An inquiry into the nature, causes and distribution of wealth in the Cape Colony, 1652-1795

Een onderzoek naar de aard, oorzaken en verdeling van de rijkdom in de Kaapkolonie, 1652-1795

Proefschrift

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Johan Fourie

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Promotoren: Prof.dr. J.-L. van Zanden
Prof.dr. S.A. du Plessis

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"But man has almost constant occasion for the help of his brethren."[1]

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[1] Smith 1776, I.2.2

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Overview

"The discovery of America, and that of a passage to the East Indies by the Cape of Good Hope, are the two greatest and most important events recorded in the history of mankind."[2]

Adam Smith's assertion that the fifteenth century discoveries of new trade routes around Africa and to America would irrevocably change both hemispheres still rings true. Within these fragile global connections, products, people, diseases and ideas moved – first slowly, then more rapidly – between Europe and the territories of the Americas, Africa and Asia, beginning a process of interconnectedness that would later be called globalisation. While the impact of these connections on societies in Europe, Asia and America has received considerable scholarly attention, their impact on economic development in Africa remains underexamined. In fact, the colony in the Cape of Good Hope, settled in 1652 as a victualling station for Dutch East India Company ships, seems to have large escaped the attention of economic historians. This is unfortunate considering the unique circumstances of its founding, its economic structure, institutions, geography, and even more importantly, the available data. And with the greater significance of colonial settlements in recent debates about comparative global levels of development, human capital, institutional persistence and long-run inequality, the Dutch Cape Colony offers a laboratory of experiments for the economic historian to test the empirical support for such economic theories and hypotheses.

This dissertation is an attempt to answer three important questions about the Dutch Cape Colony: 1) how affluent were Cape settlers, 2) what were the causes of such wealth, and 3) how was the wealth distributed? Using a variety of statistical sources, most notably the detailed probate inventories and auction rolls kept and preserved by the Dutch East India Company and now digitised by Cape historians, and empirical techniques common in the field of economics, I find results that differ from the consensus view that the eighteenth century Cape was an economic backwater, a colony where pockets of wealth withered against a continuously expanding subsistence frontier region. The evidence instead points to an extremely wealthy settler society, with little evidence that these high levels deteriorated significantly even as the population increased rapidly. This dissertation's first contribution is therefore to offer a significantly different view about the economic past of South Africa's earliest European settler community.

These questions are not only relevant for scholars of South African economic history. To explain the divergent trajectories of global economic performance, social scientists have, over the last two decades, paid renewed attention to the causes and consequences of settler societies. Their hypotheses have been criticised for oversimplifying history (Austin, 2008), but they have begun to identify long-run causal determinants that shape development trends today (Acemoglu et al., 2001). The next step is to identify the mechanisms through which these past determinants influence today's outcomes, which could provide social scientists with a quasi-laboratory to test their economic theories and hypotheses (Nunn, 2009). The use of micro-data, such as the household-level data used here, can obviate the dangers of aggregation and enable a deeper investigation into these causal mechanisms of economic progress.

[2] Smith 1776, IV.7.166.

The second contribution of this dissertation is to offer new perspectives on the causes of growth within a settler society. Both demand and supply played important roles. The demand created by the ships travelling past Cape Town offered a captive market for Cape goods, akin to the Staples thesis proposed for Canadian exports by Harold Innes. On the supply side, I show that a colony's development trajectory is influenced not only by the location-specific factors of its settlement, as suggested by existing comparative development theories, but also by the settlers' regions of origin, which can influence the production function.

But, in the spirit of recent economic history literature, institutions matter too. The unique mercantilist institutions imposed by the Dutch East India Company – notably its insistence on reducing costs to ensure farmer viability in the face of the low, non-market prices of the Company – resulted in a highly skewed distribution of settler wealth. Settlers' investment incentives favoured slavery, which exacerbated the high levels of inequality in Cape society. The highly unequal distribution of wealth would have negative consequences for the Colony's long-run growth prospects. When the English first took possession of the Cape, in 1795, they inherited a prosperous but stagnant Cape economy; as Smith had warned, "of all the expedients that can well be contrived to stunt the natural growth of a new colony, that of an exclusive company is undoubtedly the most effectual".[3]

Chapter 1 provides an overview of these hypotheses and previous attempts to test them. It also introduces the Dutch Cape Colony and spells out the research question, primary data and method of analysis. Chapter 2 uses probate inventories and auction rolls to measure the average wealth of Cape settlers. Chapter 3 investigates the demand and supply-side, and institutional causes of the high levels of settler prosperity. Chapter 4 quantifies the distribution of wealth in Cape settler society and expounds the consequences of these results for long-run Cape economic development. Chapter 5 summarises and concludes.

[3] Smith 1776, IV.7.44.

Chapter 1 | Introduction

1.1 Research question

"A proof of the increasing wealth and revenue of the people..."[4]

This dissertation has three aims. First, I estimate a household-level measure of wealth for the Cape settlers. The stylised view of the Cape is of a poor, subsistence economy, with little progress in the first 143 years of Dutch rule. New evidence from probate inventory records shows that previous estimates of wealth in the Cape are inaccurate, as tax evasion resulted in underreported *opgaafrol* data. In contrast with earlier historical accounts, the results provide evidence of, on average, an affluent, market-integrated settler society. I also compare Cape household wealth with those of other colonies and territories, especially other newly settled societies, and find that, despite the constraints of the VOCs mercantilist system, Cape Colony households were relatively affluent. Furthermore, I estimate the size of the economy and compare a standardised measure of gross domestic product to estimates of per capita income elsewhere. Again, the Cape was a wealthy society, at least for those settlers of European descent.

Next, I attempt to explain this high level of prosperity. Demand-side and supply-side factors are determinants: On the demand-side, I use Innes' 'staples theory' to show that the Cape's unique geography acted as a catalyst for the 'export' of staple Cape produce to the large numbers of ships travelling between Europe and the East. Using methods from the business cycle literature, ship traffic is shown to have driven Cape agricultural production, at least for two staples, wheat and wine. On the supply-side, I show that the arrival of the French Huguenots in 1688, with a preference for viticulture, provides a unique natural experiment to highlight the role of settler-specific skills in the Cape, and augments the existing literature which tends to highlight location-specific variables in explaining divergent development trajectories.

Finally, I investigate the distribution of wealth by calculating three measures of inequality (using different data sources). This allows for the testing of existing theories of high and persistent inequality in newly settled, preindustrial societies. According to Engerman and Sokoloff (2002), a set of initial endowments (fertile climate and large native population) will give rise to high and persistent inequality. I argue that these initial conditions are not the only progenitors for inequality. Geography, but also other factors of production, including the settlers' skills (or human capital), and demand would influence the choice of commodity. The arrival of viticulturalists in the Cape, together with the large export demand for wine, and the mercantilist policies of the Company (which necessitated keeping the input costs of farmers to a minimum through slavery), ensured that the Engerman-Sokoloff conditions were satisfied, resulting in a rising elite and evolving institutions that secured the economic position of the elite, leading to severe and persistent inequality. Modern-day South African inequality still reflects this early development trajectory.

[4] Smith 1776, V.3.49

1.2 Pre-industrial roots

"The colony of a civilised nation … advances more rapidly to wealth and greatness than any other human society."[5]

The quest to understand the causes of economic progress, memorably discussed by Adam Smith, only intensified towards the end of the nineteenth and beginning of the twentieth century, as the evidence of sustained economic prosperity became apparent in the societies of North-Western Europe. Factors such as savings and capital accumulation, technological innovation and entrepreneurship, trade and the opening of new markets, and human capital formation have been upheld as primary explanations for development, and a large body of literature has attempted to explain the causes of England's Industrial Revolution, with little agreement even today.[6] In search of growth determinants, the early modern period has become a popular recourse, emphasising preindustrial growth as a catalyst for economic take-off.[7]

Investigations into this period, ranging over the sixteenth, seventeenth and eighteenth centuries, often lack adequate estimates of national accounts which are available for most of the nineteenth and twentieth centuries. Social scientists, therefore, have had to rely on alternative proxies for household income and wealth, often constructed from the lists of assets left by deceased individuals, known as probate inventories. The results from these investigations have lead to two propositions: Firstly, European growth before industrialisation might be attributed to the 'consumer revolution', a marked increase in market-related consumption which allowed essentially the middle classes and the poor access to inexpensive goods previously reserved for the elite; and secondly, greater demand for cheap commodities resulted in what De Vries (1994, , 2008) calls an "industrious revolution", the movement of labour – mostly women and children – from leisure and household activities to income-earning jobs.

A more nuanced interpretation of the 'consumer revolution' is evident in the recent literature (McCants, 2007, Ogilvie, 2010): a greater range of nonessential products that were acquired not only the by the elite but also by the middle classes, probably from the beginning of the seventeenth century. As Pomeranz (2000: 130) explains, the proliferation of objects in houses – "mirrors, clocks, furniture, framed pictures, china, silverware, linen, books, jewellery, and silk clothing, to name just a few items – all became increasingly 'necessary' signs of status for well-off Western Europeans." It was not only the accumulation of these assets that mattered, though. According to Pomeranz (2000: 130), it became "increasingly important that these goods be 'fashionable'", depreciating "culturally much faster than they decayed physically".

Secondly, the 'consumer revolution' also gave rise to the spread of "everyday luxuries" (Pomeranz, 2000) or "colonial groceries" (McCants, 2007) – such as sugar, tea, coffee and tobacco – that trickled down to even the poorest of subsistence labourers. Both trends were closely associated with De Vries's "industrious revolution": The middle classes, with their increased desire to acquire the new nonessentials, shifted their labour supply to the market, working longer hours to afford the new fashions. This altered consumption patterns, with an

[5] Smith 1776, IV.7.23.
[6] The closing debate at the 2009 World Economic History Congress in Utrecht, the Netherlands. between Joel Mokyr and Robert Allen is a case in point.
[7] See De Vries (2008).

out-of-home labour pool requiring on-the-job calories (and stimulants), thus creating a larger market for the 'popular luxuries' of sugar, tea, coffee and tobacco.

The 'consumer revolution' was especially true of Holland and England in the seventeenth and eighteenth century, but was not unique to it. Pomeranz (2000) notes the well-documented evidence of similar 'revolutions' before the seventeenth century, notably in urban centres of Renaissance Italy and the Spanish Golden Age. And even though few Chinese inventory records exist, Clunas (1991) shows that elite families in the Ming dynasty (1368-1644) increasingly acquired nonessential goods as status symbols, even well before Europeans did so. Conversely, Ogilvie (2010) shows that other European regions, notably Germany during the eighteenth century, were much slower in taking up such practices, reined in by the persistence of non-market institutions sanctioned by guilds, communities and state authorities. She argues that these non-market institutions may explain why many parts of central, Scandinavian, eastern and southern Europe experienced little growth during the seventeenth, eighteenth and nineteenth centuries, while the societies of the north Atlantic seaboard developed rapidly. Ogilvie (2010) argues that if the slow-growing societies also experienced an 'industrious revolution', then it would cast doubt on the connection between the industrious and Industrial Revolutions as suggested by De Vries (1994, 2008). However, if and where slow-growing economies did not experience an 'industrious revolution', the lack of growth in consumption must at least partially explain its underdevelopment vis-à-vis the early industrialisers (i.e. Holland and especially England). Measuring early consumption patterns may therefore act as a key indicator of future industrialisation, even though, as in the case of Italy, Spain and China, proof of such a 'consumer revolution' brought no assurance of future growth.

The search for a proto-industrial take-off has continued across the Atlantic, notably in the North American colonies, where the availability of detailed inventory records stimulated empirical research on the growth of consumption and wealth during the seventeenth and eighteenth centuries (Carr and Walsh, 1988, Walsh, 1983, Main, 1974, Main, 1983, Kulikoff, 1979, Jones, 1984). Although the United States emerged as an economic power during the nineteenth century, the roots of American prosperity lay in her colonial foundations. Understanding the comparative experiences of the Northern and Southern territories, for example, is one method for identifying the causal mechanisms that linked colonial prosperity to twentieth century affluence. These material histories of today's developed world have more recently been augmented by studies – most often also using probate inventories – of modern-day developing regions (Karababa, 2012). Such comparative work informs broader hypotheses that typically rely on problematic, aggregated data sources (Acemoglu et al., 2011, Albouy, 2008, Jerven, 2011). In this context, the Dutch Cape Colony, situated on the trade route between Western Europe and the East, offers a promising research environment.

Not only does the Cape Colony offer new perspectives on the process of proto-industrialisation in comparison to Europe and other settler colonies, but it also juxtaposes sub-Saharan Africa's only eighteenth century settler economy with the act of colonial expropriation on which this, like all other settler colonies, was based. An investigation of the investment and consumption patterns of Cape Colony settlers could offer a first comparison between the patterns of consumption, investment, growth and inequality in settler colonies for the eighteenth century. In addition, it also informs current theories of African development that is mostly based on coarse cross-country evidence. In their now famous contribution, Acemoglu, Johnson and

Robinson (2001), for example, divide the colonial experience in two: settler economies and non-settler economies. According to Austin (2008: 1021), this distinction is "stimulating but insufficient". He underlines the importance of "combining the cross-country comparative statics, econometric approach with contextually-specific micro studies". With its focus on the pre-industrial Cape Colony, the only eighteenth-century settler colony in sub-Saharan Africa, this dissertation aims to do exactly that.

1.3 Cape historiography

"The Cape of Good Hope is at present the most considerable colony which the Europeans have established in Africa."[8]

When employees of the Dutch East India Company (*Vereenigde Oost-Indische Companjie*, or VOC) first arrived in the Cape in April 1652 with the intention to settle, the purpose of their settlement was to establish a refreshment station in Table Bay to service passing ships sailing between North-Western Europe and the East Indies. To this end, Company officials and servants, sailors, and soldiers from across Western Europe constructed a small fort in Table Bay and promptly planted a vegetable garden, experimented with crop farming, and undertook trade expeditions to barter livestock from the native Khoe.[9] The supply of fuel and produce to cater to the demand from the ships was deemed inadequate, and in 1657, the commander of settlement, Jan van Riebeeck, released nine Company servants to become free burghers (hereafter, settlers), farming for private gain but subject to severe economic restrictions – farmers were only allowed to sell to the Company at prices set by it, manufacturing was prohibited, and a set of monopoly contracts (*pachts*) were imposed that permeated all sectors of the economy. Whereas Van Riebeeck had envisaged a European blueprint of small-scale agriculture, the Cape peninsula was soon covered by a handful of mostly pastoral farmers. This necessitated expansion into the interior, a process that would continue until the settlers met the isiXhosa approximately a century later at the Great Fish River.[10] Figure 1 projects this expansion of the Colony's borders on a modern map.

[8] Smith 1776, IV.7.186.

[9] The Khoe (Khoekhoe, or Khoikhoi) were a pastoral people, for whom cattle were the most valued assets. Another native group present at the Cape – the San – were a hunter-gatherer people, and offered less trade opportunities for the arriving Europeans.

[10] See Ross (2010) for an excellent recent overview of this process of conquest and expansion.

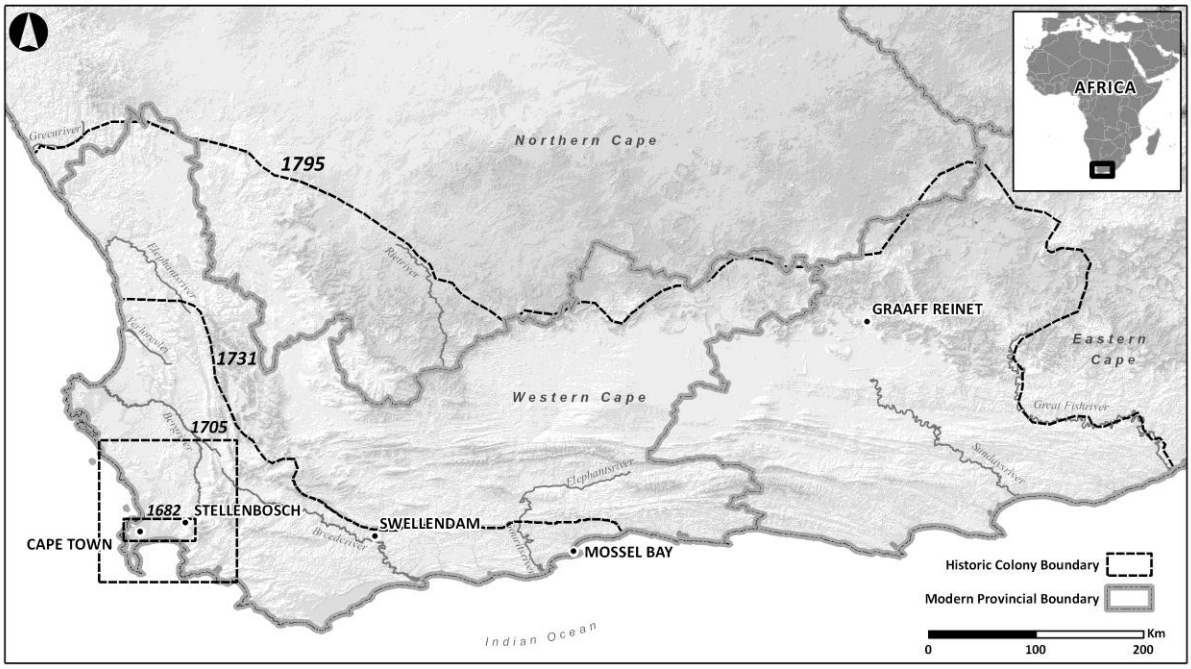

Figure 1: Map of the Cape Colony (1682, 1705, 1731, 1795) with modern-day boundaries
Source: Guelke (1980), own projections.

Cape Town was the hub of economic activity in the Colony. Farmers brought their produce to the Company fort (known as the Castle), which resold to the ships anchored in Table Bay. Other than replenishing supplies, the ships, stationed in Table Bay for an average of 27 days[11], used the services offered by a number of traders, transporters, ship builders and general retailers working in the small town. In a survey of occupations undertaken by Governor La Fontaine in 1732, more than 60% of the population of Cape Town was active in secondary and tertiary industries. In fact, most villagers were, if not directly, then indirectly linked to the passing ships: Schutte (1980: 189), for example, notes that "… according to seamen, nearly every house in Cape Town was a public house or inn".

The fertile land to the immediate east of Cape Town (but west of the first mountain ranges) was fully settled by the turn of the eighteenth century. This area included Stellenbosch, founded in 1679, and Drakenstein, in 1685. While crop and stock farming were first adopted by the settlers, viticulture became an important industry after 1702, as production moved away from Company officials, notably Willem Adriaan van der Stel at Vergelegen, to the settlers. The early settlers in these regions were granted freehold land of 60 *morgen* (about 50 hectares) per farm, with the Dutch system of inheritance dividing land equally between the spouse and children (see, for example, Dooling (2007: 30-31)).

After 1713, when the right was granted to cultivate wheat on the loan farms which had been granted a decade earlier, the first settlers began to settle beyond the first mountain ranges. Settlers responded to the inexpensive land and low levels of resistance from the indigenous groups (who suffered large losses from several smallpox epidemics) which created a system of family farms, with high settler fertility rates pushing the boundaries first north then east until the settlers met up with the isiXhosa late in the eighteenth century (Newton-King, 1999). As

[11] See Chapter 3 for a full discussion of this calculation.

Domar (1970) had argued for sixteenth century Russia, because of the availability of land, European labour was relatively expensive, and alternative forms of labour was used in the forms of imported slaves and indentured Khoe servants. By 1795, the year the VOC relinquished power of its Cape station to the British, the Cape Colony extended over a vast territory from Table Bay in the west, north to the Green River and east to the Great Fish River, covering an area of almost 110000 square miles, with a population of around 50000.

This population consisted of mainly four groups: the settlers, VOC officials and personnel, indentured Khoesan, and slaves. The settlers were mostly former sailors and soldiers who requested to remain in the Cape after their contracts had terminated. They were from the poorer parts of Europe, notably Germany after the end of the Thirty Years War, and most brought little physical or human capital with them. The Company, through generous loans, often provided the initial capital for seeds and farm equipment, and farmers also borrowed extensively from one another.

A characteristic of settler colonies in the Cape and elsewhere was the high fertility rate reached and maintained throughout the seventeenth and eighteenth centuries. Even after European immigration to the Cape was discouraged in 1717, the settler community continued to increase, expanding the territory under Company influence. This northward and eastward movement brought the settlers into direct contact with the Khoesan, a collective term for the pastoral Khoe and hunter-gatherer San. Smallpox epidemics, particularly in 1713, which also killed a number of settlers, ravaged the Khoesan communities and reduced the cost of acquiring new territories for the Europeans. As the Khoesan relinquished their territory to the settlers, they gradually became part of the colonial economy. The Company did not allow indigenous tribes to be appropriated for slaves – mostly because this made trade difficult and retaliation a reality – but the Khoesan, with little alternatives open to them, accepted labour on settler farms or often as herdsman in the interior, as the farmers keen to attract labour with knowledge of the veld. Only towards the middle of the century would the Khoesan be lured onto farms to supplement the predominant eighteenth century labour, slavery.

The Cape was a slave society, and for most of the eighteenth century, slaves outnumbered the free Cape population. The first slaves were imported from Angola in 1658, although it was only at the end of the seventeenth century that slave imports became the preferred labour type for settler farmers. Slaves arrived through the Dutch network in the East Indies, primarily from four main destinations: the Indonesian archipelago, India (and Ceylon), Madagascar (and Mauritius) and Mozambique. Slaves permeated Cape society; of those settlers who left probate inventories, 65% owned at least one slave[12], mostly concentrated on the wheat and wine farms close to Cape Town.

[12] Using information contained in the probate inventories, the average household at the Cape owned five slaves. When only slave-owning household are counted, this increases to 7. Using the *opgaafrolle*, only 42% of households owned slaves. The discrepancy in numbers arises from the different definitions of a household. When considering only slave-owning households in the *opgaafrolle*, the average number of slave are nearly exactly the same as those in the probate inventories. See Chapter 2 for a full discussion.

The historical literature divides the eighteenth-century Cape Colony into three parts: Cape Town[13], the fertile area west of the first mountain ranges, and the interior, frontier territory (Giliomee, 2003). Cape Town was considered the economic hub of the Colony, where nearly all trade and most of the secondary and tertiary activities occurred (Schutte, 1980). While the fertile area, settled roughly by 1710, was used for crop farming, especially wheat and vines, stock farming prevailed in the interior as the borders of the Colony expanded east. The geography of settlement closely mirrored estimates of individual wealth in the Cape. Mentzel, a German immigrant living in Cape Town in the 1730s, divided Cape society into four parts (Mentzel, 2008): the affluent city dwellers in Cape Town, who often possessed farms in the country; the landed gentry, who owned large farms and lived opulently; the hard-working cultivators, who owned few slaves (and who probably fulfilled their labour requirements themselves); and the poor, pastoral farmers of the interior. Given that the latter two groups comprised the majority of Cape settlers, it is no surprise that for most of the twentieth century, the Dutch Cape Colony was seen as an "economic and social backwater", "more of a static than a progressing community", a slave-based subsistence economy that "advanced with almost extreme slowness" (respectively, Trapido, 1990, De Kock, 1924: 24, 40). While close to Cape Town, pockets of wealth emerged during the eighteenth century (Guelke and Shell, 1983), this relative affluence was overshadowed by the increasing poverty of the frontier farmer who, "living for the most part in isolated homesteads, gained a scanty subsistence by the pastoral industry and hunting" (De Kock, 1924: 40). And, in the most recent Economic History of South Africa, Feinstein (2005) concludes that before the 1870s, "markets were small, conditions difficult and progress slow".

Qualitative sources provide further evidence of the high levels of poverty and inequality in the Colony. The poverty of the early farmers – the church often collected money to give to needy farmers whose "naked kids were sleeping in the hay with horses and cattle" (Coetzee, 1942: 41) – is juxtaposed against the affluence of the wealthy elite. Giliomee calculates that the gentry, measured as those who owned more than sixteen slaves, totalled seven per cent of the rural population in 1731 (Giliomee, 2003: 30). Wealth among a cohort of rural Cape farmers increased throughout the early part of the eighteenth century (Guelke and Shell, 1983, Terreblanche, 2002: 156). In 1755, the Governor and his council issued a *plakkaat* (ordinance, known as the sumptuary law) with a view to "limiting the number of horses, carriages, jewels, slaves, etc., which an individual of this or that rank might possess" (Giliomee, 2003: 30). Although similar ordinances had been issued earlier, the High Government in Batavia noted in the preamble to the 1755 ordinance that the "splendour and pomp among various Company servants and burghers … reached such a peak of scandal" that the issue had to be dealt with more seriously (Ross, 1999: 9). This sumptuary law was concerned with the display which was allowed on the horses, carriages and guides, and the number of horses used. Gold and silver, for example, were only allowed for the carriages of the Governor of the Cape and his wife's and their children's sedan chairs. The *Fiscaal* (or chief law officer), together with the governor, were the only two individuals who were allowed to decorate their carriages with their coats of arms or other personal emblems (Ross, 1999: 10). Visitors also noted the expensive taste of some

[13] Cape Town, naturally, was the seat of wealth at the Cape, being the centre of VOC activities and the only outlet for the settlers' goods. Given the limitations of the data, most of this dissertation, as with earlier studies, will be concerned with the wealth and incomes of the free farmers, i.e. those settlers residing outside Cape Town. The reasons for this are outlined in the discussions of the different data sources and within each chapter.

farmers. In 1783, a traveller to the region wrote that on several farms he had observed "nothing except signs of affluence and prosperity, to the extent that, in addition to splendours and magnificence in clothes and carriages, the houses are filled with elegant furniture and the tables decked with silverware and served by tidily clothed slaves" (Naudé, 1950).

The prosperity of the elite stands in sharp contrast to the stereotypical representation of the difficult life on the frontier. Travel journals document the abject poverty of many frontier families, often living in tents and wagons. Woeke, the first colonial official of Graaff-Reinet, described his living quarters as "a hut … without door or glass windows, where the wind continuously blows dust inside" (Müller, 1980: 26). Carl Peter Thunberg, a Swedish botanist in the interior during the 1770s, noted the use of tanned animal skins for ropes, bags and blankets, and even as clothes for the extremely poor (Thunberg, 1986: 52).

These accounts are augmented by recent investigations into Cape Colony material culture (Worden, 2010), buttressed by the availability of digitised records and the increasing use of inter-disciplinary methodologies (Mitchell and Groenewald, 2010). In her review of *Contingent Lives: Social Identity and Material Culture in the VOC world*, a recent collection of 31 essays edited by Cape historian Nigel Worden (2007), Ulrich (2010: 580) refers to several essays within the collection that examine the consumer and material culture of Cape citizens. The emphasis seems to be on the micro-histories of the middling and upper classes – "a corrective to the fixation of social historians on the disenfranchised and dispossessed" – which tends to "focus on the particularities of the colonial context". Ross, for example, investigates how VOC officials used sumptuary laws to maintain supremacy over the increasingly affluent settlers. Yet, his and other micro-histories included in the volume do not provide convincing evidence to identify the average level of consumption or wealth; in particular, none of these studies aim to compare the wealth of the various groups in the Cape with those of other regions. Ulrich (2010:580), in her critique of the volume, remarks that an "examination of commodities used in everyday life may provide a more balanced view" of Cape standards of living. Unfortunately, none of the contributions in the volume put forward such a macro perspective.

In addition to Worden (2007), several recent books have been linked to debates within consumption studies and material culture. Brink (2008) use architecture to shed light on the material culture of the Cape settler. She argues that the settlers, most of them from the lower ranks of Dutch society, created a new, gentrified identity in the Cape, symbolised by their land ownership, architecture and the material goods in their possession. Hall (2000: 107), for example, points to the building of Cape Dutch gables as "the product of a class of peasants-made-good, who were taking old European approaches to gentry architecture and twisting them into a new aesthetic strand". Such qualitative evidence supports the notion that a section of Cape society prospered, but fails to generalise this affluence to the entire settler community.

With few exceptions, Cape colonial data fails to report any measure of material culture for groups other than settlers within the Colony. While Malan (1998/99:66) documents the livelihoods of "freeblack" women in the Cape, concluding that "there were no significant differences in material culture between households of any free persons of property in the early 18th century Cape, except those associated with family composition, wealth or occupation", little is known about the material culture of the native Khoi, San and Xhosa who shared the Cape with the settlers. One alternative source of information on these groups comes from Huigen (2009),

who analyses the work of eighteenth-century travellers in the Cape Colony. Huigen (2009: 239) argues that Cape travellers often provide scientific assessments of the living standards of the indigenous populations and are not merely "trailblazers of the colonial regime", paving the way for European colonisation. Aside from their botanical and zoological contributions, Huigen (2009) highlights the travellers' ethnographic accounts of the various Cape Colony groups. These descriptions provide fractional evidence of living standards – and the colonial impact on it – of the groups not captured in probate inventories and other records. While informative, the qualitative evidence provided by the travellers is not sufficient to be combined with the detailed quantitative information on settler communities (as provided by probate inventories). Any comparisons of material culture can therefore be made only across different settler communities (which would include any person who was part of the VOC world, including free Blacks, but excluding the indigenous groups). This is a notable limitation of this and all other such colonial comparisons.

Few of the early Cape historians use probate inventories as a primary source to provide a macro perspective of Cape Colony development. Aside from Worden (1985), who investigates the changes in slave prices over the course of the eighteenth century, genealogical research is often the main outlet for such micro-data (Schoeman, 2010, Malan, 1997). Mitchell (2008) offers a captivating narrative of a frontier farmer's auction, bringing race, class and generational dynamics into relief. She provides a prosopography of the Lubbe family, and describes the events of the 7 and 8 November 1785 in detail: the buyers of Barend Lubbe's belongings, the social interactions, the mood. Mitchell (2008) concludes that auctions were a place of circulation in both the narrow and wider orbit: they brought families together again, redistributing assets and re-establishing connections. In the wider orbit, settlers travelled to the frontier from afar, some even from Cape Town, which serves to "underscore the public, market-oriented nature of the event" (Mitchell 2008: 7, 43).

Fortunately, the digitisation and online dissemination of the Cape probate inventories and auction rolls have allowed access to a wider research audience. Randle (2011) is one of the first to investigate Cape material culture using a compilation of digitised probate records. Analysing the auctions of three elite, female-headed households in 1727, 1729 and 1734, Randle (2011) examines the "apparent connection between group identities and the material goods they publicly purchased". She questions whether, given the prohibitions on foreign trade and domestic manufacturing, the Cape was any less a "modern society" compared with England, finding that modernity might "not have been defined so much by the use of 'new' consumables but rather by access to the wealth needed to purchase the most luxurious of second-hand goods." Randle (2011), therefore, argues that auctions presented opportunities for people at all levels of society, even those at "the lowest levels of society", to enhance their status by acquiring luxury goods. The emphasis in Randle's work, though, is on the settlers' quest to improve their social status and identity, with little focus on the *extent* and *diversity* of household items or the *ability* of buyers to afford them. While improving their social status may have been of concern to even the poorest members of society, their *ability to acquire such a wide and increasing variety of goods* is of greater interest, as it may reflect a society in the midst of a consumer revolution and one that achieved, in comparison to other regions, a remarkably high standard of living.

Unfortunately, historians have exerted less effort on quantifying the average wealth of Cape settlers. Guelke and Shell (1983) were the first to use the *opgaafrolle*, annual censuses

administered by the Company, at an aggregated level to compare the production of the Cape Colony between 1705 and 1731, although with the aim of highlighting the rise of a colonial gentry. It is however Van Duin and Ross (1987) that first estimated production figures for the Cape Colony over the entire period for which censuses were administered (1673-1795). An index of the five key agricultural outputs – vines, wine, wheat reaped, cattle and sheep – as calculated by Van Duin and Ross (1987) are reported in Figure 2.

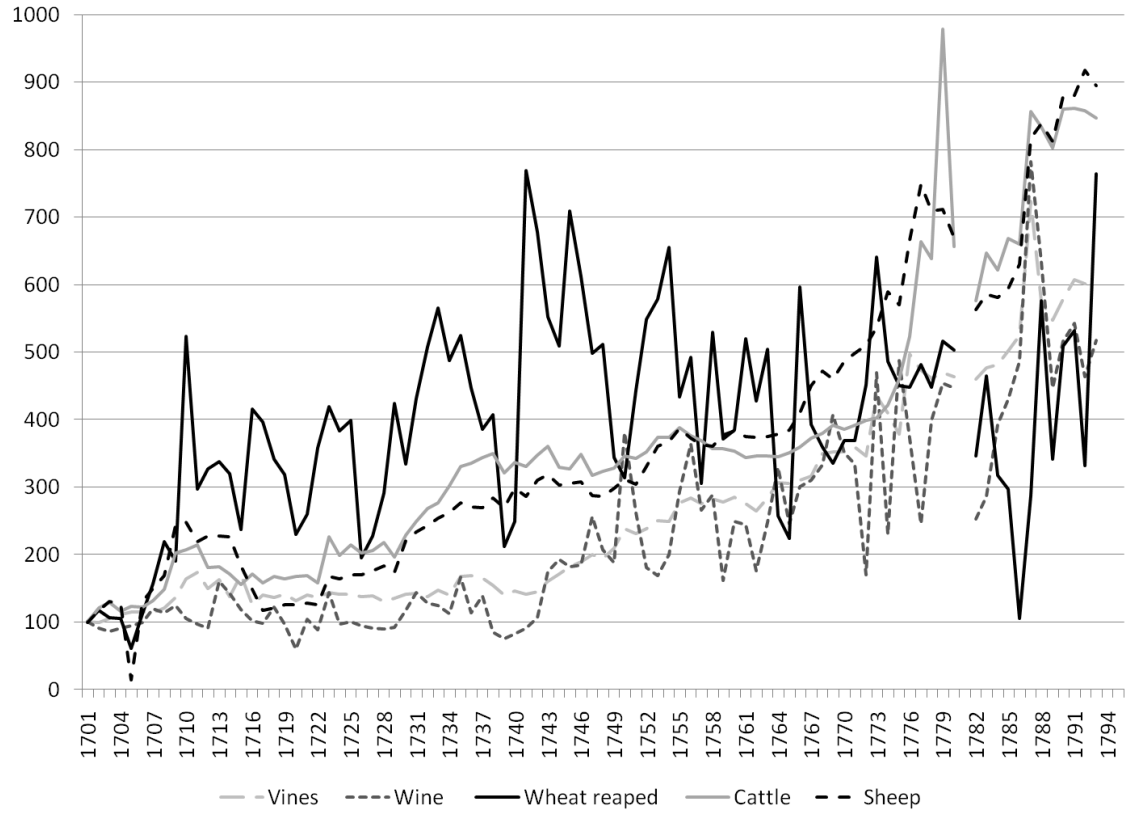

Figure 2: An index of agricultural production indicators in the Cape Colony, 1701-1795
Source: Van Duin and Ross (1987); own calculations. Notes: 1781 data not available.

These trends reflect relatively slow progress in crop farming in the Colony over the first forty years of the eighteenth century. Vines and wine production, especially, made little progress between 1700 and 1743. According to the Van Duin and Ross (1987) figures, population growth (not shown), notably that of slave numbers, was consistently higher than agricultural output growth, which suggests a similar picture to that etched by the earlier historians of a stagnant Colony, perhaps even in decline. As the slave population increased rapidly, "the slow pace at which the settlers increased both their activity and their numbers", as Feinstein (2005: 22) puts it, would lead to per capita economic stagnation.

