English and French were catching up, but it lasted until the 1780s before they were able to exceed the Dutch in

Solomos Solomou, 'Tariffs and economic growth in the first era of globalization', *Journal of Economic Growth* 16 (2011) pp. 33-70.

¹²⁶ Dennis O. Flynn and Arturo Giraldez, 'Born with a "Silver Spoon": The Origin of World Trade in 1571', *Journal of World History* 6 (1995) pp. 201-221; *ibid.*, 'Cycles of Silver: Global Economic Unity through the Mid-Eighteenth Century', *Journal of World History* 13 (2002) pp. 391-427; *ibid.*, 'Path dependence, time lags and the birth of globalization: A critique of O'Rourke and Williamson', *European Review of Economic History* 8 (2004) pp. 81-108; *ibid.*, 'Born again: Globalization's sixteenth century origins (Asian/Global versus European Dynamics)', *Pacific Economic Review* 13 (2008) pp. 359-387.

¹²⁷ Rönnbäck, 'Integration of Global'.

¹²⁸ Sharp and Weisdorf, 'Globalization revisited', p. 96.

¹²⁹ Dobado-Gonzales et al., 'The Integration'.

¹³⁰ De Vries, 'The Limits', p. 731.

¹³¹ Chaudhuri, *The Trading World*; *ibid.*, *The English East India Company; the Study of an Early Joint-Stock Company, 1600-1640* (London: F. Cass, 1965).

¹³² E.g.: Pilar Noques-Marco, 'Euro-Asian globalization in the early modern period (1664-1820s): Trade Boom or Price Convergence?' Paper presented at the conference on *Trade, Poverty and Growth in History* (Madrid 2012).

numbers of Asia-bound ships. At the same time, the average tonnage of goods was also continuously higher on Dutch ships.¹³³

TABLE 2.1: NUMBERS (AND SHARES) OF SHIPS SENT TO ASIA, 1600-1800.¹³⁴

	1600-1700		1700-1800		Total 1600-1800	
	N	%	N	%	N	%
Dutch	1,770	59	2,950	44	4,720	49
English	811	27	1,865	28	2,676	28
French	155	5	1,300	20	1,455	15
Portuguese	193	6	193	3	386	4
Danish	54	2	234	4	288	3
Swedish			61	1	61	1
Ostend			55	1	55	1
Total	2,983	100	6,658	100	9,641	100

Source: Gaastra and Bruijn, 'The Dutch East India Company's Shipping', p. 183

This chapter will add to the discussion on globalization's origins by exploiting new annual price data on a great variety of goods traded by the VOC in the seventeenth and eighteenth centuries. These data are examined in order to find whether there is any evidence of 'globalization' taking place in the early modern period, defined as price convergence. In the next section a discussion of definitions is followed by methodological considerations. Section 2.3 will introduce the sources. Section 2.4 will begin the inquiry of price convergence by an exploration of some data before the establishment of the VOC, in order to be able to place the influence of Company in a long-term perspective. Section 2.5 will constitute the main part of this chapter, as it will show the trends in price convergence for a variety of commodities between c. 1600 and 1800. After finding that declining transport costs and increased maritime competition may account for a part of the observed trends in section 2.6, section 2.7 analyses the diverse conditions in the various commodity markets. It is suggested that the customary dichotomy between monopoly goods and goods bought in competitive markets do not suffice to explain the observed trends. In Europe a clear distinction was indeed made between the monopoly goods (the four spices of which the VOC was the sole supplier) and the other products. Yet the chapter also emphasizes differences in the extent to which the VOC controlled purchasing markets in Asia. Some markets were largely competitive and the VOC was merely one trader among many, whereas in other markets it had exclusive contracts with local rulers, and

¹³³ De Vries, 'Connecting Europe', pp. 46-51.

¹³⁴ While one would ideally compare numbers of ships returning to Europe, as it is the trade in goods from Asia that is of most concern for the story of globalization, those data are incomplete. The incomplete figures provide a roughly similar picture as the table presented here. The figures in table 2.1 also differ slightly from: De Vries, 'Connecting Europe', pp. 50-53.

in still others it had complete control over production and purchases. Where commodities were traded between competitive markets, price convergence took place. Convergence was however not automatic for those goods acquired in markets where the VOC had long-term contracts or colonial control over production and trade. Finally, the chapter will also attempt to explain the differences in the extent of colonial power in these areas by focussing on geography and indigenous institutions.

2.2. Definitions and methodology

‘Globalization’ is a widely used term, especially since the 1990s. As a result, numerous definitions have been given, emphasizing different dimensions (economic, cultural and political) of globalization.¹³⁵ In this section, I will focus on the discussion within the field of economic history.

Part of the dispute between Flynn and Giraldez on the one hand, and O’Rourke and Williamson on the other, originates from their incongruent definitions of globalization. Flynn and Giraldez propose that ‘globalization began when all heavily populated land masses initiated sustained interaction – both directly with each other and indirectly through other land masses – in a manner that deeply and permanently linked them’.¹³⁶ They suggest that a focus on purely economic globalization is ‘doomed’ and that globalization contains ecological, demographic, cultural as well as economic elements. Flynn and Giraldez thus emphasize the Columbian exchange of plants and animals across the oceans, especially the adoption of New World crops by the Chinese.¹³⁷ One problem with Flynn and Giraldez’ definition is the question of what qualifies as deep and lasting impacts of globalization. De Vries notes that Flynn and Giraldez definition ‘evades modelling and testing’ and therefore christened their definition ‘soft globalization’.¹³⁸ Their argument is strengthened by their evidence of several phases where silver prices converged (in the 1640s and around 1750), on the basis of which they argue that a highly integrated global economy emerged in the late sixteenth century.¹³⁹

O’Rourke and Williamson’s definition (dubbed ‘hard globalization’ by De Vries), and consequently their propositions, have the advantage that they can be tested quantitatively. According to them, globalization equals the integration of factor and commodity markets across time and space. They focus on the integration of commodity markets, and, as noted, suggest that declining price gaps provide the best evidence for this. Figure 2.1 illustrates the mechanism they propose: MM is the home

¹³⁵ Robert P. Potter, Tony Binns, Jennifer A. Elliott and David Smith, *Geographies of Development* (Harlow: Pearson, 2004) pp. 127-133.

¹³⁶ Flynn and Giraldez, ‘Born again’, p. 2.

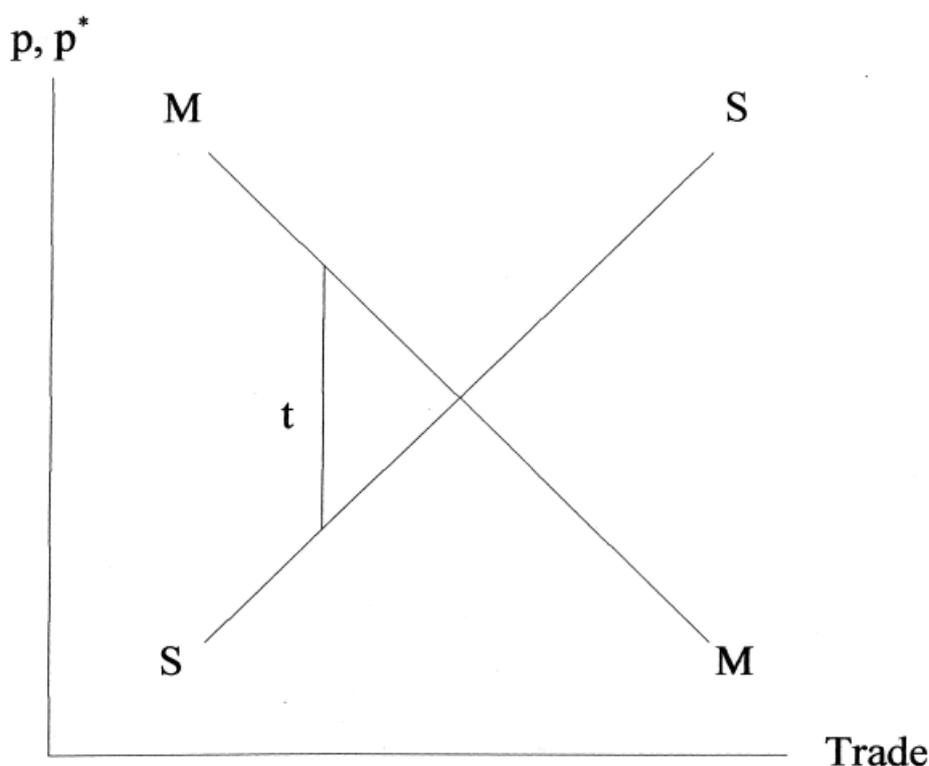
¹³⁷ Flynn and Giraldez, ‘Path dependence’, p. 96.

¹³⁸ De Vries, ‘The limits’, p. 713.

¹³⁹ Flynn and Giraldez, ‘Cycles of Silver’.

import demand function. Domestic demand (minus domestic supply) declines if the home price (p) increases; and SS is the foreign supply function: foreign supply (minus foreign demand) rises if the price abroad (p^*) increases. Globalization occurs as a result of falling transport costs or trade barriers, leading to increases in trade volumes, rising export prices and falling import prices. As trade volumes may also increase as a result of population growth, capital accumulation and/or other factors unrelated to market integration, the best evidence of globalization is thus the price gap (t) between the foreign export price and domestic import price decline; i.e. when price convergence takes place.¹⁴⁰

FIGURE 2.1: TRADE BETWEEN HOME COUNTRY AND THE REST OF THE WORLD.



Source: O'Rourke and Williamson, 'When did globalisation?', p. 25.

Yet inferring globalization from price gap t is not without problems as t may also be influenced by shifts in the demand curve. Price elasticities of various goods may have changed over time. As a result of growing surplus income in Europe,¹⁴¹ and the inclusion of luxury goods as standard items in the European consumption pattern,¹⁴² the demand curve may have shifted and demand may have become less elastic (larger fluctuations in price would have had smaller effects on quantities). Anne

¹⁴⁰ O'Rourke and Williamson, 'When did globalisation?', pp. 25-26.

¹⁴¹ O'Rourke and Williamson, 'After Columbus'.

¹⁴² McCants, 'Poor consumers', *ibid.*, 'Exotic Goods, Popular Consumption, and the Standard of Living: Thinking about Globalization in the Early Modern World', *Journal of World History* 18 (2007) pp. 433-462.

McCants has for example demonstrated that the price elasticity of sugar at the Amsterdam Municipal Orphanage declined from -2.05 in the period 1639-1757 to -0.93 in the period 1761-1812,¹⁴³ as sugar became a more standard part of the north-western European diet. The result of increased demand and a decline in price elasticity may have been an increase in the price gap over time as the Company would attempt to benefit from the decreased elasticity by raising prices.¹⁴⁴ As will be shown later, there is still significant evidence of price convergence across this period and the issue thus does not alter the general conclusions. However, in the cases of divergence it should be kept in mind that this may be driven by this methodological issue, rather than the lack of globalization.

There are several measures of price convergence. O'Rourke and Williamson study what they call 'mark-ups': the ratio of the selling price to the purchasing price. While this is a straightforward measure, Rönnbäck criticized it as a somewhat unbalanced measure as 'a quite small absolute change in the price in the selling market translates into a rather big change in the mark-up ratio.'¹⁴⁵ Another disadvantage of the mark-up is that it can measure the price wedge between two different markets only. Therefore, the coefficient of variation (CV) is perhaps a more common measure of price convergence.¹⁴⁶ The coefficient of variation allows measurement of price convergence across several markets at the same time and shows the size of the price wedge relative to the mean price between the markets. Rönnbäck suggests a deflated standard deviation should also be included as a measure of price convergence because the CV might show price convergence as a result of a positive demand shock (unrelated to globalization) that drives up the mean price. This chapter will take into account developments in all three measures of price convergence, but section 2.7 will only show figures on mark-ups, as these allow easy interpretation. Besides a few exceptions that will be discussed later, the results of the three measures are fairly consistent.

Some scholars have argued that price convergence alone is not 'a sufficient condition for market integration as prices may be determined or influenced by processes outside of the realm of transaction and exchange (e.g., large-scale climatological events).'¹⁴⁷ Therefore these scholars have looked at price adjustment

¹⁴³ Anne McCants, 'Consumer Behaviour in an early modern Dutch orphanage: A wealth of choice', *Journal of European Economic History* 22 (1993) pp. 121-142.

¹⁴⁴ Although Douglas Irwin has suggested that the VOC provided managerial incentives to increase total turnover, see: Douglas A. Irwin, 'Mercantilist as Strategic Trade Policy: The Anglo-Dutch Rivalry for the East India Trade', *Journal of Political Economy* 99 (1991) pp. 1296-1314; *ibid.*, 'Strategic trade policy and mercantilist trade rivalries', *American Economic Review* 82 (1992) pp. 134-139.

¹⁴⁵ Rönnbäck, 'Integration', p. 100.

¹⁴⁶ See e.g. Giovanni Federico, 'When did European markets integrate?', *European Review of Economic History* 15 (2011) p. 93-126.

¹⁴⁷ David S. Jacks, 'Intra- and international commodity market integration in the Atlantic economy, 1800-1913', *Explorations in Economic History* 42 (2005) pp. 381-413, p. 383.

and price volatility, as well as price convergence as measures of market integration.¹⁴⁸ However, considering the limitations of the data that will be presented here (which are annual with gaps and therefore not suitable for more advanced testing of market integration), this paper looks only at price convergence. This does not need not be an extreme handicap, since we are interested in long term developments, and as was noted by Giovanni Federico, one of the experts on market integration: ‘when looking at the long-term growth, price convergence is much more important than other measures’.¹⁴⁹ He argues that, while it ‘may be less glamorous’, studying price convergence does not need ‘a priori assumptions about the process of adjustment, it is more robust to errors in data, it is highly flexible; and, above all, it focuses on changes in prices which oriented the decisions of millions of producers and consumers’.¹⁵⁰

2.3. Sources

The most important contribution of this chapter lies in its use of a newly collected dataset. O’Rourke and Williamson admit that their sample of price data is limited and explicitly invite other scholars to challenge or confirm their findings by bringing in new data:

We would be delighted if [...] pre-industrial world economy specialists were to take this empirical challenge seriously, and produce more long-run price data that can speak to the issues of when globalisation started, and what drove the post-Columbus expansion of world trade.¹⁵¹

Over forty years ago, Kristof Glamann pointed out that the prices on the commodity exchange in Amsterdam provide an excellent source of information on globalization where products from all corners of the world competed with each other.¹⁵² The prices fetched for various products at the auctions in Amsterdam are still available in the VOC archives.¹⁵³ While Glamann already assembled a few of these figures between 1650 and 1740,¹⁵⁴ the data from this source have now been

¹⁴⁸ Jacks, ‘Intra- and international’; Victoria N. Bateman, ‘The evolution of markets in early modern Europe, 1350-1800: a study of wheat prices’, *Economic History Review* 64 (2011) pp. 447-471; Karl Gunnar Persson, *Grain Markets in Europe, 1500-1900: Integration and deregulation* (Cambridge: Cambridge U. P, 1999) p. 92.

¹⁴⁹ Giovanni Federico, ‘How much do we know about market integration in Europe’, *Economic History Review* 65 (2012) pp. 470-497, there, p. 495,

¹⁵⁰ Federico, ‘When did European’, p. 95.

¹⁵¹ O’Rourke and Williamson, ‘Once more’, and: *ibid.* ‘After Columbus’, p. 428: ‘Of course, our sample of commodities and routes is limited, and we would like to have more and better evidence to see whether other long distance routes, other commodities, and deeper evidence for the fifteenth and sixteenth centuries confirm the conclusions offered here.’

¹⁵² Kristoff Glamann, ‘European trade 1500-1750’, in: Carlo M. Cipolla (ed.) *The Sixteenth and Seventeenth Centuries* (1974) p. 451.

¹⁵³ VOC 4584-4597. These figures have been assembled by Peter Koudijs, Kariin Sundsback and myself.

¹⁵⁴ Glamann, *Dutch-Asiatic*, pp. 279-286.

systematically assembled in its entirety. These price series were augmented with the well-known data assembled by N.W. Posthumus in case of missing data.¹⁵⁵

The ‘General Ledgers’ of the VOC Bookkeeper-General in Batavia constitute the main source of prices in Asia.¹⁵⁶ In these general ledgers the trade in the entire VOC charter area was recorded. Fifty-five volumes of the eighteenth century have been preserved. In each volume all products and their quantities and values that were shipped between the Dutch Republic and Asia, and among the ‘colonies’ and trading posts in Asia themselves were recorded for a single financial year. Second, data were gathered from the *facturas* (export invoices), which are part of the general VOC-OBP.¹⁵⁷ These state the quantities of goods purchased in Asia, as well as the prices for which they were procured, per ship.¹⁵⁸ Additional observations stem from the *rendementen* (returns) which record the purchasing and sales prices of various goods at the establishments in Asia.¹⁵⁹ These were employed for the seventeenth century (when no General Ledgers have survived) and to fill gaps resulting from missing general ledgers in the eighteenth century. Next to these data from the VOC accounts, published sources (like the *Nederlandsch-Indische Plakaatboeken*, *Generale Missiven* and *Daghregisters* of Batavia) were employed to fill additional gaps.¹⁶⁰ For the period immediately before the establishment of the Company, there were also a few travel descriptions of the first voyages of the Dutch to the East Indies that contained price observations.¹⁶¹

¹⁵⁵ Posthumus, *Nederlandsche prijsgeschiedenis*; these were used to extrapolate the VOC auction series; in general these series do not differ much.

¹⁵⁶ NA.BGB 1.04.02.12. *Generale Journalen*. Made available online by the Huygens ING Project Bookkeeper-General Batavia: <http://bgb.huygens.knaw.nl/>

¹⁵⁷ VOC: *Overgekomen brieven en papieren* (OBP).

¹⁵⁸ VOC 603-605; 607; 629; 652; 1067-1074; 1076-1080; 1082; 1087-1088; 1090-1094; 1096; 1098-1100; 1105; 1134; 1152; 1221; 1230; 1232; 1234; 1241; 1245; 1251; 1261; 1269; 1297; 1315; 1395; 1419; 1457; 1501; 1561; 2753; 3819; 3969; 7545.

¹⁵⁹ VOC 2683; 2710; 2727; 2730; 2753; 2770; 2810; 2828; 2847; 2892; 2915; 2945; 2974; 3002; 3034; 3127; 3162; 3217; 3223; 3282; 3313; 3366; 3392; 3423; 3440; 3477; 3505; 3535; 3563; 3630; 3635; 3678; 3771; 3781; 3826; 7545; 7552; 7566.

¹⁶⁰ J. E. Heeres, H. T. Colenbrander and J. A. van der Chijs (eds.) *Dagh-register gehouden int Casteel Batavia vant passerende daer ter plaetse als over geheel Nederlands-India*. Vols. 1-31. (The Hague: Martinus Nijhoff, 1887-1931); J. A. van der Chijs (ed.), *Nederlandsch-Indisch Plakaatboek, 1602-1811*. Vols. 1-17. (Batavia: Landsdrukkerij, 1885). W. Ph. Coolhaas, J. van Goor, J. E. Schooneveld-Oosterling and H. K. s’ Jacob (eds.) *Generale Missiven van Gouverneurs-Generaal en Raden aan Heren XVII der Verenigde Oostindische Compagnie* (1960-2007); J. W. IJzerman (ed.), *Cornelis Buijsero te Bantam 1616-1618. Zijn brieven en journaal. Met inleiding en bijlagen* (The Hague: Martinus Nijhoff, 1923); W. Ph. Coolhaas (ed.), *Pieter van den Broecke in Azië. 2 Vols.* (The Hague: Martinus Nijhoff, 1962-1963); J. K. J. de Jonge and M. L. van Deventer (eds.), *De Opkomst van het Nederlandsch Gezag in Oost-Indië (1595-1811): verzameling van onuitgegeven stukken uit het oud-koloniaal archief*. 17 Vols. (The Hague, 1862-1888).

¹⁶¹ J. Keuning (ed.) *De tweede schipvaart der Nederlanders naar Oost-Indië onder Jacob Cornelisz. van Neck en Wijbrant Warwijck 1598-1600: journalen, documenten en andere bescheiden*. Vol. 2. (The Hague: Martinus Nijhoff, 1938); G. P. Rouffaer and J. W. IJzerman (eds.) *De Eerste Schipvaart der Nederlanders naar Oost-Indië onder Cornelis de Houtman, 1595-1597. Journalen, documenten en andere bescheiden*. Vol. 3. (The Hague: Martinus Nijhoff, 1915); W. S. Unger (ed.) *De oudste reizen van de Zeeuwen naar Oost-Indië 1598-1604* (The Hague: Martinus Nijhoff 1948).

As the VOC always wrote down the purchasing price for the location where it acquired a product, purchasing prices in Batavia actually reflect prices for different parts of Asia; e.g. in the case of cloves, it reflects the purchasing price on Amboina. The purchasing prices for the products could be reported in different (old) units of measurement such as the *pond*, the *picol* and the *bahar*. Prices could be expressed in different currencies: e.g. *rial*, *rixdollars* and *guilders*. I have converted all over these measures and currencies to guilders per *pond* to compare with the auction price in Amsterdam.¹⁶² It is important to note that the prices in Asia were corrected for differences in the silver values of the guilder in Asia and Europe (also see section 3.5.4 and appendix 2.2).

2.4. Globalization and Dutch entry into Asian markets

Obviously, trade between Europe, Africa and Asia predated the establishment of the VOC, as well as Vasco da Gama's discovery of the Cape route to India. Janet Abu-Lughod, for example, emphasized that the world was globalized in the thirteenth century as the three most populous parts of the world – Western Europe, the Middle East and Asia (South, Southeast and China) – were already intensively connected.¹⁶³ This 'world system' was disturbed by the Bubonic Plague in the fourteenth century (while the spread of the Plague itself was a consequence of this early globalization). Findlay and O'Rourke agree that a case for globalization in this period can be made, also as a result of the *Pax Mongolica*.¹⁶⁴ Following Adam Smith, various scholars emphasized the immediate effects of the 'Voyages of Discovery' and the Portuguese circumvention of the Venetian spice monopoly in the late fifteenth and early sixteenth centuries for the integration of world markets.¹⁶⁵ Niels Steensgaard argued, however, that a real breakthrough in international trade was accomplished only by the entry of the North-West European trading companies, most notably the Dutch and English.¹⁶⁶ These companies were an institutional innovation that led 'to more stable prices in the

¹⁶² See appendices 1 and 2 for the details. Following W. G. Wolters, I have assumed for the entire period the following guilder value per coin: *rial*: 3, *rixdollar*: 2.4; *dubbeltje*: 0.10, *stuiver*: 0.05; *duit* = 0.0125. Wolters also discussed the issue of the difference between so-called heavy and light money used by the VOC. See: 'Heavy and light money in the Netherlands Indies and the Dutch Republic: dilemmas of monetary management with unit of account systems', *Financial History Review* 15 (2008) pp. 37-53. Most of the VOC bookkeeping was done in guilders, so the problem is not so big. Furthermore, the issue of 'heavy' versus 'light' guilders had to be dealt with: see appendix. Textiles are, of course, not converted to prices per *pond*, but in prices per piece.

¹⁶³ Janet L. Abu-Lughod, *Before European Hegemony: the world system A. D. 1250-1350* (New York and Oxford: Oxford U. P., 1991).

¹⁶⁴ Findlay and O'Rourke, *Power and Plenty*, p. 108.

¹⁶⁵ O'Rourke and Williamson, 'Did Vasco'.

¹⁶⁶ Niels Steensgaard, *The Asian Trade Revolution of the Seventeenth Century. The East India Companies and the Decline of the Caravan Trade* (Chicago and London: University of Chicago Press, 1973).

Amsterdam market and a smaller price gap between Europe and Asia'.¹⁶⁷ Similarly, Robert Allen suggests that in the sixteenth century only Portugal benefited from the reduction in transport costs and that it was only with the arrival of the English and Dutch East India companies in the early seventeenth century that broke Portugal's maritime monopoly and further reduced the European price by two-thirds.¹⁶⁸ Two Dutch scholars studying the early trade with the archipelago also suggested that the Portuguese had hardly any effect on the Asian trading system.¹⁶⁹ While this chapter is mainly concerned with price convergence over the seventeenth and eighteenth centuries, it will be illuminating to have some sense of price gaps before and during the early period of the VOC, even though the evidence is thin, as this allows putting the analysis of price gaps in a long-run perspective. To what extent did the arrival of the Company contribute to the process of globalization, as compared with the developments before?

The answer to this question lies of course with Asian price information in the sixteenth century. Unfortunately, such data are scarce and only available for a few products: cloves, cinnamon and pepper. For the fifteenth century there are two observations of pepper prices from Chinese sources,¹⁷⁰ while a few additional price observations for the sixteenth century could be found in well-known Portuguese documents like Tomé Pires' *Suma Oriental* and Duarte Barbosa's *Book of Duarte Barbosa*.¹⁷¹ Combining these prices with those from Dutch sources for the early period and comparing them with the prices for these goods prevailing in Amsterdam, or, when those were not available, Antwerp,¹⁷² a rough sketch of the developments in mark-ups from the fifteenth to the seventeenth century can be given (see table 2.2). Reviewing these data, it must be kept in mind that the relatively few observations may

¹⁶⁷ Niels Steensgaard, 'The Dutch East India Company as an Institutional Innovation', in: Maurice Aymard (ed.) *Dutch capitalism and world capitalism. Capitalism hollandaise et capitalisme mondial* (Cambridge: Cambridge U. P., 1982) pp. 235-258. In: *ibid.*, *The Asian Trade*, pp. 152-153: Steensgaard suggests that '[t]he ultimate proof must await the elaboration of Asian price series, but the information to be gained from available price series is that the gap between the buyers' and the producers' prices was reduced after the rise of the Companies.

¹⁶⁸ Robert C. Allen, *Global Economic History: A Very Short History* (Oxford: Oxford U. P., 2012) p. 17.

¹⁶⁹ J. C. van Leur, *Indonesian Trade and Society: Essays in Asian Social and Economic History* (The Hague: Van Hoeve, 1955) p. 118; M. A. P. Meilink-Roelofs, *Asian Trade and European Influence in the Indonesian Archipelago between 1500 and about 1630* (The Hague, 1962) p. 214.

¹⁷⁰ These suggest pepper could be obtained for between 0.32 and 0.62 grams of silver per Dutch *pond*. See: Meilink-Roelofs, *Asian Trade*, p. 333 n. 57: Ma Huan (1416 or 1425-1432) suggests 100 kati of pepper could be obtained for 1 silver *tael*, according to Fei Hsin (1436) a *bahar* of pepper could be obtained for 6 silver *tael*. 1 *tael* = 37.5 grams; 1 *bahar* = 320 kati; and, 1 *bahar* pepper = 180 kg = 364 *pond*, according to Bulbeck et al. *Southeast Asian exports*, p. 182

¹⁷¹ Tomé Pires, *Suma Oriental: an account of the East, from the Red Sea to Japan, written in Malacca and India in 1512-1515*. 2 vols. (London, 1944); Duarte Barbosa, *The Book of Duarte Barbosa. An account of the countries bordering on the Indian Ocean and their Inhabitants, written by Duarte Barbosa and completed about the year 1518 AD*. [Transl. and ed. by Mansel Longworth Dames] (New Delhi: Asian Educational Services, 1989).

¹⁷² Herman van der Wee, *The growth of the Antwerp market and the European economy (fourteenth-sixteenth centuries)*. Vol. I Statistics (The Hague: Martinus Nijhoff, 1963).

not be representative for prices during these decades. However, until new data are unearthed from e.g. Portuguese sources, these data present the best evidence yet. When taking these figures at face value, an argument can be made in favour of Steensgaard and Allen's suggestions that the entry of the north-western European companies may have led to initial drops in the mark-up. The data for cinnamon suggest a decline of a mark-up of somewhat above 20 in the late sixteenth and early seventeenth centuries to around 12 in the later seventeenth century (and steadily declining until the 1740s, see figure 2.8 below). The earliest mark-ups in the 1510s and 20s for cloves are exceedingly high (140-180), but then drop to remarkably low figures (4-8) in the second half of the sixteenth century. Considering these large fluctuations, and the small number of observations, it is hard to interpret these figures. Yet, similarly to the mark-ups for cinnamon, a decline in the mark-up in the first half of the seventeenth century can be discerned from above 20 to around 14-15 later in the century. In both cases, this is despite the VOC acquisition of a monopoly over these spices in the 1650s. This monopoly did, however, prevent a further decline in the remainder of the seventeenth and eighteenth centuries, as will be shown below.

For a more detailed look at this process of early price convergence, we can focus more specifically on Indonesian pepper prices in the period 1590-1660 (figure 2.2) for which data are more abundant. It is clear that starting with the arrival of the first Dutch ships in 1596,¹⁷³ purchasing prices increased rapidly until roughly 1603. After that, the lack of rivalry among the Dutch resulting from the foundation of the VOC may have led to a brief drop in prices.¹⁷⁴ During the 1610s the price for pepper is driven up again due to fierce competition between, especially, the Dutch, English, Chinese (who also often took a role as intermediary traders) and western Asian merchants in the various pepper ports in the Archipelago (especially in Banten, a major international commercial port). Spearheaded by the infamous Jan Pieterszoon Coen, the Company's strategy to acquire pepper at low prices became more aggressive. As the Chinese traders and intermediaries were seen as the main cause of high pepper prices, Coen started seizing junks with cargoes of pepper departing for China.¹⁷⁵ Coen also moved the centre of Dutch company activities from Banten to Jayakarta (a vassal of the former), as he thought he would be able to exert more influence over the (weaker) ruler of Jayakarta. With the Dutch threatening the position of Banten, tensions led the Sultan of Banten to attack the VOC and Jayakarta in December 1618.¹⁷⁶ The consequential raid of the same city by Dutch forces in May 1619, and the rebuilding of it as the VOC headquarters Batavia, however, tipped the balance of this power play in favour of the Dutch. In succeeding years, the blockade of

¹⁷³ Rouffaer and IJzerman, *De Eerste Schipvaart*.

¹⁷⁴ Meilink-Roelofs, *Asian Trade*.

¹⁷⁵ Much of this section is based on the excellent discussion in: Meilink-Roelofs, *Asian Trade*, pp. 239-259.

¹⁷⁶ Merle C. Ricklefs, *A history of modern Indonesia since c. 1200* (Stanford: Stanford U. P., 2008) p. 33.

Banten and the redirection of much its trade through Batavia allowed the Dutch to successfully entrench their position. Banten's steady demise pushed down prices from the 1620s onwards, yet the improved Dutch position also allowed the increase of pepper supplies to Amsterdam, which led to a decline of the price of pepper there by 50 percent from around fl. 1.00 per *pond* to fl. 0.50 in the first half of the seventeenth century, thereby allowing the decline in the mark-up in this period.

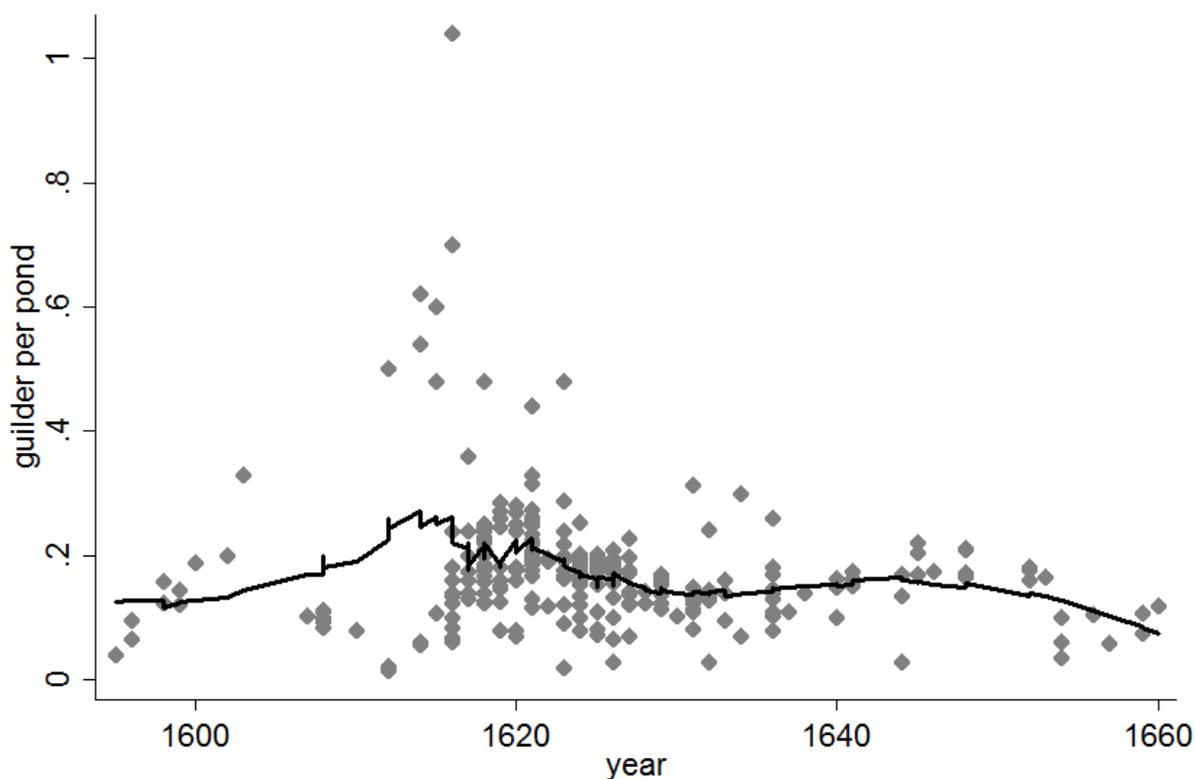
TABLE 2.2: MARK-UPS (EUROPEAN SALES PRICE / ASIAN PURCHASING PRICE) ON CINNAMON, CLOVES AND PEPPER, 1450-1680.

	Cinnamon	Cloves	Pepper
1420*			28.9
1510		140.0	6.8
1520		180.1	
1530		39.7	
1540		4.4	
1550			
1560	21.2	8.2	
1580			60.7
1590			16.2
1600	25.3	25.3	9.1
1610	21.7	21.7	5.3
1620	10.9	19.8	5.2
1630	20.5	18.5	5.9
1640	13.1	13.0	5.6
1650		12.1	6.3
1660	13.3	17.8	5.5
1670	12.6	15.3	3.8
1680	11.5	14.4	4.2

Sources: Asia: Barbosa, *The Book*; Bulbeck et al, *Southeast Asian*; Ma Huan *Ying-yai*; Meilink-Roelofs, *Asian Trade*; Pires, *Suma Oriental*; other data from VOC archives see text and appendix 4.1; Europe: Van Zanden, 'Prices'; Herman Van der Wee, *The growth of the Antwerp market and the European economy (fourteenth-sixteenth centuries)* (Louvain 1963); Posthumus, *Nederlandsche prijsgeschiedenis*. *1420 refers to 1416-1436.

While future research, especially in Portuguese sources, may bring valuable new data to light for the sixteenth century, from the evidence presented here it can be concluded that the entry of the Dutch probably led an early phase of price convergence. As a result of the increasing hold of the Dutch over purchasing markets (acquired by the use of force), as will be discussed below, the converging trends for pepper and the fine spices did not continue over the remainder of the seventeenth and eighteenth centuries.

FIGURE 2.2: INDONESIAN PURCHASING PRICES OF PEPPER, GUILDERS PER POND, 1590-1660.



Sources: see text and table 2.2.

2.5. Price convergence and the Company

Table 2.3 shows the trends in price differentials for sixteen products traded between Batavia and Amsterdam. Following Rönnbäck,¹⁷⁷ and O'Rourke and Williamson,¹⁷⁸ I tested whether these trends were statistically significant. These sixteen products together accounted for roughly 90 percent of the total sales in Amsterdam during almost the entire period, meaning that virtually the entire Dutch-Asiatic trade is captured by this analysis. Alas, there were still some gaps in the series, especially in the seventeenth century. Nonetheless, these series are an improvement *vis-à-vis* the data available hitherto, and gaps are not detrimental to the analysis, since they are assumed to be random (i.e. caused by the loss of source material, not missing because of the patterns in trade).¹⁷⁹

¹⁷⁷ Rönnbäck, 'Integration', pp. 105-106.

¹⁷⁸ O'Rourke and Williamson, 'Did Vasco', p. 670.

¹⁷⁹ The series by e.g. O'Rourke and Williamson, 'When did globalization?' figure 5 on page 34, or Rönnbäck, 'Integration', figure 2 on page 104, also contain gaps.

The trends in the mark-up are to a great extent similar to those displayed by the CV and the deflated standard deviation (SD). The only difference with the CV trends is that the converging trends for pepper and nutmeg become statistically significant. The dissimilarity with the SD is slightly bigger, as the prices for nutmeg shows a diverging trend, while the price series for coffee are converging. The trends for these three products are thus perhaps less robust than those for the other goods. Keeping this in mind when looking at the results from the mark-ups in table 2.3, a number of observations can still be made. By far the majority of price series (9 robust, or 12 when we include coffee, nutmeg and pepper) show convergence, while only 4 (or 6 when including nutmeg and coffee) display a diverging trend. Furthermore, not only could the trends in price convergence differ between products, the absolute size in the gaps between purchasing and sales prices could vary enormously (looking at the Y-axes on the right-hand side). Nutmeg made the most handsome profit, as for example at the beginning of the 18th century the sales price (fl. 3.72) was over 70 times the purchasing price (fl. 0.05).¹⁸⁰ Conversely, if the VOC would only have transported copper and tin from Asia to Europe its demise would probably have come a lot sooner as the average mark-ups were only 1.4 and 1.7 respectively. Allowing for transport costs, such a route would surely have been operating at a substantial loss. Obviously, this trade constituted only a small proportion of the VOCs total trade.

These examples force us to ask the question of how to assess this array of data? Is price convergence for one product more important than for another? While O'Rourke and Williamson have dismissed early modern globalization on the basis of evidence on e.g. pepper, coffee and cloves, Rönnbäck suggests that globalization cannot be dismissed because of the evidence on prices for e.g. sugar, tobacco, and tea. Anne McCants notes that as pepper was clearly a much more significant commodity in European consumption than ginger, pepper prices should be given greater weight in any quantitative exercise.¹⁸¹ De Vries claims that even if mark-ups for most commodities declined only marginally, or not at all, 'overall gross margins faced by the trading companies tended to decline nonetheless because of an additional effect of a continually changing mix of goods in a direction that involved them in progressively more competition, both in Asia and at home.'¹⁸² He shows that the gross margins on the total trade of the VOC thus declined from almost 4:1 to below 2.5:1 after 1720.

¹⁸⁰ Dutch value: Indian price: fl. 0.00625.

¹⁸¹ McCants, 'Exotic Goods', p. 442.

¹⁸² De Vries, 'The limits', p. 724.

TABLE 2.3: TRENDS IN PRICE CONVERGENCE FOR 16 COMMODITIES.

Product	Trends			Trend	Avg. mark-up	Period ¹⁸³	N
	Mark-up	CV	SD ¹⁸⁴				
Cinnamon	0.085 (9.99)	0.001 (8.32)	0.002 (12.12)	Divergence	13.2	1608-1800	145
Cotton yarn	0.012 (4.25)	0.002 (4.72)	0.0002 (3.15)	Divergence	4.1	1660-1789	58
Indigo	0.015 (3.38)	0.003 (3.71)	0.0012 (4.80)	Divergence	2.8	1663-1800	58
Mace	0.031 (4.06)	0.0003 (4.61)	0.0009 (4.41)	Divergence	14.8	1609-1789	143
Nutmeg	-0.037 (-0.86)	-0.0003 (-3.60)	0.0017 (6.20)	None	45.8	1609-1789	129
Coffee	0.034 (4.41)	0.003 (5.71)	-0.0003 (-6.10)	None	5.5	1711-1800	87
Cloves	-0.040 (-6.92)	-0.001 (-7.66)	-0.0006 (-4.74)	Convergence	14.5	1608-1800	164
Copper	-0.005 (-3.39)	-0.002 (-3.20)	-0.0005 (-1.19)	Convergence	1.4	1663-1742	41
Pepper	-0.005 (-1.60)	-0.0003 (-4.10)	-0.0009 (-3.92)	Convergence	5.1	1609-1800	114
Porcelain	-0.016 (-4.01)	-0.005 (-4.62)	-67.17 ¹⁸⁵ (-2.85)	Convergence	2.0	1729-1792	56
Saltpetre	-0.031 (-8.51)	-0.003 (-9.34)	-0.00005 (-2.79)	Convergence	3.0	1665-1794	86
Silk	-0.008 (-3.16)	-0.002 (-3.49)	-0.001 ¹⁸⁶ (-1.96)	Convergence	1.9	1660-1763	44
Sugar ¹⁸⁷	-0.429 (-9.22)	-0.002 (-8.48)	-0.0003 (-10.13)	Convergence	5.2	1623-1786	88
Tea	-0.031 (-7.73)	-0.005 (-7.49)	-0.0032 (-11.32)	Convergence	4.1	1660-1789	84
Textiles	-0.015 (-8.89)	-0.003 (-9.60)	-0.0041 (-7.23)	Convergence	2.2	1660-1792	69
Tin	-0.003 ¹⁸⁸ (-2.60)	-0.001 (-3.10)	-0.0008 (-3.60)	Convergence	1.7	1668-1789	63

Sources: porcelain: C. J. A. Jörg, *Porcelain and the Dutch China trade* (The Hague: Martinus Nijhoff, 1982); other products: see text. Significant trends in bold (all at 1 percent level, unless otherwise mentioned).

¹⁸³ The first and last year for which there was data for both purchasing and sales prices. These dates are thus the result of data availability and not the choice of the author.

¹⁸⁴ The standard deviation is deflated by the CPI from Jan Luiten van Zanden, 'The prices of the most important consumer goods, and indices of wages and the cost of living in the western part of the Netherlands, 1450-1800', website *Historical Prices and Wages of the International Institute of Social History*: <http://www.iisg.nl/hpw/brenv.xls>. Last update: December 11, 2009.

¹⁸⁵ The high coefficient is the result of the use of a different source which reflect the gross profit margins rather than the price differential. See appendix.

¹⁸⁶ Significant at the 10 percent level.

¹⁸⁷ For Asia there are two types of sugar (candy and powdered), while the Amsterdam series seem to be for candy (although it is not specified in the source). Only candy sugar is included in this table.

¹⁸⁸ Significant at the 5 percent level.

In order to take into account the relative importance of the various goods in the analysis of price differentials, we can weigh the price gaps with the total quantities and values of goods sold at the VOC auctions in Amsterdam. Half of all goods brought to Europe by the VOC were sold in Amsterdam and the relative shares of the different goods in the total package are representative for the entire Dutch-Asiatic trade.¹⁸⁹ It is important to use these data to assign relative importance to each of the trends displayed above. Therefore figure 2.3 shows four series: (1) the mark-up weighted by the sales values in Amsterdam, (2) the mark-up weighted by purchasing values in Asia, (3) the mark-up weighted by the volumes of the goods, and (4) the gross margins of the VOC trade (total sales value / total invoice values).¹⁹⁰ For this exercise it was necessary to interpolate gaps in the mark-ups and price series, therefore this figure should be seen as indicative of broader trends, rather than an accurate measure of e.g. the year-to-year profitability of the VOC. Due to data constraints, the time frame had to be limited to 1660-1790.

Looking at the thus calculated average measures of price convergence for the entire package of goods in figure 2.3 it becomes clear that when taking into account the relative importance of the various products there is mostly convergence. Only the declining trend in the Amsterdam sales values is not significant, as it is completely driven by the huge price rises in mace, nutmeg and cinnamon at the end of the period. These rises are a result of the, for the Dutch devastating, Fourth Anglo-Dutch war. Yet, if one considers volumes, Asian invoice values, or gross margins the more important metric, it is clear that price convergence was taking place in this period, despite the effects of the Fourth Anglo-Dutch war.

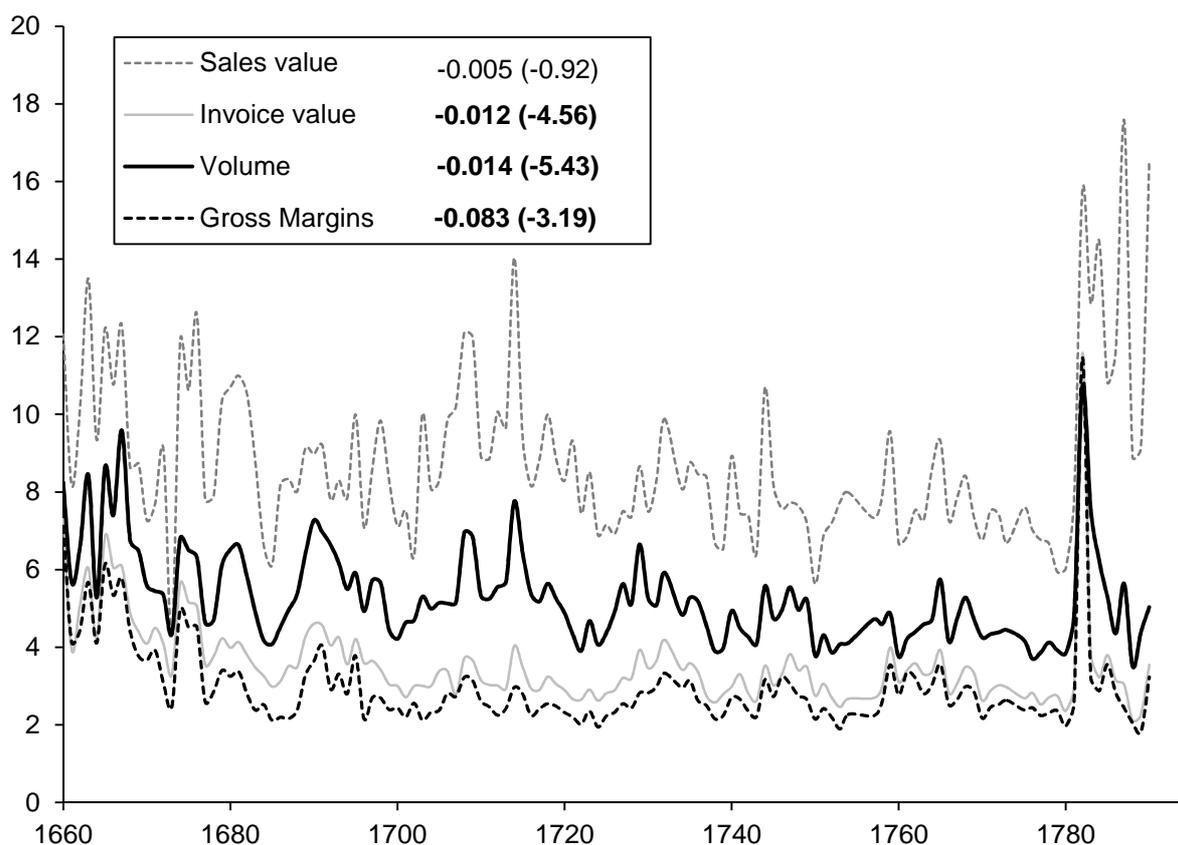
The VOC price data thus suggest price convergence for a majority (robust: 9 out of 16) of the products transported between Asia and Amsterdam. In addition, when calculating an average mark-up over time while taking into account the different weights and volumes of the products transported, price gaps also declined over later seventeenth and eighteenth centuries when taking volumes, invoice values and gross margins as the appropriate indicators. This evidence thus corroborates Rönnbäck's conclusion that the occurrence of price convergence in the early modern period cannot be dismissed. These data do not corroborate statements that 'there is absolutely no evidence of price convergence'¹⁹¹ for the Dutch imports from Asia.

¹⁸⁹ Glamann also notes the Amsterdam figures are representative as 'shown by comparative materials': *Dutch-Asiatic Trade*, p. 14.

¹⁹⁰ It is assumed that one piece of textiles weighed 8 pond (the average price difference between a pond of cotton yarn and a piece of textile).

¹⁹¹ Findlay and O'Rourke, 'Commodity Market Integration', p. 26.

FIGURE 2.3: PRICE CONVERGENCE DUTCH-ASIATIC TRADE, DIFFERENT WEIGHTS.



Sources: see text.

At the same time, table 2.3 shows that mark-ups on the prices of some commodities could indeed be remarkably high and for some important products we even find divergence during the eighteenth century. Furthermore, with prices in Europe for many of these products still over double those in Asia even in the late eighteenth century, this is obviously still far from a situation of perfectly integrated markets. The series stop at 1800 or earlier; clearly the trends displayed here could have been disrupted by the Napoleonic Wars. However, this does not alter what can be said about trends over the seventeenth and eighteenth centuries, just like the disruptive effects of the First World War do not invalidate notions of globalization taking place in the nineteenth century.¹⁹²

In addition, this study does not include an analysis of nineteenth and twentieth century price convergence to compare trends. Dobado-Gonzalez et al. demonstrated that market integration in trans-Atlantic grain markets began in the eighteenth century, but also showed that this process gained momentum in the later nineteenth century.¹⁹³ O'Rourke and Williamson are probably still right in suggesting that price convergence was much faster and more consistent in the nineteenth century. Their

¹⁹² Also see the argument made by: Rönnbäck, 'Integration', pp. 99-100.

¹⁹³ Dobado-Gonzalez et al., 'The Integration'.

mark-ups for coffee, pepper and cloves seem to be consistently below three in the nineteenth century, clearly far smaller than the mark-ups for those products in the later eighteenth century. Nonetheless, the data presented here can be used to emphasize the earlier origins of this process and to stress the continuity between globalization in the eighteenth and nineteenth centuries, rather than its sudden arrival in the nineteenth century.¹⁹⁴

Now, of course, we would like to explain both this earlier gradual process of globalization and the variation between the trends for different products. Considering the fact that of those price series that show convergence, one is for a monopoly product (cloves), while of the 4/6 series showing divergence, only 2 are for monopoly products (cinnamon and mace), monopolies alone cannot account for the different trends. Since we have relatively detailed information on trends in prices and quantities for almost all products traded by the VOC, as well as the conditions under which these were purchased and sold, we can examine in greater detail what drove the differences in trends and absolute gaps in the mark-ups of these different products.

2.6. Transport costs and conflicts

Price convergence may be caused by two things; declining transport costs and/or reduced barriers to trade.¹⁹⁵ This section will discuss whether price convergence may have been driven by advances in transport and declining piracy and conflicts. From the outset it is however clear that these aspects, which would have affected all trends similarly, will not suffice to explain the variation in trends between the different goods. In the next section, these differences will be examined by looking at the differences between commodity markets.

2.6.1. Transport costs

A decline in transport costs may have taken place as a consequence of increased shipping productivity. There has been some discussion on whether shipping productivity increased over the early modern period. While several studies have shown that ocean freight rates declined in the Atlantic trade during the early modern period,¹⁹⁶ others questioned whether these freight rates were properly deflated and whether the decline in ocean freight rates applied for other trade routes as well.¹⁹⁷

A survey of the recent literature suggests the possibility of advances in shipping productivity during the early modern period. Jan Lucassen and Richard Unger have

¹⁹⁴ In line with Dobado-Gonzalez et al.'s conclusions, 'The Integration', pp. 697-698.

¹⁹⁵ O'Rourke and Williamson, 'When did globalisation?'

¹⁹⁶ North, 'Ocean freight rates', and *ibid.* 'Sources of productivity change'.

¹⁹⁷ C. Knick Harley, 'Ocean freight rates and productivity 1740-1913: the primacy of mechanical invention reaffirmed', *Journal of Economic History* 48 (1988) pp. 851-876; Menard, 'Transport costs'; O'Rourke and Williamson, 'When did globalisation?'

shown that labour productivity in ocean shipping rose from the end of the Middle Ages up to 1800 with an (impressive) annual rate of 0.4 percent per year.¹⁹⁸ Milja van Tielhof and Jan Luiten van Zanden recently suggested that only between 1550 and the 1620s freight rates declined in Dutch shipping.¹⁹⁹ Yet, after the 1650s freight rates increased and did not reach the low levels of the early seventeenth century over the entire eighteenth century. Rönnbäck demonstrated that the speed of shipping increased significantly in the trans-Atlantic slave trade,²⁰⁰ while Peter Solar finds that shipping costs between Europe and Asia fell by two-thirds between the 1770s and 1820s as a result of changes in the composition of shipping, improvements in ship construction and navigation,²⁰¹ as well the increased speed of ships.²⁰² Another reason for declining transport cost may have been the decrease in piracy and privateering over the eighteenth century, which would have allowed a decline in labour and capital costs on soldiers and armaments.²⁰³

Focusing on the VOC trade between the Dutch Republic and Asia specifically, there is also the probability that transport costs declined. J.R. Bruijn has attempted to estimate shipping costs of the VOC per ton and finds that shipping costs remained relatively stable over most of the eighteenth century, and only increased during the Fourth Anglo-Dutch War in the 1780s.²⁰⁴ Figure 2.4 shows his data corrected for general price trends. In addition, Bruijn speculated that VOC shipping costs mostly fell in the seventeenth century.²⁰⁵ Comparing his figures for the eighteenth century with the general inflation in the Dutch Republic,²⁰⁶ we find a 20 percent decline in freight rates relative to the general price level between 1730 and 1770.

¹⁹⁸ Jan Lucassen and Richard W. Unger, 'Labour Productivity in Ocean Shipping 1500-1850', *International Journal of Maritime History* 12 (2000) pp. 127-142: productivity increases were less impressive in almost all other sectors of the economy.

¹⁹⁹ Milja van Tielhof and Jan Luiten van Zanden, 'Productivity Changes in Shipping in the Dutch Republic: the Evidence from Freight Rates, 1550-1800', in: Richard W. Unger (eds.) *Shipping and Economic Growth 1350-1850* (Leiden and Boston: Brill, 2011) pp. 47-80; *ibid.*, 'Roots of growth and productivity change in Dutch shipping industry 1500-1800', *Explorations in Economic History* 46 (2009) pp. 389-403.

²⁰⁰ Klas Rönnbäck, 'The speed of ships and shipping productivity in the age of sail', *European Review of Economic History* 16 (2013) pp. 469-489: Rönnbäck warns that the speed of ships in the slave trade may not be representative for all ocean shipping at the time. However, Peter Solar and Luc Hens also found an increase in shipping in the late 18th century for English East India Company ships: 'The Speed of East India Company Ships', *Mimeo Free University Brussels* (2013).

²⁰¹ Peter M. Solar, 'Opening to the East: Shipping between Europe and Asia, 1770-1830', *Journal of Economic History* 73 (2013) pp. 625-661.

²⁰² Solar and Hens, 'The Speed'.

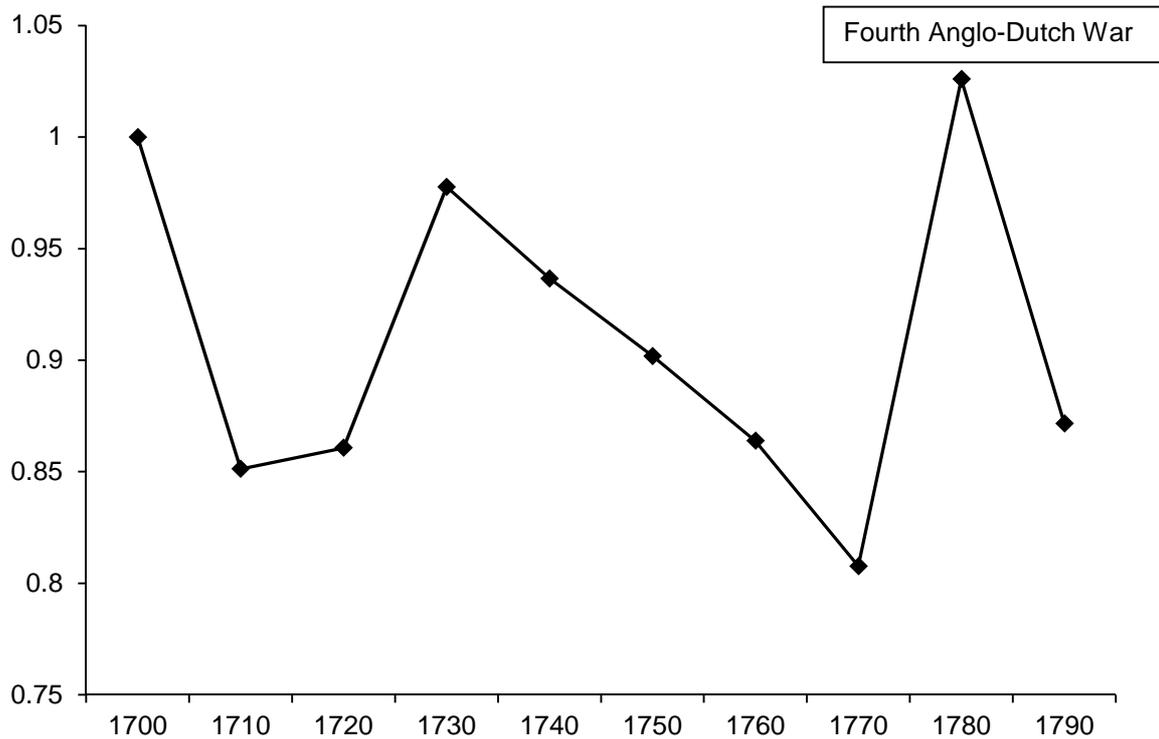
²⁰³ Rönnbäck, 'The speed of ships', Henning Hillmann and Christina Gathmann, 'Overseas trade and the decline of privateering', *Journal of Economic History* 71 (2011) 730-761.

²⁰⁴ J. R. Bruijn, 'Productivity, profitability, and costs of private and corporate Dutch ship owning in the seventeenth and eighteenth centuries', in: J. D. Tracy (ed.) *The Rise of Merchant Empires. Long-distance trade in the early modern world, 1350-1750* (Cambridge: Cambridge U. P., 1990) pp. 174-194.

²⁰⁵ Bruijn, 'Productivity, profitability'. Similarly, Steensgaard suggested that freight costs in the EIC trade declined in the first half of the seventeenth century mostly as a result of decreasing voyage time: Niels Steensgaard, 'Freight Costs in the English East India Trade 1601-1657', *Scandinavian Economic History Review* 13 (1965) pp. 143-162.

²⁰⁶ Using figures from Van Zanden, 'The prices'.

FIGURE 2.4: REAL VOC FREIGHT COST: 1700 = 1.



Sources: Freight rates: Bruijn, 'Productivity, profitability'; CPI deflator: Van Zanden, 'The Prices'.

In general, it seems the Company's shipping 'was a rather safe business'.²⁰⁷ Of all the voyages from the Republic to the East Indies, just over 2.5 percent ended in shipwreck.²⁰⁸ In addition, piracy was limited: on a total of over 8,000 journeys, only 36 ships to, and 24 ships from the East Indies were raided. Between 1674 and 1781 not a single returning ship was attacked east of the Cape of Good Hope.²⁰⁹

However, Bruijn, Gaastra and Schöffer's shipping statistics do not show improvement in shipping in the eighteenth century compared with the seventeenth. While in the seventeenth century a total of 2.7 percent of all voyages ended in disaster (due to capture or wreckage), this figure had increased to 3.2 in the eighteenth century.²¹⁰ Furthermore, their data suggest that the average speed of Company ships in the Indian Ocean declined from 83.5 nautical miles per day in the seventeenth century to 78.1 in the eighteenth on the outward bound voyages, and from 74.2 to 70.5 on the

²⁰⁷ J. R. Bruijn, 'Between Batavia and the Cape: Shipping Patterns of the Dutch East India Company', *Journal of Southeast Asian Studies* 11 (1980) pp. 251-264 there p. 261.

²⁰⁸ Bruijn, 'Between Batavia', tables 1 and 2. All shipwrecks = 98. All voyages arrived in, departed from, Batavia = 3877. This includes only the shipping between the Dutch Republic and Batavia.

²⁰⁹ Jurrien van Goor, *De Nederlandse Koloniën. Geschiedenis van de Nederlandse expansie 1600-1875* (The Hague: SDU, 1994) p. 50.

²¹⁰ Bruijn et al., *Dutch-Asiatic shipping*. Tables 3 and 22: 17th century: 75 ships lost *vis-à-vis* 2761 journey; 18th century 171 ships lost *vis-à-vis* 5317 journeys. In contrast to the figures above, this includes *all* Dutch-Asiatic shipping. Not just those between the Republic and Batavia (but also direct journeys to Ceylon, Bengal, Canton).

return trips. The average days of the journey from the Dutch Republic to Batavia was 239 days in both centuries, but the return trip took almost three weeks longer in the eighteenth century (235 days *vis-à-vis* 216 days).²¹¹ It is probable that risk-averse VOC shipping regulations have hindered shipping speed. Ships from other companies seem to have been slightly faster,²¹² and in 1802, no longer hindered by VOC regulations, 4 Dutch ships made the journey in only 175 days (a decrease in transport time of almost 27 percent).²¹³

It is thus likely that decreasing transportation costs in the seventeenth and eighteenth centuries may account for a part of the decline in some of the price differentials.

2.6.2. Conflict and competition

According to O'Rourke and Williamson, as well as Rönneck, international conflict was detrimental to the process of market integration. In terms of the individual series for the products analysed, it is first of all important to note that for e.g. tea, textiles and saltpetre, some of the first observations unfortunately coincide with the Second Anglo-Dutch War (1665-7), which may have driven up sales prices in Amsterdam.²¹⁴ Nonetheless, excluding those years from the regressions still shows similar trends.²¹⁵ Figure 2.4 already demonstrated the increase in transport cost as a result of the Fourth Anglo-Dutch war (1780-4). As a result, this war seems to have further pushed up (long-term) mark-ups for mace, nutmeg and coffee, but this did not lead to a structural break in individual trends as there was no convergence for those products to begin with.

The effects of war and conflict for the process of market integration can be tested formally via the use of war dummies in a regression framework. Table 2.4 shows the results of trend regressions on the four compound series shown in figure 2.3 with two war dummies: one for the Anglo-Dutch wars and one for the other wars,²¹⁶ as it can be assumed that for trade and shipping the Anglo-Dutch wars, which were primarily naval wars, were more disruptive than the others. A glance at table 2.4 immediately confirms the assumption. In all cases, the effect of the Anglo-Dutch wars

²¹¹ Tables 1 and 2 from Bruijn, 'Between Batavia'.

²¹² Gastra and Bruijn, 'The Dutch East', pp. 194-195.

²¹³ Bruijn, 'Between Batavia', p. 261. For increased shipping speed in this period, also see: Hens and Solar, 'The speed'.

²¹⁴ This can clearly be observed for saltpetre, for textiles, no real peaks can be observed. For tea there are too few observations for surrounding years to conclude whether war time prices were dramatically higher.

²¹⁵ Trends: Markups: Tea -0.027 (-6.83), Textile -0.011 (-7.85), Saltpetre -0.028 (-8.34); CV: Tea -0.005 (-6.98) Textile -0.0029 (-7.18), Saltpetre -0.003 (-8.42); SD: Tea -0.003 (-10.41), Textile -0.004 (-6.49), Saltpetre -0.00001 (-0.76): All trends are significant at 1 % except Saltpetre SD (which is insignificant).

²¹⁶ Dummy for Anglo-Dutch wars being assigned 1 in the years 1665-7, 1672-4 and 1780-4 and 0 in all other years; dummy for other wars a 1 in the years 1660, 1672-78, 1688-97, 1701-14 and a 0 in all other years.

is highly significant and leads to a jump in the price gap, while the other wars are never significant. The regressions are very weak for the series weighted by the sales values as the Fourth-Anglo Dutch war not only pushed up price gaps in the short run, but also led to a structural break in the series. In all other cases, however, the effects are not lasting. A possible factor limiting the effects of wars on the price gaps, is that the Company could store textiles, but also other goods for several months in their warehouses, thereby being able to absorb initial shocks of dried-up supply. At the same time, demand may also have dwindled, as in periods of war and crisis consumers probably prioritized on the purchase of more basic commodities.

TABLE 2.4: TREND REGRESSIONS WITH WAR DUMMIES ON COMPOUND PRICE-GAP SERIES 1660-1790.

	Regression 1	Regression 2	Regression 3	Regression 4
Panel A: Price gap weighted by sales values				
Constant	16.908* (1.89)	16.005* (1.88)	11.600 (1.17)	10.729 (1.12)
Trend	-0.005 (-0.92)	-0.004 (-0.87)	-0.0017 (-0.30)	-0.001 (-0.23)
Anglo-Dutch wars		2.039*** (3.06)		2.037*** (3.07)
Other wars			0.573 (1.15)	0.570 (1.18)
R ²	0.01	0.08	0.02	0.09
F	0.85	5.15*	1.08	3.90*
N	127	127	127	127
Panel B: Price gap weighted by invoice values				
Constant	23.360*** (5.50)	22.636*** (5.90)	24.333*** (5.505)	23.631*** (5.44)
Trend	-0.012*** (-4.56)	-0.011*** (-5.01)	-0.012*** (-4.33)	-0.012*** (-4.67)
Anglo-Dutch Wars		1.635*** (5.45)		1.636*** (5.44)
Other Wars			-0.105 (-0.43)	-0.108 (-0.49)
R ²	0.15	0.31	0.15	0.31
F	21.72***	28.22***	10.88***	18.78***
N	127	127	127	127
Panel C: Price gap weighted by volumes				
Constant	29.483*** (6.62)	28.754*** (7.09)	27.857*** (5.52)	27.153*** (5.91)
Trend	-0.014*** (-5.43)	-0.137*** (-5.19)	-0.013*** (-4.51)	-0.013*** (-4.83)

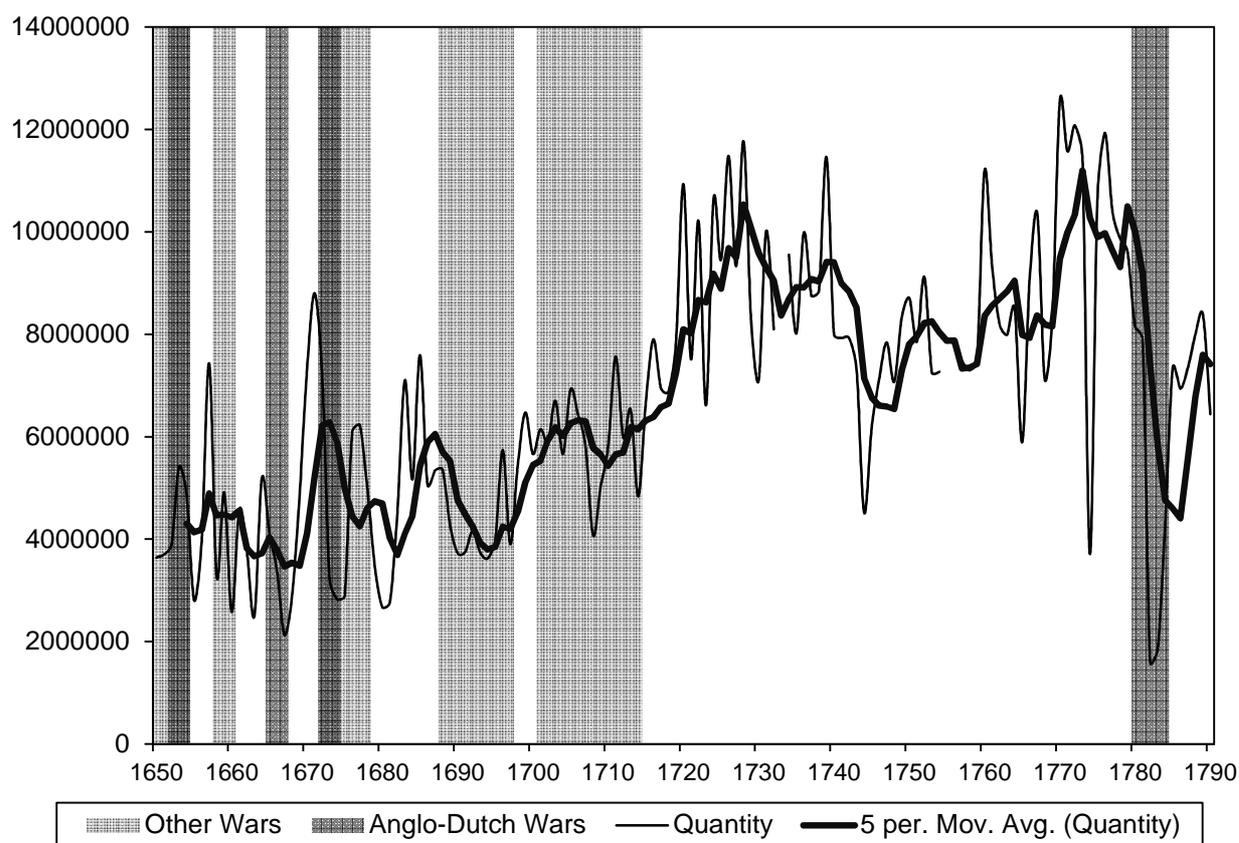
Anglo-Dutch Wars		1.646***		1.645***
		(5.19)		(5.18)
Other Wars			0.176	0.173
			(0.69)	(0.75)
R ²	0.19	0.34	0.19	0.34
F	29.51***	31.28***	14.93***	20.97***
N	127	127	127	127
Panel D: Gross margins				
Constant	17.451***	16.713***	19.480***	18.766***
	(3.85)	(4.04)	(3.80)	(4.01)
Trend	-0.008***	-0.008***	-0.010***	-0.009***
	(-3.19)	(-3.36)	(-3.22)	(-3.42)
Anglo-Dutch Wars		1.667***		1.668***
		(5.16)		(5.16)
Other Wars			-0.219	-0.222
			(-0.85)	(-0.94)
R ²	0.08	0.24	0.08	0.24
F	10.18***	19.43***	5.44**	13.24***
N	127	127	127	127

Sources: see text. Note: ***, **, * denote significance at the 1, 5 and 10 percent levels respectively. T-ratios are in parentheses.

Wars and conflicts not only had effects on prices, but also on the quantities imported from Asia. Figure 2.5 below sketches the total volume of Company commodities sold on the auctions in Amsterdam (a proxy for the import from Asia, as goods could also be sold from the warehouse and vice versa: goods could be imported, but stored instead of sold) and highlights the wars involving the Dutch Republic. Again the distinction is made between the Anglo-Dutch wars and the other wars. It is clearly visible that volumes dropped during war years and indeed, especially in those wars involving the English. The Fourth Anglo-Dutch war was an especially disastrous war from a Dutch perspective. The war not only led to an immediate loss of shipping volume,²¹⁷ but also to the forfeiture of the VOCs dominant position in the Euro-Asian trade.

²¹⁷ Also see: Van Zanden and Van Tielhof, 'Roots of growth'.

FIGURE 2.5: QUANTITY OF GOODS SOLD IN THE AMSTERDAM AUCTIONS AND WARS.



Sources: VOC auctions Amsterdam: VOC 4584-4597.

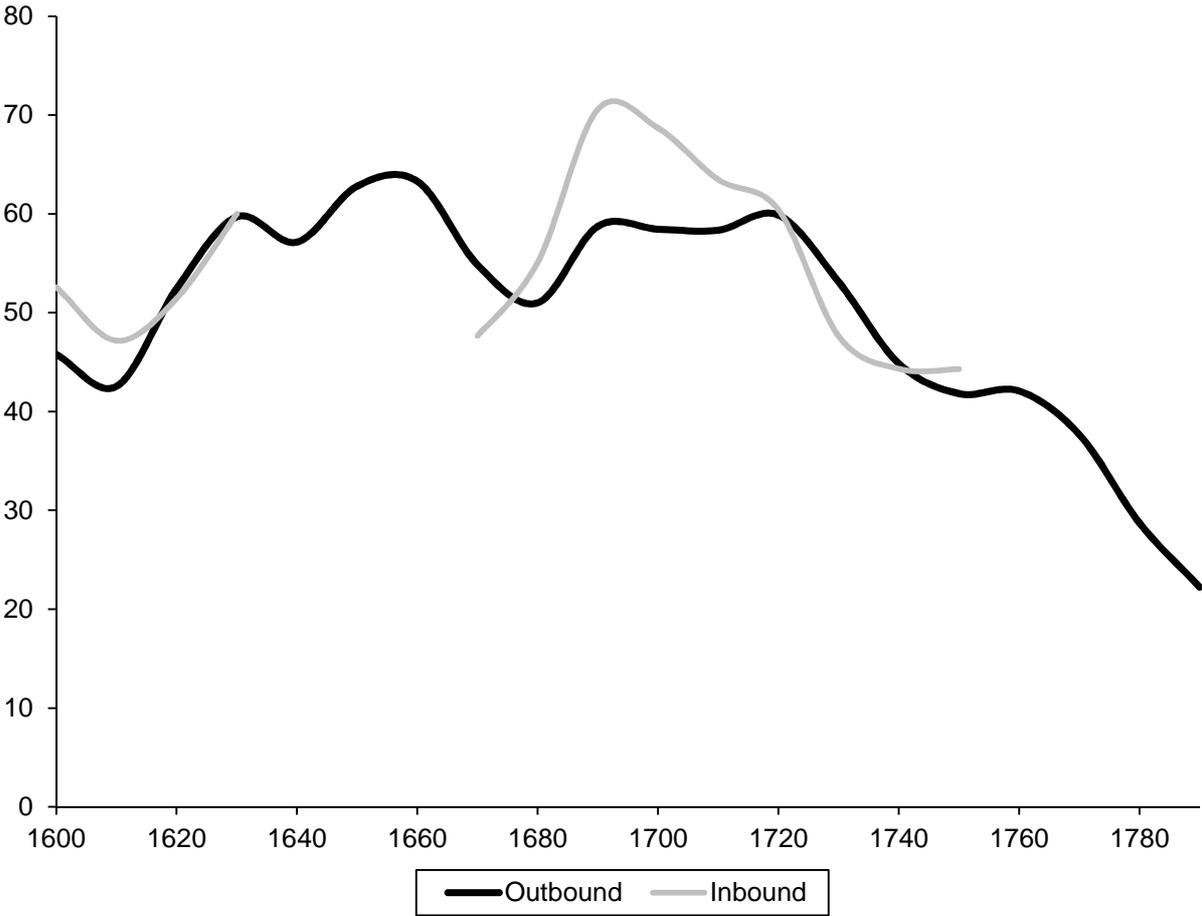
Related to this was the competition among the European countries in international trade. As Douglas Irwin notes, the Anglo-Dutch wars were instigated by the English ‘in an effort to increase their market share in trade by capturing or destroying Dutch shipping’.²¹⁸ While the English achieved victory in the First war, the Dutch were able to quickly rebuild their fleet to gain victory in the Second.²¹⁹ The Third war (1672-1674) ended in a status quo and was the last war fought between the Dutch and English for over a century. Whereas the Dutch were clearly dominant in the seventeenth century and early eighteenth century, over the course of the eighteenth century English (and French) competition became more pronounced. Figure 2.6 demonstrates that competition increased from the 1700s, after which the Dutch share in number of inbound ships declined, or after the 1730s when the share in outbound ships also starts its steady decay. Yet it was only after the Fourth Anglo-Dutch war in the 1780s that the Dutch were finally surpassed in terms of the total number of ships sent to Asia.

²¹⁸ Irwin, ‘Strategic trade policy’, p. 137.

²¹⁹ Jonathan I. Israel, *The Dutch Republic: its rise, greatness, and fall, 1477-1806* (Oxford: Oxford U. P., 1995) p. 721.

While the wars themselves may have been disruptive to the globalization process, the associated competition from the French, and especially that from the English, probably had a positive effect on the process of price convergence. Considering the lack of uniformity in the trends of price convergence among the various products, we need to focus on the differences between the various commodity markets in the remainder of the analysis.

FIGURE 2.6: SHARE OF DUTCH SHIPS DEPARTING AND RETURNING SHIPS IN TOTAL EURO-ASIAN TRADE.



Source: De Vries, ‘Connecting Europe’, pp. 51-53; inbound figures incomplete, years without data on the EIC excluded from this figure.

2.7. Commodity markets in Europe and Asia

O’Rourke and Williamson suggest that even more than the lack of improvement in transport, ‘monopoly, international conflict, piracy and government restriction’²²⁰ were driving up price differentials. While the trading companies (by their charter) held exclusive rights on the wholesale of East Indian goods in their home countries, only for

²²⁰ O’Rourke and Williamson, ‘After Columbus’.

the four monopoly spices (cinnamon, cloves, mace and nutmeg) one company controlled the entire world production and was thus genuinely the only seller of these goods on the world markets and consequentially held complete control over prices. In all other cases, the companies sold their goods (at auctions) in their home markets to other merchants who were in competition with each other at markets throughout Europe.²²¹

2.7.1. Monopoly and competition in Europe

A brief look at the average mark-ups from table 2.3 immediately shows that price gaps were by far the largest for cinnamon, cloves, mace and, especially, nutmeg. In contrast to the four fine spices, pepper was also brought to Europe by the other European companies. If markets across Europe were integrated, this means that pepper prices in Amsterdam were influenced by those in London, Antwerp and elsewhere. The integration of European markets has been the subject of many studies in the past years. Using increasingly sophisticated econometric techniques, various scholars have measured the extent to which European commodity markets integrated since the late middle ages. These studies have not led to consistent results as some have shown significant integration of European markets over the early modern period,²²² while others find that integration was domestic, or at most regional, before the nineteenth century.²²³ Part of this variety may have been caused by differences between various commodity markets. It has, for example, been suggested that while the market for soap became integrated between 1500 and 1800, those for e.g. rice, sugar, honey and butter did not.²²⁴

An elaborate examination of the integration of the European markets for the goods brought from the East Indies is outside the scope of this dissertation. Yet, studies on e.g. European pepper markets suggest that these were fairly well integrated by the late sixteenth century.²²⁵ Pepper, nor the fine spices, had counterparts outside Asia. Yet the other commodities sold by the VOC also had to compete with goods

²²¹ De Vries, 'Limits', p. 725.

²²² Persson, *Grain Markets*, David S. Jacks, 'Market integration in the North and Baltic Seas, 1500–1800', *Journal of European Economic History* 33 (2004) pp. 285–329. Christiaan van Bochove, *The Economic Consequences of the Dutch. Economic integration around the North Sea 1500–1800* (Amsterdam: Aksant, 2008); David Chilos, Tommy E. Murphy, Roman Studer, A. Coşkun Tunçer, 'Europe's many integrations: geography and grain markets, 1620–1913', *Explorations in Economic History* 50 (2013) pp. 46–68.

²²³ Bateman, 'The Evolution'; Federico, 'When did European'; Uebele, 'National and international'.

²²⁴ Süleyman Özmucur and Sevket Pamuk, 'Did European commodity prices converge before 1800?', in: T. J. Hatton, K. H. O'Rourke and A. M. Taylor (eds.) *The New Comparative Economic History: Essays in Honour of Jeffrey G. Williamson* (Cambridge, MA: MIT Press, 2007) pp. 59–85; Federico, 'When did European'.

²²⁵ O'Rourke and Williamson, 'Did Vasco'; Greg Barrett, 'An exploration of the role of Portugal in the economic integration of Asia and Europe with a focus on the pepper market', paper prepared for the *Asia-Pacific Economic and Business History Conference 2012* (Canberra, 2012): <http://apebh2012.files.wordpress.com/2011/05/apebh-text-of-paper-barrett.pdf>

brought to Europe from other parts of Europe or the New World. As Glamann already noted:

The records show that there was competition...between alternative products, such as East Indian and European textiles; between identical products from different regions enjoying similar climates, e.g., sugar from Java and Bengal, sugar from Madeira and Sao Tome, and Brazilian and West Indian sugar; or between products grown in different climatic regions [...] Chinese, Persian and Italian silk; Japanese, Hungarian, Swedish and West Indian copper; the spices of Asia, Africa and America; coffee from Mocha, Java and the West Indies: all of these competed. Study of the volume of trade and the movement of prices at selected locations reveals numerous instances of uniform trends [...] The best barometer, however, is represented by the prices on the commodity exchange of Amsterdam. The yearly prices of colonial goods in this, the most important market place of northern Europe, mirror global market conditions [...] we see a regular flow of traffic through an immense network of trade routes that are linked together to form a European system of redistribution with Antwerp, Amsterdam, London and Hamburg constituting some of its most important centres.²²⁶

One can further add that indigo from Java, competed with that from India and the West Indies. Furthermore, Indian textiles and Chinese porcelain not only competed with cloth and ceramics produced in Europe, but also encouraged the development of European imitations: notable examples are English imitations of Indian calicos,²²⁷ and Dutch Delftware inspired by Chinese originals. As De Vries argues, '[t]he existence of alternatives and the rise of import substitution influenced the prices at which many Asian goods could be sold in Europe, limiting the "pricing power" of the trading companies'.²²⁸ Thus, the availability of these alternatives could have put downward pressure on the mark-ups of all commodities other than the monopoly spices.

The Company's procedures of selling these commodities in the Dutch Republic changed over time. At the beginning of the seventeenth century, the sale of Asian commodities was mostly via contracts with large buyers or syndicates of buyers. In September 1620, for example, all pepper (the most important import at that moment) brought to the Dutch Republic was purchased by a syndicate consisting of only four persons. This is one of many examples given by Glamann in his seminal work on the Dutch-Asiatic trade.²²⁹ If a satisfactory price was not obtained through contracts, commodities were sold at fixed prices. While sale by contract remained the dominant form of sale in the 1630s, there were several disputes surrounding this form of selling

²²⁶ Glamann, 'European trade', p. 451. See e.g. Topik, 'The Integration' for uniform trends in coffee prices from Java, Mocha and the West-Indies.

²²⁷ Stephen Broadberry and Bishnupriya Gupta, 'Lancashire, India, and shifting competitive advantage in cotton textiles, 1700–1850: the neglected role of factor prices', *Economic History Review* 62 (2009) pp. 279–305.

²²⁸ De Vries, 'The Limits', p. 722.

²²⁹ Glamann, *Dutch-Asiatic*, pp. 29–33.

since the later 1620s.²³⁰ These debates eventually led to the sale of the Asian commodities at auction from 1642 onwards, and only the spices were sometimes exempted as the Company sought to sell them at a fixed price. The sale by auction led to the distribution among a larger number of buyers and prices being determined by the free market. In all five products (pepper and spices) for which we have data on the period between 1608 and 1650, price convergence can be observed in that period (see figures 2.8 and 2.10). The change in sales techniques, according to Glamann largely resulting from conflicts of interest within the Company, also may be seen as an institutional innovation (perhaps unintentionally) aiding the process of market integration.

Thus, whether or not markets in Europe were perfectly integrated in the early modern period, it is clear that the behaviour of prices of the Asian commodities in Amsterdam, with the exception of monopoly spices, was influenced by prices in other cities, as well as the prices of similar goods brought into Amsterdam from elsewhere. Especially after 1642 when these commodities began to be sold by auction, rather than by contract. Another part of the price gap was, of course, influenced by the purchasing prices in different parts of Asia.

2.7.2. Colonial control in Ceylon, Java and the Moluccas

While price gaps were clearly largest for the monopoly spices, and part of the explanation lies of course in the monopoly the VOC had on the sale of these goods in Europe, the story does not end there: table 2.3 does not provide a single trend for these four products. With regard to cinnamon (which only grew on Ceylon in good quality) it can be seen that, while the data for the period before 1658, when the VOC secured its position on Ceylon, is fragile (only 4 price observations), mark-ups were not immediately higher after monopolization. Purchasing prices increased from 4 real per *picol* (fl. 0.08 per *pond*) in 1608 to fl. 0.30 per *pond* in 1660,²³¹ at which level it would remain until 1800.²³² However, the trend in sales prices of cinnamon (which fluctuated) is not only the result of price-setting by the VOC. Instead these prices were determined by forces of demand, but mostly, supply (or the lack thereof). In contrast to the other spices, the VOC did not actively try to limit supplies; instead, supply was restricted by the limited availability of fertile lands and the fact that cinnamon production (peeling) was the task of only one of the (smaller) Sinhalese castes in

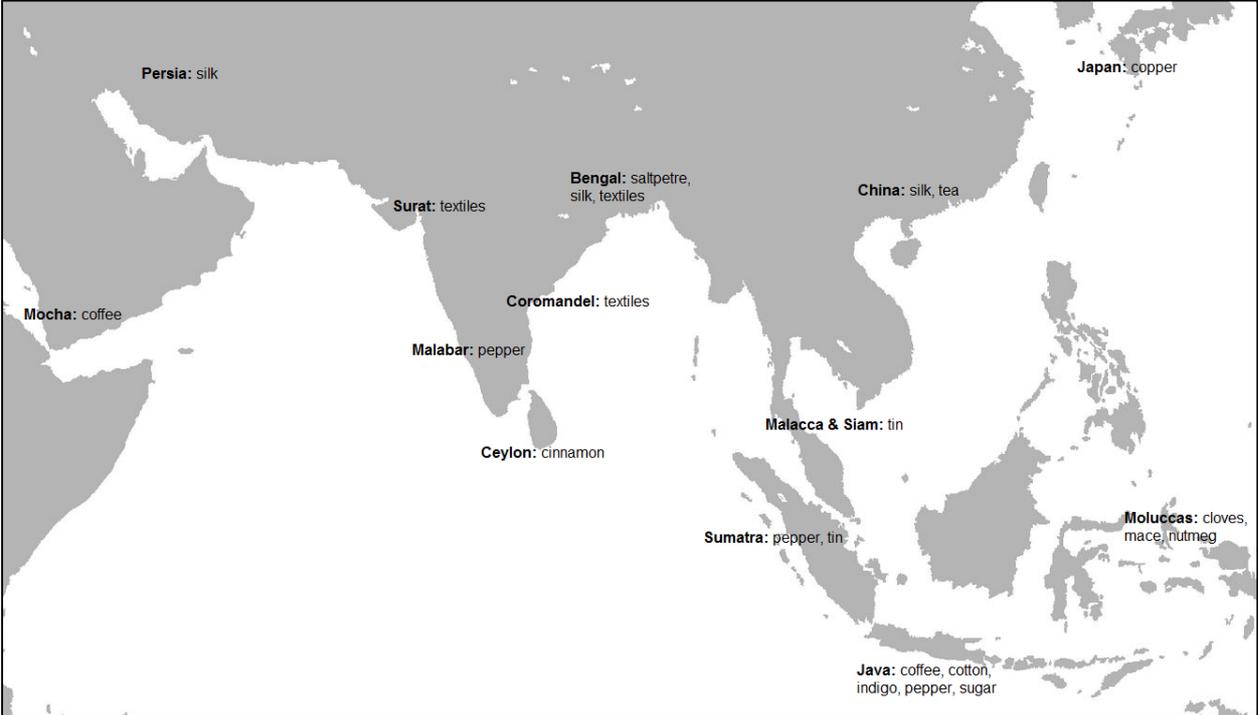
²³⁰ Many VOC *bewindhebbers* of the various Chambers, and even the Gentlemen XVII, were part of the syndicates that purchased the goods. Shareholders and some *bewindhebbers* from Zeeland protested against these practices. Glamann, *Dutch-Asiatic*, pp. 35-36.

²³¹ VOC 603: This is in fact the price for which the VOC purchased the cinnamon in Banten (Western Java) in 1608, the purchasing price in Ceylon was probably even lower as otherwise the merchants bringing it to Banten would have been operating at a loss.

²³² Roughly: the price in the VOC accounts could fluctuate slightly between fl. 0.31 and fl. 0.25.

Ceylon (the *Salagama*). In the 1740s population growth, social unrest and increasing tensions with the Kandyan King (the only remaining indigenous king on the island) led to a dramatic drop in cinnamon supply. Only after victory over Kandy in 1766 was the VOC able to increase cinnamon production as it broke with the caste system and allowed all Ceylonese to plant and peel cinnamon trees. Furthermore, as sovereign ruler over the entire Ceylonese coast, the Company was better able to secure the monopoly. These developments probably caused the significant rise in the mark-up from the later 1740s.

FIGURE 2.7: PRODUCTS AND PRODUCTION AREAS OF THE VOC IN ASIA.



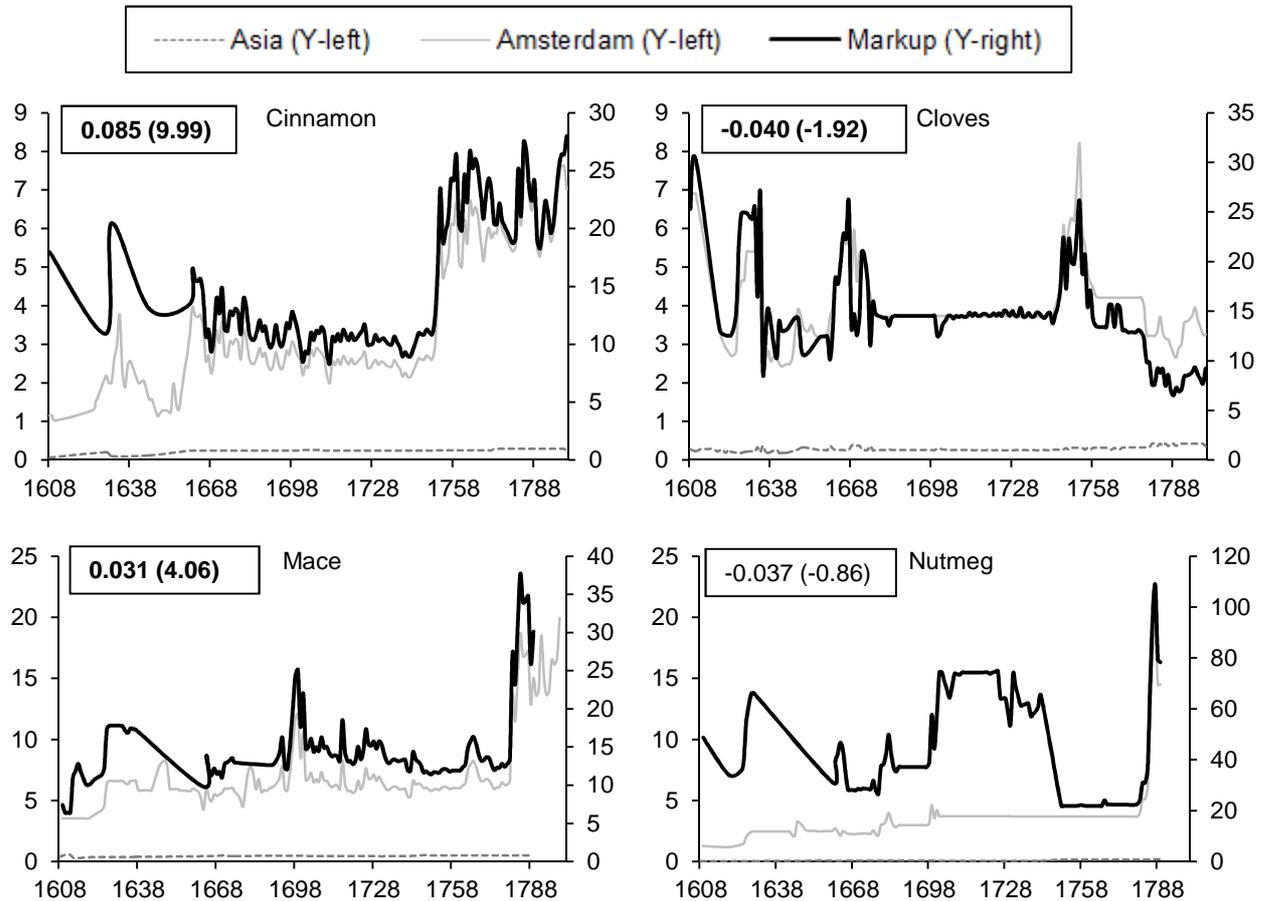
Sources: based on Jacobs, *Merchant in Asia*.

Nutmeg and mace came from the tiny Banda Islands in the Moluccas. After unsuccessful negotiations to secure contracts with the local heads (the *orangkaya*), the VOC used a terrible amount of force to get what it came for. By 1621 the Company had succeeded in killing or expelling the entire indigenous population, destroyed all nutmeg trees outside Banda, and implemented a plantation system.²³³ The Company similarly secured the monopoly over cloves with the use of force in the 1650s. The data on cloves provide an interesting case of what happens to mark-ups with and without a monopoly. Bulbeck et al. found that in the sixteenth and early seventeenth century there was a significant growth in quantities, as well as local prices until the

²³³ Mace and nutmeg came from the same tree. Interestingly, while mace was very valuable from early on, nutmeg, which turned out to be the VOCs main money maker, was not at all sought after in the sixteenth and seventeenth century. Pires, *Suma Oriental*, p. 207 wrote: ‘they will not sell you mace and nutmeg except together, that is, if you want a bahar of mace you have to buy seven bahars of nutmeg.’

VOC monopoly started affecting prices in the 1640s.²³⁴ In the 1770s, French and English traders smuggled clove seedlings from the Moluccas and started growing clove trees elsewhere in Southeast Asia and East Africa.²³⁵ Even though these attempts remained largely unsuccessful until the second half of the nineteenth century, mark-ups declined from a high level of 25 in the 1750s to below 10 at the end of the century.

FIGURE 2.8: PRICES AND MARK-UPS FOR MONOPOLY SPICES, 1608-1800.



Sources: see text. Y-axes left-hand side: *guilders* per pond/piece for prices in Asia and Amsterdam; y-axes right-hand side: mark-ups.

With the exception of these spices, it has been claimed that all other commodities were bought in competitive markets ‘in the sense that rival European companies vied with each other to acquire the Asian goods, but also [...] vied with Asian traders for these goods.’²³⁶ However, this observation is not completely accurate either, as the Company enjoyed significant control over purchasing markets in other areas as well.

²³⁴ Bulbeck et al., *Southeast Asian exports*, p. 21. This is also confirmed in the seminal work by Meilink-Roelofs, *Asian Trade*.

²³⁵ Bulbeck et al., *Southeast Asian exports*, p. 21.

²³⁶ De Vries, ‘Limits’, p. 724.

As in Ceylon and the Moluccas, the Company became a colonial ruler over much of Java in the course of the seventeenth and eighteenth century. In contrast to these other areas, where the Company more or less actively pursued a policy of expansion against local rulers in order to safeguard its monopoly over the fine spices, in Java the Company was hesitantly drawn into the role of a colonial power as a result of its involvement in conflicts between various competitors for the Mataram throne (in the first half of the seventeenth century much of the island was ruled by the Susuhunan²³⁷ of Mataram). Almost every time the company intervened in the Javanese power struggles it expanded its territory as a payment for the supplied military services. The Treaty of Giyanti in 1755 ended the series of wars and the process of territorial expansion. The Company now became sovereign ruler of over two-thirds of the island, with the remainder of Mataram being split between two equally sized sultanates: Surakarta and Yogyakarta. In order to compensate for the consequently high overhead costs the Company incurred on the island, it introduced the cultivation of indigo and coffee and further encouraged the cultivation of cotton and, especially, sugar.

Sugar was already cultivated on Java before the Dutch arrived. While initially of little interest to the VOC, around the mid-seventeenth century it was realized that there was a huge market for sugar in Asia. The Company demanded a certain quantity of sugar from the millers at a set price each year. If the Company was in control of the purchasing price, then why did prices converge? Due to a loss of markets and soil exhaustion, the sugar industry was threatened with extinction in the 1730s, and again the 1770s. Therefore, in order to save an industry that provided a livelihood for many people on the island,²³⁸ purchasing prices were raised. At the same time, sugar from the West-Indies flooded the European market, resulting in lower sales prices in Amsterdam. Consequently, and as could also be seen in the study by Rönnbäck, global sugar prices converged.

Both indigo and cotton yarn were purchased in competitive Indian markets in the seventeenth century. At the end of the seventeenth century, in order to circumvent the high purchasing prices in India, the Company introduced the cultivation of indigo and encouraged cotton growing in Java. To acquire cotton, the Company imposed forced deliveries at set prices on Javanese Regents.²³⁹ In order to stimulate indigo cultivation, the VOC initially increased purchasing prices in the early 1730s. However, later in the century, as indigo did not fetch a good profit in the Dutch Republic,

²³⁷ 'Honoured lord', title of the ruler of Mataram. Ricklefs, *A History*, p. 47.

²³⁸ As well as investments of high VOC officials on the island; Luc Nagtegaal, *Rijden op een Hollandse Tijger. De noordkust van Java en de V.O.C. 1680-1743* (unpublished PhD thesis, Utrecht University, 1988) p. 138.

²³⁹ Robert van Niel, *Java's Northeast Coast 1740-1840: a study in colonial encroachment and dominance* (Leiden: CNWS. 2005) p. 176; Kwee Hui Kian, 'Production, Consumption and Trade of Javanese Cotton Yarn and Textile in the late Seventeenth and Eighteenth Century', Paper presented at *GEHN Conference on Cotton Textiles* (Pune 2005), pp. 25-29.

purchasing prices were reduced, and the Dutch started to claim a more active role in overseeing indigo production.²⁴⁰

Likewise, coffee cultivation was introduced in Java in the early eighteenth century in a reaction to the high prices in Mocha. The company provided the Regents in Java with coffee seedlings and offered a high purchasing price of fl. 0.50 per *pond* to stimulate cultivation in the 1710s. Coffee cultivation was so successful that total deliveries exceeded 4 million pounds already in the 1720s. In 1723 the VOC monopolized the market and forced planters to deliver their entire crop to the Company. In fear of overflowing the European market, the purchasing price was drastically reduced in the late 1720s and 1730s, while in the 1740s the VOC set quotas for what each region was allowed to produce. However, the European market turned out to be insatiable and coffee consumption increased from less than 1 million to over 100 million *pond* per year, without significant decreases in prices after 1740. Realizing this (rather late), coffee production was transformed into a coercive system only in the late 1780s, and Javanese peasants were forced to cultivate and deliver a minimum amount of coffee beans each year.²⁴¹ Thus, while price differentials between different types of coffee in consuming markets may have declined,²⁴² the gap between the price paid in Amsterdam and that paid in Batavia, most certainly increased as a result of VOC control over production and trade in Java.

De Vries wrote that ‘what began as an age of globalization [...] ended as an age of colonialism’.²⁴³ Mostly as a reaction against the forces of globalization (competition and consequentially rising prices in purchasing markets) the Company attempted to control production and purchasing prices in its own territories. We can find a colonial system of production on Ambon and the Banda Islands from the middle of the seventeenth century,²⁴⁴ and in Java and Ceylon from the middle of the eighteenth. Colonialism thus did not begin with the English in Bengal in 1757, as claimed by De Vries, but started already with Dutch rule over parts of Java and the Moluccas from the seventeenth century onwards.²⁴⁵

²⁴⁰ Van Niel, *Java's Northeast Coast*, pp. 153-162.

²⁴¹ Jacobs, *Merchant in Asia*, pp. 260-275. The slave revolt in Santo Domingo and the French Revolutionary wars drove up Amsterdam coffee prices in the 1790s.

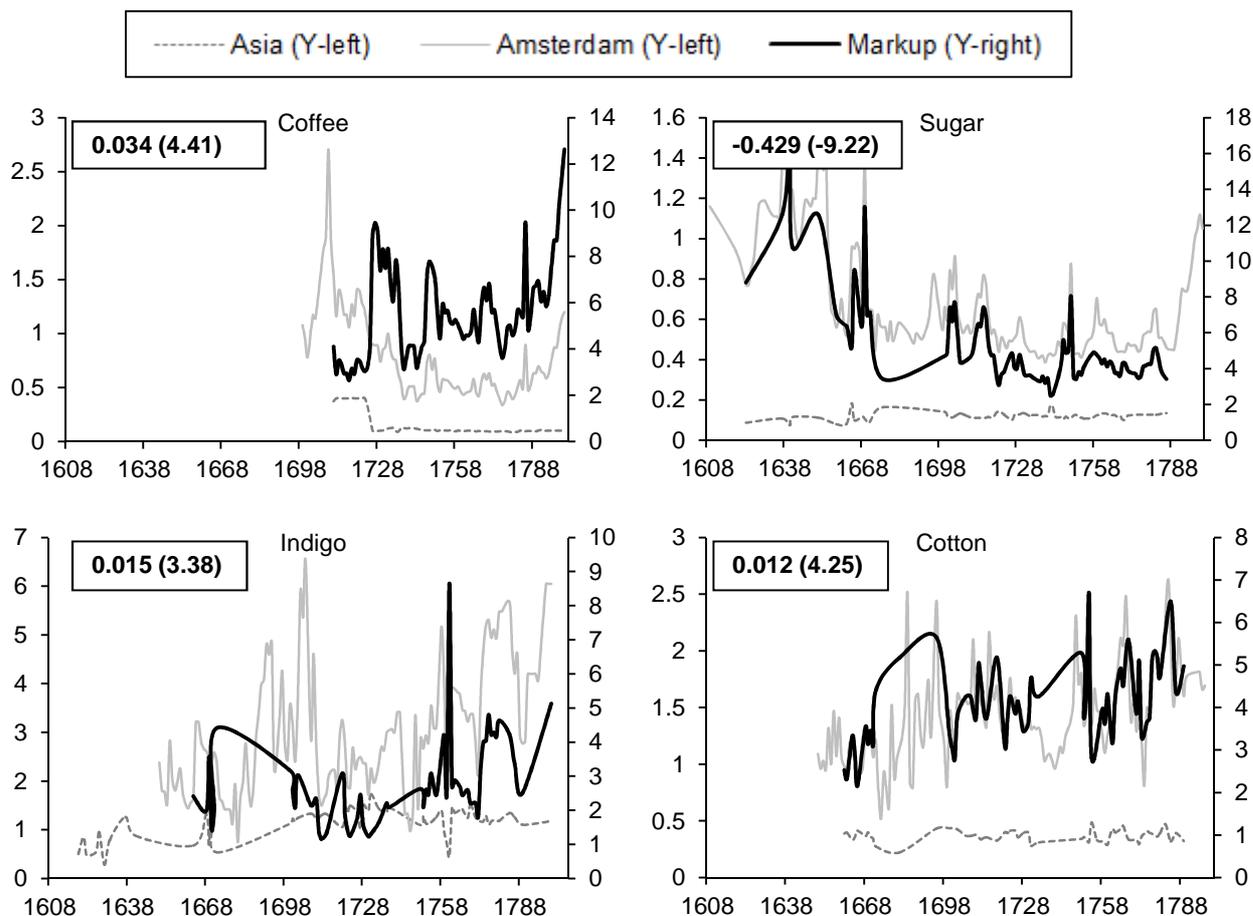
²⁴² Emphasized by Topik, ‘The Integration’.

²⁴³ De Vries, ‘The Limits’, p. 731.

²⁴⁴ In the sense that the local population was forced to deliver a certain amount of a product each year to the colonial government for relatively low, or no, pay.

²⁴⁵ Jacobs also notes the rise of a colonial system in 18th century Java: *Merchant in Asia*, pp. 274-275.

FIGURE 2.9: PRICES AND MARK-UPS FOR GOODS OBTAINED IN JAVA, 1608-1800.



Sources: see text. Y-axes left-hand side: *guilders* per pond/piece for prices in Asia and Amsterdam; y-axes right-hand side: mark-ups.

2.7.3. Contracts in Malabar, Sumatra and the Malaysian Peninsula

As a result of the widespread cultivation of pepper in the Southeast Asian archipelago and Malabar (southern India), monopoly of pepper and effective price control through limitation of production was ‘out of the question at any time’.²⁴⁶ Why did pepper prices not converge as much as expected?

While in the late sixteenth and early seventeenth centuries, competition among European and Asian traders drove up the price for pepper in Southeast Asia significantly (just like in the case of cloves);²⁴⁷ from the later 1640s the average price was relatively stable, though increasing steadily from roughly fl. 0.10 in the 1650s to fl. 0.13 per *pond* at the end of the eighteenth century. This was a consequence of the fact that on the pepper markets, the VOC did not pay according to a market price set by supply and demand, but paid a contract price negotiated with local potentates.²⁴⁸ In

²⁴⁶ J. Kathirithamby-Wells, *The British West Sumatran Presidency (1760-85): Problems of early colonial enterprise* (Kuala Lumpur: Penerbit Universiti Malaya, 1977) p. 180.

²⁴⁷ Also see: Meilink-Roelofs, *Asian Trade*.

²⁴⁸ As De Vries, ‘The Limits’, p. 721, notes: ‘relations with local rulers sensitively affected the acquisition price of pepper’.

return for military support, the Company paid a low price for pepper to the Sultans of Palembang (a contract since 1642) and Jambi (a contract since the 1680s) on Sumatra, the main supplier of pepper in the world at that time.²⁴⁹ Furthermore, in the early 1680s, the VOC conquered Banten, Southeast Asia's main international pepper port, situated only 13 miles east of Batavia.²⁵⁰ The newly installed Bantenese Sultan was forced to agree to a contract to deliver pepper only to the VOC for a relatively low price, again in return for political and military support. Malabar (South-western India) was another important area of pepper cultivation. In the early 1660s the Company launched an extensive military campaign and managed to expel the Portuguese from this region. In the process, the Company forced many local sovereigns into involuntary pepper deliveries. While certainly a dominant actor, the VOC was never able to completely control the Malabar Coast and deliveries remained variable. Especially after 1730, expansionist politics of one of the local kings²⁵¹ undermined the Company's power. As a result of this, as well as numerous other factors,²⁵² the Company was not able to prevent a decline in pepper supply over the eighteenth century. The declining supply drove up pepper prices in Europe in the second half of the eighteenth century. In fact, when taking the mark-up as the relevant measure of price convergence, the trend is statistically insignificant.²⁵³

A more or less similar story applies to tin. The prices for which the VOC purchased tin from the rulers of Palembang, Siam and Malacca was again based on contracts and power play and did not fluctuate much between 1660 and the late eighteenth century. The sales price in Amsterdam, however, was not only determined by the supply from the East Indies, but also by production in Europe. As prices in Amsterdam were consequentially relatively low, and hardly any profits were made, tin was much more important in the intra-Asian trade. The trends for both these products were thus both weakly converging, despite the contracts. The situation was again different in the remaining commodity markets.

²⁴⁹ In 1666, local chiefs on the West coast of Sumatra (Padang & Aceh) also bound themselves to the Dutch Company.

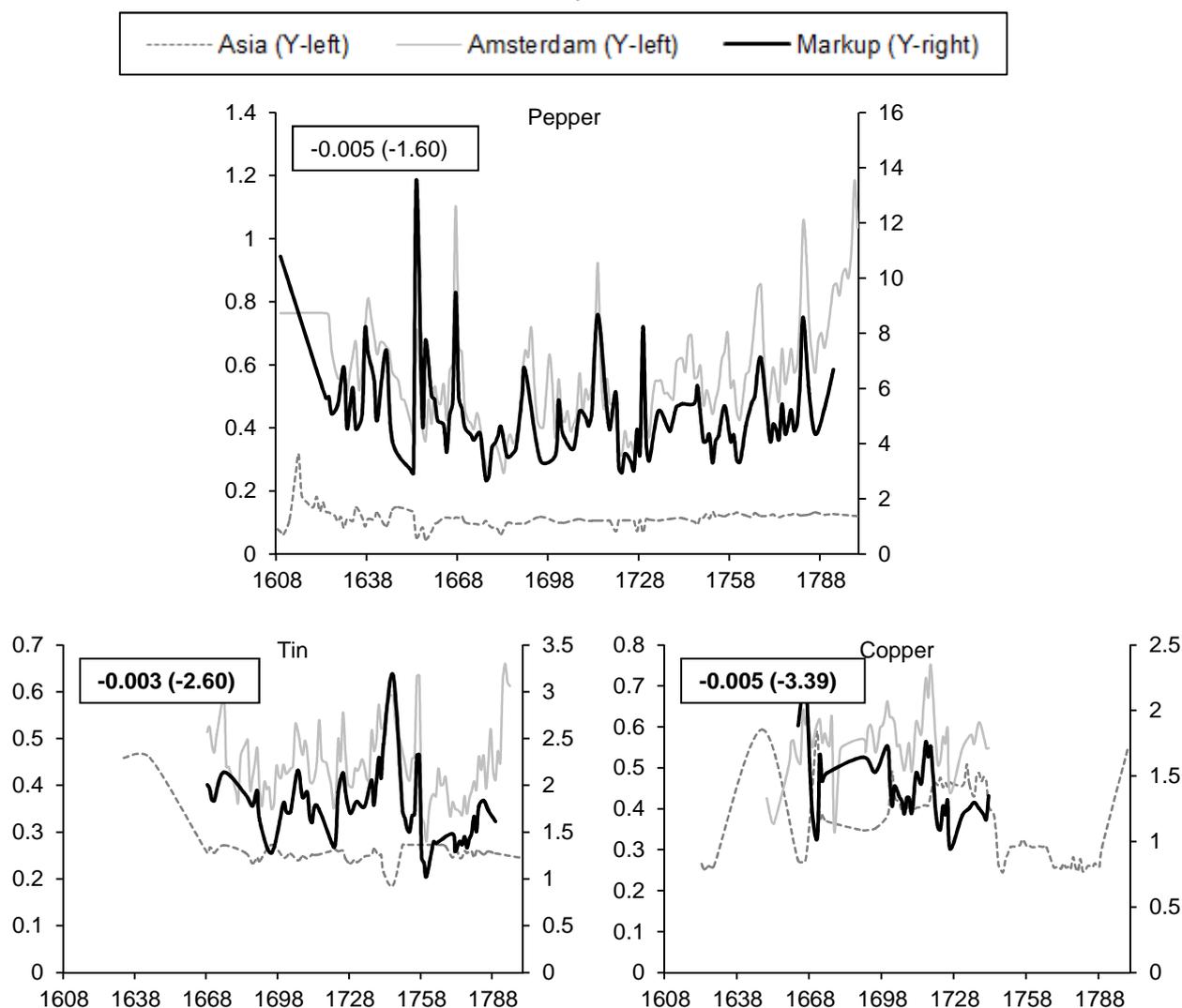
²⁵⁰ The pepper growing areas of Banten were actually situated in the Lampung region of Southern Sumatra.

²⁵¹ The king of Travancore.

²⁵² Increasing pepper prices in Malabar, increasing social unrest and piracy around Batnam, a shift from the cultivation of pepper to the production of tin by the Sultan of Palembang. See: Jacobs, *Merchant in Asia*, pp. 70-89

²⁵³ Trend: -0.0003; T-statistic: -4.10. Due to increased importance of the purchasing market.

FIGURE 2.10: PRICES AND MARK-UPS FOR GOODS OBTAINED THROUGH CONTRACTS, 1608-1800.



Sources: see text. Y-axes left-hand side: *guilders* per pond/piece for prices in Asia and Amsterdam; y-axes right-hand side: mark-ups.

2.7.4. Competitive markets in India and China

We conclude with the commodity markets where European trading companies and Asian merchants did compete and mark-ups converged accordingly: porcelain, saltpetre, silk, tea and textiles. These were products acquired in Bengal, Surat, on the Coromandel Coast and in Canton, China (see figure 2.7).

In Bengal, the VOC competed with the Danish, French, Ostend, and, most significantly, the English company,²⁵⁴ but perhaps even more so with Asian merchants who were dominant in Bengal in the pre-Plassey period.²⁵⁵ While around 1690 the VOC was the principal buyer and purchased a third of the entire saltpetre production

²⁵⁴ Hameeda Hossain, *The Company Weavers of Bengal. The East India Company and the Organization of Textile Production in Bengal 1750-1813* (Delhi etc.: Oxford U. P., 1988) p. 74.

²⁵⁵ Sushil Chaudhury, *From Prosperity to Decline: eighteenth century Bengal* (New Delhi: Manohar, 1995) p. 228.

in Bengal, competition with the EIC and the French increased especially from the 1730s.²⁵⁶ Saltpetre purchasing prices increased accordingly from fl. 0.04 to 0.07-0.08. The highest prices were recorded during the 1750s, when well-endowed indigenous merchants controlled large parts of the saltpetre market. That situation ended with the establishment of English power in 1757, after which the VOC was depending on the English for their saltpetre purchases.²⁵⁷

In order to procure textiles in Bengal, the VOC also had to deal with various indigenous merchants,²⁵⁸ who, after having received an order with cash-advancement, delivered the goods to the Company factory in Chinsura, where they were inspected and the merchants and VOC could (re-)negotiate the price.²⁵⁹ Om Prakash notes that the VOC tried to avoid breakdowns in these negotiations 'since the growing competition among the Europeans was increasingly creating a sellers' market'.²⁶⁰ Similarly, the silk market was extremely competitive, and European companies were unable to control the silk market, and thus the silk price.²⁶¹ Purchasing prices were relatively high, while competition with French and Italian silk in Europe meant that mark-ups were generally low, and declined over the eighteenth century as the VOC lost its leading position to the English.

The Coromandel Coast and Surat were also important production areas of textiles, especially in the seventeenth century. In these places, the market was also characterized by fierce competition and the important position held by middlemen. Various studies on the textile trade and manufacturing have all documented a rise of textile prices in Surat (Northwestern-India),²⁶² Bengal and Coromandel,²⁶³ while in Europe prices remained roughly constant or declined due to the competition among the European companies.²⁶⁴ As a result, mark-ups on Indian textiles, arguably the most important of all trades, declined.

²⁵⁶ Jacobs, *Merchant in Asia*, p. 126.

²⁵⁷ Jacobs, *Merchant in Asia*, p. 127.

²⁵⁸ The Company rarely purchased textiles from weavers directly: Prakash, *The Dutch East India*, p. 107.

²⁵⁹ Also see Sushil Chaudhury's discussion of the *dadni* system: *ibid.*, 'Merchants, companies and rulers: Bengal in the Eighteenth Century', *Journal of the Economic and Social History of the Orient* 31 (1988) pp. 74-109.

²⁶⁰ Prakash, *The Dutch East India*, p. 105.

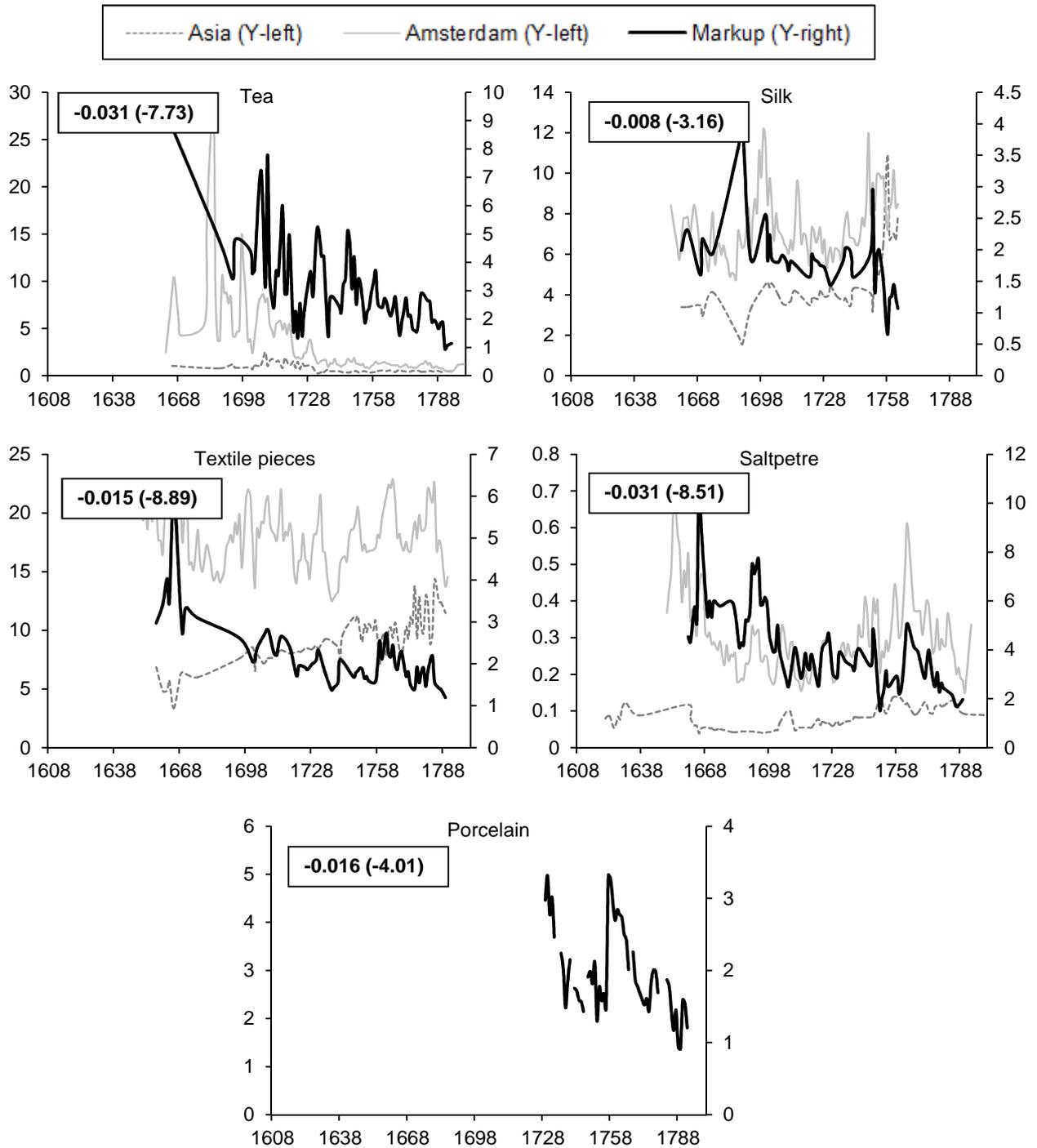
²⁶¹ Chaudhury, *From Prosperity*, p. 228.

²⁶² For Surat also see: Ghulam Nadri, *Eighteenth-Century Gujarat: The Dynamics of Its Political Economy 1750-1800* (Leiden: Brill, 2008).

²⁶³ Chaudhuri, *The Trading World*; Prasannan Parthasarathi, *The Transition to a Colonial Economy: Weavers, Merchants and Kings in South India* (Cambridge: Cambridge U. P., 2001) p. 40; Kanakalatha Mukund, *The Trading World of the Tamil Merchant. Evolution of Merchant Capitalism in the Coromandel* (Chennai: Orient Longman Ltd., 1999) pp. 81-82; S. Hariharan, *Cotton Textiles and Corporate Buyers in Cottonpolis: a Study of Purchase and Prices in Gujarat 1600-1800* (New Delhi: Manak 2002) pp. 298-305.

²⁶⁴ Bishnupriya Gupta, 'Competition and control in the market for textiles: Indian weavers and the English East India Company in the Eighteenth Century', in: Giorgio Riello and Tirthankar Roy (eds.), *How India Clothed the World. The world of South Asian Textiles, 1500-1850* (Leiden: Brill, 2009) pp. 281-308, there p. 286.

FIGURE 2.11: PRICES AND MARK-UPS FOR GOODS OBTAINED IN COMPETITIVE MARKETS, 1608-1800.



Sources: see text. Y-axes left-hand side: *guilders* per pond/piece for prices in Asia and Amsterdam; y-axes right-hand side: mark-ups.

The VOC purchased tea first from Chinese junks in Batavia, which led to the problem of inconsistent supply. As a result, the purchasing price paid for tea could be

higher than 3 guilders per *pond* at the beginning of the eighteenth century.²⁶⁵ After 1729 the VOC started to buy tea directly in Canton, and purchasing prices declined from around fl. 1.30 to around fl. 0.50 per *pond* of *bohea* tea and would remain around that level for the remainder of the eighteenth century.²⁶⁶ In Canton, the Company again found itself in competition with the other European companies, as well as private European and Asian merchants and had to pursue its business via Chinese intermediaries. Consequentially ‘prices fluctuated according to the pressures of supply and demand’.²⁶⁷ However, as purchasing prices were stable in China in the long run, most of the decline in the mark-up was the result of the spectacular decline in the European price. This price decline was ushered in by a spectacular increase in annual supply; this increased a 100-fold from a meagre 30.000 *pond* in the early 1700s,²⁶⁸ to over 3,000,000 *pond* at the end of the eighteenth century.²⁶⁹ The fees paid in Canton were based on the size of ships and one standard charge charged on all ships (the ‘Emperors Present’). This system favoured bigger ships (i.e. those sailing in the Euro-Asian trade) and since these charges held no connection with the value of the cargo, the fees declined over the eighteenth century relative to inflation.²⁷⁰ These duties amounted to around 2 to 4 percent of the value of the cargo.²⁷¹ Tariffs in India also seem to have been relatively low before 1750.²⁷²

Thus in these cases, the VOC competed both with the other European companies and with Indian Ocean merchants. It procured products often via local intermediaries and had to pay a (relatively small) export tax. As the total trade volumes, as well as competition, increased in the eighteenth century, mark-ups dropped.

2.8. Conclusion

This chapter examined the notion of ‘globalization’ in the early modern period, and more specifically what has come to be known as ‘hard’ globalization in the past years.

²⁶⁵ George B. Souza, *The Survival of Empire. Portuguese trade and society in China and the South China Sea 1630-1754* (Cambridge: Cambridge U. P., 1986) pp. 142 and 145-151.

²⁶⁶ Glamann, *Dutch-Asiatic*, p. 225; Liu Yong, *The Dutch East India Company's Tea Trade with China 1757-1781* (Leiden: Brill, 2006) pp. 212-222.

²⁶⁷ Paul A. van Dyke, *The Canton Trade: Life and enterprise on the China Coast, 1700-1845* (Hong Kong: Hong Kong U. P., 2006) p. 15. Liu Yong describes how the VOC used various Chinese merchants as middlemen in the purchases of tea in order to create some measure of competition; *The Dutch East India Company's Tea Trade with China 1757-1781* (Leiden: Brill, 2006) pp. 74-89.

²⁶⁸ VOC auctions: VOC 4584-4597.

²⁶⁹ Yong, *The Dutch*, pp. 126-128. See, p. 130 for a dramatic decline in the gross profits on tea sales in the second half of the 18th century.

²⁷⁰ Van Dyke, *The Canton Trade*, pp. 10-11, 103-115.

²⁷¹ Jacobs, *Merchant in Asia*, p. 187.

²⁷² Suggested by B. Blachdran and S. Subrahmanyam, ‘On the History of Globalization and India: Concepts, Measures and Debates’, in J. Assayag and C. J. Fuller (eds.) *Globalizing India: Perspectives from Below* (London: Anthem Press, 2005) pp. 17-46; cited in Flynn and Giraldez, ‘Born again’, p. 364.

O'Rourke and Williamson's statements have been put to the test with new price data from the Dutch-Asiatic trade.

The discussion of Asian prices and mark-ups in between 1450-1660 points out that the entrance of the Company (and the other European companies) in the Asian markets possibly led to an initial phase of price convergence. However, Company power-play hindered the continuation of these trends in the later periods.

The main part of the analysis focussed on the Dutch-Asiatic trade in the period 1608-1800. It examines whether we can find evidence of the process of globalization taking place, as suggested by price convergence, in this particular period and on this particular trade route. This is not the final word in this debate. Evidence from other Companies and routes may suggest different patterns, while the data series presented here, despite efforts to the contrary, still contained gaps, or sometimes represents only a limited number of observations, raising questions about reliability and representativeness. With these limitations in mind, what have we learned from this exercise?

It has been demonstrated that for a majority of commodities in the Dutch-Asiatic trade, prices in Europe and Asia converged. While for some products prices diverged and for others again mark-ups may have remained 'stubbornly high', the overall price gaps of the entire package of goods transported between Asia and the Republic declined. A survey of the recent literature on transport in the early modern period suggests that improvements in transport were responsible for part of this decrease in the price gaps. In addition, wars, and especially the naval wars between the Dutch and English, were certainly disruptive to trade and the process of integration in the short-run. Yet in the long run, the maritime competition (associated with these wars) probably further stimulated a decline in mark-ups over the course of the eighteenth century. Nonetheless, considering the large differences in the trends between the various products traded, the largest part of the explanation of these trends was to be found in the character of commodity markets for each product.

Convergence could be observed in the trends for porcelain, saltpetre, silk, tea and textiles. These products were procured in India and China, where the VOC competed with other European companies, as well as private European and Asian merchants. Increasing demand in Asia pushed up purchasing prices, while the growth of supply put downward pressure on sales prices in Europe. Customs duties probably did not amount to over 5 percent of the cargo value. Similar competition had characterized the pepper trade until the second half of the seventeenth century. By the end of the century, however, the Dutch had established contracts with the rulers of many of the major pepper producing regions in Malabar and Sumatra, who provided them with pepper at low purchasing prices. Where diplomacy failed, the VOC employed its guns to evade competition and high prices. In the Moluccas, Ceylon and Java the VOC established itself as a military and political power and gained complete

control of the purchasing markets. The VOC was a reluctant imperialist, however, as an extensive military and administrative apparatus dramatically increased overhead costs. Where it did exert such power, it tried to make up for the expenses by keeping purchasing prices as low as possible via control over both production and trade.

The discussion is summarized in table 2.5 below. Per product we noted what the average mark-up was in the seventeenth and the eighteenth century and whether the trend is significant and shows convergence or divergence. In column 5 is noted to which extent prices in the purchasing market were determined by competition (supply and demand), contracts, or complete control of the market.²⁷³ Column 6 shows whether the VOC was the sole supplier of a product in Europe or whether the sales prices were determined by competition.

It can thus be concluded that neither claims that the Euro-Asian trade remained effectively monopolized before the nineteenth century, nor the suggestion that besides the monopoly spices all other goods were bought in competitive markets, are entirely accurate. The evidence on early price convergence suggested that the entrance of the VOC (and perhaps the other north-western European companies) in the Asian markets initially had the expected result of rising prices in Asia. Subsequent power struggles and colonialism, however, go a long way to explain the lack of market integration in some markets in the later seventeenth and eighteenth centuries.

Rather than stubbornly high transport costs, tariffs, or wars, it was the extent of VOC control over the commodity markets in Asia that determined trends in price convergence. Various scholars have suggested that in the nineteenth century colonialism became one of the main drivers of economic globalization as ‘empires increased trade by lowering transaction costs and by establishing trade policies that promoted trade within empires.’²⁷⁴ De Vries also finds that most of the price convergence in the nineteenth century was limited to areas ‘brought within colonial and imperial trading structures.’²⁷⁵ However, in the age of mercantilism, colonialism was in the hands of private companies that had maximizing profits as their most important goal. Territorial control was a means to capture rents and it thereby hindered the process of commodity market integration.

²⁷³ Regarding copper, the Dutch were the only buyers of Japanese copper at Deshima, and thus the only seller on the European market. Based on exclusive contracts purchasing prices in Japan were low, but since Japanese copper had to compete with Swedish, Hungarian and Norwegian copper on the Amsterdam market, selling prices were also low, resulting in low mark-ups in this trade. Demand was high for Japanese copper in Asian markets, and in the intra-Asian trade, on the other hand, copper made a handsome profit, see: Ryuto Shimada, *The Intra-Asian Trade in Japanese Copper by the Dutch East India Company during the Eighteenth Century* (Leiden: Brill, 2006).

²⁷⁴ Kris J. Mitchener and Marc Weidenmier, ‘Trade and empire’, *NBER Working Paper 13765* (Cambridge 2008) p. 2. Also see: Niall Ferguson, ‘no organization in history has done more to promote the free movement of goods, capital and labor than the British empire in the nineteenth and early twentieth centuries’, in: Ferguson, *Empire*: p. xxi; Rodrik, *The Globalization Paradox*, p. 26: ‘imperialism was a mechanism for imposing trade-friendly rules’.

²⁷⁵ De Vries, ‘The limits’, p. 719, n. 36.

TABLE 2.5: DUTCH-ASIATIC TRADE IN THE 17TH AND 18TH CENTURIES.

Product	Mean mark-up 17 th (n)	Mean mark-up 18 th (n)	Trend (entire period) ²⁷⁶	Determinant of purchasing price	Determinant of sales price
Cinnamon	10.3 (44)	15.9 (100)	Divergence	Control	Monopoly
Cloves	16.1 (63)	13.6 (100)	Convergence	Control	Monopoly ²⁷⁷
Nutmeg	38.0 (46)	50.2 (82)	None	Control	Monopoly
Mace	13.7 (82)	15.4 (89)	Divergence	Control	Monopoly
Pepper	5.3 (49)	4.9 (64)	None	Contract	Competition
Tin	1.8 (9)	1.7 (51)	Convergence	Contract	Competition
Copper	1.6 (6)	1.3 (30)	Convergence	Contract	Competition
Sugar	9.2 (14)	4.5 (73)	Convergence	Control	Competition
Cotton	3.5 (12)	4.2 (45)	Divergence	Control	Competition
Indigo	2.6 (6)	2.8 (51)	Divergence	Control	Competition
Coffee		5.7 (87)	Divergence	Control	Competition
Saltpetre	5.9 (28)	3.2 (53)	Convergence	Competition	Competition
Textiles	3.5 (11)	1.9 (50)	Convergence	Competition	Competition
Silk	2.5 (8)	1.7 (35)	Convergence	Competition	Competition
Tea	5.4 (4)	2.9 (82)	Convergence	Competition	Competition
Porcelain		2.0 (56)	Convergence	Competition	Competition

Sources: see text.

Following the literature on colonization, the extent of colonial control was determined by a combination of initial geographic conditions (the area where specific crops could grow),²⁷⁸ the strength of indigenous institutions (or the level of political centralisation),²⁷⁹ as well as chance. In regions that grew rare commodities, such as the Moluccas and Ceylon, colonization was a means to establish a monopoly. In these areas, the effects of globalization could go beyond its impact on supply and demand. Production areas of most other commodities were too extensive to achieve an efficient monopoly, and in order to limit overhead costs associated with territorial control the VOC tried to establish contracts with local potentates in many other areas. In south-western India (Malabar) and Java the VOC extended its power for strategic reasons. In regions with strong political centralisation, such as Mughal India, Qing China and Tokugawa Japan, VOC power (and thus its probable effects) remained limited. The extent of colonial power not only affected the process of globalization, but also what the effects of this globalization would be for the economies involved. This will be the subject of the remainder of the dissertation.

²⁷⁶ Trend in mark-up.

²⁷⁷ After 1770; competition.

²⁷⁸ Engerman and Sokoloff, 'History Lessons'.

²⁷⁹ Acemoglu et al, 'The colonial origins'.

Chapter 3: Prices and Consumption Patterns

3.1. Introduction

What were the consequences of this globalization for the economies in Europe and Asia? O'Rourke, Williamson and their co-authors' works started out as a contribution to that issue. Some scholars, like Immanuel Wallerstein and Andre Gunder Frank, emphasized the importance of long-distance trade in the period between 1500 and 1800 for the rise in global inequality, claiming that intercontinental trade led to capital accumulation and intercontinental specialization.²⁸⁰ While the periphery concentrated on the production of primary goods, resulting in low levels of per capita income, the European core could shift part of its production into more productive sectors of the economy, such as manufacturing, thereby pushing Europe towards industrialization and higher standards of living.²⁸¹ Others have downplayed the importance of intercontinental trade, like Patrick O'Brien who coined the catchy phrase that 'for the economic growth of the core, the periphery was peripheral'²⁸² as he estimated that the contribution of intercontinental trade to western European GNP was at the most 1 percent, and to gross investment at the most 10 percent.²⁸³

²⁸⁰ Wallerstein, *The Modern World*; *ibid.*, *The Capitalist World* ; Frank, *World Accumulation*.

²⁸¹ Also see the discussion by O'Brien, 'European Economic Development', pp. 1-3.

²⁸² O'Brien, 'European Economic Development', p. 9.

²⁸³ O'Brien, 'European Economic Development', p. 5.

O'Rourke and Williamson are in the same boat as O'Brien, as they suggest that as commodities in intercontinental trade before the nineteenth century were non-competing and luxuries rather than necessities in Europe: 'the vast majority of the "exotic" imports from Asia and the Americas were out of reach of any but the rich.'²⁸⁴ Therefore this trade did not influence resource allocation and factor prices in Europe and consequentially had no 'significant impact on the structure of production or on economic welfare.'²⁸⁵

Recent research has reemphasized the importance of international trade for Europe. Acemoglu et al. find that intercontinental trade induced institutional changes that were central to economic growth in Western Europe between 1500 and 1800.²⁸⁶ At the same time, Robert Allen has argued that trade led to urbanization and larger cities as it offered job opportunities in certain trade hubs. Because larger cities have a more refined division of labour than smaller rural towns, urbanization led to greater efficiency and higher wages, which provided the crucial incentive for industrialization.²⁸⁷ Research on consumption patterns has produced evidence of the relatively widespread availability and consumption of e.g. coffee and tea in Europe in the eighteenth century.²⁸⁸ The availability of these products, not only raised living standards,²⁸⁹ but also 'enlarged the aspiration to consume and increased the incentive to work and earn high income'²⁹⁰ thereby inducing a revolution in work ethics.²⁹¹

While many scholars have thus focussed on the impact of intercontinental trade on Europe, equally important is the question what the consequences were for the different economies in Asia. Findlay and O'Rourke suggest that in China and India the increased inflow of silver, when it did not lead to inflation, had positive effects on commercialization and economic growth.²⁹² Similarly, O'Rourke et al. suggest that 'an alternative Smithian "vent for surplus" perspective assumes that resources in many 18th century economies were unemployed, or at least, underemployed, and that trade could bring these resources into productive (or more productive) employment at little or no opportunity costs.'²⁹³ Yet, De Vries observes as 'Asia is large and populous',

²⁸⁴ O'Rourke and Williamson, 'After Columbus', p. 434.

²⁸⁵ Ibid., 'When did globalisation', p. 46.

²⁸⁶ Acemoglu et al., 'The Rise'.

²⁸⁷ Allen, *The British Industrial*; ibid. 'Progress and poverty'.

²⁸⁸ McCants, 'Poor consumers', ibid., 'Exotic goods'.

²⁸⁹ Jonathan Hersh and Hans-Joachim Voth, 'Sweet Diversity: Colonial Goods and Welfare Gains from Trade after 1492', *Mimeo* 2011.

²⁹⁰ Allen, *The British Industrial*, p. 22.

²⁹¹ De Vries, 'The Industrial Revolution'; ibid., *The Industrious Revolution*.

²⁹² Finlay and O'Rourke, *Power and Plenty*, pp. 219-221: following the theory: M (money supply) = kPY . If P (prices) did not increase: k (commercialization) and/or Y (income) did.

²⁹³ O'Rourke et al., 'Trade and Empire', p. 10.

additional European demand for Asian products may have affected these industries only at the margin.²⁹⁴

However, as we have seen in the previous chapter, the effects of this early modern long-distance trade go beyond neo-classical mechanisms of demand and supply in a free market. Where globalization was followed (or hindered) by (mercantile)²⁹⁵ colonialism and monopolization, the effects may have been quite profound. Thus, the effects of what should be considered ‘soft’ globalization, i.e. when there was no clear-cut evidence of price convergence, were perhaps not so soft at all.

In this chapter, a start will be made with the assessment of the effects of the Dutch East India Company’s trade and its related business for living standards around the Indian Ocean. For various reasons, explained in the introduction, the analysis concentrate on Bengal, the Cape, Ceylon and Java. This analysis of living standards links up with the Great Divergence debate, where the controversy over differences in living standards between Europe and Asia holds centre stage. Yet, one thing that became clear from the debate thus far is that the evidence on Asian standards of living in general is thin and contradicting. This dissertation hopes to improve the evidence on living standards. Generally one can discern between three dimensions of the standard of living: income, education and health. In the next section the most commonly used measures of living standards are discussed. Most of these measures suffer from problems in terms of data availability or a narrow focus on one element of the standard of living. In that sense, real wages have some crucial advantages, as wage and price data are available for a wide range of countries for a long period in time, and may contain information on all three elements of the standard of living. From the discussion of the real wage methodology in section 3.3 it becomes clear that the creation of a simple but accurate consumption basket is crucial to calculate comparative real wages. Therefore, in section 3.4, the evidence on consumption patterns in pre-modern Bengal, the Cape, Ceylon and Java is reviewed, before baskets are created that allow for international and inter-temporal comparisons. Section 3.5 then develops the price data and discusses its limitations and representativeness. Section 3.6 concludes.

3.2. Measuring Living Standards

Pomeranz rightly questions what measure is the most relevant to gauge and compare living standards in the past:

²⁹⁴ De Vries, ‘The limits’, p. 729.

²⁹⁵ See: Ola Olsson, ‘On the Institutional Legacy of Mercantilist and Imperialist Colonialism’, *Working Papers in Economics* 247 (March 2007); *ibid.*, ‘On the democratic legacy of colonialism’, *Journal of Comparative Economics* 37 (2009) pp. 534-551; Potter et al., *Geographies of Development*, pp. 58-73.

How are we to decide which differences constitute being ‘ahead in standard of living’? Why emphasize Europe’s probably edge in housing, rather than, say the remarkable supply of safe drinking water in much of Japan, China, and Southeast Asia?²⁹⁶

The body of literature dealing with living standards is vast and many different measures of the standard of living have been put forward. The most important of these will be discussed, before turning to an in-depth discussion of the method adopted in this dissertation: real wages.

GDP per capita is still the most widely used measure of living standards,²⁹⁷ as well as ‘the most acceptable measure of the overall economy and productive capacity’.²⁹⁸ A number of studies have shown a positive relationship between per capita income and other elements of the standard of living, such as life expectancy, infant mortality, education as well as overall ‘life satisfaction’.²⁹⁹ Yet there are a number of problems with GDP per head estimates. First, while improved estimates of GDP per capita for England and Holland are now being pushed back to the Middle Ages,³⁰⁰ such data are relatively difficult to obtain and are subject to large margins of error, especially for the period before 1870.³⁰¹ Second, GDP requires a variety of assumptions in order to capture non-market income, such as the spouse’s work within the household or food grown for own consumption. Additional problems arise with ‘black market’ activities, all of which are often substantial in pre-industrial countries.³⁰² Third, because pre-industrial and developing countries are often highly unequal societies, estimates of average incomes in these regions give little information about the standard of living of the majority of the population.³⁰³ Finally, although numerous studies have found a positive link between income and other elements of the quality of life, this relationship is indirect and does not apply generally.³⁰⁴ Due to a high degree

²⁹⁶ Pomeranz, *The Great Divergence*, p. 36

²⁹⁷ Robert C. Allen, ‘Real Wages in Europe and Asia: A First Look at the Long-term Patterns’, in: Robert C. Allen, Tommy Bengtsson, and Martin Dribe (eds.), *Living Standards in the Past New Perspectives on Well-Being in Asia and Europe* (Oxford: Oxford University Press, 2005) pp. 157-185.

²⁹⁸ Jörg Baten, Debin Ma, Stephen Morgan and Qing Wang, ‘Evolution of Living Standards and Human Capital in China in 18-20th centuries: Evidences from real wages, age-heaping and anthropometrics’, *Explorations in Economic History* 47 (2010) pp. 347-359, there p. 248.

²⁹⁹ Angus Deaton, ‘Income, Health, and Well-Being around the World: Evidence from the Gallup World Poll’, *Journal of Economic Perspectives* 22 (2008) pp. 53-72, there p. 69; Charles Kenny, ‘Why are We Worried About Income? Nearly Everything that Matters is Converging’, *World Development* 33 (2005) pp. 1-19, there p. 1.

³⁰⁰ Stephen Broadberry, Bruce Campbell, Alexander Klein, Mark Overton, and Bas van Leeuwen, ‘British Economic Growth, 1270-1870: An output-based approach’ *Mimeo* (2012); Jan Luiten van Zanden and Bas van Leeuwen, ‘Persistent but not consistent: the growth of national income in Holland, 1347-1807’, *Explorations in Economic History* 49 (2012) pp. 119-130.

³⁰¹ Suleyman Ozmucur and Sevket Pamuk, ‘Real Wages and Standards of Living in the Ottoman Empire, 1489-1914’, *Journal of Economic History* 62 (2002) pp. 293-321, there p. 294.

³⁰² Stanley L. Engerman, ‘The Standard of Living Debate in International Perspective: Measures and Indicators’, in: R. Steckel and R. Floud (eds.), *Health and Welfare during Industrialization* (Chicago: University of Chicago Press, 1997) pp. 17-45, there p. 27; Baten et al., ‘Evolution’, p. 4.

³⁰³ Allen, ‘Real Wages’, p. 158.

³⁰⁴ Kenny, ‘Why Are We’, p. 2.

of inequality in a society, large parts of the population can be denied decent schooling or healthcare even in states with a relatively high GDP per capita.

These issues have led to the search for alternative measures of living standards. Consumption of sugar, tea, coffee and other ‘everyday luxuries’ provide information about the extent to which people were able to buy luxuries above subsistence. Pomeranz suggests that Chinese sugar consumption in 1750 exceeded that in continental Europe even in 1800.³⁰⁵ However, such estimates are dependent on estimates of trade, production and population that are of questionable reliability, and most of the luxury consumption may have been driven by elites, and tells us little about living standards of the masses. Probate inventories also contain much information about luxury consumption and wealth accumulation. As private probate inventories are drawn up by a notary, who did not work without pay, such lists generally pertain to the better-off families again. However, Anne McCants and Johan Fourie have looked at probate inventories drawn up by orphanages after the death of parents, which more likely reflect the poorer parts of society. Fourie has used such inventories to show that the farmers in the Cape Colony during the eighteenth century were remarkably wealthy, also in comparison with north-western Europe.³⁰⁶ Such sources have yet to be exposed for most parts of the non-western world – if at all available.

Following new growth theory, which claims that human capital formation is one of the main determinants of long-term economic growth,³⁰⁷ some studies have focused on measuring levels of human capital. Traditionally, research looked at literacy rates that were estimated by looking at the share of the population able to sign legal documents or marriage registers. A more recent method is looking at book production, which ‘measures the size of the market for books and therefore represents actual use of reading skills’,³⁰⁸ and a recent study has shown that per capita book production correlates with both literacy and per capita GDP growth.³⁰⁹ Another technique is to quantify numeracy by looking at the use of ‘age heaping’ in population censuses or legal documents: poorly educated people in the past tended to report their age in ‘attractive’ numbers, like those ending in 5 or 0, whilst better educated individuals were more likely to report their exact age.³¹⁰ Numeracy is an indispensable skill for

³⁰⁵ Pomeranz, *The Great Divergence*, p. 122.

³⁰⁶ Johan Fourie, ‘The remarkable wealth of the Dutch Cape Colony: measurements from eighteenth-century probate inventories’, *Economic History Review* 66 (2013) pp. 419-448; McCants, ‘Poor consumers’.

³⁰⁷ Oded Galor, ‘From Stagnation to Growth: Unified Growth Theory’, in: P. Aghion and S. Durlauf (eds.), *Handbook of Economic Growth* (Amsterdam 2005) pp. 172-293; Glaeser et al., ‘Do institutions’.

³⁰⁸ Jörg Baten and Jan Luiten van Zanden, ‘Book production and the onset of modern economic growth’, *Journal of Economic Growth* 13 (2008) pp. 217-235, there p. 221.

³⁰⁹ *Ibid.*, p. 235.

³¹⁰ Brian A’Hearn, Jörg Baten, and Dorothee Crayen, ‘Quantifying Quantitative Literacy: Age Heaping and the History of Human Capital’, *Journal of Economic History* 69 (2009) 783-808; Baten et al., ‘Evolution’, p. 14.

many commercial and technical activities and therefore an important indicator of human capital. A strong relationship was found between age heaping and illiteracy. Yet, an obvious weakness of these measurements (when examining living standards) is that they do not capture health.

Anthropometric methods (the study of heights) have therefore been employed extensively in the last three decades, as they are good indicators of biological components of welfare, such as health, life expectancy and the quality of nutrition.³¹¹ Height is positively affected by the quantity and quality of nutritional inputs, whilst disease and physical activities absorb nutrients, thus affecting growth negatively. Early studies have demonstrated a strong correlation between both height and per capita income, and between height and mortality.³¹² Average height is particularly sensitive to nutritional deficit and therefore a good measure to observe economic inequality, and thus the standard of living of the poorer people in societies.³¹³ Another advantage is that data on heights can be found in a wide variety of sources that go further back in time and are available for more places than the data needed for estimating per capita income.³¹⁴ Even in the absence of consistent population data, authors have made claims regarding height based on observations of contemporaries: e.g. Reid suggests that Southeast Asians were roughly as tall as Europeans as travellers declared them as 'being of "average" height'.³¹⁵ Height, however, does not measure the educational aspect of the standard of living and therefore complements, rather than substitutes, other welfare indicators. And, in a recent paper, Howard Bodenhorn et al. have shown that many heights studies suffer from serious sample selection bias issues.³¹⁶ Another way to look at the health aspect of the standard of living is by looking at life expectancies.³¹⁷ For many areas data for such estimates before the twentieth centuries are scarce;³¹⁸ they are either based on genealogies, an exercise fraught with serious difficulties, or are available for only a few villages, raising issues of representativeness.

The Human Development Index (HDI) has become a fashionable welfare indicator in recent years, because it captures the three different elements of the

³¹¹ Richard H. Steckel, 'Stature and the Standard of Living', *Journal of Economic Literature*, 33 (1995) 1903-1940. Baten et al., 'Evolution', p. 6.

³¹² Engerman, 'The Standard of Living', p. 35.

³¹³ Baten et al., 'Evolution', p. 6; Steckel, 'Stature', p. 1918.

³¹⁴ Engerman, 'The Standard of Living', p. 34.

³¹⁵ Anthony Reid, 'The Origins of Southeast Asian Poverty', in: W. E. Willmot (ed.) *Scholarship and Society in Southeast Asia* (Christchurch, 1979) pp. 33-49.

³¹⁶ Howard Bodenhorn, Timothy W. Guinnane, and Thomas A. Mroz, 'Sample-selection Bias in the Historical Heights Literature', *Mimeo* (2012).

³¹⁷ William Lavelly and R. Bin Wong, 'Revising the Malthusian Narrative: The Comparative Study of Population Dynamics in the Late Imperial China', *Journal of Asian Studies* 57 (1998) pp. 714-648.

³¹⁸ The big exception is of course England, for which E. A. Wrigley and R. S. Schofield have conducted meticulous research: E. A. Wrigley and R. S. Schofield, *The Population History of England 1541-1871. A Reconstruction* (London: Edward Arnold, 1981).

standard of living – education, income and health – in a single index.³¹⁹ Education is dependent on both enrolment and literacy rates; income is measured by log GDP per capita; and health is measured by life expectancy at birth. The three components are given equal weight and have a value between zero and one, as does HDI, which makes international comparisons possible. The obvious advantage of the HDI is that it captures three important welfare indicators in one number that can be easily compared across countries. One shortcoming is that the HDI does not provide any indication about the distribution of welfare within countries. Furthermore, the equal weights for the three components have attracted criticism and can be considered arbitrary.³²⁰

A general problem of these methods for historical studies is that they are dependent on data that is unavailable for the period before 1800 and a narrow focus on one of the elements of the standard of living. Compared with the methods above, focussing on wages and prices has a number of advantages. The data are available for a much wider range of countries going much further back in time. The real wage can be calculated at the individual household level for ordinary workers. Furthermore, wage and price data can contain information about all three elements of the standard of living (income, health and education).³²¹ At the same time, real wages as a method of measuring living standards have drawbacks that are discussed in chapter 4.

3.3. Calculating Real Wages

Many studies therefore rely on real wages – the purchasing power of an (often unskilled) labourer – as an indicator of the economic well-being of a large part of the population. After pioneering work by e.g. Thorold Rogers and Auguste Hanauer in the late nineteenth century,³²² important advances were made in the 1930s by members of the International Scientific Committee on Price History. These scholars have been compiling databases of wages and prices for European cities from the Middle Ages onwards and, as a result, the data on Europe are relatively complete. The early real wage studies showed that European real incomes declined between the fifteenth and the late eighteenth century and that only in the early twentieth century did (English) real wages surpass their late medieval levels.³²³ These studies suggested that there was

³¹⁹ Nicholas Crafts, ‘The Human Development Index 1870-1999: Some Revised Estimates’, *European Review of Economic History* 6 (2002) pp. 395-405.

³²⁰ Richard H. Steckel and Roderick Floud, ‘Introduction’, in: *ibid.* (eds.) *Health and Welfare during Industrialization* (Chicago: University of Chicago Press, 1997) pp. 1-16, there p. 12.

³²¹ The health aspect is addressed by standardizing consumption on the basis of kcal, while the educational aspect is covered by the wage differentials between skilled and unskilled workers.

³²² J. E. T. Rogers, *A History of Agriculture and Prices in England*. 7 vols. (Oxford: Clarendon Press: 1866-1892); A. C. Hanauer, *Etudes economiques sur l’Alsace, ancienne et moderne* (Strasbourg: Hagemann, Librairie. 1878).

³²³ E.g.: E. H. Phelps-Brown and S. V. Hopkins, ‘Seven Centuries of the Prices of Consumables, compared with Builders’ Wage-rates’, *Economica* 22 (1956) pp. 195-206.

no economic growth in early modern Europe, which was seemingly stuck in a Malthusian cycle until the Industrial Revolution.

In the case of Britain, workers' living standards during the Industrial Revolution became a particular subject of debate.³²⁴ While the participants in this debate have all used real wages as indicator of living standards, they have still come to very different conclusions. It thus became clear that (relatively small) differences in methodology can lead to significantly different conclusions. Most of these differences stem from dissimilarities in the consumer price indices (CPI), which require a basket of goods reflecting the actual consumption pattern of the workers. Calculating a CPI over time gives rise to index number problems as changes in relative price differences between complementary goods and the introduction of new goods (e.g. due to technological progress or international trade) can cause the overstatement or understatement of price increases. Contributors to the British standard of living debate have used different formulae to construct their indices (Laspeyres, Paasche, geometric etc.), employed different weights (and/or shifting weights) and used different price series or included different products in their consumption baskets.

The Laspeyres index tends to overstate inflation, as it does not take into account that consumers will substitute more expensive goods for less expensive ones, the Paasche index understates inflation because it does not reflect the reduction in consumer welfare due to substitution, while a geometric index allows consumption to vary with price. The Laspeyres index, in which the quantity of each good is specified, is preferred because the consumption basket can then be taken to represent subsistence level. For a Paasche Index one needs data on product quantities on a yearly basis, which is often unavailable. Allen has shown that the differences between the Laspeyres index and geometric indices are small.³²⁵

The introduction of new goods likewise influences the price index. William Nordhaus has demonstrated that in the case of lighting, traditional price indices (not taking into account new products as a result of technological change) dramatically overstate the true increase in prices.³²⁶ Gregory Clark did include new products in his CPI for England that indeed led to a lower price index and thus higher real wages

³²⁴ See e.g. M. W. Flinn, 'Trends in Real Wages, 1750-1850', *Economic History Review*, 27 (1974) pp. 395-413. P. H. Lindert and J. G. Williamson, 'English Workers' Living Standards During the Industrial Revolution: A New Look', *Economic History Review* 36 (1983) pp. 1-25; Charles F. Feinstein, 'Pessimism perpetuated: real wages and the standard of living in Britain during and after the Industrial Revolution', *Journal of Economic History* 58 (1998) pp. 625-58; Gregory Clark 'The condition of the working class in England, 1209-2004', *Journal of Political Economy* 11 (2005) pp. 1307-1340; and Robert C. Allen, 'Pessimism preserved: Real wages in the British Industrial Revolution', *Oxford University Department of Economics Working Paper* 314 (2007).

³²⁵ Allen, 'The Great Divergence'; *ibid.*, 'Pessimism preserved'. Feinstein also suggests that the Laspeyres index is the most suitable procedure for measuring long-term changes in living standards; 'Pessimism perpetuated', p. 634.