Van Duin and Ross (1987) are not convinced that the *opgaaf* figures reflect the true level of Cape Colony production.[14] They argue that significant undercounting of assets occurred in the rural Cape.[15] Taxes were levied on ownership and production and thus created a strong incentive for

[14] In some cases, such as vines, cattle and population numbers, the figures are of course stock variables rather than flow variables, as in the case of wheat sown and reaped.
[15] A more complete discussion of this data is provided in Appendix 6.3.

farmers to underreport. To incorporate possible undercounting, Van Duin and Ross (1987) inflate the agricultural indicators through a multiplier, derived from evidence on consumption in the Cape Colony. Brunt (2008), using new techniques, further adjusts these estimates upwards. He concludes that the annual growth rate of output in the period of Dutch rule – in his case, 1701-1794 – was 1.9 per cent. Given that the growth rate of the European population over the same period was 2.5%, yielding a per capita growth rate of negative 0.6%, there is still little indication that the Cape Colony could boast – at least during the eighteenth century – a thriving economy.[16] In fact, these estimates portray what earlier historians were convinced of: that the Cape economy was stagnant, expanding at its edges through nothing more than the high fertility rate and relatively free availability of land.

These aggregated figures (of agricultural produce) may conceal important shifts in the nature of economic life in Cape society. Except for the inclusion of slaves and weapons, agricultural indicators dominate the censuses. Historians, therefore, have had little option but to base their estimates of economic growth on the growth of agriculture production. Both Van Duin and Ross (1987) and Brunt (2008) correct for undercounting in the census figures by calculating an estimate of consumption in the Cape Colony, and then equating production to consumption.[17] Where production was below consumption, they argue for an increase in the multiplier used to adjust the production levels.

Van Duin and Ross (1987) and Brunt (2008) consider only agricultural indicators, and primarily wheat, when estimating total consumption. Consumption, today and then, consists of much more than perishable food, and should include durable, semi-durable and other non-durable goods. To equate consumption of wheat with production of wheat is correct if the object is to determine total production of wheat in the Cape Colony. Yet both authors use the adjusted production estimates of wheat (and other agricultural products) to determine total production in the Cape, i.e. a rough measure of gross domestic product. From this, they argued that the Cape during the eighteenth century was more dynamic than previously suggested (as in the case of Van Duin and Ross), even if still relatively slow-growing (as in the case of Brunt), although both do not consider per capita growth (which turn their growth rates negative, as noted above).

The exclusion of non-food consumption is problematic. While little is known about the secondary and tertiary sectors in the Cape – except the well-documented policies that manufacturing was strongly prohibited by the mercantilist Company (De Kock, 1924, Groenewald, 2007) – a few idiosyncratic statistical records suggest that these sectors may have been consequential. One such source is a survey conducted by the Governor of the Cape Colony, J.M. la Fontaine, in 1732. A summary of the survey, which identifies the occupations of all free citizens in the Cape, is provided in Table 1. In the final row, the total number of survey candidates is compared with the total population as suggested by an alternative source. This indicates that the survey, in fact, covered the entire population (or, rather, the total number of European and free Black people in the Cape Colony). While crop and stock farming was the dominant activity in the Drakenstein area, secondary and tertiary activities were quite prevalent, especially in and around Cape Town. From a sample of 416 individuals, Cape Town

[16] If the 3.1% growth rate of slaves is included, the per capita growth rate in the Colony falls to -1.0%.
[17] Brunt (2008) offers a critical evaluation of the adjustments by Van Duin and Ross (1987) and suggests larger multipliers. However, he finds that growth took off only after the arrival of the British at the Cape and that the establishment of property rights underpins this growth episode.

housed 26 inn-keepers, which can be ascribed to the large demand from ships' crew after months at sea (see Chapter 3.1).[18] More than 21% of all respondents reported working in production (bakers, brewers, millers and artisans), while more than 15% provided services in and around Cape Town (including barbers, teachers, nurses, wine traders and more). Where measures of wealth are based on the *opgaafrolle*, these trades are obviously not accounted for.

Table 1: Job types in the Cape Colony by district, 1732

Economic sector	Cape Town		Stellenbosch		Drakenstein	
	Number	*Proportion*	*Number*	*Proportion*	*Number*	*Proportion*
Primary	70	16.83%	48	34.04%	193	67.01%
Production	97	23.32%	12	8.51%	5	1.74%
Services	83	19.95%	9	6.38%	1	0.35%
Uncertain	166	39.90%	72	51.06%	88	30.56%
Total population according to this survey	416	100.00%	141	100.00%	287	100.00%
Total population according to Van Duin and Ross (1987)	397		145		284	

Source: Schutte (1980: 189); own calculations.

Secondary and tertiary production seems less frequent in the countryside, where crop and stock farming dominated production. In Drakenstein (which at that stage included all the farmers in the interior), only one butcher and one teacher were to be found, together with 193 crop and stock farmers. Based on such intermittent evidence, production in Cape Town may have been much more diverse than is suggested by the *opgaafrolle*. Conversely, the censuses seem accurate in their account of production in the rural areas, where agriculture was the most important activity.

Whereas the combination of crop and stock farming may have been the most important livelihood in the interior (Van der Merwe, 1938), it certainly was not these famers' only productive activity. In the absence of official documents, travel accounts often act as an essential source of information on the consumption and production decisions of these farmers. Thus, I find Mentzel (2008) observing economic life in the 1730s: "The inhabitants and free burghers derive their living principally from grain growing, vegetable gardening and viticulture. Besides, all of them either engage in trades, for instance as blacksmiths, wagon builders, tailors, bootmakers, carpenters and thatchers, or they keep a general dealer's and wine shop". Subsistence farmers – which, due to their distance from goods and factor markets, the frontier farmers in the Cape are often ascribed to as having been – by definition diversify their production. Apart from raising cattle and sheep, these farmers significantly added to their own consumption and marketable goods by living off the rich environmental resources at their disposal. Some products could arguably not be self-produced: weapons, ammunition, coffee, sugar, finer textiles and tobacco, for which they travelled to Cape Town to trade. In return, they offered meat and wool but also other agricultural by-products: butter, aloe, ivory, skins and tallow. The focus on agricultural indicators in the *opgaafrolle*, notably in Cape Town but also the outlying areas, may underestimate the nature and size of Cape household consumption.

[18] Given the total settler population of 1317 (most of whom lived in the interior) and the 1016 Company officials stationed at the Cape, one inn served on average 90 people.

Most recently, Du Plessis and Du Plessis (2012) and De Zwart (2011) have echoed the Van Duin and Ross (1987) hypothesis that the average Cape settler was more affluent than previously thought. Both study eighteenth century prices to show that Cape wages, in contrast with England and Holland, were increasing, so that Cape wage earners become more affluent over time. Du Plessis and Du Plessis (2012) show that, already at the start of the eighteenth century, Cape society was highly stratified, with some wage earners obtaining comparatively high standards of living. In contrast, De Zwart (2011) notes that this was growth off a low base: at the start of the century, Cape wages were only slightly above subsistence levels, while at its end they rivalled those of England and Holland, the richest countries at the time. Both studies, however, use Cape wages paid to VOC employees in their analysis; it is not clear whether these wages were set in Cape Town or Amsterdam, where employees of the Company were recruited, or whether they, in fact, they mirrored market wages in the Colony. In addition, the Cape was a settler and slave society, with very low numbers of wage labourers. The extent to which an investigation of wage labour in the Cape can accurately portray average household income is not clear.

The traditional historiography that viewed the Cape as a poor and backward economy was based entirely on qualitative evidence, which included letters from farmers describing their own impoverished situation and traveller accounts noting the abject poverty of some frontier farmers, or small sample sizes. Even those that ascribe to a more 'optimistic' view of the Cape – using newly digitised records – cannot convincingly show that the average Cape settler was affluent, or that wealth increased over the course of the eighteenth century. Van Duin and Ross point out that "it has been too commonly assumed that the farmers' own complaints on their poverty and on the absence of markets reflected economic reality". While informative, these grievances do not provide a balanced view of the wealth of the average Cape settler. Van Duin and Ross conclude: "The Cape farmers, like all entrepreneurs at all times, did not believe that they were operating in the best possible economic climate. But, in the circumstances within which they did have to act, as a body they found reason to expand and opportunity to flourish."

The view of the Cape as an economic backwater is challenged in Chapter 2. Using a large sample of Cape probate inventories and other data sources, estimates for Cape settler household wealth and income are calculated and compared with those of North-Western Europe and the colonial societies of North America. What emerges is an affluent settler society, even in comparison with some of the most affluent eighteenth century regions.

1.4 Growth determinants

Chapter 3 begins to investigate the causes of this relative prosperity. In search of the determinants of comparative economic performance, colonial societies have recently attracted considerable attention. Four seminal papers, in particular, link the past to current performance through institutional[19] persistance.[20]

[19] Institutions are defined here in the new institutional economics tradition, as 'rules of the game', consisting of formal rules (laws, etc.) and informal laws (social norms, etc.) that govern individual behaviour and structure social interaction (see North, 1990).

Engerman and Sokoloff (2002, 2011) posit that initial factor endowments (such as climate, soil and labour availability) influence a society's early level of inequality, which determines the type of political and economic institutions adopted. Severe inequality results in growth-debilitating institutions that preserve the ruling elite's hegemony by way of a narrow franchise, restricted property rights and poor access to education.[21] According to Engerman and Sokoloff, the political institutions created immediately after settlement in colonial societies persist to the present, driven by the level of inequality in the colonial setting.

Rather than emphasising climatic and soil conditions, Acemoglu, Johnson and Robinson (2001) posit that the links between the past and present can be found in the disease environment of the colonies where Europeans settled or attempted to do so. They argue that two types of colonial strategies were adopted: a favourable disease environment (low incidence of malaria, mostly in temperate areas) yielded low settler mortality rates and consequently the adoption of institutions conducive to economic growth (such as the protection of property rights for a large and expanding settler population). A poor disease environment (high incidence of malaria) resulted in high rates of settler mortality, which caused the adoption of extractive institutions (such as power concentrated in the hands of a small elite). The US, Canada and Australia are examples of the former, while extractive institutions were mostly limited to the tropical countries of Congo, Ghana, Peru and Mexico. Moreover, Acemoglu et al. (2001) argue that these institutions remained after independence, influencing modern-day development levels. Easterly and Levine (2003) also show that measures of geography explain cross-country differences in income today only through their impact on institutions.

La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997, 1998, 2008) posit that the legal institutions in the settlers' origin countries explain cross-country variation in the welfare of the colonies where they settled. These legal institutions include the laws pertaining to, in part, investor protection, the quality of their implementation, and ownership concentration. While not without criticism (Klerman and Mahoney, 2007), La Porta et al. do offer, in contrast to Engerman and Sokoloff, and AJR, a mechanism through which settler characteristics influence the trajectory of colonial development.

Most recently, Putterman and Weil (2010) show empirically that correlations between historical (year 1500) and current (year 2000) country-level economic performance measures improve significantly once settler migration between countries is accounted for. They construct a data set of the year-1500 origins of the current population of each country, which is used to convert historical cross-country measures into measures that instead capture the historical performance of the ancestors of the people who now live in each country. For example, whereas the technologies available to South Africa in the year 1500 would have reflected those available to the Khoesan and various Bantu tribes present in the region, the ancestry-adjusted technological variable (in addition to the Khoesan and Bantu technologies) includes technologies used by the Dutch, French, German, British, Indian and Indonesian settlers, slaves and servants that migrated to South Africa in the intervening 500 years. The ancestry-adjusted

[20] Whether these persistent links are, in fact, what economic historians *should* explain is a matter for debate. Van Zanden (2012) argues that the emphasis, rather, should be on trying to explain why societies are different – what gives societies, or individuals in those societies, agency.
[21] A more detailed explanation of the E-S hypothesis is found below.

measures have higher explanatory power than the unadjusted indicators, which Putterman and Weil (2010) argue is proof of the importance of how country-of-origin settler differences matter for economic performance today. Their ancestry adjustments improve the explanatory power of both geographic and institutional variables, but mask the true determinants through which settler characteristics influence later economic performance: Their empirical results, for example, predict both a positive and large role for a variable measuring government structure (called state history, an institutional variable) and the rise of agriculture (a geographic variable), providing no hint as to the underlying mechanisms at play. They acknowledge this shortcoming: "(O)ne would want to know the specific channel through which this affect flows. For the most part, I consider this an issue for future research" (Putterman and Weil, 2010: 1652).

While the four seminal papers prove that "institutions matter", Nunn (2009) calls for a deeper investigation into the exact causal mechanisms or channels through which early institutions affect later outcomes. For Engerman and Sokoloff, and Acemoglu, Johnson and Robinson, environmental conditions in the destination country affect the development trajectory of that region. For La Porta et al. and Putterman and Weil, country-of-origin factors do play a role, but the exact mechanisms by which these factors play a role is unclear.

In the search for causal mechanisms, several origin country characteristics, such as property rights (Banerjee and Iyer, 2005), legal systems (La Porta, Lopez-de-Silanes and Shleifer, 2008), technology (Comin, Easterly and Gong, 2010) and culture (Nunn, 2012) have been proposed as explanations for the variation in the destination country. But it is, or should be, evident that one mechanism through which historical linkages influence modern development outcomes is human capital. Education seems to be a particularly persuasive argument, also drawing support from the new growth theory (Lucas, 1988, Romer, 1990, Becker, 1993, Romer, 1994). Glaeser, La Porta, Lopez-de-Silanes and Shleifer (2004) point out that "human capital is a more basic source of growth than are the institutions". And in a detailed review of the empirical literature, Hanushek and Woesmann (2008) find that the relationship between education, notably the quality of education, and earnings is remarkably robust. They insist that the relationship cannot be "explained away by a set of plausible alternative hypotheses about other forces or mechanisms that might lie behind the relationship". Easterly and Levine (2012: 1) find 'some evidence' for an institutional channel, their results 'are most consistent with human capital playing a central role in the way that colonial European settlement affects development today'.

The human capital of settlers has largely been neglected in the institutional literature. In fact, the seminal contributions discussed above nearly all reflect on the destination-country-specific conditions that the settlers experienced on arrival to explain why certain regions developed growth-inducing versus growth-inhibiting institutions. The reason for this is no secret: Separating the institutional and human capital determinants of development is problematic. The two indicators are seldom exogenous and nearly always collinear. What is needed, then, is a natural experiment, where one of the two variables is held constant, with variation in the second. Chapter 3.2 undertakes such an experiment: it shows that the Huguenots who arrived in the Cape Colony in 1688/89 possessed uniquely different skills than the incumbent farmers, which allowed them to become more productive winemakers. The results point to strong evidence that settler capabilities – specific skills acquired in the land of origin – matter in

colonial development and should be considered an important determinant of colonial development.

The development of viticulture was not only a supply-side phenomenon; the Cape of Good Hope trade route between Europe and the East Indies brought a steady demand for fresh produce, and alcohol, to Table Bay. While volumes have been written on the impact of the Cape route on trade between Europe and the East (De Vries, 2003, Shiue and Keller, 2007), there is as yet little understanding of the economic impact of the trade route on the development of markets in Southern Africa. The Cape was not considered an important trade destination in itself. The settlement was founded with the sole purpose of providing passing Dutch ships with fresh water, food and fuel (Ward, 2007). The historical literature suggests that the Cape exported relatively few goods to European markets (apart from small quantities of ivory and aloe amongst others); most of its exports of wine, brandy and wheat were of poor quality and sent to markets in the East (De Kock, 1924, Van Duin and Ross, 1987).

In fact, three important demand-generating impacts can be identified. First, ships visited Cape Town to acquire local resources for their journey ahead, notably food, fuel and water. Because of its strategic location in a world with high transport costs, only the Cape could provide the passing ships with fresh goods for their journeys ahead. Second, while minor, some goods, especially wheat, wine and brandy, were exported to markets mostly in the East. Because of the prohibitions on industrial activity, nearly all manufactures were also imported. Third, the Cape provided services to the roughly 10000 soldiers and sailors visiting the Colony each year. In fact, the Cape offered health and travel services on a massive scale. It is the latter that may prove to be of great significance in explaining the large demand for Cape produce.

Given the low number of exported products, the Cape Colony does not fit the conventional "staple thesis" popularised by Harold Innis, who explained Canadian economic development as a result of its large exports of staple products to Europe, notably fish, fur, lumber and various agricultural products (Innis, 1956). Because of its close proximity and relatively low transport costs, Europe offered a captive market for Canadian goods. While the Cape could not profitably compete for the lucrative European market, it did enjoy a captive market of European ships. The three types of demand for Cape goods, and in particular the services offered to tired and ill sailors arriving in Table Bay after three months at sea, provided a ready market for Cape farmers, even if the monopsonist Company intervened to skim economic profits.

While early historians acknowledged the important role of ship traffic in the Cape economy, Van Duin and Ross (1987) offer the large *local* demand for Cape produce as reason for its "dynamic" character. Using techniques borrowed from the business cycle literature, Chapter 3.1 shows that ship traffic had a causal impact on agricultural production in the Cape, notably the production of wheat and wine. The demand for wine, boosted by the arrival of the Huguenots with wine-making skills, contributed to an affluent eighteenth century settler society.

The demand from ships for Cape produce, notably wine, and the arrival of French Huguenots with skills in viticulture, combined to act as catalyst for the expansion of the wine-industry. But producing wine required a large pool of labour which was not available at the Cape. The Cape did not have a large pool of wage labourers, as described in Chapter 3, and consequently resorted to importing Indian Ocean slave labour.

As the probate inventories show, slaves became the most important asset owned by settler households, amounting to 24% of the value of total movable household assets. Chapter 3.3 explains why slave labour offered settlers economies of scale and scope that could not be provided by investments in alternative forms of capital. The probate inventories reveal evidence of diversification on farms, with some – arguably elite farmers – establishing enterprises that primarily added value to agriculture, such as carpentry, iron working and wagon-making.

There is strong evidence to suggest that slavery significantly reduced input costs and allowed (some) farmers to earn large surpluses. Such low labour costs would also, a century or more later, result in the high profits of the diamond and gold mining companies in the Orange Free State and Transvaal mines (Feinstein, 2005). But while slave or indentured labour contributed to high levels of settler (and South African) prosperity, it is not clear that the choice for slavery had, relative to a no-slavery counterfactual, positive consequences for long-run growth. In the spirit of Engerman and Sokoloff (2011), Bruhn and Gallego (2012) look into within-country variations of colonial activities in the Americas to explain the long-run economic development of these regions. In regions where colonial activities allowed economies of scale, labour was largely exploited, and current GDP per capita levels centuries later are significantly lower than countries with no such colonial activities. The reason for the weak performance of these regions is that labour was politically underrepresented, which led to fewer income transfers to those regions, and eventually to lower economic development.

Cape slavery is perhaps more comparable to the American South. Although both the Northern States of America and the antebellum South prospered during the 19th century, Ransom and Sutch (1988) argue that they were doing so for different reasons. While in the North, labourers were being reallocated to the manufacturing sector and contributing to industry, slaves in the South were reallocated to work on more fertile soil. So while physical capital was created in the North that would enhance economic growth, the same cannot be said for the South. Slave-owners were essentially "Capitalists without Capital" (Ransom and Sutch, 1988: 10). Slave capital effectively crowded out physical capital, thereby debilitating economic growth. It was not the capitalisation of the labour force per se which was detrimental to economic growth, but rather the growth of the slave population. When the slave population and slave prices increased, it would reduce conventional saving and thereby slow the growth rate of capital stock (Ransom and Sutch, 1988: 14-16).

In contrast to what was happening on Cape farms, Wright (2006: 72-74) argues that slave property rights discouraged economic diversification in the American South during the nineteenth century. Given the high slave prices, the slave owners in the South protected their property in the same way that property owners in the North did. Often, slaves were even treated better than free labourers and also enjoyed more legal protection in case of injury. Slave life insurance also became popular during the 1850s. Given these drawbacks, slave labour was scarcely used in industry, which resulted in the retardation of manufacturing in the South.

In the Spanish colonies, the *Obraje* system created the same conditions as those in the US South. The *Obrajes* were textile workshops, and the labourers were forced or coerced into doing the work; they were often unpaid and worked under terrible conditions. Since pre-colonial population densities were high, local labour was used as 'slaves', rather than farmers actually

importing the slaves. Nonetheless, the effect was the same as in slave-owning societies. According to Gomez-Galvarriato (2006: 77), the *Obraje* system debilitated long-run growth and development, as the strong dependence on this 'slave' labour removed incentives for the labourers to accumulate human capital. It also increased severe income inequality.

1.5 An unequal society

The eighteenth century Cape settlers did not prosper equally. Simon Kuznets famously argued that income inequality follows an inverted-U curve as a country moves from a low to a high level of development. His conjecture was that inequality would tend to increase during the early phase of capitalist development and only equalise after a sustained period of economic growth, when the economy had matured (Kuznets, 1955).[22] Kuznets applied the theory only to industrialising societies.

In 1995, Jan-Luiten van Zanden found proof that Europe had ascended a "super-Kuznets curve" even before industrialisation (sometime during the sixteenth, seventeenth or eighteenth centuries) (Van Zanden, 1995). Whereas Kuznets had intended his theory to apply to industrial economic growth, Van Zanden's hypothesis claimed that Europe had already experienced an increase in economic activity prior to the Industrial Revolution, and that this pre-industrial growth had already resulted in an increase in inequality.

A number of explanations have been posited for the existence of a Kuznets or super-Kuznets curve. Firstly, Kuznets himself argued that modern economic growth caused a shift in labour from low productivity sectors – agriculture – to high productivity sectors – industry and services. Initially, the entire labour force is employed in agriculture. As agricultural workers move from agriculture to industry, inequality increases. This occurs up to a certain point, when half the population has moved between the sectors. Thereafter, as more agricultural workers move into industry, inequality begins to decline. A parallel argument can be made with the rural and urban population substituting agriculture and industry, earning differential wages. Kuznets had, however, emphasised that a specific set of conditions or institutions have to exist for these changes to occur – and he was sceptical of the generalisation of his theory across time and territory (Kuznets, 1992). Van Zanden (1995) finds this consistent with the period of pre-industrial growth and attributes the rise in inequality of pre-industrial Holland to this explanation.

While the contemporaneous links between income inequality and growth remain unclear, severe inequality may hamper a country's growth *potential* (Sokoloff and Engerman, 2000). Engerman and Sokoloff (2002) put forward two preconditions for the rise of inequality in a

[22] Although Kuznets was himself not convinced of the empirical evidence for his hypothesis, a noteworthy group of scholars agree that the Kuznets curve holds for the early industrialised countries, notably Britain and the United States. Williamson, although not the first to do so, proclaims in his book *Did British Capitalism Breed Inequality* that the "facts support Simon Kuznets' (1955) conjecture that income inequality is likely to show an early rise and later decline as economic development proceeds" (Williamson 1985: 200). Relying on a range of data sources, he concludes that the rise in inequality began in 1760. Although interrupted by the French Wars, inequality increased rapidly after Waterloo. "British inequality seems to have reached a peak somewhere around the 1860s or shortly thereafter. While not spectacular, the egalitarian levelling up to World War I was universal" (Williamson 1985: 200). The evidence for the United States is equally compelling (Williamson and Lindert 1980).

newly settled society: favourable climate and soil conditions that are conducive to the growing of (cash) crops, and a numerous native population. Colonies located in the tropics were endowed with fertile conditions that encouraged the production of sugar, coffee, bananas, tobacco and rubber – in other words, cash crops that are subject to large economies of scale. The realisation of these economies of scale required labour, sourced from native populations or through slave imports. As these labour-intensive industries developed, an elite secured economic power, which it maintained through institutions that promoted the status quo, namely an unequal distribution of resources. The two institutions often used for this purpose were the monopolisation of property rights, and the limitation of access to education. Engerman and Sokoloff posit that most Latin American and Caribbean countries resemble this model. In contrast, in temperate zones and in the absence of large native populations (such as in British America), a relatively free market developed, promoting institutions (property rights, education and free trade) that resulted in lower inequality and faster economic growth.

A growing literature has emerged to test this hypothesis. Apart from Engerman and Sokoloff's own contribution summarised in their book '*Economic Development in the Americas since 1500*' (Engerman and Sokoloff, 2011), Easterly (2007) finds that inequality results in lower per capita economic welfare, including worse institutions and schooling outcomes. He shows this using a new variable indicating the abundance of land suitable for growing wheat relative to sugarcane, which is closely related to the Engermann and Sokoloff hypothesis. By contrast, Nunn (2007), while finding a negative relationship between slave use and subsequent economic development, finds no evidence that the relationship is driven by *plantation* slavery, which is the channel postulated in the initial endowments-inequality-growth hypothesis. Even more critically, Williamson (2009a) has argued that there is little evidence to suggest that Latin American countries were uniquely unequal for most of the last five centuries. In fact, when adopting a new measure of income inequality – the inequality extraction ratio – Milanovic, Lindert and Williamson (2008) show that Latin American inequality was on par with most other societies of the time (for which data are available), despite high levels of inequality in that region in modern times. These results are, however, based on few and unreliable sources, which Williamson acknowledges in an earlier version of his paper entitled "History without evidence" (Williamson, 2009b).

Inequality was severe not only within Cape settler society: for most of the eighteenth century, the Cape slave population outnumbered settlers. The decision by the Company to encourage slave imports instead of European immigrants to satisfy the labour shortage resulted in high inequality within broader Cape society.

In order to understand the impact of slavery and inequality on later development outcomes, the severity of early inequality must be measured accurately for countries across the modern development spectrum. While the preservation of early records enables such measures to be calculated for most of today's developed nations, the dearth of detailed early records for the currently developing world limits the extent to which the hypothesis can be generalised. African regions, especially, are underrepresented in many of these studies, as the set of countries in Milanovic, Lindert and Williamson (2008) confirm. Chapter 4 fills the gap, by calculating the wealth and income inequality of the Cape Colony using several new data sets and methodologies. In contrast to Willamson's (2009a) findings for Latin America, the Cape Colony was unequal at the time of its settlement, and this has persisted into modern-day South Africa.

1.6 Data sources

"The Cape of Good Hope … is peculiarly fortunate in (its) situation."[23]

This investigation into the Cape economy relies on quantitative sources digitised from colonial records. The VOC, having had to report to its shareholders, established and maintained a dense bureaucratic network of record-keeping and accounting that provide fertile research material for economic historians. Four primary data sources are employed: the *opgaafrolle* (tax censuses), *inventarisse* (probate inventories), *vendurolle* (auction rolls), and ship traffic records.

Micro data collected by the VOC are rich in their coverage of the European population in the Cape. Given that the colony was managed by a Company, detailed records for the purposes of taxation were maintained on an annual basis. The bulk of the European population was not directly employed by the VOC, but was commissioned to bolster agricultural production as settlers in the interior.[24] However, this privilege required the annual payment of taxes on land outputs and stocks. Hans Heese has transcribed a selection of the annual *opgaafrolle* (or *opgaafrollen*), the official settler tax returns required by the VOC, which contain detailed micro-level information on the assets and yields of the free population. Each of these cross sections comprises a census of European households that were not in the company's employment[25] and provides details on quantities of all the products that formed part of the income basket of this group. Fourteen of these *opgaafrolle* – spaced roughly every five years and subject to the quality of archival sources – have been converted into a user-friendly format.[26] Demographic and agricultural indicators dominate the *opgaafrolle*. They include the name of the household head; the number of men, women, boys and girls in the household; the number of *knechts*, slave men, slave women, slave boys and slave girls; the number of sheep, cattle, horses, pigs and vines planted; the amount of wine owned; the amount of wheat rye and barley sown and reaped; as well as the number of guns and daggers owned. The Appendix provides the mean of each variable by year.

The MOOC8 *inventarisse* (hereafter referred to as probate inventories) are lists of assets owned by deceased individuals or households. The Orphan Chamber in the Cape was established to administer the estates of individuals who died intestate and left heirs either too young or unavailable (TANAP, 2010). These inventories (MOOC8 series) were transcribed and digitised between 2004 and 2006 by an inter-disciplinary team who converted the hand-written Dutch

[23] Smith 1776, IV.7.186.

[24] Because the *opgaafrolle* exclude any indicator of wealth or income outside slaves, whenever I make use of these, I remove those individuals that report zero agricultural production, i.e. the urban and rural artisans, traders and officials who may have earned a considerable income but are not captured because of the focus on agricultural indicators in the *opgaafrolle*. In few instances, though, these urban residents are included: in calculating gross domestic product, in Chapter 2, I include the total population (of settlers and officials) at the Cape or, in calculating inequality, in Chapter 4, I use the slaves owned by these urban residents as a proxy for their wealth and include them in the distribution.

[25] A comparison with alternative official records (Van Duin and Ross, 1987: 112-127) suggests that the version of the *opgaafrollen* used here captures very close to all households in the colony, including total slave and European servant numbers in non-VOC employ. Slight discrepancies are accounted for by adjusting the weights applied to each household, as discussed below.

[26] The following years are included: 1663, 1670, 1678, 1682, 1685, 1688, 1692, 1695, 1700, 1702, 1705, 1709, 1712, 1719, 1723, 1731, 1738, 1741, 1752, 1757, 1762 and 1773.

records held in the Cape Town Archives Repository into a digital database of XML code (Liebenberg et al., 2007). I used an XSL stylesheet to extract the data and format it in Microsoft Excel and Stata 11. To the MOOC8 series are added 134 Stellenbosch inventories, which were transcribed into Microsoft Word by Annemarie Krzesinkski-de Widt (2002), and are available from the Stellenbosch Museum. There are 2577 unique probate inventories catalogued between 1673 and 1795, which makes it one of the largest inventory datasets used in an analysis of this kind. A full account of the data treatment is provided in the Appendix.

The same team responsible for transcribing the MOOC8 series also transcribed the first five volumes of the MOOC10 series (the *vendurolle*, hereafter the auction rolls), covering all entries from 1693 to 1748. The auction rolls provide lists of assets auctioned by the Orphan Chamber. The name of the deceased, the buyer and, particularly important for my purposes, the price of the item accompany each entry.[27] Each auction also lists the total value of items sold. While these probably do not include all assets owned by the individual – for example, in most of the auctions after 1709, no property is listed – nearly all of the individual's movable (and durable) assets were reported.

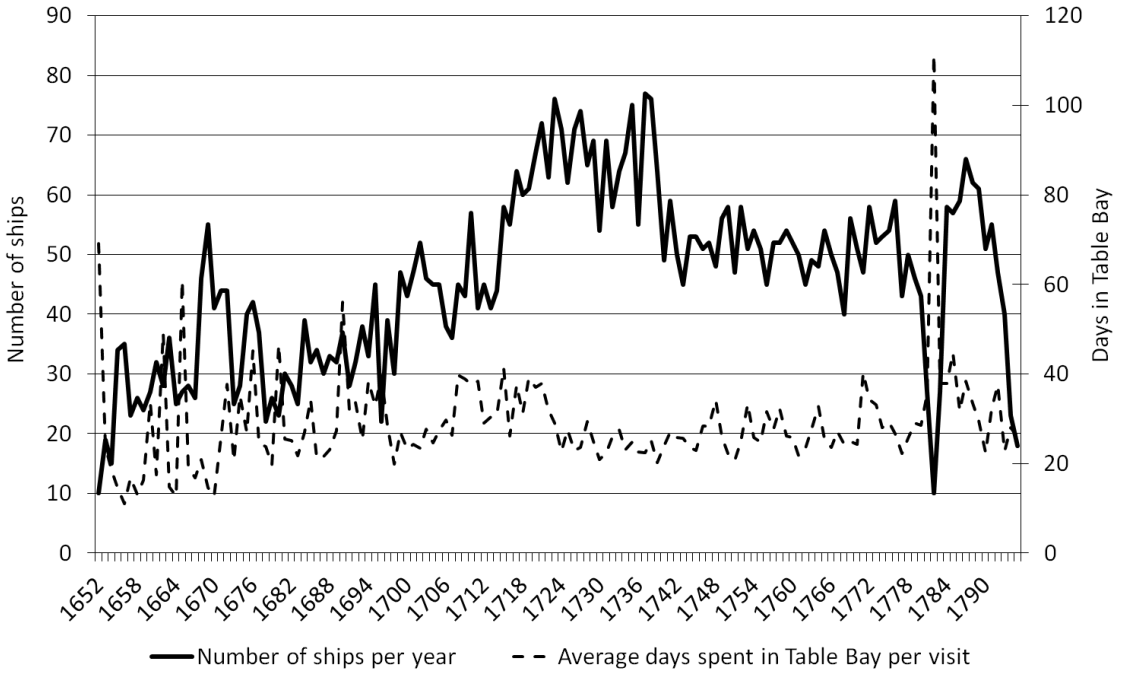

Figure 3: Number of ships and periods of anchorage in Table Bay, 1652-1795
Source: Bruijn, Gaastra and Schöffer (1987); own calculations (Boshoff and Fourie, 2008).

In their three-volume publication, Bruijn, Gaastra and Schöffer (1987) compile a dataset that contains the outward-bound and homeward-bound voyages of Dutch ships between the Dutch East Indies and the Republic of the United Netherlands from 1602 until 1795. Apart from dates of departure and arrival, the dataset also includes the dates on which the ships passed the Cape of Good Hope.[28] From this, I calculated a new measure – ship days – as a proxy for the demand

[27] Note that this is only the first five volumes of a total of 46 available volumes. A lack of funding forced the transcription team to focus only on the first five volumes and on indexing the last 41 volumes.
[28] J.R. Bruijn, F.S. Gaastra & I. Schöffer, *Dutch-Asiatic shipping in the seventeenth and eighteenth centuries*, RGP Nº 165, Den Haag, 1987. The electronic version can be downloaded from

created by the passing ships in Table Bay. A ship day is equal to one ship anchored in Table Bay for one day – there can thus be multiple ship days for each of the 52554 days in the 143 years covered by the dataset; in fact, 192815 ship days were counted. Figure 3 plots the number of ships arriving per year and the average period of anchorage. A more detailed discussion of this source is provided in Boshoff and Fourie (2008).

In addition to these four sources, several other primary and secondary sources were used. Van Duin and Ross (1987) provide aggregate figures for various series of population, production, exports and prices. Chapter 2.8 also relies on a number of additional sources, which are explained in Fourie and Van Zanden (2012). Sources that allow comparative work are cited in the text.

In contrast to the recent tendency to give more attention to the indigenous and slave populations, this dissertation, in a sense, reverts to an older tradition of historiography in its focus on the small settler population of the Colony. This approach has advantages and disadvantages: On the positive side, using newly digitised primary source data, I am able to show that there is much more that can be said about the eighteenth century Cape Colony, such as calculating the average levels of settler wealth and income. This allows not only for a comparison with the earlier historiography (which also focused primarily on the settler society) but also across regions (in comparison with other settler societies). The limitation, though, is the total neglect of the native Khoe, San[29] and, later, isiXhosa population. When Van Riebeeck settled in Table Bay, the first contact he established was with the Khoe, a nomadic, pastoral people consisting of many different clans and widely distributed over what is today the Western Cape and parts of the Northern Cape. Elphick and Malherbe (1989) note that roughly 50000 Khoekhoe inhabited the southwestern Cape, although there is little evidence to support these claims. Greater consensus exists about the disastrous impact of a smallpox epidemic in 1713 which reduced the Khoe population considerably (De Kock, 1924).[30] Together with slow European expansion into the interior, the epidemic resulted in the "fairly easy" cointegration of the Khoe society into the colonial economy as a "subordinate labouring class" (Elphick and Malherbe, 1989: 3).

Even less is known about the size and dispersion of the San population, a hunter-gatherer people who made up the original inhabitants of the region. Without reliable estimates of population size, it is simply impossible to infer even crude estimates of between-group inequality (i.e. between the Khoesan and the Europeans). However, regardless of the size of the Khoesan population, their wealth levels would not have been much above subsistence, probably more so for the San than the Khoe, who did at least produce enough surplus to initially trade with the Europeans. Given this, the estimates of inequality in the following sections can only be *lower bound* estimates of total inequality in the Cape Colony.

Scholars' inability to reconcile Dutch records with guesstimates of Khoesan population size and especially the lack of any reliable micro-level information on Khoe and San lifestyles results in

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http://www.dans.knaw.nl/databases/nhda/study/15001 [Accessed 20 November 2007]. The dataset required some cleaning before any analysis could be undertaken.

[29] 'Khoesan' is the compound term used when referring to both.