³²⁶ William D. Nordhaus, 'Do Real Output and Real Wage Measures Capture Reality? The History of Light Suggests Not', in: Robert J. Gordon and Timothy F. Bresnahan (eds.), *The Economics of New Goods* (Chicago: University of Chicago Press, 1997) pp. 29-66.

during the early Industrial Revolution when technological change was rapid.³²⁷ However, the introduction of new goods requires extremely detailed budget information.³²⁸ While this is now perhaps possible for England, such information is unavailable for most other countries in the world. This procedure is thus unfeasible for comparing historical living standards across the globe before the nineteenth century.

Even if one decides not to introduce new products into the price index, it has to be determined what products are included and what proportion each item takes up in the basket. This has differed substantially across various studies. For example, in the basket constructed by Clark the share of spending on carbohydrates is 27 percent,³²⁹ while, for the same country and time period, this share is 39 percent in the basket of Feinstein. Furthermore, Feinstein used three sets of quantity weights to ‘reflect changes in the pattern of consumption.’³³⁰ Again, these weights are often based on detailed household budget information, and such information is not abundantly available for most parts of the world.

Therefore, Allen proposed a consumer basket based on a standard amount of caloric and protein intake as well as some other basic commodities.³³¹ The ambitions of his methodology are twofold. First, to measure not only the development of wages over time (as most studies set out to do), but also to create an absolute benchmark, in the form of a ‘subsistence basket’, to find out if the workers could afford the (subsistence) expenditures of themselves and their families. In this way a kind of absolute ‘poverty line’ was introduced in the economic history literature, representing something like the contemporary World Bank Poverty Line (of \$1.25 per day).³³² By expressing annual wages in the quantity of subsistence baskets that could be bought, wages were turned into an absolute measure of welfare.

The second aim of the Allen-method is to use these ‘absolute’ real wages to make international and inter-temporal comparisons. Standardized baskets provide a minimum amount of calories per day mainly from the cheapest available carbohydrate in a specific region, e.g. rice in many parts of Asia and oats in north-western Europe. The diet also includes small quantities of meat or fish and butter or oil, and provides at least the recommended daily intake of protein. In addition, some non-food items such as cloth and fuel are included in the baskets.³³³ Substitutions are permitted between complementary products, which make it possible to allow for differences in national tastes, cuisines and climates. This approach of calculating comparative real wages is now widely accepted as a robust measure of welfare and has recently been

³²⁷ Clark, ‘The condition’.

³²⁸ Allen, ‘Pessimism Preserved’.

³²⁹ Clark, ‘The condition’.

³³⁰ Feinstein, ‘Pessimism perpetuated’, p. 634.

³³¹ Allen, ‘The great divergence’.

³³² Robert C. Allen, Tommy E. Murphy and Eric B. Schneider, ‘The Colonial Origins of the Divergence in the Americas: A Labor Market Approach’, *Journal of Economic History* 72 (2002) pp. 863-894.

³³³ Allen et al., ‘Wages, prices’, pp. 19-20.

employed for various regions across the globe in a range of studies. Table 3.1 gives an example of a standardized basket providing over 1940 kcal with wheat as the main staple (used for e.g. the Cape Colony).

Because of the relatively widespread availability of wage and price data and Allen's innovations, there has been a surge in comparative real wage studies over the past decade.³³⁴

TABLE 3.1: BAREBONES SUBSISTENCE BASKET AT THE CAPE.³³⁵

	Unit	Q per person per year	Nutrients per kg		Nutrients per day	
			Calories	Grams of Protein	Calories	Grams of Protein
Wheat	kg	179	3400	132	1667	65
Beans	kg	20	3383	213	185	12
Meat	kg	5	2500	200	34	3
Butter	kg	3	7268	7	60	0
Soap	kg	1.3				
Candles	kg	1.3				
Lamp oil	litre	1.3				
Cotton	m ²	3				
Fuel	MBTU	3				
Total					1946	86

Sources: based on Allen et al., 'Wages, prices'; also see: De Zwart, 'Real wages'.

3.4. Consumption Baskets

In order to maintain comparability, the baskets created by Allen et al. for China and Europe serve as a benchmark, but are adjusted for Bengal, the Cape, Ceylon and Java on the basis of evidence regarding differences in consumption patterns. Table 3.2 shows the different consumption baskets. In this section, some of the evidence available on differences in consumption patterns will be reviewed, and the delicate balance in the basket between an accurate reflection of the prevailing consumption pattern on the one hand, and comparability on the other, is discussed.

³³⁴ Allen, 'India', Allen et al., 'Wages, prices'; Allen et al., 'The Colonial Origins'; Leticia Arroyo Abad, Elwyn Davies and Jan Luiten van Zanden, 'Between Conquest and Independence: Real wages and demographic change in Spanish America, 1530-1820', *Explorations in Economic History* 49 (2012) pp. 149-166; Jean-Pascal Bassino and Debin Ma, 'Japanese Unskilled Wages in International Perspective, 1741-1913', *Research in Economic History* 23 (2006) pp. 229-248; Ewout Frankema and Marlous van Waijenburg, 'Structural Impediments to African Growth? New Evidence from Real Wages in British Africa, 1880-1965', *Journal of Economic History* 72 (2012) pp. 895-926;

³³⁵ For wheat, caloric values were taken for wheat flour from the USDA National Nutrient Database <http://ndb.nal.usda.gov>. Other caloric values taken from Allen et al. 'Wages, prices.'

The Cape basket is very similar to the baskets created for Europe. Consumption patterns are to a large extent determined by culture and environmental conditions. As the Cape was a society formed by VOC personnel and settlers from north-western European descent – mostly Dutch, English, German and French – it is likely that the consumption pattern of these settlers in the Cape Colony was more or less similar to the patterns in north-western Europe. Furthermore, the climate and geography of the Cape was not much different from Spain, and allowed the cultivation of crops also available in Europe: ‘the meat from livestock farming and vegetables from the Company’s gardens made possible the continuation of basic European food practices like the Dutch *hutsepot*’.³³⁶ The only difference is that wheat is the main staple at the Cape, while the English and Dutch baskets are based on oats and rye respectively.

TABLE 3.2: CONSUMER BASKET, SUBSISTENCE LIFE STYLE IN EUROPE, THE CAPE COLONY AND ASIA.

	Unit	Europe & Cape ³³⁷	China ³³⁸	India (Bengal) ³³⁹	Ceylon	Java
Main staple ³⁴⁰	kg	155-179	171-179	164-209	165 ³⁴¹	168
Beans/peas	kg	20	20	20	20	25
Meat/fish	kg	3	3	3		6 ³⁴²
Butter/oil/ghee	kg	3	3	3	5	
Sugar	kg			2	2	2
Soap	kg	1.3	1.3		1.3	1.3
Salt	kg					2
Linen/cotton	m	3	3	3	3	3
Candles	kg	1.3	1.3		1.3	2.6
Lamp oil	liter	1.3	1.3		1.3	
Fuel	mbtu	3	3			3

Sources: Allen, ‘India’; Allen et al., ‘Wages, prices’.

³³⁶ Stacey C. Jordan, ‘Coarse Earthenware at the Dutch Colonial Cape of Good Hope, South Africa: A History of Local Production and Typology of Products,’ *International Journal of Historical Archaeology* 4 (2000) pp. 113-143, there p. 141.

³³⁷ Allen et al, ‘Wages, prices and living standards’, 21: 176 kg. oats or 186 kg. rye for northwestern Europe, 179 kg. wheat for the Cape.

³³⁸ Ibid.: 171 kg rice in Suzhou and Canton; 179 kg sorghum in Beijing.

³³⁹ Allen, ‘India’: 164 kg rice/209 kg millet.

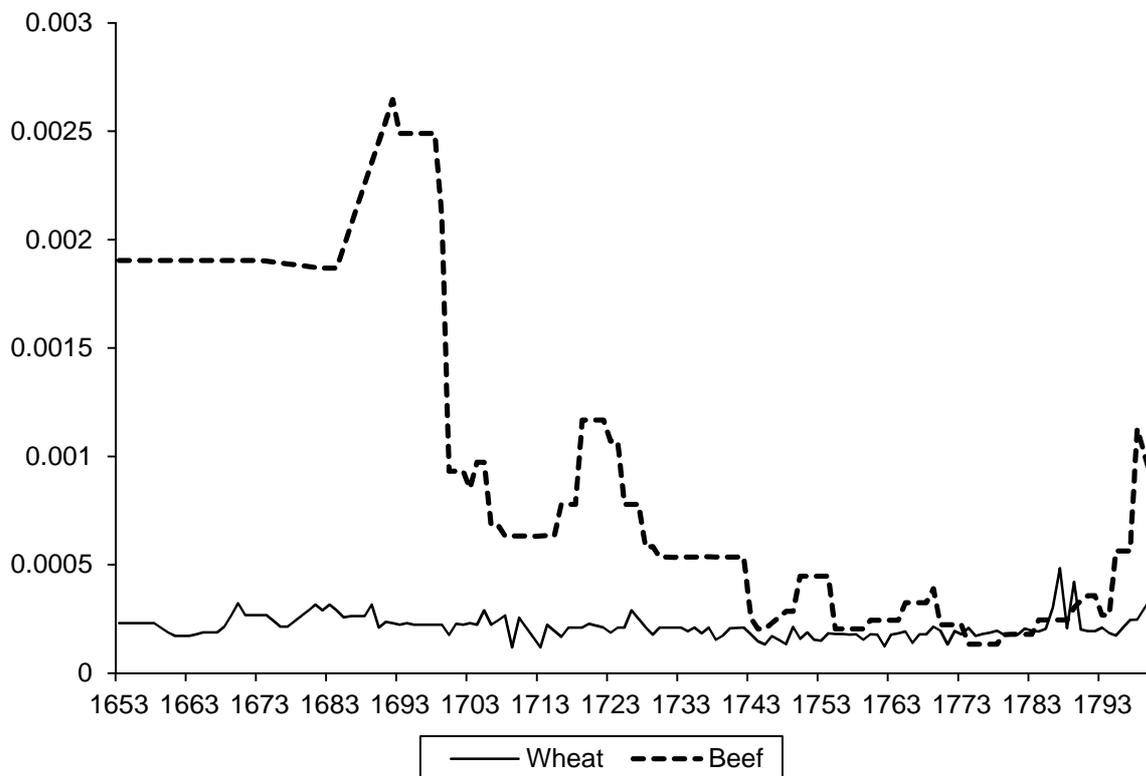
³⁴⁰ Europe: rye, wheat, oats; Cape: wheat; China: rice or sorghum; India, Ceylon and Java: rice.

³⁴¹ Whereas in previous work ‘paddy’ was used in the basket, as it was cheaper than rice and thus better reflects the barebones level of consumption (De Zwart, ‘Population, labour’). Yet, considering notations that paddy was used as fodder (VOC 2336, f. 444) this is changed to rice here (fed to slaves according to VOC 2336, f. 444), which was somewhat more expensive.

³⁴² Fish.

This consumption basket for the Cape differs from the one employed by Sophia and Stan du Plessis in their study on Cape living standards, as their basket contains much larger amounts of meat. They emphasize that commentators on the colonial diet at the Cape underlined the importance of meat in a generally rich diet.³⁴³ An example is the diet of Joachim von Dessin, a soldier (lowest ranking official) in VOC service, who arrived at the Cape in 1727. His inventory includes wheat and rice, a variety of beans, spices (mustard, cumin, pepper, tamarind), sugar and coffee, oil and lard, wines, soap, wood and candles, as well as pork and beef.³⁴⁴

FIGURE 3.1: COST PER KCAL IN GRAMS OF SILVER: WHEAT AND MEAT AT THE CAPE.



Sources: see text.³⁴⁵

Furthermore, they argue that ‘more persuasively from an economic perspective’³⁴⁶ the relative price of meat at the Cape encouraged meat consumption relative to bread. Thus in some years, depending on prices, their basket contains up to

³⁴³ G. Botha, *General history and social life of the Cape of Good Hope* (Cape Town: Struik, 1962).

³⁴⁴ Sophia du Plessis and Stan du Plessis, ‘Happy in the service of the Company: the purchasing power of VOC salaries at the Cape in the 18th century’, *Economic History of Developing Regions* 27 (2012) pp. 125-149, there p. 132; H. W. Claasens, *Die geskiedenis van boerekos, 1652-1806* (Pretoria: Protea Boekhuis, 2006) p. 118.

³⁴⁵ In 1676 and 1681 very low prices of meat were reported (VOC 4012 f. 426; VOC 4017 f. 425) of 5 and 3 cents per *pond* respectively, versus 30 cents in the surrounding years. It is therefore assumed that these are errors. For this comparison these numbers have been left out and missing values were linearly interpolated.

³⁴⁶ Du Plessis and Du Plessis, ‘Happy in the service’, p. 133.

100 kg. of meat per year.³⁴⁷ Using the price data that will be introduced below, the price per kcal can be calculated for wheat and meat at the Cape. Figure 3.1 shows that only during a few years, 1774/7 and 1786/7, meat is actually cheaper per kcal than wheat. For much of the remaining period it is still a luxury product. Besides, even if more meat may reflect consumption at the Cape more accurately, it limits the extent to which one can make international comparisons.³⁴⁸ Therefore, it seems reasonable to keep the amount of meat similar to the other baskets.

For India, much of the evidence points to a simple diet. As Allen noted ‘[f]rom contemporary accounts it becomes clear that the diet in most parts of India consisted mainly of rice, millets and pulses.’³⁴⁹ Francisco Pelsaert, VOC employee at Agra and Surat in the early seventeenth century, says that common workmen:

know little of the taste of meat. For their monotonous daily food they have nothing but a little *khichri*,³⁵⁰ made of ‘green pulse’³⁵¹ mixed with rice, which is cooked with water over a little fire until the moisture is evaporated, and eaten hot with butter in the evening; in the day time they munch a little parched pulse or other grain, which they say suffices for their lean stomachs.³⁵²

In Bengal, rice was the major agricultural crop and thus formed the staple diet of the masses,³⁵³ and wheat was not a common part of the diet, even in wheat producing regions. Fish was relatively popular in coastal regions like Bengal, but ‘fish, too, was not taken either very often or in large quantities, especially by those who lived inland or far from rivers.’³⁵⁴ Furthermore, ‘there was a taboo on beef and pigmeat which extended to hens, eggs and most of the domesticated animals’.³⁵⁵ According to Satish Chandra, butter (*ghi*) and sugar, on the other hand, were a part of the common diet for many, while spices were too expensive.³⁵⁶ From this evidence, it seems that the basket created by Allen for India as a whole,³⁵⁷ may to some extent reflect the actual diet of the workmen in early modern Bengal (see table 3.2). This very basic basket may have even been too luxurious for the very poor, whose food is described as ‘boiled

³⁴⁷ Ibid., p. 134.

³⁴⁸ Their basket contains between 26 and 100 kg. meat.

³⁴⁹ Allen, ‘India’.

³⁵⁰ In the text: *kitchery*; W. H. Moreland and P. Geyl (transl.), *Jahangir's India. The Remonstrantie of Francisco Pelsaert* (Cambridge: W. Heffer & Sons Ltd., 1925) pp. 60-1.

³⁵¹ In the original: ‘groene ertjens’, which could be translated as green peas. Moreland and Geyl note that probably *moth* is meant here, the cheapest pulse.

³⁵² Moreland and Geyl, *Jahangir's India*.

³⁵³ Satish Chandra, ‘Standard of Living’, in: Tapan Raychaudhuri and Irfan Habib (eds.) *The Cambridge Economic History of India. Volume I: c. 1200 – c. 1750* (Cambridge: Cambridge University Press, 1982) pp. 458-477, there p. 461.

³⁵⁴ Chandra, ‘Standard of Living’, p. 462.

³⁵⁵ Ibid.

³⁵⁶ Ibid.

³⁵⁷ Allen, ‘India in the Great Divergence’.

rice, nichany, millet and grass roots', while in Bihar they ate 'pea-like grain'.³⁵⁸ Rajat Datta quotes a budget for a common artisan in Rangpur (Bengal) c. 1807 that is made up for over 80 percent of rice.³⁵⁹

Like in India, rice is the main food staple consumed in Ceylon. On the basis of observations by the European travellers in the seventeenth century, as well as data constraints, a few alterations to the Indian basket were made. Meat and fish are left out of the Ceylon basket, both due to a lack of prices and because Robert Knox, an English prisoner in Kandy in the seventeenth century, wrote:

Beef here may not be eaten; it is abominable: Flesh and Fish is somewhat scarce. And that little of it they have, they had rather sell to get money to keep, then eat it themselves: neither is there any but outlandish men, that will buy any of them.³⁶⁰

The meat and fish have been replaced by extra kilograms of butter and rice, as the Dutch seventeenth century traveller and reverend Philippus Baldaeus Ceylon noted that the Ceylonese 'have a taste for butter'.³⁶¹ Sugar is included in the basket, because there is evidence on the use of *jaggory* (palm sugar) in a number of dishes.³⁶² In addition, whereas soap, candles and lamp oil were omitted from the Indian basket due to a lack of price series, these have been put back in the Ceylonese basket for three reasons, because: (a) these prices were available; (b) it makes the CPI dependent on the movement of a greater variety of prices, thereby enhancing its quality; and (c) there are no reasons to assume that while people living in the rest of the world were consuming 1.3 kgs./liters soap, candles and lamp oil per year, people living in Ceylon were not.³⁶³ Finally, unlike the European and Chinese baskets, firewood/fuel has been left out of the basket. Again, there are three arguments for this, because: (a) of a the lack of price series; (b) the fuel used for heating was minimal, due to the warm climate; and (c) Knox describes that it was one of the women's tasks to gather firewood in the woods (Ceylon was densely forested),³⁶⁴ implying that firewood was not bought in the market.

³⁵⁸ Chandra, 'Standard of Living', p. 462; Radhakamal Mukerjee, *The Economic History of India* (London: Longmans, 1945) p. 57.

³⁵⁹ Rajat Datta, *Society, economy and the market: commercialization in rural Bengal, c. 1760-1800* (Delhi: Manohar, 2000) p. 193.

³⁶⁰ Robert Knox, 'An Historical Relation of Ceylon', *Ceylon Historical Journal* 6 (1956-57) p. 138 [Original published in 1681].

³⁶¹ Philippus Baldaeus, *Naauwkeurige beschryvinge van Malabar en Choromandel, der zelve aangrenzende ryken, en het machtige eyland Ceylon* (Amsterdam, 1672) p. 177.

³⁶² Dewasiri, *The adaptable peasant*, p. 87; Knox, *Historical relation*, p. 141. The price evidence is, however, on cane sugar, which serves as a proxy.

³⁶³ Knox describes the Sinhalese habit of washing both before and after meals: *Historical relation*, p. 140.

³⁶⁴ Knox, *Historical relation*, p. 147.

Rice was also the main staple and dominant source of calories in Java.³⁶⁵ Anthony Reid cites numerous European commentators who observed that Southeast Asians ate very little meat. Instead of meat, it is therefore more likely that greater amounts of fish were consumed.³⁶⁶ Luc Nagtegaal notes that the majority of animal proteins in the Javanese diet stemmed from fish.³⁶⁷ While fish may have been harder to obtain inland, Reid suggests it was an important article of internal commerce: cities in Java were supplied with dried fish by Banjarmasin,³⁶⁸ for example. A sixteenth century commentator noted regarding the Visayan Islands in the Philippines:

The inhabitants of the mountains cannot live without the fish, salt, and other articles of food ... of other districts; nor, on the other hand, can those of the coast live without the rice and cotton of the mountaineers.³⁶⁹

While the sources cited by Reid suggest ‘a relative paucity of vegetables’, this was compensated by the abundance of fruits. No price data on fruits were available to me, but it can be kept in mind that Javanese may have augmented their basket with fruits.³⁷⁰ Similarly, Nagtegaal notes the consumption of maize (*jagung*), but it was not traded and thus does not turn up in the VOC sources.³⁷¹ In addition, due to the absence of price series, the butter or olive oil, included in the other baskets, was replaced with some extra sugar and beans. Sugar was widely consumed while beans (*kacang*) also seem to have been widely produced (and thus consumed for additional protein).³⁷² Finally, some additional salt was included in the basket which fits both the notes by early modern observers about the great importance of salt as an article of everyday consumption in Southeast Asia,³⁷³ as well as studies on nineteenth-century living standards.³⁷⁴

Two things stand out from this this discussion. First, the evidence on consumption patterns in these areas suggests a relatively simple diet (with the possible

³⁶⁵ Peter Boomgaard, *Children of the colonial state. Population growth and economic development in Java 1795-1880* (Amsterdam: Free University Press, 1989) pp. 222-228; Anthony Reid, *Southeast Asia in the age of commerce 1450-1680. Vol. 1: The lands below the winds* (New Haven and London 1988) p. 28; Nagtegaal, *Rijden*, p. 35.

³⁶⁶ Due to the lower caloric values of fish vis-à-vis meat, the amount is doubled to 6 kg. per year.

³⁶⁷ Nagtegaal, *Rijden*, p. 39.

³⁶⁸ Reid, *Southeast Asia I*, p. 29.

³⁶⁹ Michael de Loarca, ‘Relation of the Filipinas Islands’ (1581), cited in Reid, *Southeast Asia I*, p. 28.

³⁷⁰ But so have the Europeans studied in the other real wage studies: e.g. Allen, ‘The Great Divergence’.

³⁷¹ Nagtegaal, *Rijden*, p. 35.

³⁷² Nagtegaal, *Rijden*, p. 35; he also notes the widespread consumption of maize (*jagung*), but as there was no trade in maize, it is rarely mentioned in the VOC sources.

³⁷³ Gerrit Knaap and Luc Nagtegaal, ‘A Forgotten Trade: Salt in Southeast Asia 1670-1813’, in: Roderich Ptak and Dietmar Rothermund (eds.) *Emporia, commodities and entrepreneurs in Asian maritime trade, c. 1400-1750* (Stuttgart: Franz Steiner, 1991) pp. 127-158, there pp. 127-8; Reid, *Southeast Asia I*, pp. 28-9; Peter Carey, *The power of prophecy: Prince Dipanagara and the end of the old order in Java, 1785-1855* (Leiden: KITLV Press, 2007) pp. 44-45.

³⁷⁴ Van Zanden, ‘Rich and poor’. While the consumption of salt may have been higher, most coastal people may have been able to procure salt themselves.

exception of the Cape, where more meat may have been consumed). Second, it highlights the tensions between the aim to calculate real wages in relation to a poverty line, and the ambition to calculate real wages that are comparable over time and space. For the first aim, it is important to include all the available information on consumption patterns, and how these changed over time in one particular society. Doing so would hurt the international comparison, especially since information on such details are lacking for many pre-modern societies. International and inter-temporal comparison requires a certain simplification and standardization of the baskets, as otherwise the figures that come out of the comparison would reflect different styles of living.³⁷⁵ In this study, the simplified basket is employed as a result of data constraints (there simply are no detailed data on household consumption, or enough price data to calculate the costs of more complicated consumption baskets), and because the international comparisons are at the cornerstone of this study.

3.5. Price data

Having defined consumption baskets, price data of the products included in the basket are needed to calculate the cost of the baskets across time. In this section, a time series of the price of the consumption basket over time will be computed, on the basis of new primary material. First, the sources and the problems involved in this exercise are discussed, before a comparative analysis of price levels can be made.

3.5.1. Sources

As noted in the introduction, the VOC accounts are a rich source of prices in the areas studied. As discussed in chapter 2, the archives of the VOC Bookkeeper-General in Batavia constitute a major source of prices.³⁷⁶ In addition, three types of documents containing price data are part of the VOC-OBP that are organized per Company-establishment.³⁷⁷ First are the expense bills or specifications that state the costs ships made to restock supplies for ship sailing to the Indies (when at the Cape of Good Hope), or returning to the Dutch Republic. Second, there are account books that contain statements on expenditures of a VOC establishment in a certain year as well as describe the goods and their value stored in the warehouse. A third source of prices are the so-called *rendementen*, which are lists presenting evidence on the profits that were made on the sale of goods.³⁷⁸

³⁷⁵ As e.g. real wages based on a more luxurious basket will lead to a lower standard of living compared with real wages calculated with simpler baskets.

³⁷⁶ NA BGB: Inv. no. 1.04.18.02. Ref. no. 10751-10801.

³⁷⁷ NA VOC: 1.04.02. *Overgekomen Brieven en Papieren* (OBP). See introduction.

³⁷⁸ For Ceylon, Christiaan van Bochove already collected data from the *rendementen*: 'Prices in Sri Lanka and Southern India during the pre-Industrial period': <http://www.iisg.nl/hpw/voc-srilanka-southernindia.pdf>

In addition, data could also be found in the *Scheepssoldijboeken*, or Ship's Pay-Ledgers, which form a separate section of the VOC archives.³⁷⁹ For each ship sailing to the East a pay-ledger was created which bore the name of the ship.³⁸⁰ It is essentially staff administration as it contains a list of all the personnel on board the ship, their rank, wages, possible debts etc. However, in some cases, lists on the expenditure replenishing supplies at Batavia or Cape Town (and in a few cases for Bengal and Canton) for the return trip to Europe were bound in the back of the volume. These are essentially the same as the expense bills stated above, but bound in a different source.

Regarding Bengal, prices were found in lists presenting the prices for which some necessities could be obtained in Chinsurah,³⁸¹ which are part of the series 'Proceedings of the Political Council' in Bengal (in turn part of the VOC-OBP).³⁸² These data supplement the price series constructed for Bengal by Allen and Roman Studer.³⁸³ Additional price data for the Cape were collected from the inventories of the Orphan Chamber at the Cape of Good Hope (MOOC 8 and 10). This institution registered all deaths and wills, and inventoried and acted as executor in various cases.³⁸⁴ When no relatives could be found, the goods and property were sold by public auction. These inventories have been made available online via the TEPC and TANAP project.³⁸⁵ Some prices for wheat, cotton, soap and butter were taken from this source. Furthermore a few prices for the later eighteenth century were found in the Western Cape Archives in Cape Town.³⁸⁶ Finally, some price data for the Cape and Java could also be obtained from various secondary literature.³⁸⁷

3.5.2. Issues

Creating historical price time series from these sources is fraught with difficulties. The price data available for earlier time periods are often prices paid for by important institutions, which raises issues of reliability and representativeness. Grain prices are

³⁷⁹ *Scheepssoldijboeken*: VOC 5269-6842.

³⁸⁰ Remco Raben and H. Spijkerman (eds.), *De archieven van de Verenigde Oostindische Compagnie / The Archives of the Dutch East India Company* (The Hague: SDU, 1992) pp. 61-62.

³⁸¹ Refers to the main establishment of the VOC in Bengal; also often named Hooghly-Chinsurah, or just Hooghly. Since Hooghly is also the name of the river, I consistently refer to Chinsurah in this dissertation.

³⁸² 'Notitie waar voor d'ondervolgende benodigtheden inde dispens d'eerst komende ses maanden kunnen geleverd werden': VOC 2872 f. 180; 3037 f. 2641; 3168 f. 487; 3343 f. 20; 3371 ff. 318-9; ff. 551-2; 3427 ff. 572-573; 3452 f. 796; 3481 f. 203; 3481 ff. 16-7; 3510 f. 464; 3538 f. 189; f. 456; 3565 f. 308; 3660 ff. 241-2; 3716 f. 145; f. 636; 3747 f. 395, f. 615; 3529 f. 25; 3830 f. 434; 3919 f. 683; 3953 f. 448.

³⁸³ Available at <http://gpih.ucdavis.edu>.

³⁸⁴ Fourie, 'The remarkable'.

³⁸⁵ Inventories of the Orphan Chamber: <http://databases.tanap.net/mooc/>

³⁸⁶ Western Cape Archives: Council of Policy (C): 2739 and 2734.

³⁸⁷ The Cape: A. J. du Plessis, *Die geskiedenis van die graankultuur in Suid-Afrika, 1652-1752* (Cape Town, 1933); Van Duin and Ross, 'The economy', Du Plessis and Du Plessis, 'Happy in the service'; I thank Sophia and Stan du Plessis for making their price data available to me. Java: Van Niel, *Java's Northeast Coast*; Nagtegaal, *Rijden*.

often wholesale, while the prices of other products, such as soap and textiles, may be fixed by long-term contracts. Prices of raw materials are sometimes used if those for the finished product are unavailable: e.g. the price of tallow as a proxy for candles.³⁸⁸ Critics of institutional prices have suggested that a divergence in the movement of wholesale and retail prices may have taken place: ‘for example, the costs of transport and distribution might move differently from those of commodities, local prices might deviate from those set in national markets and shopkeepers might attempt to even out the larger fluctuations in wholesale prices’.³⁸⁹ Through a comparison of various English wholesale, contract and retail prices between 1780 and 1880, Feinstein shows that there is no significant divergence in the long-term trend or short run fluctuations between these series. It is unclear to what extent this also applies to other periods and regions. However, even if consumer retail prices are unavailable it is ‘important to see what story the institutional prices tell, for they are the only game in town’.³⁹⁰

In other studies, the difference between wholesale and retail prices is often resolved by employing constant mark-ups based on a number of observations for retail prices. The issue requires some additional attention in this study, as the prices taken from the VOC administration are mostly wholesale prices paid for by a large trading organization that also wielded considerable political power. For Bengal and Ceylon, the problems are limited as we can rely on the prices gathered by Allen and Studer for Bengal and the sales prices from the *rendementen* for Ceylon. In the cases of Java and the Cape Colony, however, I had to rely to a greater extent on VOC purchasing prices.

As principal buyer of agricultural produce at the Cape, the VOC fixed prices of wheat by longer term contracts. According to Robert Ross, ‘the free market price in Cape Town did not drop much below the VOC’s figure even in years of abundant harvests, but could rise well above it in years of scarcity, despite the best efforts of the VOC and the Cape Town *Burgerraad* (which in this represented the consumers) to hold it steady’.³⁹¹ Bearing in mind its role as a refreshment station for the VOC ships sailing to and from the East Indies, and considering the farmers’ complaints regarding the low prices obtained for their products,³⁹² we would expect a downward bias in the VOC prices at the Cape.

Comparing official VOC prices as obtained from the *Scheepssoldijboeken* and expense bills with those from other sources (e.g. the MOOC auctions) in figure 3.2, it seems the ‘free market’ price was often lower than the official price. Furthermore, a

³⁸⁸ Feinstein, ‘Pessimism perpetuated’, 636.

³⁸⁹ Charles Feinstein, ‘Changes in nominal wages, the cost of living and real wages in the United Kingdom over two centuries, 1780-1990’, in: Peter Scholliers and Vera Zamagni (eds.) *Labour’s Reward. Real wages and economic change in 19th and 20th century Europe* (Aldershot: Edward Elgar, 1995) p. 10.

³⁹⁰ Allen, ‘The Great Divergence’, p. 418.

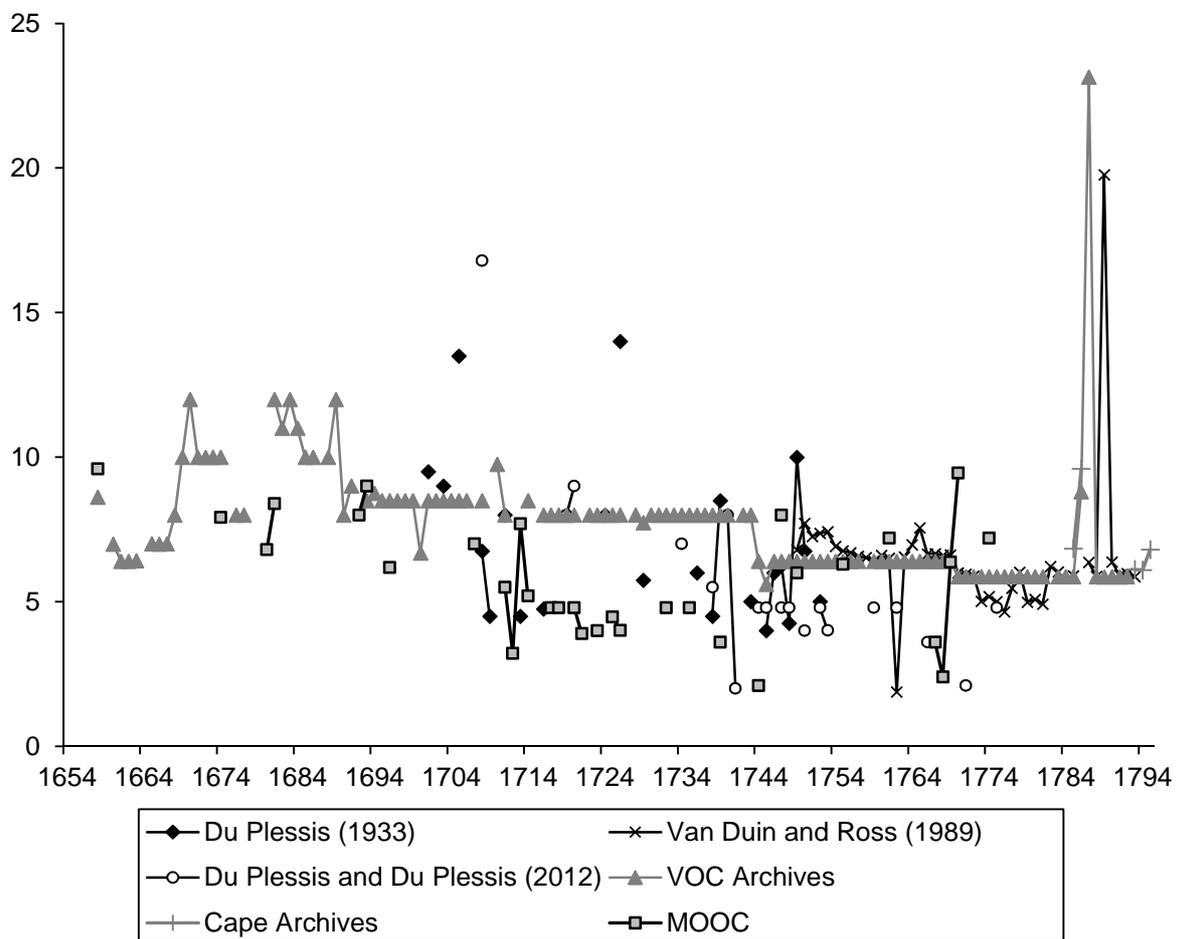
³⁹¹ Robert Ross, ‘The Cape’, p. 247.

³⁹² Johan Fourie, *An Inquiry into the Nature, Causes and Distribution of Wealth in the Cape Colony, 1652-1795* (unpublished PhD thesis, Utrecht University, 2012) pp. 80-81.

comparison of Cape prices with those in the other cases and in Amsterdam, shows that they were on the same (high) level as in Amsterdam during the seventeenth and early eighteenth centuries (see figure 3.7 below). This evidence casts some doubts on the legitimacy of the Cape farmers' complaints.³⁹³ As Van Duin and Ross already noted 'it has been too commonly assumed that the farmers' own complaints on their poverty and on the absence of markets reflected economic reality'.³⁹⁴

Thus, when creating the CPI for the Cape, no mark-ups were employed on VOC prices. Instead, I have taken the arithmetic mean of different notations, as it is unclear whether Cape consumers were always able to purchase their wheat at auctions, which were held at the estates of the deceased in the countryside.³⁹⁵

FIGURE 3.2: WHEAT PRICES IN CAPE TOWN, GUILDERS PER MUID.



Sources: see text.

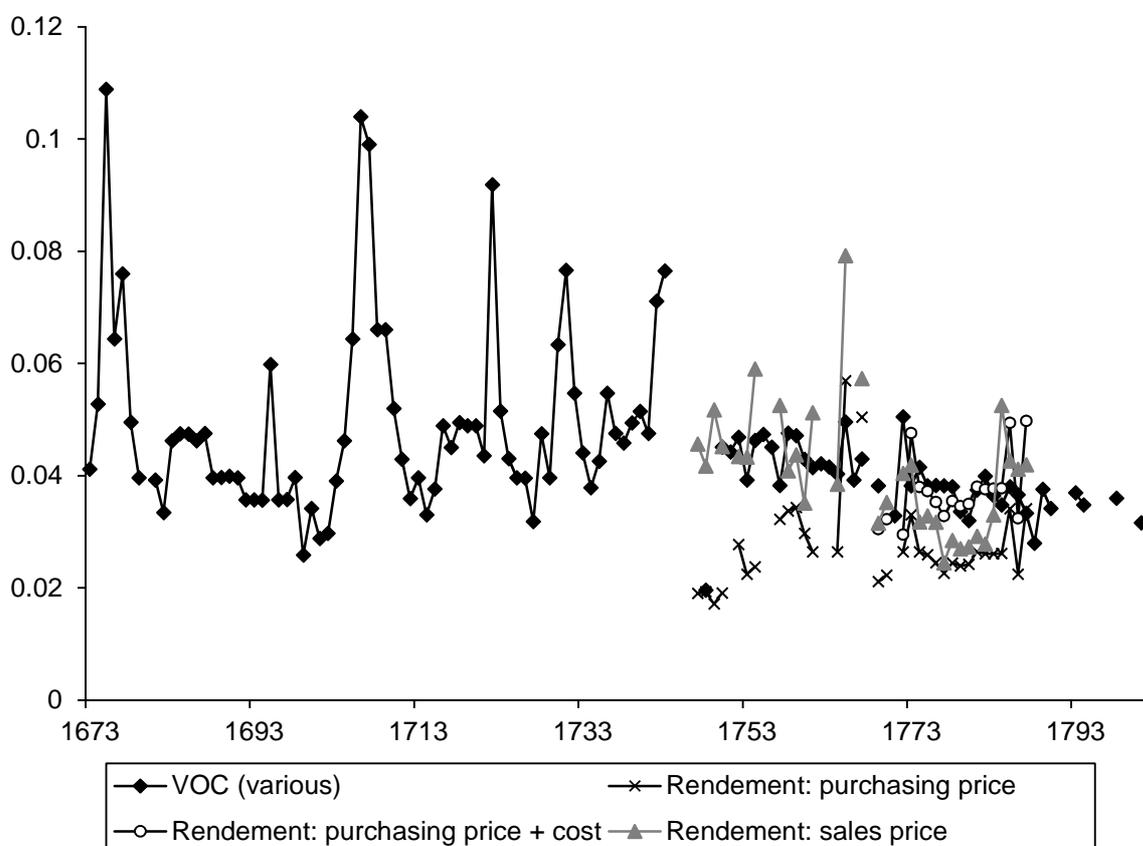
³⁹³ In fact, it seems that the Cape farmers were relatively well off: see Fourie, *An Inquiry*, and Fourie, 'The remarkable', and Johan Fourie and J. Uys, 'Luxury product consumption in eighteenth-century Cape Colony households', *Low Countries Journal of Social and Economic History* 9 (2012) pp. 29-60. This also suggests that one should be cautious with the interpretation of qualitative sources; statements of contemporaries have obvious biases.

³⁹⁴ Van Duin and Ross, 'The economy'.

³⁹⁵ Taking the average also means that there will now appear to two smaller crises in wheat farming, rather than one big one, as the sources (VOC on the one hand, and Van Duin and Ross on the other) date the increase in wheat prices differently.

In the case of Java, the Company could obtain shipments of rice and other products at payments below the market price.³⁹⁶ Especially since the Company consolidated its power over Java's Northeast Coast (the main supplier of rice to Batavia) in the 1740s and 1750s, one might fear that the VOC would be able to procure greater quantities of rice at a lower cost.³⁹⁷ Fortunately, the *rendementen* (returns) for Batavia for the period 1747-1787 contain data on purchasing and sales prices, while those between 1769 and 1787 even show the costs on transport, storing, personnel and risk.

FIGURE 3.3: RICE PRICES IN BATAVIA, GUILDER PER KG., 1673-1801..



Sources: see text.

Figure 3.3 plots these prices against the prices of rice found in the other VOC documents. Interestingly, if costs are taken into account, the VOC was mostly making a loss on its rice sales in Batavia. This suggests that the VOC was primarily interested in feeding its workers in Batavia, while profits were to be made with the sale of other

³⁹⁶ Robert van Niel, 'Economic and population changes in Java, 1750-1850', in: A. Hayami and Y. Tsubouchi (eds.) *Economic and demographic development in rice producing societies: some aspects of east Asian economic history, 1500-1900* (Leuven: 1990) pp. 291-315, there p. 294.

³⁹⁷ Jacobs, *Merchant in Asia*, p. 244.

crops.³⁹⁸ The figure shows that the prices from the other VOC sources more closely resemble the sales price from the *rendementen*, than the purchasing price. These data thus confirm Van Niel's observation that 'the private rice market, however, came increasingly to operate outside Company control and was mainly in the hands of wealthy Chinese and Europeans'.³⁹⁹ This also corroborates Nagtegaal's impression that 'the prices paid by the VOC did not deviate drastically from the general market prices as they prevailed for others'.⁴⁰⁰ Furthermore, the amounts of rice contracted seem to have been generally less than 10 percent of local production.⁴⁰¹ While Van Niel notes that the price of rice increased over the eighteenth century,⁴⁰² the newly collected VOC data suggest otherwise.⁴⁰³ Therefore no mark-ups on rice are employed for the prices from the period before 1747, as this would unfairly depress living standards. At the same time, the evidence from the *rendementen* did suggest minor mark-ups on salt, sugar and textiles (see appendix A4.5).

In addition, these patterns make sense in the context of other information we have on the Javanese economic history. The peaks in prices in the late seventeenth and early eighteenth century coincide with periods of warfare.⁴⁰⁴ After 1755 a long period of peace seems to have allowed the expansion of agricultural production,⁴⁰⁵ which is also suggested by evidence on trade expansion. Maddison finds an increased per capita export production between 1700 and 1780.⁴⁰⁶ That this did not occur at the cost of reduced food production is suggested by the fact that the total value of goods (in guilders, at VOC purchasing prices) and total amounts of rice shipped from Semarang (on Java's Northeast Coast) to Batavia increased over the eighteenth century (also when accounting for population growth).⁴⁰⁷ While we only have evidence on VOC trade, Gerrit Knaap has shown that, in contrast to suggestions by e.g. Reid, the role of Javanese merchants remained substantial up until the later eighteenth century,

³⁹⁸ Van Niel, *Java's Northeast Coast*, p. 123.

³⁹⁹ Van Niel, *Java's Northeast Coast*, p. 128.

⁴⁰⁰ Nagtegaal, *Rijden*, p. 176. Own translation of: 'mijn indruk is dat doorgaans de prijzen die de VOC betaalde niet sterk afweken van de algemene marktprijzen zoals die ook voor anderen golden'.

⁴⁰¹ Van Niel, 'Economic and population change', p. 297.

⁴⁰² Van Niel, *Java's Northeast Coast*, pp. 127-8.

⁴⁰³ In fact, his own data (Van Niel, *Java's Northeast Coast*, appendix 13) do not point to an increase in prices either.

⁴⁰⁴ Nagtegaal, *Rijden*, pp. 176-7.

⁴⁰⁵ Peter Carey, 'Waiting for the "Just King": The Agrarian World of South-Central Java from Giyanti (1755) to the Java War (1825-1830)', *Modern Asian Studies* 20 (1986), pp. 59-137, there pp. 89-91; Alberto Feenstra, 'Dutch Coins for Asian Growth. VOC-Duiten to Assess Java's Deep Monetisation and Economic Growth, 1724-1800', *Low Countries Journal of Social and Economic History* (forthcoming 2014); Jacobs, *Merchant in Asia*, p. 241; Victor Lieberman, *Strange Parallels: Southeast Asia in Global Context, c. 800-1830* (Cambridge: Cambridge U. P., 2009) pp. 870-1; Merle Ricklefs, 'Some statistical evidence on Javanese social, economic and demographic history in the later seventeenth and eighteenth centuries', *Modern Asian Studies* 20 (1986) pp. 1-32, there p. 30; *ibid.*, *A History of Modern Indonesia since c. 1200* (Stanford CA: Stanford University Press, 2008) p. 121.

⁴⁰⁶ Angus Maddison, 'Dutch Income in and from Indonesia 1700-1938', *Modern Asian Studies* 23 (1989) pp. 645-670.

⁴⁰⁷ Van Niel, *Java's Northeast Coast*, p. 131; Nagtegaal, *Rijden*; De Zwart and Van Zanden, 'Labour, wages'.

although they were clearly surpassed in importance by the VOC and the Chinese.⁴⁰⁸ While the VOC may have dominated long-distance trade, Javanese traders specialized in local and interinsular connections. In recent work, Knaap estimates that in the port of Semarang (the VOC capital on Java's Northeast Coast) VOC trade represented only 6 percent of the total trade in the 1770s.⁴⁰⁹ Finally, various colonial officials have suggested an increase in production and consumption in Java in the later eighteenth century.⁴¹⁰

It can be concluded that while these data are perhaps not ideal, they do not seem to be more problematic than e.g. those for seventeenth-century England, where, according to Christopher Hill, a man lived:

in a house built with monopoly bricks, with windows [...] of monopoly glass; heated by monopoly coal [...], burning in a grate made of monopoly iron. He washed himself in monopoly soap, his clothes in monopoly starch. He dressed in monopoly lace, monopoly linen, monopoly leather, monopoly gold thread... His clothes were held up by monopoly belts, monopoly buttons, monopoly pins. They were dyed with monopoly dyes. He ate monopoly butter, monopoly currents, monopoly red herrings, monopoly salmon, and monopoly lobsters. His food was seasoned with monopoly salt, monopoly pepper, monopoly vinegar. He wrote with monopoly pens, on monopoly writing paper; read (through monopoly spectacles, by the light of monopoly candles) monopoly printed books.⁴¹¹

It can thus be argued that price developments as unearthed from the VOC archives in this chapter can be meaningfully compared with data from other parts of the world.

3.5.3. Regional price variation

One of the assumptions underlying the real wage methodology as discussed in the previous sections is that the real wage in the capital or another major city can to some extent be seen as representative for welfare in the wider region or even the entire country.⁴¹² Critics may suggest that price developments in the capital are

⁴⁰⁸ Gerrit Knaap, 'Shipping and trade in Java, c. 1775; A quantitative analysis', *Modern Asian Studies* 33 (1999) pp. 405-420.

⁴⁰⁹ Gerrit Knaap, 'Semarang. A colonial provincial capital and port city in Java, circa 1775', in: U. Bosma and T. Webster (eds.), *Commodities, Ports and Asian Maritime Trade, c. 1750-1950* (Palgrave/Macmillan forthcoming).

⁴¹⁰ Waterloo to Engelhard (1804): 'one only has to direct one's eyes to those lands which [now] produce rice and which just twenty years ago were still waste and uncultivated' (cited in: Carey, *Power and prophecy*, p. 35), Engelhard to High Government Batavia: 'rice consumption in everyone's household is greater than formerly. [...] the condition of the Javanese is very different from 50 to 60 years ago when they lived in ignorance and were depressed and suppressed by the continual wars' (cited in: Van Niel, *Java's Northeast Coast*, p. 131) and Crawford (1812): 'a traveler could now pass a hundred miles in Java without encountering an uncultivated spot' (cited in: Carey, 'Waiting for the "Just"', p. 91).

⁴¹¹ Christopher Hill, *The Century of Revolution, 1603-1714* (New York: W. W. Norton, 1966) p. 32.

⁴¹² Allen et al. 'Wages, prices'; Arroyo Abad et al., 'Between conquest'.

unrepresentative and that generalizations cannot be made on the basis of such data. However, regarding the English workers' standard of living debate, Feinstein suggested that London price series 'accurately reflect national movements in prices'.⁴¹³ While regional commodity markets may have been relatively well-integrated in nineteenth-century England, this need not be the case for the eighteenth-century territories examined here. This section reviews some of the evidence regarding the regional variation in prices. The focus is again on the main staple crops as the data were generally most abundant for these and the effects on living standards the strongest. In section 3.6 more will be said about price developments of the other products.

In the early modern Cape Colony, Cape Town was the major town, the only port and the main market. Large wine and wheat farms dominated the area around Cape Town, while further into the interior pastoral livestock farmers occupied an ever expanding territory. Figure 3.2 above may suggest that prices in the countryside were somewhat lower than in Cape Town. However there is no additional information on prices in e.g. Stellenbosch or Franschhoek.

For the other regions under discussion, information is somewhat more abundant (even if still scarce). For Bengal, the issue of regional price variation has been analysed by Roman Studer.⁴¹⁴ According to his study, local rice markets in India in the period 1750-1830 were fairly well integrated (correlation coefficient 0.91): 'neighbouring villages or cities less than 35 km apart clearly exhibit a common price regime'.⁴¹⁵ However, the correlation is much weaker (0.46) between prices in markets that were between 35 and 70 km distance from each other. For markets over 70 km from each other the relationship between markets becomes very weak, while beyond a distance of 300 km there is no relationship between prices discernible. Rajat Datta shows price series for the neighbouring Bengali districts of Burdwan and Birbhum between 1784 and 1813, and claims that the synchronicity between these prices is a clear indication of market integration.⁴¹⁶ At the same time, Datta also shows a few observations of price differentials between town and countryside in Bengal. While these observations are very erratic, it seems that prices in town are on average 46 percent higher.⁴¹⁷ However, since we also look at urban wages, these prices are more suitable to calculate real wages for Bengal.

⁴¹³ Feinstein, 'Pessimism perpetuated', p. 636. Supported by Nicholas Crafts, 'Regional price variations in England in 1843: an aspect of the standard-of-living debate', *Explorations in Economic History* 19 (1982) pp. 51-70.

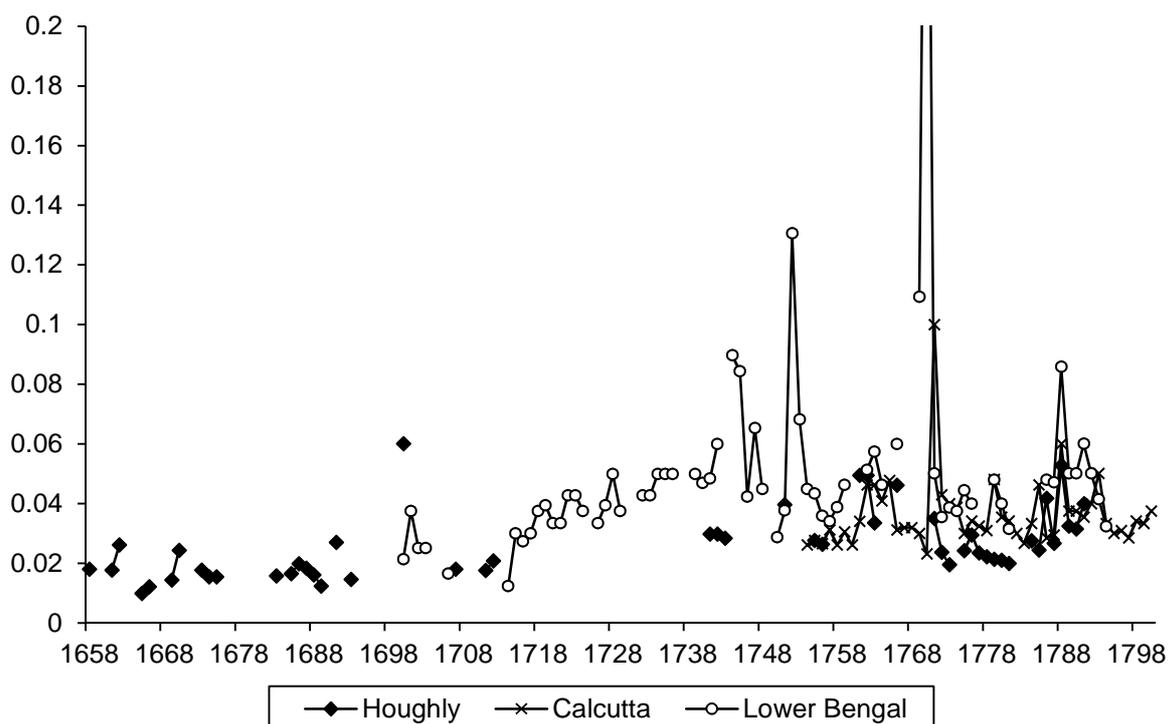
⁴¹⁴ Studer, 'India and the Great Divergence'.

⁴¹⁵ Studer, 'India and the Great Divergence', p. 403.

⁴¹⁶ Datta, *Society, economy*, p. 198 and p. 229.

⁴¹⁷ *Ibid.*, p. 199.

FIGURE 3.4: RICE PRICES IN BENGAL, GUILDERS PER KG, 1688-1790.

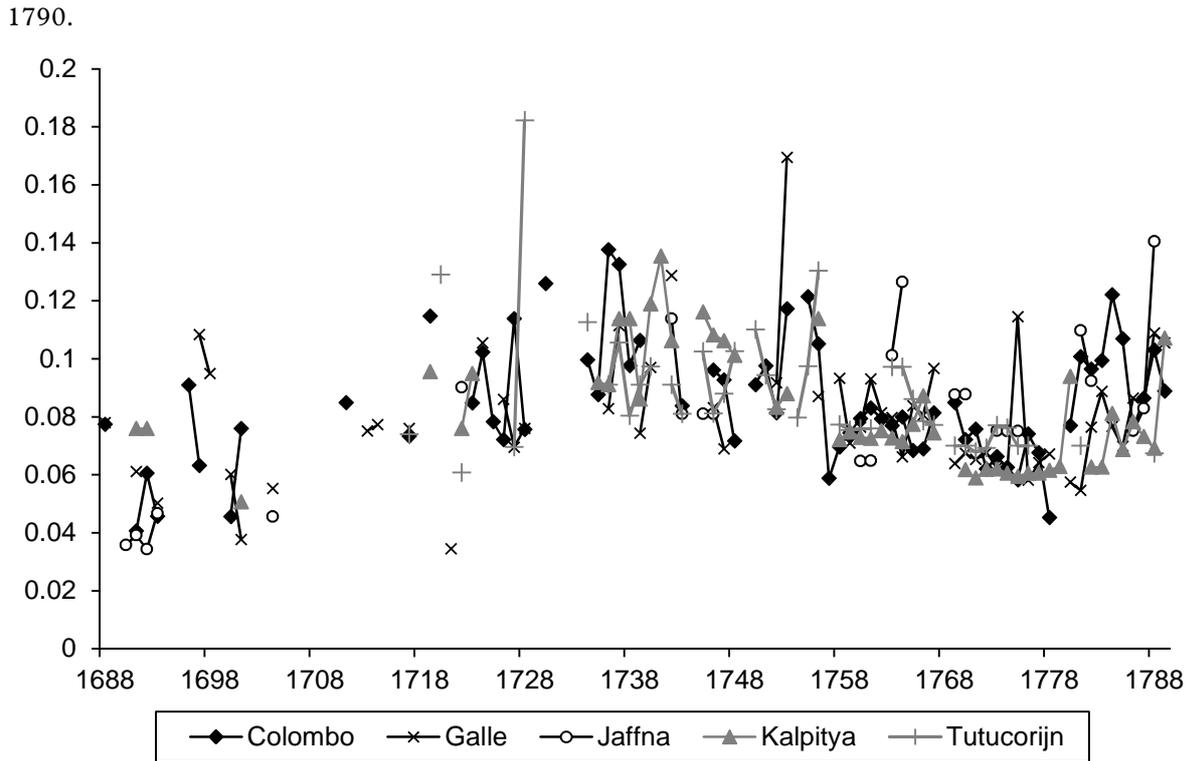


Sources: see text and Allen and Studer, 'Prices and Wages'.⁴¹⁸

Figures 3.4, 3.5 and 3.6 show rice prices for a number of different towns in Bengal, Ceylon (and Southern India: Tutucorin) and Java. A brief glance at the three figures shows that prices exhibit more or less similar trends in the same region, but that the developments differ between the regions. While Bengal displays a slightly rising trend until the later eighteenth century, while the trend is largely flat after the crisis of 1769-70. At the same time, prices in Java were declining over most of the eighteenth century, while prices in Ceylon behaved like a wave: increasing until the 1740s and declining thereafter until the 1780s, when they jumped up again as a result of the bad harvests across South Asia.

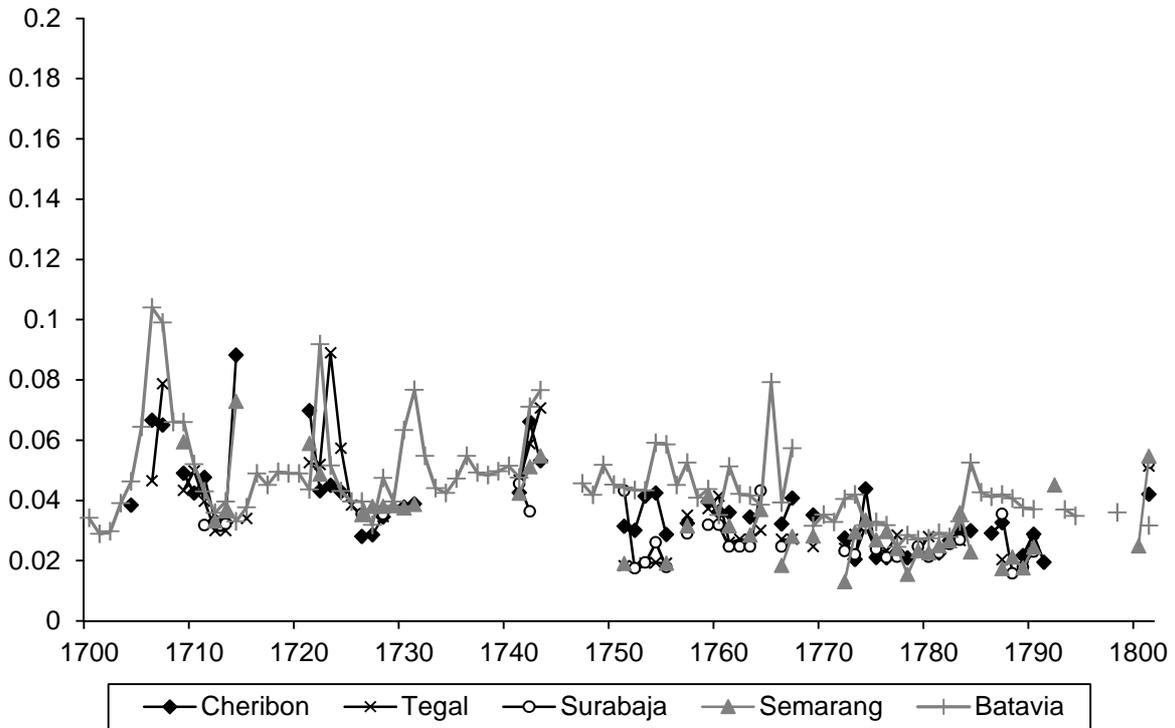
⁴¹⁸ The data were taken from the excel sheets as provided by Allen and Studer, who took the data from A. S. M. A. Hussain, 'A quantitative Study of Price Movements in Bengal during Eighteenth and Nineteenth Centuries', (PhD thesis, University of London, 1976). However, as some of the data were interpolated according to unknown methods, I went back to the original sources to see which data were interpolated and which were actual observations: G. Herklots, 'Table showing the market price of Grain &c. in lower Bengal from the year 1700 to 1813, extracted from authentic documents of one month in each year, for which generally the month of August was selected', *Gleanings in Science* 1 (1829) pp. 368-369; W. B. Baily, 'Statistical Account of Burwan', *Asiatick Researches* 12 (1818) pp. 567-573. Interpolations by Allen and Studer were deleted from this figure.

FIGURE 3.5: RICE PRICES IN CEYLON and S. INDIA, GUILDERS PER KG., 1688-



Sources: see text.

FIGURE 3.6: RICE PRICES IN JAVA, GUILDERS PER KG., 1700-1801.



Sources: see text.

As noted in chapter 2, the spread of prices between different markets can be measured by, among others, the coefficient of variation (CV). The data contains many gaps, but it may still be illuminating to show some information on the average price dispersion. Therefore, table 3.3 shows the average CV taken over three towns in Ceylon,⁴¹⁹ Java,⁴²⁰ and Bengal, as well as the average CV between Colombo, Batavia and Chinsurah.

TABLE 3.3: CV IN RICE PRICES WITHIN AND BETWEEN REGIONS, 1700-1800.

	1700-49		1750-99		1700-99	
	CV	N	CV	N	CV	N
Bengal	n/a	0	0.281	17	0.281	17
Ceylon	0.225	5	0.139	31	0.149	36
Java	0.225	13	0.265	21	0.250	34
Asia	0.471	18	0.486	31	0.485	49

Sources: figures 3.5-3.7.

In addition, one can also look at the correlations between prices to see whether the prices show similar movements and trends in the various towns, which would also imply a certain degree of integration.⁴²¹ The correlation coefficients on the rice prices are shown in table 3.4a-c. For Bengal the numbers of overlapping years were very few and no correlations were significant. Yet for Ceylon and Java there were sufficient observations for a correlation analysis. Galle, Jaffna and Kalpitiya were all in connection with Colombo, and only the correlation with Tuticorin (part of the Ceylon administration, but located on the southern tip of India) is insignificant. Tuticorin traded mostly with Kalpitiya which was immediately across the Palk Strait. In addition, the correlation between Jaffna and Galle was also insignificant as these were on the far northern and southern tips of the island respectively. Regarding Java (table 3.4b) it can be seen that there was a relatively strong connection between Batavia and cities that were relatively close: Batavia, Cirebon and Tegal, while the relationship becomes a little bit weaker for Semarang (which is slightly further east) and the correlation with Surabaya (even further east) was insignificant. As all the cities were positioned in between Batavia and Surabaya, the other correlations were all significant. Finally, table 3.4c shows that, despite the gap in price levels, there was also a relationship between prices in Batavia and Colombo, which also fits the evidence of rice shipments from the former to the latter.

⁴¹⁹ Colombo, Galle and Kalpitiya, as data were most abundant for these places.

⁴²⁰ Batavia, Cirebon and Semarang for the same reason.

⁴²¹ For correlation analysis we want the series to be stationary, which is often not the case. Therefore the data are usually differenced. Due to the limited observations this is not feasible in this case (as we would again lose many observations). The correlations shown here are only indicative and should not be considered robust evidence of market integration.

TABLE 3.4A: CORRELATION COEFFICIENTS RICE PRICES IN CEYLON 1688-1789.

	Colombo	Galle	Jaffna	Kalpitiya	Tutucorin
Colombo	1.00				
Galle	0.41	1.00			
Jaffna	0.61	0.33	1.00		
Kalpitiya	0.49	0.44	-0.00	1.00	
Tuticorin	0.26	0.18	0.09	0.62	1.00

TABLE 3.4B: CORRELATION COEFFICIENTS RICE PRICES IN JAVA 1700-1801.⁴²²

	Batavia	Cirebon	Semarang	Surabaya	Tegal
Batavia	1.00				
Cirebon	0.51	1.00			
Semarang	0.32	0.82	1.00		
Surabaya	0.12	0.50	0.58	1.00	
Tegal	0.55	0.69	0.80	0.64	1.00

TABLE 3.4C: CORRELATION COEFFICIENTS RICE PRICES IN THE INDIAN OCEAN, 1688-1789.

	Bengal	Ceylon	Java
Bengal	1.00		
Colombo	0.01	1.00	
Batavia	-0.11	0.33	1.00

Sources tables 3.4a-c: figure 3.5-3.7

Due to the limitations of the data, these figures should not be interpreted as robust information on the integration of markets. However, in general we can conclude that price developments exhibit similar trends and price gaps are relatively limited within the same region (relatively low CV), but not across regions (higher CV for 'Asia'). This corroborates the research by Studer, as well as that by Dobado-Gonzales et al. suggesting limited market integration across far distances in Asia.⁴²³ From the correlation coefficients in table 3.4 a similar picture emerges: among most Ceylonese and Javanese towns the coefficient of rice prices was relatively large and significant (although declining with distance). For the purpose of this chapter we can conclude that the developments we compare between the various major cities (Batavia, Cape Town, Chinsurah and Colombo) may in fact be representative for developments

⁴²² While there were also observations for Gresik, Pekalongan and Joana these referred only to the second half of the eighteenth century and were omitted from the analysis.

⁴²³ Rafael Dobado-Gonzalez, Alfredo Garcia-Hiernaux and David E. Guerrero, 'West versus East: Early Globalization and the Great Divergence', *Mimeo* 2013.

in the wider regions (Java, Cape Town, Bengal, and Ceylon).⁴²⁴ Yet across regions in Asia trends could differ more profoundly, which reinforces the argument that comparisons in the Great Divergence debate should not be based only on the level of continents (i.e. Europe vs. Asia), but have to take into account the differences within these continents as well.

Thus, figures 3.5-3.7 already hint that prices were (much) higher in Ceylon than in both Bengal and Java. Whereas in Bengal and Java prices for a kilogram of rice were higher than 10 cents for only a few exceptional years (of crisis), Ceylonese prices were generally around that level, and often above. The comparative cost of living in these regions will be further analysed in the next section.

3.5.4. Global price comparisons

Before we can do so, some smaller practical issues further frustrate the creation of historical time series. Prices were given in different coins; e.g. *rix-dollars*, *guilders*, *stuivers*, or sometimes in *rupees*. In order to make global comparisons, one needs to know the market exchange rates in order to convert the prices from one currency to another. These rates are, however, missing in many cases. Because silver coins were the principal medium of exchange in most early modern states, the solution is to convert the coins in the weight of silver they could buy per unit.⁴²⁵ The Dutch guilder contained 9.8 grams of silver up to 1680 and 9.61 grams of silver from 1681 onwards.⁴²⁶ For some time, the value of the guilder used by the VOC in Asia was lower than the guilder in the Dutch Republic and the Asian currency was therefore referred to as 'light money'. Yet, the value of the Asian relative to the Dutch guilder fluctuated throughout the seventeenth and eighteenth centuries. According to Els Jacobs one Asian guilder was worth 20 percent less than the Dutch guilder prior to 1743; 16.35 percent less between 1743 and 1768, while after 1768 the differences disappeared.⁴²⁷

Furthermore, similarly to the global commodities of the previous chapter, the prices were noted per different kind of early modern units of measurement: e.g. *mudde*, *last*, and *pond*.⁴²⁸ These different units of measurement needed to be converted into its metric equivalents to make comparisons across different regions and periods possible.⁴²⁹ Finally, despite efforts to collect all available price data for the regions studied, (sometimes significant) gaps in the price series remained. These gaps were

⁴²⁴ At least in terms of prices, the regional wage-dispersion is discussed in the next chapter.

⁴²⁵ Allen, 'Real Wages', p. 158.

⁴²⁶ Jan Luiten van Zanden, 'Prices and wages and the cost of living in the western part of the Netherlands, 1450-1800', website *Historical Prices and Wages of the International Institute of Social History*: <http://www.iisg.nl/hpw/brenv.xls>. Last update: December 11, 2009.

⁴²⁷ Jacobs, *Merchant in Asia*, pp. 300-304; Wolters, 'Heavy and light'; and Gaastra, *De geschiedenis*, pp. 144-5. See appendix A2.2.

⁴²⁸ For the old Dutch units of measurement and their metric value, see: by J. M. Verhoeff, *De oude Nederlandse maten en gewichten* (Amsterdam: P.J. Meertens Instituut, 1982) and appendix.

⁴²⁹ Drawing e.g. on the work by Verhoeff, *De oude Nederlandse*; and the *VOC Glossarium*: <http://resources.huuygens.knaw.nl/vocglossarium>

filled by inter- and extrapolations. Further details on the conversions and interpolations of the data are discussed in appendices 4 and 5. Figure 3.7 plots the fruits of this work; a comparison of the cost of living over time between the regions under discussion as well as with Amsterdam.

There is of course the question of how to interpret secular trends in prices. Some scholars have suggested that ‘a more extended and progressive price rise ... spells expansion and prosperity, [while] a [sustained] decline denotes economic recession.’⁴³⁰ Consequently, e.g. Datta concluded that, as prices increased, Bengal was going through a period of economic growth over much of the eighteenth century. The opposite may also be argued, as is done by e.g. David Clingingsmith and Jeffrey Williamson, who claim that the increases in Indian grain prices reflect declining agricultural productivity.⁴³¹ For the analysis here, I tend to side with Clingingsmith and Williamson; putting the series in the proper context, it seems that declining prices generally reflect increasing productivity (supply increases more than demand – i.e. population), while increasing prices reflect declining productivity or more pressure on supplies (due to population growth). As wages are usually rather sticky (as we shall see in the next chapter), increasing prices generally imply declining living standards.

Thus, a number of observations can be made on the basis of this figure. First of all, especially in the late seventeenth and early eighteenth century, prices seem to have been very high at the Cape, perhaps as a result of its remote location and its extensive system of agriculture. In the seventeenth century, it was difficult to grow enough food at the Cape, and additional rice had to be imported from Java in order to feed its growing populace and the cape therefore struggled to supply all bypassing ships with the necessary goods.⁴³² Over the course of the eighteenth century, wheat production expanded and prices slowly declined. A positive effect of the VOC pricing policies was to avert many subsistence crises caused by harvest failures, while the farmers were ensured a guaranteed minimum price for their produce, even in years of abundant harvests. The crisis in 1780s shows that the VOC could not go against the forces of the market entirely (see figure 3.2).⁴³³

⁴³⁰ Datta, *Society, economy*, p. 195: citing C. E. Labrousse, ‘Economic Fluctuations and the Individual’, in: M. Aymard and H. Mukhia (eds.), *French Studies in History, vol. 1: the Inheritance* (Delhi, 1989) p. 271.

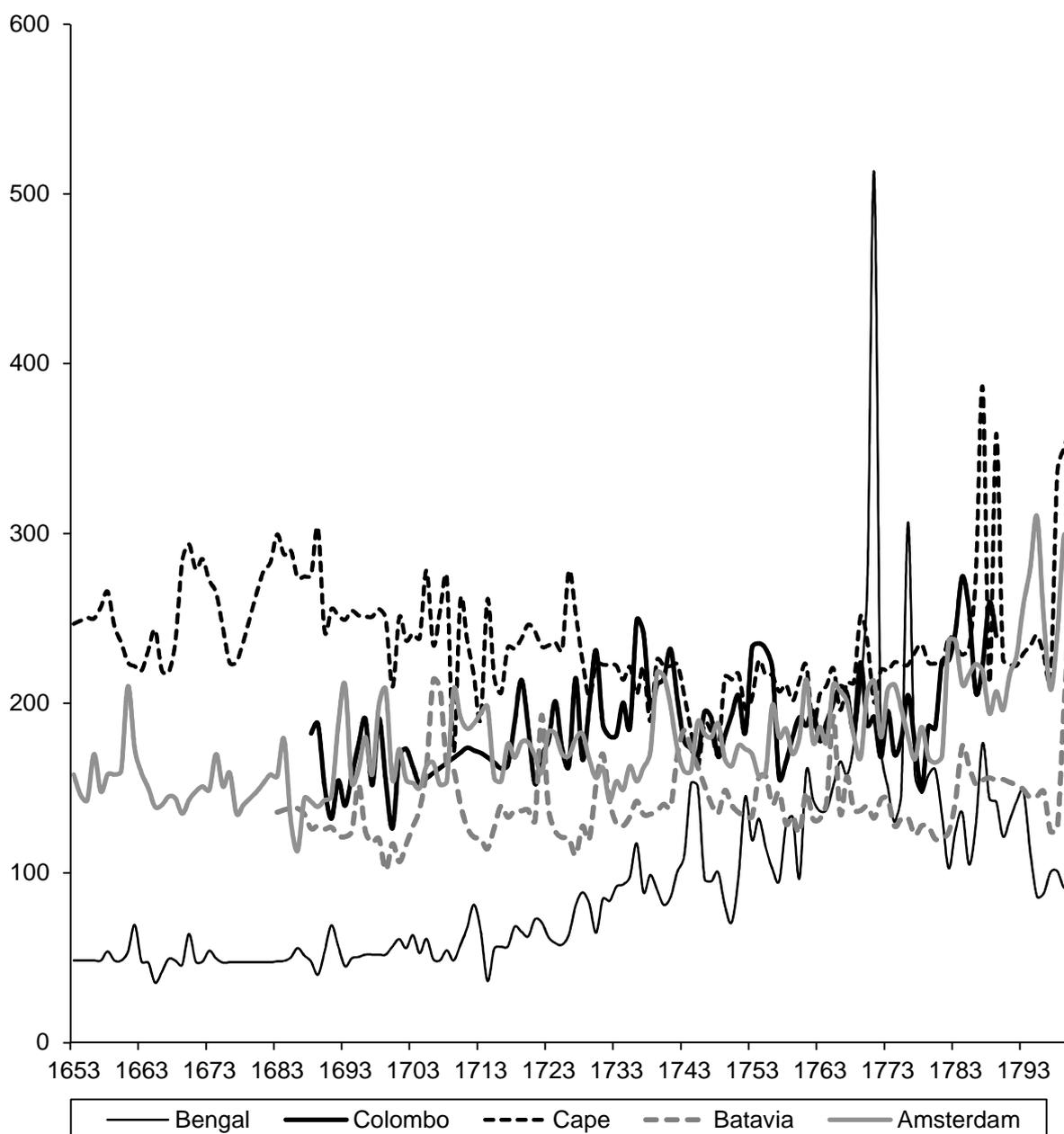
⁴³¹ Clingingsmith and Williamson, ‘Deindustrialization’.

⁴³² Monica Wilson and Leonard Thompson, ‘White Settlers and the Origin of a New Society, 1652-1778’, in: *ibid.* (eds.), *The Oxford History of South Africa. Vol. I.* (Oxford: Clarendon Press, 1971) pp. 183-232, there p. 191.

⁴³³ Ross, ‘The Cape’.

FIGURE 3.7: COST OF A BAREBONES BASKET IN GRAMS OF SILVER.

Sources: see text and Allen, 'India in the Great Divergence'; Allen et al., 'Wages, prices'.



Sources: see text and Allen, 'India in the Great Divergence'; Allen et al., 'Wages, prices'.

Secondly, prices were also relatively high in Ceylon (as also noted in the previous section). Ceylon was generally unable to produce enough food for the entire population, making imports of large quantities of rice from Bengal, Coromandel (South-Eastern India) and Java necessary (and therefore relatively expensive).⁴³⁴ Thus one can observe a spike during e.g. the 1780s, when rice prices increased as it became

⁴³⁴ Sinnappah Arasaratnam, 'The Rice Trade in Eastern India 1650-1740', *Modern Asian Studies* 22 (1988) pp. 533-542; *ibid.*, *Dutch power in Ceylon*, p. 130; K. M. de Silva, *A history of Sri Lanka* (London: Hurst, 1981) p. 171.

harder to obtain rice from abroad (due to political turmoil in Coromandel, a shortage of sailors, and greater priority given to rice imports to Surat and Malabar).⁴³⁵

Third, prices seem to have been generally somewhat lower in Java. Only the first half of the eighteenth century display serious spikes in the rice prices, mostly as a consequence of wars fought in those years. As noted in chapter 2 above, the Company expanded its control over the island as it was drawn into various power struggles over the Mataram Throne. Next to the rebellion against the Susuhunan in the 1670s and 1680s, and the successful Company's campaigns against Banten in the early 1680s, the VOC intervened in three Javanese wars of succession (1704-07; 1719-23; 1746-57), while Mataram, in turn, intervened in the Chinese war (1741-1743).⁴³⁶ These wars pushed up prices not only because of the destruction of crops, but also by limiting the possibilities of transporting rice from e.g. Java's northeast coast (the main area of rice production) to Batavia. As noted above, the peace after 1755 allowed relatively low price levels in the second part of the eighteenth century.⁴³⁷ While perhaps hard to discern from this figure, these prices show a slightly declining trend over most of the eighteenth century. Only at the end of the eighteenth and beginning of the nineteenth century, a spike in Batavia prices can be observed as a consequence of a series of bad harvests between 1795 and 1803,⁴³⁸ and the British blockade of Batavia.

Fourth, until the 1740s prices were lowest in Bengal. Following e.g. Parthasarathi, this may suggest the relatively high productivity in agriculture in this region. Clingingsmith and Williamson provide several reasons why prices rose and agricultural productivity declined over the course of eighteenth century.⁴³⁹ First of all, the waning of Mughal power led to increased occurrence of local wars which not only led to destruction of crops and capital by marauding armies but also pulled important resources (men and animals) from agriculture into the military. Furthermore, there are indications that the revenue burden was higher among Mughal successor states and the British colonial government than under the Mughals. Finally, they claim that the increased occurrence of draughts during the later eighteenth century lowered agricultural productivity and put further pressure on grain prices. Severe draught in 1769-1770 led to a famine that drove up prices dramatically. All of this occurred at the same time when population (and thus demand) was growing relatively rapidly (see chapter 5).

To conclude this section, the cost of living in these areas can be compared to that in Amsterdam. In terms of levels, this comparison confirms the observation by Allen et al. that prices were not generally higher in Europe than in Asia (as suggested

⁴³⁵ De Silva, *A history*, p. 172.

⁴³⁶ See e.g.: Ricklefs, *A History*.

⁴³⁷ See next chapter for more information.

⁴³⁸ Peter Boomgaard, 'From Subsistence Crises to Business Cycle Depressions, Indonesia 1800-1940', *Itinerario* 26 (2002) pp. 35-51.

⁴³⁹ Clingingsmith and Williamson, 'Deindustrialization'.

by e.g. Adam Smith). They found that the silver price of a subsistence basket in China (in Beijing and Shanghai) was roughly on a par with the cost of the subsistence lifestyle in London and Leipzig in the eighteenth century. Similarly prices in Amsterdam were on the same level as in Ceylon, but slightly below those at the Cape. Only in Bengal and Java prices were lower.

At the same time, looking at the trends in this global comparison it seems that the price levels in these areas converged until the 1760s and after that diverged again. As this may be difficult to discern from figure 3.7, this can again be shown by plotting the coefficient of variation of these series between 1688 and 1789 (when there is data for all series) as shown in figure 3.8 below. This convergence of CPIs (expressed in silver values) confirms Flynn and Giraldez’ suggestion of a period of silver price convergence in the first half of the eighteenth century.⁴⁴⁰

FIGURE 3.8: COEFFICIENT OF VARIATION (CV) CPIs AMSTERDAM, BATAVIA, BENGAL, COLOMBO AND CAPE TOWN.



Sources: figure 3.7.

⁴⁴⁰ Flynn and Giraldez, ‘Cycles of Silver’; *ibid.*, ‘Path Dependence’.

3.6. Relative Prices and Luxury Consumption

The discussion has so far focussed on the development of prices of a single basket over time. These series do not capture possible shifts in relative prices, which may have instigated a change in consumption patterns. Yet, Pomeranz suggested that:

Europeans certainly ate more meat and far more dairy products than most peoples in Asia. But this advantage was declining, not growing, in the early modern period, and doing so rapidly: meat consumption in Germany, for instance fell by about 80 percent between the late Middle Ages and 1800.⁴⁴¹

A recent study by Philip T. Hoffman et al., on the other hand, has shown that in Europe the prices of luxuries generally declined *vis-à-vis* grains in the period 1500-1800.⁴⁴² In this section the price data will be employed to investigate whether in the eighteenth century, shifts within the consumption pattern could occur as a result of declining relative prices of more luxurious items like butter or textiles.

TABLE 3.5. TRENDS IN PRICES OF VARIOUS COMMODITIES, RELATIVE TO THE MAIN STAPLE, C. 1650-1800.

	Amsterdam	Batavia	Cape Town	Colombo	Chinsurah
Butter	-0.001*	n/a	n/a	-0.002***	-0.002***
Meat ⁴⁴³	-0.000	-0.002***	-0.006***	n/a	n/a
Sugar	0.004***	-0.001**	0.000	-0.003***	-0.005***
Soap	0.001**	n/a	0.004***	-0.002***	-0.001
Textiles	-0.000	0.002***	0.002**	-0.002***	-0.008***
Lamp oil	-0.002***	0.001	0.009***	0.001	n/a
Candles	-0.001**	0.003***	0.005***	0.001	-0.001
Firewood	n/a	0.003***	0.009***	n/a	n/a

Sources: see text.

Table 3.5 shows the trends in prices of a variety of commodities relative to that of the main staple in Amsterdam and the four case studies. As in the previous chapter, we also tested whether the trends were significant. This table provides a mixed picture for the period 1650-1800. Whereas Jan de Vries has suggested that ‘especially in the century following 1650’⁴⁴⁴ there was a substantial shift in consumer patterns, Hoffman et al.’s figures show that most of the relative price decline of luxuries in Europe occurred in the period before 1650.⁴⁴⁵ In Amsterdam, after 1650, the relative prices of

⁴⁴¹ Pomeranz, *The Great Divergence*, p. 35.

⁴⁴² Phillip T. Hoffman, David Jacks, Patricia A. Levin, and Peter H. Lindert, ‘Real Inequality in Europe since 1500’, *Journal of Economic History* 62 (2002) pp. 322-355.

⁴⁴³ In the case of Batavia: fish was used in the basket, but shows the same trend as meat.

⁴⁴⁴ De Vries, ‘The limits’, p.722, footnote 45.

⁴⁴⁵ See their figure 1: Hoffman et al., ‘Real Inequality’, pp. 332-333.

butter, lamp oil and candles were declining, but not spectacularly (butter and candles less than 0.1 percent year and significant only at the 10 and 5 percent level respectively), while the relative price for soap increased in a similar order of magnitude, and that for sugar increased by a more impressive 0.4 percent annually.

Figure 3.1 shows that the relative price of meat declined more spectacularly in the Cape Colony. The declining trend in meat prices makes it likely that Capetonians increased their meat consumption over the eighteenth century, as also suggested by qualitative evidence on consumption patterns. Yet, all the other products became relatively more expensive over the period 1650-1800. While they may have enjoyed cheaper meat, cooking and eating it, especially when it was dark and cold outside, became more expensive. Regarding Batavia, a similarly mixed picture emerges as meat/fish and became relatively cheaper, while clothing, heating and lighting came to occupy a substantial part of the budget. The fact that textiles became more expensive over this period may account for the decline in textile imports observed by Reid. Only for Ceylon and Bengal, the prices of the other products included in the basket either declined relative to rice, or showed a similar trend (leading to an insignificant relative price trend). Remarkable for the relationship between trade and prices is that the relative price for clothing declined in Bengal. Cotton textiles were in demand for long-distance trade, yet the price of grains increased faster. This suggests that increased local demand (e.g. population growth) relative to local supply (a possible decline in agricultural productivity), rather than international trade was driving inflation over this period.

It is difficult to reach a straightforward conclusion on the basis of such mixed trends. Therefore, perhaps the best conclusion is that in the one and a half century up to 1800 trends in relative prices within the basket do not point to dramatic changes in consumption patterns; some may have increased their meat or sugar consumption somewhat over this period, but this went at the expense of more costly fuel and lighting. Only in Bengal and Ceylon, most of the other commodities became consistently cheaper than rice over time; however, this probably did not induce a change in consumption patterns as rice still represented the cheapest calories, and, as we shall see in chapter 4, these workers could not afford consumption above subsistence level.

3.7. Conclusion

This chapter has taken the first step in comparing living standards between different regions in Asia, Southern Africa and the rest of the world. Such comparisons are at the heart of the Great Divergence debate; while 'California School' scholars suggested that

living standards in many parts of Asia were on a par with Europe, various others have disputed such claims.

We have discussed the various measures of the standard of living, concentrated around three elements: income, health and education. Some of these measures require data that are usually unavailable before the 1800s, suffer from sample-bias issues, and focus on only one dimension of the standard of living. Wage and price data are available for a larger number of countries much further back in time and can contain information on three elements of the standard of living. In recent years, a methodology has been developed that allows comparing real wages over time and space by creating baskets standardized on caloric values. These baskets reasonably reflect consumption patterns in the regions studied, as diets were relatively simple. This methodology is now widely used for global comparisons of living standards. Furthermore, the discussion of relative price trends in section 3.6 has suggested that the shifts within consumption patterns between 1650 and 1800 were probably not very dramatic.

From figure 3.7 it became clear that prices were relatively high at the Cape, even though agricultural expansion allowed a slight decline in prices over the eighteenth century. Prices in Ceylon were also relatively high and comparable to prices in Amsterdam (as it remained dependant on imported rice for the entire period under discussion), in contrast to Bengal and Java where the cost of living was generally lower than in north-western Europe. Bengal initially profited from a relatively productive agriculture, producing surpluses that were sent not only to Ceylon, but also to towns along the coast of India as well as Southeast Asia.⁴⁴⁶ In Java, besides the war-time peaks in the late seventeenth and early eighteenth century, prices were comparatively low over most of the eighteenth century. The peace and stability after the 1740s led to an expansion of agriculture and declining prices: a trend that was only reversed in the early 1800s as a result of a series of bad harvests and the British blockade of Batavia.

What about the relationship between international trade and the price developments sketched above? Recent research on the Cape Colony has demonstrated that agricultural production responded to the arrival and departure of ships sailing to and from the East Indies.⁴⁴⁷ Figure 3.7 has shown that, as this trade did not lead to inflation in the long run, it may have had beneficial effects on the economy. In Ceylon and Java there was also no consistent rise in prices. As noted, prices in Ceylon were generally high throughout the period. Considering the relatively low and declining prices in Java at a time of expanding monetization and production (see chapter 5) it is more likely that trade may have had a beneficial impact. Only in the case of Bengal, we should reckon with the possibility that the ‘bullion for goods’⁴⁴⁸ trade led to inflation as

⁴⁴⁶ Parthasarathi, *Why Europe*, p. 69; Arasaratnam, ‘The Rice Trade’.

⁴⁴⁷ Willem H. Boshoff and Johan Fourie, ‘The significance of the Cape trade route to economic activity in the Cape Colony: a medium-term business cycle analysis’, *European Review of Economic History* 14 (2010) pp. 469-503.

⁴⁴⁸ Prakash, ‘Bullion for Goods’.

prices more than tripled over the eighteenth century, which must have put downward pressure on living standards. However, we cannot be sure that this increase was primarily caused by trade, rather than by lower agricultural productivity due to changing climate conditions and increased rent-seeking under Mughal successor states and English rule, as suggested by Clingingsmith and Williamson.⁴⁴⁹ Considering the relative price decline of cotton textiles, the main in the ‘global trade carousel’,⁴⁵⁰ the Clingingsmith and Williamson hypothesis seems more plausible than inflation caused by trade. These price trends were thus to a great extent determined by local developments. At the same time, it cannot be ignored that the CPIs expressed in silver in Europe, Southern Africa and Asia show a converging trend over the eighteenth century, with the CV declining from 0.5 in the late seventeenth to 0.2 in the mid-eighteenth century. This confirms Flynn and Giraldez’ argument about converging silver prices in this period,⁴⁵¹ and provides another clue that some degree of globalization was already underway in this period.

While these price series alone are already very informative about the economies under discussion, prices only contain information about the standard of living if they are combined with evidence on wages. In the next chapter, the wage data will be discussed and combined with these prices in order to estimate the standard of living.

⁴⁴⁹ Clingingsmith and Williamson, ‘Deindustrialization’.

⁴⁵⁰ To paraphrase Andre Gunder Frank: *ReORIENT: global economy in the Asian age* (Berkeley: University of California Press, 1988), p. 52.

⁴⁵¹ Flynn and Giraldez, ‘Cycles of Silver’.

Chapter 4: Wages and the Standard of Living

4.1. Introduction

A second step in the calculation of living standards requires an estimation of the wages in these regions. Adam Smith already suggested in the eighteenth century that there was a clear global wage division, with higher wages in Europe than anywhere in Asia.⁴⁵²

A variety of recent studies has investigated comparative real wages in the light of the Great Divergence debate. Whereas Pomeranz and Parthasarathi claimed that incomes and wages were on a par or higher than in Europe in the eighteenth century, these studies showed that real wages in Japan, China and India were lower than in England or the Dutch Republic. They were on a par with cities in other parts of Europe, however. Allen et al. therefore conclude that ‘it was only England and the Low Countries that pulled ahead of the Rest. The Rest, in this context, includes not only Asia, but also much of Europe’.⁴⁵³ In this chapter, new wage evidence will be combined with the prices for the consumption baskets discussed in the previous chapter. This exercise will reveal where Bengal, the Cape Colony, Ceylon and Java are on this eighteenth-century wage ladder, thereby providing new insights for the Great Divergence debate.

Moreover, as Jean-Laurent Rosenthal and R. Bin Wong note ‘we know that when economies are growing rapidly, wages rise, and when economies run into

⁴⁵² See: Allen, ‘India in the Great Divergence’, p. 9.

⁴⁵³ Allen et al., ‘Wages, prices’, p. 31.

trouble, wages fall'.⁴⁵⁴ Thus, this chapter will reveal more about the trends in economic development over the seventeenth and eighteenth century, trends that have been the subject of some discussion in the historiographies of these different areas.

First of all, in the case of Bengal, the eighteenth century has traditionally been seen as 'an epoch of decay, chaos, greed and violence'.⁴⁵⁵ British imperialism, beginning with the Battle of Plassey in 1757, and globalization have often been blamed for the economic malaise,⁴⁵⁶ although climatic factors and the disintegration of the Mughal Empire have also been put forward.⁴⁵⁷ At the same time, a number of relatively recent studies have argued that rather than an age of decline, there are also indications of economic blossoming over the eighteenth century. Tilottama Mukherjee remarked in 2011 that 'Bengal experienced a long-term elaboration and expansion of the economy in the eighteenth century, marked by urbanisation and commercial growth.'⁴⁵⁸ Similar revisionist claims have also been made regarding eighteenth-century Gujarat,⁴⁵⁹ and northern India.⁴⁶⁰ Nonetheless, the latest GDP per capita estimates for India as a whole clearly point to a decline,⁴⁶¹ in line with earlier estimates of real wages and other measures of the standard of living.⁴⁶²

The view of destitute inhabitants of the Cape Colony, put forward in much of the older literature, has mostly been based on farmers' letters describing their own impoverishment.⁴⁶³ As noted in section 3.5.2, such qualitative and biased observations should be treated with great caution. The study of living standards in the Cape Colony has experienced a revival in the past years and the results from this research have altered this picture. Du Plessis and Du Plessis have shown that VOC officials at the Cape enjoyed increasing living standards over the eighteenth century as a result of declining prices.⁴⁶⁴ Johan Fourie used evidence from probate inventories to show that luxury goods possession of Cape farmers compared favourably with England and Holland, and that the poorer farmers became wealthier over the course of the

⁴⁵⁴ Jean-Laurent Rosenthal and R. Bin Wong, *Before and Beyond Divergence. The Politics of Economic Change in China and Europe* (Cambridge MA: Harvard U. P., 2011) p. 43.

⁴⁵⁵ David Washbrook, 'Eighteenth Century Issues in South Asia', *Journal of the Economic and Social History of the Orient* 44 (2001) pp. 372-383, there p. 372.

⁴⁵⁶ Tirthankar Roy, 'Beyond divergence: rethinking the economic history of India', *Economic History of Developing Regions* 27 (2012) pp. 57-65; *ibid.*, 'Economic History and Modern India'.

⁴⁵⁷ Clingingsmith and Williamson, 'Deindustrialization'.

⁴⁵⁸ Tilottama Mukherjee, 'Markets in eighteenth century Bengal economy', *Indian Economic and Social History Review* 48 (2011) pp. 143-176, there p. 144. Similar suggestions were made by Datta, *Society, economy*.

⁴⁵⁹ Nadri, *Eighteenth-Century Gujarat*.

⁴⁶⁰ Bayly, *Rulers, townsmen*.

⁴⁶¹ Stephen Broadberry, Johann Custodis and Bishnupriya Gupta, 'India and the Great Divergence: An Anglo-Indian Comparison of GDP per capita, 1600-1871', *Explorations in Economic History* (forthcoming 2014).

⁴⁶² Allen, 'India in the Great Divergence'.

⁴⁶³ Johan Fourie and Jan Luiten van Zanden, 'GDP in the Dutch Cape Colony: the national accounts of a slave-based society', *South African Journal of Economics* 81 (2013) pp. 467-490, there p. 471.

⁴⁶⁴ Du Plessis and Du Plessis, 'Happy in the service'.

eighteenth century.⁴⁶⁵ Recent estimates of GDP per capita also point to a society where the average inhabitant enjoyed an income comparable to those in north-western Europe. Per capita income declined over the eighteenth century, however, pointing to stagnation rather than growth.⁴⁶⁶

Regarding Southeast Asia as a whole, Reid stresses that he could find no evidence of famines, starvation and misery in the accounts of early European travellers (as was the case for India and China), and he gives examples of daily wages around 1600 that were on average 25 times the daily rice requirements of one person.⁴⁶⁷ Experts on Javanese economic history pointed to declining living standards over time. Peter Boomgaard finds a declining trend in real wages over the eighteenth century.⁴⁶⁸ Merle Ricklefs concludes that 'on balance, Dutch involvement in Java was to a great extent a catastrophe for all concerned'.⁴⁶⁹ Luc Nagtegaal, however, notes that while the thesis of the underdevelopment of Java over the seventeenth and eighteenth century is not implausible, the opposite could also have been the case.⁴⁷⁰ Following Smithian theory, he suggests that increasing trade may have led to more effective use of land and labour.⁴⁷¹

For Ceylon, little is known about the trends in living standards over the seventeenth and eighteenth centuries. As in the case of Java, most of the historiography has generally assumed that, due to its mercantilist policies, the Company contributed to the underdevelopment of the island.⁴⁷² At the same time, Arasaratnam has noted that in Jaffna prosperity increased and that some groups of workers could benefit from the increased demand for labour by the VOC, especially in the construction and commercial sector. For this period, so far no consistent data on any indicator of economic development has been put forward that could have shed light on this.

The remainder of this chapter will proceed as follows. In the next section, I will introduce the sources for the wage data and extensively discuss the problems associated with it. Section 4.3 employs these data, in combination with the prices from the previous chapter, to calculate real wages and compares these with real wages with those in China, Japan and Europe. In section 4.4 wage differentials between skilled

⁴⁶⁵ Fourie, 'The remarkable wealth'. Fourie and Uys, 'Luxury product consumption'.

⁴⁶⁶ Fourie and Van Zanden, 'GDP in the Dutch Cape'.

⁴⁶⁷ Reid, *Southeast Asia*, p. 130: his range varies between 2.7 (for a slave) and 650 (caulker) times the daily rice requirement. The average of 25 is taken from Peter Boomgaard, 'Why work for wages? Free labour in Java 1600-1900', *Economic and Social History in the Netherlands* 2 (1990) pp. 37-57, there p. 44.

⁴⁶⁸ Boomgaard, 'Why work'.

⁴⁶⁹ Merle C. Ricklefs, *Modern Javanese Historical Tradition. A Study of an Original Kartasura Chronicle and Related Materials* (London: SOAS, 1978) p. 3.

⁴⁷⁰ Nagtegaal, *Rijden*, p. 197.

⁴⁷¹ Although in the English version of his dissertation published a few years later he clearly sides with the view that the VOC caused underdevelopment: Luc Nagtegaal, *Riding the Dutch tiger: the Dutch East Indies Company and the northeast coast of Java, 1680-1743* (Leiden: KITLV Press, 1996).

⁴⁷² See e.g. Sinnappah Arasaratnam, 'Dutch Commercial Policy in Ceylon and its effects on the Indo-Ceylon Trade (1600-1750)', *Indian Economic and Social History Review* 4 (1967) pp. 109- 130; Schrikker, *Dutch and British*, p. 2.

and unskilled workers are analysed in order to discuss the differences in human capital formation across the globe. Section 4.5 concludes.

4.2. Wage data

In this section, a time series of nominal wages will be estimated on the basis of wage observations taken from a variety of sources. Because wage data are generally much scarcer than price data, significant gaps had to be filled by estimating the trend of wages over time.⁴⁷³ This section will introduce the various sources for the wage observations and will discuss the various problems related with the creation of a nominal wage series.

4.2.1. Sources

The most ‘ideal’ source containing wages are statements on the expenses incurred for the construction and repairs of different VOC buildings and ships in the various regions. These documents could be scattered individually throughout the general VOC-OBP series, or were inserted among the ‘Proceedings of the Political Council’ that are part of the OBP. The latter was generally the case for Bengal. These documents state the costs on building materials for the building project, as well as the various workers hired, and for how many days.⁴⁷⁴ As real wage studies on other areas, such as Europe, have often used the wages of building craftsmen and labourers, wages taken from these documents are very well comparable to those in other studies. Furthermore, most of the wages reported in these documents were reported as daily rates, which are generally preferred over monthly or annual rates. Especially for Bengal, this turned out to be a rich source of information on wages.

A second source of wages is formed by the separate VOC archive-series of the ‘General Land and Sea Muster Rolls’. For almost the entire eighteenth century these rolls are still available in The Hague, while separate rolls for different establishments are also available for the seventeenth century. These rolls are well-known sources for studying Company servants on ships and at the various establishments in Asia. For our purposes it is important that these rolls state monthly wages of company servants employed at the different VOC establishments in the East Indies. These sources, however, generally deal with the European personnel, which make them less interesting for this dissertation. For the Cape Colony, wages from five of these rolls were already collected for a number of benchmark years between 1699 and 1790 by

⁴⁷³ As done by Allen, ‘India in the Great Divergence’, and Allen et al., ‘Wages, prices’.

⁴⁷⁴ Unfortunately in some cases, especially in for those on Java and Ceylon, it was not mentioned for how many days the workers were hired, or all the figures were aggregated, which made it impossible to calculate daily wages. These could thus not be used in this research. The availability of even more of such documents than those employed in this study, does suggest that wage labour may have been widespread.

Sophia and Stan du Plessis.⁴⁷⁵ To their numbers, I have added wages from the earliest muster rolls from the years 1657 and 1658.⁴⁷⁶

For Ceylon specifically, the Colombo account books, which have survived for the years 1759-1790, constitute the most important source of information.⁴⁷⁷ Quantitatively these account books are a treasure trove on the VOCs business in Ceylon.⁴⁷⁸ Most interesting for this dissertation were the monthly statements on the costs of wages of European as well as indigenous servants of the Company. These thus contained the monthly wages paid to a great variety of servants on the payroll, from washers to village heads. I have assembled the wage lists for September or October each month.⁴⁷⁹ In addition to these data, wages were assembled for a few earlier years from scattered 'lists' or 'rolls' of the indigenous servants,⁴⁸⁰ as well as statements on the costs of building repairs.⁴⁸¹

In the case of Java, next to the wages taken from the statements on building and ship building and repairs, the *Nederlandsch-Indische Plakaatboeken*, the collection of proclamations by the Governor and Council of the Indies, contained numerous decrees setting the wages of coolies and craftsmen working for the Company. Additional wage observations were taken from other published sources like the *Dagh-register* and the *Verhandelingen van het Bataviaasch Genootschap*,⁴⁸² as well as various secondary sources.⁴⁸³

4.2.2. Representativeness

A potential problem with wages taken from VOC sources can be caused by a bias in the reported rates. Such a bias may have occurred in two ways. First, there could be an upward bias as an additional premium was possibly paid to ensure the efficiency and loyalty of the local workers. Second, the opposite may have been the case as the dominant position of the VOC in these places may have allowed it to squeeze these

⁴⁷⁵ Du Plessis and Du Plessis, 'Happy in the service'. I thank Stan and Sophia for kindly sharing these data with me.

⁴⁷⁶ VOC 3991, 3992 and 4038. Furthermore, I collected data from muster rolls for 1778 and 1786 to trace the beginnings of the late eighteenth century wage increases: VOC 12575 and 12602.

⁴⁷⁷ VOC 2985-3979.

⁴⁷⁸ Also see: Albert van den Belt, *VOC bedrijf op Ceylon. Een voorname vestiging van de Oost-Indische Compagnie in de 18^{de} eeuw* (Zutphen: Walburg Pers, 2008).

⁴⁷⁹ Depending on the readability of the documents. A comparison with similar data collected from those in April suggested no wage changes across different months.

⁴⁸⁰ VOC 1340 f. 1416-1422; VOC 1351 ff. 2527-2531; VOC 1643, ff. 606-613; VOC 1544, f. 1218; VOC 2541, ff. 3149-3193; VOC 8902 ff. 540-566; VOC 839 f. 767; VOC 8978 ff. 446-449.

⁴⁸¹ VOC 1351 f. 2514-2515; VOC 8974 f. 2011-2013.

⁴⁸² The *Dagh-Register* is a diary of events that took place in Batavia and other important news for the VOC reported on a daily basis. The years between 1624 and 1682 have been published. The *Verhandelingen* is a journal given out by the Batavian Society for Arts and Sciences between 1779 and 1922. Van der Chijs (ed.) *Nederlandsch-Indisch*; De Jonge (ed.), *Opkomst*; Heeres et al. (eds.) *Dagh-register*; Hooyman, 'Verhandelingen'.

⁴⁸³ Boomgaard, *Children*; *ibid.*, 'Why work'; Feenstra, 'Dutch Coins'; Frederik de Haan, *Priangan: de Preanger-regentschappen onder het Nederlandsch bestuur tot 1811* (Batavia: 1910-12); Nagtegaal. *Rijden*.

workers into accepting lower wages. In this section, this problem will be investigated by comparing the VOC wages with those found in other sources, in order to say something about the representativeness of wages paid for by the VOC for the general wage levels prevailing in a society.

This issue is probably the least problematic in the case of Bengal, where the Company had relatively little power to influence the labour market. Here, the VOC, like the EIC as well as the other European companies, entered a mature labour market and had to pay market rates.⁴⁸⁴ This also becomes clear when comparing wages from the VOC sources with other wages from the literature. At the beginning of the eighteenth century, the EIC paid a peon at Fort William (in Calcutta) between 1.5 and 2 rupee per month between 1703 and 1711,⁴⁸⁵ while the VOC paid between 1.69 and 2.25 rupee in 1699,⁴⁸⁶ and 2.5 rupee in 1709, only slightly higher. In the 1750s the literature reports wages of around 2.5 rupees per month for a peon by the English,⁴⁸⁷ while Dutch sources suggest 2.44 rupees per month in the period 1745-1755.⁴⁸⁸ In the late 1780s wages for coolies at Fort William had increased to 3 rupees,⁴⁸⁹ whereas the Dutch paid coolies even 3.3 rupees per month in Chinsurah. However, the data do not always fit as well, as for the later 1730s as the English paid a wage of 2.5 rupee per month in “Bengal” and Kasimbazar,⁴⁹⁰ while the Dutch paid 3.75 rupee to a peon in Chinsurah in 1738, and a similar wage in Kasimbazar in 1743, although this wage declined again to 2.0-2.5 in the later 1740s. Furthermore, we find a wage of 3 rupees to peons by the English Company in Dhaka in 1774, while in the same year the VOC reports a wage of only 1.98 rupee there. Nonetheless, it may perhaps be concluded that these wages, apart from these exceptions, are normally on roughly the same levels, and that there seems to be no consistent downward or upward bias in the VOC wages.

In the Cape Colony, although the evidence is limited, there we do see a consistent discrepancy between the wages earned by workers still under VOC contract and those *knechts* working without a long-term contract as e.g. farmhands for farmers. The Company *knechts* could also be VOC soldiers or sailors hired out to a settler. They signed a renewable one-year contract with the head of a household and received a monthly cash wage. After 1692 all contracts between Company *knechts* and settlers

⁴⁸⁴ More on this in section 5.5, but see also: Jan Lucassen, ‘Working at the Ichapur Gunpowder Factory in the 1790s (Part I)’, *Indian Historical Review* 39 (2012) pp. 19-56; *ibid.*, ‘Working at the Ichapur Gunpowder Factory in the 1790s (Part II)’, *Indian Historical Review* 39 (2012) pp. 251-271; Parthasarathi, *Why Europe*, p. 59.

⁴⁸⁵ Mukerjee, *Economic History*, p. 49.

⁴⁸⁶ VOC 8734, f. 109: 2 peons got paid 2.25 rupee per month, 2 got 2 rupee, 1 received 1.75, while 4 peons got 1.69 rupee per month.

⁴⁸⁷ See: Allen and Studer, ‘Prices and Wages’: 1751-1752; Calcutta: Mukerjee, *Economic History*, p. 49.

⁴⁸⁸ VOC 8796, 8798, 8800, 8802, 8804, 8805.

⁴⁸⁹ Data from ongoing work by Jan Lucassen, collected from the *British Military Board Proceedings* at the National Archives of India in New Delhi. I thank Jan for sharing these with me.

⁴⁹⁰ See: Bengal: Allen and Studer, ‘Prices and Wages’: 1737; Bhattacharya, *East India Company*, p. 205; Kasimbazar: A. S. M. A. Hussain, ‘A Quantitative Study of Price Movements in Bengal during eighteenth and nineteenth centuries’, (London: unpublished PhD thesis, 1976) p. 33.

had to be in written form and wages were fixed until 1795. The free *knechts*, and among them there were free blacks, did not enjoy institutional and contractual protection from the VOC, but their wages were significantly higher.⁴⁹¹ Zacharias Wagenaar, Commander of the Cape, noted in 1666 that free Dutch servants received ‘besides their gratuitous subsistence, ten and twelve, aye! fourteen and fifteen guilders monthly’.⁴⁹² Ad Biewenga suggests that the average wage of a building labourer around 1700 was 13 to 14 guilders per month (roughly 1.5 times the wage of the lowest ranking VOC employee).⁴⁹³ Skilled work was even more lucrative, as G.W. van Imhoff, Governor-General of the VOC in Batavia, noted that free masons and carpenters earned between 8 and 9 *schellingen* per day in 1743, twice the wage of a VOC craftsman.⁴⁹⁴

Since there are detailed data available on the population and the labour market in the Cape Colony,⁴⁹⁵ it is possible to correct for this bias. While these data will be further discussed in section 5.5, for now it suffices to note that there are data available on the number of free *knechts* and the number of VOC servants. Using these data, the VOC wages as taken from the muster rolls could be corrected for underestimation, by assuming ‘free’ unskilled wages were constantly 1.5 times, and ‘free’ skilled wages constantly 2 times higher than the VOC rates, and then adding shifting weights to these different wages on the basis of the information in figure 5.7 below.⁴⁹⁶

One may expect that the issue could be more problematic in Ceylon and Java where the VOC also held significant political power next to its role as a trader. However, as shall be discussed below and in the next chapter, it seems that next to the unfree labour market, there was a ‘free’ labour market in operation, where the Company hired labourers at market rates. For Ceylon wage evidence other than that from the VOC bookkeeping is very limited, yet it suggests that even in the provinces of Ceylon where the Company wielded considerable political power it had to pay wages that were more or less in conformity with the market. In his description of Ceylon in 1672, the Reverend Baldaeus wrote that carpenters and masons earned five to six *stuivers* per day.⁴⁹⁷ This is similar to the wage found for a carpenter and mason in VOC service in Mannar, earning 3 3/8 rix-dollars per month of 27 working days, which

⁴⁹¹ R. C.-H. Shell, *Children of Bondage. A social history of a slave society at the Cape of Good Hope, 1652-1838* (Johannesburg: Wits University Press, 1997) p. 13.

⁴⁹² D. Moodie (ed.), *The Record, or a Series of Official Papers Relative to the Condition and Treatment of the Native Tribes of South Africa* (Cape Town: Balkema, 1960) p. 293

⁴⁹³ Ad Biewenga, *De Kaap de Goede Hoop: Een Nederlandse vestigingskolonie, 1680-1730* (Amsterdam: Bert Bakker, 1999) p. 101. A VOC soldier earned 9 guilders per month: see next section.

⁴⁹⁴ J. X. Merriman (ed.), *The Reports of Chavonnes and his Council, and of Van Imhoff, on the Cape. With incidental correspondence* (Cape Town: The Van Riebeeck Society, 1918).

⁴⁹⁵ Van Duin and Ross, ‘The economy’, also see next chapter.

⁴⁹⁶ Employing the shares of VOC employees and *knechts* as weights for minimal and maximum wage rates. No data on these shares were available for the period between 1652 and 1700, therefore a linear time-trend was fitted to the share of VOC employees on the available data for 1701-1790: $VOC = 0,1484t + 77,798$ ($R^2 = 0.84$).

⁴⁹⁷ Baldaeus, *Naauwkeurige beschryvinge*, p. 188.

comes down to six *stuivers* per day.⁴⁹⁸ While in the memoir of Governor Julius Stein van Gollennesse (1743-1751) a monthly wage of 1 pagoda and a *parra* of rice, which translates into about 7 guilders is noted for a craftsman at a blacksmiths' shop (the wage noted in the VOC accounts is 7.2 guilders per month in 1769).⁴⁹⁹ The only wages found in the secondary literature are reported by Arasaratnam, who remarks that unskilled labourers earned fl. 6 guilders per month.⁵⁰⁰ While this seems to be high compared with most other data gathered during this research, his observation stems from 1740, when a similar wage for a coolie was reported in the VOC accounts in that year.⁵⁰¹ His suggestion that wages of skilled craftsmen were around fl. 18, however, seems unlikely in the face of the other evidence. Perhaps he is accidentally referring to a European craftsman.

Making comparisons between wage observations from different sources for Java is more difficult, as the wages from the costs on building and repairs mostly refer to craftsmen in a variety of cities along Java's north east coast, while those from the *Plakaatboeken* mostly relate to Batavia. However, perhaps the fact that there were at least 65 decrees concerned with setting wage levels of various labourers,⁵⁰² while at least thirteen of these were specifically issued to increase the level of wages,⁵⁰³ might suggest that the Company was adjusting wages to prevailing market rates. For example, an edict raising the wages of coolies working in the Chinese hospital in Batavia on January 5th, 1807 stated that the salary had to be raised to 5 *rix-dollars* per month, as no one could be found to work for only 3 *rix-dollars*.⁵⁰⁴ An edict issued a couple of weeks later raised the wages of Chinese blacksmiths from 40 *stuivers* to one *rix-dollar* per day, because that was what they could earn on the free market.⁵⁰⁵

⁴⁹⁸ VOC 1544, f. 1218: 3 3/8 rix-dollar divided by 27 days is 0.13 rix-dollar (consisting of 48 *stuivers*) is 6 *stuivers* per day.

⁴⁹⁹ Julius Stein van Gollennesse, *Memoir of Julius Stein van Gollennesse, Governor of Ceylon. For his successor Gerrit Joan Vreeland on February 28, 1751*, trans. by S. Arasaratnam (Colombo, 1974) pp. 91 and 144: one pagoda was about 6 guilders, while a *parra* rice cost about 1 guilder.

⁵⁰⁰ S. Arasaratnam, 'Historical foundation of the economy of the Tamils of north Sri Lanka', *Cheivanavakam Memorial Lectures* (Jaffna 1982) pp. 1-23, there p. 17.

⁵⁰¹ VOC 8978, f. 446.

⁵⁰² Plakaatboek VIII: 30.5.1765; 9.8.1765; 27.9.1765; 25.5.1766; 8.9.1768; 16.3.1773; Plakaatboek X: ?6.1776; 16.6.1778; 8.12.1778; 12.8.1779; 27.8.1779; 7.9.1779; 24.11.1783; 16.3.1784; Plakaatboek XI: 29.6.1792; 20.9.1794; 27.9.1794; Plakaatboek XII: 26.12.1795; 26.12.1795; 16.1.1796; 16.1.1796; 23.1.1796; 11.2.1797; 24.3.1797; 1.7.1797; Plakaatboek XIII: 1.7.1800; Plakaatboek XIV: 12.10.1804; 2.5.1805; 28.6.1805; 17.5.1807; 29.9.1807; 14.1.1808; 22.1.1808; 27.1.1808; 11.2.1808; 26.2.1808; 19.6.1808; Plakaatboek XV: 8.7.1808; 20.9.1808; 8.10.1808; 2.11.1808; 30.11.1808; 9.6.1809; 19.5.1809; 8.5.1809; 8.5.1809; 9.3.1809; Plakaatboek XVI :27.6.1810; 19.7.1810; 3.2.1811.

⁵⁰³ Plakaatboek VIII: 25.8.1769; Plakaatboek X: 12.1.1780; 18.9.1781; 11.3.1785; Plakaatboek XII: 26.6.1795; Plakaatboek XIII: 6.9.1800; 4.11.1803; 9.12.1803; Plakaatboek XIV: 26.8.1806; 7.8.1806; 5.1.1807; 23.1.1807; 3.5.1808; Plakaatboek XV: 14.1.1809; 17.1.1809; 21.4.1809; 27.9.1809; Plakaatboek XVI: 9.1.1810; 14.2.1810; 27.6.1811; 7.7.1811.

⁵⁰⁴ Plakaatboek XIV: 18.1.1807. A rix-dollar or *rijksdaalder* was a coin worth 48 *stuivers*, equal to 2.40 guilders.

⁵⁰⁵ Plakaatboek XIV: 23.1.1807.

To summarize, there seems to be no consistent bias in the wage data for Bengal, while those for the Cape Colony have to be corrected for underestimation. For Ceylon and Java the evidence is limited, but, as will also be discussed below in more detail: there was a free labour market where the VOC presumably paid wages at market rates. This last point shall be further investigated in the next chapter. For now, another issue with these wage data is related to the difference between wages within each of these regions.

4.2.3. Regional variation

One of the assumptions in the real wage methodology is that the real wages computed for the major city in the country (often the capital) is somehow representative for developments for the wider region, or even the entire country. In the previous chapter it has been shown that regional commodity markets may have been relatively well integrated and the prices showed similar trends across different cities, this may not have been the case for labour markets. In fact, most labour markets before the twentieth century seem to have been poorly integrated. Regarding England, e.g. M.W. Flinn concludes that there were ‘very clearly substantial regional variations in wages’ in the eighteenth and nineteenth centuries.⁵⁰⁶ Even by the early twentieth century the integration of labour markets in England was far from complete.⁵⁰⁷ At the same time, De Vries notes the difference between nominal wages in the Eastern and Western Netherlands in the seventeenth and eighteenth centuries.⁵⁰⁸

As in the case of prices, the Cape will not be included as it was dominated by one city. While wages for free *knechts* may have fluctuated further back in the hinterland (also see the previous section), there are simply no data at this point to base any conclusions on.

More information is available regarding Bengal (and Bihar). While most of data refer to the main establishment in Chinsurah, there are also documents pertaining to Balasore, Chapra,⁵⁰⁹ Dhaka, Karriemabad, Kasimbazar, Patna, Singia, and Bettiah.⁵¹⁰

⁵⁰⁶ M. W. Flinn, ‘Trends in Real Wages, 1750-1850’, *Economic History Review* 27 (1974) pp. 395-413, there 404. For studies on wage differentials in Britain: E. H. Hunt, *Regional wage variations in Britain 1850-1914* (Oxford: Oxford U. P., 1973); *ibid.*, ‘Industrialisation and regional inequality: wages in Britain, 1760-1914’, *Journal of Economic History* 46 (1986) pp. 935-966; F. W. Botham and E. H. Hunt, ‘Wages in Britain during the Industrial Revolution’, *Economic History Review* 40 (1987) pp. 380-399; Elizabeth W. Gilboy, *Wages in Eighteenth Century England* (Cambridge: Harvard U. P., 1934).

⁵⁰⁷ George R. Boyer and Tim Hatton, ‘Regional Labour market integration in England and Wales, 1850-1913’, in: G Grantham and M MacKinnon (eds.), *Labour Market Evolution*, pp. 84-106, there p. 103.

⁵⁰⁸ Jan de Vries, ‘How did pre-industrial labour markets work?’, in: George Grantham and Mary Mackinnon (eds.), *Labour Market Evolution* (London, 1994) pp. 39-63.

⁵⁰⁹ Sioppra in the sources, very close to Patna.

⁵¹⁰ Tettua in the sources, assumed to be Bettiah in Bihar. See also: Murari Jha. *The Political Economy of the Ganga River. Highway of State Formation in Mughal India, c. 1600-1800* (unpublished PhD thesis, Leiden 2013).

Table 4.1 compares wages for coolies in these towns for four benchmark periods.⁵¹¹ This table shows that wages differed significantly between the towns in Bengal and those in Bihar, but that within those regions the labour market was relatively well integrated. This is also the point of Jan Lucassen’s observation that the workforce of a gunpowder factory at Ichapur near Calcutta consisted largely of migrants coming all the way from Chittagong (500 km east of Calcutta) and Bishnupur (130 km northwest).⁵¹² At the beginning of the century, wages for unskilled coolies in Bengal were 0.06 rupee per day and this may have increased somewhat (to around 0.10-0.12) towards the end of the eighteenth century. Unskilled wages in towns in Bihar were initially a third higher, but remained stable over the eighteenth century, or perhaps even declined slightly (see the observation for Patna 1788-89). A similar picture emerges from the nominal wages of skilled craftsmen, which are further discussed in appendix A6.1.

TABLE 4.1: UNSKILLED DAILY WAGES IN RUPEES, VARIOUS TOWNS IN BENGAL AND BIHAR, 1721-1789.

		1721-31	1742-45	1758-59	1788-9
Bengal ⁵¹³	Balasore		0.06		
	Chinsurah	0.06	0.06	0.06- 0.07	0.10-0.11
	Dhaka			0.06-0.07	
	Karriemabad	0.06	0.06	0.08	
Bihar	Chapra		0.09		
	Patna	0.09	0.09	0.09	0.08
	Singia		0.09	0.09	

Sources: VOC archives: statements on costs of repairs and building in Bengal, see text and appendix.

While most wage observations for Ceylon refer to Colombo, there are a few years for which we can make some comparisons between wages paid for specific labourers in different towns. In the later seventeenth century, there some scattered observations for carpenter’s helpers, or *knechts*. In Colombo these earned fl. 0.14 per day in 1678 and 1681,⁵¹⁴ while those in Caliture in that same year and Mannar in 1694, earned only half of that (fl. 0.06-0.07).⁵¹⁵ However, by 1701 the wage in Mannar had increased to fl. 0.12 per day.⁵¹⁶ Coolie wages reported for Tutucorin in

⁵¹¹ Based on data availability.

⁵¹² Lucassen, ‘Working at the Ichapur’, pp. 19, 45-9.

⁵¹³ There are also observations for coolie wages in Kasimbazar, but these could differ significant even in one year ranging from 0.06 rupees to 0.21 and even 0.29 rupee per day. Because it is unclear what exactly caused these high wages (especially since the high rates were also higher than those for masons and carpenters), Kasimbazar has been left out of the analysis.

⁵¹⁴ Fl. 3.60 per month: VOC 1340 f. 1417; 1351 f. 2527; 8902 f. 540.

⁵¹⁵ VOC 1340 f. 1417v; 1544 f. 1218.

⁵¹⁶ VOC 1643 f. 613.

1678-79 were similarly very low: fl. 0.06-fl. 0.09 per day.⁵¹⁷ The latter wages are dramatically low, and it can be assumed that these are not market wages for free full-time labourers, or that these workers received additional remuneration as otherwise they would not be able to sustain themselves. Coolie wages in Colombo in the period 1762-1790 were consistently fl. 0.18 per day.⁵¹⁸ Only in the years 1789-90 we have coolie wages for multiple locations: next to Colombo, also for Jaffna and Tutucorin (Southern India, but administered from Ceylon). These earnings do roughly correspond, as in the latter town coolies earn 21 cents per day,⁵¹⁹ while those in Jaffna (as in Colombo) made 18 cents.⁵²⁰ In 1789 a carpenter's helper in Galle earned on average 15 cents per day, but received additional rice.⁵²¹ See the appendix for more details on differences in wages of skilled workers.

These data are not conclusive, but on the basis of my observations it can be hypothesized that the free labour market in Ceylon outside Colombo was relatively underdeveloped in the later seventeenth century, but that over the seventeenth and eighteenth centuries the labour market matured and the importance of wage labour increased. This is also confirmed by the literature, as will be discussed in the next section. In the later seventeenth century, wages reported for Colombo are probably not entirely representative for the whole island, but the wage labour market perhaps became better integrated in the later eighteenth century.

There are almost no data for comparable unskilled coolies across Java before the eighteenth century. The little comparative evidence available suggests that wages in Batavia, as one would expect, were higher than those elsewhere on the island. Around 1686 a coolie in Cirebon made 3 *stuivers* (fl. 0.15) per day, less than half that of a coolie in Batavia who earned 4 *rix-dollars* per month (fl. 0.37 per day). In the 1740s a coolie in Surabaya earned 6 *stuivers* per day, only slightly below the wage in Batavia of 8 *stuivers* per day. Half a century later, around 1810, coolies in Surabaya earn 8 to 12 *stuivers* per day, while those in Batavia earn 12 to 20. More evidence about wage levels across Java's northeast coast is available for a variety of skilled workers, as shown in appendix table A6.5. That table shows that wages could differ, not only between occupations (a mason often earned more than a carpenter in Java), but also between cities. Interestingly, wages of carpenters across Java (with the possible exception of Batavia) are roughly on a par (fl. 0.30 per day until the 1740s, and fl. 0.60 at the end of the eighteenth century), while those for masons could differ radically. Those in Demak, Japara and Rembang could earn as much as fl. 1.20 per day, while masons in Surabaya and Semarang got only half of that, and those in Cirebon earned only fl.

⁵¹⁷ VOC 1340 f. 1418; VOC 1351 f. 2529.

⁵¹⁸ Fl. 4.80 per month. Source: Colombo account books.

⁵¹⁹ These were hired for a year for fl. 66.40: VOC 3977, f. 1808.

⁵²⁰ Wages for Jaffna noted down per day, those in Colombo earn 2 *rix-dollars* per month, which equals fl. 0.18 per day when assuming a 26 day work week and 2.4 guilder per *rix-dollar*.

⁵²¹ This is an average: 36 carpenter's helpers earned fl. 4.95 per month and 2 *parra* rice, while 16 received fl. 1.83 per month, and 1 *parra* rice month: VOC 3922 ff. 1510-1512.

0.30 per day. Because we find these wage differentials for masons only, it seems implausible that this difference was driven by varieties in the extent of VOC power across these towns.⁵²² It is more likely that these wage differentials are in fact driven (as noted above) by market mechanisms of supply and demand: masons were probably scarcer and in higher demand in Demak, Japara and Rembang than elsewhere.

The data on the spread of wages within the various regions is too limited and too heterogeneous to estimate the exact differentials across the regions. However, it is clear that wages in Batavia and Colombo may not be wholly representative for the entire island. This is not different from what has been observed for other parts of the world. In England nominal wages in Oxford were roughly half the level in London in the seventeenth and eighteenth centuries,⁵²³ while in the Dutch Republic the daily nominal wage for a master carpenter in Holland (Alkmaar) was about 50 percent higher than those in the eastern provinces (Kampen, Overijssel) around 1800.⁵²⁴ Only across Bengal wage rates were very similar, but again differed from those in Bihar. For the real wage comparisons, we will compare trends and values between the main towns in these regions, and in the global comparisons we are thus still comparing like with like.

4.2.4. Estimating a time series of nominal wages

In order to be able to compare the longer term trends in real wages, it is necessary to translate the wage observations from the sources into a continuous time trend of wages. In order to do so, a number of further issues had to be resolved. As in the case of prices, wages could be reported in different coins (*rix-dollars*, *guilders*, *rupees* etc.), and these were all converted into grams of silver to make them comparable over space. Furthermore, the wages found in the sources were reported per different time period (day, week and year) and had to be converted to daily rates in order to make them consistent. Whereas Allen et al. assumed 250 working days per year (21 per month) for Europe, the sources on Bengal, Java and Ceylon suggest that a working month in these areas may have been between 26 and 30 days per month.⁵²⁵ However, to ensure

⁵²² E.g. that as VOC had a less dominant position in Japara than in Cirebon, it had to pay a (larger) premium to obtain reliable workers. Also, that would not explain why wages would be higher in Batavia, where the VOC was omnipresent.

⁵²³ Allen, 'The Great Divergence', and data on his personal website:

<http://www.nuffield.ox.ac.uk/People/sites/Allen/SitePages/Biography.aspx>

⁵²⁴ Jan Luiten van Zanden, *Arbeid tijdens het handelskapitalisme: opkomst en neergang van de Hollandse economie, 1350-1850* (Bergen: Octavo, 1991) pp. 136-137, although levels were closer to each other in earlier periods.

⁵²⁵ Java: between: 26 and 30 days: Plakaatboek XII, p. 198 (16.1.1796), P. XIV, p. 566-8 (22.1.1808): coolies working 26 days per month; P. XIV p. 699 (3.5.1808). Bengal: 30 days according to differences between daily and monthly wages in VOC 8791 ff. 343-348, VOC 8793 f. 274-6. Ceylon: a month consisted of 30 days as wage notations for 15 days were exactly half the monthly wage: e.g.: VOC 3204, 3235, 3265, 3323, 3379, 3404, 3434, 3487, 3518 (unfortunately these sources had no page numbers).

comparability with Allen et al., this dissertation will estimate real wages assuming 21 working days, as we wish to compare the purchasing power of wages *ceteris paribus*.⁵²⁶

Another problem is formed by the additional remunerations besides the money wage, e.g. board and lodging, which are not consistently mentioned in the sources. In the case of the Cape Colony, a report of the Council of Policy from 1717, and two VOC cashbooks (from 1754 and 1786), mentions how the lowest ranking VOC employees received an additional $\frac{3}{4}$ reaal and 31 pounds of wheat per month as board, while skilled craftsmen receive $1\frac{1}{2}$ to 2 reaal extra per month as well as 3 *muids* of wheat annually. These additional remunerations were found in separate sources and it can be assumed that all the workers on VOC contracts received similar extras. The monetary value of these additions was added to the monthly wages.⁵²⁷ For Ceylon and Java, on the other hand, the data suggest that only those labourers (probably those performing obligatory labour service) who received comparatively low wages received additional remunerations.⁵²⁸ Where nothing about additional remunerations was mentioned, no corrections were made.⁵²⁹

The problem is more complex for Bengal, as the sources only start mentioning rates with and without board from the 1770s onwards. This means that another assumption had to be made: either when it was not explicitly mentioned in the sources, this does in fact suggest that these labourers did not receive any extra income; or they received additional compensation, but this was just not consistently reported. Considering the increase in wages in the 1770s relative to the period before, especially when including board, it may be assumed that workers for the earlier eighteenth century also received board even though it was not explicitly mentioned. In the appendix the different series and corrections are reported and it becomes clear that the results reported here are biased against my conclusions (of low living standards in Bengal) as these assumptions result in the highest real wages over the eighteenth century (see figure A6.1).

Finally, and most importantly, in order to estimate wages over time, one has to deal with missing observations. While these gaps were generally much larger than those in the price series, this is at the same time perhaps less problematic, as, in contrast to prices (which could fluctuate a lot), wages tended to be 'sticky': remaining fixed for long time periods, sometimes for over a century.⁵³⁰ Furthermore, while they

⁵²⁶ For Ceylon, this is not a major issue, as most wages were noted down per month, and the subsistence rates were based on annual salaries. For the comparison of nominal daily wages, also for Ceylon these were calculated on the basis of 250 work days per year.

⁵²⁷ Using the wheat price series to convert the 3 *muids* into guilder values.

⁵²⁸ Arasaratnam suggest that a *parra* of rice was added to wages in Ceylon in case of serious labour shortages: Arasaratnam, 'Historical Foundation', p. 17.

⁵²⁹ For details see the appendix.

⁵³⁰ De Vries, 'How did,' p. 40.

possibly increased from time to time, it seems that in pre-modern labour markets in general nominal wages (almost) never fall.⁵³¹

The data for Chinsurah are relatively complete and the gaps could be linearly interpolated without much risk. The data on the Cape Colony demonstrate that, similar to the other VOC establishments in Asia, Company wages were fixed throughout the seventeenth and larger part of the eighteenth centuries;⁵³² only in 1790 Du Plessis and Du Plessis find an increase in the wages of soldiers (who represent the lowest ranking VOC employees).⁵³³ As noted above, these VOC wages were corrected for underestimation of the average wage level using the shares of free *knechts vis-a-vis* Company employees, which introduces a slightly declining trend in the series as the share of free *knechts* declined over the eighteenth century. The appendix shows that different ways of handling the data do not impact much on the results for unskilled wages. The differences are somewhat larger for the skilled workers, which must be kept in mind when discussing the ‘skill premium’ below.

The data for Ceylon and Java pose greater difficulties. The data from the Colombo account books for the period 1760 to 1790 suggest wages are sticky in this period, yet data for the earlier period are scarce. Wages for masons in Colombo confirm that this stability can be projected back onto the later seventeenth century, suggested by observations from 1681, as well as 1738 and 1740.⁵³⁴ Yet a few observations of wages of carpenters and unskilled workers may suggest slightly more fluctuation.⁵³⁵ There are a few ways to deal with this. First, one can assume stability over the entire period. Second, one can interpolate between the years for which we have data. A third way to deal with this is to regress the wages in the database on a time trend, using dummies for different levels of skills and the ethnicity of labourers. All three options are explored in the appendix.

As can be seen in the appendix, the results do not lead to dramatically different results. In fact, the regressions suggest nominal wage stability over the entire period. The interpolated series are slightly lower in the later seventeenth century and a little bit higher in the middle of the eighteenth century. For the series presented in this thesis I use the sticky series. This is also supported by Arasaratnam’s observation that

⁵³¹ Ibid., p. 40.

⁵³² LeQuin, *Het personeel*; Matthias van Rossum, ‘De intra-Aziatische vaart: schepen, zeelieden en ondergang van de VOC?’, *Tijdschrift voor Sociale en Economische Geschiedenis* (2011) 8, pp. 32-69; Claudia Rei, ‘Incentives in Merchant Empires: Portuguese and Dutch Labor Compensation’, *Cliometrica* 7 (2013) pp. 1-13.

⁵³³ Their data from 1756 shows that unskilled building labourers (*fortificatie werkers*) that often represent unskilled labourers in real wage studies earn a similar monthly wage as the soldier. Similarly, the muster roll from 1778 (VOC 12575) suggests *arbeidsheden* (manual labourers) also earn the same. There are no data for skilled construction workers for 1790, but there have been no increases until 1778 and assume no increases until 1790. This is reasonable as Claudia Rei also shows that craftsman in Amsterdam saw their nominal wage decline, while that of unskilled increased slightly over the eighteenth century: ‘Career and wages in the Dutch East India Company’, *Cliometrica* 8 (2014) pp. 27-48.

⁵³⁴ VOC 8902 f. 540; VOC 8974 f. 2012; VOC 8978 f. 446.

⁵³⁵ VOC 8939 f. 767, 8974 f. 2012; 8978 f. 446.

in (neighbouring) Southern India ‘there had been no marked increase in wages from the seventeenth century for over a hundred year period’.⁵³⁶

For Java there are more data for the earlier eighteenth and late seventeenth centuries, but these come from a variety of sources and refer to different types of workers. The same three options again present themselves. Appendix A6.4 discusses the different methods of dealing with these missing data. It is shown that these different methods of dealing with gaps lead to essentially the same results. As these wages stem from such a variety of sources, the data presented here are far from ideal, but the results seem plausible. While both Boomgaard and Reid have suggested a decline in wages over the seventeenth and early eighteenth centuries,⁵³⁷ they did not show data on wages for the later eighteenth century, but the evidence dug up for this dissertation strongly suggests an increase in nominal wages in the second half of the eighteenth century. This fits with the evidence of high labour demand in that period as well as possible increased productivity in agriculture, as will be discussed in the next chapter.

Thus, the appendices demonstrate that the different ways of dealing with biases and missing data do not lead to significantly different results. However, it is clear that constructing a continuous time series of wages from these relatively scarce data goes at the expense of some of the interesting details enclosed in these data. The limitations of these procedures, as discussed extensively in the sections above, as well as in the appendix, must be kept in mind. New data, perhaps from local archives, may confirm (or refute) the trends sketched in this dissertation. Nonetheless, it is suggested that creating these series in this manner is still an interesting exercise, which allows the analysis of longer term patterns of living standards in a comparative perspective.

4.2.5. Global wage comparisons

Table 4.2 shows the results of inserting the newly estimated wage series in a global picture of nominal daily unskilled wages, expressed in grams of silver (which allows international comparisons). These nominal wages provide information on the competitiveness of these regions. One difficulty is that these nominal wages may also reflect differences in the value of silver across the globe.

Table 4.2 to some extent seems to confirm what is known about differences in the relative value of silver. Silver wages were highest in Southern America, where the major silver mines were located, and where silver was consequentially valued lower. Silver flowed first to Europe and then to Asia, and silver wages at first sight also seem to be higher in the former than in the latter. However, looking more closely at some of the developments, the relative value of silver is not the only factor driving global

⁵³⁶ S. Arasaratnam, ‘Weavers, merchants, and company: the handloom industry in Southeastern India 1750-1790’, *Indian Economic and Social History Review* 17 (1978) pp. 257-281.

⁵³⁷ Boomgaard, ‘Why work?’, Reid, *Southeast Asia* I.

nominal wage differentials. Although the silver mines were located in South America, silver wages in North America were quickly catching up in the eighteenth century. By the end of the eighteenth century, silver wages were higher in Maryland than in Bolivia, Chile and Mexico. This may reflect significant economic development taking place there, but it is also related to the developments in England, as shall be discussed below. While most silver came to Europe via Spain in the sixteenth century, Spain had lost its lead in silver wages in the early seventeenth century.⁵³⁸ Wages in London, Amsterdam and Antwerp were particularly high in the seventeenth and eighteenth centuries, a possible consequence of the active involvement of these areas in global trade.⁵³⁹ Furthermore, Allen et al. have shown that industrialization in England also pushed levels in London further above those in Amsterdam in the early nineteenth century. Silver wages in China, where silver was supposedly valued higher than in Europe, were higher than in Spain, and on a par with cities in other parts of the European 'periphery'.

The fact that these wage patterns not only depended on varieties in the value of silver also corresponds with the observation of converging silver prices in the previous chapter as well as studies by Flynn and Giraldez suggesting that by the late sixteenth century there was already an integrated global market for silver.⁵⁴⁰ Broadberry and Gupta have suggested that the level of silver wages in this period are thus already associated, to some extent, with the level of economic development.⁵⁴¹

The lower silver wages in China, and especially in India, explain why manufactured goods (e.g. textiles) were transported in great quantities from Asia to Europe, rather than the other way around. The new data assembled for Bengal strongly confirm earlier observations of very low wages there. New data on Surat, taken from Ghulam Nadri, have also been converted to silver values and entered into the global comparison. While those wages are double those in Bengal, they are still lower than in most parts of Asia and Europe. The low silver wages gave India an important competitive advantage in textile manufacturing, and confirm observations by various contemporaries like Daniel Defoe and Francisco Pelsaert.⁵⁴² Wages in Ceylon were similarly low (although still twice the level in Bengal), and just above those in Southern India. Unskilled silver wages were somewhat higher in Batavia and increased more in the second half of the eighteenth century, thereby surpassing nominal wage levels in China in the final decades.

⁵³⁸ Broadberry and Gupta, 'The early modern', p. 5.

⁵³⁹ Allen, 'Progress and Poverty'.

⁵⁴⁰ Flynn and Giraldez, 'Cycles of Silver'.

⁵⁴¹ Broadberry and Gupta, 'The early modern'; Van Zanden notes the strong positive correlation between silver wage and urbanization; J. L. van Zanden, 'Wages and the standard of living in Europe, 1500-1800', *European Review of Economic History* 3 (1999) pp. 175-197, there p. 181.

⁵⁴² See Parthasarathi, *Why Europe*, pp. 34-38.

TABLE 4.2: NOMINAL DAILY WAGES IN GRAMS OF SILVER PER DAY, 1650-1800.

	1650-74	1675-99	1700-24	1725-49	1750-74	1775-99
Africa						
Cape Town	6.32	6.25	6.07	5.98	5.72	6.92
Gold Coast ⁵⁴³				1.60		
Asia						
Bengal			0.68	0.73	1.08	1.15
Surat	1.29 ⁵⁴⁴	1.40 ⁵⁴⁵		2.34	2.08	2.36
South. India	1.15 ⁵⁴⁶	1.44 ⁵⁴⁷			(3.02) ⁵⁴⁸	0.86-1.44
Colombo ⁵⁴⁹		1.77	1.77	1.79	1.93	2.21
Batavia		2.31	2.31	2.34	2.63	3.36
Kyoto				2.68	2.68	2.64
Beijing				3.26	3.24	3.20
Suzhou	3.38	3.35	3.31	3.28	3.25	3.22
Europe						
London	9.28	10.02	10.24	10.73	11.17	11.90
Amsterdam	8.34	8.58	8.86	8.99	9.17	9.23
Leipzig	4.32	3.50	3.82	3.53	3.21	3.00
Valencia	2.35	2.58	2.44	2.38	1.91	1.61
Latin America						
Bolivia	12.78	12.78	12.78	12.51	12.43	12.17
Chile		9.20	14.42	15.01	15.17	15.96
Mexico	9.98	10.54	11.14	11.41	11.60	11.40
Peru	10.22	10.22	10.22	10.37	11.96	
North America⁵⁵⁰						
Boston	4.70	5.23	5.52	5.97	7.96	11.97
Maryland				8.47	11.05	18.27
Philadelphia	6.43	5.96	6.09	6.69	8.24	

As a major part of the population of 'settler' societies came from Europe, wage levels in these colonies are related to those prevailing in patria.⁵⁵¹ Consequentially,

⁵⁴³ Observation from K. Rönnbäck, 'Living standards on the pre-colonial Gold Coast: a quantitative estimate of African laborers' welfare ratios', *European Review of Economic History* 18 (2014) pp. 185-202. On p. 197 an annual wage for a free canoe man on the Gold Coast is noted of £3.6. Following Lindert, 'Silver value', the £ was 111.4 grams of silver: $(3.6 * 111.4) / 250 = 1.60$ grams of silver per day.

⁵⁴⁴ Observation for 1640: Broadberry and Gupta, 'The early modern'.

⁵⁴⁵ Observation for 1690: Broadberry and Gupta, 'The early modern'.

⁵⁴⁶ Observation 1600-50.

⁵⁴⁷ Observation for 1680.

⁵⁴⁸ Observation by Parthasarathi, 'Rethinking wages'; deemed unreliable by Broadberry and Gupta, 'The early modern'.

⁵⁴⁹ Calculated on the basis of monthly rates, assuming 250 days per year. As they probably worked more days per month, these figures slightly overestimate the daily wage in Colombo.

⁵⁵⁰ I thank Bob Allen for sharing these data with me.

⁵⁵¹ Robert C. Allen, 'Real Incomes in the English-Speaking World, 1879-1913', in: G. Grantham and M. MacKinnon (eds.), *Labour Market Evolution. The economic history of market integration, wage flexibility and the employment relation*. (London: Routledge, 1994) pp. 107-138; Alan M. Taylor and Jeffrey G.

silver wages were high in Cape Town (and North America) compared with Asia and Southern and Eastern Europe. This clearly differs from the Gold Coast, where nominal wages were as low as in Colombo. In the next section, it will be explored whether high silver wages also translated into higher levels of material well-being.

4.3. Real wages

These wages can be converted into real wages by deflating them by the prices of the baskets calculated in the previous chapter. The prices of the baskets shown in figure 3.7 fit the nutritional requirements for one adult male. Following Allen et al., the price of these baskets were multiplied by 3.15 in order to cover the budget for a nuclear family including rent.⁵⁵² Obviously, such assumptions may be criticized as household sizes were not equal across the world. The issue is investigated in the next chapter, but for comparative purposes, we accept the assumption for now (as we wish to answer the question where workers across the globe had the higher purchasing power, *ceterus paribus*, as well as have a notion about their standard of living relative to subsistence).⁵⁵³ Dividing the full time, full year earnings, as estimated in the previous section, by this annual family budget results in so-called ‘subsistence ratios’. This ratio allows simple interpretation: a ratio above ‘1’ indicates that the household lived, based on the male wage, above subsistence, allowing the household to expand consumption and include more luxurious products, or take more time for leisure. A ratio below one suggests that other family members had to work, or households should augment their incomes with alternate sources in order to survive, as the costs of a barebones basket cannot be reduced by much.

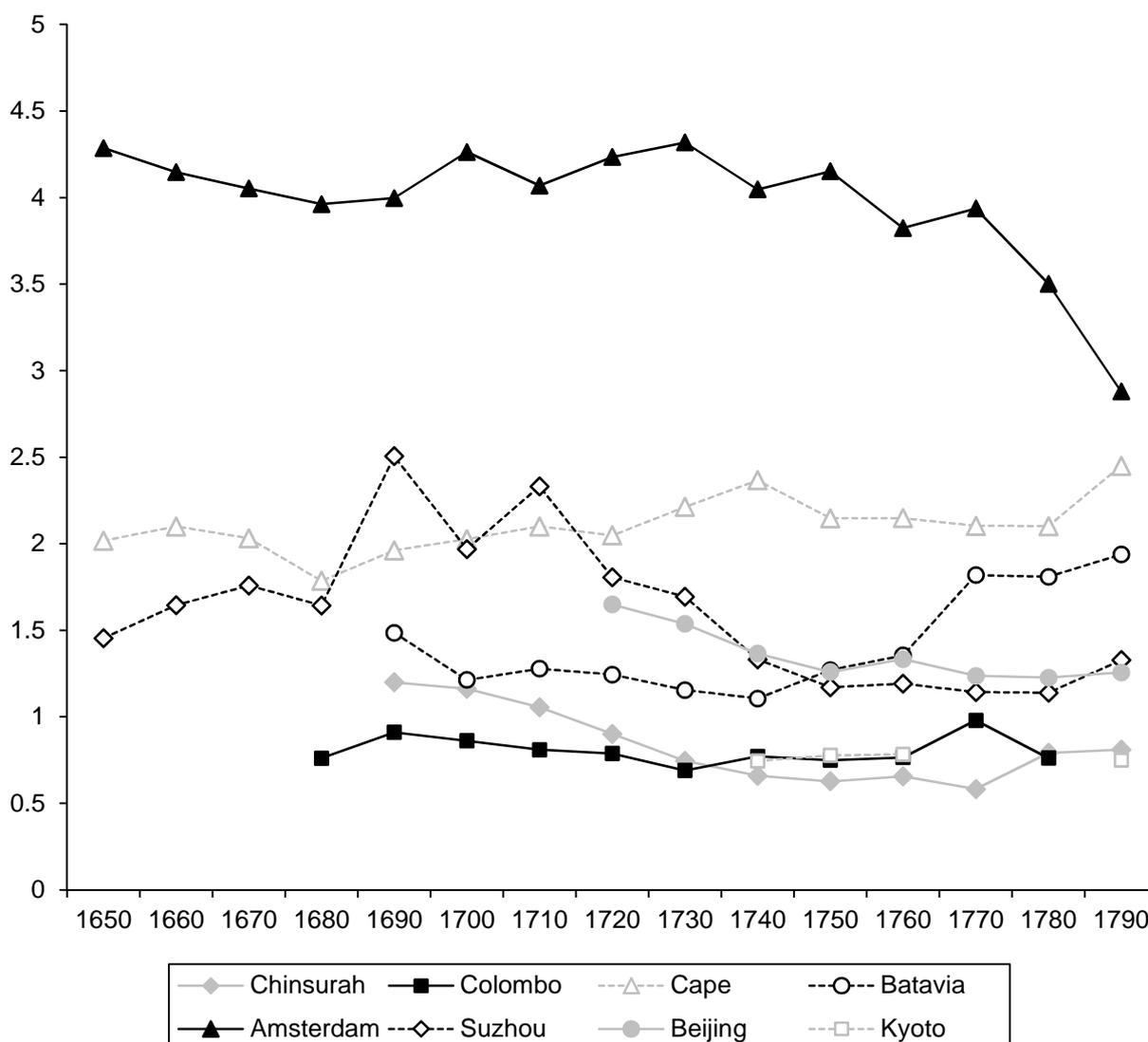
Figure 4.1 shows that absolute standards of living in the cases studies, and compares these with those in Amsterdam, that represents the maritime region of north-western Europe (also including London and to some extent Antwerp and Oxford) characterized by high living standards. Also included in the comparison are other cities in Asia: Shanghai/Suzhou, situated on the lower reaches of the Yangtze River Delta (reflecting developments in the most advanced region of China), as well as Beijing and Kyoto (representing northern China and Japan respectively).

Williamson, ‘Convergence in the age of mass migration’, *European Review of Economic History* 1 (1997) pp. 27-63; Allen et al., ‘Colonial origins’.

⁵⁵² Allen et al., ‘Wages, prices’.

⁵⁵³ But at the same time still being able to get some notion of their ‘absolute’ standard of living, relative to a poverty line. See sections 3.2 and 3.3 for more on the methodology and see sections 5.3 and 5.4 for an examination of the assumptions on family sizes and their impact on the global comparisons.

FIGURE 4.1: SUBSISTENCE RATIOS IN ASIA AND EUROPE, 10-YEAR-AVERAGES.



Sources: Chinsurah, Colombo, Cape and Batavia: see text; Amsterdam, Suzhou,⁵⁵⁴ Beijing and Kyoto: Allen et al., 'Wages, prices'.

Perhaps somewhat surprisingly, subsistence ratios in Cape Town were initially well below those prevailing in Amsterdam; they converged over the eighteenth century.⁵⁵⁵ Many of the Cape immigrants came from Holland, Germany, and France and living standards in north-western Europe could have been an alternative.⁵⁵⁶ There are a variety of reasons for the relatively low ratios at the Cape. First, living standards in many parts of Germany and France,⁵⁵⁷ although not shown in this figure, were on a par with, or lower than, those at the Cape.⁵⁵⁸ Second, many European settlers in Cape

⁵⁵⁴ Suzhou is situated, next to Shanghai, in the Yangzi Delta.

⁵⁵⁵ Not unlike living standards in Boston, as recently shown by Allen et al., 'Colonial origins', p. 878.

⁵⁵⁶ See the literature on migration and real wages: e.g. Allen, 'Real Incomes', and Taylor and Williamson, 'Convergence in the age'.

⁵⁵⁷ In Stellenbosch in 1704 and 1726, slightly more men came from Germany than from the Dutch Republic: Biewenga, *De Kaap*, p. 32.

⁵⁵⁸ See Allen et al., 'Wages, prices', and Allen, 'The Great Divergence'.

Town were either VOC or ex-VOC employees. Europeans enlisting into the lower ranks of the VOC usually came from the bottom ranks of society in Europe.⁵⁵⁹ Third, while the VOC paid relatively low wages to its lower personnel, they were ensured a stable income over the long term and there were significant opportunities for climbing the wage ladder within the VOC.⁵⁶⁰ Fourth, after the contract with the VOC ended these workers could try to improve their standard of living by either becoming free *knechts* (who earned higher wages, but did not enjoy the contractual protection of the Company),⁵⁶¹ or freehold farmers. Finally, the assumptions employed in this study put some downward bias on the subsistence ratios for workers at the Cape specifically as these were workers who received important in-kind payments and who probably did not have a family yet.

The real wages for Cape Town show a slightly increasing trend over the seventeenth and eighteenth centuries. The notable stability of real wages over this long period does not point to a very dynamic economy. Nonetheless, in light of significant population expansion and diminishing living standards in different parts of Europe, stable welfare at two (or more) times subsistence level is not a poor performance. A positive effect of the VOC price policies was to avert many subsistence crises caused by harvest failures, while the farmers were ensured a guaranteed minimum price for their produce, even in years of abundant harvests.⁵⁶² Relative security and prospects of improvement might have been an attractive option for the poorer people in Europe.

Living standards were generally lower in the other case studies, where, in contrast to the Cape, the evidence for indigenous workers, rather than for European settlers, is shown. The ratios in Bengal were slightly above subsistence level until 1710, but went into a significant decline after that. Bengali workers' purchasing power declined by around 60 percent between 1710 and the early 1740s (see appendix figure A6.1). Real wages fluctuated around that low level until the drought of 1769-70 when subsistence ratios hit rock-bottom. Living standards recovered after that. This research, based on extensive new wage evidence, thus supports the pessimistic view of Bengali living standards. It confirms observations by contemporaries who suggested that the Indian poor 'are poor indeed,'⁵⁶³ as well as those historians who suggested that the many in India lived in 'great poverty'⁵⁶⁴ and fits with the evidence of very simple diets there.⁵⁶⁵ Furthermore, figure A6.1 also shows the great vulnerability of the region to droughts and famines. Whereas the harvest failures in the Cape Colony in the 1780s

⁵⁵⁹ Gaastra, *De geschiedenis van de VOC*, p. 97. Or, as Merle C. Ricklefs put it, 'adventurers, vagabonds, criminals and the unfortunate from throughout Europe took its oath of allegiance' in: *A History of Modern Indonesia since c. 1200* (Stanford: Stanford U. P., 2008) p. 30.

⁵⁶⁰ Rei, 'Career and wages'.

⁵⁶¹ Shell, *Children of Bondage*.

⁵⁶² Ross, 'The Cape'.

⁵⁶³ Cited in: Parthasarathi, 'Rethinking wages', p. 80

⁵⁶⁴ E.g. W. H. Moreland, T. Raychaudhuri, K. N. Chaudhuri, cited in Parthasarathi, 'Rethinking wages'; *ibid.*, *Why Europe*.

⁵⁶⁵ See section 4.4.

did not push subsistence ratios below 1, the drought of 1769-1770 reduced those in Bengal to only a fifth of subsistence (0.2). With up to half of the total crop destroyed, many people perished in the subsequent famine. 'Consensual wisdom' suggests a death toll as high as 10 million people, or a third of the total population.⁵⁶⁶ These low living standards may also explain the relatively high number of observations for female and children's wages noted in the sources on Bengal (discussed in chapter 5 below), as well as the fact that many observations suggest a 30 day working month. Clearly, all the stops had to be pulled for households to survive in Bengal.

Declining real wages were also found in Northern India (Agra/Delhi) and Southern India by Allen, Broadberry and Gupta.⁵⁶⁷ Interestingly, India's decline in living standards thus precedes the nineteenth century, the period mostly associated with colonialism and globalization, which have often been invoked as causes for India's poor economic growth.⁵⁶⁸ As argued above, globalization may have started earlier and may thus have led to inflationary pressures in Bengal in the eighteenth century. Nonetheless these trends suggest that other factors also played a role in the declining living standards. Possible alternative explanations are declining agricultural productivity due to increased wars, revenue burdens and draught,⁵⁶⁹ or population growth leading to labour surplus.⁵⁷⁰

Standards of living in Ceylon were similarly low, in absolute as well as relative terms. Silver wages were as low as in Southern India, while prices were on the same (high) level as Amsterdam. This combination led to levels of material well-being almost consistently below subsistence. Workers in Southern India could benefit from relatively low food prices, which were either the result of high productivity in rice-growing agriculture, or 'an abundance of rice arising from geographical factors and a high proportion of the labour force engaged in agriculture.'⁵⁷¹ Ceylonese labourers, however, seem not to have shared this benefit of low food prices. In fact, Ceylon was unable to produce enough food for its population, making imports of large quantities of rice from Bengal, Coromandel and Java necessary (and relatively expensive).⁵⁷² The poverty of the indigenous inhabitants of Ceylon around this time is also remarked upon by Governor Jan Schreuder (1757-1761) in his memoir.⁵⁷³ Looking more closely at the trends over time in this period, it seems that real wages were stable or even declined in the late seventeenth and early eighteenth centuries, while from the late

⁵⁶⁶ Datta, *Society, economy and market*, p. 15.

⁵⁶⁷ Allen, 'India in the Great Divergence'; Broadberry and Gupta, 'The early modern'.

⁵⁶⁸ Roy, 'Beyond divergence', p. 58;

⁵⁶⁹ Clingingsmith and Williamson, 'Deindustrialization'.

⁵⁷⁰ K. N. Chaudhuri, cited by Parthasarathi, *Why Europe*, p. 38.