[30] While some historians, citing an entry in the register of the Colonial Government, believe that up to 9 in every 10 Khoesan perished, Ross (1977: 416-428) show these estimates are too high.

little alternative but for this dissertation to focus on the *population under European influence* in the Cape. Where the Khoesan were indeed recorded as slaves or *knechts* in the records, they were included as part of Cape society; where they were not, there was no information to judge their relative wealth or income level vis-à-vis other members of society. Hopefully future research will be able to tackle this important limitation.

The focus in the dissertation is thus on the average settler experience. Where the data allows, I include geographical distinctions, although this is not always possible. The main focus is therefore on the rural settler inhabitants, even though, as Table 1 shows, Cape Town was the hub of economic activity in the Colony and housed a considerable number of free artisans, merchants, traders, inn-keepers and others. The focus on Cape Town as an entrepôt for visiting sailors and soldiers, arriving settlers and slaves, and as market for the farmers and hunters on the frontier has received more attention from historians (Worden 2012), although, aside from probate inventories, economic data on these urban inhabitants are extremely limited. It is thus not surprising that although Chapter 4 highlights stark inequalities within settler society, historians, such as Newton-King (1999), has shown that a micro-economic investigation of a particular geographic area or group, such as urban Cape Town, or, in her case the Eastern frontier, may tell a different picture than the overall, macroeconomic trends of the Colony. To some extent, the high levels of inequality calculated in Chapter 4 reveal a dynamic process of wealth and poverty in the Colony, although I do not attach any specific geographic characteristic to this process. Labelling the probate inventories with geographical tags – perhaps coded in a GIS framework – could well provide considerable additional value in understanding the inequalities within the settler society at the Cape.

Chapter 2 | The Nature of Cape Colony wealth

2.1 On wealth

"Real wealth [is the] annual produce of land and labour of the society"[31]

The term 'wealth' is sometimes confused with 'income'.[32] In modern parlance, 'wealth' is described as any item that possesses some economic value, while 'net wealth' is simply the value of these assets minus the value of liabilities owed. Wealth is therefore a stock variable: it refers to the accumulation of resources that is measured at one point in time.

The inventories used here provide estimates of the wealth of the Cape society, i.e. the total household accumulation of assets at death. Wealth, defined here, is therefore not 'net wealth', the difference between household credits and debits, but rather 'gross wealth', the total accumulated assets. To be sure, a lively credit market did exist in the Cape Colony: of the 1584 households in MOOC volumes 1-20, 48.5% list at least some debt obligations after the deceased passed away.[33] While the implications of including the credit market are briefly discussed below, the focus here is on the assets owned by the households over time, and also on allowing for comparisons with other regions.

As explained in Chapter 1, the predominance of agricultural indicators in the *opgaafrolle* may provide inaccurate estimates of total regional production over the eighteenth century. The proliferation of non-agricultural asset categories in the inventories indicates that secondary and tertiary production may have been non-trivial and should be reflected in estimates of regional production. The inventories, therefore, play a dual purpose: first, they provide an initial estimate of aggregate wealth accumulation over the eighteenth century in the Cape Colony and, second, they may offer valuable insights into the nature of the production and growth of the Cape economy, which could ameliorate existing estimates of Cape Colony income. Chapter 2.7 combines the inventories, *opgaafrolle* and other measures to estimate a measure of the gross domestic product of the eighteenth century Cape Colony.

One additional issue which arises when estimating average levels of wealth for a colonial society is whether to include slave prices in the estimate of wealth per capita of the settler population (the numerator), or to add their numbers to the total population (the denominator). As Dooling (2007: 42) shows, the "slave in Roman law was not only property or *res* (object of rights), but also *persona*, by which Roman lawyers meant human being". In a way, it is an impossible dilemma, since at least until 1834 slaves were an integral part of the Cape settlers' calculations of wealth, and of course of the security they could offer for credit. For this reason and as a rule, this dissertation includes slaves as assets (in the numerator), although there are two exceptions, each carefully explained.

[31] Smith 1776, I.I.9.
[32] See also footnote 15 of Book I of the *Wealth of Nations*.
[33] The share of debt to gross assets can only be calculated for a much smaller sample of 362 households. While acknowledging a possible bias in the small sample, it is nevertheless interesting to note that household debt for these households amount to 42% of gross assets (with a median of 40%).

2.2 Probate inventories

In the absence of the household-level surveys used in modern poverty analysis, historical measures of wealth, income and inequality are often confined to inexact, proxy variables for which data sources are available. Probate inventories provide one such recourse.

Probate inventories are lists of assets owned by deceased individuals or households. These lists are often incredibly detailed and are widely used in genealogical studies to trace family ancestry, as relations are almost always mentioned in these records. More recently, economic historians have realised the immense value of these ownership records, providing a more detailed appraisal of standards of living and material culture in societies where wages could prove to be only rough indicators. For instance, wage data in England and Holland during the seventeenth and eighteenth centuries suggest that workers could barely cover daily necessities. However, when these same workers' probate inventories are analysed, a more optimistic picture emerges, with evidence of improvements in the number and quality of goods consumed (De Vries, 2008: 123).

The source of the 2577 inventories used in this study was the Orphan Chamber in the Cape. All wills and deaths had to be registered with this institution, but it only inventoried and acted as an executor for the estates of free people who left heirs who were under 25 (and unmarried) or of unsound mind, or out of the country or untraceable, or who died *ab intestate* or *ex testamento*, or where there was a specific request in the will for the Chamber to act as executor, or where the will did not specifically exclude the Chamber from acting as executor (TANAP, 2010). Where an individual died without children or a spouse, the inheritance went to his or her next of kin. If no relatives could be found, the property was sold, the debts discharged, and what remained was reserved for the unknown heirs for 50 years from the date of death, after which the estate reverted to the Company. No inheritance taxes were imposed by the Company.

The Master of the Orphan Chamber inventory-series (MOOC8) is therefore not necessarily a completely representative sample of all deceased individuals in the Cape. Without knowledge of a full population, sample selection bias may arise, either in favour of the richer segments of society (as is often found with probate samples) or perhaps in favour of the poor (such as the Orphan records of Amsterdam) (McCants, 2006). Fortunately, other data sources offer a statistical benchmark.

Figure 4 compares the number of deceased individuals in the inventories with the total population in the Cape Colony as reported in the *opgaafrolle*, as well as the number of deaths constructed from the 17-volume Genealogical Register of South Africa database.[34] The number of inventories reported seems to be around one per cent of the Cape settler population until roughly the 1740s (see also Figure 5).[35] For the first six decades, inventory deaths exceed those of the South African Genealogical Register, suggesting that a large proportion of recorded settler deaths are included in the sample. While sample selection bias may still persist, especially

[34] For more information on the digitisation of this remarkable dataset, see Cilliers (2012).

[35] Two smallpox epidemics, in 1713 and 1755, are clearly visible in both series drawn in Fig. 3. For example, from an average of below 10 inventories annually, nearly 40 inventories were catalogued in 1713, a clear outlier.

towards the end of the period when the genealogical records exceed the number of inventories, the close correlation between the three series, at the very least, suggests that the inventories capture a consistently large share of total recorded deaths in the Colony.

Figure 4: Comparison of population, Genealogy Register deaths and inventory records, 1673-1806

Source: Van Duin & Ross (1987) and own calculations.

In an expanding frontier colony, sample selection bias may be linked to geography. Although a new district in the interior – Swellendam – was only established in 1743, many farmers had earlier moved and settled permanently in this area. O.F. Mentzel (2008), a traveller of the 1730s, writes extensively about his experience in visiting these frontier farmers. Towards the end of the century, farmers had already settled as far as the Great Fish River and a new district, Graaff-Reinet, was established in 1786. In the absence of full property rights in these regions (ownership would only be granted after the arrival of the British), farmers generally continued their pastoral lifestyle, with very limited crop farming and wine-making, remaining relatively less affluent in comparison with the arable farmers closer to Cape Town.

Because of the great distances to Cape Town from this growing frontier region, probate inventories were administered differently. For farmers living close to Cape Town, a reputable commissioner would travel to the farm to inventory all assets – and where necessary – arrange an auction. For frontier farmers, this process was administered by a neighbour, friends, or relatives and then sent to the Cape to be copied by a clerk, although records of both entries remain in the MOOC 8 series.

These double entries provide evidence of geographic migration away from urban Cape Town. But even though the number of double entries rises over the period, it remains a small share of the total inventories (Figure 5). Where deaths of the frontier population outpaced the growth in probate inventories of these poorer regions, an 'overestimation' of average colonial wealth may occur. This is likely only to be a serious concern after the 1760s, as is also evident from the increase in the number of Genealogical Register deaths vis-à-vis the inventories in Figure 4, but this 'overestimation' may be offset by an 'underestimation' in the welfare level of households because of demographic definitions.

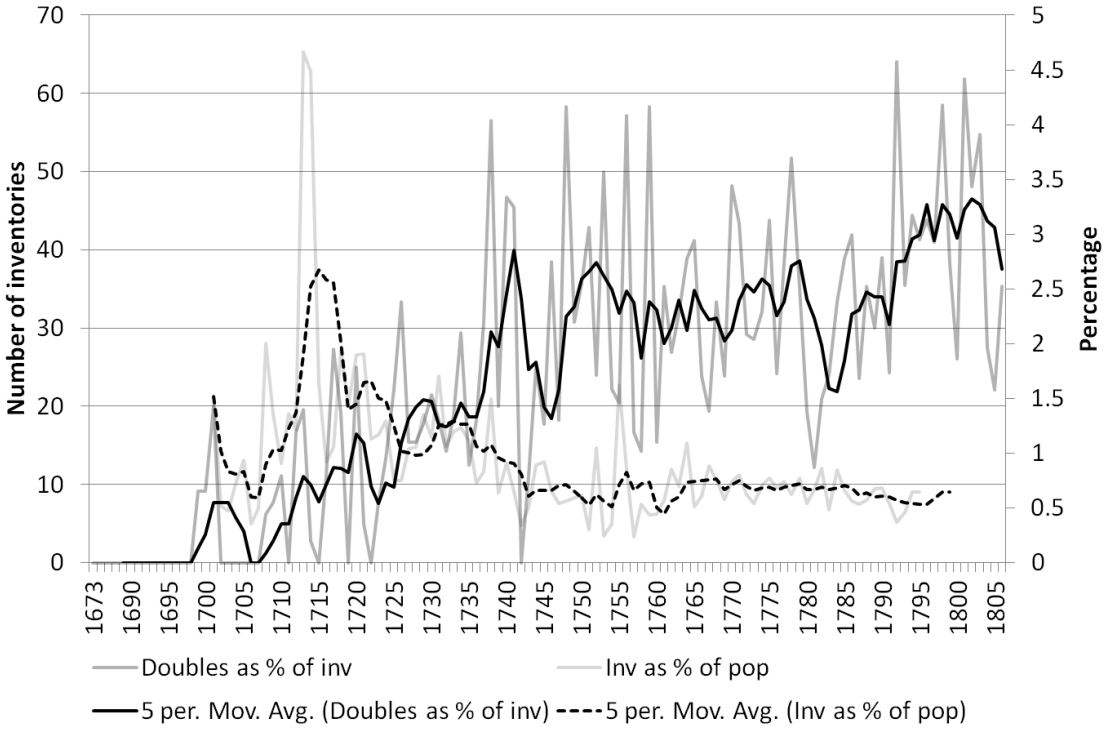

Figure 5: Share of inventories in total population and share of double entries in inventories, 1673-1806

Source: Van Duin & Ross (1987) and own calculations.

As explained above, the MOOC criterion that all families with children younger than 25 years old be included suggests that the probate inventories are more likely to include younger households. The Colony, with its high fertility rate, had few young households with no children, and thus it would have been mostly the older households that would have been excluded from the MOOC inventories. This suggests a sampling bias in favour of younger – and thus less affluent – households.

The most convincing evidence of a bias in favour of poorer households, however, comes from an analysis of 134 Stellenbosch inventories not included in the MOOC8 series. The Stellenbosch series, transcribed by Krzesinkski-de Widt, are probate inventories of settler households living in the Stellenbosch region whose deaths, for whatever reasons, were not administered by the Master of the Orphan Chamber in Cape Town. Figure 6 plots slave ownership for both the MOOC8 inventories and non-MOOC Stellenbosch inventories. The higher level of slave ownership of the non-MOOCs is clearly observed. Even when four outliers (households owning more than 100 slaves) are excluded (the dark line), I find a significant difference between the

linear trend of the MOOCs and those of the non-MOOCs, suggesting that the MOOC inventories perhaps undervalued aggregate welfare, especially during the second half of the eighteenth century.[36] It also shows that MOOC entries declined significantly after 1800 for the Stellenbosch district, suggesting that most households compiled wills and testaments outside the ambit of the Orphan Chamber. This is the reason that most of the analysis is restricted to the period before 1795. In addition, a number of non-MOOC inventories included by Krzesinkski-de Widt (2002) towards the end of the period are only partial records of ownership due to the bad quality of the surviving sources. This may underestimate aggregate wealth even more. This supports the notion that the MOOC8 series probably underreports average settler wealth, especially towards the end of the century.

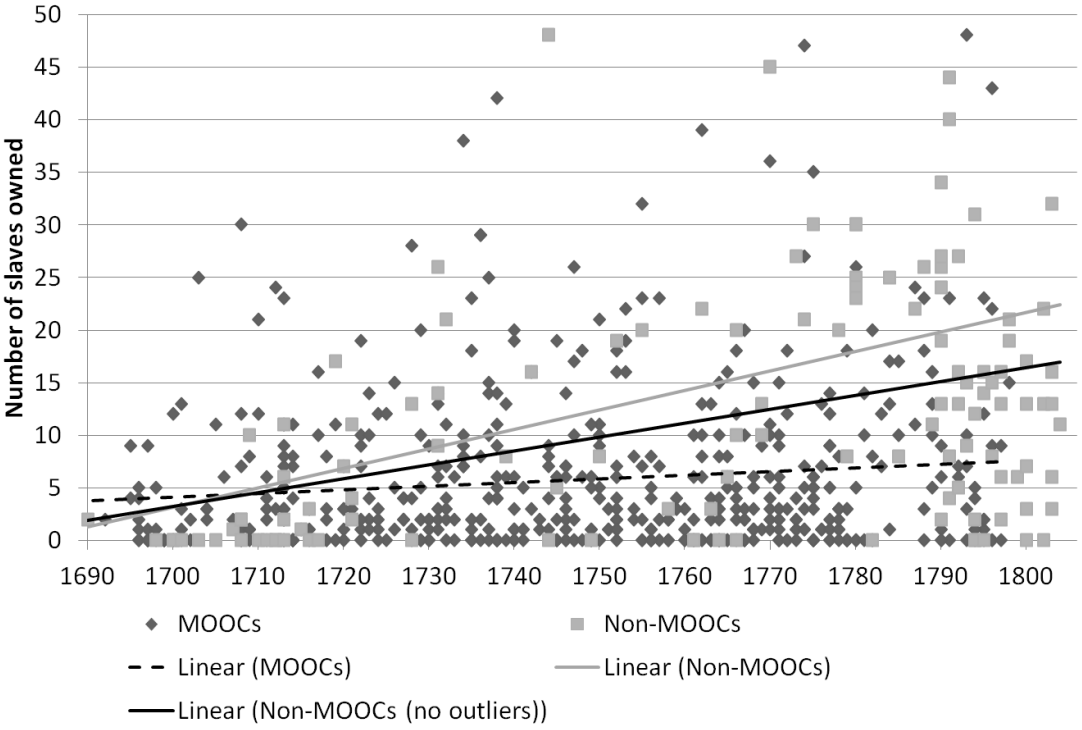

Figure 6: Slave ownership by household, Stellenbosch district, 1690-1806
Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations. Notes: Observations above 50 slaves are not shown, but are included in the linear trends (as indicated).

It is impossible to determine the extent of these two opposing biases. Rather than attempt to correct an unknown sampling bias – where the remedy may be worse than the problem – I acknowledge that the results may have some margin of error, although the large sample size (as a share of the total population of deaths), especially towards the end of the period, helps to ameliorate any serious biases. The inclusion of 2577 inventories, one of the largest sample sizes used in analyses of this kind, provides the most rigorous approximation of the average household wealth at death of the eighteenth-century Cape Colony.

[36] A more detailed statistical comparison is available in the Appendix.

2.3 Probate items

The 2577 inventories reveal a wealth of information about the eighteenth-century Cape economy. Inventories vary in length: some include only basic household assets with up to a dozen unique items, while others are extensive and may include several hundreds of unique items. The thousands of different items listed and their even more varied early modern Dutch descriptions make the categorising of each item both unfeasible and superfluous. Instead I selected 28 items to represent total household wealth. The selection was subjective but it was made for several cogent reasons: regularity of occurrence, standardised unit of account, narrow quality variance, consistency of use, and traceability in the data.

Regularity of occurrence is the most obvious: I included only items that a large proportion of households actually owned. Of course, not owning something may in itself be interesting, but the non-occurrence may simply mean that the item is described differently in each inventory or that it is perishable and therefore is not included in the inventories. Wine, arguably one of the most important commodities in the Cape, is found only infrequently in inventories over the course of the eighteenth century (and especially during the first seven decades), suggesting that farmers kept only small amounts of wine on their farms for home consumption, or that it was removed from the property before the assessor arrived, or simply that surveyors considered it a perishable item and did not include it. In contrast, 'fishing boat' occurs infrequently; nevertheless, I included it in the analysis because its rarity suggests that fishing was not a common source of supplementary income for farmers.

The item also had to have a standardised unit of account. Sugar was an important commodity during the eighteenth century, but is not included in the analysis (see Table 2). I was obliged to omit it because the inventories do not use a standardised unit for sugar. Whereas cattle were measured simply as a number of units, sugar was measured in pounds [MOOC8/1.13], *leggers* [MOOC8/1.21], *mompijpen* and *speckvatten* [MOOC8/1.62], *kanassers*, *kisten*, and *potjes* [MOOC8/1.63], *vaatjen* [MOOC8/1.69], *celderflessen* [MOOC8/2.21] and *trommels* [MOOC8/2.63], to name but a few. It was impractical to aggregate these into a single unit of account, as there is no standard unit of account for *potje*, for example.

Apart from a standard unit of account, items in different inventories classified as similar should at least share some qualitative characteristics. This is an extremely difficult criterion to apply, and one which is often neglected. Paintings, for example, even if they are of equal size, may be of completely different quality and thus value. Quality improvements over time may further distort period comparisons: an imported Chinese chair in the late eighteenth century may be of much higher quality than a simple wooden chair early in the century. Also, while the quality of bedsteads may have remained the same throughout the eighteenth century, the items appended to them – such as mattresses and assorted bed coverings – might have improved.

Finally, as is the case today, fashions vary and so do the words that describe them. The snuffbox that might have been known as a *snuijfdoos* at the beginning of the eighteenth century would be classified as a *tabaksdoos* towards the end. It is impossible for the researcher to be sure of including all possible descriptions of a similar item. Moreover, given the isolation of many farmers in the interior and the varieties of language that developed (Cornell and Malan, 2005), spellings vary considerably between inventories and over time, and this reduces traceability.

Items that can be described in a variety of ways are best avoided. I attempted to choose items that are described in reasonably consistent terms throughout the 2577 inventories. The Appendix provides a short overview of these spelling variations for the 28 products surveyed.

Table 2: Descriptions of the 28 products included in the wealth analysis

No.	Item name	Dutch name	Category	Type
1	Slaves	Slaaven	N/A	Commodities
2	Cattle	Beesten	Agriculture	Commodities
3	Horses	Paarden	Agriculture	Commodities
4	Sheep	Schapen	Agriculture	Commodities
5	Ploughs	Ploegen	Agriculture	Primary
6	Corn sieves	Koornharp	Agriculture	Primary
7	Fishing boats	Schuit	Fishing	Primary
8	Buckets	Emmers	General husbandry	Primary
9	Spades	Graaven	General husbandry	Primary
10	Guns	Geweer/Snaphaan	Security/Hunting	Primary
11	Brandy stills	Brandewijnskeetel	Agriculture	Secondary
12	Wagons	Waagen	Transport	Secondary
13	Anvils	Aambeeld	Manufacturing	Secondary
14	Bench vices	Bankschroef	Manufacturing	Secondary
15	Balances	Balans	Cooking	Basic
16	Fire tongs	Tang	Cooking	Basic
17	Ovens	Stoven	Cooking	Basic
18	Bedsteads	Kadel	Furniture	Basic
19	Chairs	Stoel	Furniture	Basic
20	Trousers	Broek	Clothing and textiles	Basic
21	Irons	Strijkijsters	Clothing and textiles	Luxury
22	Books	Boeken	Education	Luxury
23	Timepieces	Horologie	Time-keeping	Luxury
24	Snuffboxes	Snuijfdoos, tabakdoos	Leisure	Luxury
25	Paintings	Schilderij	Furniture	Luxury
26	Mirrors	Spiegel	Furniture	Luxury
27	Bird cages	Vogelkooij	Pets	Luxury
28	Gold rings	Ring	Jewellery	Luxury

Notes: The full list, documenting the various forms of the words, is available in the Appendix.

Given these criteria, the 28 products selected should proxy for the total movable wealth over the period, reported in Table 2. But is this a valid assumption? What proportion of total wealth do these 28 products explain? In the absence of inventory prices and thus a monetary estimate of total wealth, a new data set must provide answers.

The MOOC10 auction rolls (*vendurolle*) provide lists of assets auctioned by the Orphan Chamber. The name of the deceased seller, the buyer and, particularly important for my purposes, the price of the item are included. The 28 products listed above are extracted from the auction rolls to determine the value of these products in the total household auction. The

auction also sometimes lists property value, which is shown separately below. Figure 7 shows the breakdown by product category.[37]

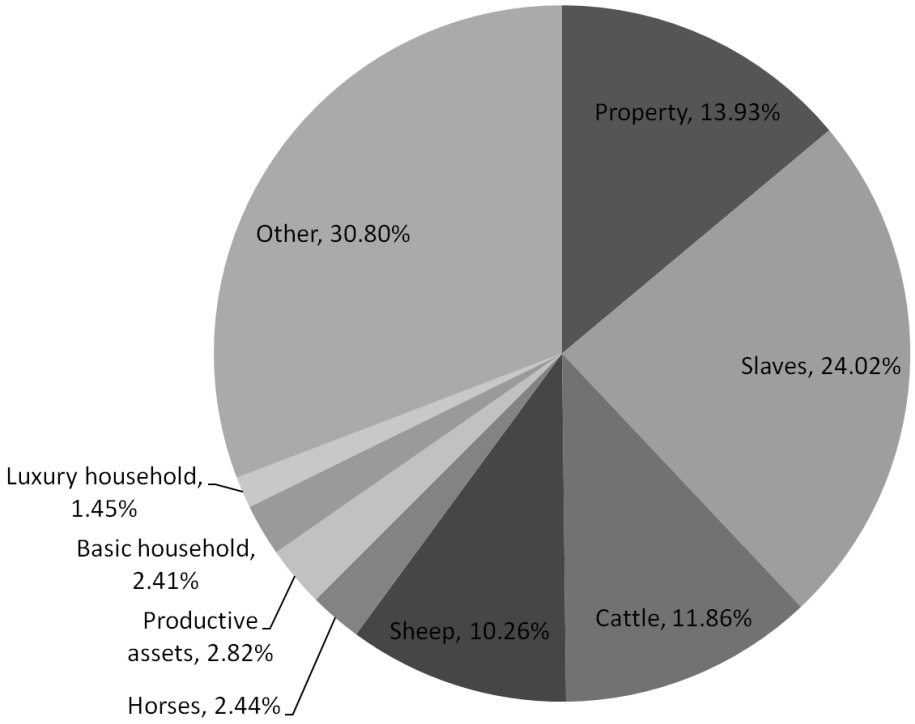

Figure 7: Product proportions of total wealth, 1693-1748
Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.

The largest single product category is slaves, which constitutes 24 per cent of the total wealth represented in the auctions. This finding supports the decision by previous authors to use slaves as a proxy for total wealth (Guelke and Shell, 1983). Property – which includes farms (10.98 per cent) and town houses (2.96 per cent)) – constitutes 14 per cent (but is listed surprisingly infrequently in the auction rolls, suggesting that the MOOC series best approximates *movable* assets), cattle 12 per cent, and sheep 10 per cent of total wealth. Together, these four items comprise more than 60 per cent of all wealth in the inventories. The remaining 25 products – horses (2.44%); productive assets, which include ploughs (0.20%), corn sieves (0.07%), boats (0.02%), buckets (0.05%), spades (0.06%), guns (0.27%), brandy stills (0.25%), wagons (1.87%), anvils (0.01%) and bench vices (0.01%)); basic household assets, which include balances (0.13%), fire tongs (0.08%), chairs (0.33%), stoves (0.03%), beds (1.62%) and trousers (0.21%); and luxury household assets, which include irons (0.03%), paintings (0.41%), mirrors (0.36%), books (0.29%), timepieces (0.15%), Snuffboxes (0.04%), bird cages (0.04%) and gold rings (0.14%) – represent 9% of total wealth. Put differently, the thousands of other products (outside of the 28 products enumerated and property) account for only 30.8 per cent of total wealth in the auction rolls. Thus, nearly 70% of all movable assets is captured by the 28

[37] Note that these proportions reflect the auction rolls of 1693-1748. It is assumed that these proportions remained relatively similar for the remainder of the century.

products selected, inspiring confidence that trends in the 28 products more than likely represent trends in the total wealth of Cape the probate inventories.

Descriptive statistics for each of the twenty-eight products are reported in Table 3. 'Sum' denotes the aggregated total for each product, 'Mean' calculates the per inventory average, 'SD' denotes the standard deviation of the sample, 'Max' reports the highest inventory entry for that product, 'Med' denotes the median (the midpoint of a frequency distribution), 'p75' and 'p90' denote the entries at the 75th and 90th percentiles, 'Non-0' reports the number of unique entries that are non-zero in the records, while '% 0s' shows the percentage of inventories that records a zero score.

Table 3: Descriptive statistics of the 28 products found in the 2577 probate inventories

Products	Sum	Mean	SD	Max	Med	p75	p90	Non-0	% 0s
Slaves	12682	4.92	8.65	148	2	6	14	1694	34.26%
Cattle	140436	54.50	108.26	2000	15	68	153	1486	42.34%
Horses	16128	6.26	13.05	296	2	8	18	1472	42.88%
Sheep	901357	349.77	689.20	10200	0	428	1010	1271	50.68%
Ploughs	1587	0.62	1.20	19	0	1	2	921	64.26%
Corn sieves	214	0.08	0.30	3	0	0	0	195	92.43%
Boats	62	0.02	0.17	3	0	0	0	54	97.90%
Buckets	7102	2.76	3.78	61	2	4	6	1662	35.51%
Spades	5169	2.01	13.12	450	0	2	5	906	64.84%
Guns	2972	1.15	2.11	47	0	2	3	1169	54.64%
Brandy stills	407	0.16	0.43	5	0	0	1	357	86.15%
Wagons	3109	1.21	1.96	40	1	2	3	1400	45.67%
Anvils	130	0.05	0.26	3	0	0	0	107	95.85%
Bench vices	263	0.10	0.38	7	0	0	0	223	91.35%
Balances	1023	0.40	0.91	9	0	0	1	618	76.02%
Fire tongs	1958	0.76	1.72	33	0	1	2	1020	60.42%
Ovens	2264	0.88	2.20	24	0	0	3	594	76.95%
Bedsteads	3284	1.27	1.86	26	1	2	4	1307	49.28%
Chairs	25719	9.98	15.45	125	4	12	28	1734	32.71%
Trousers	2929	1.14	5.39	143	0	0	3	433	83.20%
Irons	2225	0.86	1.75	35	0	1	2	1048	59.33%
Books	10518	4.08	77.65	3856	0	1	5	688	73.30%
Timepieces	776	0.30	0.89	30	0	0	1	529	79.47%
Snuffboxes	2580	1.00	18.15	783	0	0	1	440	82.93%
Paintings	11664	4.53	11.05	134	0	4	15	789	69.38%
Mirrors	4368	1.69	5.90	193	0	2	4	1196	53.59%
Bird cages	1003	0.39	1.23	17	0	0	2	355	86.22%
Gold rings	983	0.38	1.94	44	0	0	1	288	88.82%

Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.

The product list includes slaves and three commodities (cattle, horses and sheep), six productive assets in the primary sector (ploughs, corn sieves, fishing vessels, buckets, spades and guns), four productive assets in the secondary sector (brandy stills, wagons, anvils and

bench vices), six basic household products (balances, fire tongs, ovens, bedsteads, chairs and trousers) and eight luxury household products (irons, books, clocks and watches, snuffboxes, paintings, mirrors, bird cages and gold rings). These classifications are mostly arbitrary; irons and mirrors may well be classified as necessities, while balances may be considered luxuries. They are paired simply for representation reasons, and their delineations would not influence the results or analysis.

Slaves are the most common item found in the inventory records: only 34.26% of all 2577 inventories had no slaves. This probably points to both the importance of slavery in the Cape economy, but also to the accuracy of reporting – as the most valuable asset in a household, inventory surveyors would ensure that the correct number of slaves be reported. Slaves are also clearly marked in the inventories – in the PDF records of the MOOCs, they are highlighted in purple – which minimises the risk of oversight. Aside from slaves, the three other commodities are also widely distributed in the MOOC8 inventories. A total of 140436 cattle were enumerated in the inventories, yielding an average of 54.5 cattle per inventory (with a median of 15). An average of 6.26 horses and 349.77 sheep per inventory were recorded. While sheep were owned in greater numbers, they were distributed amongst fewer farmers; more than half the inventories listed no sheep.

A number of products classified as productive assets in the primary sector are also relatively widely distributed, notably buckets, spades and guns. The average inventory included 2.76 buckets, 2.01 spades and 1.15 guns, but only 0.62 ploughs and 0.08 corn sieves, probably reflecting the latter two's specialised use in harvesting grains. Fishing vessels are very rarely found in the inventories (54, or 3%), suggesting a very low dependence of the settlers on fishing. In the Cape, though, fishing was mostly an economic activity of the free Black population, which may explain the low incidence of fishing vessels in probate records, as few free Blacks are included.

Productive assets in the secondary sector are less common, except for wagons, which are found in more than half of the inventories. Wagons were used to transport produce on farms and between farms and the market. The average of 1.21 and the median of 1 suggests that it was an essential asset for most farmers. This is not true for the other three products classified in the secondary sector: brandy stills, anvils and bench vices are clearly elite products as only 357, 107 and 223 of the 2577 unique inventories included these assets.

As expected, basic household products are more widely distributed, ranging from chairs (with a surprisingly high mean of 9.98 per inventory) and bedsteads (1.12 per inventory) to balances, which were also mostly found amongst the elite (a mean of 0.4 per inventory). The availability of luxury products also varies considerably: while mirrors (1.69) and irons (0.86) are found in more than 40% of inventories, paintings (4.53) and books (4.08) are available in greater numbers but in fewer inventories. Even though luxury products were by definition concentrated among the elite, they were *more* widely available and in *greater* numbers than three of the four productive assets in the secondary sector.

The focus on the mean in all of these discussions might raise concerns given the problems with the mean as a moment of centrality. It is therefore important also to consider the median (reported in Table 3) across all products. What becomes clear is the large number of products

with a zero median, suggesting that in most cases ownership was confined to a relatively small settler elite. At a minimum, the disparity between the mean and the median warrants further investigation into whether wealth accumulation was limited to a few wealthy individuals or whether it was more broadly shared. Chapter 4.1 investigates these distributional issues in more detail.

The descriptive statistics also provide further insight into the reliability of the source material. Comparing the commodities reported in the *opgaafrolle* and inventories allows an assessment of the levels of reporting in both sources. Keep in mind that the *opgaafrolle* are considered to underreport actual ownership (in the case of stock variables), while the sample bias concerns of the inventories discussed above mean that the direction of the bias is undetermined.

Table 4 provides further insights into the direction of sample biases in the two datasets. The table is split into two parts: the first compares the descriptive statistics of both sources when zeros are included, while zeros are excluded in the second comparison. Where the zeros are included, the inventories consistently report higher means than the *opgaafrolle*. Slave ownership in the *opgaafrolle* amounts to 3.3 slaves per household, while the inventories report 4.92 slaves per household. The difference is found in the number of zeros included – 55.53% of households in the *opgaafrolle* report zero slaves, while only 34.26% of inventories do. The difference can be ascribed to the definition of a household, where young men of age 16 (Shell, 1994) would be recorded as a separate household in the *opgaafrolle* (as zeros if they own nothing); they would count as part of their parents' households in the inventories until they were 25 years old.

To exclude this bias, only non-zero entries were compared. The results are startling. From two completely unrelated sources, with significantly different numbers of observations (6932 observations in the *opgaafrolle* compared with 1694 observations in the inventories), a near exact match is recorded for slave ownership. The *opgaafrolle* report a mean of 7.42, a p25 of 2, a median of 4, a p75 of 9 and a p90 of 17, while the inventories report a mean of 7.49, a p25 of 2, a median of 4, a p75 of 9 and a p90 of 18. Because there was no reason for individuals to underreport slave numbers in the *opgaafrolle*, this makes a strong case that the Cape probate inventory sample used here is representative of the Cape settler population.

Given that the two sources are comparable, I can assess the level of underreporting in the stock variables of the *opgaafrolle*. Table 4 shows that when zeros are included, the probate inventories report more than double the average household ownership of cattle and sheep compared with the *opgaafrolle*. Horses are also just slightly below 100 per cent more in the inventories than the *opgaafrolle*. When zeros are excluded from both datasets (which gives us the most conservative estimate of underreporting), the animal stock variables still increase in excess of 50 per cent, often close to 100 per cent. While a time dimension was not included to track the change in misreporting over time, this certainly validates recent authors' suggestions that the *opgaafrolle* significantly underreport production data (van Duin and Ross, 1987).

Table 4: Commodity comparisons between *opgaafrolle* and inventories

Descriptive comparisons including zeros										
Opgaafrolle	N	Sum	Mean	SD	Min	Max	p25	Med	p75	p90
Slaves	15587	51446	3.30	6.72	0	66	0	0	4	10
Cattle	15587	318715	20.45	49.39	0	1501	0	0	23	60
Horses	15587	50752	3.26	7.72	0	99	0	1	2	10
Sheep	15587	1770512	113.59	294.03	0	10500	0	0	100	400
Inventories	N	Sum	Mean	SD	Min	Max	p25	Med	p75	p90
Slaves	2577	12682	4.92	8.65	0	148	0	2	6	14
Cattle	2577	140436	54.50	108.26	0	2000	0	15	68	153
Horses	2577	16128	6.26	13.05	0	296	0	2	8	18
Sheep	2577	901357	349.77	689.20	0	10200	0	0	428	1010
Descriptive comparisons excluding zeros										
Opgaafrolle	N	Sum	Mean	SD	Min	Max	p25	Med	p75	p90
Slaves	6932	51446	7.42	8.43	1	66	2	4	9	17
Cattle	5899	318715	54.03	68.06	1	1501	20	32	60	110
Horses	7934	50752	6.40	9.85	1	99	1	2	8	17
Sheep	4682	1770512	378.15	433.35	1	10500	150	300	500	800
Inventories	N	Sum	Mean	SD	Min	Max	p25	Med	p75	p90
Slaves	1694	12682	7.49	9.73	1	148	2	4	9	18
Cattle	1486	140436	94.51	128.63	2	2000	27	57	116	205
Horses	1472	16128	10.96	15.70	1	296	3	6	13	25
Sheep	1271	901357	709.17	841.65	1	10200	200	435	889	1692

Source: MOOC8 series, volumes 1-75; opgaafrolle *1700-1773; own calculations.*
Notes: Only opgaafrolle *1700-1773 were considered. Inventories include all 2577 of them.*

Figures 8 to 12 show per household ownership for the twenty-eight products over the course of the eighteenth century. Figure 8 reveals clear upward trends for cattle, horses and sheep owned. Per household ownership of slaves seems to have stagnated from the 1740s onwards. Average ownership of slaves began at below 3 slaves per inventory and increased to above 5 up to 1740, where it persists until 1800. Horse ownership averaged fewer than two horses per inventory before 1700 and increased to eight horses per inventory, an annualised growth rate of 1.5% over 100 years (see Appendix). Cattle (presented on the right axis) increased from fewer than 30 head per inventory to more than 60 at the end of the century, an annual per inventory increase of 0.9%. Assuming that the number of household members in the inventories remained relatively constant over the century, this implies a per capita increase of the same magnitude per year over the course of 100 years, far removed from the negative per capita growth rates suggested by the *opgaafrolle*.

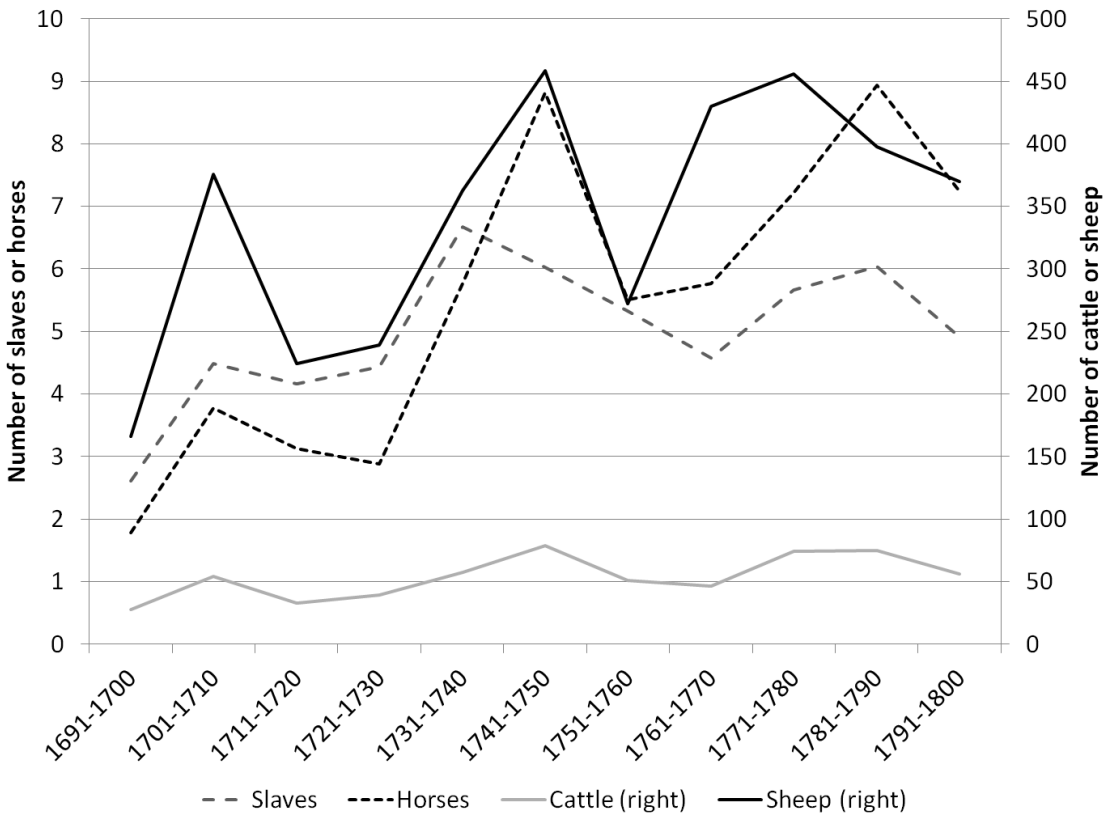

Figure 8: Slaves and commodities owned per inventory (logarithmic scale), decade averages (1691-1800)
Source: MOOC8 series, volumes 1-75; own calculations.

Figure 9 reports the ownership trends of six assets used (mostly) for productive purposes in the primary sector: ploughs, corn sieves, fishing vessels, buckets, spades and guns. Visually, there was little rise in household ownership over the course of the eighteenth century, and there was stagnation after the first few decades. Yet, none of the items consistently declined over the course of the eighteenth century, suggesting that, on average, farmers maintained their investment in primary sector productive resources, even allowing for a large migration into the interior.

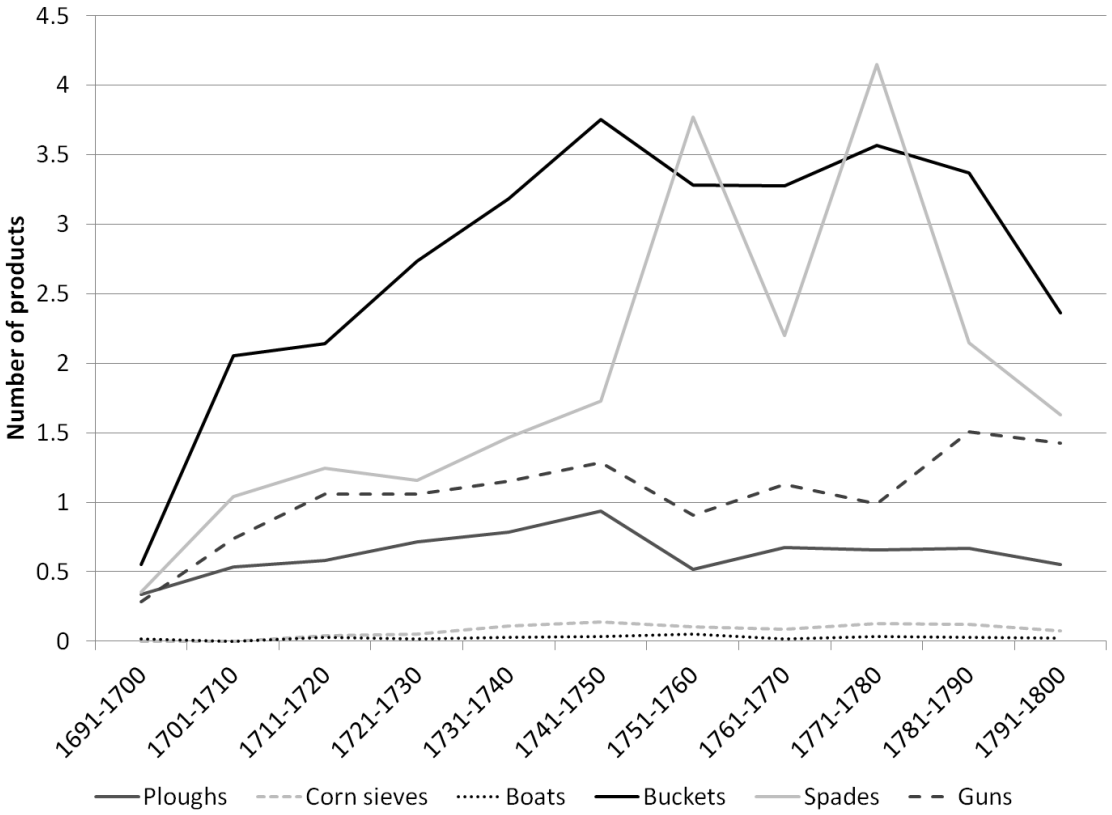

Figure 9: Assets within the primary sector owned per inventory, decade averages (1691-1800)
Source: MOOC8 series, volumes 1-75; own calculations.

Figure 10 reports the ownership of secondary sector productive assets. Here, the trends were clearly upward sloping, suggesting a consistent rise in the per capita ownership of productive assets used in the secondary sector. Wagons are a case in point: while only 1 in 10 farmers owned a wagon during 1691-1700, farmers owned, on average, at least one wagon during the period 1791-1800.

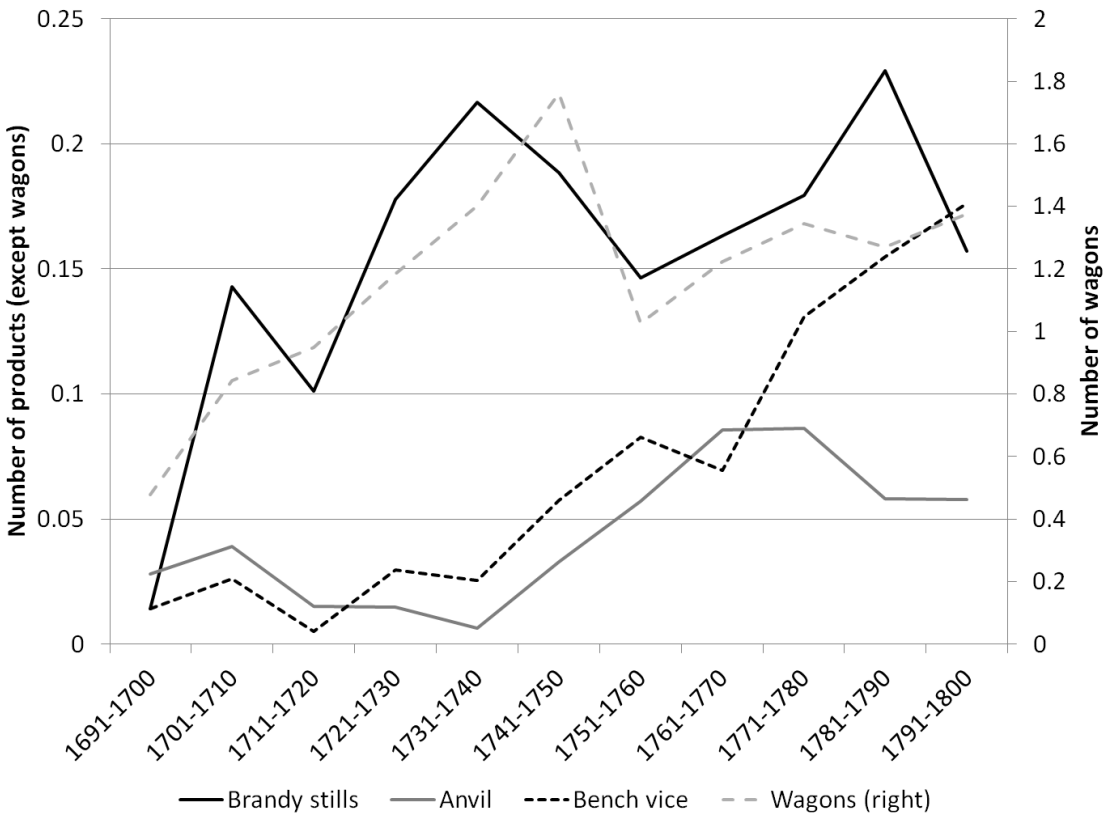

Figure 10: Assets within the secondary sector, per inventory, decade averages (1691-1800)
Source: MOOC8 series, volumes 1-75; own calculations.

Figure 11 provides a first glimpse into household consumption patterns over the eighteenth century. Many household products do not meet the criteria for selection as stipulated above. I have identified six – balances, fire tongs, ovens, bedsteads, trousers and chairs – which adhere to most of the requirements. Even so, the decline observed in all three items from the 1760s could be as a result of classification discrepancies. For instance, a bedstead (*kadel*) may have been classified as such earlier in the century, but might have been called bed (*bed*) – which by assumption includes the bedstead – towards the end of the period. As such, it would not be counted, even though a bedstead may be present. The extent to which such inventory practices changed over time is unclear and the researcher can at best infer these changes when examining the raw data.

A surprisingly consistent picture emerges across all six products (chairs are reported on the right axis). Per household ownership of basic necessities increased rapidly from the 1690s until the 1720s, after which it stabilised for the remainder of the eighteenth century. While the only consistent rise seems to be in per household trouser ownership, this may be explained by the inconsistent reporting of clothes in the inventories and the often pooling of clothing items together as a bundle of clothes ("eenige ouden kleren") [MOOC8/5.20]. Nevertheless, assuming that this underreporting was constant across the eighteenth century, the increase in the availability of trousers at an annualised rate of 2.36% over a hundred- year period supports the notion of a non-trivial increase in the standards of living of the settlers.

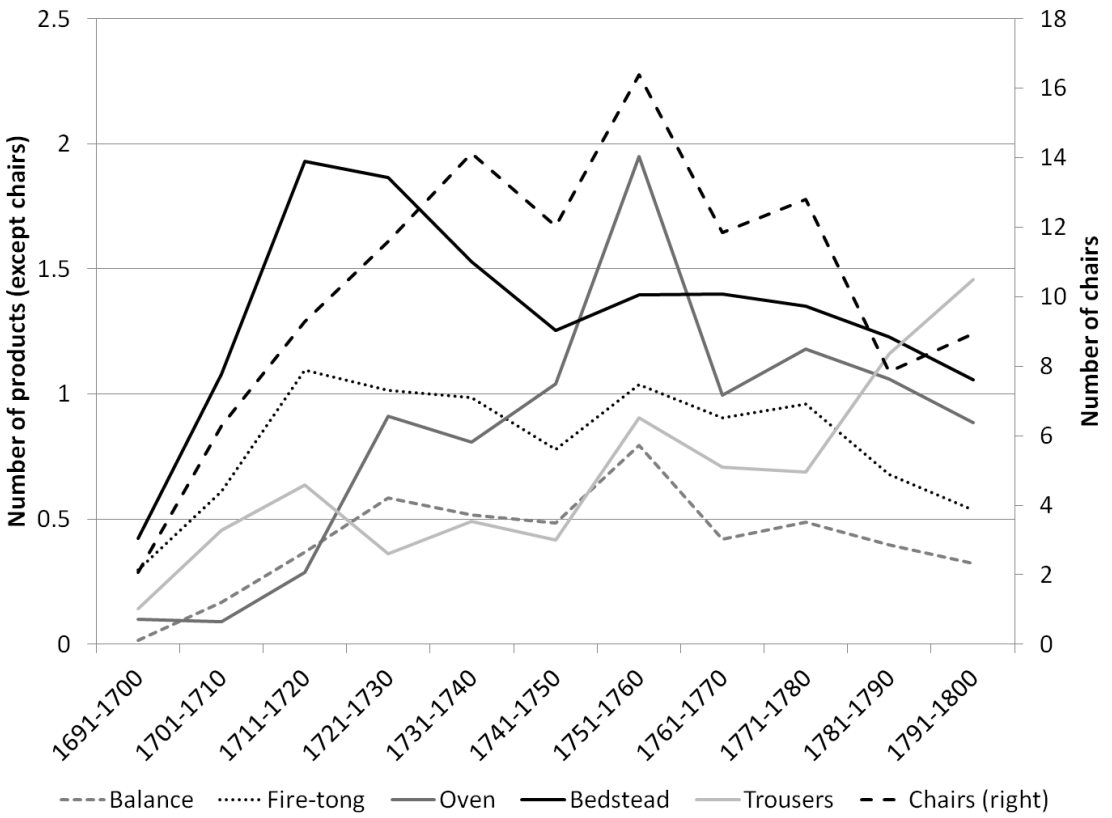

Figure 11: Basic household assets owned per inventory, decade averages (1691-1800)
Source: MOOC8 series, volumes 1-75; own calculations.

The stagnation – and for a number of basic products, marginal decline – after the 1760s may have been as a result of the migration of farmers into the interior, with larger items perhaps being more difficult to transport and thus being left behind. The relative stagnancy of fire tongs, balances and ovens may also point to a level of saturation for necessities, beyond which other (luxury) items were acquired as income increased.

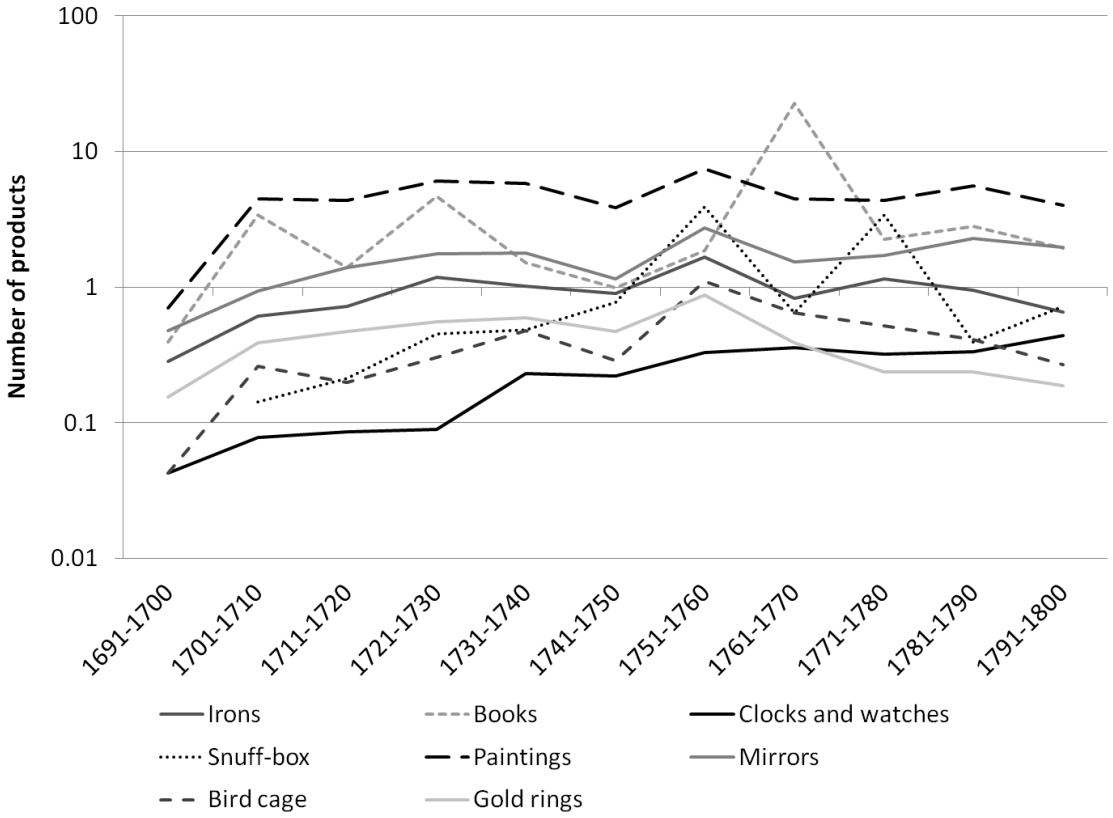

Figure 12: Luxury household assets owned per inventory, decade averages (1680-1800), on a logarithmic axis
Source: MOOC8 series, volumes 1-75; own calculations.

The eight luxury consumption items (Figure 12) exhibit relatively similar trends to the basic household necessities of Figure 11. A general upward trend is observed until the middle of the century, after which stagnation and decline is recorded. The notable exception here is watches (timepieces), for which there was an increase in availability of 2.38% of annualised growth throughout the period.

'Books' is included here even though it fails to adhere to a number of the inclusion criteria. Books were most often reported as "*partij boeken*" (some books), with no exact amount listed. This makes aggregation difficult; I assumed five books in such cases, although this is probably underestimating the number of books in the collection.[38] Also, one outlier, Joachim Nicolaus van Dessin [MOOC8/10.76], maintained a library of 3856 books. The inventory records note:

> "… een biblioteecq bestaande in drie duijsend agt hondert ses en vijftig boeken en manuscripten soo gebondene als ongebondene in folio, quarto, octavo en diodecimo beneevens de daartoe gehoorende racken, groote loquetten en klijne boeklessenaars."

[38] When the observations listing "*partij boeken*" are excluded, the average and median book ownership for those settlers owning at least one book is 13.5 and 6, respectively. This average excludes the outlier of Joachim van Dessin.

This single entry is responsible for the high mean over the period 1761-1770. If this outlier were removed, a slow upward trend for book ownership would be observed over the course of the eighteenth century.

Not all luxury products served only one purpose. A case in point is 'mirrors', which were primarily used by settlers for reflecting light, so as to increase the effectiveness of candles. This would have been a valuable attribute both for established households and for the nomadic farmers in the interior. The strong growth of mirrors per inventory over the eighteenth century supports this notion.

Another factor that may dictate trends in the ownership of luxury items, of course, is fashion. Trends in fashion could have a dual impact on ownership: first, if an item 'goes out of fashion', it may simply be that it is not bought or produced anymore and one would expect a fall in the ownership per inventory of this item over time. Second, as Pomeranz (2000:151) argues, it may also be that fashion increases the speed at which existing goods, such as clothes, are discarded and replaced by more fashionable goods. While consumers may derive greater utility from such 'quality' increases, no increase in the quantity of goods would be observed in a wealth analysis such as this. It is unsure to what extent fashion played a role in the Cape, given the size of the second-hand trade (Randle, 2011).

To get an aggregate picture of wealth accumulation in the Cape economy, these twenty-eight product trends must merge into an accurate measure of total value. To do this, eighteenth century prices are required.

2.4 Probate prices

The decision of the Dutch East India Company to build a small refreshment station in the Cape was based on information that the ships and their crew could be provided with fresh produce at a relatively low cost. Given the high incidence of illness and death on voyages between the East Indies and Europe, a refreshment station – where fresh food, fuel and water could be loaded – would ensure faster and more reliable journeys, reducing the net costs for the Company and shareholders. The purpose of the Cape station, therefore, was not to earn a profit in and of itself, but rather to improve the profitability of the Company through lowering transport costs.

To lower costs in the Cape, the Company fixed the prices it paid for farmers' produce. The monopsonistic Company did not allow direct trading between the arriving ships and farmers, at least not within the first few days of arrival. As ship traffic was the primary market for Cape produce, especially during the first few decades of the Colony, farmers were forced to sell their produce to the Company at predetermined rates, and the Company resold these goods to passing ships and owners of the monopoly *pachts* at highly inflated prices, although the extent of this inflation remains unknown.[39] Farmers complained throughout the 143 years of VOC rule about the excessively low prices set by the Company. The Patriot Movement, initiated by the well-to-do wheat and wine farmers in the vicinity of Cape Town during the 1770s, was partly as a result of what was described as draconian Company policies.

[39] Sources that are now emerging from the archives, notably the *Scheepsoldijrekords*, are being exploited to shed light on this.

The Company's monopsonistic behaviour was mostly restricted to agricultural produce, alcohol and wood used for fuel on the ships. While the Company officially prohibited manufacturing, and the settlers' productive activity was therefore limited to the provision of agricultural goods, their everyday needs required at least some market for basic foodstuffs, household necessities and even luxury products. The inventories provide clear evidence that a large variety of items were in use in the Cape. However, they provide only a measure of their availability, not of their value. To determine value, auction rolls were used.

The first five volumes of the MOOC10 series include 280 individuals whose possessions were auctioned. I included all of these in my analysis. Some individuals had multiple auction entries, although, unlike the inventories, these were not copies but rather multiple auctions. A median price for each product was calculated and then used across the entire period (1673-1795). This is, of course, problematic when relative price changes occurred. But except for commodities such as cattle and sheep, there are often too few observations in the MOOC10 series to discern a price series for each of the 28 products. Prices also vary dramatically for the same goods even within the same inventory. A too small sample size (often only a couple of observations per decade) and a large variation in its prices could lead to spurious trends that would not reflect the actual median price for each of the products.

Du Plessis and Du Plessis (2012) provide some information on relative price changes for the most important commodities. They construct price indices for three agricultural commodities – wheat, wine and cattle – over the eighteenth century. For both wheat and meat, they find a comparable decline in nominal prices, while for wine they calculate relatively stable prices over the course of the century. This is also reflected in the official Company prices; while wine prices were fixed throughout the eighteenth century, meat prices declined (van Duin and Ross, 1987:50). In the case of wine and slaves (see Worden, 1985), prices seem to have remained constant or even to have increased slightly, while for wheat and meat, prices tended to decline significantly. Using a single median price for each product may, therefore, result in the long-run aggregate measures being biased *against* slave owners and wine makers, at least towards the end of the century. Given that these groups are often those at the top of the distribution, inequality measurements may be too low (see Chapter 4).

Following Van Duin and Ross (1987), prices are converted as follows: 1 rijksdaalder (rixdollar) = 48 stuivers; 1 schelling = 6 stuivers. Prices were usually reported in rijksdaalders and schellings (i.e. Rds 4:3 would denote four rijksdaalders and three schellings). In the first volume, however, prices were often denoted in gulden. While 1 gulden = 20 stuivers in the Netherlands, it equalled only 16 stuivers in Batavia. The use in the Cape varied, but for the purposes of this study, I used the Batavian exchange rate, as seems to be the case where both the gulden and rijksdaalder amount is quoted in the auction lists (i.e. 3 gulden = 1 rijksdaalder).

Table 5 provides summary statistics of the prices of the twenty-eight items included in the wealth analysis.

Table 5: Prices of the 28 products included in wealth analysis

Products	N	Sum	Mean	SD	Min	Max	Med	Mean	Med
Unit		*Stuiv*	*Stuiv*	*Stuiv*	*Stuiv*	*Stuiv*	*Stuiv*	*Rds*	*Rds*
Slaves	1102	6716319	6094.7	3535.9	48	32736	5412	126.97	112.75
Cattle	3401	1529962	449.9	251.1	20	2016	417	9.37	8.69
Horses	650	631379	971.4	808.3	24	4800	759	20.24	15.81
Sheep	909	51432	56.6	30.3	7	141	48	1.18	1.01
Ploughs	143	54721	382.7	264.4	24	1416	312	7.97	6.50
Corn sieves	18	20508	1139.3	542.4	120	2112	1083	23.74	22.56
Boats	11	18502	1682.0	1285.3	400	4320	1440	35.04	30.00
Buckets	263	12843	48.8	44.3	3	378	38	1.02	0.79
Spades	62	1898	30.6	18.3	5	108	28	0.64	0.58
Guns	250	52880	211.5	217.9	10	1602	150	4.41	3.13
Brandy stills	46	83748	1820.6	1450.3	81	5856	1695	37.93	35.31
Wagons	279	554226	1986.5	1564.0	8	9696	1632	41.38	34.00
Anvils	7	6480	925.7	900.6	90	2400	738	19.29	15.38
Bench vices	10	3612	361.2	158.8	144	672	342	7.53	7.13
Balances	171	34441	201.4	279.2	6	1776	114	4.20	2.38
Fire tongs	74	3194	43.2	27.7	12	162	36	0.90	0.75
Ovens	80	1944	24.3	21.8	2	108	18	0.51	0.38
Bedsteads	348	32861	94.4	72.2	2	408	78	1.97	1.63
Chairs	1250	75512	60.4	34.4	1	396	54	1.26	1.13
Trousers	57	4294	75.3	51.4	3	270	63	1.57	1.31
Irons	140	8037	57.4	41.1	4	210	48	1.20	1.00
Books	326	17438	53.5	81.5	1	960	32	1.11	0.67
Timepieces	49	42204	861.3	1020.6	12	4800	582	17.94	12.13
Snuffbox	64	9508	148.6	156.7	6	828	101	3.09	2.09
Paintings	548	59764	109.1	145.1	1	852	54	2.27	1.13
Mirrors	356	84813	238.2	335.0	3	2400	108	4.96	2.25
Bird cages	55	4891	88.9	83.4	12	492	60	1.85	1.25
Gold rings	110	38722	352.0	589.0	21	3360	147	7.33	3.06

Source: MOOC10 series, volumes 1-5; selected MOOC8 series; N = the number of transactions, Mean (stv) = mean price in stuivers, Sd (stv) = the standard deviation in stuivers, Median (stv) = the median price in stuivers, Min (stv) = the minimum price in stuivers, Max (stv) = the maximum price in stuivers, Mean (rds) = the mean price in rijksdaalders (rixdollars), Median (rds) = the median price in rijksdaalders.

Slaves, with a median of Rds 112, were considerably more expensive than any other asset. The price of slaves fluctuated throughout the period (see Figure 13), with a slight upward long-run trend. Investigating the entire eighteenth century, Worden (1985) confirms a gradual increase in slave prices, notably after the 1770s, due to greater demand from farmers (after a sharp reduction in supply from another smallpox epidemic) and a slowdown in the supply of slaves.

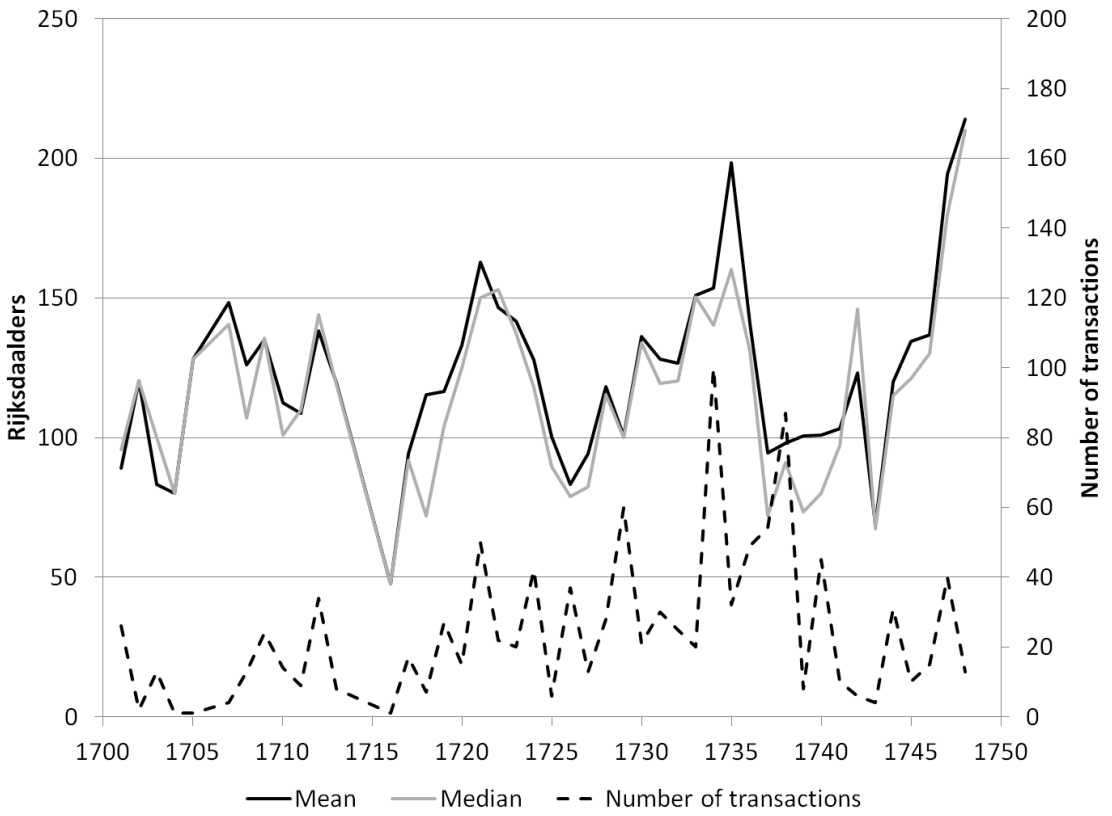

Figure 13: Mean and median slave prices per annum, 1700-1748
Source: MOOC10 series, volumes 1-5; number of transactions on right axis.

As shown earlier, livestock ownership is widespread in the eighteenth century Cape Colony. During the years 1741-1750, on average, every settler at death owned more than 78 head of cattle, 8 horses and 458 sheep, affirming the importance of the three commodities in the Cape economy. Table 5 offers one explanation for the widespread ownership: these commodities were an important store of value. The average price per head of cattle between 1691 and 1748 was Rds 9.4, Rds 20.2 per horse and Rds 1.18 per sheep. The median prices were slightly lower at Rds 8.7, Rds 15.8 and Rds 1.01. Figure 14 distinguishes between the three types of cattle in the auction rolls (and the inventories): *beesten* (also *runderen*, cattle), *ossen* (oxen) and *koeijen* (cows). Prices of calves were excluded. There is little systematic difference between the three categories, which is perhaps surprising, given the important role of oxen in transport. Also included in Figure 14 are the official Company prices for meat (duiten per pound, where 1 stuiver = 8 duiten) reported by Van Duin and Ross (1987). It is quite clear that the mean free market price was correlated with the official Company price.[40] Sheep prices were surprisingly low. The median sheep was auctioned for 1 Rds, the same price paid for an iron or a chair. This probably reflected the abundance of sheep in the colony, together with the low prices offered by the Company.

[40] If we equate the two prices, it is also possible to obtain the amount of pounds obtained per head of cattle. Using the average price per head of cattle at auctions for the six years between 1730 and 1735 (530 stuivers) and the constant Company price (11 duiten per pound), I calculated that farmers had to get 386 pounds from one head of cattle, to break even. Given that the average cow provided roughly 240 pounds (depending, of course, on many factors), it is clear that the cows were worth more (about 60% more) than only the meat they offered.

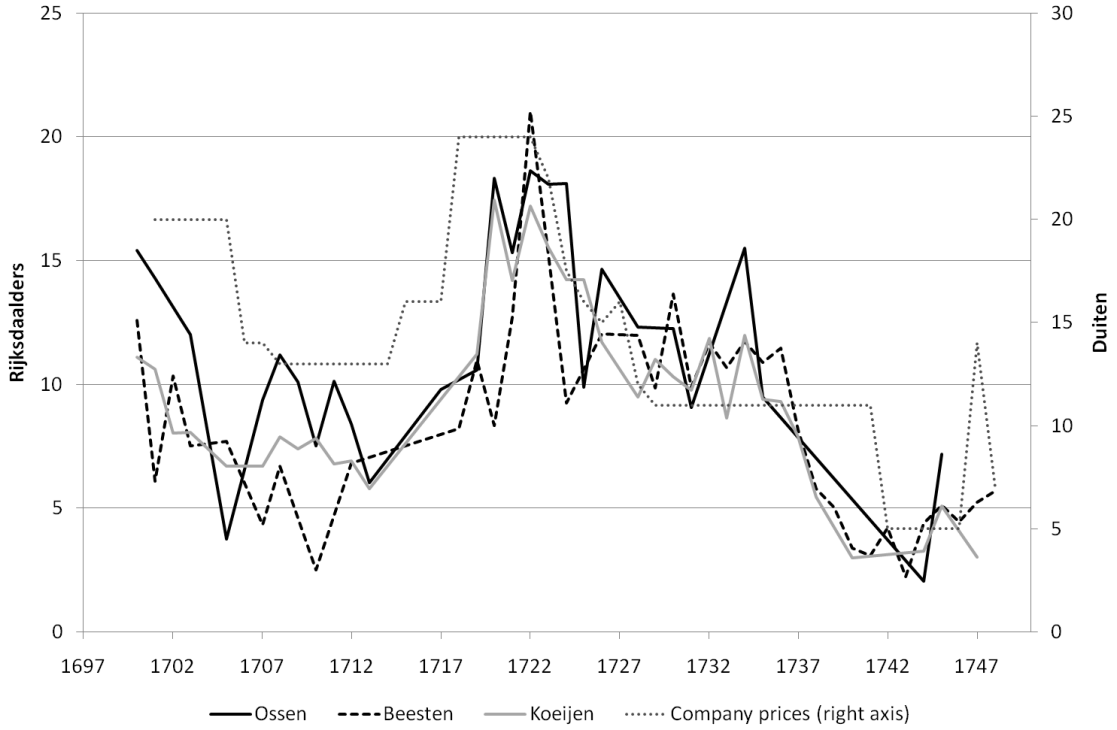

Figure 14: Mean cattle prices for three types, 1700-1748
Source: MOOC10 series, volumes 1-5; price of meat (in duiten) on right axis.

The stark difference in prices between production and consumption items in Table 5 provides a first insight into explaining the composition of production in the Cape Colony. Production items, notably brandy stills (Rds 35.31), wagons (Rds 34.00), boats (Rds 30.00) and corn sieves (Rds 22.56), but also anvils (Rds 15.38), vices (Rds 7.13), ploughs (Rds 6.50) and guns (Rds 3.13), were expensive items. Of the household items, only timekeeping apparatuses (clocks and watches) (Rds 12.13) were as valuable. The only production items excluded from the above list were spades (Rds 0.58) and buckets (Rds 0.79), both common instruments used for general husbandry purposes. Apart from clocks, gold rings (Rds 3.06), balances (Rds 2.38), mirrors (Rds 2.25) and snuffboxes (Rds 2.09) were the higher-priced items, followed by the other products, distributed around one rijksdaalder. Books, again, are problematic, because most books were itemised as "*partij boeken*" (some books). Five books per bundle were again assumed, although this is probably underestimated, and the price was therefore overestimated.