⁵⁷¹ This is a subject of debate: Broadberry and Gupta, 'The early modern', p. 16; Parthasarathi, 'Rethinking wages'.

⁵⁷² Arasaratnam, *Dutch power in Ceylon*, p. 130; De Silva, *A history*, p. 171.

⁵⁷³ Jan Schreuder, *Memoir of Jan Schreuder, Governor of Ceylon Delivered to his successor Lubbert Jan Baron van Eck on March 17, 1762*, trans. E. Reimers (Colombo: Ceylon Government Press, 1946) pp. 49 and 67.

1730s/early 1740s real wages increased slightly. These developments are possibly related to demographic trends,⁵⁷⁴ which will be discussed more extensively below.

Living standards in Batavia were higher than those in Bengal, Ceylon, and, in the second half of the eighteenth century, China. However, considering the significant gap between Batavia and Amsterdam (roughly 4 times higher subsistence ratios in the eighteenth century), these data hardly confirm Reid's suggestion that Southeast Asian's 'lives were no more squalid, their health no more wretched and their physical stature no worse than those of eighteenth century Europeans.'⁵⁷⁵ Clearly, at least in terms of purchasing power, the Javanese living standards were not on a par with those in Europe.

Reid and Boomgaard have both claimed that real wages declined in the seventeenth and eighteenth centuries. Their claims are confirmed with regard to 1680-1740. Neither of them showed wage data for the later eighteenth century, however, and as nominal wages increased, while prices declined due to a sustained period of peace and stability, living standards actually improved between the 1740s and the 1790s. Thus, after the crisis of the seventeenth century and the wars of the early eighteenth century, some of the evidence for the later eighteenth century suggests an increase in living standards. This is also corroborated by evidence of increases in production and trade,⁵⁷⁶ increases in monetary exchange,⁵⁷⁷ consumption and population growth.⁵⁷⁸ Furthermore, various colonial officials remarked upon the increase in production and consumption in the later eighteenth century.⁵⁷⁹

Figure 4.1 thus supports the conventional, rather than the Californian, view in the divergence debate. Living standards were generally lower in all parts of Asia (the core, constituting of the fertile Ganges and Yangzi river deltas, as well as the periphery, Ceylon, Japan, and Java).

4.4. The Skill Premium

One of the reasons for the differences in real wages may be caused by differences in the level of human capital formation, which is related to economic growth. Peter Lindert

⁵⁷⁴ De Zwart, 'Population, labour'.

⁵⁷⁵ Reid, 'Economic and Social Change'.

⁵⁷⁶ Nagtegaal, *Rijden*; Van Niel, *Java's Northeast Coast*; Maddison, 'Dutch Income'; also see: De Zwart and Van Zanden, 'Labour, wages'.

⁵⁷⁷ Feenstra, 'Dutch Coins'.

⁵⁷⁸ Peter Carey, 'Waiting for the "Just King"', pp. 89-91; Jacobs, *Merchant in Asia*, p. 241; Lieberman, *Strange Parallels*, Vol. 2, pp. 870-1; Ricklefs, 'Some Statistical Evidence', p. 30.

⁵⁷⁹ Waterloo to Engelhard (1804): 'one only has to direct one's eyes to those lands which [now] produce rice and which just twenty years ago were still waste and uncultivated' (cited in: Carey, *Power of prophecy*, p. 35), Engelhard to High Government Batavia: 'rice consumption in everyone's household is greater than formerly. [...] the condition of the Javanese is very different from 50 to 60 years ago when they lived in ignorance and were depressed and suppressed by the continual wars' (cited in: Van Niel, *Java's Northeast Coast*, p. 131) and Crawford (1812): 'a traveler could now pass a hundred miles in Java without encountering an uncultivated spot' (cited in: Carey, 'Waiting for the "Just King"', p. 91).

et al. hypothesised that one of north-western Europe's advantages was in 'the development of non-agricultural productivity concentrated in the capital-goods and knowledge intensive sector.'⁵⁸⁰ Interest rates were relatively low, but food and other agricultural products were relatively expensive there.⁵⁸¹ Jan Luiten van Zanden has investigated one aspect of this hypothesis by looking at the skill premium. The skill premium can be seen as the market value for skills (human capital) and is calculated by the difference between the wages of skilled craftsmen and those of unskilled labourers.⁵⁸²

According to new growth theory human capital formation is one of the most important determinants of long-term economic growth.⁵⁸³ A study by Davin Chor has pointed out that European cities between the sixteenth and nineteenth centuries that had low skill premiums also had higher levels of real wages.⁵⁸⁴ Van Zanden finds a strong relationship between the average skill premium during the eighteenth century and GDP per capita growth in the nineteenth century, as well as between the average skill premium and the absolute level of GDP per capita in 1913. He concludes that 'the skill premium is not only a measure of the quality of the institutional framework of an economy, but also appears to be a predictor of growth in the long run.'⁵⁸⁵

Van Zanden showed that Europe saw a spectacular decline in the skill premium in the period between 1350 and 1450 (from 140-160 percent to 50-60 percent). Whereas in England and the Low Countries the skill premium remained low and constant at the 50 percent level from 1450 onwards, the skill premium in central and southern Europe again rose to over 70 percent in the sixteenth century. Thus, already before the Industrial Revolution, Western Europe witnessed a greatly increased stock of human capital even though the reward for skill acquisition on the market remained relatively low.⁵⁸⁶ The skill premium was much higher in other parts of the world than it was anywhere in Europe. Although data on other parts of the world are scarce, some examples can be given. Data from sixteenth century Russia suggest a skill premium between 100 (carpenter/unskilled labourer) to 167 percent (mason/unskilled labourer). Data from Beijing point to a skill premium of 100 percent during the seventeenth and eighteenth centuries. Yet, there seem to have been large regional variations in the skill

⁵⁸⁰ Peter Lindert et al., 'Preliminary Global Price Comparisons, 1500-1870', Paper presented at the conference *Towards a Global History of Prices and Wages* (IISH Amsterdam, 2004) p. 25.

⁵⁸¹ Lindert et al., 'Preliminary Global Price Comparisons'; Van Zanden, 'The skill premium', p. 122.

⁵⁸² Van Zanden, 'The skill premium', p. 122.

⁵⁸³ See for example: Oded Galor, 'From Stagnation to Growth: Unified Growth Theory', in: Philippe Aghion and Steven N. Durlauf (eds.) *Handbook of Economic Growth* Vol. 1a (Amsterdam etc.: Elsevier, 2005) pp. 171-293; Glaeser et al., 'Do institutions'.

⁵⁸⁴ Davin Chor, 'Institutions, wages, and inequality: the case of Europe and its periphery (1500-1899)', *Explorations in Economic History* 42 (2005) 547-566.

⁵⁸⁵ Van Zanden, 'The skill premium', 147.

⁵⁸⁶ Gregory Clark, 'The condition', p. 1314.

premium in China, and some parts even had a skill premium comparable to Western Europe.⁵⁸⁷

Especially in the absence of literacy or numeracy rates for the regions under examination in this dissertation,⁵⁸⁸ the skill premium is informative about the spread of human capital there. In the case of the Cape, the assumptions necessary to correct for underestimation in the nominal wage series (see above), as well as the lack of observations of skilled wages in the later period, affect the calculation of the skill premium in that region. Therefore the skill premium is shown as a range, depending on assumptions. Furthermore in the case of the Ceylon, there is a clear wage gap between ordinary craftsmen and ‘master’ craftsmen. Table 4.3 shows the results and compares the skill premium in Bengal, the Cape, Ceylon and Java with Amsterdam between c. 1650 and 1800.

TABLE 4.3: SKILL PREMIUM, IN PERCENTAGES, IN AMSTERDAM, HOUGHLY, CAPE TOWN, COLOMBO AND BATAVIA, BENCHMARK YEARS.⁵⁸⁹

	Amsterdam	Cape Town ⁵⁹⁰	Chinsurah ⁵⁹¹	Colombo	Batavia
c. 1650	59	65-81	-	-	-
c. 1700	51	73-84	81	100 ⁵⁹²	-
c. 1750	52	56-61	91	40-94 ⁵⁹³	130 ⁵⁹⁴
c. 1800	49	30-57	51	40-94 ⁵⁹⁵	178 ⁵⁹⁶

Sources: see text.

These numbers suggest that skill premium was indeed the lowest over almost the entire period in Amsterdam. First of all, the early observation of the skill premium in Cape Town is largely influenced by the situation in Europe. This skill premium is slightly higher than in Europe because it was probably harder to find skilled workers to risk their lives to work for the VOC than to find unskilled labourers. Over the eighteenth century, the trend in the skill premium is clearly declining at the Cape. The

⁵⁸⁷ The percentages in this paragraph are taken from: Van Zanden, ‘The skill premium’, 131-33.

⁵⁸⁸ Except the Cape Colony, where there are data: Jörg Baten and Johan Fourie, ‘Numeracy of Africans, Asians and Europeans during the Early Modern Period: New Evidence from Cape Colony Court Registers’, *Economic History Review* (forthcoming 2014).

⁵⁸⁹ Data from the years closely surrounding those benchmarks: the skill premium is calculated by dividing the difference between the skilled and the unskilled wage by the unskilled wage * 100.

⁵⁹⁰ Ranges depending on assumptions (see appendix). 1650 refers to 1653-6; 1700 refers to 1699-1701, 1750: 1749-1751 and 1800 refers to data for 1789-91.

⁵⁹¹ All data refer to the difference between a carpenter’s and a coolie’s wage in Chinsurah. The figure for 1700 refers to data from 1706/7; 1750 refers to 1745, 1749-51; and 1800 refers to 1788-1791.

⁵⁹² Refers to 1681.

⁵⁹³ Based on regression 1 in appendix table A6.2, range determined by the subdivision between skilled (carpenter) and higher skilled labourers (master carpenter). See appendix A6.3.

⁵⁹⁴ Result from regression, see appendix A6.4.

⁵⁹⁵ Based on regression 1 appendix table A6.2, range determined by the subdivision between skilled (carpenter) and higher skilled labourers (master carpenter). See appendix A6.3.

⁵⁹⁶ 1797: carpenter and coolies in Batavia.

skill premium in Bengal in the first half of the eighteenth century is between 80 and 90 percent, which is over 30 percent below that of 119 percent for Northern and Western India in 1637, but higher than the 70 percent noted for Southern India in 1680.⁵⁹⁷ Towards the end of the century, the skill premium plunges in Bengal as unskilled wages increase more rapidly than skilled wages. In Colombo the premium is also 100 percent or lower. In fact, considering the fact that the 94/100 percent is for master craftsmen, while only about 40 percent is for ordinary craftsmen, the skill premium was relatively low there, and on a similar level as that quoted for Southern India, yet it is hard to discern a clear trend from these observations. The price for human capital paid in Batavia, was, however, relatively high and rising throughout the eighteenth century.

Differences in the skill premium depend on a number of factors.⁵⁹⁸ First of all, the skill premium is partly determined by the interest rates. The period of decline in the skill premium in Europe coincides with the period in which the Black Death caused an enormous fall in population levels, which resulted in a decline in interest rates caused by the rise of wealth per capita, which was in turn the consequence of the more favourable capital/labour and land/labour ratios. Regarding England for example, it has been suggested that interest rates fell from 10-11 percent before 1350 to 4-5 percent in 1450-1500,⁵⁹⁹ which then induced households, whose capital increased about 50 percent,⁶⁰⁰ to increase their investments in human capital, leading to the sharp decline in the skill premium in that period. Interest rates were around a low 5-6 percent in Europe in the early modern period. The relatively low and declining skill premium at the Cape may also have been partly the result of similarly low interest rates. The interest rate in 1782 there was 6 percent annually in 1782.⁶⁰¹ Over the later eighteenth century the interest rate seems to have further declined, to 5 percent in 1793,⁶⁰² and to only 4 percent in 1797.⁶⁰³

Interest rates in other parts of the world were much higher, and may partially account for the higher skill premiums there. In Bengal interest rates were between 12-18 percent in the middle of the seventeenth century,⁶⁰⁴ but declined to 10-12 percent

⁵⁹⁷ Broadberry and Gupta, 'The early modern', p. 14.

⁵⁹⁸ As discussed by Van Zanden, 'The skill premium'.

⁵⁹⁹ Gregory Clark, 'The Cost of Capital and Medieval Agricultural Technique', *Explorations in Economic History* 25 (1988) pp. 265-294, there p. 265.

⁶⁰⁰ *Ibid.*, 267.

⁶⁰¹ Or a ½ percent per month: E. H. D. Arndt, *Banking and Currency Development in South Africa (1652-1927): with an appendix on the rise of savings banking in South Africa* (Cape Town, 1928) p. 5; Rutger Kremers, *On the Colonial Roots of South Africa's Divergence: A Comprehensive Analysis of South African Economic Performance, 1600-1961* (unpublished MA thesis: Utrecht University, 2013) pp. 24-26.

⁶⁰² Arndt, *Banking and Currency*, p. 167; A. J. Bruwer, *South Africa: A Case National Gold and Banking Policy* (Cape Town: H.A.U.M., 1959) pp. 56-63.

⁶⁰³ G. M. Theal (ed.), *Records of the Cape Colony*, vol. 2 (1905) p. 141.

⁶⁰⁴ Sushil Chaudhuri, 'The financing of investments in Bengal, 1650-1720', *Indian Economic and Social History Review* 8 (1972) pp. 109-133, there pp. 124-126.

on ordinary debts in the later seventeenth-century,⁶⁰⁵ and remained at that level during the eighteenth century.⁶⁰⁶ Similarly interest rates were around 12 percent in seventeenth-century Ceylon,⁶⁰⁷ and Coromandel.⁶⁰⁸ Yet interest rates in Western India (Surat) were lower: around 8 percent per year in the middle of the seventeenth century.⁶⁰⁹ Furthermore, while it has been suggested that Southeast Asia was characterized by high interest rates and thin capital markets since as early as the seventeenth century, interest rates in Batavia were relatively low and often only 6 percent per year in the seventeenth century.⁶¹⁰

However, these are rates charged either by the VOC to European ‘freeburghers’ or rates paid by the Company itself. Perhaps the risk on these loans was relatively low. Indigenous labourers (those who had to make the investment in human capital) probably had to pay much higher interest. Boomgaard notes that ‘the lowest interest rates in the indigenous sphere in Southeast Asia during this period, both in legal texts and in actual practice appear to have fluctuated at between 25 and 35 percent per year.’⁶¹¹ He even finds annual rates between 40-50 percent charged in Buitenzorg near Batavia at the beginning of the nineteenth century.⁶¹² The situation was even more problematic in Ceylon, where peasants paid 10-15 percent interest per month (120 – 180 percent per year) to Muslim traders,⁶¹³ or even 25 percent monthly to ‘usurers’.⁶¹⁴ Yet the skill premium was lower in Ceylon and it thus seems that interest rates are not the entire story.

Second, the efficiency of training mechanisms and ‘access to the profession in general’ are important for the supply of skilled labour.⁶¹⁵ For example, it has been argued that the low skill premium in England was the result of efficient third party (the guilds and the state) enforcement of training contracts, thereby preventing both

⁶⁰⁵ Peter Boomgaard, ‘Geld, krediet, rente en Europeanen in Zuid- en Zuidoost-Azie in de zeventiende eeuw’, in: C. A. Davids, W. Fritchy, L. A. van der Valk and P. W. Klein (eds.) *Kapitaal, ondernemerschap en beleid. Studies over economie en politiek in Nederland, Europa en Azië van 1500 tot heden* (NEHA: Amsterdam, 1996) pp. 483-510.

⁶⁰⁶ Roy, ‘Economic conditions’, p. 190.

⁶⁰⁷ Lodewijk Hovy, *Ceylonees plakkaatboek: plakkaten en andere wetten uitgevaardigd door het Nederlandse bestuur op Ceylon, 1638-1796* vol. 1 (Hilversum: Verloren, 1991) p. 117: edict from 27 May, 1665 in Colombo.

⁶⁰⁸ Boomgaard, ‘Geld, krediet, rente’.

⁶⁰⁹ Irfan Habib, ‘Monetary System and Prices’, in: Tapan Raychaudhuri and Irfan Habib (eds.), *The Cambridge Economic History of India* vol. 1 (Cambridge, 1982) pp. 76-93.

⁶¹⁰ Boomgaard, ‘Geld, krediet, rente’: interest rates in other parts of Java were higher.

⁶¹¹ Peter Boomgaard, ‘Labour, land and capital markets in early modern Southeast Asia from the fifteenth to the nineteenth century’, *Continuity and Change* 24 (2009) pp. 55-78.

⁶¹² Van Zanden, ‘The skill premium’, pp. 136-7; Peter Boomgaard, ‘Buitenzorg in 1805: The Role of Money and Credit in a Colonial Frontier Society’, *Modern Asian Studies* 20 (1986) pp. 33-58; *ibid.*, ‘Labour, land’

⁶¹³ Dewasiri, *The adaptable peasant*, p. 190.

⁶¹⁴ Hovy, *Ceylonees plakkaatboek*, 1, p. 234.

⁶¹⁵ Van Zanden, ‘The skill premium’, p. 139.

masters' and apprentices' opportunism which would have had negative effects on the efficient transfer of skills.⁶¹⁶

In India and Ceylon, on the other hand, Acemoglu and Robinson, among others, suggest that the rigid hereditary caste system limited the functioning of markets and the allocation of labour across occupations.⁶¹⁷ However, the relatively low skill premium there (*vis-à-vis* Batavia) may suggest that the caste system, at least in the eighteenth century, was not as detrimental for the transmissions of skills as expected. A possible reason for this is that the caste system was less rigid in the eighteenth century,⁶¹⁸ and the labour market was working relatively efficient (despite the existence of the caste system). Yet we should not forget that there were also significant amounts of Muslims, a third of the Indian population, who fell outside of the caste system.⁶¹⁹

Most of the literature on India seems to suggest that labour markets were functioning quite well. Nadri describes that the labour market for building craftsmen in eighteenth-century Surat was able to respond to mechanisms of supply and demand and labour mobility was not hindered by the caste system.⁶²⁰ Similarly Lucassen's detailed case study of a Bengali gunpowder factory in the late eighteenth century also suggests an efficient labour market where workers were stimulated through monetary incentives.⁶²¹ Parthasarathi also provides various examples of 'a great deal of fluidity and mobility': e.g. *parayans* (landless labourers), who were found in a variety of urban (and military) occupations in the eighteenth century and *kunbis* (cultivators) who turned to weaving.⁶²² Similarly, in eighteenth century Ceylon members of the *karāva* caste, ostensibly fishers, were found performing a variety of jobs. For example, the great demand for carpenters in and around Colombo led many *karāva* in the nearby coastal settlement of Moratuwa to turn to carpentry.⁶²³ The *karāva* also carried out coastal trading, while demand for inland transport led many to become boatmen on the interior waterways and there also cases of them being employed assisting in the

⁶¹⁶ See e.g.: S. R. Epstein, 'Craft Guilds, Apprenticeship, and Technological Change in Preindustrial Europe', *Journal of Economic History* 58 (September 1998) pp. 684-713; Jane Humphries, 'English Apprenticeship: A Neglected Factor in the First Industrial Revolution', in: Paul A. David & Mark Thomas (eds.) *The Economic Future in Historical Perspective* (Oxford: Oxford University Press, 2003) pp. 73-102; Patrick Wallis, 'Apprenticeship and Training in Pre-modern England', *Journal of Economic History* 68 (2008) pp. 832-861.

⁶¹⁷ Acemoglu and Robinson, *Why Nations Fail*, p. 118.

⁶¹⁸ As suggested by: Parthasarathi, *Why Europe*, p. 59. Caste in India became more rigid in the nineteenth century, as also suggested by the first prime-minister of India, Jawaharlal Nehru, *The Discovery of India* (Delhi, Oxford and New York: Oxford U.P., 1994 [1946]) p. 225: who sees the causes of India's decline as 'the inevitable result of the growing rigidity and exclusiveness of the Indian social structure as represented chiefly by the caste system'.

⁶¹⁹ Shireen Moosvi, 'The World of Labour in Mughal India', *International Review of Social History* 56 (2011) pp. 245-261.

⁶²⁰ Nadri, *Eighteenth-century Gujarat*, p. 48.

⁶²¹ Jan Lucassen, 'Working at the Ichapur'.

⁶²² Parthasarathi, *Why Europe*, p. 59.

⁶²³ Arasaratnam, 'Social and economic change', p. 45; Dewasiri, *The adaptable peasant*, p. 92.

catching of elephants (the task of the *weenawo*,⁶²⁴ *pannikeas*, and *cornacx*).⁶²⁵ Rather than impeding the functioning of the labour market, the caste system may have provided additional trust and security in the transfer of skills through caste and kinship relations lacking in Europe. Labour markets will be discussed in greater detail in the next chapter.

Third, next to these factors influencing the supply of skilled labour, the skill premium also depends on the demand for skilled work. Population growth can lead to an increase in skill premium, for example because it increases demand for skills in the construction industry to build extra houses (especially since the skilled worker is represented by building craftsmen).⁶²⁶ Population growth can lead to an increasing supply of unskilled labour, pushing down real wages and productivity, thereby increasing the wage gap between unskilled and skilled labourers. In the next chapter it will be shown that in all four areas under discussion there were increases in population over the eighteenth century; however, only in Batavia this seems to have pushed up the already high skill premium. In Bengal, on the other hand, the famine of 1770/1 possibly led to the decrease in the skill premium, as unskilled workers may have been harder hit by the famine than skilled workers.

Thus, looking at the skill premium, it seems that north-western Europe was indeed ahead not only of China, but also of other parts of Asia. But perhaps the most remarkable feature of this discussion is that the skill premium was about 100 percent or below in the areas with a caste system, Bengal and Ceylon, while it was much higher in Java. While the caste system obviously hinders labour mobility across occupations, apparently it did provide a (relatively efficient) framework for the transmission of skills through caste and kinship lines.

4.5. Conclusion

This chapter has attempted to contribute to the debate on the Great Divergence in living standards during the early modern period. I have added wage data for Bengal, the Cape Colony, Ceylon and Java to the comparison. Deflated by the price series constructed in the previous chapter, and taking into account additional costs for sustaining other family members and housing, these wages have been converted into subsistence ratios that can be compared across time and space. The construction of such series is by no means straightforward, especially when data are as sparse as in the cases presented here. The issues and limitations related to the creation of these series were discussed at length in this and the previous chapter, as well as in the appendices. The creation of these series nonetheless increases reliability of these observations *vis-à-*

⁶²⁴ Dewasiri, *The adaptable peasant*, p. 203.

⁶²⁵ De Zwart, 'Population, labour'.

⁶²⁶ Van Zanden, 'The skill premium', p. 139.

vis observations of specific benchmark years (which could be outliers),⁶²⁷ and allows the analysis of trends over time.

These ratios lead to several conclusions. In general, the data support the conventional view in the Great Divergence debate. Living standards in Asia (at the core and the periphery) were lower than those in the European core (north-western Europe, here represented by Amsterdam). In line with the study by Allen et al., it must however be concluded that living standards in Asia were not exceptionally low, but instead that the living standards in north western Europe were exceptionally high, as living standards in Asia were largely on a par with those in many other parts of Europe.⁶²⁸

In Ceylon real wages were generally just below subsistence, as it suffered from both relatively low wages and high prices. Material well-being however slightly improved in the second half of the eighteenth century. Real wages in Bengal were slightly above subsistence in the early eighteenth century, but rapidly declined over the first part of the eighteenth century, and recovered only after a significant part of the population had perished in the crisis of 1769-70. Living standards were somewhat higher in Batavia, in line with Reid and Boomgaard's suggestions living standards declined until the 1740s, after which they recovered as the rise of VOC hegemony over Java's northeast coast allowed for a long period of peace and stability. Finally, as a society with a significant number of European settlers, the Cape Colony had the highest standard of living of the cases under investigation. Similarly to the cities in North America, living standards at the Cape were to some extent determined by welfare levels prevailing in the countries of origin of the European migrants (why else would they have made the trip?).

Also in terms of the skill premium it was the Cape that was most strongly influenced by developments in the home country. Interest rates were relatively low and the premium converged to European levels in the eighteenth century. The price paid for skill was generally higher in the other case studies, but perhaps lower than expected on the basis of the literature.⁶²⁹ Despite relatively high interest rates, the caste system provided a framework for the transfer of skills.

In order to arrive at conclusions about the comparative standards of living, this dissertation has followed Allen's method of computing real wages as subsistence ratios. The biggest advantage is that it allows us to put real wages in Bengal, the Cape Colony, Ceylon, and Java in an international comparative context, because similar calculations have been made for Europe, China, Japan and other parts of India in this period. The price and wage data for these case studies had to be put in the same model for estimating subsistence costs and wage income used for other societies, even

⁶²⁷ As Pomeranz did in *The Great Divergence*.

⁶²⁸ Allen et al., 'Wages, prices'.

⁶²⁹ Van Zanden, 'The skill premium'.

though conditions are clearly different in each country. For example, the Allen-approach assumes 250 working days per year, whereas much wage labour in e.g. Java and Ceylon was seasonal. It also assumes that wages were the only source of income for the household involved – again an assumption that was often violated in practice. It is, however, not possible to reconstruct how many days were actually worked by wage labourers in these cases during this period and thus how much money was earned per household, because the data for such an exercise are missing, but we can reconstruct, making use of the Allen framework, the long-term evolution of the purchasing power of the daily wage and put this into international perspective.

However, it is obvious that the relevance of this method depends on one's view of the organization of the labour market. To maintain comparability with other studies, I use the Allen-model and employ the same assumptions about working days, family composition and structure of the budget, knowing well that they do not entirely fit reality. Yet the method does tell us something about the purchasing power of the wages earned, which is usually considered to be an important determinant of living standard. In the next chapter, in order to shed more light on these issues, the labour market as well as demographic developments in these societies will be examined. Furthermore, the next chapter will analyse the possible causes of developments in living standards.

Chapter 5: Population, Households and Labour Markets

5.1. Introduction

The increase in the number of real wage studies over the past years made it possible to put the results of the archival research for this dissertation in an international perspective. As the real wage research has led to ‘provoking and interesting results’, this new strand of literature has also started to attract some criticism. First, Anne Booth doubts if in developing economies prior to the twentieth century, real wages of urban wage labourers can be seen as representative for the standard of living of the vast majority of the population.⁶³⁰ Large parts of the population were engaged in agriculture and received a significant share of their remuneration in kind (food and housing). Second, scholars like Joyce Burnette, Jane Humphries and Elise van Nederveen Meerkerk have argued that a significant part of household income was generated by women and children, and that a narrow focus on male earnings may lead to inaccurate conclusions.⁶³¹

⁶³⁰ Anne Booth, ‘Measuring Living Standards in Different Colonial Systems: Some Evidence from South East Asia, 1900-1942’, *Modern Asian Studies* 46 (2012) pp. 1145-1181.

⁶³¹ E.g. J. Burnette, *Gender, Work and Wages in Industrial Revolution Britain* (Cambridge University Press, 2008); Jane Humphries, ‘The lure of aggregates and the pitfalls of the patriarchal perspective: a critique of the high wage economy interpretation of the British Industrial Revolution’, *Economic History Review* 66 (2013) pp. 693-714; Elise van Nederveen Meerkerk, ‘From male breadwinner to family wage: suggestions for reconstructing long-term series of wages in pre-industrial and industrializing societies’, Presented at the *CLIO-INFRA Real Wage Workshop*, International Institute of Social History (2012).

Furthermore, especially in the pre-industrial period, real wages were often closely related to demographic developments.⁶³² In the long run, wages before the Industrial Revolution often followed a Malthusian pattern, the so-called ‘Iron Law of Wages’, where population growth caused a decline in real wages, and famines and disasters that led to diminishing population numbers allowed wages to rise. At the same time, it is clear that wages are also determined by the functioning of the labour market.⁶³³ To what extent were wages set in a free and efficient market, and to what extent were labourers coerced to perform their tasks for relatively little compensation. In this chapter, in order to address some of the concerns of real wage critics, as well as to explain the trends and levels in real wages as they were uncovered in the previous chapter, I will investigate demographic patterns, labour markets and labour relations on the basis of secondary literature, as well as a number of new primary documents from the VOC archives.

In the next section, estimates will be made on total population, population growth rates over the seventeenth and eighteenth centuries, as well as population densities. This shows that population pressure on the land may indeed have had negative effects on real wages in Bengal, but probably not in the Cape Colony, Ceylon and Java. Section 5.3 will investigate household composition, in order to get an idea how far, or how close, the Allen-model of nuclear households across the globe is to the historical truth. In section 5.4 this information is combined with evidence on women’s and children’s wages to see whether it would change the overall conclusions from the previous chapter. Section 5.5 discusses the labour market in order to get some sense to what extent the living standards of wage labourers may be representative of the population at large and to analyse how mechanisms of labour coercion may have affected wage levels.

5.2. The Iron Law of Wages

Most studies in the divergence literature have included demography as an essential variable, yet the precise relationship with economic growth remains contentious. On the one hand, population growth can be interpreted as a sign of a healthy population and economic success and might stimulate technological progress and specialization. On the other, it can be seen as a cause of poverty as the resources in an economy have

⁶³² See e.g. Gregory Clark, *A Farewell to Alms: A Brief Economic History of the World* (Princeton: Princeton U.P., 2007); *ibid.*, ‘The Condition’; Sevket Pamuk, ‘The Black Death and the Origins of the “Great Divergence” across Europe, 1300-1600’, *European Review of Economic History* 11 (2007) pp. 289-317; Allen et al., ‘The Colonial’; Arroyo Abad et al., ‘Between conquest’.

⁶³³ See also: Allen et al., ‘The Colonial’.

to be divided among a greater number of people.⁶³⁴ These opposing views are hard to reconcile and demographic data thus demand cautious interpretation.

Scholars like Eric Jones and John Hajnal have argued that Western Europe benefitted from fertility checks, such as late marriage, and small family sizes, which led to moderate population growth.⁶³⁵ Western Europe thus escaped from the Malthusian cycle in which all increases in production were absorbed by the increase in the population. In China, India and other parts of Asia, on the other hand, cultural values stimulated early marriage and large family sizes. Overpopulation and relative land scarcity have been pointed out as causes of the lack of economic development and low per capita incomes in Asia.⁶³⁶ This has been disputed by the revisionists, who suggest that although the Asians did not share Europe's system of late marriage, they tried to regulate fertility within marriage.⁶³⁷ Through 'delaying pregnancy in marriage and then preventing pregnancy after establishing a family' birth rates per marriage and per woman in China 'were well below those of western Europe throughout the 1550-1850 period.'⁶³⁸ Japan similarly had low birth rates, while also for Southeast Asia there is evidence of couples trying to limit fertility. Family size in different parts of Asia was kept small through abortion, infanticide as well as contraception and abstinence.⁶³⁹

In this part of the dissertation, I will sketch developments in total population, population growth and relate these to the real wage series. In order to do so, I have estimated total population figures for late seventeenth- and eighteenth-century Ceylon from new source material and employed a variety of secondary sources to sketch population trends in the other regions.⁶⁴⁰ The estimation of population for Ceylon is extensively discussed in appendix 7. In order to arrive at these numbers, data on the developments in the number of indigenous Christians on the island were related to total population estimates in benchmark years.⁶⁴¹ These estimates thus depend on assumptions about the ratio of indigenous Christians in the totals, on assumptions concerning underreporting, as well as very crude estimates on the population of

⁶³⁴ For further elaboration on the Boserupian and Malthusian views, see: Massimo Livi-Bacci, *A Concise History of World Population* (Malden, Mass. etc.: Blackwell, 2007) pp. 70-97.

⁶³⁵ Jones, *The European Miracle*, pp. 13-21; Hajnal, 'European marriage'.

⁶³⁶ See e.g.: Mark Elvin, 'The high-level equilibrium trap: the causes of decline of invention in the traditional Chinese textile industries', in: W. E. Willmott (ed.), *Economic Organization in Chinese Society* (Stanford: Stanford U. P., 1972) pp. 137-172; and: Kang Chao, *Man and Land in Chinese History: An Economic Analysis* (Stanford: Stanford U. P., 1986)

⁶³⁷ Pomeranz, *The Great Divergence*, p. 41; but also: Lavelly and Wong, 'Revising the Malthusian'; James Z. Lee and Wang Feng, *One Quarter of Humanity. Malthusian Mythology and Chinese Realities, 1700-2000* (Cambridge, Mass.: Harvard U. P., 2001).

⁶³⁸ Pomeranz, *The Great Divergence*, p. 41.

⁶³⁹ Ibid.; also: Parthasarathi, *Why Europe*, pp. 71-75.

⁶⁴⁰ For the Cape Colony: Van Duin and Ross, 'The economy'; Fourie and Van Zanden, 'GDP in the Cape Colony', Jeanne Cilliers and Johan Fourie, 'New estimates of settler life span and other demographic estimates from South Africa, 1652-1948', *Economic History of Developing Regions*. 27 (2012), pp. 61-86; for Java: Feenstra, 'Dutch coins'; for Bengal: Rama Deb Roy, 'Population of the province of Bengal, 1751-1801', *Population Studies Unit, Indian Statistical Institute*: http://dmo.econ.msu.ru/epc2001_history/Authors/Rama/RamaRoy.htm. Last accessed, July 3rd, 2014.

⁶⁴¹ From: Van Goor, *Jan Kompenie*.

Kandy. As a result these estimates are fraught with difficulties, which must be kept in mind.⁶⁴² However, until research into more detailed sources is completed,⁶⁴³ the estimates that I will show here are the best available evidence yet.

For Bengal, population estimates are also tentative, especially for the earlier eighteenth century. Yet there are a range of estimates available for the later eighteenth century which could differ slightly, also because the estimations may include different geographical areas in their estimates (e.g. some are with and some seem to be without Bihar). In one of the more conservative estimates, population increased from 22 to 27 million between 1789 and 1801.⁶⁴⁴ While high estimates put the total number of people at over 39 million at the turn of the century.⁶⁴⁵ For this section we are mostly interested in the growth of the population over time, so whichever estimate we take it is important to be consistent over time. The most consistent estimates for the second half of the eighteenth century are from a recent reconstruction project from Rama Deb Roy.⁶⁴⁶ He suggests an annual population growth rate (excluding the famines) of 0.8 percent in Bengal and 0.5 percent in Bihar between 1750 and 1800. Extrapolating this growth rate back to 1700 one arrives at a total population of 27.6 million and a total of 42.2 in 1800. Taking these high estimates does influence the calculations of population densities below.

The population of Java probably declined somewhat during the first 50 years of the eighteenth century as a result of wars and unrest.⁶⁴⁷ Relative peace and stability after the Treaty of Giyanti allowed population growth after 1755, yet estimates of the total population size and the extent of the population increase vary greatly. Some estimates suggest that the population increased from 2.5 million around the middle of the century to 3.5 million by the end.⁶⁴⁸ It is now generally agreed that these numbers are far too low. Reid suggests that around 1800 the population was around 5 million;⁶⁴⁹ other estimates put the number between 7.5 and 8.5 million.⁶⁵⁰ Alberto Feenstra suggests that a growth of around 1.1 percent per year between 1755 and 1800 is reasonable.⁶⁵¹

⁶⁴² In this chapter I will employ the estimates that are corrected for underestimation. Please see appendix 7 for different estimates.

⁶⁴³ Albert van den Belt, Jan Kok and Kees Mandemakers are investigating the *thombos*: see *ibid.* 'Digital thombos: A new source for 18th century Sri Lankan family history. Research note', *History of the Family* 16 (2011) pp. 481-489.

⁶⁴⁴ Datta, *Society, economy*, p. 250.

⁶⁴⁵ Jha, *The Political Economy*, p. 127.

⁶⁴⁶ Deb Roy, 'Population of the province'.

⁶⁴⁷ Feenstra, 'Dutch coins'.

⁶⁴⁸ Van Niel, 'Economic and population changes'.

⁶⁴⁹ Reid, *Southeast Asia I*, p. 14.

⁶⁵⁰ P. Boomgaard and A. J. Gooszen, *Changing Economy in Indonesia. Vol. 11 Population Trends, 1795-1942* (Amsterdam: Royal Tropical Institute, 1991); Jan Luiten van Zanden, 'Economic growth in Java 1815-1939. The reconstruction of the historical national accounts of a colonial economy', *Mimeo* (2002).

⁶⁵¹ Feenstra, 'Dutch coins'.

In contrast to these rare figures, there is an abundance of relatively good quality data available for the eighteenth-century Cape Colony.⁶⁵² These data not only show total population numbers, but also a division between men, women, children, slaves and Khoesan over the entire eighteenth century. Those data are much more detailed and reliable than those for the other case studies.⁶⁵³ The total population within the borders of the Cape Colony increased from 4,300 in 1700 to over 46,800 at the end of the eighteenth century.

In table 5.1, the population growth rates in the four establishments over the eighteenth century are compared with figures for the England, Europe and China taken from the literature.⁶⁵⁴

TABLE 5.1: AVERAGE ANNUAL POPULATION GROWTH.⁶⁵⁵

	England	Europe	China	Bengal	Cape ⁶⁵⁶	Ceylon ⁶⁵⁷	Java ⁶⁵⁸
1700-1750	0.27	0.31	0.72	0.66	2.71	0.44	-0.26
1750-1800	0.81	0.50	0.79	0.15	2.27	0.23	0.76
1700-1800	0.54	0.41	0.76	0.41	2.50	0.33	0.25

Sources: see text.

A few things stand out from this table. The most remarkable growth rates were clearly achieved in the Cape Colony. In the first decades of the Colony's existence, immigration from Europe was actively stimulated (as the VOC paid for immigrants' voyage), and land was made available to the settlers on a first come, first serve basis. After 1717, however, immigration was no longer encouraged and population growth relied on high fertility rates among the settlers: the white population grew from 1,300 in 1700 to around 15,000 at the end of the century.⁶⁵⁹ In addition, significant

⁶⁵² Generously made available to me by Johan Fourie.

⁶⁵³ These data were already used in a variety of publications: Fourie and Van Zanden, 'GDP in the Dutch Cape'; Fourie and Cilliers, 'New estimates'; P. Patrizio, S. Muller, J. Cilliers, and J. Fourie. 'The transmission of longevity across generations: the case of the settler Cape Colony', *Research in Social Stratification and Mobility* 35 (2014) pp. 105–119. Baten and Fourie, 'Numeracy of Africans'.

⁶⁵⁴ Europe and China: Lavelly and Bin Wong, 'Revising'; England: Wrigley and Schofield, *The Population History*, p. 529.

⁶⁵⁵ The average annual growth rate was then calculated by the equation: $r = \left[\sqrt[t]{\frac{x}{y}} - 1 \right] \times 100$

Where: r = the average percentage growth rate; t = the difference in years between the first and last reading; y = the total population at the beginning of the period; and x = the total population at the end of the period.

⁶⁵⁶ This includes slaves. 1700 refers to the period 1701/03, 1750 refers to 1749/51 and 1800 refers to the period 1793/5.

⁶⁵⁷ 1700 refers to 1689/91, 1750 to 1739/41 and 1800 to 1787/89.

⁶⁵⁸ 1700 refers to 1701/03, 1749/51 and 1800 refers to 1798/1800.

⁶⁵⁹ In an earlier paper (De Zwart, 'Real wages'), I suggested that it had increased to 22,000, yet new estimates by Fourie and Cilliers ('New estimates'), put this number somewhat lower.

numbers of slaves were imported and their number increased more than tenfold from almost 2,000 at the beginning to over 21,000 at the end of century.⁶⁶⁰

Population growth in Bengal in the first half of the century was relatively fast and approaching the (high?) Chinese levels. The Bengal famine clearly depressed growth rates in the second half of the century. The famine and the previous high growth rates may suggest a Malthusian pattern, as previous scholars have proposed.⁶⁶¹ Population increase was also relatively fast in Java in the second half of eighteenth century, yet there is no evidence that this led to positive checks in this or subsequent periods. Only in Ceylon – if the numbers are correct – the rate of natural increase seems to have been limited and not only as a result of famines and wars. The practice of polyandry (where a household consists of one woman and several men) and relatively high death rates may be the causes of this, as shall be discussed in the next section. How did this population growth relate to the development of living standards?

Figure 5.1 shows the relationship between population and real wages in the four case studies over the eighteenth century. In the literature, graphs presenting the relationship between real wages and population usually span several centuries,⁶⁶² yet even though I have data for only the eighteenth century, some interesting patterns can still be discerned. First of all, there is a clear difference between Bengal and Ceylon on the one hand, and Java and the Cape Colony on the other. The graph for Bengal shows the Malthusian negative relationship between population and wages. Adam Smith already cited Bengal as an example of an economy with an ‘overflowing’ labour force where wages sank to the ‘most miserable and scanty subsistence’, and where population pressure meant that:

Many...would either starve, or be driven to seek a subsistence either by begging, or by the perpetration perhaps of the greatest enormities. Want, famine, and mortality would immediately prevail in [the lowest] class, and from thence extend themselves to all the superior classes.⁶⁶³

Only after the famine in 1769/70, when total population numbers were severely diminished did the real wage move upwards. In Ceylon a slightly negative relationship can be discerned from the graph, especially until the 1730s when population growth was relatively strong. Again, this connection was mainly disturbed by an external shock; as many perished in the Dutch-Kandyan war of the 1760s, real wages shot up in the 1770s, only to decline again with population growth towards the end of the century. As population growth was slower in Ceylon, the relationship was weaker than in Bengal and turned out to be statistically insignificant in regressions.

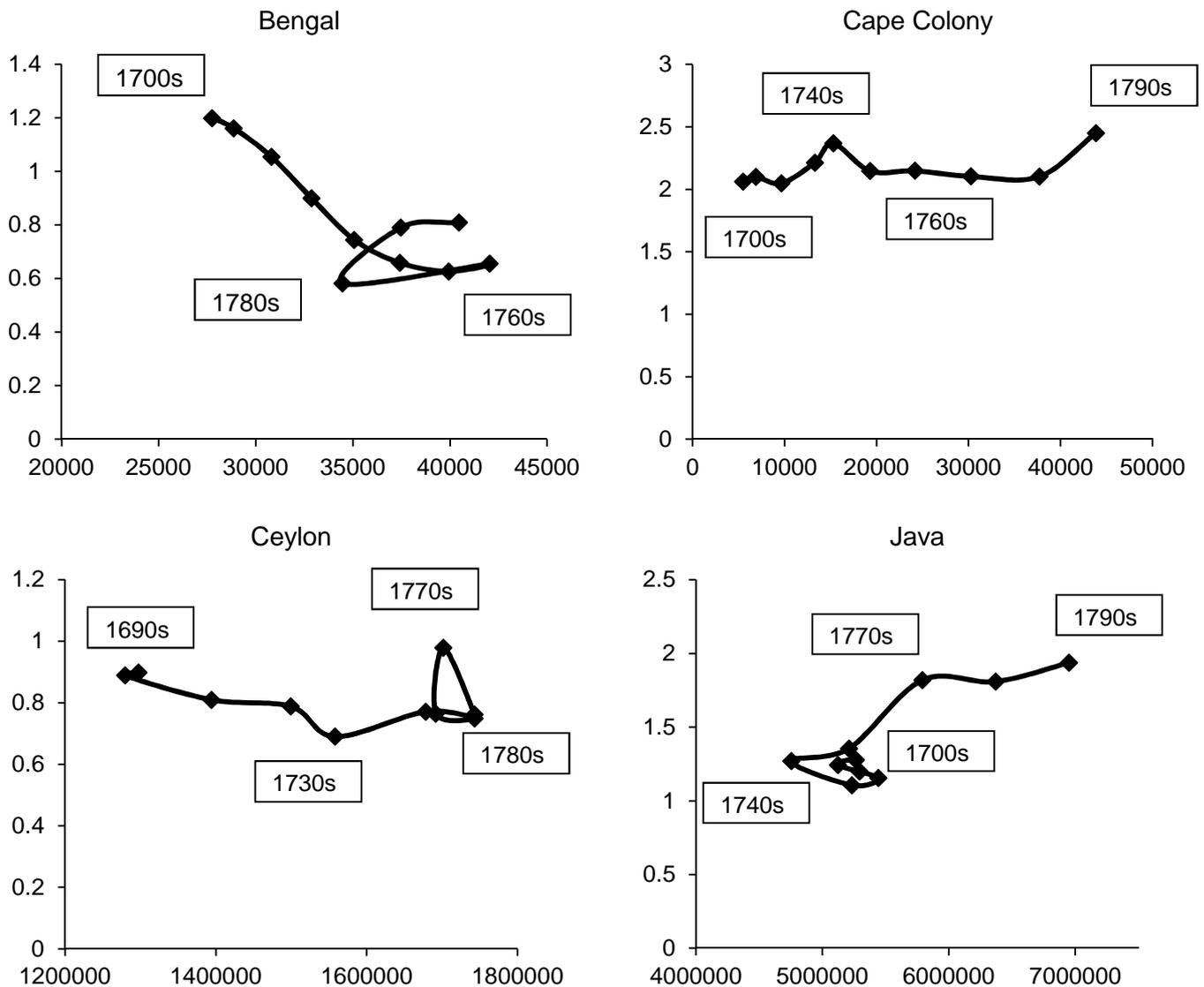
⁶⁶⁰ Shell, *Children of Bondage*, pp. 445-448.

⁶⁶¹ E.g. Jones, *European Miracle*, ch. 2; Smith, *Wealth of Nations*, pp. 103-104; also see the discussion in Parthasarathi, *Why Europe*, p. 71-78.

⁶⁶² Clark, *Farewell to Alms*, p. 30; Van Zanden, ‘The skill premium’; Livi-Bacci, *A concise history*, p. 78.

⁶⁶³ Smith, *Wealth of Nations*, pp. 103-104; cited in Geoffrey Gilbert, ‘Adam Smith on the nature and Causes of Poverty’, *Review of Social Economy* 55 (1997) pp.274-291.

FIGURE 5.1: POPULATION AND REAL WAGES IN THE EIGHTEENTH CENTURY.



Sources: see text. Regressing population and real wages demonstrated that the relationship is insignificant in case of the Cape Colony and Ceylon, significant (at 1 percent) and negative in the case of Bengal, and significant (at 1 percent) and positive in the case of Java.

In Java a negative relationship between population and real wages is found in the early eighteenth century. It is, however, difficult to discern as the wars that raged on the island both destroyed crops (increasing prices and diminishing real wages) and killed people. Yet, later in the eighteenth century population and real wages are trending together. Here population growth seems a sign of economic growth, as also suggested by others.⁶⁶⁴ Real wages did not decline in response to this increased labour pool as the demand for labour by the VOC continued to grow (as testified by the

⁶⁶⁴ Carey, 'Waiting for the Just King', pp. 89-91; Jacobs, *Merchant in Asia*, p. 241; Lieberman, *Strange Parallels 2*, pp. 870-1; Ricklefs, 'Some Statistical Evidence', p. 30.

various *plakATEN* below) and more people were necessary to produce the increase in export output.⁶⁶⁵

In the Cape Colony, real wages are very stable in the face of very significant increases in population. There are several reasons for this, which will be discussed below. At the same time as population grew, the amount of the land brought under cultivation increased, which meant that the man/land ratios remained stable. The land and population increases were therefore also matched by similar increases in production (though production per capita thus remained roughly stable, or perhaps declined slightly) as could be seen in chapter 3. In addition, the influence of the VOC setting wage and price levels meant a relatively stable real wage over long periods of time.

The differences in this relationship have to do with the relative scarcity/abundance of labour *vis-à-vis* other factors of production, especially land.⁶⁶⁶ This can be shown by population densities. In order to estimate population densities, the total population figures are divided by estimates of the total amount of land. This is an imperfect measure as the total land area differs from the total amount of arable land (excluding desert, inland water, and tundra) and the amount of arable land can change over time. Additional difficulties arise in the case of the Cape Colony, where the frontier of the colony was constantly shifting. Table 6.2 gives population densities per km² in these areas and makes the comparison with Europe and China.

TABLE 5.2: POPULATION DENSITIES PER KM² IN EUROPE AND ASIA.

	England	Europe	China	Bengal	Cape	Ceylon	Java
1700	44.10	11.79	37.50	119.65	0.43	19.86	41.07
1750	46.01	13.75	53.75	165.53	0.42	25.72	35.54
1800	70.94	17.68	80.00	181.22	0.21	27.21	51.95

Sources for population see text; sources from km²: England, Europe and China: Colin MacEvedy and Richard Jones, *Atlas of World Population History* (Harmondsworth: Penguin Books, 1978); Bengal: T. Roy, 'Economic conditions'; Jha, *Political Economy*; Ceylon and Java: WikiPedia.com; the Cape Colony: estimates for different periods on the basis of the shifting borders shown in figure 1.7 using GIS to calculate surface: 1700: 9,942; 1750: 41,041; 1800: 226,104 km² (I thank Richard Zijdeman for helping me with this).

As a result of a variety of factors,⁶⁶⁷ England was able to break out of the Malthusian pattern somewhere during the later seventeenth century.⁶⁶⁸ As a result, the increased population densities towards the end of the eighteenth century did not result

⁶⁶⁵ For increases in export production see section 3. Bulbeck et al., *Southeast Asian*.

⁶⁶⁶ But also capital; interest rates, which may reflect the scarcity or abundance of capital have been discussed in section 4.4.

⁶⁶⁷ Views on which factors differ, see e.g.: Allen, *The British Industrial*; Clark, *A Farewell*; Pomeranz, *Great Divergence*.

⁶⁶⁸ Clark, 'The Condition'.

in lower real wages. This was not the case in most other regions. Population densities were clearly very high in Bengal, more than double the figures of China, which had the second highest population densities. If eighteenth-century China has been depicted as a society with significant Malthusian pressures,⁶⁶⁹ then clearly this must also be assumed for eighteenth-century Bengal. Taking the evidence together: the low and declining real wages, the evidence of relatively fast population growth (excl. the famine), the high population densities, and the evidence of the frequent occurrence of major famines,⁶⁷⁰ it is hard to discard population pressures as an important factor in Bengal's eighteenth-century decline.⁶⁷¹

In Java, population densities were lower than in Bengal, China, as well as England. Even though Java had the highest population densities in Southeast Asia (characterized by low population densities in general), it was labour that was scarce rather than land until the late nineteenth century when the frontier started to close.⁶⁷² As a result, wages could continue to increase despite population growth in the later eighteenth century. Densities were even lower in Ceylon.⁶⁷³ Also for Ceylon it has been suggested that under-population seems to have been the greater problem, as Arasaratnam notes: 'what was lacking [...] was not land but men'.⁶⁷⁴ This explains why the Malthusian pattern was relatively weak in Ceylon. Finally, as is well-known, population densities were very low in the Cape Colony. There were relatively few people within the ever expanding boundaries of the colony, and while the growth of the population may have outpaced the growth of territory; this was and remained a labour scarce economy. In the Cape, the labour shortage was to be resolved by the use of slave labour. In Ceylon and Java, while there were also slaves, most of the labour shortages had to be resolved by systems of *corvée* labour (as can be read in section 5.5). It is thus obvious that population growth only causes wages to decline in situations of labour abundance, when population densities were high, as in the case of Bengal.

5.3. Households

High birth-rates and large family sizes, if not off-set by high death rates, could be the cause of (relatively) fast population growth and increased Malthusian pressures. In this section, a variety of sources will be employed to gather some information on average household/family sizes and gender and age distribution of the population. This

⁶⁶⁹ Chao, *Man and Land*. Although, this has been disputed by Pomeranz, *The Great Divergence*.

⁶⁷⁰ Datta, *Society, economy*, p. 240, 243

⁶⁷¹ Parthasarathi attempts to downplay the role of Malthusian dynamics in the Indian case: *Why Europe*, pp. 74-77.

⁶⁷² De Zwart and Van Zanden, 'Labour, wages'.

⁶⁷³ I have taken the highest estimates here, which are thus biased against the result of low population densities.

⁶⁷⁴ Arasaratnam, *Dutch Power*, p. 130.

discussion is relevant methodologically as the cost of sustaining a family is dependent on the number of family members. Allen's assumptions of family size have been criticized by e.g. Jane Humphries who argues that Sir Frederic Eden's Ealing gardener family (used by Allen) is not representative for English families, which were generally larger.⁶⁷⁵ She finds that, in the mid-nineteenth century, it was common for seven or eight children to be born into working-class families. Eric Schneider has, however, pointed out that Humphries overestimates family sizes. Schneider's analysis, which employs the detailed Cambridge population data for English parishes in combination with computerized simulations, suggests that demography adjusted real wages are in fact higher than, or match Allen's original real wages.⁶⁷⁶

While the Allen-series may thus have been reaffirmed for England, this may be different for the areas under discussion; especially since it has been suggested that population growth was particularly fast in the case of India, because it had large family sizes. The issue is also important as Rosenthal and Wong have emphasized that the relationship between markets and households differs between nuclear and extended households, and that differences in household size may consequently drive variations in wages.⁶⁷⁷

Yet much of the evidence at hand suggests that families in various parts of Asia were on average not much bigger than in England. For India, Parthasarathi suggests that despite early age of marriage, Indian family sizes were also fairly small and comparable with Europe, partly as a result of infanticide, high child mortality and early widowhood.⁶⁷⁸ He cites figures from the early nineteenth century showing that Indian households had similar sizes as those in Europe. However, he also gives data from a 1821 survey of Bengal, Bihar and Orissa that reported an average of 5.14 persons per house.⁶⁷⁹ A census of Burdwan (100 km northeast of Calcutta) which enumerates a total of 40,000 people suggests an average of 5.27 persons per house.⁶⁸⁰ The latter census also provides some more information regarding the age and gender distribution of this population (shown in figure 5.2). While it is unclear how representative (or reliable) this census is for Bengal as a whole, there are no reasons to assume this census is particularly skewed in terms of the gender and age distribution. These data show that the population was not particularly young, as 31 percent could be classified

⁶⁷⁵ Humphries, 'The lure', pp. 695, 703. Humphries also criticized the amount of calories in Allen's basket and suggests that Allen underestimates the calorie consumption of women and children. While she may be right (and Allen is working on new kcal standards currently reworking them (see: Robert C. Allen, 'Poverty Lines in History, Theory and Current International Practice', *Oxford Economics Discussion Paper* 685 (December 2013)) the issue is not relevant here, as it would not change the international comparisons.

⁶⁷⁶ Eric B. Schneider, 'Real wages and the family: Adjusting real wages to changing demography in pre-modern England', *Explorations in Economic History* 50 (2013) pp. 99-115.

⁶⁷⁷ Rosenthal and Wong, *Before and Beyond*, pp. 58-64.

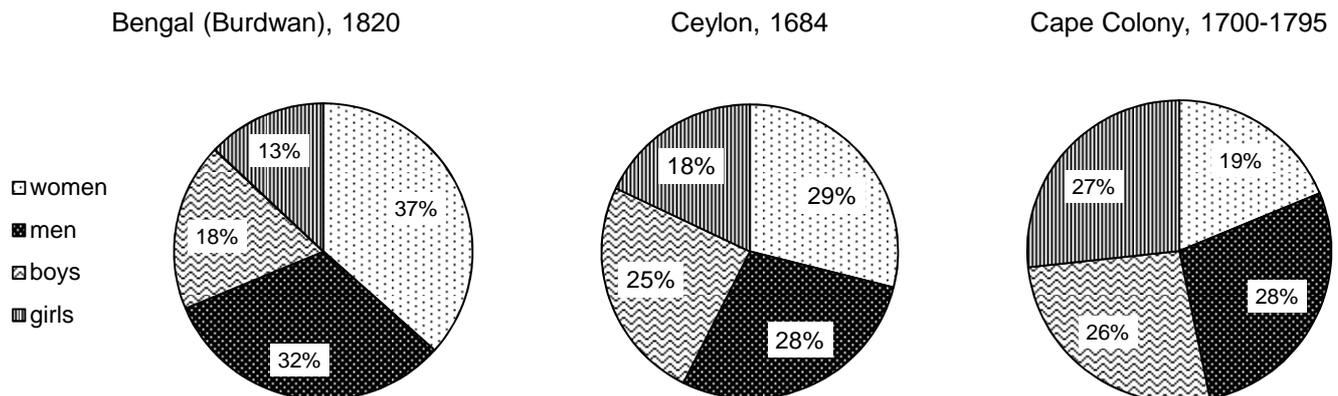
⁶⁷⁸ Parthasarathi, *Why Europe*, p. 74.

⁶⁷⁹ *Ibid.*

⁶⁸⁰ W. B. Bayley, 'Statistical View of the Population of Burdwan, &c', *Asiatick Researches* 12 (1816) pp. 549- 574.

as children (below age 12 for girls, below age 16 for boys), which is similar to England where also roughly 31 percent of the population was between 0 and 14 in 1696.⁶⁸¹ This suggests either that fertility was roughly on the same level, or that fertility was higher, but that more children died before reaching ages 12-16. As also suggested by another study, the gender ratio in Bengal was relatively balanced (perhaps somewhat surprising considering the existence of female infanticide).⁶⁸²

FIGURE 5.2: AGE AND GENDER RATIOS IN BENGAL, CEYLON AND THE CAPE.



Sources: Bengal: Bayley, 'Statistical View'; Ceylon: VOC 1396, ff. 602-612; Cape Colony: Van Duin and Ross, 'Eighteenth Century'.

For Ceylon, the data on indigenous Christians used in the previous section and appendix 7 to estimate total population also showed that on average 4.26 persons were living in a house.⁶⁸³ Furthermore, the data from 1684 contained additional demographic information on the age and gender distribution of the population.⁶⁸⁴ To arrive at the age distribution in figure 5.2, it is assumed that the 'school' age of boys and girls was roughly the same as in the Netherlands in the seventeenth and eighteenth centuries, as these were 'Dutch' schools in Ceylon.⁶⁸⁵ Based on literature on education in the Dutch Republic, it was estimated that the school going age in Ceylon was roughly between 5 and 11,⁶⁸⁶ with girls leaving school probably somewhat earlier than

⁶⁸¹ Wrigley and Schofield, *The population history*, p. 528.

⁶⁸² Bishnupriya Gupta, 'Where have all the brides gone? Son preference and marriage in India over the twentieth century', *Economic History Review* 67 (2014) pp. 1-24; there: p. 13.

⁶⁸³ VOC 1506, ff. 1180-1181; VOC 1544, ff 805-806; VOC 1591, ff. 1079-1086; and VOC 1605, ff. 882-888: 'Rolls of baptized indigenous Christians'.

⁶⁸⁴ VOC 1396, ff. 602-612: 'Sommarium van alle 's Compagnies onderdanen' [Transl.: 'Summary of all Company's subjects'].

⁶⁸⁵ Van Goor, *Jan Kompenie*.

⁶⁸⁶ E. P. de Booy suggests that after the age of 10 to 12 children stopped going to school. In addition, she presents a table on the number of pupils in a school in the province of Utrecht, which reveal that the number of children older than 11 is limited. From a paper by Margaret Spufford, it becomes clear that children in the Dutch Republic started going to school somewhere between the ages 4 and 7: E. P. de Booy, *Kweekhoven der Wijsheid. Basis- en vervolgonderwijs in de steden van de provincie Utrecht van 1580 tot het begin der 19^e eeuw* (Zutphen, 1980) p. 30; *ibid.*, *De weldaet der scholen. Het plattelandsonderwijs in de*

boys. This is suggested by the smaller number of school girls, as demonstrated elsewhere.⁶⁸⁷ It is unlikely that there was a 100 percent enrolment rate among the Ceylonese children, but we can assume that those children not going to school are captured by the 'young men' and 'young women' (these were grouped with the 'adults').

The percentages given in figure 5.2 for 1684 correspond closely with the numbers from the source on indigenous Christians,⁶⁸⁸ as well as to those arising from a census of Ceylon from 1821,⁶⁸⁹ and statistics from the 1830s,⁶⁹⁰ and 1850s.⁶⁹¹ This gives some confidence in the reliability of these numbers. It also points to the limited amount of demographic change in Ceylon over the eighteenth and early nineteenth centuries. These data demonstrate that the population of Ceylon in the late seventeenth century (and thus, probably also during the eighteenth century) was relatively young, as 43 percent of the total was formed by children aged roughly between 0 and 11, while the group of adults still contained a large number of people classified as 'young'.⁶⁹² The gender ratio was skewed towards men (53 percent), although perhaps not as much as one might expect in a society where the practice of polyandry (where one woman has several men) was supposedly widespread.⁶⁹³ The relatively lower number of school girls and young women combined with a high number of widows suggest a significantly lower marriage age for women, which is confirmed by evidence from the *thombos*.⁶⁹⁴

The demography of the Cape Colony is a different story entirely. In recent research, Jeanne Cilliers and Johan Fourie have analysed the demographic composition of the settler population at the Cape. As could be expected from the high growth rates shown in the previous section, average household sizes were much larger than in the other areas. The median number of children per household increased from

provincie Utrecht van 1580 tot het begin der 19^{de} eeuw (Utrecht, 1977) p. 75; and: Margaret Spufford, 'Literacy, trade and religion in the commercial centres of Europe', in: Karel Davids and Jan Lucassen (eds.), *A Miracle Mirrored. The Dutch Republic in European perspective* (Cambridge: Cambridge U. P., 1995) p. 260.

⁶⁸⁷ De Zwart, 'Population, labour'.

⁶⁸⁸ Ibid.

⁶⁸⁹ For 1821 census a total of 595,105 persons are enumerated; of these 349,917 (59%) are above puberty and 316,059 (53%) of these are male and 279,046 (47%) are female. Numbers taken from: Robert, *Caste and conflict*, p. 297.

⁶⁹⁰ Robert Montgomery Martin, *Statistics of the colonies of the British Empire in the West Indies, South America, North America, Asia, Austral-Asia, Africa and Europe. From the official records of the Colonial Office* (London, 1839) pp. 375-6: 1832: total population: 998,259; males: 524,052 (52.5%), females: 474,207 (47.5%); 1836: total population 1,229,828; males: 645,492 (52.5%); females: 584,336 (47.5%).

⁶⁹¹ *Statistical tables*: 1850: Total population = 1,575,613; Female: 750,010 (47.5%); Male: 825,603 (52.5%), data for 1851-54 reveal a similar picture.

⁶⁹² Wrigley and Schofield, *The population history*, p. 528.

⁶⁹³ Darshini A. de Zoysa, 'Transformation of customary marriage and inheritance laws of the Sinhalese under British Colonialism', *Dialectical Anthropology* 20 (1995) pp. 111-132.

⁶⁹⁴ Van den Belt, Kok and Mandemakers, 'Digital thombos', p. 18; Dewasiri, *The adaptable peasant*, p. 91. Also see the research on the marital age gap in Ceylon by Sarah Carmichael: 'Pearls, Girl's best friend? Sri Lankan women's status at the beginning of the 20th century as the roots of their current position', Paper presented at the *Utrecht Seminar in Social and Economic History* (November 2011).

7 in the late seventeenth to 9 in the late eighteenth century.⁶⁹⁵ As a result the population at the Cape was even younger than in Ceylon (assuming children are again aged 11 and below). In addition, the gender distribution was highly skewed towards men. Rather than female infanticide,⁶⁹⁶ this was the result of the fact that many settlers, farmers or townsmen, were former members of the Cape garrison or other Company servants,⁶⁹⁷ and especially in the early years most of the immigrants from Europe were male.⁶⁹⁸ The numbers shown in figure 5.2 even underestimate the male bias as these do not include the Company establishment at the Cape, which also includes significant amounts of men (as shall also be seen in section 5.4.4 below), nor the figure for the slave population which also has a clear male bias (75 percent male).⁶⁹⁹

There are different suggestions regarding households in Java. The common unit of account in Javanese censuses is the *cacah*, sometimes considered as an equivalent of the household. While Governor-General Stamford Raffles (1811-1816) suggested average household size in Java was 4.16,⁷⁰⁰ others have suggested the typical *cacah* had around 5 or even 6 members.⁷⁰¹ The consensus, based on more recent numbers, suggests that the Javanese household consisted of around 4.5 people on average.⁷⁰² Boomgaard concludes that in Java ‘the nuclear family was the rule rather than the exception’.⁷⁰³ Evidence from the 1920s suggests that family size is correlated with income and that families with higher incomes tend to have more children. Coolies, the people of our main interest, had an average family size of 4.⁷⁰⁴ In contrast to the previous case studies, our evidence on Java suggests that, at least in the nineteenth century, there were slightly more females than males. Boomgaard gives a ratio of 47 percent women and 53 percent men in 1802 and these percentages remained roughly

⁶⁹⁵ Cilliers and Fourie, ‘New estimates’, p. 78.

⁶⁹⁶ The number of girls is higher than the number of boys.

⁶⁹⁷ Robert Ross, ‘The “White” Population of South Africa in the Eighteenth Century’, *Population Studies* 26 (1975) pp. 217-230, there p. 222

⁶⁹⁸ *Ibid.*, p. 223.

⁶⁹⁹ Van Duin and Ross, ‘The economy’.

⁷⁰⁰ Thomas Stamford Raffles, *The History of Java* 2 vols. (Kuala Lumpur [etc.]: Oxford U. P., 1978 [Original: London 1817]), see: Ulbe Bosma, ‘Labour Relations in Java 1650, 1800, 1900,’ *Global Collaboratory on the History of Labour Relations 1500-2000* (June 2011) p. 10.

⁷⁰¹ Van Niel, ‘Economic and population changes’, p. 300; J. Hageman, ‘Geschied- en aardrijkskundig overzicht van Java op het einde der achttiende eeuw,’ *Tijdschrift van het Bataviaasch Genootschap* 9 (1860) p. 267; Ricklefs, ‘Some Statistical evidence’. The subject is discussed extensively by Boomgaard, *Children*, appendix 1: ‘What is a cacah?’

⁷⁰² Boomgaard finds average households of 4.7 in the nineteenth century; *Children of the colonial*, p. 153. The 1920 and 1930 population censuses identified 4.6 persons per dwelling in Java while another study from 1924-25 suggested 4.3 people per rural household: A. Leigh and P. van der Eng, ‘Top Incomes in Indonesia, 1920-2004’, in: A. B. Atkinson and T. Piketty (eds.), *Top Incomes: A Global Perspective* (Oxford: Oxford U. P., 2010) pp. 171-219. Bosma, ‘Labour Relations’, also suggests 4.5 seems a reasonable number.

⁷⁰³ Boomgaard, *Children*, p. 153.

⁷⁰⁴ *Ibid.*, p.157.

the same throughout the remainder of the nineteenth century.⁷⁰⁵ Numbers given by Raffles suggest even more women: 57 percent.⁷⁰⁶ Finally, nineteenth century data of Boomgaard suggest the average percentage of children was 45/46 percent,⁷⁰⁷ while Bosma suggests it was below 40 percent in the eighteenth century.⁷⁰⁸

What does this mean for the real wages calculated in the previous chapter? Regarding three of the regions presented here (Bengal, Ceylon and Java) it can be concluded that these can be reasonably compared with England and other parts of the world, as family size will not drive any significant biases in the results as average family size in the other areas of the comparisons of figure 4.1 were equal or on a par with these regions: pre-modern England: 4.8 persons, Tokugawa Japan 4.9 and China in the early twentieth century: 5.3-5.4.⁷⁰⁹ Following Schneider's conclusions this should not lead to significant biases in the comparisons of real wages.⁷¹⁰ However, in the case of the Cape Colony, the large family sizes and skewed gender distribution of the population perhaps makes comparisons more complicated. These distributions relate to freeburghers who often had their own shop in Cape Town, or their own farm in the hinterlands. When they were still working for wages they probably had no, or few, kids, and only when they set up as freeburghers they extended their families. Furthermore, as Cilliers and Fourie noted, these family compositions look very similar to those in New England,⁷¹¹ and their real wages also showed similar patterns.⁷¹² Finally, even in the case of the Cape, roughly over a quarter of the population consisted of adult men, which fits the Allen-model of one male breadwinner feeding 3 other people. What might change this picture, however, is the contribution of women and children to household income.

5.4. Family Incomes

Most, if not all, studies on real wages have based their historical reconstructions on male daily wages. Nonetheless, during much of history, women and children also

⁷⁰⁵ Ibid., pp. 172-175.

⁷⁰⁶ Raffles, *History of Java*; Bosma, 'Labour Relations', p. 4.

⁷⁰⁷ Boomgaard, *Children*, p. 154. Boomgaard does not specify until what age people were considered children. Bosma, 'Labour Relations', suggests that adulthood was reached between ages 10 and 12.

⁷⁰⁸ Bosma, 'Labour Relations', p. 4.

⁷⁰⁹ Boomgaard, *Children*, p. 153: referring to works by P. Laslett, 'Mean household size in England since the sixteenth century', in: P. Laslett and R. Wall (eds.) *Household and family in past time* (Cambridge, 1972) pp. 125-158; C. Nakane, 'An interpretation of the size and structure of the household in Japan over three centuries', in: P. Laslett and R. Wall (eds.) *Household and family in past time* (Cambridge, 1972), pp. 517-543; and: Chi-Ming Chiao, 'A study of Chinese population', *Milbank Memorial Fund Quarterly Bulletin* 11 (1933) pp. 325-341.

⁷¹⁰ Schneider, 'Real wages'.

⁷¹¹ Cilliers and Fourie, 'New estimates'.

⁷¹² Allen et al., 'The Colonial'.

made contributions to household incomes.⁷¹³ Two things may drive a bias in the comparison of real wage series based exclusively on male earnings: (1) global variance in the male-female/child wage gap and (2) differences in the labour participation rate of women and children.

Concerning the first point, women's and children's earnings, there are only few observations available for the Dutch Republic,⁷¹⁴ and only recently more solid wage series for women have been constructed for pre-modern England.⁷¹⁵ This research has shown that the gender wage gap fluctuated over time and space, depending on labour market conditions, type of contracts and differences between sectors. When labour was scarce in the aftermath of the Black Death, the wage gap narrowed,⁷¹⁶ but it increased again in the period 1500-1800 when demand for their labour fell sharply.⁷¹⁷ As a result, women's wages in this period fell from about 80 percent to 40 percent of the unskilled male wage.⁷¹⁸ Recent research suggests that these trends differ somewhat depending on whether women were employed on a casual or permanent basis,⁷¹⁹ while the gap also differed per sector. Probably as a result of the more physical nature of agricultural work, the wage gap was generally larger in agriculture than in industry.⁷²⁰

What matters for international comparisons and the implications for the Great Divergence debate is Pomeranz' suggestion that in eighteenth-century China 'women's earnings more closely approximated men's than in Europe.'⁷²¹ Whereas a Chinese male agricultural labourer employed full time earned about 12 *taels*, a woman spinning and weaving for 200 days per year could earn 14.61 *taels*, slightly more than a man.⁷²² Allen et al. show, however, that even including these female earnings, living standards in China were far behind those in Europe.⁷²³

We can now include Bengal in this discussion, as I found some female and children's wages in the sources discussed in the previous chapter. These women (and

⁷¹³ De Vries, 'The Industrial Revolution'; *ibid.* *The Industrious Revolution*; Burnette, *Gender, work and wages*; Jane Humphries and Jacob Weisdorf, 'The Wages of Women in England, 1260-1850', *Oxford Economic and Social History Working Papers* 127 (2014); Elise van Nederveen Meerkerk, 'Market wage or discrimination? The remuneration of male and female wool spinners in the seventeenth-century Dutch republic', *Economic History Review* 63 (2010) pp. 165-186; Robert C. Allen and Jacob Weisdorf, 'Was there an "industrious revolution" before the industrial revolution? An empirical exercise for England, c. 1300-1830', *Economic History Review* 64 (2011) pp. 715-729.

⁷¹⁴ Jan Luiten van Zanden, 'The Malthusian Intermezzo: Women's wages and human capital formation between the late middle ages and the demographic transition of the 19th century', *History of the Family* 16 (2011) pp. 331-342; Van Nederveen Meerkerk, 'Market wage'.

⁷¹⁵ Humphries and Weisdorf, 'The Wages of Women'.

⁷¹⁶ At least for those women in casual employment.

⁷¹⁷ Van Zanden, 'The Malthusian Intermezzo'.

⁷¹⁸ *Ibid.*

⁷¹⁹ Humphries and Weisdorf, 'The Wages of Women'.

⁷²⁰ Van Nederveen Meerkerk, 'From Male Breadwinner'.

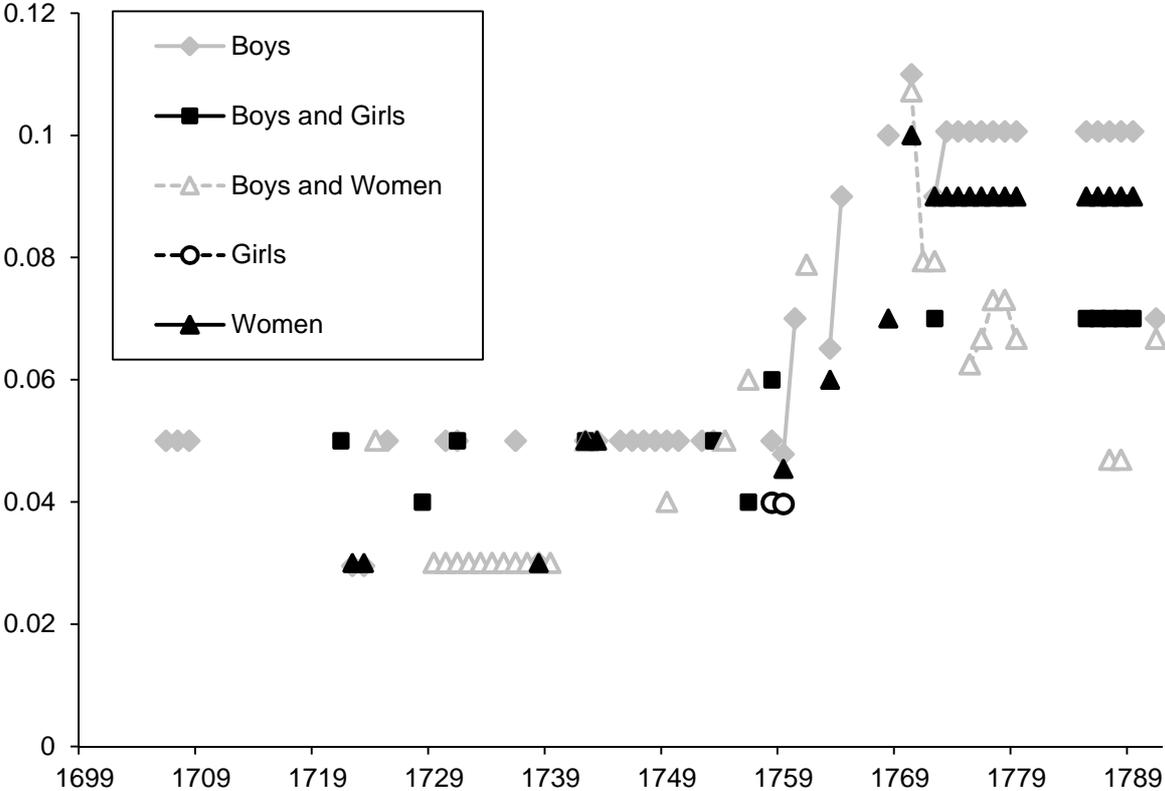
⁷²¹ Kenneth Pomeranz, 'Political Economy and Ecology on the Eve of Industrialization: Europe, China, and the Global Conjuncture', *American Historical Review* 107 (2002) pp. 425-446, there, p. 432.

⁷²² Allen et al., 'Wages, prices', p. 30

⁷²³ *Ibid.*

children) probably prepared lime-mortar and brought it to the masons at work.⁷²⁴ In the sources, the payment of women and children sometimes specifically stated that only women, or boys, were hired for a certain number of days, but they were also often grouped together. One of the problems with this is that while from the specific series it can be observed that boys generally earned more than women and girls, when they are grouped together the wage differs somewhat, probably depending on the share of each of these groups. For example, the observations for 'boys and girls' in 1721 and 1731 probably refer to a group with more boys than the observation of 1728 (see figure 5.3). In order to increase the observations of women's wages, these have been extrapolated using the wages for boys.⁷²⁵

FIGURE 5.3: WOMENS AND CHILDRENS WAGES IN BENGAL, RUPEES PER DAY, 1699-1791.