2.5 Probate wealth

Prices allow the twenty-eight products to be aggregated into one measure of household wealth accumulation for the eighteenth century Cape Colony, shown in Figure 15. It suggests that, on average, household wealth increased over the century. Fluctuations around the long-run trend largely reflect the trends observed in the analysis above when only the quantity of products was used. The first three decades reveal little growth in average wealth, averaging just above 1000 stuivers. The 1730s and 1740s witnessed relatively strong growth. Stagnation and decline followed during the 1750s and 1760s. The latter may be as much a case of growth of the denominator (i.e. an increase in the inventory sample) as a decline in the numerator. Growth increased again during the 1770s to the high levels of the 1780s and early 1790s.

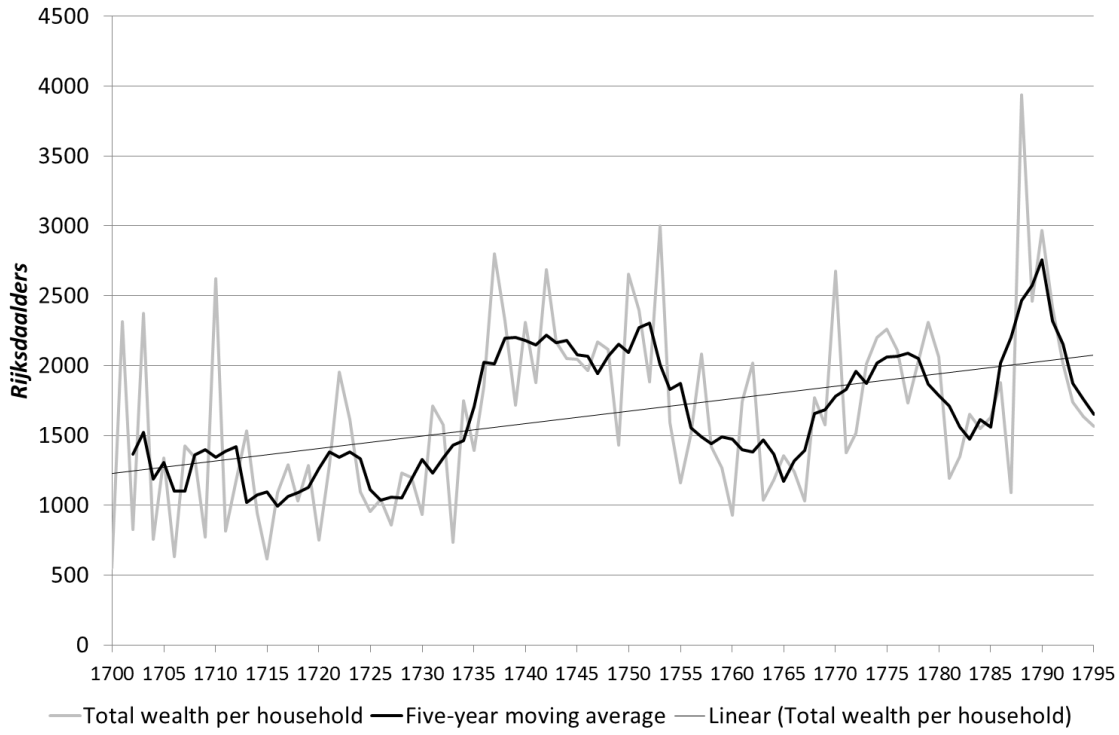

Figure 15: Aggregate household wealth for 28 items, 1700-1795

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations: prices = median prices (1691-1748); products included = the twenty-eight listed in Table 2.

Table 6 provides the mean and median household wealth by decade. The movements in the percentiles (also reported) inform the analysis around the mean trend. Figure 16 represents these changes through box plots. Each box plot shows the distribution of inventories by decade; the bar in the box represents the median, the box top and bottom represent the 25th and 75th percentiles and the line-ends the 5th and the 95th percentiles. Outliers are excluded here, but are included in the Appendix.

Table 6: Descriptive statistics of household wealth, 1673-1800

Date	N	Sum	Mean	SD	Min	Max	p10	p25	Med	p75	p90
1700	71	53910	759	1198	0	5406	2	67	284	738	2452
1710	77	113867	1479	2105	0	13794	8	136	577	2195	3883
1720	198	219691	1110	1567	0	10793	6	145	506	1633	3043
1730	135	165180	1224	1549	0	11226	33	174	614	2053	3051
1740	157	285246	1817	2164	0	10097	66	289	1089	2474	4911
1750	122	254253	2084	2258	0	12908	137	436	1398	2725	4962
1760	157	238677	1520	1928	0	11492	117	382	878	1842	3640
1770	245	381451	1557	1985	0	13640	24	168	794	2278	3856
1780	290	571833	1972	2845	0	27521	40	397	1073	2584	4777
1790	362	716289	1979	2733	0	24680	44	293	1240	2711	4383
1800	414	676256	1633	1979	0	16930	30	235	1000	2383	4018
Total	2228	3676655	1650	2225	0	27521	28	245	887	2303	4028

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations: prices = median prices (1691-1748). Notes: The sample size of 2577 falls to 2228 because all post-1800 values are excluded.

Figure 16 shows the clear improvement in the wealth of the median settler until 1750. This is true across the entire distribution: the 25th, 50th, 75th and 95th percentiles are higher during the decade 1741-1750 than all previous decades. After this period, the 25th percentile remains relatively constant, while the 50th, 75th, and 95th percentiles fall until they regain their positions in the 1780s. This long-run trend provides further support to refute the notion that the Cape economy was in decline. Moreover, the second growth period (from the 1760s to the 1790s) also reflects increasing *inequality* between the 25th and 75th percentiles, and especially the 5th and 95th percentiles compared with earlier periods. The changes in the distribution of wealth are discussed in Chapter 4.

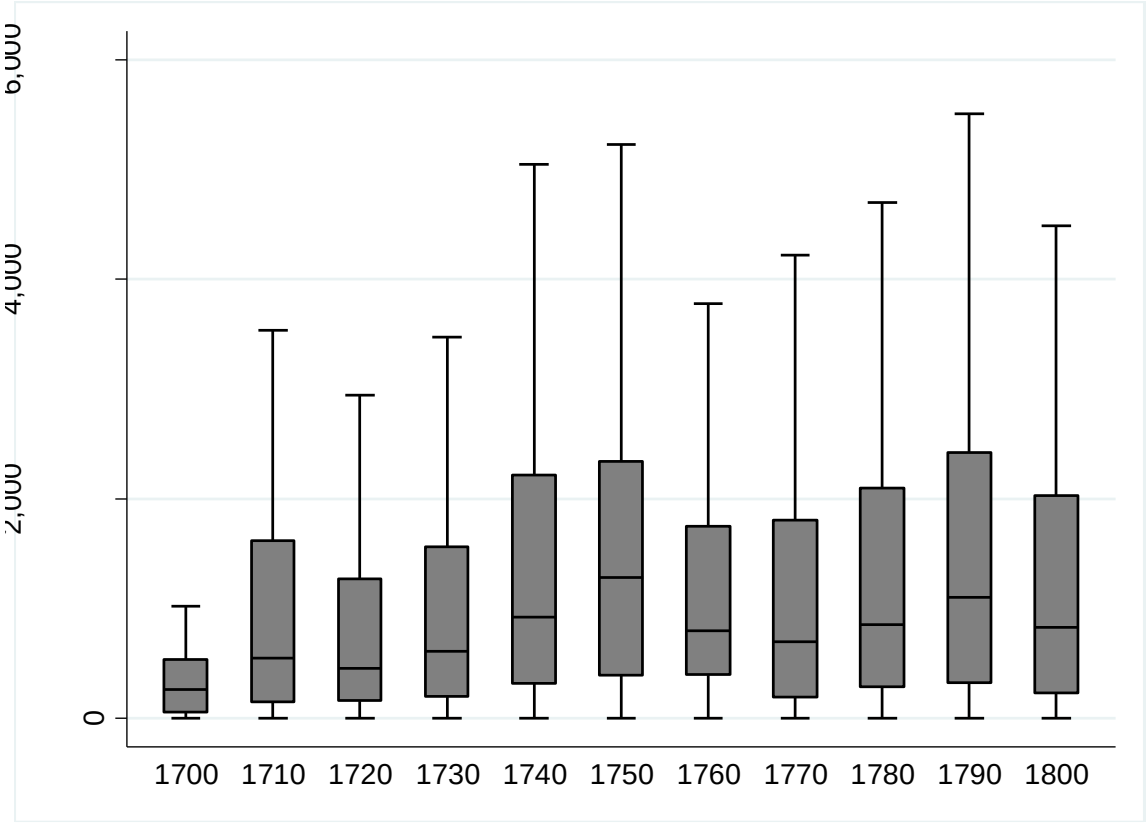

Figure 16: Box plots of wealth distribution by decade, outliers excluded, 1691-1800
Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations. Notes: The bottom and top ends represent the 5th and 95th percentiles, the bottom and top sides of the boxes, the 25th and 75th percentiles, and the line within the box the 50th percentile (or median).

Accounts of eighteenth century economic performance provide some support for the aggregate wealth trends witnessed above. The first three decades of the eighteenth century were characterised by unfavourable economic conditions; after the increase in production of wheat and wine with the arrival of the French Huguenots by the end of the seventeenth century, the price ceilings imposed by the Company, and stagnant demand from ships created an oversupply of wheat and wine. To discourage production, the Company restricted the issue of freehold land after 1717, allowing only settlers to obtain a 'loan farm' in the interior. A tax was imposed on wine, first in 1715 and again in 1743. "It may thus be seen that from the very beginning, the economic position of arable farming in the Cape was precarious." (Neumark, 1956:30). While the price of meat improved between the mid-1710s and 1720s, the trade restrictions imposed

by the Company – prohibiting the lucrative trade with foreign ships in live animals (1720) and fresh meat (1724) – made stock farming unappealing (Neumark, 1956). The first three decades of the eighteenth century were a period of slow growth, which is also reflected in the wealth analysis.

The 1730s and particularly the 1740s seem to have been a period of prosperity. Neumark (1956:45) reports that the early 1740s "marked the turning point from depression to prosperity in the economic life of the colony". This period coincided with "the first meat boom" in the Cape, owing to the culmination of the 1744-1748 French-English war in India. English warships entered Table Bay eager to buy fresh meat, live animals and other animal products – including butter, tallow and tail fat. Even after peace was concluded at the end of 1748, an English fleet "consisting of 26 men-of-war and transports put into Table Bay", "the most powerful fleet that had ever appeared on the Indian Ocean", further boosting demand (Neumark, 1956:46). While demand from ships ensured more prosperous conditions in the 1740s, less is known about what caused the high levels of wealth of the 1730s.

A shorter boom occurred between 1758 and 1763 when French ships – due to the Seven-Years War – requested provisions in Cape Town for their fleet in Mauritius. This boom is not visible in the data above, perhaps because it was relatively short-lived. But, according to Neumark (1956:53), the 1758-1763 boom "was only a forerunner of a long period of great prosperity to come". Foreign shipping began to increase from the early 1770s and "assumed ever-larger dimensions in the following three decades, particularly in the 1770s and 1780s" (Neumark, 1956:53). Neumark (1956) argues that the market for meat and wine particularly took off, but there was a lesser impact on wheat. This boom would continue into the early 1790s until the British took control of the Colony in 1795. Figure 17 supports this qualitative evidence, revealing high levels of per household wealth during the 1780s.

2.6 Ownership priorities

An aggregated measure of average household wealth masks the underlying structure of ownership. The inventories include thousands of unique items owned by the Cape settlers. A comprehensive analysis of household items is thus impractical; rather, I use the 28 items defined above to ascertain the order of priority in which households acquired goods.

The order of priority was calculated as follows: the number of product varieties owned by each household was counted (there were 49 households owning none of the twenty-eight products and one household owning 27 of the 28 products). The households were then grouped by the number of product varieties owned, and the groups were ranked (from zero to twenty-eight).[41] The ownership priority was then calculated as a proportion of the full list. The products were categorised into four types, commodities, productive assets, basic household products and luxury household products.

Figure 17 shows four of the products, ranked by their ownership priority. These four products were selected to avoid cluttering the graph, but reflect the general trends for the four product categories. The highest priority ownership by Cape households tended to be slaves and the

[41] Categories 23-27 are merged because of very few observations.

three commodities cattle, horses and sheep. Slaves are shown in Figure 17. Wagons (not shown), classified here as a productive asset, resemble a very similar trend to that of cattle and horses. Next follow the basic household products, represented on the graph by bedsteads. Its trend reflects nearly all of the basic household products, except for trousers.[42] Together with the basic household products, four productive assets (guns, ploughs, buckets and spades) appear to have the same priorities as the four highest-priority products owned (slaves, cattle, horses and sheep). This is not unexpected, given the multiple uses of these productive assets in the household.

Household luxuries were given less priority than basic household products. Irons, books, mirrors, paintings, timepieces, snuffboxes and bird cages are represented in Figure 17 by paintings. The likelihood of owning a luxury product rose sharply after the 10th product is owned. Gold rings (not shown) are the exception. While the likelihood of owning a gold ring rises quite early, it flattens off towards the end of the sample, probably owing to it not being captured well in the data.

The expensive productive assets – anvils, benchs vices, corn sieves, brandy stills and boats (represented by brandy stills in Figure 17) – were given the least priority in household acquisition decisions. It is perhaps surprising that these were acquired only after luxury products, but this points to an important predisposition in the Cape: large, productive assets were owned by an elite few, with lower ownership priority given to them than to luxury products on the farmer's list of consumption (investment) priorities. As discussed later, only slaves and, to some extent, wagons were investment priorities for the non-elite.

[42] The strange incidence of trousers (not shown) suggests that they were measured imprecisely; the likelihood that a person with only two products owned a pair of trousers was larger than someone who owned any greater number of products. This suggests that individual clothing items were listed in the inventories as inferior goods: the higher the level of wealth, the less it was reported.

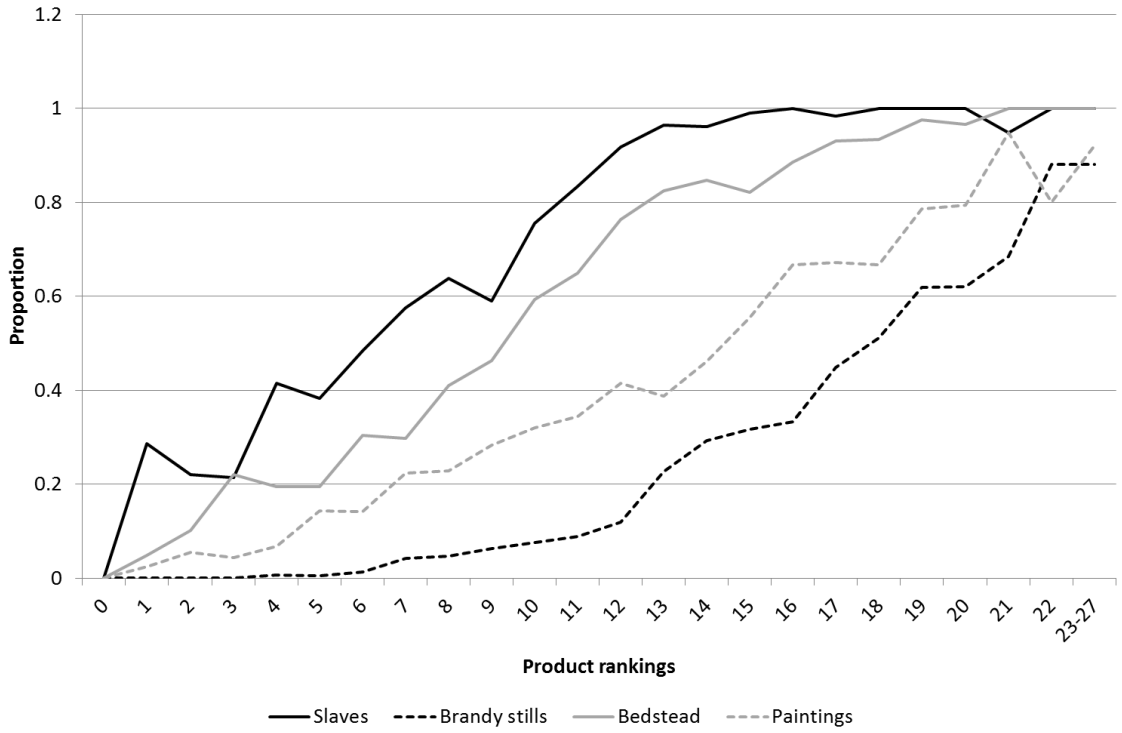

Figure 17: Ownership priorities of item ownership, categorised into four groups
Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

Table 7 summarises the product incidence by group. Seven groups of ownership are defined. Commodities were the first assets acquired by poor households.[43] Of those owning four or fewer items, 31% owned cattle, 25% horses and 27% slaves. Household necessities, such as chairs, buckets and beds were also obtained with high priority, while household luxuries and productive assets had a very low incidence amongst the poor. Yet, even amongst the poorest, some luxury products could be found – in the poorest category, 10.5% owned a book, 8.1% owned a clock or watch, 6% owned a mirror, and surprisingly 5% owned gold rings. Compare this with the extremely low incidence of productive assets for this group: while 10.3% owned a gun, only 1.1% owned a spade, and less than 1% owned an anvil, bench vice or brandy still.

[43] There is a correlation of 0.58 between the number of items owned and the ownership of slaves (which is used as a proxy for welfare above). Not all the 'poor' as measured by the spread of items owned are thus necessarily those with few slaves, and vice versa. Nevertheless, the trends reported in Table 4 are similar when slave ownership rather than counted items is used for ranking.

Table 7: The incidence of the 28 products by ownership groups

Products	0-4	5-8	9-12	13-16	17-20	21-24	25-28	Total
Obs.	542	666	671	455	174	62	7	2577
Slaves	26.8%	52.0%	77.2%	97.6%	99.4%	98.4%	100.0%	65.7%
Cattle	31.0%	59.3%	62.7%	64.2%	82.8%	95.2%	100.0%	57.7%
Horses	25.1%	55.4%	64.4%	69.2%	87.4%	98.4%	100.0%	57.1%
Sheep	22.1%	50.5%	53.2%	57.6%	75.3%	93.5%	100.0%	49.3%
Ploughs	3.0%	19.7%	46.1%	58.2%	77.0%	95.2%	100.0%	35.7%
Corn sieves	0.0%	0.3%	2.5%	13.8%	35.1%	74.2%	85.7%	7.6%
Boats	0.4%	1.2%	1.8%	2.6%	4.0%	14.5%	57.1%	2.1%
Buckets	8.9%	53.0%	88.2%	95.4%	95.4%	100.0%	100.0%	64.5%
Spades	1.1%	13.8%	46.6%	63.5%	80.5%	95.2%	100.0%	35.2%
Guns	10.3%	40.2%	54.1%	62.9%	76.4%	90.3%	100.0%	45.4%
Brandy stills	0.2%	2.7%	8.6%	28.6%	53.4%	80.6%	100.0%	13.9%
Wagons	15.9%	53.2%	61.7%	70.1%	90.8%	100.0%	100.0%	54.3%
Anvils	0.7%	0.9%	1.9%	3.3%	17.8%	56.5%	42.9%	4.2%
Bench vices	0.6%	2.3%	7.0%	13.6%	31.6%	56.5%	85.7%	8.7%
Balances	0.7%	5.6%	22.7%	50.1%	75.9%	93.5%	100.0%	24.0%
Fire tongs	3.3%	19.8%	48.1%	73.4%	83.3%	98.4%	100.0%	39.6%
Oven	1.8%	8.9%	24.3%	43.5%	69.0%	59.7%	100.0%	23.1%
Bedsteads	14.2%	30.0%	61.5%	84.2%	94.8%	100.0%	100.0%	50.7%
Chairs	18.6%	56.3%	87.3%	95.4%	97.1%	100.0%	100.0%	67.3%
Trousers	24.7%	12.8%	12.1%	18.0%	21.3%	14.5%	71.4%	16.8%
Irons	2.4%	20.7%	51.1%	74.7%	85.1%	95.2%	100.0%	40.7%
Books	10.5%	14.9%	24.4%	44.6%	62.1%	80.6%	100.0%	26.7%
Timepieces	8.1%	11.1%	15.4%	34.7%	52.3%	83.9%	100.0%	20.5%
Snuffboxes	5.2%	7.4%	14.6%	31.0%	46.0%	61.3%	85.7%	17.1%
Paintings	4.6%	18.5%	34.0%	49.9%	71.8%	88.7%	85.7%	30.6%
Mirrors	6.1%	31.7%	53.2%	79.1%	95.4%	100.0%	100.0%	46.4%
Bird cages	0.7%	3.5%	12.8%	29.2%	39.1%	56.5%	85.7%	13.8%
Gold rings	5.0%	4.5%	10.3%	21.8%	24.1%	29.0%	42.9%	11.2%

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

Even given the relatively low penetration of products amongst the poorest, the average ownership priorities across the whole sample reflects a society that was not desperately poor; with more than a fifth of all households owning time-keeping instruments (20.5%), books (26.7%), paintings (30.6%) and mirrors (46.4%), the purported pockets of 'wealth' were indeed relatively widespread and inclusive. In fact, these results suggest that the Cape was embedded in the 'consumer revolution' that the regions of North-Western Europe experienced during the late seventeenth and early eighteenth centuries. The next section reflects on these claims, comparing the early Cape material culture with those of other countries and colonies.

2.7 Comparisons

"The Dutch settlements in the West, as well as those in the East Indies, were originally put under the government of an exclusive company. The progress of some of them, therefore, though it has been considerable, in comparison with that of almost any country that has been long peopled and established, has been languid and slow in comparison with that of the greater part of new colonies."[44]

The frequency and number of household products owned by Cape settlers calculated above have limited use if not compared with those of other regions. Holland was the country of origin for most of the European settlers that arrived in the Cape, and it was therefore the obvious starting point. I used three probate sources from Holland: Jan de Vries' seminal work on Frisian probate inventories (De Vries, 1974, 1975), Anton Schuurman's comprehensive investigation into the probates of three nineteenth-century Dutch regions – Zaanstreek, Oost-Groningen and Oost-Brabant (Schuurman, 1997), and Anne McCants' work on Orphan probate inventories in Amsterdam (McCants, 2007). For England, I rely on earlier work by Lorna Weatherill (1988) covering a number of jurisdictions across England and, more recently, Mark Overton et al. (2004), focusing on sample parishes in Kent and Cromwell.

The Cape was, of course, not the only colonial settlement to take root during the sixteenth, seventeenth and eighteenth centuries. New settlements appeared in the Dutch, British, Spanish and French North American colonies, in the Caribbean, and in the South American Spanish and Portuguese territories. In addition to the native populations, European immigrants – and in most parts, slave imports – rapidly increased the population and productive capabilities of these new territories. Other regions – notably Australia – would only experience significant settler immigration during the nineteenth century. Unfortunately, not all these regions administered probate inventories or, where such records were kept, they are not comparable for various reasons. In this study, the Dutch Cape Colony is compared across as wide a range of regions as possible. For Colonial North America, I used the Chesapeake records of Carr and Walsh (1988). I also refer to Jones's (1980) majestic study, *The Wealth of a Nation to Be*, although her data is not presented in a format that is easily comparable with the above results. Finally, Sheridan (1965) uses the probate records of Jamaican plantations which informs the comparison between the Cape Colony and the Caribbean.

Aside from the availability of comparable data, comparisons with the United States as another settler territory are often used by South African historians to demonstrate the perceived poverty of the settlers at the Cape. These comparisons, based mostly on anecdotal evidence or small sample sizes, result, I argue, in incorrect conclusions: Dooling (2007: 4), for example, suggests that "European settlers [at the Cape] failed to accumulate anywhere near the wealth of their counterparts in, say, the United States". The following section, based on information drawn from the probate inventories, will show the contrary.

[44] Smith 1776, IV.7.34

2.7.1 Consumer products

The possibility that the industrious revolution acted as trigger for the Industrial Revolution has galvanised research into the consumption behaviour of individuals in different regions and across time. This large literature mostly uses the *availability* of consumer products as an indicator of material culture, rather than the average number of products or average value of consumer products. Using only availability has its limitations: whereas basic consumer necessities may be prevalent in many households, their frequency in the household may point to large differences in living standards. For example, while 95% of inventories within the highest wealth bracket in Leeuwarderadeel, Friesland from 1711 to 1750 owned at least one mirror, the average ownership per inventory amounted to 1.6 mirrors (De Vries 1975). In the Cape Colony during the same period, 94% of inventories of the top wealth group recorded at least one mirror in the household. But, in contrast to Leeuwarderadeel, the average household ownership for those inventories was much higher, with 4.3 mirrors per household. Average ownership thus adds information that is not reflected by considering only availability of ownership. In the absence of average ownership, however (the De Vries study being an exception), I compare only the availability of inventory products.

Any comparison across different samples of probate inventories is subject to misinterpretation if the different sampling biases are not known and adjusted for. I therefore compare only probate inventory studies that provide satisfactory evidence of having considered possible selectivity bias and, where possible, having controlled for such biases (such as adjusting for possible age bias). Nevertheless, the evidence presented below should be seen as 'soft evidence', with the focus on broad trends rather than narrow, individual comparisons between regions or time-periods.

I first consider books. Several causes are attributed to the Industrial Revolution of late eighteenth century England, of which human capital formation has recently received renewed attention (Galor and Weil, 2000). Even prior to the Industrial Revolution, a derivative of human capital – literacy – was considered an important predictor of economic performance. Baten and Van Zanden (2008) show, for example, how book production, and thus literacy, in the early-modern period explains the economic growth disparities between regions of Western Europe.

Book ownership offers one tool for investigating the human capital attainment of comparative regions. Gilmore (1989: 20) notes that by 1750, the reading public had expanded substantially in North-Western Europe to "include rural and urban 'middling sort' wealth and occupation groups". According to Gilmore (1989), book diffusion was widest in England and America, followed by France and Germany. Less is known about literacy in the Cape Colony, although Baten and Fourie, using the age-heaping of court of justice records to calculate numeracy scores, find that settlers from European origin attained more than 90 per cent numeracy levels throughout the eighteenth century (Baten and Fourie, 2012).

Table 8 adds to this growing literature by reporting the number of books owned by Cape settlers vis-a-vis those of other regions. In comparison with rural inhabitants of Leeuwarderadeel in Friesland, Groningen and the Zaanstreek, Cape settlers owned slightly

fewer books, on average.[45] Compared with Amsterdam orphan records and the probates of Cornwall and Kent, however, Cape settlers owned a relatively greater number of books per inventory. Cape settlers also owned more books than citizens of England, on average, although probates in London, especially, and East Kent report higher book ownership. Still, given Gilmore's assertion that England was the country with the highest book diffusion, Cape settler probate inventories reflect some of the highest levels of book ownership anywhere at that time. The Chesapeake region reflects a broad-based diffusion of religious books.[46] Because book titles are in most cases not listed in the Cape, there is no way to discern between religious and secular books, but some religious books (the Bible or Psalms) were often listed separately. Such separately identified religious books constitute a meagre 3.4% of all books recorded[47], which suggests that Cape settlers owned significantly greater numbers of secular books compared to the Chesapeake settlers of North America.

While book ownership was widespread, book production was certainly not. In all the probate inventories, only one reference could be found to a printing press in the Cape: Frederik Kirsten, a merchant who died in 1784, left "one box of book printing equipment" (MOOC8/18.52). Given the high levels of literacy in the Colony, it is perhaps surprising to find very little printing activity in the Cape.

Table 8: Comparisons of household book ownership across various regions

Books	Class	Source	Percentage of inventories that include books
			1711-1750
Cape Colony	1	Own	14%
Cape Colony	2	Own	19%
Cape Colony	3	Own	31%
Cape Colony	4	Own	55%
Leeuwarderadeel	1	De Vries	75%
Leeuwarderadeel	2	De Vries	42%
Leeuwarderadeel	3	De Vries	56%
			1740-1782
Cape Colony		Own	27%
Amsterdam-BWH		McCants	22%
			1790-1800
Cape Colony		Own	26%
			1830
Oost-Brabant		Schuurman	25%
Oost-Groningen		Schuurman	73%

[45] The Leeuwarderadeel records are grouped according to three 'wealth' groups: those owning zero cows, those owning between 1 and 10 cows and those owning more than 10 cows. Following the earlier literature, I divide the Cape into four wealth groups: those owning zero slaves, those earning between 1 and 5 slaves, those earning between 6 and 15 slaves, and those earning more than 15 slaves. See Chapter 4.1 for more detail.

[46] Carr and Walsh rank five wealth groups (or classes) by the total monetary wealth of the inventories.

[47] In the full dataset (1673-1806), 13048 books are recorded, of which only 449 are specifically referred to as religious books.

Zaanstreek		Schuurman	91%							
			1600-1629	**1630-1659**	**1660-1689**	**1690-1719**	**1720-1749**			
Cape Colony		Own	-	-	-	24%	22%			
Cornwall		Overton	9%	10%	8%	6%	8%			
Kent		Overton	19%	31%	25%	25%	20%			
			1675	**1685**	**1695**	**1705**	**1715**	**1725**		
Cape Colony		Own	-	-	7%	23%	28%	24%		
England		Weatherill	18%	18%	18%	19%	21%	22%		
London area		Weatherill	18%	15%	19%	38%	31%	52%		
North East England		Weatherill	9%	9%	12%	8%	14%	-		
East Kent		Weatherill	28%	25%	29%	25%	23%	28%		
Cambridgeshire		Weatherill	11%	12%	6%	18%	14%	9%		
North-west England		Weatherill	17%	26%	20%	18%	25%	15%		
Hampshire		Weatherill	29%	26%	23%	18%	-	-		
North-west Midlands		Weatherill	22%	15%	15%	11%	17%	9%		
Cumbria		Weatherill	14%	17%	15%	17%	22%	15%		
			1688-1699	**1700-1709**	**1710-1722**	**1723-1732**	**1733-1744**	**1745-1754**	**1755-1767**	**1768-1777**
Cape Colony	1	Own	4%	17%	19%	17%	13%	8%	8%	17%
Cape Colony	2	Own	6%	17%	25%	18%	13%	10%	27%	34%
Cape Colony	3	Own	11%	21%	33%	29%	37%	28%	41%	36%
Cape Colony	4	Own	0%	60%	67%	78%	47%	41%	71%	56%
Chesapeake (rel)	1	C&W	19%	23%	20%	32%	28%	24%	33%	22%
Chesapeake (rel)	2	C&W	34%	48%	59%	42%	44%	58%	39%	48%
Chesapeake (rel)	3	C&W	57%	68%	42%	67%	51%	69%	52%	63%
Chesapeake (rel)	4	C&W	61%	72%	68%	79%	71%	83%	66%	66%
Chesapeake (rel)	5	C&W	73%	94%	85%	85%	86%	92%	85%	82%
Chesapeake (sec)	1	C&W	2%	5%	0%	5%	0%	3%	1%	3%
Chesapeake (sec)	2	C&W	0%	7%	0%	0%	4%	0%	0%	0%
Chesapeake (sec)	3	C&W	3%	0%	5%	0%	2%	5%	2%	5%
Chesapeake (sec)	4	C&W	0%	0%	5%	0%	16%	0%	2%	0%
Chesapeake (sec)	5	C&W	36%	6%	4%	20%	14%	8%	4%	5%

Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.
Notes: Leeuwarderadeel is a municipality in Friesland, the Netherlands. Amsterdam refers to the Amsterdam Burger Weeshuis probate inventories. "Own" refers to own calculations, "De Vries" refers to De Vries (1975), "McCants" refers to McCants (2007), "Overton" refers to Overton et al. (2004), "Weatherill" refers to Weatherill (1988) and "C&W" refers to Carr and Walsh (1988). "rel" refers to religious books and "sec" refers to secular books. Own calculations from MOOC 8 series and Krzesinkski-de Widt (2002).

Not only was literacy an important determinant of preindustrial European growth, but so too was the increasing household allocation of time towards work. De Vries's "industrious revolution" takes this argument further, arguing a causal link between the greater demands for commodities within households, the need to work longer hours, and the Industrial Revolution that was to follow. Voth (2000) uses watch ownership as one method to derive trends of time

use and time consciousness. Timepieces in the Cape probate inventories include hanging and standing clocks, and silver or gold pocket watches. Table 9 provides a comparison of timepiece ownership between the Cape and other regions.

Table 9: Comparisons of household timepiece ownership across various regions

Region	Class	Source	Percentage of inventories that include clocks and watches							
			1711-1750							
Cape Colony	1	Own	2%							
Cape Colony	2	Own	6%							
Cape Colony	3	Own	17%							
Cape Colony	4	Own	49%							
Leeuwarderadeel	1	De Vries	8%							
Leeuwarderadeel	2	De Vries	58%							
Leeuwarderadeel	3	De Vries	83%							
			1740-1782							
Cape Colony		Own	23%							
Amsterdam		McCants	19%							
			1600-1629	**1630-1659**	**1660-1689**	**1690-1719**	**1720-1749**			
Cape Colony		Own	-	-	-	6%	14%			
Cornwall		Overton	0%	0%	1%	2%	9%			
Kent		Overton	1%	1%	18%	41%	54%			
			1670-1679	**1680-1689**	**1690-1699**	**1700-1709**	**1710-1719**	**1720-1729**		
Cape Colony		Own	-	-	5%	7%	7%	8%		
England		Weatherill	9%	9%	14%	20%	33%	34%		
London		Weatherill	56%	54%	58%	70%	90%	88%		
			1688-1699	**1700-1709**	**1710-1722**	**1723-1732**	**1733-1744**	**1745-1754**	**1755-1767**	**1768-1777**
Cape Colony	1	Own	4%	0%	7%	0%	3%	12%	7%	10%
Cape Colony	2	Own	12%	5%	0%	2%	7%	7%	15%	22%
Cape Colony	3	Own	0%	9%	0%	15%	25%	28%	40%	31%
Cape Colony	4	Own	0%	50%	40%	56%	53%	47%	82%	64%
Chesapeake	1	C&W	0%	2%	0%	0%	2%	0%	1%	3%
Chesapeake	2	C&W	0%	4%	0%	0%	0%	0%	3%	4%
Chesapeake	3	C&W	0%	4%	5%	4%	10%	10%	4%	13%
Chesapeake	4	C&W	15%	0%	14%	14%	13%	20%	8%	10%
Chesapeake	5	C&W	27%	44%	42%	55%	61%	60%	43%	39%

Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.
Notes: Leeuwarderadeel is a municipality in Friesland, the Netherlands. Amsterdam refers to the Amsterdam Burger Weeshuis probate inventories. "Own" refers to own calculations, "De Vries" refers to De Vries (1975), "McCants" refers to McCants (2007), "Overton" refers to Overton et al. (2004), "Weatherill" refers to Weatherill (1988) and "C&W" refers to Carr and Walsh (1988). Own calculations from MOOC 8 series and Krzesinkski-de Widt (2002).

Cape settlers owned, on average, fewer timepieces than their Dutch and English compatriots at the beginning of the eighteenth century. However, the diffusion of timepiece ownership in the Cape increased significantly over the second half of the eighteenth century. This increase is visible from the comparisons with the Chesapeake, with more Cape settlers owning timepieces than the settlers of this North American region.

Another luxury item that has provoked debate is the production and ownership of paintings and prints, especially their growth in Holland during the seventeenth century (Montias, 1996, Montias, 2004-2005, Prak, 2003, North, 1997). The Dutch economy – labelled by De Vries and Van der Woude as the "first modern economy" – witnessed a rapid expansion of markets and wealth, together with a rise in the production and consumption of art (de Vries and van der Woude, 1997). The close correlation has encouraged economic historians to investigate the linkages between the two, underpinning the important role of art as a (proximate) measure of a society's economic performance.

The flourishing of art during the Dutch Golden Age would suggest that, during the eighteenth century, Dutch households owned comparatively more paintings and prints than any other region. Table 10 provides a comparison of picture ownership (pictures are the collective of paintings and prints). The results show that the Cape Colony settlers, apart from three regions in England, owned more paintings per household than all other established regions in the Old World. Cape households also owned significantly greater numbers of paintings than the settlers of the Chesapeake region, where ownership of paintings was largely limited to the top quintile and then only to the same extent as the Cape Colony's bottom quintile. The Cape results show that the ownership of paintings permeated settler households; while this may be partly explained by the cultural preferences given the origin of the settlers, the strong link between art and economic performance noted in the literature supports the notion that the Cape was an affluent society, even for those in the bottom quintile.

Another cause of the diffusion of paintings in the Colony may have been local production. Outstanding credits, for example, owed to Adriana Strijdom (1768, MOOC8/12.54) by Philip Hartog for a painting delivered suggests that Adriana had supplemented her income (she was a widow with five children) by painting. The many references to painting equipment ("*1 parthij oude raamen, lijsten, schilderijen en verfgereetschappen*"; *"eenige schilders gereedschappen, mitsg:rs een parthij soo geprepareerde als onaangemaakte verfen"*) in nearly every room, including a total of 66 paintings in her house provide further evidence that this was not only a hobby. The example of Adriana Strijdom (MOOC8/12.54) shows that at least some of the local paintings were produced in the Colony, although only 6 *"schildersgereedschap"* were found in the entire inventory sample, suggesting that local production could not explain the pervasiveness of paintings in Cape households.

Table 10: Comparisons of household picture ownership across various regions

Region	Class	Source	Percentage of inventories that include pictures							
			1711-1750							
Cape Colony	1	Own	15%							
Cape Colony	2	Own	36%							
Cape Colony	3	Own	51%							
Cape Colony	4	Own	74%							
Leeuwarderadeel	1	De Vries	25%							
Leeuwarderadeel	2	De Vries	16%							
Leeuwarderadeel	3	De Vries	28%							
			1740-1782							
Cape Colony		Own	34%							
Amsterdam-BWH		McCants	25%							
			1600-1629	**1630-1659**	**1660-1689**	**1690-1719**	**1720-1749**			
Cape Colony		Own	-	-	-	29%	40%			
Cornwall		Overton	0%	0%	0%	1%	4%			
Kent		Overton	2%	6%	5%	6%	25%			
			1675	**1685**	**1695**	**1705**	**1715**	**1725**		
Cape Colony		Own	-	-	14%	23%	35%	40%		
England		Weatherill	7%	8%	9%	14%	24%	21%		
London area		Weatherill	54%	69%	79%	77%	89%	78%		
North East England		Weatherill	26%	45%	42%	48%	58%	-		
East Kent		Weatherill	37%	31%	48%	48%	52%	68%		
Cambridgeshire		Weatherill	6%	18%	18%	42%	34%	45%		
North West England		Weatherill	20%	28%	35%	32%	38%	34%		
Hampshire		Weatherill	18%	15%	20%	23%	-	-		
North West Midlands		Weatherill	11%	8%	14%	14%	29%	11%		
Cumbria		Weatherill	3%	6%	6%	8%	9%	3%		
			1688-1699	**1700-1709**	**1710-1722**	**1723-1732**	**1733-1744**	**1745-1754**	**1755-1767**	**1768-1777**
Cape Colony	1	Own	7%	7%	11%	17%	18%	12%	18%	14%
Cape Colony	2	Own	24%	27%	41%	35%	35%	17%	38%	26%
Cape Colony	3	Own	22%	29%	42%	68%	52%	49%	56%	46%
Cape Colony	4	Own	-	60%	83%	100%	63%	71%	59%	80%
Chesapeake	1	C&W	0%	2%	0%	3%	0%	3%	0%	0%
Chesapeake	2	C&W	0%	4%	0%	0%	0%	4%	0%	0%
Chesapeake	3	C&W	0%	4%	5%	8%	6%	3%	2%	5%
Chesapeake	4	C&W	0%	0%	9%	7%	7%	10%	10%	12%
Chesapeake	5	C&W	27%	11%	19%	38%	23%	24%	15%	18%

Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.
Notes: Same as in Table 9.

Mirrors in the Cape were often used not only as "looking glasses" but also as reflectors of light. The incidence of mirrors was much more frequent in Holland than in the Cape Colony, perhaps

reflecting the fewer number of daylight hours available in Holland. Table 11 compares mirror ownership, finding that citizens of Holland owned, on average, more mirrors while English citizens owned fewer mirrors than Cape settlers.

Table 11: Comparisons of household mirror ownership across various regions

Region	Class	Source	Percentage of inventories that include mirrors	
			1711-1750	
Cape Colony	1	Own	30%	
Cape Colony	2	Own	56%	
Cape Colony	3	Own	75%	
Cape Colony	4	Own	94%	
Leeuwarderadeel	1	De Vries	100%	
Leeuwarderadeel	2	De Vries	90%	
Leeuwarderadeel	3	De Vries	95%	
			1740-1782	
Cape Colony		Own	51%	
Amsterdam-BWH		McCants	58%	
			1790-1800	
Cape Colony		Own	41%	
			1830	
Oost-Brabant		Schuurman	75%	
Oost-Groningen		Schuurman	95%	
Zaanstreek		Schuurman	100%	
			1690-1719	**1720-1749**
Cape Colony		Own	48%	57%
Cornwall		Overton	4%	8%
Kent		Overton	36%	52%

Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.
Notes: Leeuwarderadeel is a municipality in Friesland, the Netherlands. Amsterdam refers to the Amsterdam Burger Weeshuis probate inventories. "Own" refers to own calculations, "De Vries" refers to De Vries (1975), "McCants" refers to McCants (2007), "Overton" refers to Overton et al. (2004) and "Schuurman" refers to Schuurman (1997). Own calculations from MOOC 8 series and Krzesinkski-de Widt (2002).

2.7.2 Productive assets

The most valuable movable asset in the Cape Colony was slaves. Using the MOOC10 auction rolls, slaves accounted for 24% of the value of all movable assets during the period 1691-1748. Given the increase in the price of slaves towards the end of the century and the decrease in prices of other assets, particularly cattle and sheep, one would expect this share to have increased further. This most closely resembles the US South, where inventories reflected an average of 18.4% of total wealth invested in slaves in 1774. However, 98.4% of American South inventories record slaves and servants, whereas only 72% do in the Cape Colony.[48] The higher

[48] This is for the same time period (1691-1748), but from the MOOC8-inventories.

value but lower incidence of slaves in the Cape suggests that slaves were of relatively greater value compared with the American South. In contrast, the northern and middle colonies owned nearly no slaves (Jones, 1980).

The slave-owning sugar plantations of Jamaica were on a different scale. Between 1741 and 1745, slaves on these estates constituted 55% of total inventory valuations of the sugar plantations. This increased significantly to 81,6% in the 1771-1775 period (Sheridan, 1965). For example, Sheridan (1965) examines a "median sugar estate", noting that between 1741 and 1745 such an estate would have held an average of 99 slaves, increasing to 204 for the years 1771 to 1775 (Sheridan, 1965: 301). This is in sharp contrast with the average number of slaves held in the Cape, which total 6.67 and 5.33 for the two periods.

Table 12: Comparisons of the proportion of slaves to total households assets

Region	Source	Proportion of slaves to total household assets	
		1691-1748	
Cape Colony	Own	24.0	
		1774	
Thirteen colonies	Jones	9.1	
New England	Jones	0.2	
Middle colonies	Jones	1.6	
South	Jones	18.4	
		1741-1745	**1771-1775**
Jamaica	Sheridan	55.0	81.6

Source: MOOC10 series, volumes 1-5; own calculations.
Notes: "Jones" refers to Jones (1980), "Sheridan" refers to Sheridan (1965), own calculations from MOOC 8 series and Krzesinkski-de Widt (2002).

As shown earlier, livestock – cattle, sheep and horses – was the largest component of movable assets for Cape farmers. Table 13 compares the average number of cattle per household with similar results for Holland (districts in Leeuwarderadeel) and England (Kent and Cornwall). Two Cape Colony indicators were included: an average across all households and an average for cattle owners only. The reason for both measures is that in some cases, the comparative sources may calculate averages only for cattle owners.

Table 13: Comparisons of average household cattle ownership across various regions

Region	Source	Date
		1700-1750
Cape Colony	Own	50
Cape Colony (only cattle farmers)	Own	90
Kent	Overton et al.	20
Cornwall	Overton et al.	9
		1711-1723
Cape Colony	Own	39
Cape Colony (only cattle farmers)	Own	75
Noordertrimdeel (Leeuwarderadeel)	De Vries	16
Zuidertrimdeel (Leeuwarderadeel)	De Vries	25

Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.
Notes: Leeuwarderadeel is a municipality in Friesland, the Netherlands. Own calculations from MOOC 8 series and Krzesinkski-de Widt (2002).

As with cattle ownership, Cape settlers owned significantly more sheep than farmers in England. Unfortunately, no similar comparisons could be found for eighteenth century Holland.

Table 14: Comparisons of the availability of and average household sheep ownership across various regions

Region	Source	1700-1750	
		Availability (percentage)	**Average (number)**
Cape Colony	Own	48%	315
Cape Colony (sheep farmers only)	Own	100%	659
Kent	Overton	35%	50
Cornwall	Overton	40%	37

Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.
Notes: "Overton" refers to Overton et al. (2004), Own calculations from MOOC 8 series and Krzesinkski-de Widt (2002).

Tables 15 to 17 provide comparisons of the frequency of ploughs, wagons and buckets owned. The results show that between 1711 and 1750, 63% of farmers within wealth group three owned at least one plough, with 79% of farmers in wealth group four. Compared with De Vries's estimates of Leeuwarderadeel farmers, which show that 61% of those in the top income bracket (those owning more than 10 cows) owned at least one plough, the Cape is surprisingly similar. Ploughs were more frequently owned by Leeuwarderadeel households than by households in the Cape, though, with only 17% of those at the bottom reporting ploughs in their inventories.

Table 15: Comparisons of the frequency of household plough ownership across various regions

Region	Class	Source	Percentage of inventories that include ploughs
			1711-1750
Cape Colony	1	Own	17%
Cape Colony	2	Own	30%
Cape Colony	3	Own	63%
Cape Colony	4	Own	79%
Leeuwarderadeel	1	De Vries	-
Leeuwarderadeel	2	De Vries	63%
Leeuwarderadeel	3	De Vries	61%

Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.
Notes: Leeuwarderadeel is a municipality in Friesland, the Netherlands. Own calculations from MOOC 8 series and Krzesinkski-de Widt (2002).

Table 16 shows that wagon ownership were widespread in the Cape Colony, even amongst the poorest of farmers. Compared with households in Holland, wagon ownership was more numerous in the Cape. The lower level of wagon ownership in Holland can be attributed to the fact that wagons were not the only source of transportation in Holland, where road transportation competed with water transportation.

Table 16: Comparisons of the frequency of household wagon ownership across various regions

Region	Class	Source	Date
			1711-1750
Cape Colony	1	Own	26%
Cape Colony	2	Own	44%
Cape Colony	3	Own	80%
Cape Colony	4	Own	96%
Leeuwarderadeel	1	De Vries	17%
Leeuwarderadeel	2	De Vries	77%
Leeuwarderadeel	3	De Vries	100%

Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.
Notes: Leeuwarderadeel is a municipality in Friesland, the Netherlands. Own calculations from MOOC 8 series and Krzesinkski-de Widt (2002).

Buckets were everyday household assets with several purposes in the eighteenth century Cape. Most often the inventories simply list 'buckets', but in some cases the purposes were also added, such as 'milk bucket' or 'water bucket'. Inventories from the Ottoman town of Bursa, Anatolia and Anton Schuurman's inventory collections from nineteenth century Groningen show that eighteenth century Cape households did not own significantly fewer buckets than households in these regions (see Table 17).

Table 17: Comparisons of the frequency of household bucket ownership across various regions

Region	Class	Source	Percentage of inventories that include buckets
			1700-1800
Cape Colony		Own	67%
			1646-1655
Bursa, Anatolia	1	Karababa	41.5%
Bursa, Anatolia	2	Karababa	48.4%
			1830
Oost-Brabant		Schuurman	83%
Oost-Groningen		Schuurman	100%
Zaanstreek		Schuurman	95%

Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.
Notes: Class 1 and Class 2 in Karababa (2012) refer to the working and ruling class, respectively. "Schuurman" refers to Schuurman (1997). Own calculations from MOOC 8 series and Krzesinkski-de Widt (2002).

Colonial probate inventories created a stir in the United States in 2000 with the publication of Michael Bellesiles's *Arming America: the Origins of a National Gun Culture*. Bellesiles (2000) claimed that American gun culture did not have its roots in America's colonial period but emerged only during and after the Civil War; that during the colonial and antebellum periods, average gun ownership was low and proficiency in use poor. Consequent research, however, showed that Bellesiles had fabricated evidence and that his conclusions were false (Main, 2002). Lindgren and Heather (2002), for example, conclude that "there were high numbers of guns" in seventeenth and eighteenth-century America, and list the ownership proportions calculated from a number of probate samples. It is these figures that are included in Table 18 to compare gun ownership in the Cape with those of other areas.

Table 18: Comparisons of the frequency of household gun ownership across various regions

Region	Source	Percentage of inventories that include guns	
		1690-1719	**1720-1749**
Cape Colony	Own	40%	46%
Cornwall	Overton	2%	2%
Kent	Overton	17%	21%
		1765-1784	**1774**
Cape Colony	Own	46%	
New England	Jones, 1978		50%
Middle Colonies	Jones, 1978		41%
South	Jones, 1978		69%
		1740-1800	**1740-1810**
Cape Colony	Own	46%	
Maryland and Virginia	Gunston Hall Database		71%

Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.
Notes: "Gunstan Hall Database" can be accessed at http://www.gunstonhall.org/library/probate/index.htm [Accessed: 1 November 2011]. Own calculations from MOOC 8 series and Krzesinkski-de Widt (2002).

It is clear that gun ownership in the American South was significantly higher than in the other colonies of North America as well as in the Cape Colony. Gun ownership in the Cape Colony more closely resembled ownership in the northern territories, and both regions were significantly above the ownership percentage for Cornwall and Kent in England.

These results confirm the relative affluence of the average Cape settler. On average, citizens of Holland and England, the two most prosperous societies of the eighteenth century, in very few instances, attained higher standards of living – measured here as the number of particular possessions owned. This result stands in sharp contrast to the perceived poverty of the farmers in the Cape.

2.7.3 Gross domestic product[49]

Even though the above results attest to high standards of living for the average settler in comparison with other regions, an estimate of the gross domestic product (GDP) per capita would allow a more accurate comparison of income per capita between different regions of the world. Measuring aggregate income over long time periods is now standard practice for most developed countries. Estimates of annual income per capita are available for most European and North American countries from as early as the seventeenth century, and measures of real wages – as a proxy for standards of living – date to even earlier periods (Maddison, 2003, Broadberry

[49] This section is based on a co-authored paper with Jan Luiten van Zanden. See Fourie, J. and Van Zanden, J-L. 2012. 'GDP in the Dutch Cape Colony: the national accounts of a slave-based society'. *CGEH Working Paper series*. Utrecht: Centre for Global Economic History.

et al., 2011, Broadberry and Gupta, 2006). These estimates not only allow for static comparisons across regions, but offer more conclusive evidence on the timing and speed of the Great Divergence, the process by which Western Europe and its New World offspring accelerated away from the Malthusian trap.

Population estimates are used as a baseline size for the various sectors. While the VOC sector (contributing about 20% to GDP) and agriculture (about 60%) are very well covered by the data, it is more difficult to measure the contribution of the secondary sector and the rest of the tertiary sector. Fortunately, a detailed labour force survey, undertaken in 1732 under the auspices of Governor Jan de la Fontaine, lists the occupations of the heads of households in the various districts of the colony. To this is added what is known about the distribution of the slaves over the occupations: the number of slaves employed by the VOC, those enumerated in the *opgaafrolle* and active in agriculture, and the 'rest'; it is assumed that other slaves were working in industry and services. The result is that almost 60% of the labour force was active in agriculture, 11% in industry and 29% in tertiary activities (of which more than half was employed by the VOC).

Total gross domestic output was estimated via the production approach and is the sum of value added in agriculture, the VOC sector, and 'the rest': industrial activities (such as beer brewing, construction, among others) and 'other' services not included in the VOC. A full account of this reconstruction is available in the Appendix.

The estimated eighteenth century Cape income levels can be compared with those in other parts of the world, notably the countries of Western Europe. The estimates presented here are expressed in guilders as used in the Cape Colony, which were 'light guilders', somewhat lower in value than the 'heavy guilders' used in the Netherlands. Purchasing price parity (PPP) was used to express the income estimates in Dutch guilders or English pounds. Fortunately, such PPPs have already been constructed by De Zwart (2011) in his study of real wages of the Cape. Using mainly sources from the VOC records, he estimates the total costs of a standard basket of consumption goods in Cape Town – the 'barebones' basket taken from Allen (2001) and Allen et al. (2011). Because the costs of the same basket of consumption goods in Holland and England in these years are known, PPPs are constructed and compared with these two countries.

Three series for the Cape Colony are provided. The first series is the standard GDP per capita, which includes the total Cape population of European settlers, slaves and Khoesan. In the context of the eighteenth century, however, slaves were considered capital goods. When the slave labour force is transferred from 'labour' to 'capital', the question arises as to what the relevant 'population' count would be by which to deflate total GDP. This question has been addressed by Ransom and Sutch in *One Kind of Freedom: The Economic Consequences of Emancipation* (1977) which investigates the economic development in the plantation economies of the south of the USA in the 19th century. They developed the slave economy concept of GDP, which treats slaves as capital assets, and consumption by slaves as an intermediate input into production. This means that the increase in the stock of slaves is added to GDP, and that the consumption by slaves (and in my case also the Khoesan) is subtracted from it (Sutch, 2006). The relevant population is the number of European settlers and VOC employees. The second series is therefore an adapted version of GDP, which is in fact the real income of the settler population living in the Cape Colony.

Slave societies are also characterised by the highly skewed age structure of their populations. The labour force is dependent on a constant supply of new slaves from abroad, who are usually men in the age group 15 to 30 years. Men in productive age groups are therefore disproportionately large, and women and children are underrepresented. This was also clearly the case in the Cape Colony. During the 18th century, the share of adult slaves in the total slave population was 65-70%; only after the cessation of the slave trade in the nineteenth century did this proportion begin to fall, resulting in more or less 'normal' demographic structures during the 1830s. Moreover, the labour force employed by the VOC had a similar age structure, dominated by adult men, although these men gradually began to take (local) wives and have children. Among the settlers, a rapidly growing population with a normal age structure, the proportion of adult men was about 30%, less than half that of adult men among VOC employees and slaves.

The high level of income generated by the Cape Colony (and by slave societies in general) is therefore partly explained by the low dependency ratio; among free settlers every adult male had to earn an income for about 3 people, among slaves and VOC employees, this ratio was about 1.5. One way to control for this was by estimating the size of a 'balanced' population, assuming a proportion of 30% for adult men. The 'balanced' population is clearly much larger than the actual population of the Cape Colony; the ratio between them fluctuates at about 1.9 during the first half of the century, to decline somewhat to about 1.5 during the second half of the period. The third series thus used the 'balanced' population as a denominator. The gradual change in the population structure – in particular as a result of the growth of the VOC-dependent population – can therefore help to explain in part the decline in the other two series that occurred between 1750 and 1795.

The three series were converted into grams of silver, because silver-based money was the standard in the 18th century. In the first half of the 18th century, the three price levels of these economies were very close, but in the second half of the century, prices in Cape Town had the tendency to decline, whereas in Holland and England, they went up. Because the estimates for the Cape are expressed in constant guilders of 1701, the PPPs for this year are close to parity (in 1701 the price level in Holland was less than 1% higher than in Cape Town, and in England, less than 4%).

The series for the Dutch and British GDPs are not only available in current prices (which makes it possible to do the PPP comparison), but also in international dollars of 1990, the benchmark used by Angus Maddison for comparing international levels of GDP per capita in the world economy (Maddison, 2003). This also made it possible to convert (using the ratio between the current Dutch prices of 1701 and international dollars of 1990) the estimates for the Cape Colony into dollars of 1990, to put the results into an even broader perspective.

The results, presented in Figure 18, show that at the beginning of the 18th century, real incomes in the Cape were on a par with those in Great Britain, and only somewhat lower than those in Holland, at the time probably the wealthiest region in the world. British GDP per capita shows a consistent rising trend, however, whereas real incomes in the Cape declined after about 1770. In 1790, when British incomes reached the 2000 dollars threshold, incomes in the Cape were about half of this level, 1000 dollars (in 1990 prices). However, the real incomes of the

European population in the Cape were much higher than the British level (and at times even higher than the Holland level), which supports the relative high standard of living of Cape settlers documented above. If the unbalanced nature of the population is adjusted, however, real GDP per capita appears to be much lower than in England and Holland (not shown). The fact that the real incomes of the European population were on a par or even higher than those in the most wealthy parts of Western Europe was therefore the result of two factors: the very unequal distribution of income in this slave-based society (I assumed that slaves received a subsistence income only), and the unbalanced population structure, dominated by adult men. The 'balanced' GDP per capita suggests that levels of productivity were more or less comparable to those of middle-income countries such as Germany, France and Spain.

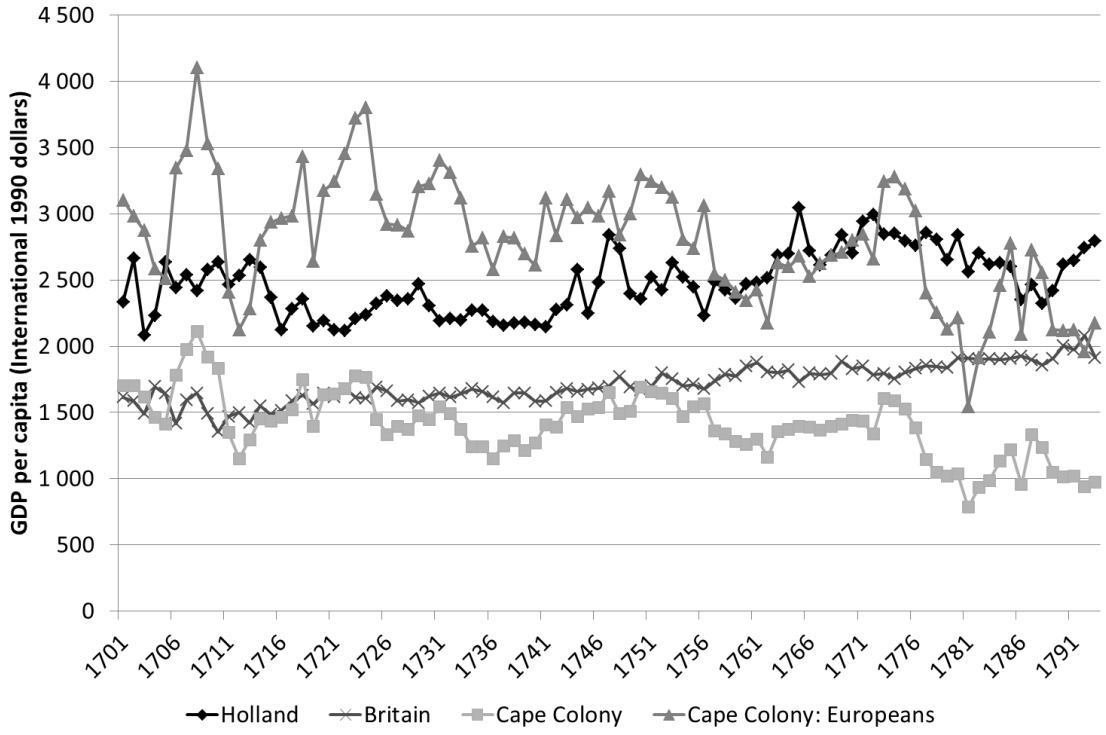

Figure 18: Estimates of GDP per capita in the Cape Colony (total population and Europeans only) compared with GDPs in Holland and Great Britain, in international dollars of 1990, 1701-1795

Sources: Broadberry et al. (2011); Van Zanden and Van Leeuwen (2012); and Fourie and Van Zanden (2012).

GDP per capita does not tell the full story. Economic growth – the increase of total GDP – was much more spectacular in the Cape than in Holland or England. The obvious difference was population growth. The trend growth (estimated as a fitted regression line) of GDP was 2,1% per year; the trend in population growth was slightly higher at 2,5%. The population of Holland was falling during much of the 18th century; its GDP per capita grew by only 0.03% (Van Zanden and Van Leeuwen, 2012). British growth was more impressive: GDP per capita increased by about 0,2%; population by 0,7% per annum, which gives a growth of total GDP of 0,9%, still less than half the rate of growth achieved in the Cape (Broadberry et al., 2011). Perhaps this is why Adam Smith (1776: IV.7.23), in his 1776 treatise, wrote: "The colony of a civilised nation which takes possession either of a waste country, or of one so thinly inhabited that the natives easily give place to the new settlers, advances more rapidly to wealth and greatness than any other human society."

The estimates for household wealth and income per capita reveal that the eighteenth-century Cape settlers had reached a remarkably high standard of living. The results show that household wealth increased over the century, while income per person remained constant and even declined over the last three decades. The two trends are easily reconcilable: the growing levels of eighteenth-century gross household wealth (or, as measured here, assets) was a result of the accumulation of the high (but constant) incomes of the settlers. The next chapter investigates the determinants of this colonial growth.

Chapter 3 | The Causes of Cape Colony wealth

The analysis thus far has covered mostly the period after the turn of the eighteenth century, though the first Europeans had already settled Table Bay in 1652. And only five years later, in 1657, did the expansion of the area under European influence begin, with the release of nine Company servants to become farmers. There are several reasons for choosing 1701 as the starting point: Van Duin and Ross's (1987) series – which is the only source with reliable, annual data on various agricultural and VOC activities – begins in 1701. Even less information about the size of the non-agricultural sector, such as on VOC employment and secondary and tertiary industries, exists for the period before 1701. Due to its small size, the variation in the size of the Cape population results in large – and unlikely – fluctuations in early estimates of GDP levels and growth. Finally, a large amount of the early agriculture in the Cape was conducted not by free settlers but, illegally so, by Company officials for their own pocket. There are no records of the size of production of these estates in the *opgaafrolle*. Only at the start of the eighteenth century, after a petition by the settlers to the Lords XVII in Holland, did these practices stop (by recalling the Governor, Willem Adriaan van der Stel, the main culprit).

Despite these concerns, the high level of GDP per capita at the beginning of the eighteenth century needs explaining. What allowed Cape settlers to prosper so rapidly, given their initial low levels of income?

The first commander of the Cape station had a European blueprint of crop agriculture in mind when he requested the Lords XVII to allow the settlement of Europeans along the Liesbeeck River. These farmers, being mostly ex-Company servants who had lived in the Cape for some time, would supply the crops needed for running the Cape station and for replenishing the passing ships. To do this, they had received most of their initial capital – seeds, cattle and horses – on loan from the Company, and each received a small plot of freehold land (roughly the size of what they could cultivate within the first three years). Schoeman (2010) notes the relatively attractive prospects of farming for Company employees in the Cape during the early years of settlement; most of them came from the bottom echelons of European society and had little opportunity of land ownership in Europe, while the slower economic progress in Holland after 1650, the bad wheat harvests of 1659-1662, and the harsh European winters of 1658-1660 probably also increased their reluctance to return home.

The vision of a tightly knit community of crop farmers soon dwindled. Few had adequate knowledge of agriculture, and the notorious south-easterly wind in the Cape often destroyed promising crops. In addition, several skirmishes with the Khoe made crop farming a risky venture (Ross 2010: 178). Many farmers, therefore, reverted to pastoral farming and hunting as a primary source of income, or escaped on ships returning to Europe.

This fluctuating initial settler population is reflected in some of the early *opgaafrolle* available for this period.[50] The first nine farmers of 1657 increased to 25 by 1660, to 50 by 1663, but fell to 44 by 1670. However, with the encouragement of a new commander in Simon van der Stel, the territory expanded East; Stellenbosch was founded in 1678, and in 1685, Drakenstein was

[50]These *opgaafrolle* were transcribed and digitised by Hans Heese in the 1970s. See Fourie and Von Fintel (2010) for an overview.

also settled. A group of French Huguenots augmented settler numbers by nearly a third (and particularly the number of women in the Colony), so that by 1692 settler men numbered 394, women 168, and children 238 (a total of 800 individuals).

Household labour on farms was complemented by slave labour and European *knechts*. To keep farmers' input costs low, the arrival of slaves was encouraged by Cape commanders from early on; the first noteworthy shipload from Angola arrived in 1658, increasing slave numbers from 10 to 89 (Shell 1994). Most of the slaves were initially used for Company activities, often on the properties of the wealthy Company officials. While Shell (1994) notes 245 slaves in the Colony in 1670, the *opgaafrolle* – tax records of the settler population only – record only 47 of them on settler farms. Only when the settlers expanded into the new territories of Stellenbosch and Drakenstein did labour shortages become acute enough to warrant a larger (private) investment in slaves.

For Company servants, *knecht* employment was often a relatively easy way for these servants to acquaint themselves with Cape agriculture before venturing out on their own. While *knechts* played a relatively minor role in the eighteenth century, their contribution was significant during the initial agricultural expansion – increasing in numbers from 42 in 1663, to 83 in 1678, and 72 in 1692. Farmers soon realised the benefits of slave labour vis-à-vis expensive European labour, and slave numbers on farms increased significantly over the next three decades, to total 860 in 1700, greater than the number of settler and *knecht* men combined.

The early availability of *knecht* labour was largely the result of the growing size of the Company establishment. During the first three decades, the majority of the European population in the Cape was concentrated in and around the fort in Table Bay, so that the 'Cape economy' nearly equated Company activity. The number of Company servants varied considerably according to the frequency of ship arrivals and the number of recuperating seamen stationed in the Company fort and hospital. For example, records show 126 individuals in 1652, 170 in 1654 and 124 in 1660 (Schoeman, 2010). The size of the Company establishment increased roughly three-fold in the last half of the seventeenth century, and was an important local market for the produce of the first farmers.

In addition to the growing local market, the passing ships provided a large, export market for Cape goods. Between 1652 and 1700, an average of 32 ships per year anchored in Table Bay, a total 894 ship days[51] per year. At least 6000[52] sailors and soldiers must have arrived annually in the Cape in search of food, drink and entertainment, less than the 9000 to 11000 proclaimed by earlier historians (Schutte, 1980), but certainly enough to provide an extensive 'export' market for local produce.

This export market fits the "staples thesis", first proposed by Harold Innis for the Canadian economy (Innis, 1956). Innis argued that the growth of the Canadian economy was based on the growth of its staple exports, cod fish, furs and timber, to Europe. The same principal applied to the North American colonies, exporting cod, wheat, furs, rice and tobacco, and sugar in the

[51] 'Ship days' were calculated as the total number of days a ship is stationed in Table Bay harbour. See Chapter 3.1.
[52] Seventy-one percent of all ships arriving in Cape Town were of the 'Spiegelschip' type, carrying an average of 200 passengers.

colonies of the Caribbean. While the Cape did not produce exports for the European market[53], the European ships created an export market that, because of geography, only Cape farmers could serve, producing predominantly wheat, meat and wine. And even though the Company acted as a merchant middle-man, skimming off what would have been very high profit margins, low input costs and relatively low transport costs (at least during the end of the seventeenth century and the beginning of the eighteenth century when most of the agriculture that occurred was west of the first mountain ranges) most certainly allowed the average farmer, especially the Huguenot descendents with skills in making wine, to earn positive profits. With these, settlers imported European-manufactured goods or reinvested in the farms, often in the form of slaves, as is evidenced in the probate inventories these settlers left behind.

This chapter uses standard econometric techniques to identify three determinants of the high eighteenth-century level of wealth: ship demand, settler skills and slave ownership. These determinants are by no means exhaustive. Land abundance (of the classic Nieboer-Domar form), demographic characteristics (such as the high male to female ratio discussed in Chapter 2.8), the system of property rights, cultural and social networks, large credit markets, and Company policies and practices all contributed to the high levels of wealth observed at the beginning of the eighteenth century. They also remain hypotheses to be empirically verified. Instead, I focus on three hypotheses that I believe is testable: that ship traffic caused an increase in agricultural production; that a subgroup of French Huguenots arrived with skills that made them, and their descendents, more productive wine farmers; and that settlers exploited economies of scope rather than specialise in a small and protected market in order to utilise their most expensive capital item, slaves. As will become clear from the discussions, these hypotheses do not only have relevance for the eighteenth-century Cape Colony, but also for our understanding about the causal mechanisms of growth.

3.1 Ship traffic[54]

"The Cape of Good Hope … is the half-way house, if one may say so, between Europe and the East Indies, at which almost every European ship makes some stay, both in going and returning. The supplying of those ships with every sort of fresh provisions, with fruit and sometimes with wine, affords alone a very extensive market for the surplus produce of the colonists."[55]

To test the hypothesis that economic activity, as reflected in agricultural production, was systematically related to the demand from passing ships, a time-series smoothing technique borrowed from the business cycle literature was used to extract useful information from the noisy historical time series. The data and methodology is fully described in Appendix 6.3. Econometric tests for long-run relationships were applied to the smoothed data to test the hypothesis, and the results were disaggregated by type of agricultural good. The economic sizes of these relationships were also briefly evaluated.

[53]Later in the eighteenth century, some produce was exported to markets in the East, but rarely to Holland. The only exception being Constantia wine, which was sought after in Europe.
[54] This section is based on published work with co-author Willem H. Boshoff. See Boshoff and Fourie (2010).
[55] Smith 1776, IV.7.186.

3.1.1 Ships in the Cape

While agriculture – primarily wheat, wine and meat – constituted the dominant share of economic activity in the Cape, Cape Town housed a variety of tertiary sector activities (Worden, 2012). Table 1 (in Chapter 1) presents a survey conducted in 1732 by then Cape Governor Jan de la Fontaine, revealing the relative distribution of occupations for settlers over the three districts of the Colony. The survey suggests that at least 40% (and probably much more) of those living in the district of Cape Town were involved in secondary and tertiary activities. Furthermore, the survey excludes VOC officials, who totalled 1016 at the time – many of whom were involved in service occupations in Cape Town or were part of the private and illegal trade.

The relationship between ship traffic and tertiary sector activity receives attention from van Duin and Ross (1987). They agree that "the money the ships and their crews brought into Cape Town, and spent on lodging, food, drink and the minor trade …, may indeed have contributed, through the multiplier effect, to the prosperity of [the] colony in ways I have been unable to measure". In fact, historians suggest that Cape Town was known as the 'Tavern of the Seas', and offered many public houses and inns to weary travellers (Giliomee, 2003:28, Schutte, 1980:189). Boucher (1974:20) offers some anecdotal evidence of this: "[T]he settlement offered … rest, recovery, good food and entertainment after long months at sea. A typical seaport, it provided pleasures at various levels, from the dubious delights of tavern and brothel to the convivial company of well-to-do settlers and the enjoyment of country excursions." These sentiments are reiterated in his descriptions of ships arriving between 1735 and 1755 in the Cape (Boucher, 1985).