Sources: various archival sources, see chapter 5 and appendix.

The female wage series can now be used to calculate the female wage gap and compare it with England. Figure 5.4 shows the English and Bengali gender wage gaps over the eighteenth century as ten years averages.⁷²⁶ For almost the entire eighteenth

⁷²⁴ Shireen Moosvi, *People, taxation and trade in Mughal India* (Oxford [etc.]: Oxford U. P., 2008) pp. 146-147.

⁷²⁵ FEMALE WAGE = 0.7666 * BOYS WAGE + 0.0101, R² = 0.87

⁷²⁶ Humphries and Weisdorf, 'The Wages of Women'. They provide two series of women's wages, those for casual employment and for fixed employments. Since the wages for Bengal were paid often as daily

century, but especially in the second half, the gender wage gap is smaller in Bengal. Similarly to what happened to women's earnings after the Black Death, the gender wage gap was smallest immediately after the 1769/70 famine in Bengal: 93 percent of male earnings in 1770 and around 84 percent for the remainder of the 1770s and 80s. Yet, in contrast to the European experience, population growth over the eighteenth century did not lead to increases in the wage gap.

In order to get an impression of how this affects the picture of comparative living standards sketched in figure 4.1, it is important to get an impression of (2) the participation rate of women and children. De Vries suggested that in Europe in the seventeenth and eighteenth centuries, as a result of long-distance trade, families increased the amount of working days at the cost of leisure and that women and children's labour was reallocated from the subsistence to the market sector.⁷²⁷ Research has confirmed the first part of De Vries' thesis, suggesting that the working year in England increased from 257 days in the second half of the sixteenth century to 280 days or more in the later eighteenth century.⁷²⁸

Direct evidence on female and child labour market participation is lacking, but it has been estimated that in England in the late eighteenth, early nineteenth century, the contribution of women and children to household income among low-wage earners in agriculture was 18.4 percent, while that of woman alone was 9.6 percent.⁷²⁹ In seventeenth-century Zwolle (in the eastern Netherlands) the contribution of women alone was 19 percent.⁷³⁰ Children also contributed to household income, in Europe, as well as in Bengal.⁷³¹ However, the research on England and the Dutch Republic suggests that this income substitutes rather than complements the woman's contribution. In Zwolle, the percentage contribution of women declined from 19 to 12

rates, this probably more closely reflects the casual employment series of Humphries and Weisdorf, which is therefore the series employed in this analysis.

⁷²⁷ De Vries, 'Industrial Revolution'.

⁷²⁸ Gregory Clark and Ysbrand van der Werf, 'Work in progress? The Industrious Revolution', *Journal of Economic History* 58 (1998) pp. 830-843, Hans-Joachim Voth, *Time and Work in England 1750-1830* (Oxford: Oxford University Press, 2001); *ibid.*, 'The Longest Years: New Estimates of Labor Input in England, 1760-1830', *Journal of Economic History* 61 (2001) pp. 1065-1082; M. Bell, 'Working hours in East Anglia during the first industrial revolution', University of Oxford Manuscript (2009); Allen and Weisdorf, 'Was there?'

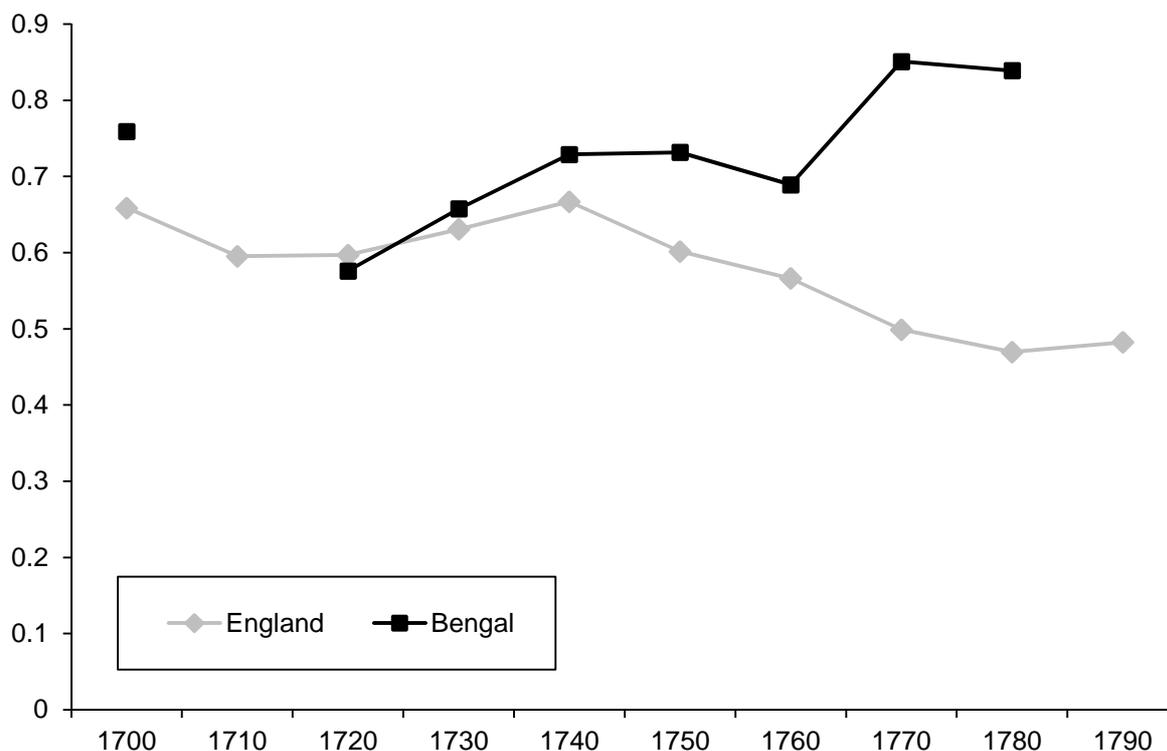
⁷²⁹ Sara Horrel and Jane Humphries, 'Women's labour force participation and the transition to the male-breadwinner family, 1790-1865', *Economic History Review* 48 (1995) pp. 89-117.

⁷³⁰ Elise van Nederveen Meerkerk, 'Couples cooperating? Dutch textile workers, family labour and the "industrious revolution"', c. 1600-1800', *Continuity and Change* 23 (2008) 237-266, there p. 257.

⁷³¹ Otherwise these wages would not have shown up in the sources. In the literature Indian women generally show up as spinners (Hossain, *Company Weavers*, p. 39; Prassanan Parthasarathi, 'Cotton Textiles in the Indian Subcontinent 1200-1800', in: Giorgio Riello and Prasannan Parthasarathi, *The Spinning World: A Global History of Cotton Textiles, 1200-1800* (Oxford: Oxford U. P., 2009) there p. 29. Although also mentioning of women in agricultural tasks, rice-processing and the building industry: Smritikumar Sarkar, 'Social Organization of Artisan Production in India: Changing Role of the Market, Technology, and Merchant-Creditor: 18th to 20th Centuries', in: Binay Bhushan Chaudhuri (ed.), *Economic History of India From Eighteenth to Twentieth Century* (New Delhi: Centre for Studies in Civilization, 2005) pp. 107-354, there 269; and as e.g. brick-carriers: Moosvi, 'The World of Labour in Mughal India', p. 251-2; *ibid.*, *People, Taxation, and Trade*, pp. 135-158.

percent in families where children were also working.⁷³² In England woman's and children's combined contribution to family income was roughly stable around 20 percent in the period 1787-1865, while the woman's contribution alone fluctuated between 1.9 and 11.6 percent.⁷³³ It is unclear whether this substitution was also case in Bengal.

FIGURE 5.4: GENDER WAGE GAP IN ENGLAND AND BENGAL, 1700-1800



Sources: England: Humphries and Weisdorf; Bengal: see text, chapter 5, and appendix.

How would women and children's contribution affect the comparison between England and Bengal (for which we have some data)? Figure 5.5 shows, besides the original series of welfare ratios in England (Oxford, to avoid the high wage bias of London) and Bengal, 4 additional series to account for family members' contribution: (1) ENGPlus adds 25 percent to the male income for the England series;⁷³⁴ (2) BENPlus adds 25 percent to the male wage for the Bengal series; (3) BENWom adds a woman's wage for 250 days per year to the household income;⁷³⁵ (4) BENWCh adds a boy's and a woman's wage for 250 days per year to the household income,⁷³⁶ but

⁷³² Van Nederveen Meerkerk, 'Couples cooperating', p. 257. Obviously part of this decline may be that general household income was higher due to this decline, and that the percentage therefore diminishes somewhat.

⁷³³ Horrel and Humphries, 'Women's labour force'.

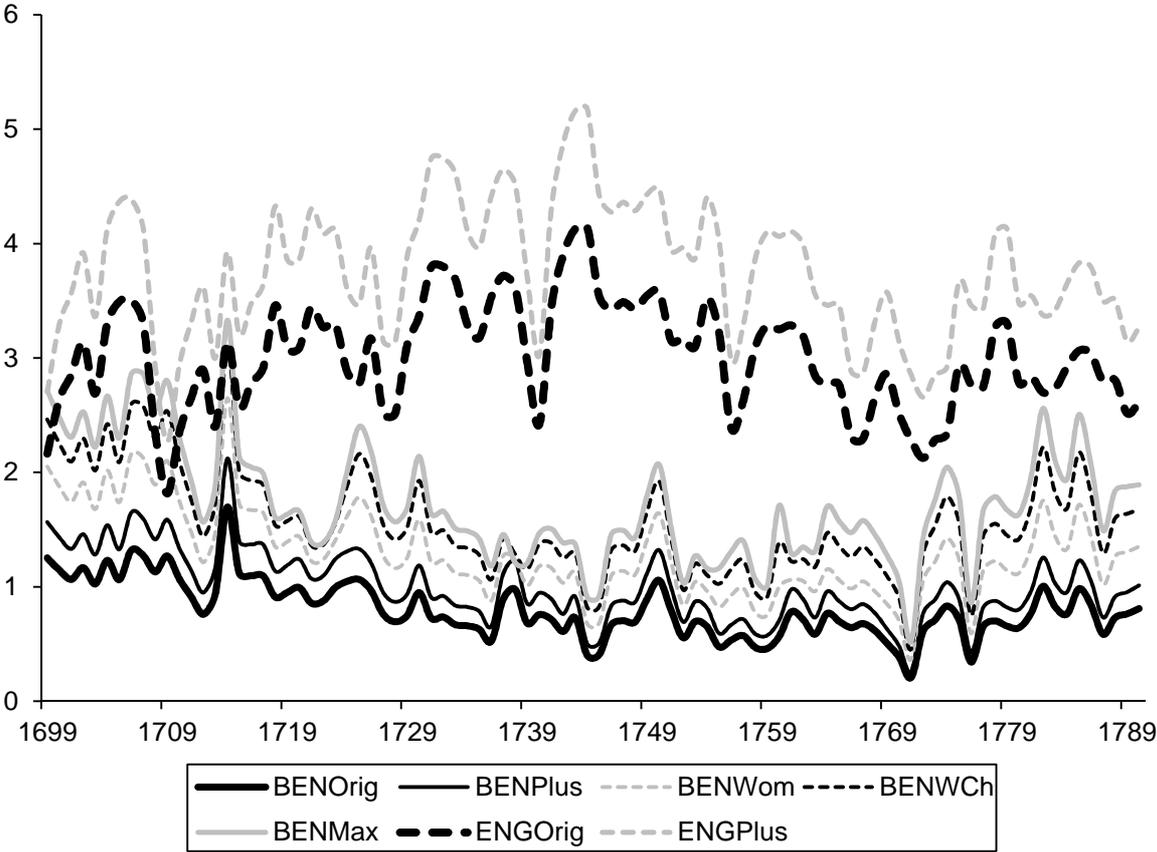
⁷³⁴ 25 percent increase means 20 percent of household income is generated by women (and children).

⁷³⁵ These series were constructed using linear interpolation between the observations shown in figure 5.3.

⁷³⁶ Ibid.

increases the number of baskets to 3.5 (rather than 3)⁷³⁷ and (5) BENMax adds 3 boys and a woman's wage for 250 days per year to household income, but increases the number of consumption baskets for the CPI to 5.⁷³⁸

FIGURE 5.5: REAL WAGES ADJUSTED WITH ADDITIONAL FAMILY MEMBERS' INCOMES.



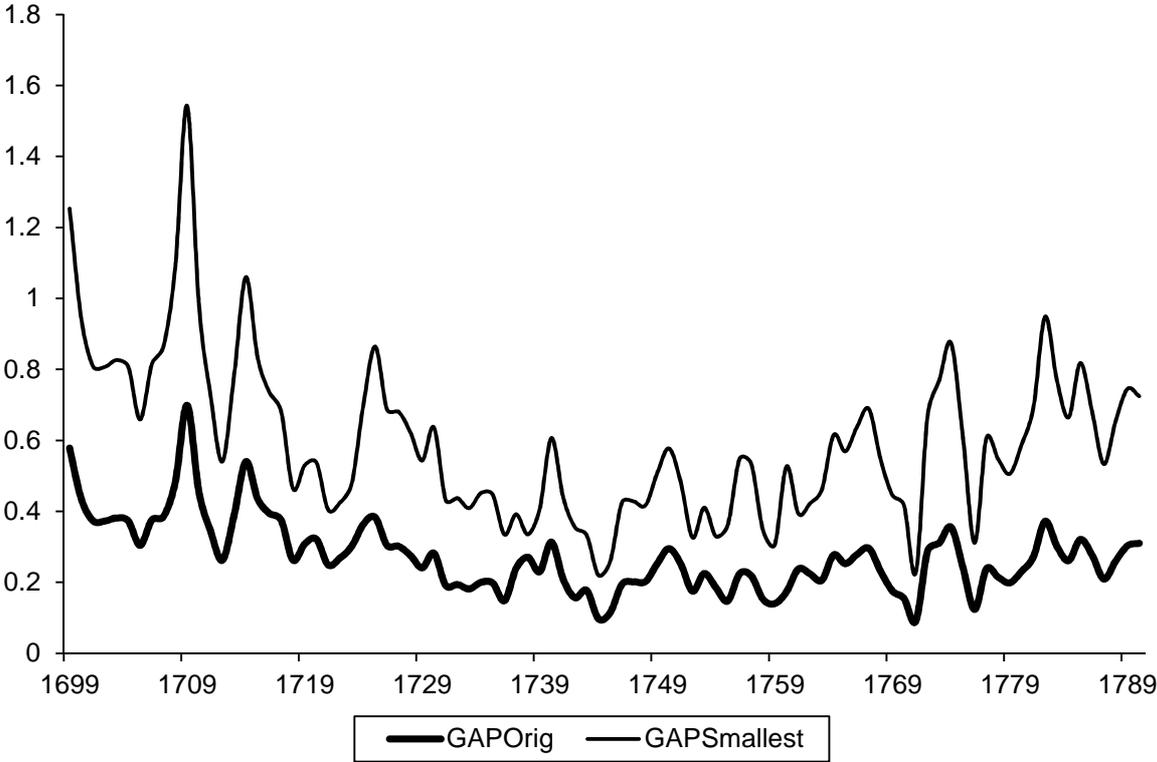
Sources: see text.

Two important conclusions may be taken from this figure. First, the contribution of women and children may account for the fact that despite subsistence ratios consistently below the poverty line, the population grew throughout almost the entire eighteenth century. The additional income of a full-time working woman and boy would allow these families to stay out of trouble most years. Still, during the famine of 1769/70 even the most optimistic series plummet below subsistence level, which fits the evidence of a high death rate in that year. Second, this figure suggests that Allen et al.'s observation for China is also true for Bengal, namely that even taking into account higher earnings and participation rates of women, living standards in Bengal were still behind those in England (and the Low Countries). Figure 5.6 shows that the gap between Bengal and a downward biased series of English living standards

⁷³⁷ As in order to work that many days, the boy probably needs at least one whole basket to survive on.
⁷³⁸ Ibid.

(Oxford wages vs London prices) without income from other family members. The most optimistic series Bengali living standards are still on average only about 59 percent of the most pessimistic English series and only during 3 peaks were they higher. These numbers reflect an unfair comparison: even if the gender wage gap was smaller in Bengal, and Bengali women were more active on the labour market, it is unlikely that they had a 100 percent participation rate, while English women had a 0 percent participation rate. Therefore, the true gap will be somewhere between the original and the “GAPSmallest” series (and probably closer to the original).

FIGURE 5.6: SMALLEST AND BIGGEST GAP BETWEEN REAL WAGES IN ENGLAND AND BENGAL. 1 = LEVEL ENGLAND



Sources: figure 5.5.

Unfortunately, no female wage data were found for other case studies, therefore only some speculations may be offered. According to a contemporary observer, Reverend James Cordiner, in Ceylon: ‘the men, in general, labour but little, where rice is not cultivated; and all the drudgery of life falls upon the women’.⁷³⁹ A variety of tasks was associated with women in Ceylon, which included, besides the nurturing of children and preparing food, the gathering of firewood from the jungle,⁷⁴⁰ going to the market,⁷⁴¹ as well as rearing cattle.⁷⁴² I have found no suggestions of women working

⁷³⁹ Cited in: Dewasiri, *Adaptable peasant*, p. 18.
⁷⁴⁰ Dewasiri, *Adaptable peasant*, p. 18, Robert Knox, *Historical Relation*, p. 147.
⁷⁴¹ Dewasiri, *Adaptable peasant*, p. 29
⁷⁴² *Ibid.*, p. 18.

for wages on the labour market, and Nirmal Dewasiri noted that ‘under-aged children and women were considered dependents by the Sri Lankan peasant’.⁷⁴³ The important contributions of women (and children) to the household notwithstanding, it is not clear whether this was more than that of European women and thus that allowing for additional income generated by these women would fill the significant gap in living standards as shown in the previous chapter.

The literature on Southeast Asia in general, and Java in particular, suggests a strong position of women in society.⁷⁴⁴ For the nineteenth century there is evidence of women and children assisting men in a variety of agricultural activities, and this was probably also the case before 1800.⁷⁴⁵ Gathering food and timber from the woods was a mixed activity, while the marketing of surplus produce was probably an exclusively female affair.⁷⁴⁶ In addition, both spinning and weaving were both done by women in Java.⁷⁴⁷ Yet again, there are no references to women working for wages (in the building industry). In order to know to what extent including more information on the contributions generated by women would alter the picture presented in figure 4.1 more information is needed.

For the Cape Colony, it is clear that part of the labour force consisted of female slaves and Khoe women.⁷⁴⁸ It is, however, unclear to what extent women of European descent also contributed to the household income. Considering the relatively large families, and the general scarcity of women, it is likely that most spent significant amounts of time taking care of children and performing domestic duties, rather than performing wage labour.

To conclude, a few things can be taken away from this section. In all these regions, just as in Europe, women (and children) made important contributions to the household. In the literature on Ceylon and Java, women are mentioned performing domestic tasks or active in textile production, and only in Bengal are women mentioned as active in the building industry (thus showing up in the sources on wages). Therefore, only for Bengal several observations of women’s and children’s wages were found scattered across the eighteenth century. The gender wage gap in Bengal was smaller than in England and decreased over the eighteenth century. There is, of course, the possibility that the non-wage contribution to household income was larger in Asia than in Europe, and this would be an interesting field for further

⁷⁴³ Ibid., p. 63.

⁷⁴⁴ Reid, *Southeast Asia I*; *ibid.*, ‘Economic and social change’; Peter Boomgaard, ‘Female Labour and Population Growth on nineteenth century Java’, *Review of Indonesian and Malaysian Affairs* 15 (1981) pp. 1-31.

⁷⁴⁵ Boomgaard, ‘Female Labour’.

⁷⁴⁶ Reid, *Southeast Asia, II*, pp. 91-93; Boomgaard, ‘Female Labour’.

⁷⁴⁷ As noted by Crawford and Raffles, see: Boomgaard, ‘Female Labour’.

⁷⁴⁸ R. Elphick and V. C. Malherbe, ‘The Khoisan to 1828’, in: Elphick (eds.) *The Shaping*, pp. 3-64, there pp. 28-29; J. C. Armstrong and N. A. Worden, ‘The slaves, 1652-1834’, in *ibid.*, pp. 109-183.

research.⁷⁴⁹ For now, however, it seems that including women's and children's contributions into the comparison of living standards does not alter the basic conclusions from the previous chapter.

5.5. Labour Markets

To conclude this chapter, the relationship between population, wages and living standards, is also depending on the functioning of the labour market. The prevalence of systems of coerced labour and slavery can affect the level of wages.⁷⁵⁰ A discussion of the structure and functioning of the labour markets is important not only for analytical, but also for methodological reasons. Critics of real wages as a measure of living standards have suggested that in many parts of the pre-modern world, most people's lives were unaffected by the level of wages as they were subsistence or small peasant farmers. What part of the population depended on wages as their household income, and what part of the household income came from wages?

In a famous contribution to development economics, W. Arthur Lewis launched his theoretical model of development 'with unlimited supplies of labour'.⁷⁵¹ Lewis proposed a two-sector model of reallocation from a low productivity 'subsistence sector' to a high productivity 'capitalist sector'. The subsistence sector is characterised by households or communities in which the members are willing to share the total output among all members. Because there is a surplus of labour and a scarcity of capital in this sector, many of the individual labourers receive a reward for their labour that surpasses the value of the actual output they produce. There thus exists 'disguised unemployment' and part of the labour force can be withdrawn from the subsistence sector without affecting total output. This surplus labour will move into the capitalist sector, because productivity is significantly higher there and wages are thus higher than the subsistence level. If productivity in the subsistence sector does not increase, while employers in the capitalist sector are able to pay higher wages consistently, the latter sector is said to enjoy 'unlimited supplies' of labour in the sense that practically everyone in the subsistence sector is prepared to enter wage employment.

In this section, I will first argue that there is evidence of (widespread) commercialization in all areas under scrutiny and that in these regions there were already a considerable number of people working outside agriculture. These people's living standards could thus be influenced by developments in wages, especially as some were landless wage labourers. Furthermore, even many farmers' living standards could

⁷⁴⁹ Also see: Van Nederveen Meerkerk, 'From male breadwinner'

⁷⁵⁰ As also demonstrated in: Allen et al., 'Colonial Origins'.

⁷⁵¹ W. Arthur Lewis, 'Economic development with unlimited supplies of labour', *Manchester School of Economic and Social Studies* 22 (1954) pp. 139-191.

be influenced by wages, as many of them were possibly engaged in side-line activities, including wage labour, outside the farming season. Following Lewis' theory, wages rates in the capitalist sector (i.e. wages paid by the VOC) are related to those in the subsistence sector: the wage at which surplus labour becomes available 'may be equal to the average product per man in subsistence agriculture, plus a margin'.⁷⁵²

It can thus be argued that real wages are a reasonable proxy for the average incomes of a substantial part of the populace, 'as well as the marginal productivity of labour in the economy as a whole'.⁷⁵³ This is, however, also depending on the functioning of the labour market: were wages determined in the context of a free labour market responding to demand and supply or were they influenced by systems of forced labour?

5.5.1. Commercialization and monetization

To get some sense of what part of the population was touched by the (labour) market, and thus the activities of the VOC, and what part was focussed exclusively on subsistence farming, it is appropriate to briefly discuss the extent of commercialization and monetization in these areas, as it is clear that the spread of wage labour requires a reasonable degree of monetization and commercialization.⁷⁵⁴ Following Jan Lucassen, one may assume a close relationship between the circulation of coins and the availability of wage labour.⁷⁵⁵

There is hardly any doubt about the high degree of commercialization of eighteenth-century Bengal. In the seventeenth century, the amount of money in circulation in India as a whole increased roughly three-fold.⁷⁵⁶ Regarding Bengal specifically, both Datta and Mukherjee suggest that over the eighteenth century a remarkable process of commercialization took place in the countryside.⁷⁵⁷

Similarly, as noted above, Reid already famously pointed out the period 1400-1650 as the Age of Commerce in Southeast Asia. Geoff Wade recently extended on this work, suggesting that 900-1300 should already be seen as an early age of commerce, characterized by population growth, the development of ceramic and textile industries, cash-cropping, booming maritime trade, and monetization.⁷⁵⁸ The

⁷⁵² Lewis, 'Economic development', p. 190.

⁷⁵³ Allen et al., 'Wages, prices', p. 29

⁷⁵⁴ Ravi Ahuja, 'Labour relations and labour intermediaries in early colonial India: Four provocations and one case study on the city of Madras', Paper prepared for the *Workshop on Labour Relations in India 1500-2000* (New Delhi: Indian Council of Historical Research, 2011) p. 2.

⁷⁵⁵ Jan Lucassen, 'Introduction: Wages and Currency, 500 BCE-2000 CE', in: J. Lucassen (ed.), *Wages and Currency. Global Comparisons from Antiquity to the Twentieth Century* (Bern: Peter Lang, 2007) pp. 9-58. See also, Feenstra, 'Dutch coins'.

⁷⁵⁶ Habib, 'Monetary System and Prices'.

⁷⁵⁷ Datta, *Society, economy*, p. 17; Mukherjee, 'Markets in eighteenth century'.

⁷⁵⁸ Geoff Wade, 'An Early Age of Commerce in Southeast Asia, 900-1300 CE', *Journal of Southeast Asian Studies* 40 (2009) pp. 221-265.

monetization of Java started already in the eighth or ninth century,⁷⁵⁹ although it was only ‘when Chinese cash came to be used for monetary purposes [during the twelfth and subsequent centuries] that coinage could function at virtually all levels of the Javanese economy, for both commercial and administrative purposes, ultimately allowing for the full development of the Javanese market system’.⁷⁶⁰ Over the eighteenth century commercialization and monetization spread across Java, as both silver and copper coins were imported into the island on a large scale.⁷⁶¹ Feenstra found that over a billion small copper coins were sent to the island by the VOC. It seems likely that these spread not only through coastal parts of the island under Dutch control: over half of these coins were sent to Semarang that served as cross-roads to Mataram.⁷⁶² The spread of wage labour throughout the island is also supported by the fact that I found evidence of smiths working for wages in Cartasura (situated in the interior of Mataram) in 1739.⁷⁶³

Ceylon has often been described as a predominantly agricultural society with a majority of the people engaged in subsistence agriculture, with paddy cultivation as its central feature.⁷⁶⁴ However, also in the case of Ceylon, we have indications of widespread commercial exchange. First of all, it is clear that the traditional peasant settlements were not completely self-sufficient: some consumer commodities came from distant areas (rice was imported from Bengal, Coromandel and Java),⁷⁶⁵ as well as across Ceylon.⁷⁶⁶ There is evidence of the existence of local markets and shops used by perhaps ‘hundreds of Sinhalese’ every day.⁷⁶⁷ This commercial exchange was facilitated by the circulation of a wide variety of coins, and took place not only at the higher levels of society, but also among the ‘ordinary working people.’⁷⁶⁸ As early as

⁷⁵⁹ Robert S. Wicks, *Money, markets and trade in early Southeast Asia: The development of indigenous monetary systems to AD 1400* (1992); Kenneth R. Hall, ‘Coinage, trade and economy in early South India and its Southeast Asian neighbours’, *Indian Economic and Social History Review* 36 (1999) pp. 431-459; Robert S. Wicks, ‘Monetary developments in Java between the ninth and sixteenth centuries: a numismatic perspective’, *Indonesia* 42 (1986) pp. 42-77.

⁷⁶⁰ Wicks, ‘Monetary developments’, p. 64.

⁷⁶¹ Nagtegaal, *Rijden*, pp. 196-7.

⁷⁶² Feenstra, ‘Dutch coins’, p. 4.

⁷⁶³ VOC 7838 ff. 62-65.

⁷⁶⁴ Da Silva, *A History*, p. 171.

⁷⁶⁵ Arasaratnam, ‘Dutch commercial policy’; and Arasaratnam, ‘The rice trade’.

⁷⁶⁶ Those parts of Dutch ruled south-west Ceylon that had a surplus of paddy traded with parts that did not produce enough. For example, the cinnamon peeling caste, the *Salāgama*, did not produce sufficient rice themselves and thus had to purchase it in Matara: Kotelawela, ‘Agrarian policies’, p. 13. Dewasiri (*Adaptable peasant*, p. 29) notes that as other essential articles and services made or provided by specialist castes were sometimes unavailable in a village, ‘as the caste-based division of labour extended beyond one single village settlement.’

⁷⁶⁷ As noted above, it was one of the tasks of the women to go to the market. In addition, Robert Knox, an English prisoner in Kandy in the seventeenth century, wrote that there were shops in the cities, ‘which sell cloth, rice, salt, tobacco, limes, drugs, fruits, swords, steel, brass, copper, &c.’ While Knaap claims that as early as the 1690s ‘hundreds of Sinhalese came into Colombo every day to sell rice, cattle and other food in the market’: Gerrit Knaap, ‘Europeans, mestizos and slaves: the population of Colombo at the end of the seventeenth century’, *Itinerario* 5 (1981) p. 85.

⁷⁶⁸ Arasaratnam, ‘Historical foundation’, p. 6.

the sixteenth century 'there was a substantial circulation of money'⁷⁶⁹ and this was 'certainly not confined to trading centres on the coast.'⁷⁷⁰ S.B.D. de Silva has demonstrated the existence of 'a complex system of commercial relations facilitated through monetary exchange' in the Kandyan regions.⁷⁷¹

The situation in the Cape Colony is somewhat peculiar. The Cape Town area and its immediate surroundings were clearly highly commercialized. There were many inn-keepers in order to serve the many ships' crews who came to call at the Cape. In addition, there were many people working in production and other services. Outside of Cape Town there were many commercial wheat and wine farms whose production were directly influenced by the ebb and flow of the internal and external market.⁷⁷² Further away from Cape Town lived the famous *trekboers* who were pastoral farmers, and many of them on a subsistence basis.

5.5.2. Occupational structure

What part of the population worked in agriculture? Parthasarathi presents occupational data from Bengal that suggest various villages enjoying a relatively small, but highly productive agricultural sector, which fed a large non-agricultural population.⁷⁷³ For example, a 1775 survey of Rangamati suggested only 39 percent of 256 households were cultivators, while the remainder of the households were weavers, coolies, officials and a variety of other non-agricultural occupations. Similarly, a survey of the village of Sibpur in 1791 suggested that only 25 percent of 419 households were agriculturalist, while some 15 percent were artisans. Tirthankar Roy however, finds that some 80 percent of the total population in Bengal was dependent on agriculture,⁷⁷⁴ and only in a few textile districts of lower Bengal the proportion was smaller. His agricultural figure may, however, be somewhat high when taking into account the significant deindustrialization in the later eighteenth and nineteenth century,⁷⁷⁵ while for India as a whole between 1857 and 1900, it has been suggested that approximately 73 percent of the male workforce was in agriculture.⁷⁷⁶

In this section, various data will be employed to get some idea of the occupational structures of Ceylon, Java and the Cape Colony. Most attention will be given to the discussion of Ceylon, as these data were gathered and constructed from archival sources. The population estimates for Ceylon in the previous section were

⁷⁶⁹ Chandra R. de Silva, 'The first Portuguese revenue register of the Kingdom of Kotte - 1599', *Ceylon Journal of Historical and Social Studies* 5 (1975) pp. 71-153.

⁷⁷⁰ Chandra R. de Silva, 'Sri Lanka in the early sixteenth century: economic and social conditions', in: K. M. de Silva (ed.) *University of Peradeniya History of Sri Lanka* (Peradeniya, 1995) p. 50.

⁷⁷¹ S. B. D. de Silva, *Political Economy of Underdevelopment* (London, 1982) p. 211.

⁷⁷² Boshoff and Fourie, 'The significance'; Ross, 'The Cape'.

⁷⁷³ Parthasarathi, *Why Europe*, p. 70.

⁷⁷⁴ Roy, 'Economic conditions', p. 184.

⁷⁷⁵ Clingingsmith and Williamson, 'Indian deindustrialization'.

⁷⁷⁶ Alan Heston, 'National Income', in: Dharma Kumar (ed.), *Cambridge Economic History of India, vol. 2, 1575-1970* (Cambridge: Cambridge U. P., 1983) pp. 376-462.

based on proto-censuses, probably compiled because the people were obliged to perform services either to the Kandyan King or, in the Maritime Provinces, to the VOC, in return for *accommodessans* (land grants). This system was known as the *rājakāriya*. What these services encompassed depended on caste; hence the existence of an occupational caste system. The farming castes, the *Goyigama* in the Sinhalese part and the *Vellale* in the northern Tamil areas, which formed both the largest and the highest castes, were exempted from these services. Other castes, such as the fisher, washer, carpenter, barber, and silversmith castes (etc.), had to perform the specific duties attached to their caste.

Using literature on castes in early modern Ceylon, the many occupations and caste names reported in the census have been brought into 13 groups based on the HISCO tree of occupational groups.⁷⁷⁷ For example, the *Careas* were part of the *Karāva*, the fisher caste, and have thus been classified as fishermen.⁷⁷⁸ Second, those groups have been categorised per sector, following the PST system of classification as developed by the Cambridge project on occupational structures.⁷⁷⁹ This implies that all the *Karāva* have been put in the primary sector. The problem that arises is that, as discussed in section 4.4 above, not all *Karāva* were fishermen: many of them were carpenters (secondary sector) or boatmen (tertiary). Similar difficulties arise with other groups as well. Also problematic for putting these occupations/castes into an occupational structure is that, as Alicia Schrikker notes, the occupation caste system ‘does not mean that all members of the castes actually performed this labour, as most people on the island were involved in subsistence agriculture.’⁷⁸⁰

These problems are, however, not confined to Ceylon: many early modern European farmers were at the same time employed as weavers in the putting-out system.⁷⁸¹ Thus while some groups in the primary sector were engaged in labour associated with the secondary and tertiary sectors, various groups in the latter sectors devoted part of their time on traditional subsistence agriculture. If this approximately evens out, table 5.3a should provide some indication of the occupational structure in the Dutch controlled Maritime Provinces of Ceylon.⁷⁸²

These are tentative numbers that most likely understate the size of the primary sector. Yet, with these limitations in mind, table 5.3a shows that in 1684

⁷⁷⁷ Marco van Leeuwen and Ineke Maas, *HISCO. A historical international standard classification of occupations*, (Leuven, 2002).

⁷⁷⁸ Michael Roberts, *Caste conflict and elite formation. The Rise of a Karava Elite in Sri Lanka, 1500-1931* (New Delhi, 1995) p. 20;

⁷⁷⁹ The University of Cambridge project: *The occupational structure of Britain 1379-1911*: <http://www.geog.cam.ac.uk/research/projects/occupations/categorisation/pst.pdf> Consulted: 18-01-2012.

⁷⁸⁰ Schrikker, *Dutch and British*, p. 17.

⁷⁸¹ E. A. Wrigley, ‘The PST system of classifying occupations’, p. 3. Wrigley also goes into more details on other problems that arise when constructing an occupational structure of census data.

⁷⁸² Household heads were counted because the problem of by-employment in the subsistence and household sector are more acute in the case of women and children: Kumar, ‘The forgotten sector’, p. 389.

approximately two-thirds of the labour force in maritime Ceylon were engaged in agriculture, 13 percent in the secondary sector and 19 percent in the service sector. If the census had included the interior kingdom of Kandy, the primary sector would have been larger: data from the 1830s show that while in the Maritime Provinces 73 percent of the population worked in agriculture, this was over 97 percent in Kandy.⁷⁸³ Data on the entire island for the 1830s and 1850s show that the primary sector accounted between 75 percent and 80 percent of the labour force.⁷⁸⁴ These figures also point to the limited amount of structural change over the eighteenth century.

TABLE 5.3A. CEYLON (DUTCH PARTS), 1684

	n	%
Primary	52,000	67
Secondary	9,900	13
Tertiary	14,700	19
Unknown	1,400	2
Total	78,000	100

Source: De Zwart, 'Population, Labour'.

TABLE 5.3B. JAVA, CA. 1650.⁷⁸⁵

	n	%
Primary	2,862,200	85
Secondary	198,200	5
Tertiary	300,800	10
Total	3,361,200	100

Source: Bosma, 'Labour Relations'.

TABLE 5.3C. THE CAPE COLONY, 1732

	n	%
Primary	5764	78.9
Secondary	114	1.5
Tertiary	1105	15.1
Unknown	326	4.5
Total	7309	100

Source: Fourie, 'The Remarkable', and Fourie and Van Zanden, 'GDP in the Dutch'.

⁷⁸³ Montgomery Martin, *Statistics*, p. 375.

⁷⁸⁴ Montgomery Martin, *Statistics*, pp. 375-6: 1832: primary 73%, secondary 9%, tertiary, 18%; 1836: primary 78%, secondary 12%, tertiary 10%; *Statistical tables*: 1850: primary 75%, secondary 11%, tertiary 14%; 1851: primary 80%, secondary: 10%, tertiary 10%; 1852: primary 80%, secondary 9%, tertiary 11%, 1853: primary 78%, secondary 12%, tertiary 10%.

⁷⁸⁵ I took Bosma's figures from Table 4, column II and used the percentages in column III to calculate the total number of people in the primary sector, which therefore slightly differ from Bosma's approach. Also included in the primary sector are those in fishing. Slaves were put in the secondary sector.

Employing tentative figures collected by Ulbe Bosma, it is also possible to give some estimates of the sectoral distribution of the workforce in Java c. 1650.⁷⁸⁶ These data show an economy dominated by the primary sector. Nonetheless the secondary and tertiary sectors were not entirely absent, and, as shall be argued below, many of those in the primary sector may have been engaged in secondary and tertiary sector activities as by-employment.⁷⁸⁷ Furthermore, Bosma suggests that these numbers may underestimate the number of people in construction and the shipping industry. Among those in the secondary sector are those working in textiles,⁷⁸⁸ construction, as well as slaves (based on the literature the latter were assumed to be artisans, most likely in the shipbuilding industry). The tertiary sector is somewhat larger than the secondary, as it includes shipping (5 percent), as well as administrators, shopkeepers, priests and teachers.

Slightly more detailed data are available to sketch sectoral employment in the Cape Colony around 1732. This is done by combining figures on the free burgher population from the Cape Town, Stellenbosch and Drakenstein districts,⁷⁸⁹ with additional estimates on Company employees and the number of Khoesan within the Colony borders.⁷⁹⁰ Unsurprisingly, these data show a large primary sector, and the economy was clearly dominated by crop and stock farming. The secondary sector is almost non-existent according to these numbers, possibly as a result the Company's policies prohibiting manufacturing.⁷⁹¹ These data may underestimate this sector as many farmers could have been engaged in trades (e.g. as 'blacksmiths, wagon builders, tailors, boot-makers, carpenters, and thatchers').⁷⁹² In Cape Town district alone 23 percent of the workforce was engaged as artisans, bakers, brewers or millers. The tertiary sector was possibly somewhat larger as there were many innkeepers, barbers and others providing services to the ship crews calling at the Cape. Furthermore, these 15 percent include Company personnel (providing military 'services').

These figures, generally estimates based on scarce data, show that these economies with between 70 and 85 percent of the population working in agriculture did not consist only of exclusively small peasant farmers. In comparison with north-western Europe, the degree of occupational specialization was perhaps not very

⁷⁸⁶ Bosma, 'Labour relations'.

⁷⁸⁷ De Zwart and Van Zanden, 'Labour, wages'; B. White, 'Economic diversification and agrarian change in rural Java, 1900-1990', in: P. Alexander, P. Boomgaard and B. White (eds.), *In the shadow of agriculture. Non-farming activities in the Javanese economy, past and present* (Amsterdam: Royal Tropical Institute, 1992); Peter Boomgaard, 'The non-agricultural side of an agricultural economy, Java, 1500-1900', in: Alexander et al. (eds.) *In the shadow*, p. 36.

⁷⁸⁸ This includes women working as spinners and/or weavers, as suggested in section 5.4.

⁷⁸⁹ Fourie, 'The Remarkable'.

⁷⁹⁰ Data employed in Fourie and Van Zanden, 'GDP in the Dutch', figures received from Jan Luiten van Zanden. It was assumed all Khoesan were in the primary sector.

⁷⁹¹ Fourie, 'The Remarkable', pp. 423-424.

⁷⁹² *Ibid.*, p. 424.

impressive. In Holland already in 1514 only 39 percent of the population worked in the primary sector,⁷⁹³ while in England about 32 percent of the labour force was in agriculture c. 1700.⁷⁹⁴

5.5.4. Labour relations

What part of these populations was working for wages and to what extent were these influenced by systems of labour coercion? While accurate quantification of labour relations and their shifts over time in these regions in this period is not feasible, the information above can be put in the context of what is known about labour markets and labour relations from the secondary literature.

5.5.4.1. Bengal

For India as a whole, it has been suggested that as a result of the high degree of monetization, in towns (perhaps 15 percent of the population was living there),⁷⁹⁵ ‘money wages were universally in vogue for both skilled and unskilled labour’.⁷⁹⁶ While some received payments in kind, Shireen Moosvi suggests that money wage payments were the rule in Indian towns in the seventeenth century. Similarly, Prakash claims that the VOC had no problem finding sufficient labour at the prevailing market wage rates as the supply of labour was very flexible.⁷⁹⁷ This is in line with Nadri’s finding that in Surat, ‘beyond some conventional caste or ethnic influences or restrictions on mobility, the labour market was free and any employer could find workers if he wanted to’.⁷⁹⁸ For Bengal specifically there is further evidence of the widespread existence of wage labour. The VOC silk reeling unit in Kasimbazar, established in the 1650s, perhaps employed as many as 4,000 reelers in 1715.⁷⁹⁹ In addition, Lucassen gives a detailed sketch of labour at the Ichapur (near Calcutta) Gunpowder Factory that in the 1790s that could occupy as many as 2,000 to 2,500 skilled labourers, making it ‘one of the world’s largest factories’.⁸⁰⁰ While no concrete numbers are given, the number of workers in the Mughal royal mints was probably also large.⁸⁰¹ Next to these manufacturing centres, there were many wage labourers involved in the many building projects, constructing forts, other buildings and ships (from which the wage data in

⁷⁹³ Jan Luiten van Zanden, ‘Taking the measure of the early modern economy: historical national account for Holland in 1510/4’, *European Review of Economic History* 6 (2002) pp. 131-163.

⁷⁹⁴ Mokyr, *The Enlightened Economy*, p. 15.

⁷⁹⁵ Irfan Habib, ‘Potentialities of Capitalistic Development in the Economy of Mughal India’, in *ibid.*, *Essays in Indian History* (Delhi, 1995) p. 201.

⁷⁹⁶ Moosvi, ‘The World of Labour’.

⁷⁹⁷ Prakash, *The Dutch East India Company*, p. 238.

⁷⁹⁸ Nadri, *Eighteenth-Century Gujarat*, p. 37.

⁷⁹⁹ Prakash, *The Dutch East India Company*, p. 117.

⁸⁰⁰ Jan Lucassen, ‘Working at the Ichapur’.

⁸⁰¹ Prakash, *The Dutch East India Company*, p. 117.

this dissertation were also taken). There could be over a thousand of workers involved in one project.⁸⁰²

Labour coercion seems to have been limited in Bengal. Yet, *zamindars* (aristocrats allowed to levy taxes) in Birbhum, some 180 km northwest of Calcutta:

[c]ould demand the attendance and labour of the Blacksmiths, Carpenters, Goldsmiths and Florists, and each artificer of this description when called was obliged to attend and work for the space of ten or fifteen days in the year, so that no one attended twice in the same year, and assist in the *zamindari* buildings and other works receiving only a small daily allowance and diet money.⁸⁰³

But Datta suggests that such *zamindari* claims were absent in the rest of the province and the *zamindars* were never accused of using corvée labour for production in their lands. Moosvi argues that forced labour was generally considered unethical in Mughal India.⁸⁰⁴ Nonetheless, in neighbouring Bihar, slave labour was widely used for the cultivation of *zamindari* lands.⁸⁰⁵

5.5.4.2. The Cape Colony

Between 1658 and 1838, the Cape was a slave-based economy and slaves formed almost half of the entire population in the eighteenth century. European settlers constituted about 40 percent of the population, and the remaining 10 percent were Khoesan.⁸⁰⁶ The numbers of Khoesan declined after 1713 when an epidemic took the lives of 9 out of 10 Khoesan.⁸⁰⁷ The shortage of labour led to the indenture of many of the remaining Khoesan. From 1721 onwards, the children of slave men and Khoesan women, as well as the children of Khoesan who worked for farmers were indentured for periods of 18 years. While a few scattered notations of Khoesan wages and prices for slave hire were found,⁸⁰⁸ the focus of the wage analysis was inevitably on the European population.

Among the Europeans, there were free burghers and Company employees. From 1657 onwards, some of the European settlers became farmers as the Company started to give out large stretches of land, in order to increase agricultural production. The rest of the European population consisted of wage-earning Company employees and *knechts* ('servants'). There were two types of *knechts*, Company *knechts* and free *knechts* who worked without a contract. Company *knechts* were VOC soldiers or sailors hired out to a settler. They signed a renewable one-year contract with the head of a

⁸⁰² Morleand, *India at the Death of Akbar*, pp. 173-174.

⁸⁰³ Cited by Datta from English colonial documents.: Data, *Society, economy*, p. 160.

⁸⁰⁴ Moosvi, 'The World of Labour', p. 251.

⁸⁰⁵ Datta, *Society, economy*, p. 160.

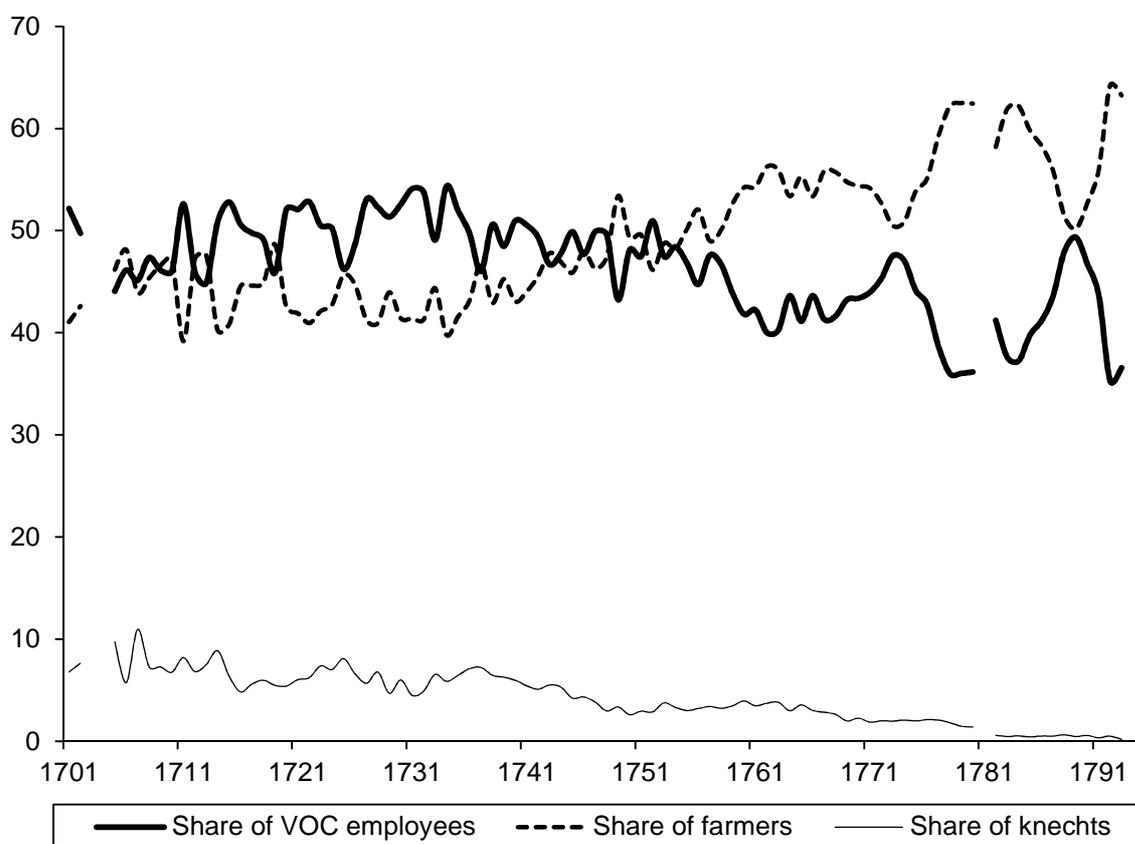
⁸⁰⁶ Van Zanden and Fourie, 'GDP in the Dutch Cape Colony': this estimate concerns only those Khoesan participating in the Cape economy, the total Khoesan population was probably much larger.

⁸⁰⁷ Biewenga, *De Kaap*, p. 107.

⁸⁰⁸ Khoesan wages were generally relatively low: Elphick and Malherbe, 'The Khoisan'.

household and received a monthly cash wage. After 1692 all contracts between Company *knechts* and settlers had to be in written form and wages were fixed until 1795. The free *knechts* (which included free blacks) did not enjoy institutional and contractual protection from the VOC, but their wages were significantly higher (as noted in section 4.2.2 above).⁸⁰⁹ Figure 5.7 plots the shares of VOC employees, farmers and free *knechts* among the free male population. This figure shows that while Johan Fourie and Jan Luiten van Zanden have suggested that wage labour formed only a minor part of the Cape labour force,⁸¹⁰ until the 1750s the number of wage labourers exceeded that of farmers.

FIGURE 5.7 SHARE OF VOC EMPLOYEES, FARMERS AND KNECHTS AMONG THE FREE MALE POPULATION OF THE CAPE COLONY.



Source: Van Duin and Ross, 'The economy'.

5.5.4.3. Ceylon

It is difficult to quantify the number of wage labourers in Ceylon. Yet, we can relate some of the figures on the occupational structure with what is known about the labour market from the literature. First of all, following the discussion on commercialization it is clear that wage labour existed in various forms in the Maritime Provinces as the

⁸⁰⁹ Shell, *Children of Bondage*, p. 13.

⁸¹⁰ Fourie and Van Zanden, 'GDP in the Dutch Cape Colony', p. 471; Fourie, 'The remarkable wealth', p. 425.

Reverend Phillippus Baldaeus mentioned wages of carpenters and masons in Jaffna,⁸¹¹ and thousands of observations of wages for Ceylonese workers could be found in the VOC documents, as discussed in the previous chapter. Wage labour was not limited to the Dutch ruled parts of Ceylon as S.B.D. de Silva suggests the existence of ‘hired labour, i.e. labour working for money wages’ in Kandy prior to the arrival of the English.⁸¹²

Although many of the service and manufacturing castes practiced subsistence agriculture alongside their caste occupation,⁸¹³ Nirmal Dewasiri suggests that the Company’s high demand for labour also affected the supply, and thereby induced a change of labour relations. Especially in the expanding urban areas, ‘there was a growing tendency for caste-based occupations to be transformed into exclusive sources of livelihood’.⁸¹⁴ This seems to especially have been the case among toddy-tappers, artisans, washers and barbers.⁸¹⁵ At the same time, the *rājakāriya* system was transformed into a ‘sort of quasi-wage-labour system’.⁸¹⁶ Governor van Gollennesse notes that a variety of workers ‘for example carpenters, sawyers, hawkers etc.’ did not get *accomodessans*, but received money payments.⁸¹⁷ In late seventeenth-century Jaffna, the required services in the *rājakāriya* amounted to only ‘three days in every three months, or twelve days in a whole year’,⁸¹⁸ and it was possible for people to buy themselves out of their service by paying a fine, which was then only 2 *stuivers* per day. This was significantly below the daily wage and in 1695 as many as 24,641 people paid their fines in Jaffna alone.⁸¹⁹ The resulting labour shortage in various construction projects of the Company had to be resolved by hiring wage labourers.⁸²⁰ By 1762 the fine had increased to 6 *stuivers*, but the service remained only 12 days per year.⁸²¹ To put this in perspective, in the ‘first modern economy’,⁸²² the seventeenth-century Dutch Republic, the average labourer had to work 17-18 days per year for the taxman.⁸²³ However, according to Arasaratnam, ‘feudal relations’ in the south were far more pronounced and the release from service via the payment of fines was less common.⁸²⁴

⁸¹¹ Baldaeus, *Nauwkeurige beschrijvinge*, p. 188.

⁸¹² De Silva, *The Political Economy*, p. 223

⁸¹³ Schrikker, *Dutch and British*, p. 17.

⁸¹⁴ Dewasiri, *The adaptable peasant*, p. 62.

⁸¹⁵ Dewasiri, *The adaptable peasant*, p. 62; Arasaratnam, ‘Social and economic change’, p. 48; and: Schreuder, *Memoir*, p. 52.

⁸¹⁶ Dewasiri, *The adaptable peasant*, p. 222.

⁸¹⁷ Van Gollennesse, *Memoir*, p. 63.

⁸¹⁸ Hendrick Zwaardcroon, *Commandeur of Jaffna. Memoir for the guidance of the council of Jaffnapatnam, During his absence at the coast of Malabar, 1697*, transl. by Sophia Pieters (Colombo, 1911) p. 22.

⁸¹⁹ Zwaardcroon, *Memoir*, p. 22.

⁸²⁰ *Ibid.*, p. 59.

⁸²¹ Schreuder, *Memoir*, p. 60.

⁸²² De Vries and Van der Woude, *The First Modern*.

⁸²³ Maarten Prak, *Gouden Eeuw. Het Raadsel van de Republiek* (Nijmegen: SUN, 2002) p. 90

⁸²⁴ Arasaratnam, ‘Social and economic change’, p. 47.

To what extent labour relations changed and how time was divided between caste-related labour for the *rājakāriya*, wage labour and subsistence agriculture differed per caste, time period and region. It is outside the scope of this dissertation to examine this for each caste group. Instead, the issue is illustrated by two cases: the *Salāgama* and the *Karāva* (that were introduced earlier). While the *Salāgama*, or *chalias*, produced the most lucrative item on the island, cinnamon, their economic and social position was dire. Cinnamon peeling was part of their traditional obligation in the *rājakāriya*. Starting at the age of twelve with a delivery of one *pingo* (62 pounds), the amount a peeler had to deliver increased annually, to a maximum of 11 *pingos*, which

they must deliver until they are judged to be beyond a state where they can deliver this through old age or sickness; then they can be relieved by the yearly reduction of a *pingo* until they come to one *pingo* where they remain till they die.⁸²⁵

The peeling was an arduous task and workers frequently failed to deliver the obligatory amount, which steadily increased during the Dutch period, until it came to a point where the *chalias* had to leave their villages and spent for over eight months a year peeling in the forests.⁸²⁶ In order to avoid the burden, the *chalias* occasionally resorted to violent insurgencies or deserted to Kandy.⁸²⁷

The *Karāva* on the other hand, seem to have been a highly mobile and flexible group. Although *Karāva* people were classified in Dutch records as fishers, they were not only fishermen. Those engaged in fishing did so as a full-time occupation.⁸²⁸ They were of course obliged to deliver part of their catch to the Company as their *rājakāriya*. Yet, the *Karāva* diverted to other forms of employment when this was profitable and they could thus be found in a variety of occupations: as noted above there is evidence of *Karāva* who became carpenters, elephant catchers or boatmen. Finally, Dewasiri also found an inland village where 29 *Karāva* families owned substantial patches of paddy-land.⁸²⁹ The difference between the *Salāgama*, caught up in an increasingly repressive system of obligational labour, and the flexible *Karāva* is striking.

This discussion suggests that many workers in the secondary sector (total 13 percent of the labour force; see table 5.2a above), which constitutes of craftsmen and coolies, may have been working for wages at least part of the time. Next to these, also the fishers (somewhat less than 9 percent),⁸³⁰ and a variety of workers in the service sector, such as the washers, teachers, bookkeepers (around 4 percent of the total, see

⁸²⁵ Van Gollennesse, *Memoir*, p. 74.

⁸²⁶ Arasaratnam, *Dutch power*, p. 186.

⁸²⁷ Dewasiri, *The adaptable peasant*, p. 79. Similarly, other groups also protested against the high pressure put on labourers by the Dutch, as becomes clear from a rebellion in Matara in 1790; see: Schrikker, *Dutch and British*, pp. 70-71

⁸²⁸ Dewasiri, *The adaptable peasant*, p. 62.

⁸²⁹ Dewasiri, *Adaptable peasant*, p. 87.

⁸³⁰ The 9 percent also includes hunters.

appendix table A8.1 below) could be employed for wages (also see appendix 8 for more detailed numbers).

5.5.4.4. Java

There has been significant debate on the existence of free wage labour in Southeast Asia in general, and Java in particular. In much of the (older) literature on labour in Southeast Asia there has been a general agreement that free wage labour hardly existed before 1880.⁸³¹ Boomgaard first disputed this consensus and from his work a different picture emerges.⁸³² Clearly a significant part of the labour force consisted of bonded labour, where three types can be distinguished: slavery, *corvée* and debt bondage.⁸³³ It seems that slavery was largely restricted to urban areas on the coast as non-noble entrepreneurs and commercially-oriented rulers in ports of trade had insufficient access to *corvée* labour. Merchants from China, India and Malaysia brought their own slaves with them, while the VOC employed slaves from India or other parts of the Indonesian archipelago. Slaves from Java itself were not allowed in Batavia and other urban centres.⁸³⁴ Many of the VOC slaves were artisan-slaves who were paid a wage and some of them could, after a given amount of time had elapsed, buy their freedom. This (non-indigenous) slavery was rare in the countryside, and according to Boomgaard about 1.5 percent of the total population were slaves.⁸³⁵ Javanese could become bonded via debt-bondage. While this was a widespread phenomenon in Southeast Asia,⁸³⁶ the total number of these in the Dutch governed parts of Java was probably limited and on several occasions the Dutch tried to abolish debt-peonage.⁸³⁷ Many people in Java could however be subject to *corvée* obligations, as a form of taxation.

Next to these forms of more or less bonded labour, there was also a group of free labourers. From early on, Chinese migrants were an important source of free labour.⁸³⁸ Around 1670 the term *coolie* first appeared in the sources, associated with (indigenous) unskilled wage labourers. While some coolies could also be coerced,

⁸³¹ Anthony Reid, 'Introduction: Slavery and Bondage in Southeast Asian ', in: *ibid.* (ed.). *Slavery, bondage and dependency in Southeast Asia* (St Lucia, 1983).

⁸³² Boomgaard, 'Why work'.

⁸³³ Peter Boomgaard, 'Human capital, slavery and low rates of economic and population growth in Indonesia, 1600-1910', *Slavery and abolition* (2003) pp. 83-96, there p. 87.

⁸³⁴ P. H. van der Brug, *Malaria en malaise. De VOC in Batavia in de achttiende eeuw* (Amsterdam, 1994) p. 33.

⁸³⁵ Boomgaard, 'Human capital', p. 84.

⁸³⁶ Reid, *Southeast Asia I*, p. 131.

⁸³⁷ Hoadley suggests that in the Cheribon-Priangan region less than 5 percent of the total population around 1700 was in debt-peonage (see Mason C. Hoadly, 'Slavery, Bondage, and Dependency in Pre-Colonial Java: the Cirebon-Priangan Region, 1700', in: Anthony Reid (ed.). *Slavery, bondage and dependency in Southeast Asia* (St Lucia, 1983) pp. 90-117, while in the Batang regency in the early nineteenth century this was less than 1 percent: Boomgaard, *Children*, p. 66.

⁸³⁸ Boomgaard ('Why work', p. 41) gives early examples from 1604/5 where the English in Banten hired a Chinese bricklayer and from 1617 when the Dutch hired Chinese shipwrights.

many were free wage labourers. Next to the coolies, there were also *bujang*. These were temporary or seasonal workers, which represents the main difference from the coolies, who resembled a permanent proletariat. In 1750 *bujang* were found as free wage labourers on the sugar estates in the environs of Batavia.⁸³⁹

From the research by Nagtegaal it becomes clear that the VOC employed free coolies and *bujang* next to corvée labourers.⁸⁴⁰ The Company mainly used corvée labourers for large and irregularly organized operations, like dredging canals or unloading large ships. These workers almost always received some food,⁸⁴¹ but also received monetary compensation even though it was part of their corvée service. Free wage-labourers often worked as domestic servants or craftsmen.⁸⁴² There is also evidence of labour migrants from the early eighteenth century: inhabitants of Banyumas (in south-central Java) came to the northern coast during the dry season to work as caulkers, while from across the entire island people came to Batavia to work in the sugar mills, or, from the 1720s onwards on the coffee plantations in the Priangan. In Semarang, men came to the *alun-alun* (central square) every morning to hire themselves out as day labourers.⁸⁴³

It seems that the size of the free labour market increased over the eighteenth century as a result of population growth between 1750 and 1850,⁸⁴⁴ which may have led to an increase in the absolute number of wage dependent workers. Finding sufficient workers remained problematic at the end of eighteenth century and the number of both corvée labourers and free wage labourers increased over the seventeenth and eighteenth centuries.⁸⁴⁵ A number of *plakkaten* (edicts) were issued to raise the number of labourers by issuing requests for the supply of corvée labourers to work in construction, the sugar mills or dredge the canals between 1750 and 1811. In addition, as noted above, several edicts were issued to raise the level of wages in order to attract more free labourers.

5.5.5 Labour markets and wages

Considering the degree of commercialization and monetization, the living standards of many people in these areas could be influenced by the wages paid by the Company. In theory, the living standards provided by these wages were slightly above those in the subsistence sector. However, this mechanism could be influenced by systems of labour coercion: how would the differences in the functioning labour markets influence levels and developments in real wages? To summarize the above discussion: the regions

⁸³⁹ The 'Ommelanden'; Boomgaard, 'Why work'.

⁸⁴⁰ Nagtegaal, *Rijden*.

⁸⁴¹ Nagtegaal gives an exception to this rule; the VOC had to pay so much money to hire 9 *batur* in Surabaya 1685 that they had to supply their food themselves: *Rijden*, p. 193

⁸⁴² Nagtegaal, *Rijden*, pp. 194-5.

⁸⁴³ *Ibid.*, pp. 195-6.

⁸⁴⁴ Boomgaard, 'Why work'; *ibid.*, 'Labour, land', Feenstra, 'Dutch coins'.

⁸⁴⁵ Nagtegaal, *Rijden*, p. 196; Boomgaard, 'Land, labour', p. 62

under discussion had four different labour markets: (1) Bengal had a large free wage labour market, where mobility was perhaps hindered by the caste system, (2) Java had a smaller free wage labour market, supplemented by a larger amount of coerced labour, (3) for Ceylon roughly the same applies, but with an additional occupational caste system limiting mobility, and, finally (4) the Cape Colony had a labour market with substantial imported slave labour.

As a result of high population density and the Malthusian pressures this put on wages in Bengal, there was no need for additional institutional interventions in the labour market to influence the level of wages. In the other regions, however, various degrees of coercion were introduced in the labour market. This is best explained by the Nieboer-Domar thesis on the causes of slavery and serfdom.⁸⁴⁶ This thesis holds that in land abundant and labour scarce economies, land is available to all and in the absence of technology leading to profits from economies of scale, there is no wage profitable 'both for a prospective employer to pay and for a prospective worker to accept, as opposed to working for him- or herself.'⁸⁴⁷ In this situation coercion has to be used in order to acquire labour, which explains the introduction of slavery or serfdom in economies.

In the Cape Colony, labour scarcity (and high European wages) may have induced the VOC to import slaves in large numbers. But, as Allen et al. have argued in the case of eighteenth-century North America, slavery did not influence white real wages or discourage European immigration, because 'white' (free wage) labour and slave labour were complements rather than substitutes. They suggest that while increased numbers of slaves may have raised European wages in the short run, the growth of the European population would keep wages stable in the long run. This is probably also what happened at the Cape; as both the slave and settler population increased tenfold, real wages for Europeans remained stable.⁸⁴⁸

But what of the effects of the systems of *corvée* labour on free wages in Ceylon and Java? As noted above, while quantification is not feasible at the moment, it seems that significant numbers of *corvée* workers were present in both these areas. The regressions in appendices A6.3 and A6.4 show that this *corvée* labour could be obtained at much lower wages than that paid in the free market; coerced workers in Ceylon and Java earned respectively 70 and 55 percent below that of free labourers.⁸⁴⁹ Due to the coercion involved in this *corvée* work, these wages are not a good index of

⁸⁴⁶ Evsey Domar, 'The causes of slavery or serfdom: a hypothesis', *Journal of Economic History* 30 (1970) pp. 18-32; H. J. Nieboer, *Slavery as an industrial system: ethnological researches* (The Hague: M. Nijhoff, 1900).

⁸⁴⁷ Gareth Austin, 'Resources, techniques and strategies south of the Sahara: revising the factor endowments perspective on African economic development, 1500-2000', *Economic History Review* 61 (2008) pp. 587-624, there p. 609.

⁸⁴⁸ Of course, this is also partly the result of VOC intervention in the market, stabilizing wages and prices.

⁸⁴⁹ Ceylon: wage for free unskilled workers is fl. 0.23 per day, coerced workers earn fl. 0.16 less; in Java the free wage is fl. 0.27 per day, while coerced workers earn fl. 0.15 less.

the relative productivity of alternative activities (in agriculture), nor a good proxy for the standard of living of the workers involved, as most *corvée* work was only seasonal, and these people also relied on other sources of income.⁸⁵⁰ However, the existence of *corvée* labour may have satisfied part of the labour demand by the Company, perhaps also lowering the demand for free labour, and thus wages in the free market sector. At the same time, *corvée* labour may also have diminished the supply of free labour, thereby putting upward pressure on free wage levels. As this happened in the same labour market, it is possible that these two developments partly cancelled each other out, and that the effects on free wages were limited. In that case we could still follow Lewis' suggestion that the free wage is related to productivity in the subsistence sector, as discussed above (pp. 186-87).

5.6. Conclusion

This chapter served two purposes: (1) to explain the trends in real wages in the context of two key variables influencing wages: demographic developments and labour markets and (2) to engage with some of the critiques that have been raised against the real wage as an appropriate indicator of the standard of living in pre-modern (colonial) societies.

First of all, including estimates on total population, population growth and densities explains part of the developments in real wages. In Bengal it is clear that population growth went hand in hand with declining real wages and only after the great famine of 1770 did real wages rise again. This relationship, while not entirely absent, was much less pronounced in Ceylon. This difference is driven by the fact that whereas population densities were high in Bengal, and labour was abundant, densities were much lower in Ceylon. It was still a society with an abundance of land that could be cleared from jungle. Similarly the frontier in Java would not be closed until the late nineteenth or early twentieth century. In the settler society of the Cape densities were famously low. As a result, in these latter cases the Malthusian relationship between population and real wages was nearly absent. Both Java and the Cape experienced increases in living standards in the second half of the eighteenth centuries in the face of rising population numbers.

Second, monetary and non-monetary incomes of other family members may explain that even in areas where the real wage was often below subsistence level, as in Bengal and Ceylon, there was still population growth, rather than decline.⁸⁵¹ Including wages of women and children into the calculation of household income for Bengal, the only region for which these data were available, leads to an increase in the average subsistence ratio from 0.8 (in the male breadwinner model), to 1.3 (including full time

⁸⁵⁰ De Zwart and Van Zanden, 'Labour, wages'.

⁸⁵¹ Although these areas were more vulnerable to famines.

women's earnings) or even 1.6-1.7 (plus 1-3 children's wages). At the same time, it is unlikely that including such earnings for all areas in the comparison would change the overall picture of the gap in living standards in the early modern world. Similarly, the data on household sizes in Bengal, Ceylon and Java show these to be generally not significantly different from other regions/countries in the comparison.⁸⁵² Only at the Cape were relatively large family sizes the norm rather than the exception. Yet, even there, looking at the gender and age distribution of the entire population, adult males take up slightly over a quarter of the population, like in other areas, suggesting that the assumptions in the Allen-model hold.

Third, these population figures were also employed to shed some light on the economic structure of these societies. It is clear that the majority of the populations in these societies were engaged in agriculture (some 70-85 percent). Evidently, some of these people were of subsistence farmers who interacted little with the market. In addition, wage labourers constituted a minority. Nonetheless, I have emphasized that as a result of the existence of significant degrees of commercialization and monetization in these areas it may be assumed that real wages and the living standards of a substantial part of this population were correlated. Next to a significant body of people working outside of agriculture, often for wages, many agricultural households were in at least some sort of relation with the market.⁸⁵³ Members of these households could be engaged in wage labour as a side-line activity.⁸⁵⁴

Finally, this chapter discussed the functioning of the labour market. Following the familiar Nieboer-Domar thesis on the causes of slavery and serfdom, we could observe that where labour was abundant, labour markets were relatively free, but where labour was scarce large parts of the population were coerced into working for low wages during part of the year, or slaves were imported from other parts of the Indian Ocean world. At the Cape, slavery did not decrease wages for the European settler population, as wage and slave labour were complements rather than substitutes. In the case of Ceylon and Java, there probably was no bias in the real wages for those outside the forced labour sector. Following Lewis, the discussion of the labour market has also shown that real wages may to some extent reflect living standards for a substantial part of the population at the lower end of the income distribution.

⁸⁵² In Bengal mean household size was slightly larger than 5, but, as noted above, this is not out of line with pre-modern England, Japan and early twentieth-century China with respectively, 4.8, 4.9 and 5.3-5.4 persons per household.

⁸⁵³ Rosenthal and Wong, *Before and beyond*, p. 44.

⁸⁵⁴ De Zwart and Van Zanden, 'Labour, wages'; White, 'Economic diversification', Boomgaard, 'The non-agricultural side', p. 36.

Chapter 6: Conclusion

6.1. Globalization

The question of when globalization began has been a contentious issue among (economic) historians for over a decade. The stakes in this debate are high as the answer to this conundrum not only puts new perspectives on one of the most important processes of the last quarter of a century, but can also redirect the search for explanations in that other great puzzle: when and why did the Great Divergence take place?

Circumventing extensive discussions about the definition of globalization, this study focussed specifically on economic globalization: the integration of world markets, and in this case more specifically focussing on the markets for goods. Price convergence can be seen as a sign of market integration taking place. While it has become commonplace in recent years to view the nineteenth century as the first age of (economic) globalization, I have tried to make the case for earlier indications of the same developments in the centuries before 1800 and the role played by the VOC – by far the most important player in Euro-Asian trade – in this process.

New data dug up in the VOC archives on prices for sixteen articles traded by the Company in the Euro-Asian trade (together representing around 90 percent of the total turnover) show that there is sufficient evidence of price convergence, and thus the integration of Euro-Asian commodity markets, taking place. This process was aided by improvements in transport and maritime rivalry among the European trading

companies, and especially between the Dutch and English. Both trends and absolute price gaps varied considerably between the various commodities, however. Rather than the simply dichotomy between monopoly goods and competitive goods (customary in the literature to date), these trends were to a large extent affected by the specific institutional settings of the different markets. I have proposed four different categories of goods that go a long way in explaining some of the variety in the trends observed. First are the four monopoly spices (cinnamon, cloves, mace and nutmeg) that were obtained in areas where the VOC held considerable political power. The Company stipulated the conditions under which they purchased these goods, determining both the total quantities produced, as well as set the prices for which they bought these goods. As the VOC was the sole supplier of these goods on European markets, sales prices were notoriously high. Second, goods purchased, again, in markets where the Company had complete control over purchasing conditions, but where it lacked a monopoly position on European markets as similar commodities were brought to Europe by other companies, sometimes also from other parts of the world. Third are goods acquired at relatively low cost through contracts negotiated with Asian potentates. In contrast to the first two categories, the Company was unable to influence the quantities of these commodities it could obtain, nor could it set the price for which it bought these goods one-sidedly. It was thus to a large extent depending on the cooperation of the Asian rulers, while on the European markets the Company held no monopoly over the sales of these goods. Finally, there were those goods that the Company purchased in competitive markets, especially in India and China, where the VOC competed with other European companies, as well as European and Asian private merchants.

Price convergence could mainly be observed in the latter two categories of goods, while in the first two categories divergence was the norm. There were two exceptions to this rule as both sugar and cloves (where the VOC controlled production) showed convergence. In the case of sugar, this was the result of the large quantities brought into Europe and the protection of the industry in Java. In the case of cloves, it was a consequence of the loss of monopoly in the later eighteenth century. Despite the few instances of divergence in this period, however, it is clear that in the bulk of the Dutch-Asiatic trade, price convergence was the rule, suggesting globalization may have taken off earlier than is commonly assumed.

Yet, it is not the exact starting date of globalization, but rather the trends over time that matter. From as early as Roman times (perhaps even earlier) the world went through phases of globalization. The period around the thirteenth and fourteenth century with the *Pax Mongolica* constitutes one phase, which was paradoxically concluded with the spread of the Bubonic Plague, itself the epitome of globalization in this period. The period immediately following the European global voyages of the late fifteenth century constituted another phase. These voyages, through the circumvention

of the Venetian and Arabic monopolies, directly increased the number of suppliers of spices on the European markets and as a consequence consumers benefitted from lower prices. In the sixteenth century, the Portuguese alone were the main beneficiaries of this global trade and they were not a strong enough force to have significant effects on the Asian trading systems. Therefore, with the advent of the northern European chartered companies, this early modern globalization reached maturity. Not only did the breaking of the Portuguese monopoly further decrease European sales prices, the entry of these companies in Asian markets also started to have more profound effects on the societies in the East. These effects were not only the result of the larger amounts of bullion poured in these economies, but also as a consequence of the increasingly aggressive introduction of colonial institutions. Colonialism thus became one of the most manifest consequences of early modern, as well as nineteenth century, globalization. In the areas where the VOC had colonial power, it hindered the development of 'free' commodity markets, incapacitating these societies to reap the benefits of increased global demand for the goods they produced. In addition, the VOC kept in place, or extended, systems of forced labour in order to satisfy its increased labour demand, which again altered the distributional effects of globalization in these societies: those eligible for forced labour suffered, while free labourers could benefit.

Colonialism was an anti-globalization force in the mercantile period, as it was meant to capture rents, rather than to aid the integration of markets. As competition among the companies intensified in the eighteenth century and the VOC steadily lost its dominant position, four o'clock tea became a national tradition in England, while in French coffee houses intellectuals started to prepare willing minds for revolution (we thus find again that the effects of globalization contributed to its temporary downfall, as the period of French Revolutionary and Napoleonic wars is generally considered an era of de-globalization).⁸⁵⁵ When globalization picked-up again in the nineteenth century, it did so in full force: steamships, railroads, and canals aided globalization like never before. Planes, the United Nations, and the internet further transformed globalization in the twentieth century. One must take note of the fact that the entering of a new phase of globalization, revolutionary as it may seem, does not alter the reality of the globalization that came before. Thus, while it may be the case that price convergence was more rapid and consistent in the nineteenth century, this does not alter the reality of globalization in the seventeenth and eighteenth centuries. This study thus emphasizes the earlier origins of this process and stresses the continuity between globalization in eighteenth and nineteenth centuries. Yet it is clear that each phase of globalization had its own causes, characteristics and rules.

Thus, without suggesting that seventeenth- and eighteenth-century globalization was more or less important than other phases, I have argued that it was

⁸⁵⁵ Findlay and O'Rourke, *Power and Plenty*, pp. 365-378.

very real and thus that it could have had effects on the global income distribution, or ‘Great Divergence’. It was shown that the process of globalization in the early modern period constituted more than the advance of technology and the crumbling of barriers to trade. Most of all, the process seems to have been influenced by the creation and adaptation of institutions that varied with local conditions across the globe. Then, and now, it is clear that with globalization came rules, and as Rodrik noted: ‘[w]hat they are, who imposes them, and how – those are the only real questions.’⁸⁵⁶ The difference between these institutions (rules) affected the way the benefits of globalization, as well as its detriments, were distributed between regions, within regions and among social groups.

6.2. The Great Divergence

As there are already strong signs of ‘hard globalization’ in the centuries before 1800, it may have had more profound effects on the Great Divergence between Western Europe and the rest of the world. While some scholars have downplayed the effects of long-distance trade for the European economy before the nineteenth century, most recent research has reemphasized the role of globalization in the rise of Europe: it gave rise to institutions more conducive to economic growth, led to urbanization, increased work efforts, higher wages and living standards and as such played an instrumental role in industrialization. For revisionist scholars in the Great Divergence debate like Pomeranz and Parthasarathi, the divergence would not have taken place without globalization, as the British would not have benefited from the production of land-intensive goods in the New World, nor would it have felt the pressure to mechanize textile production caused by the influx of Indian calicos. Yet they suggest that globalization, while important in the eighteenth century, led to divergence only in the nineteenth, as average incomes were still on a par in the centuries before. If incomes were already much lower in Asia (as I have argued in this dissertation), however, it is possible that globalization also played its part in this. What happened in Asia before the nineteenth century is subject to much uncertainty as a result of the limited availability of reliable quantitative data. This dissertation has filled part of this lacuna with new data on various regions around the Indian Ocean. As mentioned, these data are not perfect and may be further improved upon by future research in local archives. Nonetheless, by combining data from various sources, and placing them in their proper context, as well as employing various methods of dealing with gaps in the data, it has been suggested that the possible errors and biases most likely do not affect the overall conclusions of this comparative analysis. These can be briefly summarized as follows.

⁸⁵⁶ Rodrik, *The Globalization Paradox*, p. 9.

First of all, it seems that, in contrast to Adam Smith's generalization, the cost of subsistence was not generally lower in Asia.⁸⁵⁷ Price levels were shaped partly by local conditions and partly by global developments. In the middle of the seventeenth century, prices were relatively high in the Cape Colony, but trends over the following century and a half reveal a downward trend, partly resulting from agricultural expansion. In Ceylon, indigenous rice production generally did not suffice to meet local demand and the cost of living was consequently relatively high. This was in contrast to Bengal and Java where the cost of living was generally lower than in north-western Europe during most of the period. Bengal initially profited from a relatively productive agriculture, but this advantage was slowly lost over the course of the eighteenth century. The opposite happened in Java, where wars in the late seventeenth and early eighteenth century pushed up the cost of living, but peace and stability led to an expansion of agriculture and declining prices in the later eighteenth century. Thus, in contrast to current ideas about the relation between prices and development, price decline in this period does not point automatically to economic stagnation, but could also have resulted from expanding production and had a positive impact on real wages.

The global gap in nominal silver wage levels was initially much larger. As a result, the standard of living, as measured by real wages, was significantly below that in north-western Europe. These results largely confirm the conventional view in the Great Divergence debate. In line with the study by Allen et al., it must however be suggested that living standards in Asia were not exceptionally low, but instead that the living standards in north western Europe were exceptionally high, as living standards in Asia were largely on a par with those in many other parts of Europe. However, in contrast to Allen et al., as well as to the trends in GDP per capita, in terms of real wages the advantage of north-western Europe was not increasing over the eighteenth century. Considering the general European decline in real wages in the eighteenth century and possibly stable or increasing well-being in South and Southeast Asia (with the exception of India), living standards converged towards 1800. Through the investigation of household sizes and the possible contributions of other family members to household income it has been shown that these results hold against criticisms on the male-breadwinner model often applied in comparative real wage studies.

The trends in real wages can in part be explained by demographic developments. Especially in Bengal, the relationship between population and real wages is manifest. Population growth went hand in hand with declining real wages and only after the great famine of 1770 did real wages rise again. This relationship, while not entirely absent, was much less pronounced in Ceylon, as a result of differences in population densities. Bengal had notoriously high population densities, was labour abundant, and wages were consequently low. Densities were much lower in Ceylon,

⁸⁵⁷ In line with the conclusions by Allen et al., 'Wages, prices'.

where there was an abundance of land that could still be cleared from the jungle. In Java (despite higher densities than in Ceylon) and the Cape Colony, the Iron Law of Wages is largely absent; in both cases real wages increased in the face of rising population numbers in the second half of the eighteenth centuries.

Following the Domar-Nieboer thesis, these difference in population densities and thus varieties in the relative scarcity or abundance of labour led to different interventions in the labour markets. Both Pomeranz and Parthasarathi suggested well-functioning (neo-classical) labour markets in China and India, yet in the Cape Colony, Ceylon and Java (where labour was scarce) unfree labour played an important role. While in the Cape Colony, free white labour was complemented with large amounts of Asian and African slave labour, in Ceylon and Java indigenous *corvée* labour was exploited in an attempt to satisfy the high and growing Company labour demand. These interventions in the labour market possibly had only limited effects on the level of wages in the free labour market.

The discussion of demography and labour markets also shows more complex societies than the cliché picture of pre-modern Asian societies entirely dominated by subsistence farming, as depicted in some of the older literature. Agriculture clearly constituted an important part of these economies, but there is also sufficient evidence of widespread monetization and commercialization in these regions. Considering this coexistence of a subsistence and a commercial sector in these economies, we can follow W. Arthur Lewis who suggests that the living standards in the former were related to those in the latter. Indeed, there is evidence of people from the subsistence sector working for wages in the capitalist sector part of the year, as well as indications of these workers earning wages at a full time capacity. Data on occupational structures suggest that while a majority of these societies were employed in agriculture (between 70 and 85 percent), there was also a large group depending on the commercial sector for their livelihood, with even many farmers employed in the wage labour sector as seasonal by-employment. Nonetheless, in comparison with early modern occupational structures in England and Holland, these occupational structures (an indication of the level of specialization and efficiency of institutions in a society) are not very impressive. Such figures thus again support the conventional view in the Great Divergence debate.

Another clue regarding the working of Asian labour markets could be found in the discussion on the premium paid for skilled labour. While the skill premium was the lowest in Amsterdam (roughly 50 percent), the premium at the Cape converged towards that same low level over the eighteenth century. The skill premium was also lower than expected in Ceylon and Bengal: never higher than 100 percent with indications of much lower figures. While the caste system in these societies may have hindered mobility between different occupational groups, apparently it did provide a (relatively efficient) framework for the transmission of skills through caste and kinship lines. Only in Java was the skill premium consistently above 100 percent.

That this is the result of the workings of the labour market is suggested by the discussion of interest rates, which is generally considered an important determinant of the skill premium. Interest rates in England and the Dutch Republic were around 5-6 percent, while in Bengal and Ceylon the Company paid, or received, rates around 12 percent. In Batavia (where the skill premium was high) as well as in Cape Town, interest rates were on European levels of 6 percent (or below). These rates concern probably low risk official rates; there is evidence that the indigenous people in Java and Ceylon paid extremely high rates – rates as high as 25 percent monthly were reported in Ceylon. Not only do these rates suggest that capital could be very expensive in these areas, such discrepancies in interest rates show that while commodity markets were getting more intertwined in the seventeenth and eighteenth centuries, financial globalization was still a long way off.

This begs the question to what extent the above sketched developments were influenced by globalization. In general it seems that globalization contributed to increased commercialization and monetization. Furthermore, as silver flowed from West to East in substantial quantities, there is some evidence of convergence of price levels towards the middle of the eighteenth century. Regarding the Cape Colony (its existence already a direct result of globalization), another study has demonstrated how agricultural production and prices responded to shipping.⁸⁵⁸ The long-term decline in prices towards levels more in line with the world market may be a consequence of this, and trade thus may have had beneficial effects on the development of living standards there. The inflation in Bengal could have been caused by the ‘bullion for goods’ trade. Yet, considering the relative price decline of cotton textiles – the main article of interest in global trade – *vis-à-vis* rice, it is more likely that these price increases were determined by local conditions, possibly a consequence of declining agricultural productivity, resulting from climatic changes and increased rent-seeking after the Mughal decline. Prices in Ceylon were correlated with those in Java because much rice was imported from there; the VOCs intra-Asian trade thus affected price trends. Yet, Ceylon’s main article in global trade, cinnamon, was monopolized and the increased demand for it therefore did not have any effects on price levels. Javanese prices were also to a large extent driven by local conditions, mainly wars. In the absence of inflation, increased exports in global trade may have benefitted parts of the Javanese commercial economy.

While the connection with prices is the most obvious and direct, globalization affected these economies in other ways as well. Yet, as emphasized earlier, the manner in which societies were affected by globalization depended on the institutions that were locally prevalent or that came with globalization.

⁸⁵⁸ Boshoff and Fourie, ‘The significance’.

6.3. Colonialism

The effects of globalization in the early modern period, driven by the Europeans' quest for Asian commodities, was not only through its effects on domestic (relative) price levels, but also by its opening of Pandora's box of colonialism. For the nineteenth century it has been suggested that state-led colonialism became one of the main drivers of economic globalization. The paradox of colonialism in the age of mercantilism, when it was in the hands of private companies with maximizing profits as their most important goal, was that it was both a product of globalization and an obstacle to its further development. In the mercantile colonial system, territorial control was a means to capture rents and thereby hindered the process of commodity market integration. The extent to which it hindered further globalization, and how it affected societies around the Indian Ocean and in Asia, differed substantially in the regions discussed in this dissertation. The reason is that colonialism in this period was very heterogeneous, perhaps much more so than in the nineteenth century. Colonialism was so diverse because of its driver: the European quest for exotic commodities. Therefore it was partly determined by initial geographic conditions (the place and spread of specific crops),⁸⁵⁹ by the strength of initial indigenous institutions, or the level of political centralisation, as well as chance.

The Moluccas suffered from a specific mix of these elements – and paid the price for it. This was the only area of the world producing nutmeg and mace, and as the islands were also small and lacked a strong centralised state, they were easy to take over and control by just a few forts and well-armed men.⁸⁶⁰ In the Banda Islands, the VOC killed or expelled virtually the entire indigenous population and set up a plantation system where slaves worked the nutmeg tree gardens, leased by a handful of European plantation holders (*Perkeniers*, former VOC servants who had served out their contracts).⁸⁶¹ In the Ambonese islands, the Company did not introduce a plantation system, but thought it more effective to let the indigenous population work their own clove gardens as a secondary activity (next to subsistence food production).⁸⁶² Interestingly, several Dutch historians have suggested that this system was generally beneficial to the Ambonese population who could fairly easily earn some surplus income, while the people could also complain to the VOC about fraud and misconduct by village heads.⁸⁶³ Ceylon was the sole production area of one of the most highly demanded products of the early modern era. In contrast to the Moluccas, political centralisation was much stronger as this vast area was also home to the

⁸⁵⁹ Engerman and Sokoloff, 'History Lessons'.

⁸⁶⁰ The Banda Islands were controlled by two forts (Belgica and Nassau) on Banda Neira.

⁸⁶¹ Willard A. Hanna, *Indonesian Banda: Colonialism and Its Aftermath in the Nutmeg Islands* (Philadelphia: ISHI, 1978) pp. 59-60.

⁸⁶² Based on: Gerrit Knaap, *Kruidnagelen en Christenen. De VOC en de bevolking van Ambon 1656-1696* (Leiden: KITLV, 2004).

⁸⁶³ Van Goor, *De Nederlandse Koloniën*, p. 136; Piet Emmer and Jos Gommans, *Rijk aan de rand van de wereld. De geschiedenis van Nederland overzee 1600-1800* (Amsterdam: Bert Bakker, 2012) p. 52.

Kingdom of Kandy. In order to obtain the cinnamon monopoly, the VOC first ousted the Portuguese in the first half of the seventeenth century, and fought several wars with Kandy over the remainder of the seventeenth and eighteenth centuries. In the process, Ceylon developed into one of the Company's biggest possessions, requiring an extensive military and administrative apparatus to control. In Java, although lacking the production of a specific monopoly product, the VOC came to control two-thirds of the island in the later eighteenth century. This territorial expansion was largely the result of it being dragged into various Javanese power struggles, rather than active expansion to safeguard a monopoly (although it was actively defending its headquarters and main entrepôt Batavia, of course). Therefore, Femme Gaastra has described the VOC as a reluctant imperialist.⁸⁶⁴ It is clear that the effects of the Company's conduct in these areas moved beyond the mere increase in demand and possible effects on prices as they also depended on the institutions implemented (or adapted).

In contrast to nutmeg and cinnamon, pepper production areas were very extensive, and it was clear that no single company would ever be able to monopolize its production. When no monopoly would be obtainable through the use of force, the Company generally refrained from expensive military operations, but instead tried to establish contracts with local rulers. This was the case on Sumatra, Kalimantan and the Malaysian Peninsula. Only in Malabar, the Indian 'pepper coast', the Company's involvement became more extensive as it was thought instrumental for safeguarding its possessions on Ceylon. Political and economic conditions in Mughal India, Qing China and Tokugawa Japan, meant the Company would fulfil the role of merely one among many merchants there. In these areas the effects of the Company's long-distance trade would mainly go through the additional demand for local produce. However, as these areas were vast and populous, the effects were limited. Om Prakash suggested that in Bengal the growth of trade resulting from the European companies entry in the market, led to the creation of up to 110 thousand new jobs. This was, however, less than one percent of the total population. As a result, domestic forces (e.g. population growth, climate changes, Mughal disintegration, and changes in agricultural productivity) were probably more important determinants of the development of living standards in Bengal. Similarly, trade probably had negligible effects on real wage trends in China, Japan and other Indian regions.

Thus, both geography and the level of initial political centralization influenced the form colonization took in the mercantile period. In order to understand its effects on global income distribution, we must therefore move beyond the settler-extraction dichotomy, and move towards a more complicated framework than that suggested by Acemoglu et al. As expected, real wages were highest in the settler society at the Cape, but considering the consensus in the historiography on the lack of capital investments

⁸⁶⁴ Gaastra, *De Geschiedenis*, pp. 64-71.

made by the Company, as well as the negative effects of the Company's mercantilist policies, it remains questionable to what extent this 'success' was the result of 'inclusive institutions'. Following Allen et al.'s analysis of real wages in the Americas,⁸⁶⁵ it is more likely that high wages were driven by immigration from Europe. Furthermore, real wages in Java (a 'concession', or 'exploitation' colony) were surprisingly high (and rising) throughout the eighteenth century. Here, increased commercial and employment opportunities may have had positive effects for some parts of the population. It is thus not clear that colonial institutions (mainly interfering with the labour market, the market for goods, and the capital market) were more inclusive, and more conducive to economic growth, in settler rather than concession colonies in this early period of colonialism.⁸⁶⁶

Acemoglu et al. nor the picture just sketched take into account the variance within specific regions. There could be differences across space; e.g. the interior of the Cape Colony was probably poorer than the area around Cape Town, while for Java, it may be noted that the rise of Batavia (Jayakarta) happened at the expense of Banten. The latter had been the main commercial centre in the fifteenth and sixteenth centuries, it nowadays constitutes one of the poorer parts of Java.⁸⁶⁷ Various social groups were also affected by colonialism in a variety of ways. No evidence on the living standards of the Khoesan and slaves within the Cape Colony's borders was available, but we can safely speculate that their welfare was substantially below that of the European workers. As suggested above, the availability of slave labour in the Cape may have sustained the higher wages for European labourers. In Ceylon the *Karāva* fishers, among other groups, could benefit from increased employment opportunities generated by the Company, while at the same time the pressure on the *Salagama* cinnamon peelers consistently intensified under Dutch rule. In Java, free coolies and *bujang* could also profit from the high labour demand by the Company, and the increased agricultural productivity due to the peace after 1755, which led to increases in their wages in the later eighteenth century. At the same time, those people subject to corvée duties probably saw their labour obligations intensify as a result of the Company's conduct (and thus globalization and colonialism). Both in settler and concession colonies, interferences in the labour market may have led to increased inequality between different social groups as some could benefit, while others suffered. Unfortunately, gauging living standards for these separate groups has not been feasible in this dissertation, but perhaps provides a fruitful area for future research. However, while such explorations will certainly be rewarding, finding proper sources will present a formidable challenge.

⁸⁶⁵ Allen et al., 'The Colonial Origins'.

⁸⁶⁶ Interest rates in Cape Town and Batavia were on a par, as discussed in section 4.4.

⁸⁶⁷ De Zwart and Van Zanden, 'Labour, wages'.

Finally, colonialism, and its effects, differed not only across space, but also over time. What happened after the Company left the scene? For Bengal, it has been suggested in the traditional historiography and in more recent econometric work, that British colonialism had further negative effects on the economy.⁸⁶⁸ Yet, real wage evidence on the later nineteenth and early twentieth centuries show a slight improvement *vis-à-vis* the later eighteenth century.⁸⁶⁹ Both in Java and Ceylon, forced cultivation of cash crops started relatively late in the eighteenth century and became much more important in the nineteenth century. According to Schrikker, the colonial transition on Ceylon was marked by, among other processes, a shift from trading colony to exploitation colony.⁸⁷⁰ Future research into nineteenth-century living standards in Ceylon will have to show what happened after the British takeover. In Java, forced cultivation of cash crops was implemented in the 1830s with the infamous Cultivation System. Elsewhere, it was shown that living standards there did not improve much over the nineteenth century versus the centuries before.⁸⁷¹ However, in contrast to what has been suggested in the historiography on Java, there was no systematic decline in Javanese living standards, as measured by real wages, until the later nineteenth century. Europeans in the Cape Colony saw their wages steadily increase over the eighteenth century, and, as I have shown elsewhere,⁸⁷² probably benefitted from institutional changes implemented by the British in the early nineteenth century. Over the course of the nineteenth century, further increases in 'white' European wages went at the expense of increasing inequality between the European and the 'coloured' population.⁸⁷³ It may thus have been only in the nineteenth century that colonialism developed more in line with what has been suggested in much of the theoretical literature.

In sum, this dissertation has shown that globalization had earlier origins than often suggested and that it affected the various economies involved in this global trade. The effects of globalization in the early modern world were heterogeneous; they differed between and within continents, countries and regions. The effects were partly determined by neo-classical dynamics of supply and demand, but also to some extent by institutional variations resulting from different forms of the colonialism that accompanied early modern globalization. These colonial institutions affected (hindered) the development of labour, commodity and capital markets. The kinds of institutions implemented depended on a more complex mix of factors than has been suggested hitherto, and the immediate effects were therefore not as straightforward as expected. In both settlement and concession colonies, some groups and regions could

⁸⁶⁸ See: Roy, 'Economic History and Modern India'; Banerjee and Iyer, 'History, Institutions'.

⁸⁶⁹ Allen, 'India in the Great Divergence'.

⁸⁷⁰ Schrikker, *Dutch and British*, p. 212.

⁸⁷¹ De Zwart and Van Zanden, 'Labour, wages'.

⁸⁷² De Zwart, 'Real wages'.

⁸⁷³ De Zwart, 'South African'.

have benefitted from the VOCs presence, while other groups, or regions within the same colony, may have suffered. Variations in colonization were influenced by the European quest for exotic commodities. Early modern colonialism and globalization affected patterns of economic development across the globe and thus had an impact on the origins of the Great Divergence.

Summary in Dutch

De VOC was veruit de belangrijkste speler in de handel tussen Europa en Azië in de zeventiende en achttiende eeuw en zij opende meer dan 30 handelsposten tussen Kaap de Goede Hoop en Japan. Nieuw primair bronnenmateriaal opgediept uit de VOC-archieven bevat zodoende cruciale informatie over de aard en omvang van de goederenhandel tussen Azië en Europa, alsmede over de patronen van economische ontwikkeling in verschillende gebieden in Azië en Zuid-Afrika. Dit materiaal verschaft inzicht in drie belangrijke en aan elkaar gerelateerde wetenschappelijke discussies binnen de economische geschiedenis, te weten over: (1) de historische wortels van globalisering; (2) het wanneer en waarom van het ontstaan van de economische ongelijkheid tussen West-Europa en de rest van de wereld (beter bekend als de ‘Great Divergence’); en (3) de rol van kolonialisme voor economische groei op de lange termijn. In dit proefschrift verbind ik deze debatten aan elkaar door een studie naar de handel van de VOC en ontwikkelingen in de levensstandaard in een aantal van haar koloniën, namelijk: Bengalen, Ceylon, Java en de Kaapkolonie.

Het eerste hoofdstuk analyseert de VOC-handel tussen Europa en Azië. Nieuw verzamelde gegevens voor Azië en Europa laten zien dat er, in tegenstelling tot de algemeen geaccepteerde opvatting, gedurende de zeventiende en achttiende eeuw integratie van intercontinentale goederenmarkten plaatsvond. Er kan zodoende al gesproken worden van een zekere mate van ‘globalisering’ in de vroegmoderne tijd. Deze marktintegratie werd mogelijk gemaakt door vooruitgang in transport waardoor transactiekosten konden dalen. Er was een toename in arbeidsproductiviteit op schepen, een mogelijke toename in snelheid van schepen en een vermindering van de wachttijd in havens. Daarnaast nam piraterij en kaapvaart af in de achttiende eeuw. Maritieme oorlogen verstoorden de handel en hinderden het proces van integratie. Tegelijkertijd had de toegenomen handelscompetitie (met name tussen de Engelsen en Nederlanders) positieve effecten voor marktintegratie.

Er waren echter grote verschillen in trends waar te nemen voor de verschillende soorten goederen. Producten waar de VOC een monopolie op had (foelie, kaneel, kruidnagels en nootmuskaat) werden door de Compagnie goedkoop (en onder dwang) ingekocht in Ceylon en de Molukken, en vervolgens voor veel geld verkocht in Europa. Alle andere producten die de VOC verkocht in Europa moesten daar de competitie aangaan met vergelijkbare producten aangevoerd door andere compagnieën (zoals peper aangevoerd door de Engelse Compagnie), met producten afkomstig uit andere delen van de wereld (zoals koffie en suiker uit West-Indië) of met Europese ‘namaakproducten’ (denk aan Delfts blauw als alternatief voor Chinees porselein).

Deze competitie zorgde er in sommige gevallen voor dat de prijsverschillen tussen Europa en Azië afnamen (zodat er marktintegratie plaatsvond) maar in andere gevallen niet. Dit had te maken de verschillende gradaties van macht van de VOC in de gebieden in Azië. In gebieden waar de VOC geen bijzondere machtspositie had, en zij als slechts één van de vele handelaren opereerde, konden prijzen volgens het vrije marktmechanisme stijgen door de toegenomen vraag. Dit was met name het geval voor bijvoorbeeld zijde en textiel aangekocht in India en China. In andere gebieden (zoals Japan, Malakka, Siam en Sumatra) kon de VOC producten tegen een vaste (lage) prijs inkopen dankzij contracten met lokale machthebbers. In ruil voor militaire steun gaf bijvoorbeeld de sultan van Palembang (op Sumatra) de VOC het alleenrecht op het inkopen van peper (*monopsonie*) voor enkele jaren. Dit soort contracten moesten echter naar verloop van tijd vernieuwd worden in samenspraak met de lokale vorsten en de VOC had zodoende niet de volledige controle over de kwantiteit en prijs van de gewenste producten. Dit was alleen het geval in de gebieden waar de Compagnie fungeerde als koloniale machthebber (Ceylon, Java en de Molukken). Hier kon de VOC eenzijdig bepalen hoeveel en voor welke prijs zij de producten (suiker, koffie, katoen, indigo en de monopolieproducten) inkocht. Het moge duidelijk zijn dat in deze gevallen de VOC de werking van de vrije markt in Azië verhinderde, waardoor prijsstijgingen grotendeels uitbleven.

Daar waar kolonialisme in de negentiende eeuw veelal gezien wordt als één van de aansturende krachten achter globalisering, verhinderde het in het tijdperk van het mercantilisme juist de integratie van markten. Echter alleen wanneer de Compagnie het mogelijk achtte door middel van koloniale heerschappij een monopolie veilig te stellen was zij hiertoe bereid. Op Java werd de Compagnie grotendeels in de rol van koloniale machthebber gedwongen, doordat zij (vaak ongewild) bij de vele oorlogen op het eiland betrokken raakte. Of de VOC optrad als koloniaal machthebber had ook gevolgen voor de mate waarin economieën konden profiteren van de wereldhandel.

De gevolgen van de wereldhandel en het kolonialisme voor de economische ontwikkeling van Bengalen, Ceylon, Java en de Kaapkolonie staan centraal in de resterende hoofdstukken van de dissertatie. In hoofdstuk 3 worden de prijsontwikkelingen van lokale consumptiegoederen besproken. Deze gegevens zijn cruciaal voor het berekenen van een consumentenprijsindex (CPI), aan de hand waarvan er (in hoofdstuk 4) gekeken kan worden wat voor een levensstandaard een bepaald loon representeerde. De verzamelde gegevens tonen aan dat de consumptieprijzen aanvankelijk relatief hoog lagen in de Kaapkolonie (mogelijk als gevolg van het gebrek aan investeringen in landbouw en de afgelegen positie van de kolonie). In de achttiende eeuw daalden deze prijzen als gevolg van toegenomen landbouwproductie naar een niveau vergelijkbaar met de prijzen in de andere onderzochte gebieden. Op Ceylon zorgden tekorten ervoor dat rijst gedurende de hele achttiende eeuw geïmporteerd moest worden uit India en Java, waardoor ook daar de

prijzen relatief hoog waren. In Bengalen en Java lagen de prijzen aanvankelijk op een lager niveau. Bengalen kon in eerste instantie profiteren van een relatief productieve landbouwsector, maar stijgende prijzen en de hongersnood aan het einde van de achttiende eeuw tonen aan dat deze steeds meer onder druk kwam te staan. Hoewel deze inflatie ook een gevolg zou kunnen zijn van de invoer van grote hoeveelheden zilver in het subcontinent, lijken lokale oorzaken voor de prijsstijgingen meer plausibel. In Java konden de prijzen af en toe sterk stijgen als gevolg van de vele oorlogen die op het eiland uitgevochten werden. Vrede en stabiliteit in de tweede helft van de achttiende eeuw leidden tot constante lage prijzen. Deze prijsontwikkelingen werden deels gevormd door lokale omstandigheden en deels door de wereldhandel. Opvallend is de convergentie van prijslevels rond het midden van de achttiende eeuw.

In hoofdstuk 4 worden deze prijzen gecombineerd met loongegevens om de levensstandaard te kunnen analyseren. Uit de vergelijkingen op wereldschaal blijkt dat de reële lonen in Azië op een lager niveau lagen dan die in Noordwest-Europa (England en de Lage Landen). In andere delen van Europa was het loon vergelijkbaar met Azië. In Ceylon lag het reële loon net iets onder het *subsistence level* – een soort vroegmoderne armoedegrens – als gevolg van de relatief hoge prijzen en lage lonen. In Bengalen lagen de reële lonen rond 1800 net boven de armoedegrens, maar door de stijgende prijzen gedurende deze eeuw daalde ook daar de levensstandaard onder dat niveau. Op Java was de levensstandaard hoger en bovendien was er sprake van een opgaande trend gedurende de tweede helft van de achttiende eeuw. Van de onderzochte koloniën waren de reële lonen het hoogst in de Kaapkolonie. Dat komt omdat het hier het loon van de Europese immigranten betreft. Het loonniveau aan de Kaap moest hoog genoeg liggen om het voor Europeanen aantrekkelijk te maken om de overtocht te maken. Het kan aangenomen worden dat het loon van lokale Khoesan-arbeiders een stuk lager lag, maar hier heb ik geen bewijs voor gevonden.

Deze analyse van de levensstandaard in hoofdstuk 4 is gebaseerd op het inkomen van een mannelijke loonarbeider en een gezin bestaande uit vier personen. In het vijfde hoofdstuk komt informatie over demografie en de arbeidsmarkt naar voren. Deze data zijn enerzijds bedoeld om ontwikkelingen in de levensstandaard te verklaren en anderzijds om te kijken in hoeverre aannames over onder andere gezinsgrootte de geschetste uitkomsten beïnvloeden. Ten eerste blijkt dat bevolkingsgroei en bevolkingsdichtheid een belangrijke rol spelen bij de ontwikkeling van het reële loon. Met name in het dichtbevolkte Bengalen lijkt er een sterke relatie te bestaan tussen bevolkingsgroei en een daling van het reële inkomen per hoofd. In de andere cases is deze relatie zwakker of afwezig, omdat arbeid daar relatief schaars was. Zo namen in Java en de Kaap zowel bevolking als het reële loon toe in de tweede helft van de achttiende eeuw. Ten tweede blijkt in dit hoofdstuk dat het inkomen van andere gezinsleden het mogelijk maakte dat families konden overleven terwijl het loon onder de armoedegrens lag. Tegelijkertijd lijken de aannames met betrekking tot

gezinsgrootte en inkomsten van overige gezinsleden de uitkomsten van de vergelijking tussen Europa en Azië uit hoofdstuk 4 niet ernstig te beïnvloeden. Ten derde laat informatie over de economische structuur zien dat, hoewel het percentage van zelfvoorzienende landbouwers waarschijnlijk aanzienlijk was, er ook een belangrijk deel van de bevolking werkzaam was in de handel en nijverheidssector. Grote delen van de bevolking in deze gebieden kwamen zodoende in aanraking met de markt (zowel de arbeids- als de goederenmarkt). Er was dus een relatie tussen het reële loonniveau en de levensstandaard van substantiële delen van de bevolking. Ten slotte speelde dwang een belangrijke rol in de arbeidsmarkten van Ceylon, Java en de Kaap. In de eerste twee gebieden moesten delen van de bevolking als een vorm van belasting voor een relatief lage loon arbeid leveren aan de VOC, en met name in de Kaap was slavernij een belangrijk onderdeel van de arbeidsmarkt.

In deze studie heb ik beargumenteerd dat er genoeg bewijs is om te stellen dat 'globalisering', gedefinieerd als de integratie van mondiale goederenmarkten, al in de vroegmoderne tijd was begonnen. Het proces werd in sommige gevallen echter in sterke mate beïnvloed (gehinderd) door de koloniale macht van de VOC. Dit had consequenties voor de effecten van globalisering. Daar waar de VOC koloniale macht bezat, verhinderde zij de ontwikkeling en werking van vrije arbeids- en goederenmarkten, waardoor deze samenlevingen niet optimaal konden profiteren van de toegenomen vraag naar hun producten. De effecten van globalisering en kolonialisme in deze periode zijn complexer dan tot dusver gedacht, omdat er grote verschillen waren tussen regio's en bevolkingsgroepen. Daar waar sommige groepen konden profiteren van de toegenomen vraag naar arbeid en goederen, leden andere delen van de bevolking onder toegenomen uitbuiting.

Appendices

Appendix 1: Weights and measures

A1.1. Weights and measures

In order to create the price series various old weights and measures had to be converted to metric equivalents, in order to compare prices over time and space. Various sources have charted the old Dutch weights and different weights and measures in the various Dutch East India Company's territories.⁸⁷⁴ Data from the datasheet 'Weight vs. Volume' by Peter Lindert were used to convert litres into kilograms: 1 litre wheat, or beans, is 0.772 kilograms.⁸⁷⁵

TABLE A1.1: 'OLD' UNITS OF MEASUREMENT AND METRIC EQUIVALENTS.

"Old" measurement	unit	of	Value	Metric	Source
Aam			153.6	litre	VOC Gloss.
Bahar			215	kg	Souza / Bulbeck et al.
Bag			30.9	kg	Meilink-Roelofs
Gantang			6.6	kg	VOC Gloss.
Halfaam			76.8	litre	VOC Gloss.
Kan			1.51	litre	VOC Gloss.
Kati Banda			2.7	kg	VOC 1071, f.295
Kist			27.9	kg	Own estimate ⁸⁷⁶
Koyan		1482-	1667	kg	Talens / VOC 3127
Last		1482-	1515	kg	VOC Gloss. / VOC 3127
Legger			921.6	litre	Verhoeff
Maat			37	kg	VOC 3127
Mengel			1.2	litre	Verhoeff
Mudde			111.5	litre	Verhoeff
Parra			19.8	kg	VOC Gloss.
Pikol			60	kg	VOC Gloss.

⁸⁷⁴ Employed here: Bulbeck et al., *Southeast Asian*, Jacobs, *Merchant in Asia*; Nagtegaal, *Rijden*, Souza, *Survival of Empire*, J. Talens, *Feodale samenleving in koloniaal vaarwater. Staatsvorming, koloniale expansie en economische ontwikkeling in Banten, West-Java (1600-1750)* (Hilversum: Verloren, 1996); Verhoeff, *De oude Nederlandse*; VOC Glossarium; An., 'Verhandelingen der munten, maten en gewigten van Neerlandsch Indië', *Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen* 4 (1824) pp. 281-358, and VOC 3127, ff. 1032-1058.

⁸⁷⁵ Peter Lindert, 'Weights vs volume', *Global Price and Income History Group* website and the University of California-Davis: <http://gpih.ucdavis.edu/Datafilelist.htm#Asia>. Last update: April 9, 2006.

⁸⁷⁶ Based on the observations on prices for soap per *pond* and those per *kist* in the Cape Colony, it was assumed that the *kist* was similar to the *schepel*.

Pond	0.49409	kg	Verhoeff
Quintal	59	kg	Souza 1986
Schepel	27.9	litre	Verhoeff
Vadem	2.9-8.5	m ³	Verhoeff / BG 1824
Vracht	1.58	m ³	Own estimate
Vat	155	litre	Verhoeff

Sources: see column 4.

A1.2. Difficulties

Due to the lack of uniformity in these measures over time and across regions, converting these weights and measures is not without problems. A last is equal to 3000 pond according to the literature the VOC Glossary. However a VOC note from 1764 comparing the different weights in Asia suggests that a last in Batavia consists of 3066 $\frac{1}{3}$ pond,⁸⁷⁷ which is equal to 1515 kg. The *gantang* was 12 pond (in West and Middle Java, as well as Ceylon),⁸⁷⁸ but in Batavia 13 $\frac{1}{3}$ pond or 6.6 kg.⁸⁷⁹ While only the Java price series mentioned the *koyang*, it is not clear what its weight/volume was. Talens notes that the *koyang* is equal to 3000 pond (like the last).⁸⁸⁰ It is clear that the *koyang* could differ per time, place and product.⁸⁸¹ Focussing on rice alone (as those are the only prices which were reported in *koyang*), we find that around 1750 the *koyang* was around 3000 pond, but in the second half of the eighteenth century a weight of 3400 pond was generally assigned to the *koyang*. In the VOC Glossary different weights are also given for the *koyang*; ranging from 23 *pikol* in the seventeenth century, to 30 or 32 *pikol* in later periods. Nagtegaal mentions *koyangs* of both 3000 and 3500 *ponden*.⁸⁸² The VOC note from 1764 suggests that the *koyang* is 3375 pond (1667 kg.), which has been adopted in this study as all observations of the *koyang* are from around that date.⁸⁸³

It is thus clear that the exact volume or weight of a measure might have differed over time and place. Considering the lack of information on the exact date of changes in weights and measures per region, the table above, as well as the conversions used to create the price series might not be always equally accurate. However, only in the case of the *koyang* the range of weights was relatively large, in general the problem does not seem to affect overall conclusions. Nonetheless, it is important to keep these limitations in mind.

⁸⁷⁷ VOC 3127 f. 1304.

⁸⁷⁸ VOC Glossary

⁸⁷⁹ VOC Glossary

⁸⁸⁰ Talens, *Een feodale*, p. 64.

⁸⁸¹ Alberto Feenstra, 'Kisten met Koper. De opmarks van de Nederlandse duit in het Javaanse geldverkeer 1720-1850' (unpublished MA thesis: Free University Amsterdam, 2012); Jacobs, *Merchant in Asia*.

⁸⁸² Nagtegaal, *Rijden*, pp. 176-177.

⁸⁸³ VOC 3127, f. 1034

Appendix 2: Coins and silver values

A2.1. Coins

There were several different coins with various guilder values circulating in the Dutch East India Company areas in Southern Africa and Asia. Following W. G. Wolters, who made a more extensive study of the VOC coins, I have assumed for the entire period the following guilder value per coin: *rial*: 3, *rix-dollar*: 2.4; *dubbeltje*: 0.10, *stuiver*: 0.05; *duit* = 0.0125.⁸⁸⁴ In addition, especially in the Cape Colony, the *schelling* was also circulating. I follow Van Duin and Ross who suggest that these were valued at 6 *stuivers*, or 0.30 guilder.⁸⁸⁵

There is some confusion regarding the value of the rix-dollar in Asia. Some suggest it is valued at 3 guilders in Asia, while others suggest 2.4/2.5 guilders. In fact, these values could differ according to time and place, depending on whether it concerns 'light' or 'heavy' money. When not specifically mentioned otherwise, I assume 2.4 guilders,⁸⁸⁶ this means the assumption that both guilder and rix-dollar noted down in 'light' or 'heavy' money at the same time. It seems that rix-dollars are only valued 3 guilders, when it concerns heavy rix-dollars and light guilders. While there is evidence that this is sometimes the case, I follow the periodization in table A2.1 unless otherwise stated in the sources.

For the data on Bengal, wages were often reported in rupees, *anas* and *ponies*. While the *ana* is always 1/16th of a rupee, the value of the *pony* could fluctuate. While I could not find any other reference to the pony in the literature, the sources fortunately always stated how many pony were in a rupee, which was most often 60, but could fluctuate between 56 and 64. A few of wage observations in the sources on Ceylon (and Southern India) were noted in pagodas: 1 pagoda = 3.2 rupee, apart from during the period 1678-1705, when it was four rupees per one pagoda.⁸⁸⁷ In order to combine the wages for Bengal that were reported in guilders and with those reported in rupees and ponies, it was assumed that rupees consistently constitute 31.5 *stuivers*, and a guilder 20 *stuivers*.⁸⁸⁸

A few notations from the literature on Bengal note wages in *dam* or *pice* (or *paisa*).⁸⁸⁹ There are some issues regarding the changing value of these copper coins against the (silver) rupee. According to Moreland 1 dam equals 2 pice, at least in

⁸⁸⁴ Wolters, 'Heavy and light'.

⁸⁸⁵ Van Duin and Ross, 'The economy', p. viii.

⁸⁸⁶ Yong, *The Dutch*; Boomgaard, 'Buitenzorg in 1805', Van Duin and Ross, 'The economy', also suggest a rix-dollar of fl. 2.40.

⁸⁸⁷ Broadberry and Gupta, 'The early modern', p. 14.

⁸⁸⁸ VOC 3127 f. 1043.

⁸⁸⁹ Mukerjee, *Economic History*, p. 49; Najaf Haider, 'Structure and Movement of Wages in the Mughal Empire, 1500-1700', J. Lucassen (ed.), *Wages and Currency. Global Comparisons from Antiquity to the Twentieth Century* (Bern: Peter Lang, 2007) pp. 293-321, there p. 318.

Akbar's time,⁸⁹⁰ however Najaf Haider suggests that this is a misreading on Moreland's behalf and suggests that 1 *dam* is equal to 1 *pice*.⁸⁹¹ He suggests that in Surat around the middle of the seventeenth century, the value of the *dam* vis-à-vis the rupee fluctuated between 47 and 32 *dam* per rupee.⁸⁹² Mukerjee also notes 18th century exchange rates. He finds that in the late 18th century there are 40 *dams* per rupee, but suggests a significant difference between the *dam* and the *pice*: 1 *pice* = 25 *dams*. Mukerjee reports wages in 1729 in *pice*, but converted to rupee (assuming 1 *pice* = 1 *dam* and 40 *dam* = 1 rupee) these wages are over 6 times lower than the rupee observation from 1723 and 4 times lower than observation rupee observations from 1739 and therefore deemed unreliable. For the non-VOC Bengal wage data see: Allen and Studer, 'Prices and Wages'.

A2.2. Silver values

Silver value per guilder: 9.8 grams of silver up to 1680 and 9.61 grams of silver from 1681 onwards.⁸⁹³ The value of the guilder used by the VOC in Asia was lower than the guilder in the Dutch Republic and the Asian currency was therefore referred to as 'light money'. The value of the Asian relative to the Dutch guilder fluctuated throughout the seventeenth and eighteenth centuries. According to Els Jacobs one Asian guilder was worth 20 percent less than the Dutch guilder prior to 1743; 16.35 percent less between 1743 and 1768, while after 1768 the value differences disappeared (see table A2.1).

TABLE A2.1: VALUE OF ONE ASIAN GUILDER.

Period	Expressed in Dutch Guilders	Expressed in Grams of Silver
1652 – 1680	0.80	7.84
1681 – 1742	0.80	7.69
1743 – 1768	0.84	8.04
1769 – 1795	1	9.61

Sources: Van Zanden, 'Prices and wages'; Jacobs, *Koopman in Azië*, pp. 225-228.

Silver value of rupee: 10.78 grams of silver for the entire period under discussion according to Allen,⁸⁹⁴ as well as Broadberry and Gupta,⁸⁹⁵ but 11.54 grams of silver

⁸⁹⁰ Moreland, *From Akbar*, pp. 194-5.

⁸⁹¹ Haider, 'Structure and Movement', pp. 306-307; Najaf Haider, 'The Quantity Theory and Mughal Monetary History', *Medieval History Journal* 2 (1999) pp. 309-348.

⁸⁹² Haider, 'Quantity theory', p. 343.

⁸⁹³ Jan Luiten van Zanden, 'Prices and wages and the cost of living in the western part of the Netherlands, 1450-1800', website *Historical Prices and Wages of the International Institute of Social History*: <http://www.iisg.nl/hpw/brenv.xls>. Last update: December 11, 2009.

⁸⁹⁴ Allen, 'India in the Great Divergence', p. 14.

⁸⁹⁵ Broadberry and Gupta, 'The early modern', p. 14.

according to Haider.⁸⁹⁶ Since I have not found any other evidence of the rupee being worth 11.54, I will follow the former.

⁸⁹⁶ Haider, 'Structure and Movement', p. 293.

Appendix 3: Kcal and protein

Since the baskets are based on kcal and protein intake it is important to have information on the caloric and protein value of the different foodstuffs included in the various baskets shown in section 3.4. These figures were derived from Allen et al. 2011 as well as the United States Dept. of Agriculture (USDA) National Nutrient Database.⁸⁹⁷

TABLE A3.1: CALORIC AND PROTEIN CONTENTS

	Metric unit	Kcal per unit	Protein per unit (gr.)	Source
Rice	Kg.	3620	75	Allen et al. 2011
Wheat	Kg.	3420	113	USDA NND
Oats	Kg.	3890	169	USDA NND
Rye	Kg.	3380	103	USDA NND
Barley	Kg.	3450	105	Allen et al. 2011
Millet	Kg.	3780	110	Allen et al. 2011
Sorghum	Kg.	3390	113	USDA NND
Beans/peas ⁸⁹⁸	Litre	3383	213	Allen et al. 2011
Meat	Kg.	2500	200	Allen et al. 2011
Fish	Kg.	1301	192	Allen et al. 2011
Butter	Kg.	7268	7	Allen et al. 2011
Oil	Litre	8840	1	Allen et al. 2011
Sugar	Kg.	3890	0	USDA NND

Sources: see column 5.

⁸⁹⁷ Search engine could be found: <http://ndb.nal.usda.gov/ndb/search/list> [Last accessed March 3 2014.]

⁸⁹⁸ Allen et al., 'Wages, prices' distinguish between European and Asian beans. The Asian beans have been employed here, otherwise the figures in the basket would not fit.

Appendix 4: Creating the price series

Employing the information from appendices 1-3 it is possible to compute time series of prices employing the sources introduced in the text. As several ships departed for the Republic every year and for every ship the value and quantity of products was recorded, there were often several observations of prices for the same good in one year. In those cases I took the arithmetic mean price of several observations. These prices were not weighted with the amount of goods transported, as this would entail a lot of extra work, while not leading to any substantial differences in the prices (as these were generally the same throughout the year). Only in the case of data for the *Rendementen* (for Ceylon) the price observations were weighted for the total volume sold, as some of the sales concerned very limited amounts of a certain product and these would influence the results too much.

In addition, both the data from the Bookkeeper-General, and those from the *Rendementen* were ordered per accounting year, between 1677 and 1694 this period started on March 1st and ended with the last day of February.⁸⁹⁹ In the eighteenth century, the accounting year ran from September 1 to August 31. In his database on prices in Ceylon, Van Bochove put observations in the first year of the accounting year, e.g. if the accounting year was 1701/2, the data were entered in year 1701. While the Bookkeeper-General database does contain information on the exact data of the departure or arrival, these cannot be extracted from the database in the excel sheets, and thus would have to be linked to the data manually. Considering the thousands of observations this would be a daunting task, which would not lead to any significant changes in the results. Therefore I have also organized these prices in the first year, similar to Van Bochove's methodology.

Below I will give more information regarding the creation of time series of prices of various commodities for the chapter on globalization as well as for the creation of the consumer price indices for the various regions.

A4.1. Globalization

For each product, two price series were computed: one reflecting sales prices in Amsterdam and one reflecting purchasing prices in Asia. As the VOC always noted down the purchasing price from where it acquired a product, purchasing prices in Batavia actually reflect prices for different parts of Asia; e.g. in the case of cloves, it reflects the purchasing price on Ambon.

⁸⁹⁹ Van Bochove, 'Prices in Sri-Lanka'.

1. Cinnamon

Asia: Barbosa notes that cinnamon cost 10 *cruzados* per *quintal*.⁹⁰⁰ Following George Souza: 1 *quintal* = 119.3 *pond* and 1 guilder = 0.32 *cruzados*.⁹⁰¹ 1 guilder = 16.32 grams of silver in 1563.⁹⁰² For 1608: In VOC 603 it is noted that the VOC purchases 1 picol (125 *pond*) cinnamon for 4 real (2.5 *guilders*). In 1631 15.3 guilder is paid for a picol.⁹⁰³ All other observations are noted in guilders per *pond*. Considering the stability of the prices the years: 1664-5, 1667-8, 1670-4, 1676-88, 1690-9, 1709, 1727, 1729-30, 1741-51, 1790-99, were linearly interpolated.

To compare this price with a European price, I took the Antwerp price for 1563 of 333 Brabant *groats*.⁹⁰⁴ 1 Brabant *groat* = 0.27 grams of silver.⁹⁰⁵ For the period 1609-1800 prices from the VOC auctions were interpolated with Posthumus using the equation: ⁹⁰⁶

$$p \text{ VOC} = 0.8374 p \text{ POSTHUMUS} + 0.1854 \quad R^2 = 0.95 \\ N = 88$$

2. Cloves

Asia: Bulbeck et al. provide some data for the sixteenth century.⁹⁰⁷ They provide data in *reals* per ton. On page 32 they suggest 1 Spanish Dollar = Real. On page 174 they suggest 1 Spanish Dollar = 2.65 Guilder. For these conversions I follow them. Additional data were found in *reals/cruzados* per *bahar*.⁹⁰⁸ These were converted on the basis on a *bahar* of 436 *pond*, a real of 2.5 guilder and 1 *cruzado* = 1.25 *real*. This leads to similar prices as Bulbeck et al. For the remainder of the period all prices from the VOC accounts were in guilders per *pond*. These were combined with the prices from Bulbeck et al. to fill some gaps. These price series were largely similar. However, whereas they find prices increased after the 1770s, the VOC data suggests on the other hand prices declined from fl. 0.40 per *pond* to fl. 0.30-3 in the period 1770-1800. No interpolation.

European prices in the sixteenth century I used those of Herman van der Wee.⁹⁰⁹ For the seventeenth and eighteenth century, I averaged prices from the VOC

⁹⁰⁰ Barbosa, *The Book*, pt. 2, p. 112.

⁹⁰¹ Souza, *Survival of empire*, pp. xv-xvii.

⁹⁰² Van Zanden, 'Prices and the cost'.

⁹⁰³ VOC 1099.

⁹⁰⁴ Van der Wee, *The growth I*, pp. 314-317.

⁹⁰⁵ *Ibid.*, pp. 125-129.

⁹⁰⁶ Posthumus, *Nederlandsche Prijsgeschiedenis*.

⁹⁰⁷ Bulbeck et al., *Southeast Asian*.

⁹⁰⁸ Pires, *Suma Oriental*; Barbosa, *The Book*, Meilink-Roelofs, *Asian Trade*; Souza, *Survival of Empire*; Om Prakash, 'Restrictive trading regimes: VOC and the Asian spice trade in the seventeenth century', in: R. Ptak and D. Rothermund (eds.), *Emporia, commodities and entrepreneurs in Asian maritime trade, c. 1400-1750* (Stuttgart: Franz Steiner Verlag, 1991).

⁹⁰⁹ Van der Wee, *The growth*.

sales accounts, Glamann and Posthumus.⁹¹⁰ These series were very similar, but all showed some gaps which could thus be filled.

3. Coffee

Asia: All prices were given in guilders or *rijksdaalders* (2.4 *rijksdaalder* per guilder) per *picol* or *pond*. Prices for coffee were also available from Mason Hoadley, but these diverged from those found in the VOC accounts (those were very similar before 1750, but were much higher after 1750).⁹¹¹ I have used only the VOC figures. Considering the stability in price (which was fixed by the VOC) the following years were linearly interpolated: 1713, 1715-8, 1719-20, 1729, 1732-3, 1743-5, 1757, 1764, 1769-70, 1785, 1787-8, 1790, 1793-99.

Amsterdam: the prices from the VOC auctions were interpolated with data from Posthumus with the equation:

$$p \text{ VOC} = 0.9491 p \text{ POSTHUMUS} + 0.0051 \quad R^2 = 0.68$$
$$N = 55$$

4. Copper

Asia: copper prices given in guilder per *picol*, *pond* or *kati*. 1 *kati* = 1/100 *picol* = 1.25 *pond*.⁹¹² One outlier (1747) from the *Rendementen* was removed as the price was (supposedly) given per *rixdollars*, but was over twice as expensive as the surrounding observations. The series was supplemented by data from the *rendementen* from Surat assembled by Nadri.⁹¹³ No interpolation.

For Amsterdam, copper prices were taken only from the VOC auctions as Posthumus does not offer a price series for Japanese copper. Probably as a result of the small mark-ups, Japanese copper was sold in Amsterdam only for a short period.

5. Cotton yarn

Asia: all prices were in guilder per *pond*. There were a number of different varieties of raw cotton: from Bengal, Broach/Cambay/Surat, Coromandel, and Java, as well as observations only stating that it concerned white cotton, or a variety of cotton. There is not enough data to say anything about price differentials between these varieties, but they seem to be in a similar price range. In fact, since the Amsterdam sales only note down 'cotton yarn', with no specifications regarding the variety, suggesting that, as

⁹¹⁰ Glamann, *Dutch-Asiatic*; and Posthumus, *Nederlandsche Prijsgeschiedenis*.

⁹¹¹ Mason C. Hoadley, *Towards a feudal mode of production: west Java, 1680-1800* (Singapore: Institute of Southeast Asian Studies, 1994) pp. 220-1. In his review of this book, Peter Boomgaard is highly critical and laments the lack of accuracy and Hoadley's general carelessness with the sources, therefore it seems justified to trust the primary materials more than the series of Hoadley (review in: *Copenhagen Journal of Asian Studies* 9 (1994) pp. 109-111).

⁹¹² VOC Glossarium

⁹¹³ Nadri, *Eighteenth-century Gujarat*.

with pepper, they threw the different varieties together. Therefore, I have built one series of average prices. Purchasing prices from the *rendementen* later in the eighteenth century were consistently below those from the BGB. These observations were dropped from the analysis. Doing so does not affect the conclusions and including them would only strengthen the observation that there was no price convergence (lowering prices in Java would lead to an increased price gap). As with coffee, Hoadley offers a diverging price series for cotton which are not included in the calculations. No interpolations.

Amsterdam: the series from the VOC auctions and Posthumus could differ somewhat. I have taken only those prices from the VOC auctions. However, in order to fill a significant gap (1761-1770) in those prices, Java cotton prices from Posthumus were interpolated via the equation:

$$p \text{ VOC} = 0.2666 p \text{ POSTHUMUS} + 0.8123 \quad R^2 = 0.44$$

$$N = 46$$

6. Indigo

Asia: All prices for indigo given in guilders per *pond*. As in the case with cotton, there were different varieties and the average price was taken. Hoadley again offers a competing price series which is not used. The outlier of 1761 is based on 13 observations (reflecting a total of 124,884 pond of indigo shipped to the Republic) and is therefore assumed to be genuine.

Amsterdam: the VOC series were extrapolated with Posthumus:

$$p \text{ VOC} = 0.7395 p \text{ POSTHUMUS} + 0.1296 \quad R^2 = 0.48$$

$$N = 51$$

7. Mace

Asia: Some early price evidence was available in reals per *bahar*.⁹¹⁴ For some of the seventeenth century observations from the VOC accounts prices could be noted including and excluding expenses on 'sockels', the baskets in which the mace was transported. The difference in price was negligible (0.003 guilder per *pond*). Prices for mace could also be noted down per *kati Banda*, which was equal to 5.5 *pond*.

Amsterdam: The VOC auctions were interpolated with the Posthumus series

$$p \text{ VOC} = 0.855 p \text{ POSTHUMUS} + 0.7027 \quad R^2 = 0.96$$

$$N = 87$$

⁹¹⁴ 1515: Pires, *Suma Oriental*; 1599: Keuning, *De Tweede Schipvaart*, p. 204; 1603: De Jonge and Deventer, *De Opkomst*, vol.3, p. 157; 1608: VOC 652; 1603-1615: Meilink-Roelofs, *Asian Trade*, pp. 275-276, p. 401 note 74.

8. Nutmeg

Asia: early observations were given in real per bahar.⁹¹⁵ Conversion based on 2.5 guilder per real and 436 pond per bahar. The remaining observations were in guilders per *pond*. Prices could be the same for years on end, which allowed interpolation.

Amsterdam: see mace. Interpolation:

$$p \text{ VOC} = 0.9715 p \text{ POSTHUMUS} + 0.023 \quad R^2 = 0.97$$
$$N = 108$$

9. Pepper

Asia: 1 real = 0.4 guilder. Unless stated otherwise, following Bulbeck et al. 1 *bahar* pepper = 180 kg = 364 *pond*.⁹¹⁶ A quintal = 1/4th bahar = 91 *pond*. I created a time series using all observations for pepper from different locations (Palembang, Banten, Priaman, Banjarmasin etc.) and varieties (but excluding white pepper and long pepper – for which there are separate data in the Amsterdam sales). In order to get the average price each year, the data (2618 obs.) were regressed on year dummies.

Amsterdam: gaps in the VOC price series were interpolated with Posthumus:

$$p \text{ VOC} = 0.934 p \text{ POSTHUMUS} + 0.0166 \quad R^2 = 0.84$$
$$N = 88$$

10. Saltpetre

Asia: all prices given in guilders per *pond*. Prices for the 17th century could be given in a few varieties; refined, unrefined, Bengal or Agra. Refined saltpetre from Bengal was the dominating kind, and it can be assumed that in case no further specification was given, it concerned Bengal refined saltpetre. For a few years when prices were completely stable gaps were linearly interpolated (1685-6, 1688, 1691-4, 1696-9, 1707 and 1713-7).

Amsterdam: gaps in the VOC price series were extrapolated with Posthumus (removing the outlier 1745):

$$p \text{ VOC} = 0.7577 p \text{ POSTHUMUS} + 0.0049 \quad R^2 = 0.78$$
$$N = 67$$

⁹¹⁵ 1515: Pires (1515); 1596-7: Rouffaer and IJzerman, *De Eerste Schipvaart*; 1599: Keuning, *De Tweede Schipvaart*, p. 204; 1612: Meilink-Roelofs, *Asian Trade*.

⁹¹⁶ Bulbeck et al., *Southeast Asian*, p. 182.

11. Silk

Asia: prices were given in guilders or real (fl. 0.4) per *pond* or *kati* (1.25 *pond*). There were 3 different varieties of silk: Persian, Bengal and Chinese. For Persian silk there were so few observations that only for 1 year the mark-up ratio could be calculated and was therefore omitted from the analysis. No interpolation.

Amsterdam: for the same three varieties of silk we have prices from the VOC auctions and Posthumus for Amsterdam. However, in the earliest auctions there is a price series of silks with no further specification. These were used to extrapolate the Bengal silk series:

$$p \text{ SILK BENGAL} = 0.9024 p \text{ SILK} + 0.8633 \quad R^2 = 0.91 \\ N = 17$$

The VOC Chinese silk series were extrapolated with the Posthumus data:

$$p \text{ VOC} = 0.6608 p \text{ POSTHUMUS} + 2.4509 \quad R^2 = 0.81 \\ N = 49$$

Data from both series were employed to generate an average series for silk with as many observations as possible.

12. Sugar, Candy

Asia: All prices given were in guilders per *pond*. Hoadley also gave sugar prices which were not used. As those prices were slightly higher at the end of the eighteenth century and including them would only strengthen the picture of price convergence.

Amsterdam: price series for sugar are available from the VOC sales and Posthumus. Only Posthumus noted that it concerned *kandijsuiker* or sugar candy. Considering the fact the prices of the VOC auction prices were much below that price, it can be assumed this concerns *poedersuiker* (powdered sugar, or caster sugar). Therefore, we interpolated the Posthumus series with the *kandijsuiker* series (rather than the other way around):

$$p \text{ POSTHUMUS} = 2.5744 * p \text{ VOC} + 0.0213 \quad R^2 = 0.60 \\ N = 69$$

13. Sugar, Caster (not included separately in the analysis, similar trends as Sugar, Kandy).

Asia: *poedersuiker* all prices given were in guilders per *pond*. For the seventeenth century, different specifications could be given, such as 'white', 'diverse', 'from Japara'

or 'from Batavia'. Price differentials were negligible and due to limited observations I have used all to create a single price series (taking the arithmetic average in case of multiple observations in one year). To fill gaps in the eighteenth century, the series from the Bookkeeper General were extrapolated with data on Surat from Nadri:⁹¹⁷

$$p \text{ VOC} = 0.7742 p \text{ NADRI} + 0.0178 \quad R^2 = 0.65$$

$$N = 46$$

Amsterdam: see Sugar, Candy. The VOC series are now interpolated employing the Posthumus series.

$$p \text{ VOC} = 0.2324 p \text{ POSTHUMUS} + 0.1022 \quad R^2 = 0.60$$

$$N = 69$$

14. Tea

Asia : all prices were given in guilders per *pond*. There were several types of tea: *bohea*, *bing*, white. In the early observations some were referred to only as 'Chinese' tea. Since all teas were Chinese and the price differences in the VOC data between were not very big I averaged the prices of the different varieties (in case of multiple observations). The price series were merged with data from Souza,⁹¹⁸ which also seems to include different varieties, as well as the average price taken from the data on *bohea* tea by Yong.⁹¹⁹ No interpolations.

Amsterdam: I combined the series from Posthumus and the VOC auctions. In case prices from both series were available in one year the arithmetic average was taken. The correlation was weak, but the differentials small (Average CV = 0.25).

15. Textiles

Asia: the VOC traded in a variety of textiles, *baftas*, *guinea cloth*, *salempuris*, of different colours, sizes and qualities. I took average prices on the guinea (average quality, bleached) cloth from the Coromandel Coast as found in the *rendementen*, invoices and BGB. Qualities and specific sizes could differ per batch, but is not specified in the sources. Therefore these series are tentative.

Amsterdam: in the VOC auctions the 'because of lack of acquaintance with a number of textiles' the VOC accountants put the information for textiles in the 'undeterminable category' of *catoene lijwaten* (see Glamann).⁹²⁰ These were linked to the price level on guinea cloth from Glamann via the equation (thus increasing the prices, no influence on trends).

⁹¹⁷ Nadri, *Eighteenth-century Gujarat*.

⁹¹⁸ Souza, *Survival of Empire*, p. 144.

⁹¹⁹ Yon, *The Dutch*, pp. 212-222.

⁹²⁰ Glamann, *Dutch-Asiatic Trade*, p. 143.

$$p \text{ GUINEA} = 0.3057 p \text{ CATOENE LIJWATEN} + 4.886 \quad R^2 = 0.27$$

$$N = 43$$

These figures are clearly not ideal, yet, considering the importance of textiles in the Euro-Asian trade it is believed still worthwhile to give some estimates of general trends and it seems quite certain that over the period 1650 – 1800 prices for textiles in Amsterdam fluctuated around the same level, while in India prices increased (also see the article by Bishnupriya Gupta).⁹²¹ According to Hossain sales prices in London were stable or declined in the later 18th century.⁹²²

16. Tin

Asia: All prices given in guilders per *pond*. There were observations for three types of tin, Bancas, Malaysian, or Siamese. Price differentials were generally small or non-existent, and since for Europe it was not defined which of these varieties was sold, it is assumed that, as in the case of pepper and cotton yarn, they mixed these varieties. Therefore these series were combined, and in case of multiple observations in a year, the arithmetic mean price was used. NB: there was only one observation for a purchasing price for tin in 1746 from a *rendement* for China,⁹²³ since this was an outlier this data point was of questionable reliability and representativeness and therefore omitted from the analysis: this has no effects on the observed trends or conclusions based on these series.

Amsterdam: the VOC auction prices were extrapolated with Posthumus:

$$p \text{ VOC} = 0.8164 p \text{ POSTHUMUS} + 0.0207 \quad R^2 = 0.82$$

$$N = 38$$

17. Porcelain

Margins from Jörg.⁹²⁴ No interpolation.

A4.2. Bengal

The Bengal price series were taken from Allen and Studer, 'Prices and Wages'.

A4.3. The Cape Colony

1. Wheat

⁹²¹ Gupta, 'Competition and control'.

⁹²² Hossain, *Company weavers*, p. 68.

⁹²³ VOC 2710, ff. 1208-1263.

⁹²⁴ Jörg, *Porcelain*, pp. 221-223.

For the Dutch period prices of wheat were found in several sources, next to those from the VOC archives (expense bills and *Scheepssoldijboeken*), the Cape Archives and the MOOC inventories, the works by A. J. Du Plessis, Van Duin and Ross and Du Plessis and Du Plessis contained wheat prices.⁹²⁵ In the event that multiple prices were found in one year, the arithmetic mean price was taken.

2. Beans and peas

Prices were all given in guilders or rix-dollars per *mudde*. In the years 1784-1786 several sources gave prices and the arithmetic mean price was taken.⁹²⁶

3. Meat

Prices were given in guilders or rix-dollars per *pond* or *vat*. It is assumed that a *vat* consisted of 400 pond, which would fit with the prices on pond. Both prices for meat as well as prices explicitly stating it concerned 'fresh meat' were included in the price series. In the later 18th century observations from the Cape Archives,⁹²⁷ as well as George Theal and S. D. Neumark.⁹²⁸ The arithmetic mean was taken in case of several observations.

4. Butter

Butter prices were given in guilders or rixdollars per *pond* or *ton*. Since it was unclear how much a ton of butter was, these prices were not used in the series. Prices from the VOC and Cape archives were combined with some observations from the MOOC inventories and Neumark.⁹²⁹

5. Soap

Prices in guilders and rixdollars per *pond* or *kist* (crate). It was assumed that a *kist* was 27.9 kg (similar to the *schepel*). Next to the various VOC sources, prices were found in MOOC inventories and Neumark. For the period 1747-1775 sales prices were taken from the *Rendementen*. In all other cases the arithmetic mean of observations was taken in case of multiple observations in one year.

6. Cotton

A number of different types of cotton cloths were found in the sources for the Dutch period, such as *salempoeris*, *baftas*, and *ginghams*. For the Cape most prices were found for the *bafta*, and because the *bafta* was one of the cheaper varieties, those were used to

⁹²⁵ Du Plessis, *Die Geskiedenis*, Van Duin and Ross, 'The Economy', Du Plessis and Du Plessis, 'Happy in the service.'

⁹²⁶ CP 2739; CP 2734

⁹²⁷ CP 2739; CP 2734; BRD 40.

⁹²⁸ Theal, *Records*, vol. 1, p. 216; vol. 3, pp. 195 and 397; S. D. Neumark, *The South African Frontier. Economic influences, 1652-1836* (Stanford, 1956), pp. 110 and 189.

⁹²⁹ Neumark, *South African*, p. 110; CP 2739; MOOC 8/3.9, MOOC 8/3.10.

create price series for cotton. A *bafta* had a length of 19 *gaz* and a width of 1 *gaz* and 9 *tussus*; one *gaz* was 67.31 cm and a *tussus* 2.8 cm.⁹³⁰ Thus, a *bafta* was 12.78 meter in length and 0.93 meter in breadth. The price per m² cotton could thus be calculated:

$$p \text{ m}^2 \text{ COTTON} = p \text{ BAFTA} / (12.78 \times 0.93)$$

Prices, noted in guilders and rix-dollars, from the VOC, MOOC and the Cape Archives were combined in the series.

7. Candles

Prices were given for ‘wax’, ‘wax-candles’ or ‘candles’ per *pond* or *picol*. There seemed to be no structural difference in prices between these different notations and therefore all were combined to create the price series.

8. Lamp oil

Prices for *klappus* oil, lamp oil and *traan*, taken from the VOC and Cape Archives,⁹³¹ were combined to create the price series. Prices were given per *aam*, *halfaam*, *mengel* and *kan*. Some gaps were imputed using the prices for candles:

$$p \text{ LAMP OIL} = 0.0884 p \text{ CANDLE} - 0.1258 \quad R^2 = 0.16$$

$$N = 52$$

9. Fuel

Firewood prices were written down in guilders per *vadem* or per *vracht*. A *vadem* is 2.9 cubic meters and from the price differences between the *vadem* and the *vracht* in 1671-1672 and 1676-1677, it was derived that a *vracht* firewood was 1.58 cubic meters.⁹³² For the baskets, the price per M BTU was needed. The amount of M BTUs delivered per cubic meter of firewood depends on the type of tree. For the Cape Colony, the White Oak was used,⁹³³ which delivers 25.7 M BTU per cord.⁹³⁴ One cord is 128 cubic feet, and 1 cubic feet is 0.028 cubic meters:⁹³⁵ this gives 3.62 cubic meters per cord, delivering 25.7 M BTU: $3.62/25.7 = 0.14$ cubic meter per M BTU. Thus, the price per M BTU could be calculated as follows:

$$p \text{ M BTU} = (p \text{ vracht FIREWOOD} / 1.58) * 0.14$$

⁹³⁰ Hariharan, *Cotton textiles*, pp. 270, 306.

⁹³¹ From the Cape Archives only two observations for 1784 and 1785: CP 2739.

⁹³² Please note that this *vadem* is different from the one in Batavia.

⁹³³ A. J. Böeseken, *Nederlandsche Commissarissen aan de Kaap, 1657-1700* (The Hague, 1938) p. 31.

⁹³⁴ Information from website: <http://mb-soft.com/juca/print/firewood.html>. Last visited 11 July 2011.

⁹³⁵ Information from website: <http://www.asknumbers.com/CubicFeetToCubicMeter.aspx>. Last visited 11 July 2011.

Larger gaps in the price series for firewood were imputed using the prices for lamp oil:

$$p \text{ vracht FIREWOOD} = 0.2083 + 2.62 p \text{ LAMPOIL} \quad R^2 = 0.7533 \\ N = 11$$

10. Further gaps

All further gaps were filled via linear interpolation.

A4.4. Ceylon

1. Rice

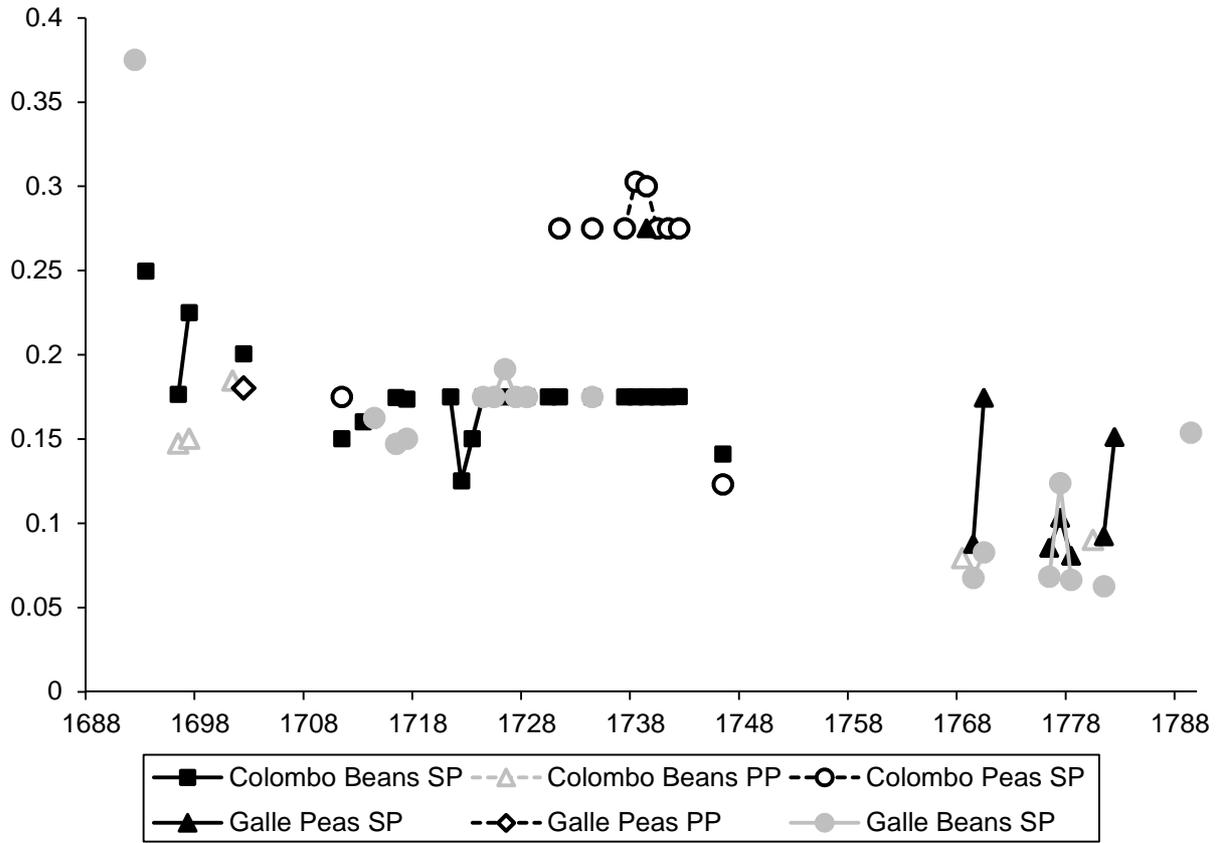
Rice prices were generally reported per *parra* or per *pond*. In order to impute gaps in the sales price series, I used prices for the other towns (also see figure 3.5), as well as the purchasing prices employing the following equations:

$$p \text{ COLOMBO} = 0.4767 p \text{ JAFFNA} + 0.7467 \quad R^2 = 0.53 \text{ (N = 19)} \\ p \text{ COLOMBO} = 0.6182 p \text{ KALPITYA} + 0.6958 \quad R^2 = 0.25 \text{ (N = 44)} \\ p \text{ SALES} = 0.4907 p \text{ PURCHASING} + 1.0221 \quad R^2 = 0.16 \text{ (N = 30)} \\ p \text{ COLOMBO} = 0.3886 p \text{ GALLE} + 1.0187 \quad R^2 = 0.15 \text{ (N = 49)}$$

2. Beans and peas

Prices of both beans and peas were found, given per Dutch pound of 0.494, or given per *parra* of 40 Dutch *ponden*. There were, however, big gaps in the price series of beans and peas and no correlations could be discovered. However, prices from the various sources and from Colombo and Galle did not differ greatly (see figure A4.1), therefore I have taken the average of all these price series. In addition, there were a few prices available for *cadjang* in Galle, which was the general word for legumes (VOC Glossary). These prices were significantly lower (10x) and since it is more likely that the local population consumed these, rather than the extremely expensive beans, the beans prices series were corrected for this (divided by 10). Please note that this is an important adjustment to the price index, biasing it downwards (and real wages upwards, against my conclusions).

FIGURE A4.1: SALES AND PURCHASING PRICES OF BEANS IN COLOMBO AND GALLE, 1688-1788.



Sources: Van Bochove, 'Prices'; VOC archives.

3. Butter

Prices for various types of butter (Bengal, Cape, Mannar) could be found in the sources. The butter from Mannar, located in Ceylon, was the cheapest and therefore preferred in the price series. Gaps in the Mannar butter series were filled with prices on Bengali butter via the equation:

$$p \text{ BUTTER (MANNAR)} = -0.2186 p \text{ BUTTER (BENGAL)} + 0.337 \quad R^2 = 0.51$$

N = 17

4. Sugar

Two types of sugar were frequently mentioned in the sources: candy sugar and powdered or castor sugar. For creating the price series, powdered sugar was used because it was the cheaper of the two. These prices were written down per Dutch *pond*. Gaps in the castor sugar series were imputed with candy sugar prices using the equation:

$$p \text{ SUGAR (CASTOR)} = 0.2592 p \text{ SUGAR (CANDY)} + 0.0831 \quad R^2 = 0.23$$

N = 64

5. Soap

Prices of soap (from Surat) were noted down per stone (*steen*). A stone could be 8 or 6 *pond*;⁹³⁶ due to the low prices of a stone of soap (e.g. when compared to a *pond* of Bengali soap), it was assumed that the stones in Ceylon were only six *pond*. Prices from Galle were exploited to fill some gaps:

$$p \text{ COLOMBO} = 0.6563 p \text{ GALLE} + 0.1126 \quad R^2 = 0.20 \\ N = 30$$

6. Salt

Prices for salt were given per *parra*. Prices from Galle were used to impute a few gaps:

$$p \text{ COLOMBO} = 0.8637 p \text{ GALLE} + 0.0741 \quad R^2 = 0.81 \\ N = 59$$

7. Cotton:

As in the case of the Cape Colony, a number of different types of cotton cloths were found in the sources, e.g. *salempoeris*, *baftas*, and *ginghams*. Yet Van Bochove focussed his data collection on the *ginghams*,⁹³⁷ and therefore those were used to create price series for cotton. A gingham had a length of 17 gaz and 18 tussus, and a width of 22 tussus; one gaz was 67.31 cm and a tussus 2.805 cm.⁹³⁸ Thus, a gingham was 12.1329 meter in length and 0.6171 meter in width. The price per m² cotton could thus be calculated:

$$p \text{ COTTON m}^2 = p \text{ GINGHAM} / (12.13 * 0.62)$$

Prices for two types of gingham were found: the normal gingham and the fine gingham. The normal gingham, which was the cheaper of the two, was used to create the time series, yet the fine gingham, for which more prices were available, was useful to impute the normal gingham series, using the following equation:

$$p \text{ GINGHAM (NORMAL)} = 0.2342 p \text{ GINGHAM (FINE)} + 3.7685 \quad R^2 = 0.15 \\ N = 35$$

In addition, prices for gingham in Galle were employed to impute the Colombo prices series:

⁹³⁶ Van Bochove, 'Prices in Sri Lanka', p. 6.

⁹³⁷ Van Bochove, 'Prices in Sri Lanka', p. 5.

⁹³⁸ Hariharan, *Cotton textiles*, p. 302.