From 1720 to 1780, an average of between 9700 and 11600 men per year left either Europe or Asia on the ships of the VOC. At least 6000 of these would have visited Cape Town, spending several weeks recuperating from the long voyage (Van Duin and Ross, 1987: 13). In modern day terminology then, the Cape was a hub of travel service exports, i.e. tourism expenditure on accommodation, food and beverages, entertainment and health services (Fourie, 2011). Compared with the settler population of 2063 in 1720, which slowly increased to approximately 8000 in 1770, and 15000 in 1795 (Beyers, 1929), the influx of foreign visitors must have had a sizable impact on the economy of the Cape, at least during the early decades of the eighteenth century (Guelke, 1980, Sleigh, 1993).[56]

Prices would typically have been related to swings in demand and supply and should be closely correlated with the demand induced by the passing ships. However, the prices paid by the VOC for farmers' produce were not determined by a market system in the Cape; the Dutch East India Company was a monopsonist buyer of agricultural produce, restricting prices at low levels throughout most of its 143-year rule (Ross, 1990). As expected, this was an unpopular policy and generated frequent petitions and protest from the farming community, of which the most famous was the Patriot movement, a movement organised by farmers to agitate against the monopolistic policies of the Company, towards the end of the eighteenth century (Schutte, 1980). In addition, the VOC prohibited direct trade between farmers and foreign ships, as well as any industry. Monopoly rights were sold to individuals, mostly in the lucrative industries of beer brewing and bread baking (Groenewald, 2007). While illegal trade did occur (with passing

[56] The settler population increased to approximately 8000 in 1770 and 15000 in 1795.

ships and with the local Khoikhoi), there is little evidence that this was, on average, an important part of farmers' incomes.

Chapter 1 briefly reviews evidence concerning economic activity in the early Cape Colony. In particular, the work by Van Duin and Ross (1987) receives significant attention, by virtue of the importance of their research in altering economic historians' views of the early Cape economy – changing it from a subsistence-based to a market-based view. However, Van Duin and Ross emphasise local consumer demand in driving agricultural production growth, although they agree that economic activities in Cape Town may have been more closely related to ship traffic. The secondary position accorded to ship traffic as a source of demand for agricultural produce is in contrast with various historical sources; Boucher (1985, 1974) and, more recently, Ward (2007) document the role of maritime traffic in Cape social life. The literature suggests that ships arriving in Table Bay had three important demand-generating impacts.

First, the ships required the replenishing of food, water and fuel supplies for the journey ahead (for example, see Appel (1966) and Roux (1975) on the demand for wood as a fuel and for ship repairs and maintenance). This was the original purpose of the halfway station in the Cape and is also perceived by Adam Smith to be the main economic benefit.

Second, and especially after production in the local economy had increased to above subsistence levels, some products were sold for export, especially wheat, wine and brandy destined for the East Indies. However, because of the geographic distance from major markets and the relatively high transport costs, Cape produce could rarely compete with the 'staple export' European markets of the North American colonies.

Third, Cape Town offered crews arriving on ships after several months at sea the opportunity to heal and rest. In fact, the demand from the VOC hospital, inns, pubs, and other institutions with strong links to ship traffic would have represented a significant share of the local demand defined by Van Duin and Ross (1987). A systematic relationship between ship traffic and agricultural production beyond exports may therefore suggest that travel services exports constituted an important economic activity in the Cape Colony.

While there were, of course, several supply-side reasons for the high level of wealth of the Cape settlers, the following sections test whether economic activity in the Cape Colony of the eighteenth century was systematically related to the ship traffic in Cape Town harbour. Given the earlier discussion on price stability, economic activity was measured in terms of the quantities of wheat, wine and cattle produced. Non-rejection of the hypothesis would suggest a significant role for ships – and, thus, demand – in the Cape economy.

3.1.2 Method of analysis

Van Duin and Ross (1987) rely on a predominantly descriptive analysis to study the relationship between ship traffic and Cape economic activity: they use graphs and qualitative descriptions to compare five-year averages for ship traffic and agricultural production. While moving averages are one way to smooth time-series data that is subject to influences from observed and unobserved impacts, more advanced techniques developed in the econometric literature now

allow for a more systematic analysis of the average relationship over time between two data series. One of these techniques – the autoregressive distributed lag (ARDL) approach – was employed here to test for the long-run relationship between production and ship traffic during the eighteenth century, while allowing for noise due to the influences of other variables (such as the weather or technological advances in agricultural techniques). The formal test is discussed at length in the Appendix, as are the sources of production data, which are mostly based on the *opgaafrolle* figures collected by Van Duin and Ross (1987). Beyers (1929) reports the number of ships in Table Bay by nationality, with Dutch, English and French ships representing the dominant proportion. Figure 19 shows the arrival of ships in Table Bay by nationality between 1700 and 1793. The category 'Other' includes ships from Denmark, Portugal, Austria, Prussia, Sweden, Spain, Hamburg, Italy, Russia and America.

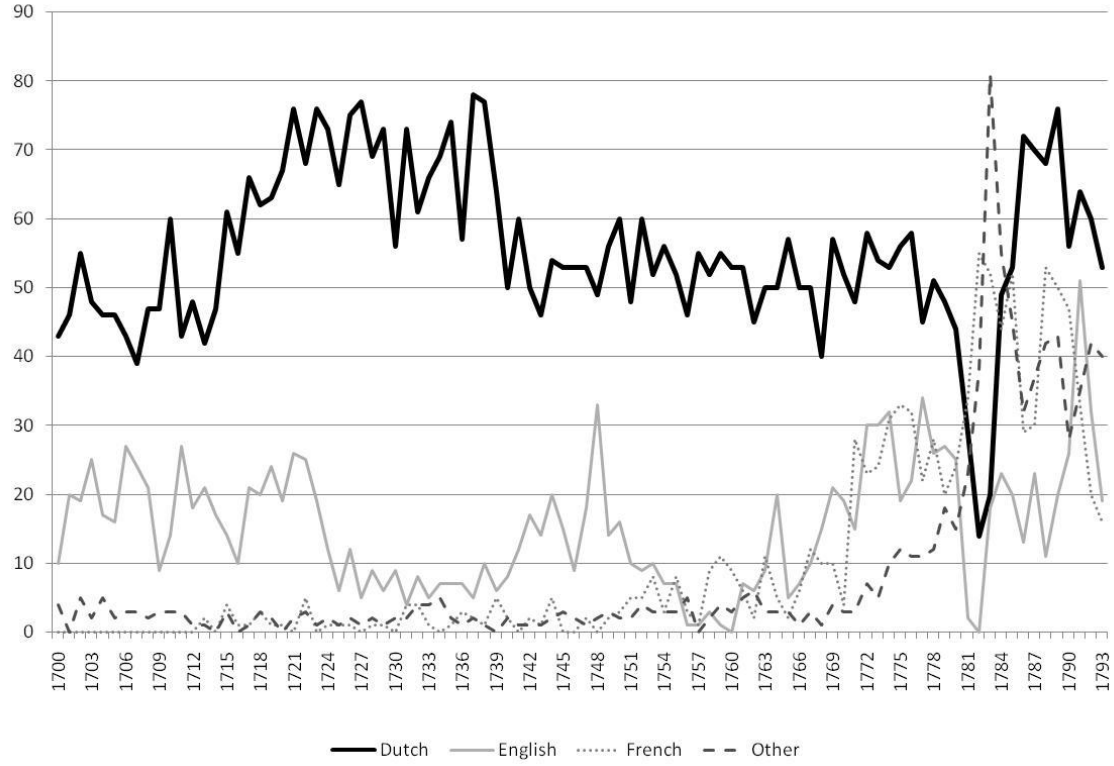

Figure 19: Number of ships by nationality, 1700-1793
Source: Beyers (1929).

A new electronic data source that includes records of all Dutch ships to anchor in Table Bay since the founding of the VOC made it possible to extend the period of analysis to 1652. The data allows estimates of the number of days ships anchored in Table Bay. A dataset for the number of ships stationed per day is therefore calculated, and this was used to compile an annual data set of ship traffic demand in Table Bay between 1652 and 1793. Boshoff and Fourie (2008) discuss this source in greater detail.

3.1.3 Extracting cycles

Time-series data of the type discussed above, spanning a century and covering diverse aspects of economic activity, offer economic historians the opportunity to test for long-run relationships

between economic variables. Unfortunately, econometric tests using the time-series data may be biased, given that the data are noisy (the wine- and cattle-related series in particular), either due to the incentive to underreport or due to the incomplete or inaccurate data collection efforts of the VOC. The challenge, therefore, was to extract the useful information from this data, while minimising the possible loss of information. The work by Van Duin and Ross (1987) and Brunt (2008) contributed significantly to this end, by substantially improving the quality and representativeness of the *opgaafrolle*. However, even these authors advise against using the annual data, given the potential inaccuracy of any given data point. This problem led Van Duin and Ross (1987: 31) to suggest relying on five-year averages, rather than the actual annual figures, when comparing series – given the danger of identifying spurious relationships. The resulting descriptive analysis loses much of the tractability of a systematic time-series evaluation. Time-series smoothing methods were used as an alternative to reduce the noise created by year-to-year data problems, while retaining the explanatory power of the time series.

Economists have developed a range of time-series smoothing techniques to extract specific information from time-series data. Smoothing has been particularly useful in the business cycle literature, where the aim is to separate short-run business cycle information from longer-run trends in the economy (Harding and Pagan, 2002). One popular smoothing technique is the band-pass filter method, which entails decomposing time series into different frequency components – where each frequency component relates to a specific time horizon (Baxter and King, 1999).

The band-pass filter was useful in solving the data problem in this study: the challenge was to remove information related to short time horizons (as year-to-year movements are quite noisy), while retaining the longer-run information. Apart from removing noise, the smoothing out of short-term fluctuations also removed the short-run impact on agricultural production of idiosyncratic shocks, such as weather patterns and local strife. While these shocks are important in their own right, the aim of this paper is to explore the market responsiveness of the Cape Colony to ship traffic. This implies a need to focus on long-run relationships based on time series from which shorter-term effects have been removed.

The band-pass filter allows one to refine the analysis even further: In addition to smoothing out short-term noise, the band-pass filter can also remove information related to very *long* time horizons, leaving a series containing only information related to the medium run. Studying only 'medium-run fluctuations' is useful for two reasons.

Firstly, long-term trends in the data may be inaccurate. For wine and, especially, cattle it is particularly difficult to know whether trends are accurate, as the data precludes the type of trend corrections attempted for wheat production (Brunt, 2008, Van Duin and Ross, 1987). While these data difficulties imply that medium-run fluctuations may also be less accurate, medium-run fluctuations provide *signals* concerning broad patterns and directions of longer-run movements. More generally, a study of medium-run fluctuations is useful in a preindustrial setting where there is still disagreement or uncertainty concerning the levels or trends in output, but where it is more generally agreed that output fluctuated over time.

Secondly, and related, medium-run fluctuations are critical to understanding the evolution of longer-run trends. A core insight of the business cycle literature is that long-term trends include

medium-run information and are not, as is commonly thought, well represented as straight lines: Shorter-run fluctuations carry over into medium-run fluctuations, which, in turn, result in variations in the long-run trend (Comin and Gertler, 2006). If medium-run fluctuations affect long-term trends, a correlation between medium-term fluctuations in ships and output implies a long-run relationship between the *trend* in ship traffic and the *trend* in output. A correlation between medium-term fluctuations in ships and output does not merely tell the uninteresting story that trade fluctuations generated output fluctuations; rather, changes in the *longer*-run trajectory of Cape Town ship traffic over the course of, say, twenty years altered the trajectory of output growth.

The focus on specific frequency ranges required the decomposition of time series into different frequency bands. Theoretically, such decomposition is possible by virtue of the spectral decomposition theorem (Christiano and Fitzgerald, 2003). This theorem provides the theoretical basis for the extraction of a specific frequency range via a time-series filter called the band-pass filter. The band-pass filter is so named as it 'passes' only the specified frequency range – removing other frequency components. The spectral decomposition theorem requires an infinitely long time series. Consequently, in practice, econometricians use approximations of these 'ideal' filters. Two approximations have become popular: the Baxter-King (1999) and the Christiano-Fitzgerald (2003) approximations, the latter of which was used here because it was more suitable for identifying longer-term fluctuations (Everts, 2006).

It may be argued that time-series smoothing can be achieved using much simpler methods, such as a moving average filter. The choice of smoothing method was quite important, as it embodies a particular assumption about the role of different frequencies in the smoothing process. Estrella (2007) notes that time-series filters can either be focused on signal extraction or frequency extraction. Moving averages, for example, are signal extraction filters where a signal can be obtained by calculating an average of a selected number of original series values. Simply taking a moving average of the original series implies that the resultant smoothed series still relies, in part, on the short-run information. This was problematic, given that some individual data points appeared to be incorrect. Alternatively, band-pass filters can be used. These are frequency extraction filters where the smoothing is achieved by removing a particular frequency component of the time series. In the case of historic agricultural data, the band-pass filter approach is to be preferred – given that it is likely that the longer-term information is accurate, but that the year-on-year fluctuations are not.

A smoothing procedure was applied to the original economic and ship traffic series to extract short- and medium-term fluctuations. Before proceeding to the results, however, it is necessary to define the time horizon of short- and medium-term fluctuations to avoid ad hoc concepts. Inevitably, such definitions involve judgment and Burns and Mitchell (1946:469) encountered this challenge during their pioneering business cycle research: "Seldom can the interrelated species of social … phenomena be marked off from one another with such precision as to leave no doubtful cases". In their study of US business cycles (which can be considered short-term fluctuations) from 1885 to 1931, Burns and Mitchell defined cycles as lasting between one-and-a-half and eight years. Of course, they explicitly warned that the range appears to shift over time (Everts, 2006) – although many contemporary studies of the business cycle continue to employ the one-and-a-half to eight year range. Consequently, in the context of the present study, it was

considered useful to consider some comparable figures concerning the South African experience.

Research by Schumann (1938) on the properties of South African business cycles from 1806 to 1936 offers some guidance concerning the duration of South African business cycles, indicating that business cycle fluctuations lasted between two and twelve years in the period before diamonds were discovered, that is, up to the 1870s. Arguably, the economic fluctuations of this period were closest in nature to those of the eighteenth century Cape Colony, as the economy was still largely agrarian-based (Schumann, 1938:112-113). I therefore define short-term (or high-frequency) fluctuations as those cyclical components in the historic time series with a period of between two and twelve years (Comin and Gertler, 2006). Sensitivity tests based on a period of two to eight years did not yield significantly different results.

Medium-term fluctuations can be defined in similar fashion. Unfortunately, less guidance is available concerning the upper bound for the medium-frequency range. This is not necessarily problematic, as Comin and Gertler argue that "[e]ven though [their] measure of the cycle includes frequencies up to 50 years … its representation in the time domain leads to cycles in the order of a decade" (Comin and Gertler, 2006: 526). The frequency definition for medium-term fluctuations appears to be consistent with the findings in Schumann (1938), who identifies three medium-term cycles in the predominantly agricultural period from 1806 to 1869, with respective durations of 30 years, 13 years and 20 years. Although these durations are not necessarily comparable to the eighteenth century, they do indicate that the South African economy in its agrarian phase *did* experience medium-term fluctuations. Equally important, the dubious quality of the time-series data (as discussed in the Appendix) necessitated a long-term view of fluctuations. Therefore, this research defines medium-term (or medium-frequency) fluctuations as those movements in the historic time series lasting between 12 and 40 years (Baxter and King, 1999). As the upper bound is a subject of debate, sensitivity tests were performed for narrower frequency ranges of 12 to 20 years. Results again did not appear to be significantly different.

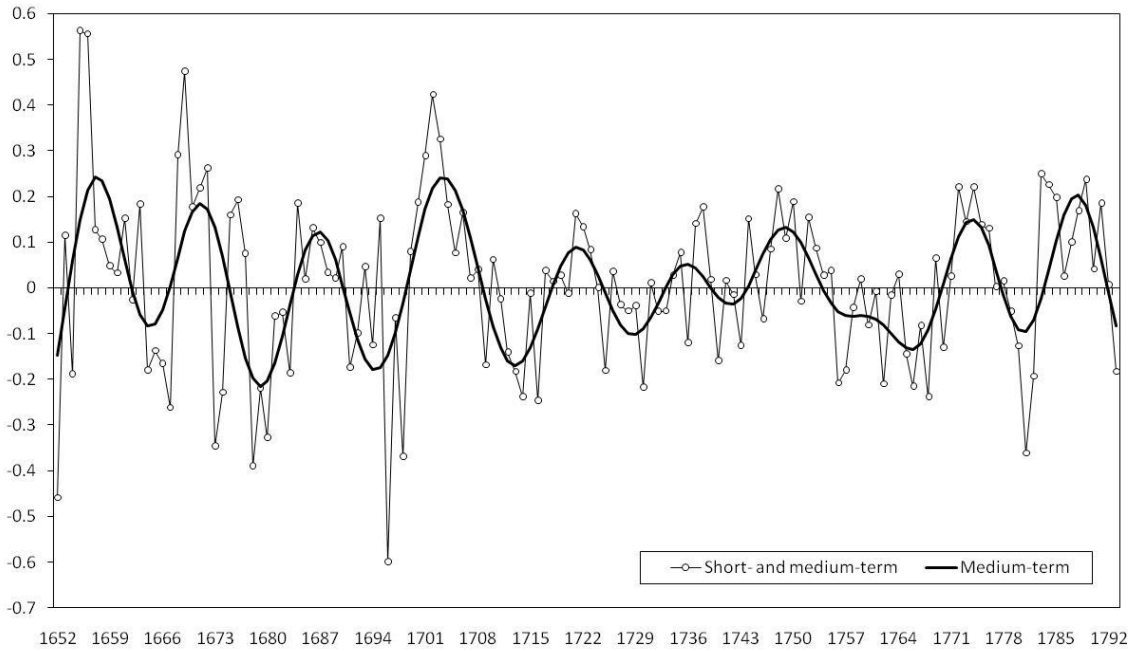

Figure 20: Short- and medium-term fluctuations in the number of ships, 1652-1793
Source: Boshoff and Fourie (2008).

Figure 20 presents short- and medium-term fluctuations for the number of ships in Cape Town harbour. The short- and medium-term line can be interpreted as the detrended series, representing the deviations of the actual series from the long-run trend, where long-run is defined as information related to a time horizon beyond 40 years. The solid line represents the medium-term fluctuations (defined previously as that component of the time series with a period of between 12 and 40 years). The short-term fluctuations can be found in the difference between the two lines. Clearly, a substantial amount of short-run noise is present. Lowering the upper bound for the medium frequency from 40 to 20 years did not produce significantly different results.

This smoothing methodology was also applied to the production time-series data. The extracted short- and medium-term fluctuations in the production and ship traffic data could then be used to test for a long-run causal relationship.

3.1.5 The causal impact of ship traffic

Firstly, the results based on the *uns*moothed time-series data and the time series smoothed with a moving average filter, are presented to emphasise the importance of the band-pass filter method described above. Subsequently, the results based on band-pass filtered data are reported, first removing only short-term fluctuations and then also removing long-term trends.

An index of the original ship traffic and the various agricultural time series is shown in Figure 21 (the base value is 100 in 1701). Visual inspection suggests little correlation between any of the economic output variables and ship traffic.

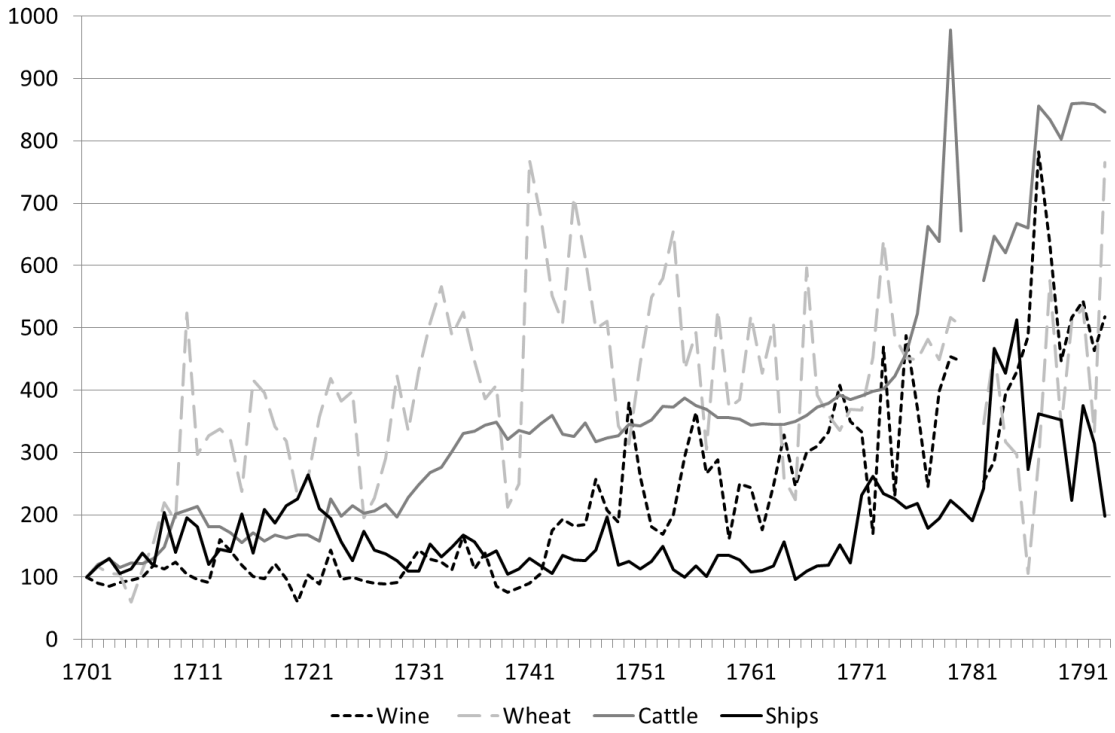

Figure 21: Index of agricultural production and ship days, 1701-1793
Source: Boshoff and Fourie (2008).

These visual impressions were verified econometrically. As discussed above, the analysis was based on the ARDL method developed by Pesaran, Shin and Smith (2006). For this and subsequent applications of the econometric procedure, a lag of four years was used, as this generally removes serial correlation in the errors and is the standard in the literature. The accompanying 5% critical values for an ARDL with a lag order of four years and an unrestricted intercept and no deterministic trend is [2.86; 4.01] (Pesaran et al., 2006:300).

In addition to considering the unsmoothed series, it was useful to include smoothed time series using a five-year, centred, moving-average filter (as opposed to the frequency filters) in the econometric analysis. The F-statistic shows whether the null hypothesis of no long-run relationship between the two variables can be rejected. Rejection of the null hypothesis, and thus evidence of a unidirectional relationship, is indicated by an asterisk (at a 5% level of significance) or two asterisks (at a 1% level of significance). Table 19 presents the results.

Table 19: ARDL bounds test results for agricultural production and ship traffic time series

Relationship	F-statistic of the unsmoothed series	F-statistic of 5-year moving average
Ships → wheat sown	0.73	0.56
Wheat sown → ships	1.17	1.23
Ships → wheat reaped	1.18	11.34**
Wheat reaped → ships	1.03	0.70
Ships → vines	0.29	0.63
Vines → ships	1.88	2.68
Ships → wine	0.40	0.06
Wine → ships	1.70	1.43
Ships → cattle	2.76	0.80
Cattle → ships	0.42	0.87

Source: Boshoff and Fourie (2010).
*Notes: * Statistically significant at 5%; ** Statistically significant at 1%.*

As the visual inspection suggests, Table 19 reports no statistically significant results for the unsmoothed series. The analysis finds no stable long-run relationship between ship traffic and economic activity based on the moving average filtered series, except for some evidence of a long-run forcing relationship from ships to wheat production. This is similar to the results of Van Duin and Ross (1987), who employ a moving-average, and conclude that passing ships were of only secondary importance for Cape Colony production. The general absence of significant statistical relationships appears to be fundamentally at odds with the qualitative discussion in the historical literature. Important information is contained in specific frequency ranges of the time series. Focusing on specific frequency components when assessing relationships may, therefore, alter the preliminary findings.

Table 20 reports the results for similar tests on time-series data from which the short-term fluctuations have been removed using the band-pass filter.

Table 20: ARDL bounds test results for adjusted agricultural production and ship traffic time series (high-frequency fluctuations removed)

Relationship	F-statistic
Ships → wheat sown	4.34*
Wheat sown → ships	4.81*
Ships → wheat reaped	17.88**
Wheat reaped → ships	24.00**
Ships → wheat exports	45.83**
Wheat exports → ships	60.11**
Ships → vines	22.32**
Vines → ships	7.65**
Ships → wine	23.35**
Wine → ships	15.56**
Ships → cattle	83.07**
Cattle → ships	0.51

Source: Boshoff and Fourie (2010).
*Notes: * Statistically significant at 5%; ** Statistically significant at 1%.*

The results clearly differ from those obtained based on the unsmoothed data set. They suggest that significant long-run relationships exist between ship traffic and all three agricultural time series and that the direction of causality appears to run both ways for wine and wheat production activities. As noted when suggesting the hypothesis, this was not unexpected. If ship traffic represented demand for agricultural produce in the Cape, one would expect economic activity to respond to changes in ship traffic. In some ways, this direction of causality appears to be particularly strong, given the relative size of the test statistics for this direction. However, it may also be argued that the increased availability of local produce may have incentivised ships to remain in Cape Town for longer; arguably, a bad harvest year which yielded little surplus production for sale would have forced passing ships to reduce the time spent in Table Bay. Interestingly, as was the case for the previous set of results, the test results for cattle differ – suggesting that ship traffic was the long-run forcing variable. In general, however, the results suggest that the short-run noise in the data *did* hide a systematic relationship between (at least some) agricultural production activities and ship traffic over longer time horizons.

Table 20 involves analysing time-series data adjusted for short-term 'fluctuations'. As argued above, it was worthwhile to focus on medium-term *fluctuations* rather than on the series, which includes both these fluctuations and the long-term trend. The long-run can be removed in a similar fashion to that employed to extract short-term fluctuations. Table 21 presents the results.

Table 21: ARDL bounds test results for medium-term fluctuations in agricultural production and ship traffic time series

Relationship	F-statistic
Ships → wheat sown	4.77*
Wheat sown → ships	3.60
Ships → wheat reaped	61.77**
Wheat reaped → ships	91.67**
Ships → wheat reaped (Brunt (2008))	24.77**
Wheat reaped (Brunt (2008)) → ships	30.50**
Ships → wheat exports	18.97**
Wheat exports → ships	25.02**
Ships → vines	6.05**
Vines → ships	5.68**
Ships → wine	4.40*
Wine → ships	1.16
Ships → cattle	0.54
Cattle → ships	0.25

Source: Boshoff and Fourie (2010).
*Notes: * Statistically significant at 5%; ** Statistically significant at 1%.*

The results differ somewhat from those reported in Table 20. They show that a statistically significant, bi-directional association between ship traffic and wheat production was maintained. It is particularly important to note that this was true for both the wheat reaped and wheat exported data. Given that all exports were by ship, one would expect a systematic relationship between exports and ship traffic. But the relation of wheat production to ship traffic was not limited to wheat exports. The results provide strong evidence that *overall* wheat

production was systematically related to ship traffic. Econometric tests were conducted for wheat production on both the original Van Duin and Ross (1987) and the newer Brunt (2008) estimates, in order to test the extent to which the latter's adjustment affected my conclusions. Both sources reach the same conclusion.

It is interesting to note the difference in results for wheat sown and wheat reaped. While a significant relationship between wheat sown and ship traffic was found, the evidence was weaker than for wheat reaped (compare the size of the F-statistics). The weaker evidence should not be interpreted as counter-evidence: the Van Duin and Ross (1987) and Brunt (2008) adjustments to the *opgaaf* data on wheat reaped yielded much improved time-series data on wheat production. Arguably, the higher-quality wheat output data more accurately reflects economic activity in grain production than the uncorrected wheat sown data. Greater weight was therefore assigned to the relationship suggested by wheat production.

Some of the medium-term fluctuations in the wine production series may also be related to medium-term ship traffic fluctuations. Table 21 shows weaker support for a relationship between ship traffic and wine production activities, although the general conclusions are maintained. When using wine production instead of the number of vines as a data source, the medium-term fluctuations in ship traffic may be forcing medium-term fluctuations in wine production. The results for the cattle data are generally weaker. In fact, with short-run variations (such as the spikes in cattle numbers in the 1770s and 1780s) removed and long-run information also excluded, it seems that medium-term fluctuations in stock farming activities were *not* related to ship traffic fluctuations.

The above findings strongly suggest a bi-directional long-run association between wheat production and ship traffic. However, the fact that both variables appear to adjust to restore equilibrium is not an indication that the relationship was equally strong in both ways. The econometric methodology described earlier can be employed to calculate the size of the long-run relationships between wheat and ship traffic. Table 22 presents these long-run coefficient estimates. Because the data were estimated on a logarithmic scale, the coefficients could be interpreted as percentage increases given a 1% increase in the independent variable.

Table 22: Coefficient estimates of medium-term fluctuations in agricultural production and ship traffic time series

Relationship	Long-run coefficient	Standard Error
Ships → wheat reaped	4.53	5.684
Wheat reaped → ships	2.38	0.671
Ships → wheat reaped (Brunt (2008))	2.18	1.012
Wheat reaped (Brunt (2008)) → ships	2.35	0.410
Ships → wheat exports	2.88	0.979
Wheat exports → ships	0.73	0.065
Ships → vines	1.46	0.539
Vines → ships	0.44	0.408

Source: Boshoff and Fourie (2010).

Table 22 supports three important conclusions. Firstly, Table 22 shows that the claim for a bi-directional forcing relationship between ship traffic and wheat exports should be interpreted with care. The fluctuations in wheat exports had a much smaller effect on ship traffic fluctuations than the reverse effect of ship traffic on wheat exports. The asymmetric result is consistent with what I know about the determinants of ship traffic from qualitative accounts. Fluctuations in ship traffic in the Cape were strongly related to periods of war in Western Europe, and all Dutch ships were required to anchor in Table Bay on their way to the East. While non-Dutch ships were free to bypass the Cape Colony, the lack of substitute ports nearby to provide the level and extent of products and services available in Cape Town was likely to have mitigated the impact of fluctuations in agricultural production on ships' decisions to visit the Cape. On the other hand, medium-term fluctuations in ship traffic fluctuations appear to have had an economically and statistically significant effect on medium-term fluctuations in wheat production. The long-run coefficient of 2.88 suggests that if ship traffic growth had exceeded its long-run trend by 10%, wheat exports would also have tended to accelerate, growing by 28% in excess of its long-run trend.

The second important conclusion from Table 22 is that ship traffic had a large impact on overall wheat production, with a long-run coefficient of around 2.18 using the Brunt (2008) data. The Brunt (2008) data was used as the econometric model suggested a better statistical fit (compare the size of standard errors) compared with the fit obtained from the Van Duin and Ross (1987) data. As expected, the coefficient estimate of 2.18 was slightly lower than the estimate of 2.88 for wheat exports, given that wheat exports were directly related to ship traffic. Nevertheless, the two coefficient estimates are of a similar size order. This similarity suggests that the impact of ship traffic on agricultural production extended beyond exports: ship traffic in Cape Town harbour not only generated demand for exportable commodities and provisions for ships, but also encouraged agricultural production for local use. Significant long-run increases (or decreases) in ship traffic would have affected inns, pubs, the VOC hospital and many other visitor-related businesses – and their long-run demand for wheat. This is consistent with the hypothesis of the demand-generating impact of travel services consumed in Cape Town.

The third conclusion from Table 22 concerns viticulture. While previous tables suggest a bi-directional relationship, the size of the coefficients suggests that the relationship is clearly more unidirectional. Although the evidence is much weaker, the analysis suggests that ship traffic had a long-run coefficient of about 1.46 with the number of vines in the Cape Colony, suggesting that if long-run ship traffic fluctuations exceeded the trend by 10%, the trajectory of vines relative to the long-run trend would have decreased by around 15%. Put another way, if ship traffic were to have declined below long-run trend growth, one would also have seen a marked deceleration in the growth rate of vines, with below-trend growth.

3.1.6 Interpretations and conclusions

The results are conditional given the bivariate nature of the analysis, but they nevertheless suggest that while ship traffic mattered less to in-land activities such as cattle, it was certainly an important driver of economic activity closer to Cape Town, such as wheat and wine production. Such findings confirm Dooling's (2007: 4) observation that "this was a dynamic, agrarian economy, tied to world markets" and the historical narrative of market-oriented wheat

and wine farmers in and around Cape Town and an expanding but relatively independent pastoral community in the frontier regions of the Colony. But the great distances from the Cape Town market and the poor transport infrastructure in the interior reduced frontier farmers' ability to react to market forces, even in the medium-run.

The finding that ships also generated demand for services, apart from exports and ship provisions, relates to a broader debate among economic historians. The literature suggests two explanations for the development of a colonial settlement: firstly, it was able to benefit from large economies of scale growing tropical crops, like sugar, tobacco and cotton [the endowment-inequality hypothesis – see Sokoloff and Engerman (2000)] or, secondly, it was offered an abundant supply of temperate land, leading to high real incomes in agriculture, which attracted large numbers of settlers. These agricultural products were then exported as 'staples' to the European markets, as in the case of Canada, Australia, New Zealand and Argentina (Schedvin, 1990) or West Africa (Hopkins, 1973) during the nineteenth and twentieth centuries. Because immigration was discouraged by the Company (and the importation of slave labour was encouraged), population growth benefitted little from ship traffic. This hypothesis was tested using the same methods described above – see Boshoff and Fourie (2010). As expected, there is no evidence of a medium-run relationship between ship traffic and population growth.

The findings presented above suggest five broad conclusions. The first conclusion from the empirical results is that problems with the historical data do influence the analysis. Unadjusted agricultural data did not appear to show any relationship to ship traffic. Furthermore, attempts at signal extraction through moving average smoothing did not appear to address the problem. However, once specific frequency ranges were removed, more supportive evidence emerged. In fact, the second conclusion is that the main hypothesis is supported for wheat and, to a lesser extent, for wine production. There is strong statistical evidence of a bi-directional long-run relationship between wheat production and ship traffic. However, the size of the correlation reveals that ships were more significant in their impact on wheat than vice versa. The evidence for wine production is less convincing, and there is partial evidence that ship traffic may have been the stimulating force for viticulture. On the other hand, when also controlling for long-run information (information with a time horizon exceeding 40 years), stock herding fluctuations appear to have been unrelated to ship traffic fluctuations. A third conclusion, therefore, is that agricultural activity closer to Cape Town, in the form of wheat and wine production, appears to have been strongly related to ship traffic, while the relative isolation of the frontier farmers from Cape Town and its surrounding regions may have contributed to a weaker relationship with ship traffic. A fourth conclusion is that exports certainly contributed to economic growth in the Cape Colony. More importantly, while fluctuations in ship traffic certainly influenced exports, these fluctuations had an even greater effect on *overall* wheat production. This suggests that the demand created by the ships was not restricted only to goods that could be exported to other settlements, but was also stimulated by the tertiary sector (to accommodate the thousands of sailors and soldiers arriving annually). The fifth conclusion is therefore that the Cape Colony attained economic growth not only by exporting goods, but also services, to the passing ships.

Ship traffic had a significant, demand-side causal link to the development of the Cape economy. This was not because Cape Town – like the harbour towns on the East coast of North America – could export staple crops to large markets abroad, nor was it because tropical commodities with

large economies of scale were 'extracted' from the Colony. In fact, the Colony's unique geography created a single export market for its products: that of the passing ships between the Atlantic and Indian Oceans. The Cape Colony is therefore a unique example of a colonial settlement used for trade purposes, where exports were not limited to commodities, but also included the export of travel services.

3.2 Settler skills[57]

"The colonists carry out with them a knowledge of agriculture and of other useful arts superior to what can grow up of its own accord."[58]

Expanding Cape production was not caused only by higher demand from ship traffic. Supply-side factors, in particular the skills of a small group of French immigrants, provided the know-how to produce one of the staple Cape commodities, wine, more productively. To prove this conjecture, the origins of 159 French families were traced and linked to household output data in the *opgaafrolle*. A standard regression analysis, controlling for a host of different possible determinants of a productivity advantage, shows that the French Huguenots who originated from wine-producing areas produced more Cape wine than the settlers from other regions in Europe. The specific knowledge and skills attained in their country of origin mattered to the settlers' new region. This view is in sharp contrast to the new institutional literature, where location-specific factors are emphasised as causes of the colonial growth experience. The results presented below call for a reconsideration of the role of the French Huguenots in the founding of the Cape wine industry and, more importantly, the role of settlers' origins in shaping the formal and informal institutions that drove colonial economic performance.