The fine gingham: $p \text{ COLOMBO} = 0.8186 p \text{ GALLE} + 2.0549$ $R^2 = 0.79$

$N = 37$

The normal gingham: $p \text{ COLOMBO} = 0.8021 p \text{ GALLE} + 1.0902$ $R^2 = 0.59$

$N = 23$

8. Lamp oil:

Prices of lamp oil were given per *kan*. Because the sources stated that *klappus* oil served for illumination at night, prices for both types of oil were put together in one price series lamp oil. In addition, coconut oil prices from Galle were exploited to impute gaps in the series and extrapolate the series back into the seventeenth century:

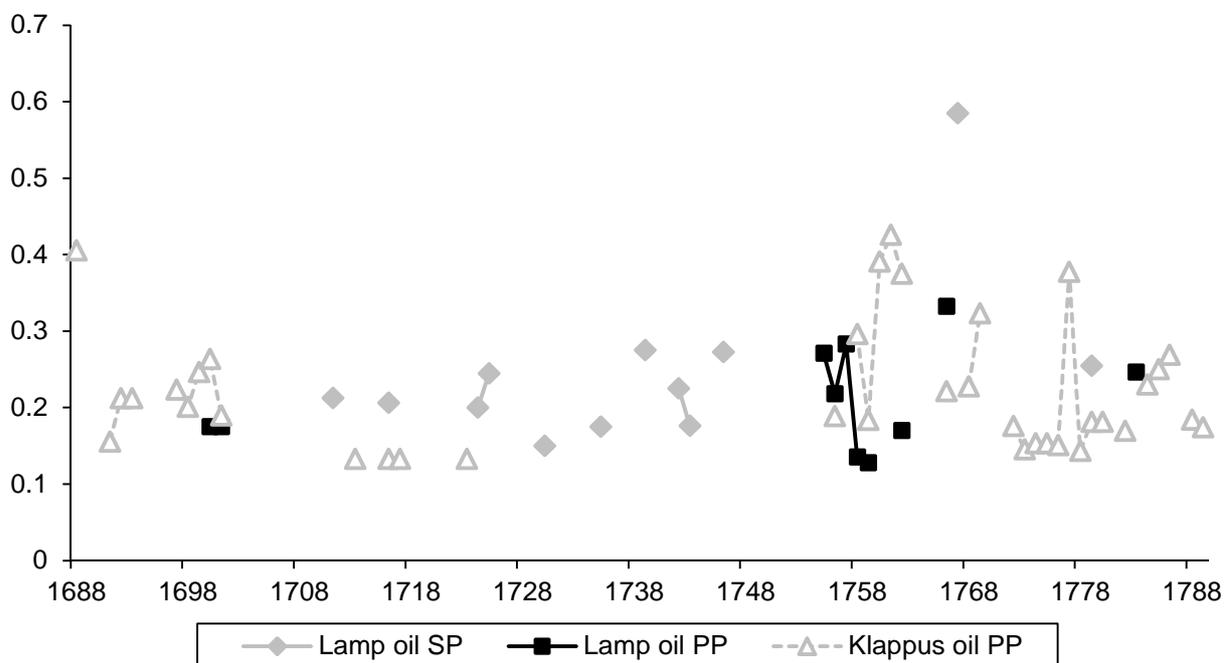
$$p \text{ COLMOBO} = 0.4547 p \text{ GALLE} + 0.1326$$

$R^2 = 0.33$

$N = 20$

There was insufficient overlap to estimate the relationship between purchasing and sales prices of lamp oil, or the difference between *klappus* and lamp oil. However prices were generally of the same order of magnitude (see figure A4.2 below), and therefore I have simply used all three series to compute an annual series (taking the arithmetic mean in case of multiple observations).

FIGURE A4.2. SALES AND PURCHASING PRICES OF LAMP OIL IN COLOMBO, 1688-1788.



Sources: Van Bochove, 'Prices'; VOC archives.

9. Candles:

All prices for candles and wax were given per Dutch *pond*. In order to fill gaps in the candle sales price series, I employed purchasing price data from Colombo, as well as purchasing and sales prices from Galle:

$$\begin{aligned} p \text{ COLOMBO (S)} &= 3.0796 p \text{ COLOMBO (P)} - 1.0875 & R^2 &= 0.90 \text{ (N = 7)} \\ p \text{ COLOMBO (S)} &= 0.1961 p \text{ GALLE (S)} + 0.6602 & R^2 &= 0.30 \text{ (N = 12)} \\ p \text{ COLOMBO (S)} &= 0.9233 p \text{ GALLE (P)} + 0.4318 & R^2 &= 0.48 \text{ (N = 3)} \end{aligned}$$

10. Further gaps

All further gaps were filled via linear interpolation.

A4.5. Java

1. Rice

Rice prices were found expressed in *pond*, *last*, *gantang* and *koyang*. Often, there were multiple observations per year (in the same unit of measurement, but also in different units of measurement). All these prices (also from the different sources) into prices per kilogram and the arithmetic mean of these prices was taken each year. Only for those years for which there are sales prices from the *Rendementen*, these prices were favoured over prices from other sources. Some gaps in the price series were imputed employing the price series on Tegal from Nagtegaal:⁹³⁹

$$\begin{aligned} p \text{ BATAVA} &= 1.2206 p \text{ TEGAL} + 18.436 & R^2 &= 0.47 \\ & & N &= 31 \end{aligned}$$

2. Beans

Prices for beans and *cadjang* were found in the sources, both prices were written down per *last*. *Cadjang* can be translated as beans and peas, and was the general word for legumes.⁹⁴⁰ Bean prices were only found in the expense bills for the period 1692-1703, 1712 and 1740 and the Bookkeeper-General (BGB) for 1708 and 1709. In a number of cases the price for beans is exactly the same as the price for *cadjang*, yet in most cases the price for beans was somewhat lower. In the case of both bean and *cadjang* prices we have taken a simple average of the two. In contrast to the prices for Ceylon, there was no great difference in the prices for beans and peas, and those for *cadjang*.

3. Meat and fish

Prices for meat and fish were sometimes reported in the sources. There were significantly fewer prices for fish. Since the price of fish was almost constantly around

⁹³⁹ Nagtegaal, *Rijden*, p. 177. This concerns prices per *last*.

⁹⁴⁰ VOC Glossary

1.77 times lower than those of meat, meat prices were used to extrapolate the price series for fish. There is no evidence to support the use of mark-ups on these data.

4. Sugar

Prices for powdered or castor sugar were noted per *pond*. Based on only 3 observations it was decided upon an average mark-up of 11 percent to allow for the difference in purchasing and sales prices.

5. Soap

Prices for soap were given per *pond* and *kist*. As in the case of the Cape Colony, it was assumed that a *kist* was 27.9 kg. which roughly fits with the price observations for a *kist* of soap in 1793 (fl. 23.60) and a *pond* of soap in 1801 (fl. 0.37): $23.60 / (27.9 / 0.494) = 0.42$.

6. Salt

Prices per *maat* or *last*. Assume similar *last* as for rice: 3066 1/3 *pond* or 1515 kg. A *maat* zout was 75 *pond* at Rembang, yet 125 *pond* at Surabaya (VOC 3127). On the basis of only three observations, the relationship between sales and purchasing price was calculated to be:

$$p \text{ SALES} = 0.9762 p \text{ PURCHASING} + 0.0016 \quad R^2 = 0.97 \\ N = 3$$

7. Cotton

For the seventeenth and eighteenth centuries we have assembled prices for *baftas*. Since black and white *baftas* were in the same price range, we have combined series of the two to increase the number of observations. In order to go from pieces of *baftas* to cotton per square meter, some calculations had to be made. A *bafta* had a length of 19 gaz and a width of 1 gaz and 9 tussus; one gaz was 67.31 cm and a tussus 2.8 cm.⁹⁴¹ Thus, a *bafta* was 12.78 meter in length and 0.93 meter in breadth. The price per m² cotton could thus be calculated:

$$p \text{ m}^2 \text{ COTTON} = p \text{ BAFTA} / (12.78 * 0.93)$$

The sales prices were calculated from purchasing prices via the relationship between sales and purchasing prices of *baftas* in the *rendementen*:

$$\text{SALES } p = 1.18 \text{ PURCHASING } p + 0.2943 \quad R^2 = 0.83 \\ N = 34$$

⁹⁴¹ Hariharan, *Cotton textiles*, pp. 270 and 306.

8. Lamp oil

Prices for lamp oil and *klappus*, or *klapper* oil were stated in the sources. The average of both series was taken. Prices were given per *kan* of 1.51 liter (VOC Glossary) these were converted to price per liters. No evidence to support the use of mark-ups.

9. Candles

Prices were found for 'wax' and 'waxcandles'. Gaps in the prices for wax-candles were imputed with those on wax:

$$p \text{ WAX-CANDLE} = 0.59 p \text{ WAX} + 0.3511 \quad R^2 = 0.18$$
$$N = 19$$

10. Fuel

Prices for firewood were noted down per *vadem*, which was 8.495 cubic meter (Bataviasch Genootschap 1824).⁹⁴² According to the website of the University of Wisconsin at Stevens Point, and the Wisconsin Energy Education, a standard cord of wood delivers between 21 MBTU on average.⁹⁴³ One cord = 3.62 cubic meter (128 x 0.028) = 21 MBTU: 3.62/21 = 0.17 m³ per MBTU. The price per MBTUs could thus be calculated:

$$p \text{ M BTU} = (p \text{ vadem FIREWOOD} / 8.495) * 0.17$$

No mark-ups.

11. Further gaps

All further gaps were filled via linear interpolation.

⁹⁴² According to a note on weights and measures, the *vadem* in Batavia is different from that in Holland, as well as in the rest of Java. The price for a Batavian *vadem* of firewood in the VOC accounts (6-8 guilders) roughly corresponds with the price given in the note (3 ¼ rds.). In Batavia it is 12 feet long and 5 feet high. In order to arrive at cubic meter we can assume also 5 feet deep: (12 x 5 x 5) x 0.3048 = 8.495 meter³. Source: An., 'Verhandeling'.

⁹⁴³ UW-Stevens Point: <http://www.uwsp.edu/cnr/wcee/keep/Mod1/Whatis/energyresourcetables.htm>. The most common wood on Java was the *jati* or teak wood (Van Niel, *Java's Northeast Coast*, p. 183), but no MBTU value could be found for that particular hard wood. Therefore the standard was taken: average of 18-24 MBTU.

Appendix 5: An alternative method for dealing with gaps in the price data

For the prices of the main staple (the driver of the CPI) gaps were generally limited and small, yet for some of the other products gaps could be substantial. Where possible these gaps were imputed with other price series that correlated with the prices of concern. However, this was not always possible, and as those price series also contained gaps, this method was not sufficient to impute all gaps. Therefore remaining gaps were linearly interpolated. Consistently decreasing or increasing prices over many years may not be entirely realistic. Therefore a second method of interpolation was employed, following the method of Arroyo Abad et al.⁹⁴⁴ They estimate a budget with the average shares of the products in the basket on the basis of years with sufficient data. The cost of a basket was then calculated on the basis of the available prices (with small gaps still interpolated) and increased by the percentage of missing product(s).

On the basis of information of years with enough data (and scattered over the period) the following shares were estimated:

For the Cape: wheat 54.8 percent, beans 11.5 percent, meat 7.9 percent, butter 10.7 percent, soap 2.9 percent, cotton 3 percent, candles 4.7 percent, lamp oil 0.41 percent and firewood 4.2 percent.

For Ceylon: rice 59 percent, beans 3 percent, butter 11 percent, sugar 3 percent, lamp oil 1 percent, soap 0.5 percent, salt 0.5 percent, candles 12 percent, cotton 10 percent.

For Java: 42.5 percent rice, beans 8.2 percent, fish 15.5 percent, sugar 2 percent, cotton 9.8 percent, lamp oil 2.2 percent, candles 12.9 percent, soap 6.9 percent, firewood 2.9 percent and 0.3 percent salt.

Gaps smaller than 5 years were still linearly interpolated.

Figures A5.1-A5.3 show that differences between the two methods are generally relatively small. The 'weights' series are generally somewhat bumpier (since depending on less linear interpolation and more on the trends in rice or wheat prices). In the main text of this dissertation the interpolated series were used.

⁹⁴⁴ Arroyo Abad et al., 'Between conquest'.

FIGURE A5.1: PRICE OF BASKET AT THE CAPE IN GUILDERS. TWO METHODS OF IMPUTATION.

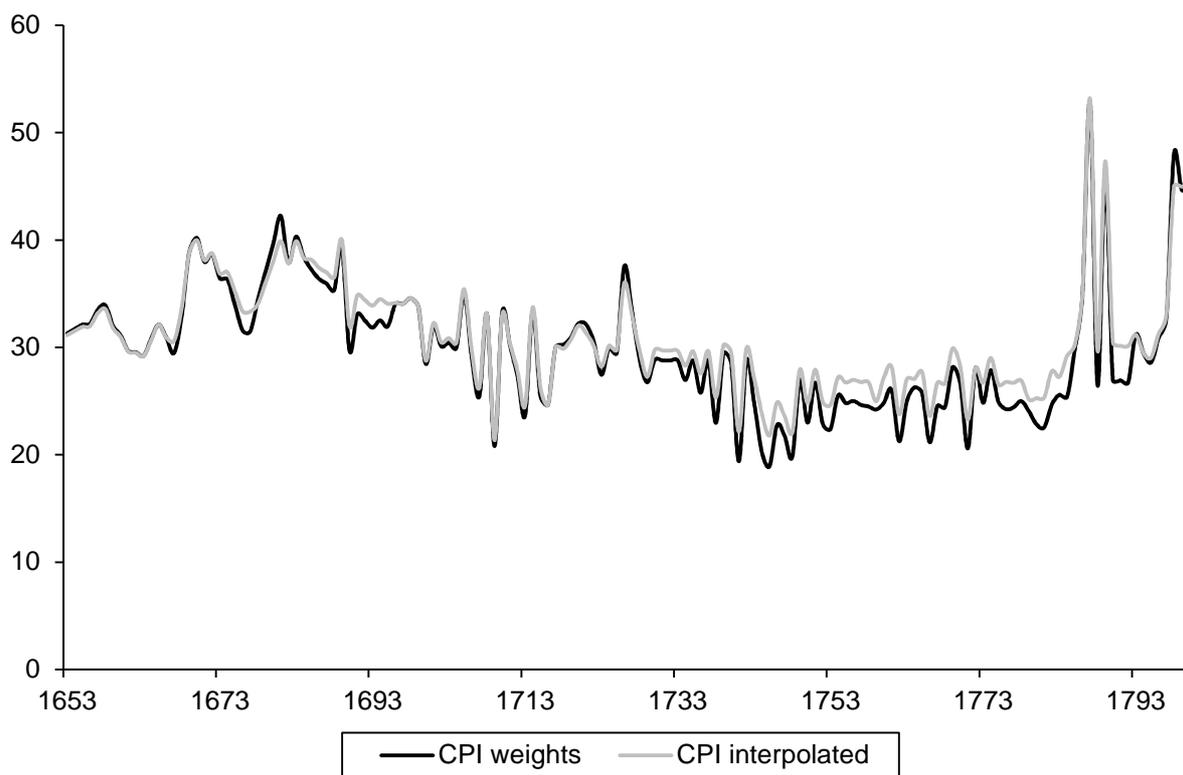


FIGURE A5.2: PRICE OF BASKET IN COLOMBO IN GUILDERS. TWO METHODS OF IMPUTATION.

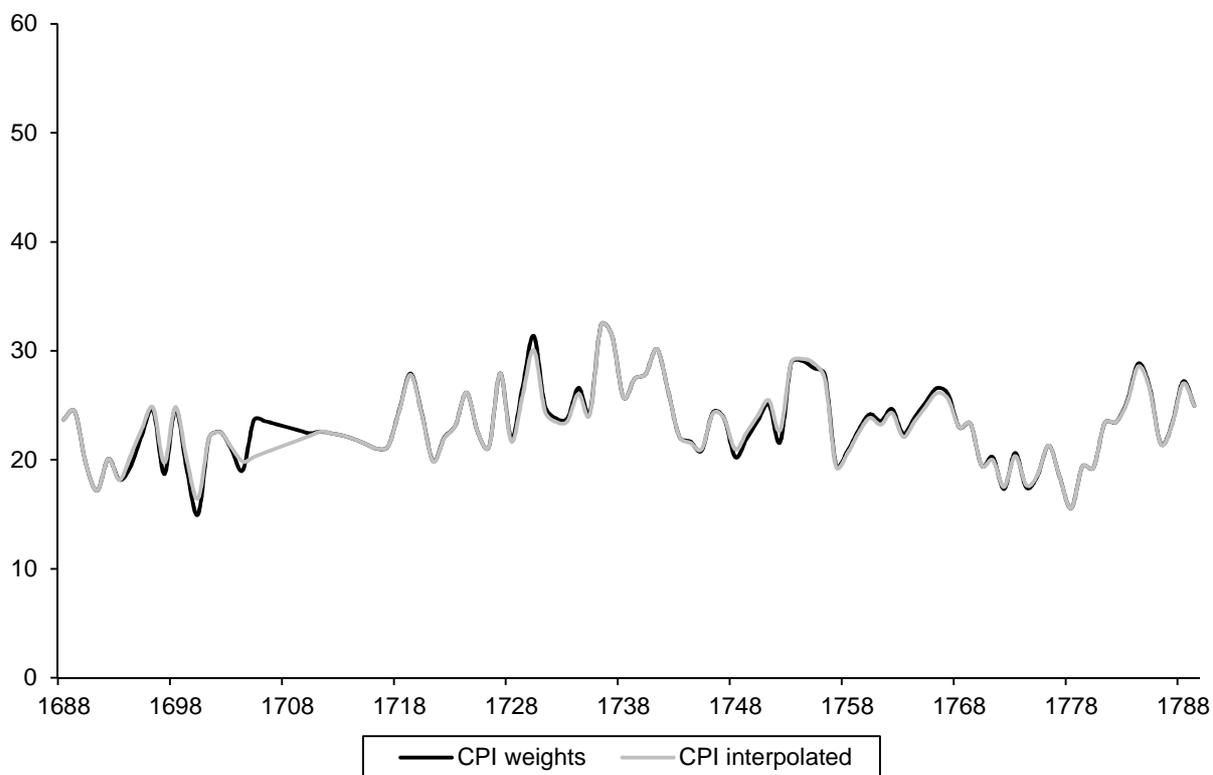
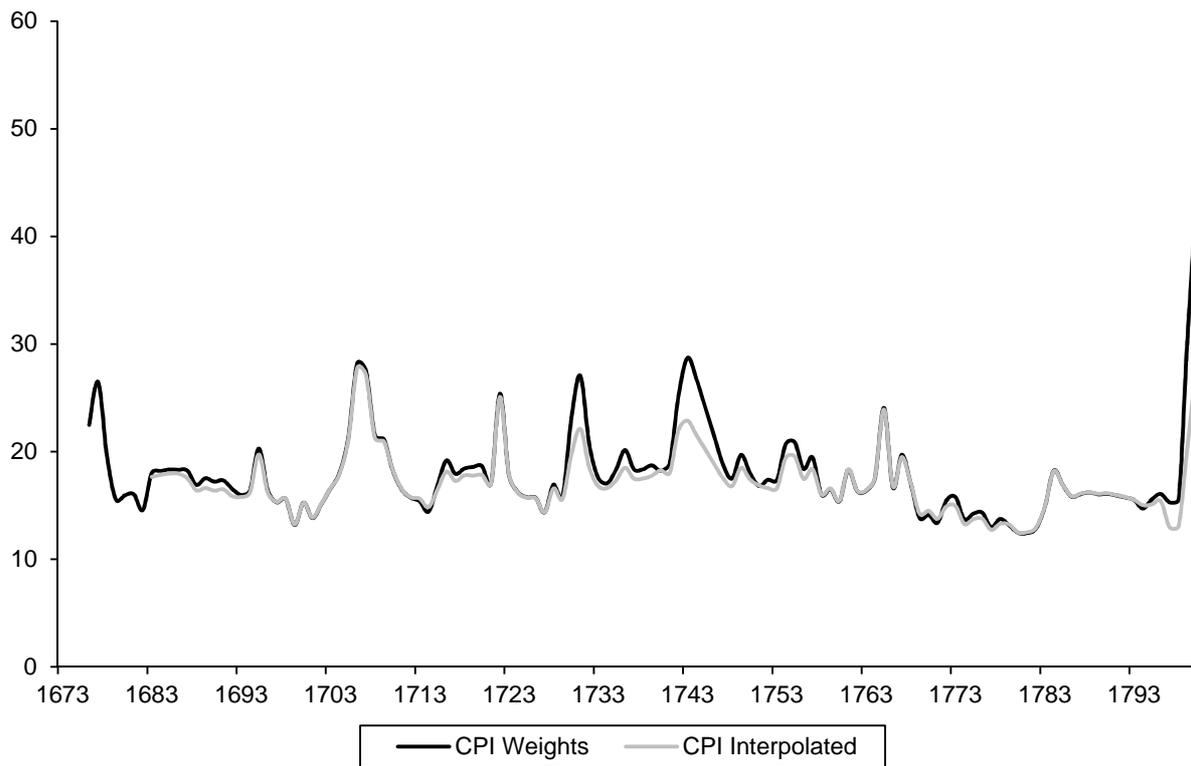


FIGURE A5.3: PRICE OF BASKET IN BATAVIA. TWO METHODS OF IMPUTATION.
GUILDER.

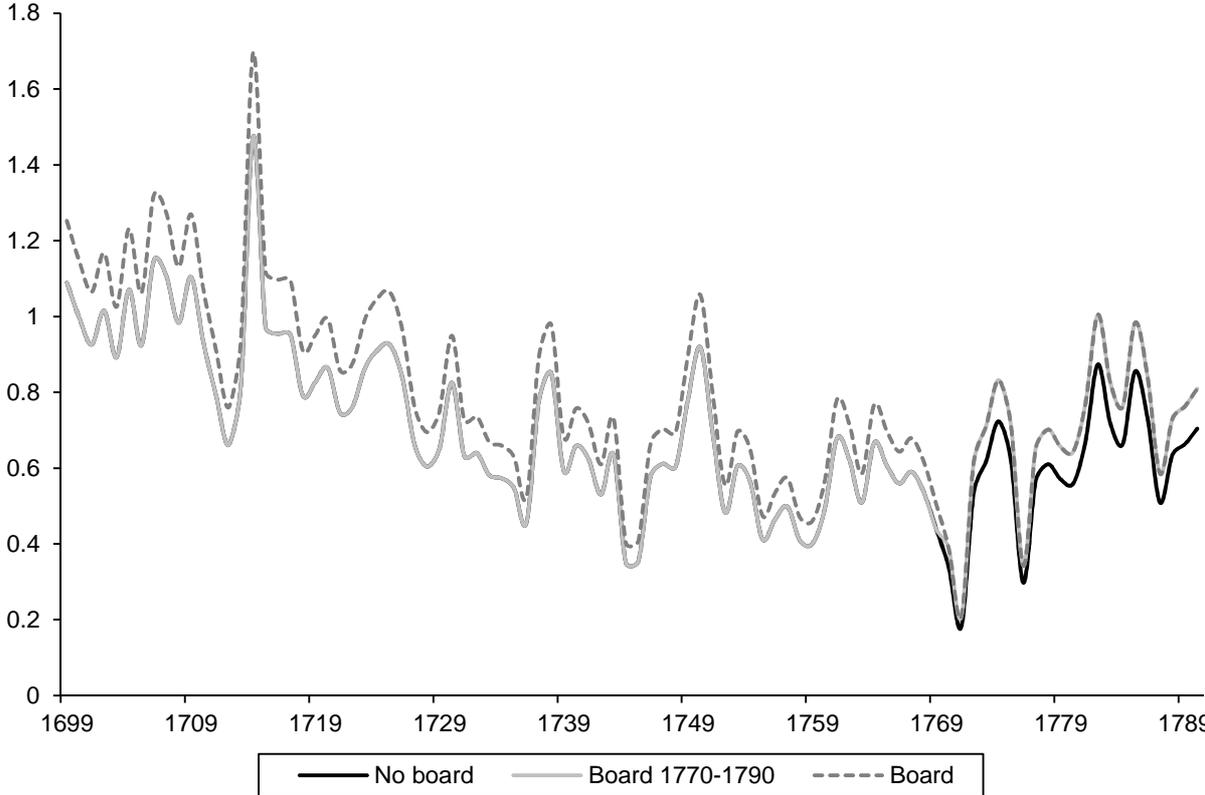


Appendix 6: The wage data

A6.1. Bengal

By far the most abundant and consistent data were found for Bengal. These data were taken from the statements of costs buildings and repairs. These data permitted simple linear interpolation between observations, as gaps were relatively limited (compared with the gaps in the series discussed below). For the years 1770-1789 there are 9 years for both the wage with and without board were reported. These data suggested that board amounted on average to an additional 15 percent of the wage. However, an assumption had to be made whether or not to add board throughout the entire period. Figure A6.1 shows three real wage series for Bengal (1) where no board was added over the entire century, (2) when only board was added in the period 1770-1790 and (3) where board was added for the entire century. Obviously, the differences between the series did not amount to more than 15 percent, thus this would have no influence on the global comparisons. The third series were used in the analysis above.

FIGURE A6.1: REAL WAGES IN BENGAL, 250 WORKING DAYS PER YEAR. WITH AND W/O BOARD.



In addition, as discussed in section 5.2.3 table A6.1 below shows the wages of masons in Bengal and Bihar, which reveals a similar pattern as the wages for unskilled workers.

TABLE A6.1: MASON'S DAILY WAGES IN RUPEES, VARIOUS TOWNS IN BENGAL AND BIHAR, 1721-1789.

		1721-31	1742-45	1758-59	1788-9
Bengal	Balasore		0.09		
	Chinsurah	0.09	0.09	0.10	0.17
	Dhaka			0.10	
	Karriemabad	0.07-0.13	0.08		
	Kasimbazar		0.09	0.09	0.12-0.15
Bihar	Bettiah	0.16	0.16	0.17	
	Chapra		0.17-0.19		
	Patna	0.16	0.16	0.17	0.16
	Singia		0.19	0.17	

A6.2. The Cape Colony

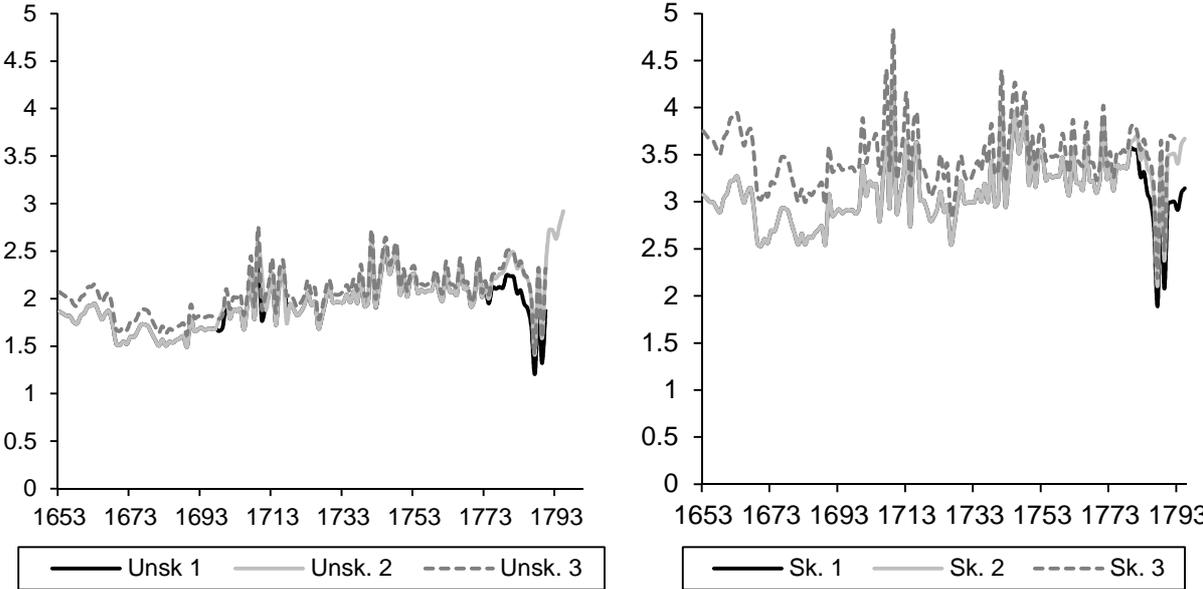
Wage data from the muster rolls as collected by myself and Du Plessis and Du Plessis were augmented by the monetary value of board as found in the Cash Books. These sources suggested that VOC employees received additional remuneration: unskilled labourers $\frac{3}{4}$ reaal and 31 pounds of wheat per month as board, while skilled craftsmen receive $1\frac{1}{2}$ to 2 reaal extra per month as well as 3 *muids* of wheat annually. The monetary value of these additions were added to the wages.

Furthermore, as noted in the text, these wages of unskilled and skilled labourers were corrected for underestimation as 'free knechts', no longer under Company contract, seem to have earned significantly more than those in VOC service. Using the shares of free *knechts* and servants vis-à-vis Company employees, an average wage was calculated. Thereby assuming that the free unskilled knechts consistently earned 1.5 times more the wage of a VOC servant, while free skilled workers were assumed to earn 2 times the wages of the VOC counterparts. As can be seen in figure A6.2 this introduces a slightly declining trend in the nominal wage series as the share of free knechts declined vis-à-vis the VOC servants. While salaries paid by the VOC seem to have been generally stable, Du Plessis and Du Plessis find an increase in soldiers' wages towards the end of the eighteenth century. There are no data for skilled construction workers for 1790, which means one has to assume that either there was a similar increase in wages for skilled workers, or that there was not. The series were interpolated between the benchmarks years for which there are data. Figure A6.2 shows the real wage series with and without corrections for underestimation, as well as with and without the increase in the later eighteenth century.

From the figure it becomes clear that especially for the unskilled wages (where the correction is smaller) the differences between the real wage series are relatively

small and will have no significant effect for the global comparison of unskilled wages. For skilled workers, the correction is larger, and thus the difference between the series, especially in the second half of the seventeenth century is significant. In both cases, the 3rd series were used in the analysis, as I believe that correcting for underestimation due to the focus on VOC employees makes sense in this case,⁹⁴⁵ and there is evidence of increasing unskilled wages at the end of the period. For skilled workers, this increase is also in line with evidence of wages in the early years of British rule.⁹⁴⁶

FIGURE A6.2: REAL WAGES IN THE CAPE COLONY FOR UNSKILLED AND SKILLED LABOURERS, VARIOUS METHODS OF CORRECTION.



Finally, while there are a few observations for the payment of slaves, it is unclear what part of this money went into the pockets of the slave owner, and what part the slaves could keep themselves, it is unclear what their standard of living was.⁹⁴⁷ Due to the data limitations, the focus in this dissertation has inevitably been on the living standards of labourers of European descent. A complete picture of long-term economic growth and development at the Cape requires more research on the standard of living of the indigenous population, about which we know next to nothing for the period before the 1850s.

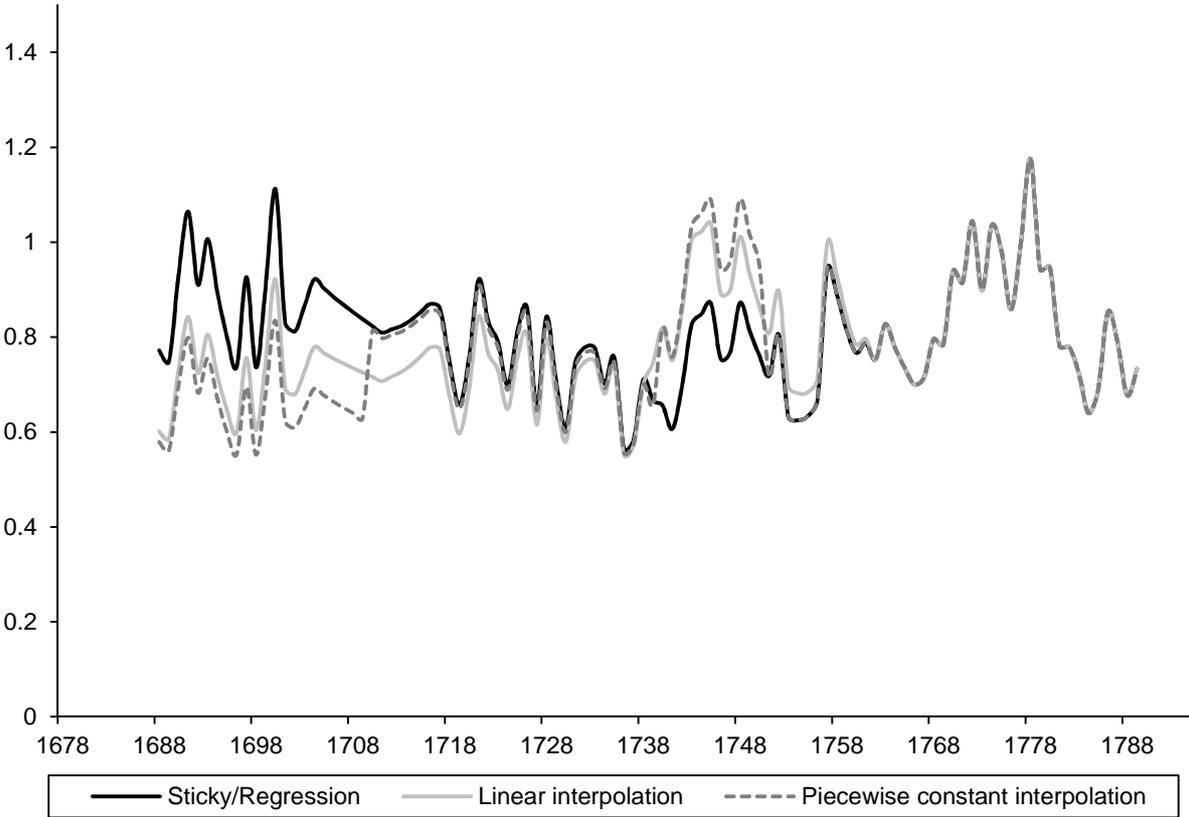
A6.3. Ceylon

While there were relatively many data available for the period 1760-1790, observations for the earlier years were scarce. As noted above, there are a few ways to deal with this.

⁹⁴⁵ See especially: Shell, *Children of Bondage*, ch. 1 and the other literature cited in chapters 4 & 5 above.
⁹⁴⁶ See: De Zwart, 'Real wages'.
⁹⁴⁷ Also see: De Zwart, 'Real wages'.

First, one can assume stability over the entire period. This stability is also confirmed when regressing the wages in the database on a time trend as shall be discussed below. Second, one can linearly interpolate between the years for which we have data. However, as wages are often sticky rather than showing a longer term increasing or declining trend, a different method of interpolation may also be used: nearest neighbour interpolation, where gaps are assigned the same value as the nearest observation. Figure A6.3 plots the different series. Again, the difference between the series is not very large in a global comparative perspective and would not have an influence on the results presented in the dissertation. Nonetheless, in terms of analysing the trends within Ceylon over the eighteenth century, there are some slight differences. The sticky wages show a decline until the late 1730s and growth in living standards after that, while the others series are stagnant until the late 1730s and increase after that. In the main text of the dissertation, the sticky/regression series are shown.

FIGURE A6.3: SUBSISTENCE RATIOS IN CEYLON, 3 METHODS OF INTERPOLATION.



A6.3.1. Regression

The database contains a total of 3116 observations, all from original VOC accounts (in contrast to the database on Java below, where the observations are taken from a variety of sources). By far the most of these data refer to Colombo (2357). The data are very

unevenly spread over time (2255 observations refer to the period 1759-1790). All cities have been assigned a dummy, but due to the uneven spread of observations over time and across occupations and cities, regression analysis seems unsuitable to estimate wage differentials across the island. In the regressions below, only observations for Colombo were used. The wages furthermore refer to a great variety of occupations, from coolies and carpenters to bookkeepers and translators. These have been assigned dummies for unskilled work, skilled work and high skilled work. Furthermore, a number of jobs associated with service obligations such as the washers and the *lascarins*, received very low wages and have been assigned a dummy. Furthermore, while most of the data refer to Sinhalese workers (named either simply *inlands*, indigenous, or Sinhalese specifically), there are also observations for Moorish, Toepasse, Mallabar, and Southeast Asian workers. The regressions only include Sinhalese labourers. All wages were assumed to be male wages, as it is never mentioned otherwise. In the table below the observations are regressed with a time trend (a variable called trend: the year minus 1750), as well as the trend squared.

The dependent variable is the daily wage (assuming 21 days of work per month). These regressions exclude observations that received additional board, as well as those for a variety of military occupations and chiefs.⁹⁴⁸ High skilled denotes master craftsmen, craftsmen 'bosses' and doctors/surgeons. Regression 1 shows the results including all the remaining observations (for Colombo only). Regression 2 excludes teachers, messengers, interpreters and bookkeepers, as the remuneration of these were highly specialized jobs and wages seemingly fluctuating depending on personal merit. As can be seen, excluding these wages leads to roughly similar results, but with a much larger percentage of the variation in wages explained (the R^2 increases by over a 1/4th).

Regressions 3, 4, 5 and 6, refer respectively only to unskilled, skilled, highly skilled and coerced work to see if these share the same trends as the entire sample. Regression 3 confirms the results of regressions 1 & 2 for unskilled workers. The constant is more or less similar and there is no trend over time. The regression for only skilled workers does not explain much. As become obvious from regressions 1 & 2, wages were roughly 9 cents higher than of those of unskilled workers. This puts the skill premium at 41 percent, which is surprisingly low. A possible reason for this is that, in contrast to other studies, I have put higher skilled occupations in another category. High skilled workers earn 17 cents more than skilled workers, and over 21 cents more than unskilled workers (a premium of almost 100 percent). The regression on the wages of those workers possibly performing work as a part of their service obligation does not explain a lot of variation. However, it is clear that these earn a lot less, only 7 cents per day, rather than the standard 23 cents for unskilled workers.

⁹⁴⁸ Since their remuneration could fluctuate drastically, and, especially in the case of various chiefs, it seems unlikely that it constitutes their entire remuneration.

These labourers, however, probably had an own plot of land and did not perform this service the entire year.

TABLE A6.2: REGRESSION ANALYSIS OF WAGES IN COLOMBO, 1679-1790

	1	2	3	4	5	6
Constant	0.2296*** (30.41)	0.2311*** (38.41)	0.2273*** (33.71)	0.3128*** (37.89)	0.4855*** (16.22)	0.0731*** (8.07)
Trend	-0.0002 (-1.19)	-0.0003* (-1.78)	0.0000 (0.12)	-0.0000 (-0.22)	-0.0022*** (-3.14)	0.0001 (0.36)
Trend ²	0.0000* (1.69)	0.0000** (2.17)	0.0000 (0.54)	0.0000 (1.76)	0.0000 (0.05)	-0.0000 (-0.53)
Skilled	0.0905*** (17.82)	0.0901*** (17.94)				
High Skill	0.2159*** (20.20)	0.2153*** (20.61)				
Teacher	0.0511*** (4.29)					
Messenger	0.3033*** (14.15)					
Interpreter	0.2021*** (18.21)					
Bookkeeper	0.1098*** (5.52)					
Service obligation	-0.1596*** (-35.44)	-0.1599*** (-35.11)	-0.1575*** (-31.87)			
R ²	0.49	0.75	0.70	0.03	0.27	0.01
F	423.28***	652.12***	682.08***	1.55	7.25***	4.21**
N	1761	1116	636	358	122	314

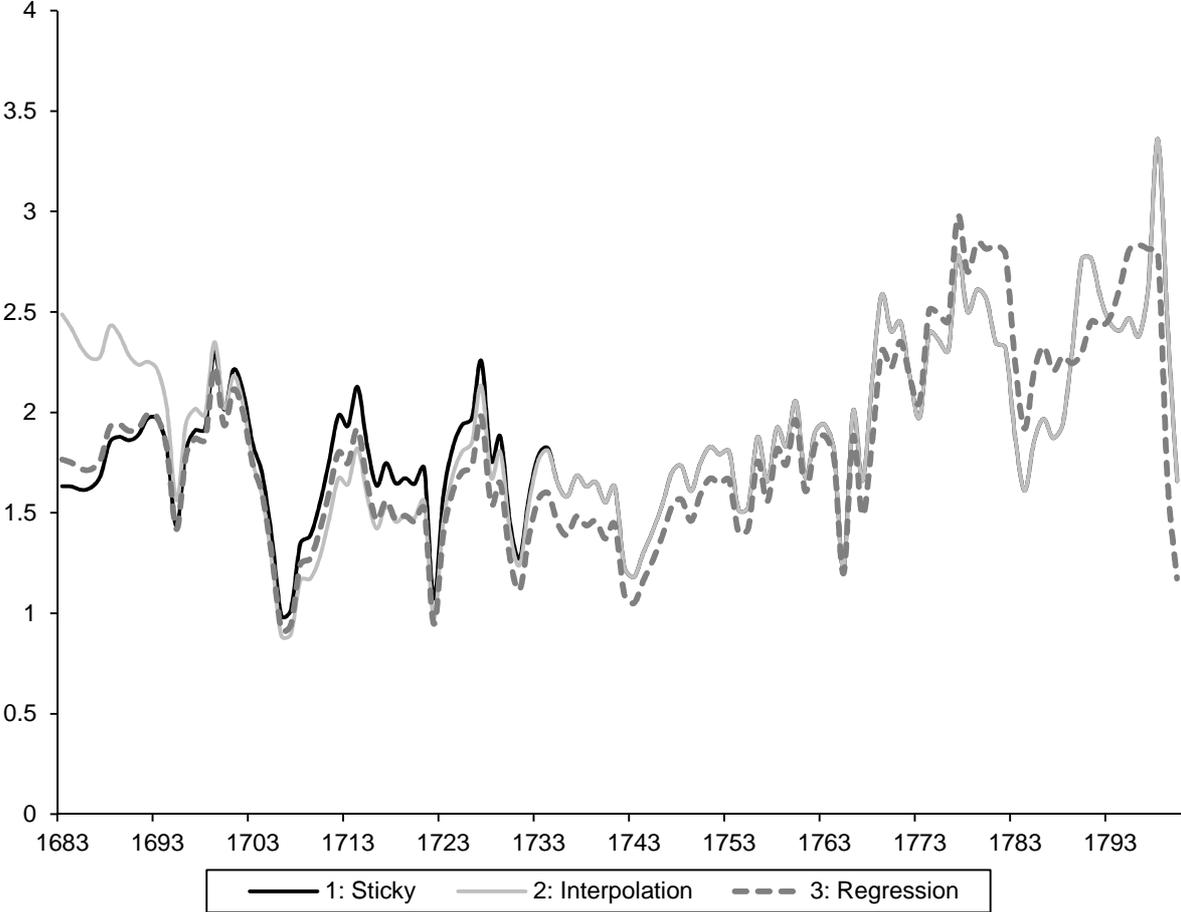
NOTE: ***, **, * DENOTE SIGNIFICANCE AT THE 1, 5 AND 10 PERCENT LEVELS RESPECTIVELY. ROBUST STANDARD ERRORS. T-RATIOS ARE IN PARENTHESES.

A6.4. Java

As noted in chapter 4, wages for Java were taken from a variety of sources as refer to a wide variety of workers. In order to estimate a time series of unskilled workers there are three options: (1) assuming stability over the later seventeenth and earlier eighteenth centuries and interpolate between observations of unskilled coolies from the 1760s onwards, (2) interpolate between the scarce observations for coolies from the earliest available observations (which introduces more variation) and (3) regress the data on a time trend. The third option is explored in greater detail below. Figure A6.4 shows the real wages for unskilled labourers calculated with following these three methods. Again, the three methods of dealing with missing data do not lead to

dramatically different results that influence the conclusions. The regressed series were used in the analysis above.

FIGURE A6.4: SUBSISTENCE RATIOS IN BATAVIA, 3 METHODS OF INTERPOLATION.



In addition, table A6.3 shows the wages of skilled craftsmen in various cities along Java’s northeast coast, as discussed in section 4.2.3.

TABLE A6.3: NOMINAL DAILY WAGES VARIOUS SKILLED LABOURERS ON JAVA'S NORTHEAST COAST, IN GUILDERS.

	1727	1728	1730	1732	1733	1734	1735	1736	1737	1738	1739	1741	1742	1779	1788	1789	1791	1792
Mason	Cirebon	0.30	0.30	0.30							0.60							
	Demak			1.20	1.20													
	Japara			1.20	1.20	1.20	1.20	1.20	1.20									
	Pasuruan	0.60		0.60														
	Rembang		1.20		1.20													
	Surabaya	0.60	0.60	0.60				0.60					0.60					
	Tegal			0.60	0.60						0.60							
Smith	Cartasoura									0.30								
	Pasuruan	0.60		0.60														
	Rembang			0.30														
	Surabaya			0.60				0.60					0.60					
Carpenter	Cirebon	0.30		0.30										0.60		0.60	0.60	0.60
	Demak		0.30		0.30											0.75	0.75	
	Gresik																	
	Indramayen													0.60				
	Japara			0.30	0.30	0.30	0.30	0.30	0.30	0.30								
	Djoana															0.25	0.25	
	Rembang		0.30		0.30									0.30		0.60		
	Tegal																	
	Semarang			0.30				0.30							0.50	0.50		
	Surabaya	0.30	0.30	0.30				0.30					0.60		0.75	0.75		
Caulker	Cirebon																	0.60
	Gresik														0.50	0.50		
	Japara					0.30		0.30									0.60	0.60
	Djoana														0.25	0.25		
	Rembang														0.30			
	Semarang														0.50	0.50		
	Surabaya														0.50	0.50		

SOURCES: Statements of expenditure on the construction and repair of various buildings.

A6.4.1. Regression

The database contains in total 633 observations for the period 1630-1820. When constructing the database all wages stated in the sources and literature were put into one excel-file. If monthly or yearly wages, these were converted to daily wages assuming 250 days per year. The information on the original wage/time has been retained and the excel sheet shows the conversion. When the source mentions for example that ‘63 coolies received 6 *stuivers* per day on the wharf⁹⁴⁹ this counts as 1 observation and not as 63. The reason is that otherwise the observations explicitly stating how many labourers the wage concerns get disproportionate weight against observations that do not specify the number. In the database, when explicitly stated in the source, the number of workers that received the wage is also noted, allowing future calculations including this information.

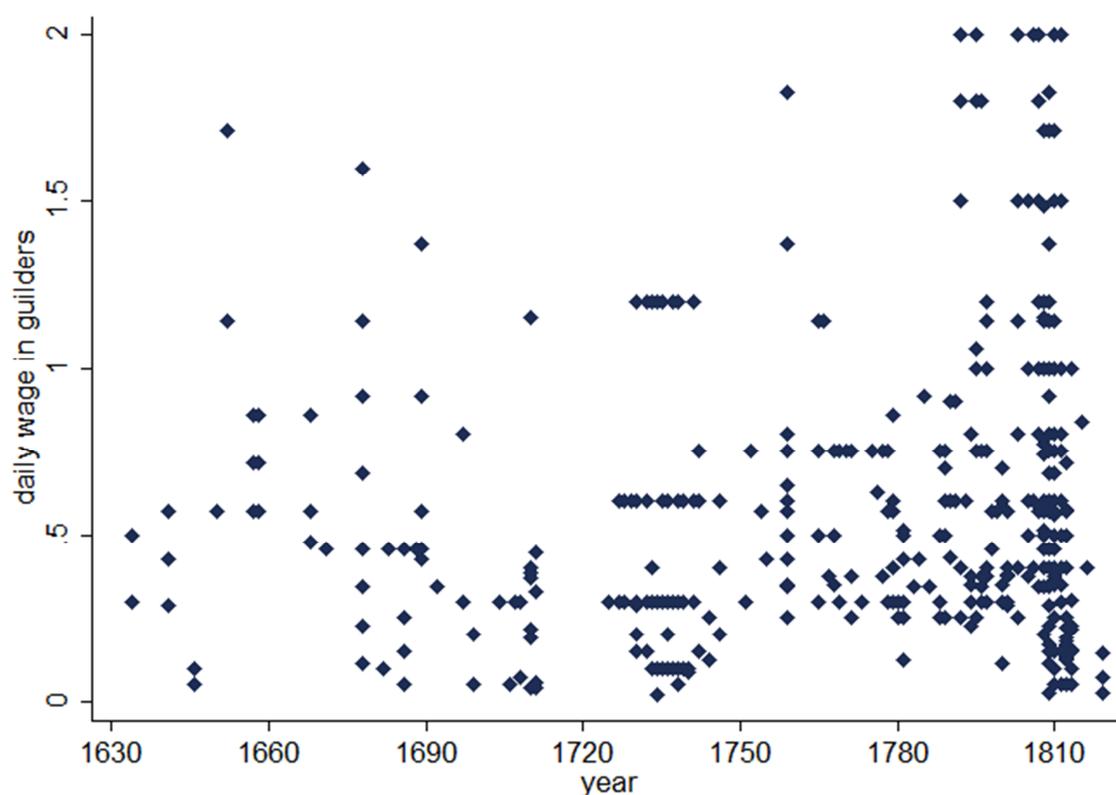
Regarding the difference between free, bonded and slave labourers. It was often explicitly mentioned in the source what kind of work we were dealing with. Otherwise we had to rely on what is known from the literature: so if wage referred to *batur* we assumed this was about bonded, while *coolies* or *bujang* (when not explicitly mentioned that they were unfree) were assumed free. Also wages for occupations known to be related to corvée services such as *modderaars* (dredging the canals) and *grassnijders* (grass cutters) were assumed to be bonded.

Skill dummy: skilled are all types of craftsmen, but also includes ‘bosses’ or foremen, as well as those denoted as ‘semi-skilled’ by e.g. Boomgaard.⁹⁵⁰ The dummy thus does not capture differences between various skill levels (e.g. a blacksmith usually earned more than a carpenter (see e.g. Plakaatboek VII. 24.3.1797). Furthermore the database contains observations for both Javanese and Chinese labourers. A dummy was given a value of 1 whenever explicitly mentioned it concerned Chinese workers.

⁹⁴⁹ Plakaatboek VIII 9.8.1765.

⁹⁵⁰ Boomgaard, *Children*.

FIGURE A6.5: WAGES OBSERVATIONS IN JAVA, 1630-1820. GUILDERS PER DAY.



The dataset thus constructed for Java contained a great variety in observations for different types of workers from various places across Java and from a great variety of sources (see figure A6.5). In contrast to the other cases, due to great variance thus introduced in the database a consistent time trend for the Javanese wages was estimated via a regression analysis (following the studies by Allen on India, and by Allen et al. on China).⁹⁵¹ This includes male wages from different towns and regions across Java, for Chinese as well as Javanese labourers, for free and coerced work and a variety of occupations (please see the appendix for more detailed information). These were all assumed to be male wages, as it is never mentioned otherwise. Because I found a considerable amount of wages for the period 1800 and 1820, these were also included in the regression (although outside the scope of the real wage analysis in chapter 4). In order to predict a continuous time trend of wages from the scattered observations, dummy variables are included for differences in ethnicity (Javanese or Chinese) and free, corvée or slave labour in the regressions. The regressions also include a time trend (called Trend) equal to the year minus 1750.⁹⁵² In all regressions the time trend is significant and positive, indicating slight wage inflation over time.

⁹⁵¹ Allen, 'India in the Great Divergence'; Allen et al., 'Wages, prices'.

⁹⁵² Similar procedures were applied in Allen, 'India in the Great Divergence', and Allen et al. 'Wages, prices'. See the appendix for further details. In the period before 1750 the trend has a negative value, allowing the U shaped curve in the predicted wage trends.

Trend2 is the square of the trend and is also significant, which leads to a U shaped curve in the predicted wage trend.⁹⁵³ Table A6.4 reports the results.

TABLE A6.4: REGRESSION ANALYSIS OF JAVANESE WAGES, 1630-1820.⁹⁵⁴

	Regression 1	Regression 2	Regression 3	Regression 4
Constant	0.2873*** (10.71)	0.2692*** (10.33)	0.5991*** (19.54)	0.1600*** (9.84)
Trend	0.0011*** (3.54)	0.0015*** (2.48)	0.0015** (2.55)	0.0014*** (3.88)
Trend2	0.00003*** (3.76)	0.00004*** (3.42)	0.00003*** (3.20)	0.0000 (0.97)
Corvée	-0.1865*** (-7.35)	-0.1506*** (-5.68)		
Slave	-0.0504 (-0.77)	-0.0193 (-0.45)	-0.0269 (-0.21)	
Skilled	0.3357*** (11.86)	0.3371*** (12.50)		
Chinese	0.7332*** (11.43)	0.6914*** (8.74)	0.7868*** (7.94)	
R ²	0.48	0.48	0.30	0.18
F	101.35***	106.47***	21.04***	7.56***
N	581	357	304	62

NOTE: ***, **, * DENOTE SIGNIFICANCE AT THE 1, 5 AND 10 PERCENT LEVELS RESPECTIVELY. ROBUST STANDARD ERRORS. T-RATIOS ARE IN PARENTHESES.

The dummy created for the wages of corvée labourers was highly significant and negative, suggesting that corvée labourers earned less than half that of free workers around 1750. The dummy for slave ‘wages’ was almost always insignificant suggesting that hiring slaves was roughly as costly for the VOC as employing free wage workers.⁹⁵⁵ The number of observations for slaves is small and, as it is unclear what part of the money paid for slaves went into the pockets of the slave owner and what part the slave could keep himself, we are unable to say anything about their standard of living. The premium for skilled labour is significant: over 130 percent, which is significantly above that paid for skill in Europe and China, though more or less on a par with India.⁹⁵⁶

⁹⁵³ I also included the trend cubed in the regressions, but this always proved statistically insignificant.

⁹⁵⁴ The regressions exclude the data on European wages paid in Java. 14 outliers of wages over 2 guilders per day were also excluded from the regression. Regression 2 excludes data after 1800, regression 3 excludes data for unskilled labourers, regression 4 excludes data for free labourers and slaves.

⁹⁵⁵ Only 16 observations for slaves; these are the non-Javanese artisan slaves, rather than those in debt-bondage.

⁹⁵⁶ Van Zanden, ‘The skill premium’; Broadberry and Gupta, ‘The early modern’.

Finally, it is shown that Chinese labourers earned much more than indigenous workers, which according to the *Plakaatboeken* is due to their higher productivity.⁹⁵⁷

Considering the price inflation after 1800 (see next section), as well as the cluster of data between 1800 and 1820, regression 2 excludes those years. As the coefficients do not change enormously this suggests that the rise in wages is not only caused by the post 1800 inflation. Regressions 3 and 4 test whether the wages of skilled and corvée labourers follow similar trends as free unskilled labourers. It is shown that the square of trend becomes insignificant in regression 4; whereas the wages of free workers (both skilled and unskilled) increased more rapidly towards the end of the eighteenth and beginning of the nineteenth century, wages of corvée labourers followed a linear trend. These regression have so far included wages from different places in Java, however, there were some differences between wages in different areas. Unfortunately many observations lack explicit mentioning the regional origin of the observation, and the observations are too unevenly spread across time.⁹⁵⁸ However, it should be kept in mind that we thus perhaps understate the wage rate in Batavia which seems to have been generally somewhat higher than elsewhere.⁹⁵⁹

While the wage data presented here are far from ideal, the results seem plausible. Both Boomgaard and Reid have suggested a decline in wages over the seventeenth and early eighteenth centuries.⁹⁶⁰ They did not show data on wages for the later eighteenth century, but the evidence dug up for this paper strongly suggests an increase in nominal wages in the second half of the eighteenth century.

⁹⁵⁷ Plakaatboek XV, pp. 545-7: '[...] *daar het bewezen is, dat de Chineezen veel beter als de inlanders voor het werk geschikt zijn*'. My translation: '[...] as it has been demonstrated that the Chinese are better capable of the work than the indigenous workers'.

⁹⁵⁸ Those observations explicitly stating that they refer to Batavia are concentrated towards the end of the period (almost half the observations are for the period after 1800).

⁹⁵⁹ However, interpolating between observations for only unskilled coolies in Batavia leads to roughly similar wage series as those estimated here. Since those observations are few, we have preferred to use the thus estimated average unskilled wage trend for calculating real wages in the next section.

⁹⁶⁰ Boomgaard, 'Why work'; Reid, *Southeast Asia I*.

Appendix 7: Estimating population trends for Ceylon

There are relatively few estimates of the total population of Ceylon during the Dutch period. A crude estimate puts the total Sinhalese population in the mid-seventeenth century in the region of 550,000 to 600,000.⁹⁶¹ While in 1505 a traveller estimated that the population in the South (Galle and Colombo) did not exceed 350,000, and the population of Jaffna was calculated at 120,000 people.⁹⁶² This is the same number given by the first Dutch commandant of the Jaffna province immediately after the Dutch conquest in 1658.⁹⁶³ Jumping forward in time, a census was taken in 1789 which covered all three Maritime Provinces – Colombo, Jaffna and Galle – and the population enumerated was 817,000. According to N. K. Sarkar, because this census was taken for the purpose of taxation, ‘serious under-enumeration was suspected.’⁹⁶⁴ Common belief at the time was that the population of the whole island (including Kandy) was around 2 million, but more educated guesses suggested this number was closer to 1.5 million. Anthony Bartolaccai estimated the population of the Maritime Provinces was approximately 700,000 in 1809.⁹⁶⁵ The first population census of the Kandyan provinces was taken in 1821, and the population was found to be 257,000.⁹⁶⁶

Next to these estimates, Jurrien van Goor has assembled data on the total number of indigenous Christians in Colombo, Galle and Jaffna. These figures (shown in figure 7.1) were submitted annually by the ministers to the Directors of the VOC or the Synods of the Republic.⁹⁶⁷ Figure A7.1 shows that the number of indigenous Christians in Jaffna rose from 160,000 in the late seventeenth century, to around 200,000 a century later. The increase in the Colombo area was more spectacular, as the number of Christians there increased five-fold, from 20,000 in 1693 to almost 100,000 in 1793. This growth seems to confirm the movement of people towards towns, especially towards important administrative centres such as Colombo, because of economic opportunities.⁹⁶⁸ In Galle, the number of Christians reached its high point of little over 90,000 in the mid-eighteenth century, thereafter declining to 60,000 at the end of the century, reflecting its declining importance as a VOC trade hub.⁹⁶⁹

⁹⁶¹ Roberts, *Caste conflict*, p. 32.

⁹⁶² P. E. Pieris, *Ceylon and the Hollanders 1658-1796* (Tellipalai, 1918) p. 3.

⁹⁶³ Arasaratnam, ‘Historical foundation’, p. 2.

⁹⁶⁴ N. K. Sarkar, *The demography of Ceylon* (Colombo: Ceylon Government Press, 1957) p. 18.

⁹⁶⁵ Anthony Bertolaccai, *A view of the agricultural, commercial and financial interests of Ceylon* (London, 1817) p. 62.

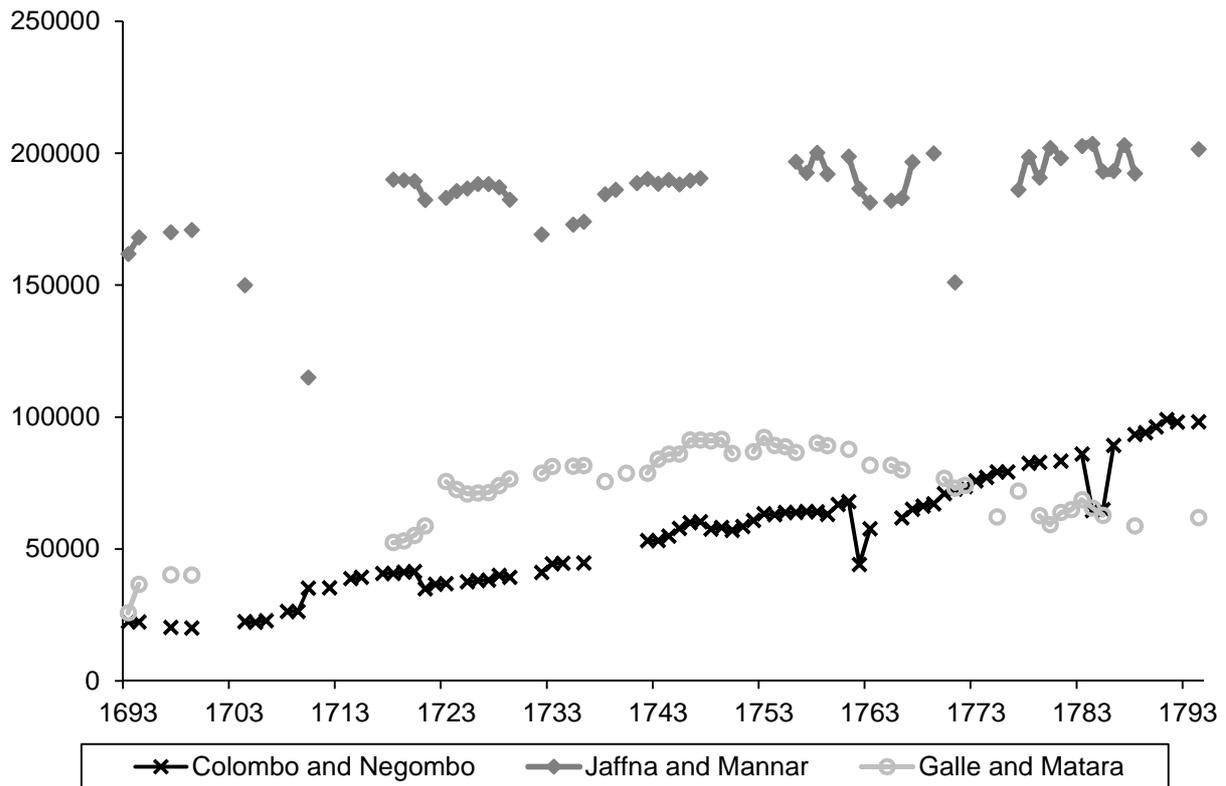
⁹⁶⁶ Roberts, *Case conflict*, p. 297.

⁹⁶⁷ Van Goor, *Jan Kompenie*, p. 121.

⁹⁶⁸ Arasaratnam, *Dutch power*, p. 217.

⁹⁶⁹ Femme S. Gaastra, ‘Ceylon als “handelscomptoir” van de VOC’, in: R. Kromhout (ed.) *Het Machtige Eyland, Ceylon en de VOC* (Den Haag, 1988) pp. 29-36.

FIGURE A7.1: INDIGINOUS CHRISTIANS IN CEYLON, 1693-1795.



Sources: Van Goor, *Jan Kompenie*, pp. 160-161; the numbers for 1694, 1697 and 1699 have been entered by the author from the source discussed in the text.

Van Goor warns that, due to the lack of other demographic studies on Dutch Ceylon, these numbers cannot be related to other data, and that it is impossible to know which part of the population had become exposed to the influence of Christianity.⁹⁷⁰ In this paper it is attempted to sidestep this problem by relating his numbers to population data for two benchmark years: 1684 and 1789 (see table A7.1). The numbers for 1789 are from the census discussed above (keeping in mind possible under-enumeration), while the numbers for 1684 stem from a newly found source in the archives of the VOC, named: ‘Summary of all Company’s subjects’.⁹⁷¹ Proto-censuses similar to this one have been found for other VOC areas in Asia, such as Cochin in Malabar,⁹⁷² and Ambon.⁹⁷³ On Ambon, village heads were required to deliver the detailed data each year to the VOC, while schoolmasters and local VOC officials were ordered to keep an eye on the process. Gerrit Knaap, who has worked

⁹⁷⁰ Van Goor, *Jan Kompenie*, p. 123.

⁹⁷¹ VOC 1396, ff. 602-612: ‘*Sommarium van alle ‘s Compagnies onderdanen*’ for the separate districts; the former Kingdom of Jaffanapatnam, the Island Mannar, the *Dissawany* of Colombo (including Negombo and Hapitagam), and the Commandment Galle, which includes Matara.

⁹⁷² Anajana Singh, *Fort Cochin in Kerala, 1750-1830. The social condition of a Dutch community in an Indian milieu* (Leiden: Brill, 2010).

⁹⁷³ Knaap, *Kruidnagelen en Christenen*; and *ibid.*, ‘The Demography of Ambon in the Seventeenth Century: Evidence from Colonial Proto-Censuses’, *Journal of Southeast Asian Studies* 26 (1995) pp. 227-241.

with these data, warns that ‘in reality there seemed to be hardly any control on the part of the VOC.’⁹⁷⁴ Since the Ceylon census also contains information on castes, a possible motivation for the population count might be the *rājakāriya* system, in which people had to perform services according to their occupational caste or had to pay a land tax. While no unambiguous guarantees can be given regarding the reliability of these censuses, the numbers on, for example, the gender and age distribution of the population, are consistent with data from other sources, as will become clear below.

Combined with sources on indigenous Christians, this source suggests that almost the entire population of Jaffna was Christian. In a census in the mid-eighteenth century, the population of Jaffna was found to be 187,599 according to Arasaratnam, who notes that this ‘seems to include the total Tamil population.’⁹⁷⁵ Most of these people were Christian only in name, and for the vast majority who were baptized (and thus appeared in the statistics), knowledge of the Christian faith and their adherence to it was nominal;⁹⁷⁶ Hindu beliefs and practices coexisted alongside Christianity. Many converted to Christianity only because it brought new economic opportunities and material benefits.⁹⁷⁷ In the two Southern provinces, about one half of the population seems to have been converted to Christianity (41 percent in Colombo, and 56 percent in Galle). Reliable population estimates for the two cities on the eastern coast, Batticaloa and Trincomalee, are lacking. Van Goor’s sources suggest less than 1000 Christians in the former in the late eighteenth century, and around 2000 in the latter. It seems unlikely that the population of these cities together exceeded the 10,000 in total.

Regarding Kandy, we are bereft of any population estimates other than those of the British for the early nineteenth century. Because the territory occupied by Kandy in the seventeenth century was larger than during the late eighteenth century, it is likely that the population exceeded the 285,000 given for 1789 by Sarkar.⁹⁷⁸ Baldaeus wrote that the King of Kandy could muster an army of 151,086 men.⁹⁷⁹ In the next paragraphs, it is shown that in Ceylon approximately 28 percent of the total population consisted of adult men. If we assume that the figure given by Baldaeus constitutes all adult men of Kandy (obviously this is questionable), this would bring the total population of Kandy in the late seventeenth century to 539,592.

⁹⁷⁴ Knaap, ‘The demography’, p. 230.

⁹⁷⁵ S. Arasaratnam, ‘Protestants: the first phase, 1650-1880’, Christianity, Traditional Cultures and Nationalism: The South Asian Experience’, *Bunker Memorial lectures* (Jaffna, 1978) pp. 13-28 there p. 19.

⁹⁷⁶ S. Arasaratnam, ‘The First Century of Protestant Christianity in Jaffna’, *Indian Church History Review* 19 (1985) pp. 39-54.

⁹⁷⁷ De Silva, *A history*, pp. 196-197.

⁹⁷⁸ Sarkar, *Demography*, p. 21: 285,000 is Sarkar’s estimate for 1789 based on the 257,000 from the census of 1821.

⁹⁷⁹ Baldaeus, *Naauwkeurige beschryving*, p. 9

Table A7.1 summarizes this discussion. Yet, as noted, these numbers are most likely underestimates.⁹⁸⁰ Based on growth rates and backward projection from the later nineteenth century, Sarkar estimates that the total population in 1789 was around 1,788,000,⁹⁸¹ which has been adopted by Colin MacEvedy and Richard Jones in their *Atlas of World Population History*.⁹⁸² In order to arrive at the corrected figure for 1684, the original number was increased by 62 percent. Compared with total population numbers for Ceylon found for the first half of the nineteenth century, as well as the figure that arises from another source, registers on family composition and landownership, known as *thombos*, for the Colombo province during the 1760s,⁹⁸³ the corrected figures thus represent an upper bound estimate.

TABLE A7.1: TOTAL POPULATION AND NUMBER OF INDIGENOUS CHRISTIANS IN CEYLON, 1684 AND 1789.⁹⁸⁴

	1684			1789		
	Christians	Total	% Chr.	Christians	Total	% Chr.
Jaffna	155,600 ⁹⁸⁵	155,600	100	193,800	-	-
Colombo	22,400	54,400	41	94,100	-	-
Galle	38,300	68,100	56	59,300	-	-
Sub-total	216,300	278,100	78	347,100	817,000	42
Kandy	-	539,600	-	-	285,000	-
Total	216,300	817,700	26	347,100	1,102,000	32
Total (corrected for underestimation)	-	1,291,100	-	-	1,788,000	-

Sources: see text.

Using these data, demographic developments across time can be calculated in four ways. First, taking 1684 as the main point of reference and assume that the percentage of Christians in each province remains stable over the eighteenth century. Second, it is possible to backward project total population numbers from the year 1789. Third, it can be assumed that towards the end of the eighteenth century the 1789 numbers are more reliable, while at the end of seventeenth century the 1684 numbers are more reliable, and use changing weights over the period to reflect this. Finally, this combined series can be corrected for underestimation. The results of this

⁹⁸⁰ The numbers for 1684 are close to estimates by Pieter van Dam, a VOC lawyer, who suggested that the total population of the Maritime Provinces in 1686 was around 278,789. Van Dam, *Beschrijvinge*, Part 2.2, p. 314.

⁹⁸¹ Sarkar, *Demography*, p. 22.

⁹⁸² MacEvedy and Jones, *Atlas of world*, p. 186.

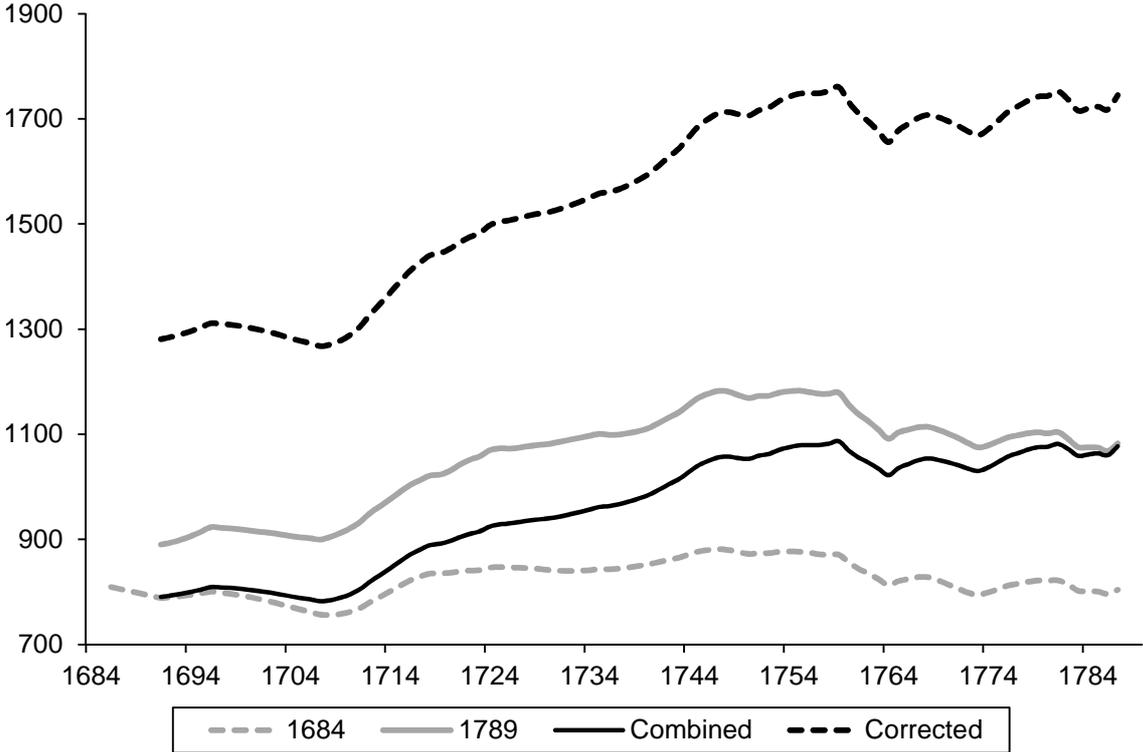
⁹⁸³ Suggesting there were 350,000 people living in the Colombo province; Kok and Van den Belt, 'Colonial thombos'.

⁹⁸⁴ Round in 100s.

⁹⁸⁵ The total number of Christians in 1690 actually enumerated 161,863. Therefore assuming some margins of error and growth between 1684 and 1690 it is estimated this number was equal to the total number of subjects in 1684: which was 155,600.

are shown in figure A7.2. Emphasizing that these numbers are preliminary estimates based on a number of assumptions and a limited amount of evidence, figure A7.2 serves as a first illustration. The most notable drops in the graph, between 1700 and 1710, and between 1760 and 1766 coincide with Dutch-Kandyan wars (which may give some confidence in these series).

FIGURE A7.2. FOUR ESTIMATES OF THE POPULATION OF CEYLON (IN 1000s), 1684-1790.



Sources: see text.

Appendix 8: Occupational Structure Ceylon

The occupational groups in table A8.1 were based on the HISCO tree of occupational groups: <http://historyofwork.iisg.nl/major.php>. In this appendix it is noted which workers (as found in the sources) are included in which groups, and in which sector (according to the PST system).

Primary sector:

6: Agricultural, animal husbandry and forestry workers, fishermen and hunters:

Farmers: *vellala*, *paradesi*, *maddapalli*, and *agamudaiyan*, (these were Tamil cultivators' castes)⁹⁸⁶ and cattle farmers.

Agricultural workers: *naindes*, *chalias* (cinnamon peelers), *durava* (headmen of cinnamon peelers) *chiandos* (toddy-tappers), wood cutters.

Slaves: in Galle and Colombo, these were written down simply as 'slaves', while in Jaffna there were four types of slaves: *nalluas* (slaves), *pallas* ('buijten slaven'/ 'outside slaves'), *corias* (house slaves) and *heijdense slaven* (non-Christian slaves).

Fishers and hunters: *careas*, *moeckias*, and *timmulaes* (fishers), *baddas* and *pattangatty* (overseers of the fishers), *barimbas* (sailors), and *paravar* (pearlfishers); hunters, *badamas*, *marrigares*, *tammekares* and *pannikias* (elephant hunters) and *cornacx* (elephant riders).

Secondary sector:

7/8/9: Production and related workers, transport equipment operators and labourers:

Various artisans: butchers, carpenters, coppersmiths, masons, painters, potters, shoemakers, silversmiths, smiths, leather workers, lime burners, salt and arrack makers, and weavers.

Labourers: *coolies*, *olias*, *bailedoors* (sources note these 'were used for various services').

Tertiary sector:

0/1: Professional, technical and related workers: jurists, accountants (*borrewijs*), priests, teachers and *merinjos* (assistant teachers).

2: Administrative and managerial workers: *adigars*, *appuhamy*, *atta corle*, *mudaliyar*, *raalens*, *vidanes*, *reformadosse*, (all of these were headmen on various positions, high and low).

3: Clerical and related workers: *cannecappuls* (bookkeepers), writers and messengers.

⁹⁸⁶ Van Goor, *Jan Kompenie*, pp. 162-3.

4: Sales workers: *chetties* (trading-caste, from South Indian origin) and *moors* (Muslim traders from India).

5: Service workers: *tarumbas*, *hunnewas*, *maiynatos* (all of these are washers) and *pedias* (overseers of washers), barbers.

Military service: *mudaliyars* (officers), *arachies* and *canganes* (corporals), *lascarins* (soldiers), *tablinjeros* and *berrewaijs* (drummers) and horn blowers.

Unknown:

For Jaffna this includes people noted down as: cripples, beggars, and *toepasses* (Portuguese speaking peoples). For Colombo this includes: Mallabars, Bengals, Chinese, *toepasses*, and widows. For Galle this includes babies, widows, free Mallabars, pilgrims and those written down as ‘brothers and friends’ of other population groups. This is thus still a problematic group, as it includes both productive and unproductive peoples, while regarding the productive people it is unclear what they are doing.

Putting these in an occupational table, the following picture emerges:

TABLE A8.1: OCCUPATIONAL STRUCTURE CEYLON, 1684

Household heads	n	%
Farming	22538	29
Agricultural workers	11677	15
Slaves	11302	14
Fishers & hunters	6640	9
Total primary	52157	67
Artisans	5992	8
Labourers	3874	5
Total secondary	9866	13
Administration	3135	4
Military	6395	8
Professional	626	1
Clerical	355	0
Merchants	1974	3
Service	2192	3
Total tertiary	14677	19
Unknown	1394	2
Total	78094	100

Source: VOC 1396, ff. 602-612.

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