Investigations into the causes of cross-country growth performance identify institutions as one of the fundamental causes of economic growth. Proponents of this view argue that institutions influence incentives for the productive use of resources, which in turn affect the development path. Capital accumulation, quantity and quality of labour, and innovation and technology are merely the embodiments or proximate causes of growth and are themselves influenced by institutions (Acemoglu et al., 2005).

Acemoglu, Johnson and Robinson (2001) (AJR hereafter) posit that settler mortality determined the institutional outcomes of colonies – low settler mortality ensured that a settler society developed with institutions favourable for growth, while high settler mortality resulted in growth-debilitating, extractive institutions. Engerman and Sokoloff (2000, 2005, 2011) emphasise the importance of initial factor endowments – climate, soil quality and the availability of a large native population – in explaining the formation of different institutions, and consequently diverse growth trajectories. La Porta et al. (2008) show that the legal origins transplanted by the colonial powers created different incentives for investors, which influenced financial development in the colonies. Institutions are determined by local conditions in both the AJR and Engerman/Sokoloff hypotheses. Both theories, and the empirical strategies by extension, posit that the settlers were a homogenous group, and that variations only existed across the territories colonised. In the context of La Porta et al. (2008), colonial settlers differed

[57] This section is based on work with co-author Dieter von Fintel. See Fourie and Von Fintel (2011).
[58] Smith 1776, IV.7.24

only to the extent that legal origins and hence the resultant institutions were not the same in each territory; they do not account for the role that various settler groups may have played in the development of the various colonies.

The notion of homogenous settler groups (which is implicit in earlier work) is challenged by recent contributions that link the origin of settler migrations to explain modern development differences (Olsson and Hibbs, 2005, Comin et al., 2010). The most recent contribution by Putterman and Weil (2010), for example, constructs a migration matrix to show empirically that conditions in settlers' countries of origin in the year 1500 (technological, institutional or even geographical) possess high explanatory power in determining 2000 GDP differences between countries. Even here, though, homogeneity is assumed amongst settlers who originated from the same country.

This section contributes to our understanding of how conditions in countries of origin affected settler welfare in the destination (settler) country. Instead of using cross-country measures to verify correlations between historical indicators and modern levels of development, historical micro-level production data of a specific region were used to identify the *mechanism* through which settler origin may influence the production possibilities in a new setting. The arrival of the French Huguenots in the newly settled Dutch Cape Colony was used as a natural experiment: this allowed the analysis of two settler groups with different legal origins and cultures. To enable this type of analysis, it was necessary to hold all other possible unmeasured influences constant: throughout, the analysis was conducted in a setting where the local geography and institutions – which were introduced by the VOC rule – were identical for both the already settled European, and new inflows of immigrant populations. The results show that French Huguenot migrants were more productive at viticulture than wheat farming. This impact persisted for their descendants. Given that in later generations the French were completely assimilated into Dutch society, culture and religion mattered little in explaining productivity and welfare: by implication, human capital (agricultural skills and tacit knowledge) was transferred within various groups across generations. This was not the case for wheat production where, controlling for other factors, any advantage the French may have had disappeared.

This hypothesis was further developed by splitting the French Huguenots into two groups, those originating from wine regions in France and those descended from wheat-farming regions. Given that both groups were French Huguenots, one would expect no differences in their use of capital and labour; in the formal and, especially, (possibly inherited) informal institutions that they were exposed to; and in their shared cultural identity. Their skills were therefore exogenously determined by the geography within their homeland.

To demonstrate these propositions, data from the *opgaafrolle* was employed. These constituted production figures that were recorded for the purposes of tax collection by the VOC, as discussed in Chapter 1. Detailed household-level inventories and records of agricultural activities were captured during most of the Dutch period, and even in the early period of British rule. The data used in this analysis spans the period from 1700 to 1773.

Viticulture had important implications for the development trajectory of the Cape. While the shift in output from cattle and wheat to wine seems insignificant, viticulture had different

labour requirements to those of cattle and (to some extent) wheat farming. Viticulture was associated with short periods of seasonally high labour demand. While the indigenous Khoe could potentially be coaxed into labour, Dutch policy prevented farmers from enslaving them. But the displacement of Khoe settlements through frontier migration often left them with little alternative than to find work on European farms. This process was accelerated through the smallpox epidemic that ravaged the Cape Colony in 1713, and in its aftermath, the Cape policy unit in 1717 proposed to the Lords XVII, the board members representing the shareholders of the VOC, that the Colony import slaves rather than encourage European immigration in order to satisfy the demand for labour. Wine making thus raised the demand for labour, encouraging slave imports.

More broadly, the results have important implications for the literature on colonial societies. Colonial institutions were shaped not only by whether settlers stayed or not (as per AJR); which legal system they adopted (as per La Porta et al.); or their language, religion or beliefs; but also by the set of skills, knowledge and experience brought from their country of origin. More specifically, this study identifies that regions within origin countries may have differed, suggesting that cross-country comparisons may hide much of the underlying impact that settlers had on the destination country. Skills affected labour productivity and their areas of specialisation in the adopted homeland. This determined the incentives for productive activity and shaped the future distribution of resources and the growth potential of the colonial settlement.

3.2.1 The Huguenots

The first Europeans to settle in South Africa came to the Cape in 1652 to establish a refreshment station for ships sailing between Europe and the East. The station was under command of the Dutch East India Company officer Jan van Riebeeck. His initial plan was to maintain a small community in and around the newly constructed fort to supply the passing ships with fresh produce, water and fuel for their journey ahead. Cattle could be obtained by trade with the indigenous Khoe population.

Van Riebeeck soon realized the difficulty of obtaining enough fresh produce for the Company servants and soldiers, and in 1657 he released nine Company officials to become free farmers. The farmers expanded into the interior and by the 1680s had already moved close to the Western mountain ranges that separate the Cape Peninsula from the interior. On the basis of a European blueprint, Van Riebeeck had imagined labour-intensive agriculture with thousands of farmers on small plots in the Cape Peninsula. By the 1670s, however, cattle herding was the Cape farmers' dominant economic activity, with a small number of households covering a large territory.

At the same time, the Revocation of the Edict of Nantes in France in October 1685 increased the supply of labour in the Netherlands significantly. The Edict, issued in 1598 by Henry of Navarre, sought to create circumstances within which French Roman Catholics and Protestants (Huguenots) could co-exist peacefully. With the murder of Henry of Navarre in 1610, however, religious intolerance and violence surfaced once more, culminating in the Revocation of the Edict in 1685. It is estimated that more than 400,000 Huguenots left France, settling in the

neighbouring countries of Britain, Prussia, the Dutch Republic and Switzerland, or emigrating to the more remote colonies of North America and the Cape Colony (Morison, 1972).

Only 159 Huguenots arrived between 1688 and 1689 at the Cape, augmenting the small number of free farmers by nearly a third. Even given these new arrivals, the Colony expanded slowly. It was only after 1700 that the supply of agricultural produce exceeded the demand from local residents and ships, and frequent harvest failures and epidemics meant that it was another three decades before supply stabilized above the fixed demand from the passing ships. When the land west of the first mountain ranges had been exhausted, farmers moved into the interior, switching to pastoral farming and in many cases living an isolated and quasi-subsistence lifestyle.

Though Van Riebeeck had already harvested the first grapes on the slopes of Table Mountain in 1658, cattle and wheat farming dominated agricultural output until the turn of the century. A few settlers had planted vines before the arrival of the Huguenots, but by 1690 most viticulture was undertaken on the large estates set up by Company officials, most notably Simon van der Stel, Governor at the Cape at the time of the Huguenots' arrival, and his son, Willem Adriaan van der Stel. These estates earned high returns for their owners, who would often employ Company slaves and prioritize the produce of these farms for Company procurements (to be resold to the passing ships). The settlers, now boosted by the arrival of the Huguenots, petitioned the Lords XVII in Holland to disallow such practices. Their requests were heeded: Willem Adriaan van der Stel was recalled, his farms were sold, and by the turn of the century settler production began the shift towards viticulture on a broader scale, which helped satisfy the growing demand for alcohol from the estimated 6,000 passing sailors and soldiers who visited Table Bay annually.[59]

The Huguenots who left France made significant contributions to the domestic economies wherever they settled. Scoville (1951, 1952a, 1952b) documents the effects that Huguenot immigration had on England, Ireland, Holland, Germany and Switzerland, finding evidence of improvements in especially the industries dealing with high quality fabrics such as silk (Rothstein and Thornton 1960), and clothing, including hat-making (Mathias, 1975). Not only did they contribute directly to production, they also established schools, improved literacy and diffused knowledge through on-the-job training programmes in their adopted countries (O'Mullane, 1946, Hornung, 2010). Because of this, cities were eager to attract these immigrants and provided various incentives to entice them to settle permanently.[60] Further evidence of their value is that the en masse emigration of the wealthiest Huguenots did considerable damage to the French economy (Scoville, 1953). Simon van der Stel was understandably eager to attract Huguenots to the Cape.

Although many Huguenots relied heavily on Company and Church support, struggling through the first few decades, the rapid growth in the wine industry at the Cape during the eighteenth century suggests at least a tentative correlation between Huguenot arrival and output growth. It is therefore surprising that few scholars have empirically investigated the contribution of these immigrants to Cape Colony production.

[59] See Chapter 3.1.
[60] Except in the case of Geneva, Switzerland, where there was strong local opposition to their settlement.

While earlier historians speak in romantic terms of the French arrival – highlighting especially their significant demographic contribution to the Afrikaner people (Nathan, 1939) – more recent surveys have attributed less weight to their economic impact (Guelke, 1980, Schutte, 1980). In what is now the standard text on the Huguenots in South Africa, Coertzen (1997) notes that before the Huguenots arrived the Dutch farmers, knowing little about wine-making, focused mostly on cattle and wheat production. Coertzen (1997) also notes that most of the Huguenots also did not take up viticulture on arrival, largely because of the slow return on investment and the immediate need to produce other goods for own consumption. Yet, from Company records it is clear that some Huguenot farmers did pursue viticulture soon after settlement, notably those who 'with some certainty could be linked to possessing some knowledge of viticulture' (Coertzen, 1997: 111).[61] However, the wine produced during this early period was widely considered to be inferior to that of France,[62] and this has led many historians to downplay the Huguenots' role in the Cape wine industry (Bolsmann 2008). While there was some improvement in quality after their arrival, the general consensus is that the few French viticulturalists were not necessarily better than their Dutch or German counterparts. And although some Huguenot families seemed to have been very successful only two decades after arrival, others 'moved backward and gave up when the droughts and plagues hit them' (Coertzen, 1997: 117). Coertzen attributes the successes to 'hard work and an enterprising spirit' and, to some extent, marrying into wealthy families. He seems to have viewed the skills brought over from France as relatively unimportant.

Some evidence does exist to support the notion that the Huguenots who settled elsewhere exported some knowledge of viticulture. Huguenots who settled in the American colonies (in contrast to those who remained in Europe) tended to favour agriculture (and often viticulture). According to Hirsch (1930), French settlers in the Americas displayed an interest in viticulture from their earliest residence. While grape vine grew wild in the southern colonies, Huguenots introduced its artificial culture, and 'generous bounties were often bestowed for their industry in this branch of agriculture' (Hirsch, 1930: 4).

In the following sections I consider the possible effect that the French settlers had on the production of wine in the Cape Colony. Differentiating between Huguenot and non-Huguenot farmers, I show that the former produced more wine than the latter and, controlling for a host of different inputs, maintained this advantage over time. I also split the Huguenots into two groups: those originating from regions in France where wine was made and those from regions where there was little or no wine production. If I find that the Huguenot farmers who were the most productive wine-makers originated from wine-producing regions in France, it supports my hypothesis that settler skills matter for colonial development.

3.2.2 Settlers' origins

It is well known that many of the main wine producers in South Africa have their roots in Huguenot families, but the *opgaafrolle* is a dataset that allows for testing the strength and

[61] These were Isaac Taillefert, Pierre Joubert, Jacques Malan, François Retif, Josue Cellier, Paul Couvret and the three brothers, Pierre, Jacques and Abraham de Villiers.
[62] The notable exception being the sweet wines of Constantia which were sent to dignitaries across Europe and which Napoleon requested while in exile on St Helena.

nature of the connection between French and South African viticulture more thoroughly than ever before. These are household level censuses of all free men at the Cape that were drawn up annually for tax purposes by the Dutch East India Company. Fourteen of these *opgaafrolle* – spaced roughly every five years and subject to the quality of archival sources – have been converted into user-friendly format by the authors on the basis of unpublished earlier work by historian Hans Heese.[63]

Apart from household members, slaves and weapons, the censuses include primarily agricultural indicators: wheat, barley and rye sown and reaped, vines planted, wine produced, and cattle, sheep, horses and pigs owned. Most scholars agree that farmers underreported variables to evade Company taxation. Van Duin and Ross (1987) and Brunt (2008) have adjusted these figures upwards using projections of consumption in the Cape Colony.[64] Because the focus is on production as compared between households, adjustments for aggregate discrepancies would not influence the results if the assumption is that underreporting occurred randomly across the groups compared.

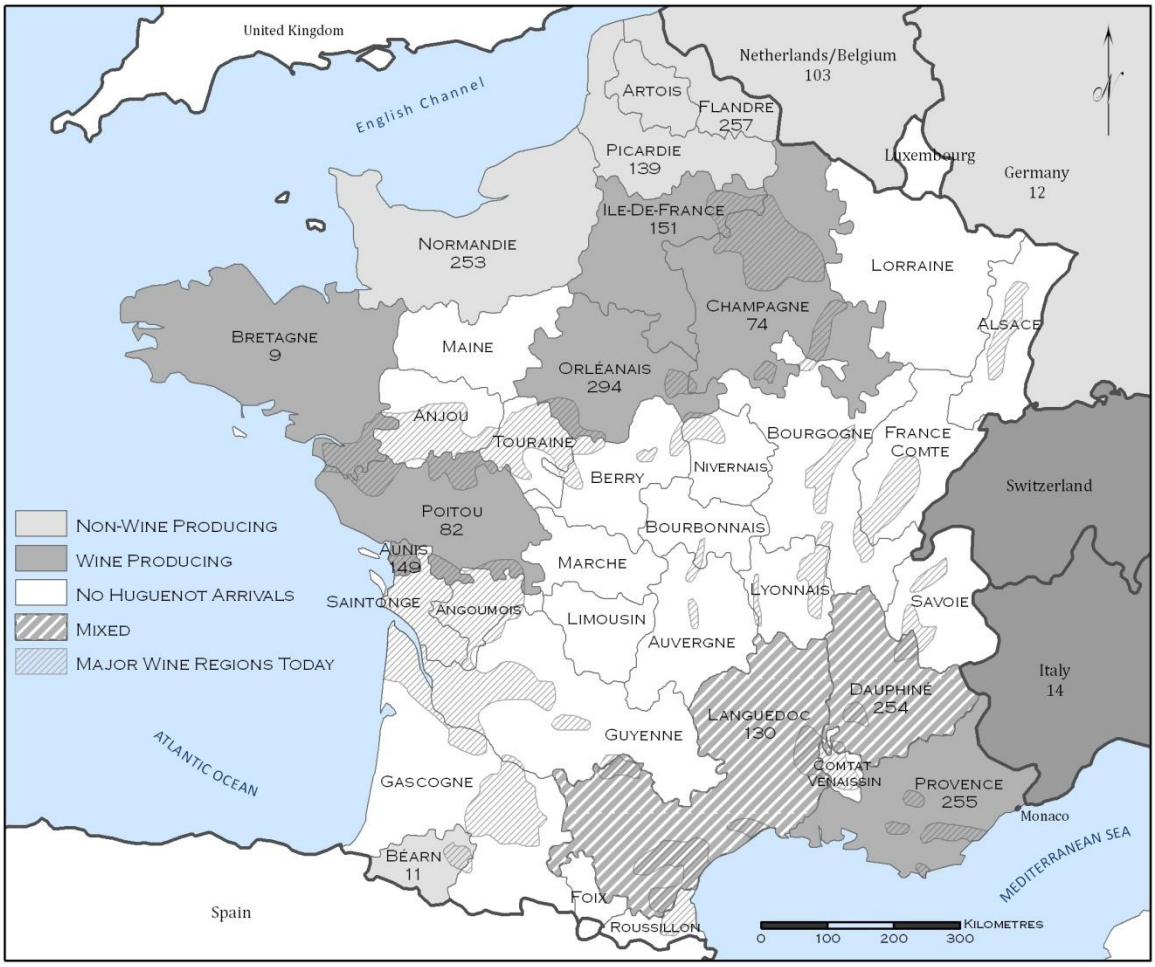

Figure 22: Provincial origins of French Huguenots
Source: Boucher (1981); own projection.

[63] See the discussion in Chapter 1.6.
[64] See the discussion in Chapter 1.3.

The analysis of settler performance is conducted by analysing household production of two outputs that dominated agriculture in the Cape colonial period: wheat and wine. These products were also traditionally cultivated in the settlers' respective countries of origin. To construct a Huguenot dummy variable, I trace the surnames of each of the 159 Huguenot who arrived in 1688/89 for all the censuses after 1700.[65] A subset of French regions traditionally excelled at wine production while other regions of the country did not enjoy this advantage. Their competitive advantage lay in the cultivation of wheat.[66] A further sub-classification of the Huguenots is therefore introduced: surnames of settlers who were known to have come to the Cape from regions in France that were wine-producing regions during the late seventeenth century were separated from surnames of those who were not. Here I follow the guidance of historians (Boucher, 1981). Figure 22: Provincial origins of French Huguenots provides a visual presentation of these areas. The numbers shown on the map represent the number of Huguenot households in the dataset over all years in the sample. There are several reasons to include all observations and not only the initial 159 individuals: a few of the first immigrants die soon after arrival or have no descendants and therefore disappear from the dataset. If these are disproportionately from one region, it could potentially bias the results. Including on the map the same individual over multiple years provides a more accurate reflection of the distribution of Huguenot surnames, and show that most regions are well-represented in the data. While historical sources are used to identify wine-producing regions, I also show that these are roughly correlated with Encyclopaedia Britannica's major French wine regions today (Britannica Online, 2012). In the rest of this chapter, I refer to Huguenots who originated from wine-producing regions as WH-farmers, Huguenots from non-wine producing regions as NWH-farmers, and non-Huguenots as NH-farmers.

A measure of formal human capital is also included in the Huguenot sub-sample. I obtained this from Crayen and Baten's (2010) age-heaping estimates of human capital in pre-industrial France. This variable represents the extent of numeracy in the areas from which each of the French settlers came. It is possible that more numerate farmers would perform better at their trade. However, numeracy (a generic skill) may not necessarily be relevant to farming, and in particular wine farming (which requires specific knowledge or skills). In this manner I separate the impact on production of generic and specific skills, which is discussed later. It should be noted, however, that this measure of human capital relates to numeracy levels of the whole population in French regions some time before the sub-population of Huguenots migrated to the Cape.

I construct a further dummy – *Married* – using the work of Coertzen (1997) and Botha (1939) to indicate whether settlers married Huguenot women, differentiating between those women who

[65] Observations are presented at the household level and classified by the surname of the household head. In most cases this person was male. As a result, if a settler with a Dutch surname had a French maternal grandfather, for instance, this descent is not recorded in this measure. This classification therefore only captures French descent that can be followed via a complete line of exclusively paternal links to an original Huguenot.

[66] Holland and Germany, where most of the Cape settlers came from, were also not wine-producing regions.

originated from wine-producing and non-wine-producing regions.[67] Another dummy – *Born abroad* – indicates whether the relevant household head was a first generation Huguenot.

Given the predominance of agricultural indicators, all non-farmers (those households with zero scores on all agricultural variables) are removed from the 17,292 household observations in the dataset to focus exclusively on the farming population. Although some rural people who were in fact farmers but simply had no farming assets on record may also have been removed in the process, using only the farming population eliminates the possible bias in undercounting the productive contribution in urban Cape Town for which we have no data to indicate production.

[67] This partially accounts for the fact that we can only identify Huguenots through paternal links to the original settler. This measure accounts for maternal links within the first generation and cannot trace Huguenot marriages lower down the family tree for a particular household.

3.2.3 The Huguenots' advantage

A descriptive analysis shows whether differences did indeed exist between the various groups of farming settlers and follow this with an extensive set of regression models that uncover the patterns that underlie the differences.

Descriptive results

Table 23 provides the average household ownership by group over the full sample of censuses. On all measures, the three groups appear roughly similar, except for vines and wine, where the WH-farmers own on average more than twice what the other two groups own.

Table 23: Average household ownership per type of asset, farmer sample

Group	N		HH	Slaves	Knechts	Vines	Wine	Wheat Reaped	Cattle	Horses
NH	6848	M	3.57	5.04	0.15	3.80	2.28	22.98	35.55	5.80
		SD	2.86	8.46	0.77	11.54	7.64	64.22	65.07	10.08
NWH	1038	M	3.62	3.73	0.06	3.65	2.26	20.01	31.78	4.42
		SD	2.82	6.28	0.29	8.81	6.55	55.14	44.15	6.69
WH	1192	M	4.05	4.03	0.08	6.88	4.83	15.58	31.01	4.54
		SD	3.16	6.70	0.36	12.87	10.92	41.05	40.86	6.81
Total	9078	M	3.64	4.76	0.13	4.19	2.61	21.67	34.52	5.48
		SD	2.90	8.04	0.69	11.49	8.08	60.71	60.32	9.39

Notes: N = observations, HH = household size, M = mean, SD = standard deviation. Only farming households are included in the sample.

Table 24: Mean household per capita production levels, by population group over time

	Wine (leaguers)			Wheat Reaped (*muids*)		
	NH	NWH	WH	NH	NWH	WH
1700	1.16	1.18	1.40	4.32	2.65	3.69
1709	0.98	0.55	0.83	17.45	7.30	8.14
1719	0.80	0.44	0.98	9.45	5.93	3.76
1731	0.75	0.55	1.13	8.68	6.65	5.46
1741	0.33	0.25	0.67	10.55	11.76	8.33
1752	0.49	0.54	1.18	4.72	3.54	4.20
1757	0.61	0.82	1.23	3.36	1.64	1.53
1773	0.63	0.93	1.89	3.73	5.51	2.82

Notes: All figures are weighted to reflect the household size of each farmer. Only farming households are included in the sample.

The average household per capita wine and wheat production by group *over time* is provided in Table 24. While no formal tests for mean differences are shown, it is evident that wine production was strongest among WH-farmers. This is illustrated in Figure 23: Mean household per capita output of wine, 1700-1773, where the mean per capita household output is plotted for various years between 1700 and 1773.

Figure 23: Mean household per capita output of wine, 1700-1773
Source: Various (see text); own calculations.

Initially there appears to be little difference between the three groups. The first difference between WH-farmers and the other two groups appears in 1719 and the disparity remains and increases towards the end of the period. Hence, there is already some evidence in the descriptive results that points to a persistent advantage in viticulture at the Cape for WH-farmers. While this suggests that the inherent advantage by region of descent was present from the beginning, these initial advantages became amplified into persistently higher wine yields over almost a century. This is contrary to what one might expect, as later generations presumably do not inherit 'more' of the advantage than the first arrivals of WH-farmers. This trend is scrutinised more closely in the regression models, when controls for these first arrivals are introduced.

Wheat production also reveals differences between groups, though now NH-farmers are the clear winners (see Table 24). This group had, however, already established their presence at the Cape before the arrival of the French, so the initial advantage may only be a reflection of more mature farming operations. In most periods, the WH-farmers appear to be the poorest wheat farmers, probably reflecting their specialization in wine production. However, the gap between the groups narrows across time, so that the rankings do not hold by the end of the period. This suggests that acquiring the necessary skills for successful wheat farming was not as costly as for wine making.

Model-based analysis
Standard production functions of household mean per capita production are estimated to model the following process:

$$log(Y_{it}) = \alpha + \beta SettlerGroup_{it} + \gamma K_{it} + \delta L_{it} + \theta A_{it} + \lambda_t + \varepsilon_{it} \quad \ldots(1)$$

where Y_{it} is household output per capita. $Settler\ Group_{it}$ represents the variables of interest – constituted by a dummy variable for WH-farmers and one for NWH-farmers, with NH-farmers as a base group. In the analysis of the Huguenot sub-sample the base group are the NWH-farmers. K_{it} is a vector of controls for capital (represented here by slave labour), L_{it} is a vector of controls for paid labour (European *knechts*), A_{it} is a vector of additional controls, including the effects of being an original Huguenot and marrying an original Huguenot wife, λ_t is a set of time fixed effects, and ε_{it} is an error term.

Using the full sample of farmers, Table 25 reveals the OLS results for four sets of regressions, specifications 1 to 4. The first regression includes only the variable of interest – the *Settler Group* dummies – as well as the *Born Abroad*, district and time dummies. The large statistically significant and positive WH-coefficient suggests that the WH-farmers produce 173% more than the NH-farmers at the Cape (when no controls are included). The small and insignificant coefficient in specifications 1 to 3 and the negative, significant coefficient in specification 4 for NWH-farmers suggest that these settlers have little if any advantage over NH-farmers in producing wine at the Cape.

It might, however, be claimed that the WH-farmers' advantage is due to other observable characteristics, such as capital and labour employed in the production process. Slavery serves as one of the strongest predictors of success and most closely proxies for capital, while European labour (*knechts*) controls for labour. These controls are introduced in specification 2. Cattle and horses are also included as control variables; in addition to providing meat, oxen were required for productive activities such as ploughing and transport, especially over the sandy terrain of the Cape Peninsula. Horse ownership was initially limited, but increased substantially during the course of the eighteenth century (Swart 2003: 56).[68] In addition to the stock variables, I control for wheat reaped to determine the complementarity or substitutability of the two crops. I also control for other familial ties (*Married* dummies) which could have aided the transmission of specific knowledge. Specification 3 includes these additional controls. Finally, specification 4 also includes the number of vines planted, which is the direct input into making wine. The number of vines planted also acts as a proxy for farm size (together with the other agricultural variables).

[68] See also Chapter 2.

Table 25: Dependent Variable: log(Wine per household member produced) (in leaguers), full farmer sample, OLS

	Specification	1	2	3	4
	Non-wine-producing	0.189	0.154	-0.178	-0.256**
Huguenot	Wine-producing	1.730***	1.499***	1.083***	0.751***
	Slaves		0.178***	0.167***	0.125***
	Knechts		0.568**	0.496***	-0.400**
	Cattle			-0.003***	-0.010***
	Horses			0.045***	-0.059***
Inputs	Wheat Reaped			0.008***	0.007**
	Non-wine			0.267**	0.313***
Married	Wine			0.667***	0.624***
Vines					0.424***
Born Abroad		1.066***	1.051***	1.049***	1.011***
	Stellenbosch	1.522***	2.191***	2.179***	1.779***
	Drakenstein	-0.091	1.221***	1.182***	0.950***
Region	Swellendam	-1.771***	-0.002	0.014	0.099
	1702	-0.904***	-0.784***	-0.770***	-0.692***
	1705	-0.827***	-0.764***	-0.788***	-0.129
	1709	-1.092***	-1.372***	-1.455***	-1.379***
	1712	-1.578***	-1.942***	-1.988***	-1.803***
	1719	-1.311***	-1.931***	-1.936***	-1.719***
	1723	-1.351***	-1.997***	-2.005***	-1.671***
	1731	-1.714***	-2.667***	-2.679***	-2.117***
	1738	-2.355***	-3.591***	-3.553***	-2.864***
	1741	-2.606***	-3.672***	-3.702***	-2.989***
	1752	-2.282***	-3.040***	-3.053***	-2.671***
	1757	-2.343***	-3.060***	-3.078***	-2.720***
	1762	-2.536***	-3.225***	-3.264***	-2.777***
Time	1773	-2.436***	-3.311***	-3.334***	-3.022***
Constant		-2.987***	-4.274***	-4.277***	-4.404***
R-squared		0.163	0.354	0.36	0.495
N		9078	9078	9078	9078
F statistic		176.325	221.51	197.359	204.718

Notes: Control groups are non-Huguenots in the Huguenot dummy, Cape Town in the district dummy and 1700 in the year dummy. Wheat reaped measured in *muids*. Vines planted numbered in 1000s. * p<0.1, ** p<0.05, *** p<0.01.
Source: Own calculations.

The variable of interest – the WH-dummy – remains large, positive and statistically significant across the first four specifications. Controlling for various inputs, the WH-farmers specialized in viticulture vis-à-vis their Dutch and other Huguenot compatriots. Specification 4 reveals further that even when controlling for vines planted, WH-farmers produced more wine per household, suggesting that not only did they specialize in viticulture, they were also more *productive* wine-makers given their production inputs.

Table 26, which includes only Huguenot arrivals in the sample, shows that the WH-farmers had an especially strong degree of specialization in wine, which is consistent with the idea that this specialization and productivity advantage is rooted in pre-migration exposure to viticulture.

Table 26: Dependent Variable: log(Wine per household member produced) (in leaguers), Huguenot sample, OLS

	Specification	5	6	7	8	9	10
Huguenot	Wine-producing	1.307***	1.106***	1.025***	0.718***	0.877***	1.992***
	Slaves		0.183***	0.180***	0.128***	0.121***	
	Knechts		3.021***	3.155***	1.28	1.843	
	Cattle			-0.008*	-0.018***	-0.022***	
	Horses			0.092**	-0.181***	-0.191***	
Inputs	Wheat Reaped			-0.005	-0.001	-0.007	
	Non-wine			0.071	0.211	0.203	
Married	Wine			0.465**	0.479***	0.457**	
Vines					0.600***	0.608***	
Born Abroad		1.817***	1.522***	1.546***	1.360***	1.124***	
Numeracy						0.006	
	Stellenbosch	1.966***	2.926***	2.792***	1.694***	1.518***	
	Drakenstein	1.255***	2.822***	2.723***	1.809***	1.623***	
Region	Swellendam	-1.732***	0.445	0.422	0.474*	0.43	
	1702	-1.289**	-1.174**	-1.152**	-1.078**	-1.042**	
	1705	-1.432***	-1.346**	-1.384***	-0.337	-0.272	
	1709	-1.451***	-1.574***	-1.592***	-1.316***	-1.251***	
	1712	-2.069***	-2.472***	-2.507***	-2.157***	-2.169***	
	1719	-1.440***	-2.116***	-2.075***	-1.599***	-1.460***	
	1723	-1.063**	-1.717***	-1.659***	-1.139***	-0.889**	
	1731	-1.063**	-2.198***	-2.182***	-1.346***	-1.168**	
	1738	-1.820***	-3.359***	-3.311***	-2.352***	-2.268***	
	1741	-1.771***	-3.213***	-3.189***	-2.122***	-2.041***	
	1752	-1.177**	-2.292***	-2.276***	-1.942***	-2.124***	
	1757	-1.378***	-2.531***	-2.585***	-2.209***	-2.294***	
	1762	-1.551***	-2.730***	-2.812***	-2.098***	-2.101***	
Time	1773	-1.382***	-2.653***	-2.711***	-2.529***	-2.637***	
Constant		-4.469***	-5.781***	-5.915***	-5.630***	-6.306***	-3.11***
R-squared		0.177	0.301	0.306	0.521	0.521	0.103
N		2230	2230	2230	2230	1675	368
F statistic		80.005	79.52	62.908	94.016	78.616	32.475

Notes: Control groups are Wine-producing-Huguenots in the Huguenot dummy, Cape Town in the district dummy and 1700 in the year dummy. Wheat reaped measured in *muids*. Vines planted numbered in 1000s. Specification 10 only considers the sample of Huguenots that were born abroad. * p<0.1, ** p<0.05, *** p<0.01.

Source: Own calculations

The results show that throughout the colonial period WH families had a relative specialization in wine production when observables and location are controlled for. The evidence in specifications 5 to 9 also suggest that not only did WH families tend to specialize in wine, they were also better at it – for a given number of labourers and vines (and controlling for other outputs and inputs), they produced more wine than NWH-farmers (72% in specification 8).

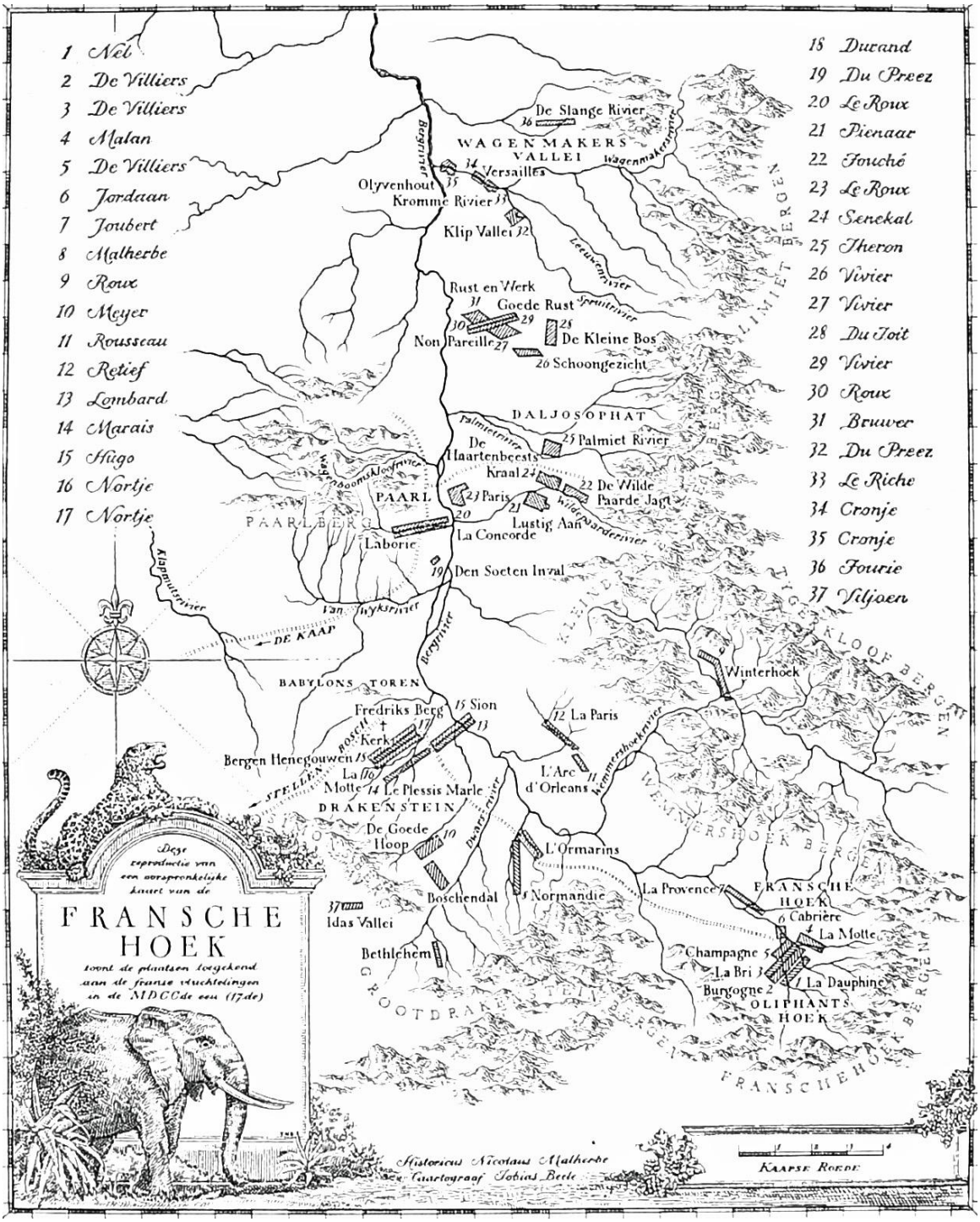

Figure 24: Approximate location of 37 Huguenot families in the Drakenstein/ Franschhoek area

Source: Digital imprint, Map division: South African Library, Cape Town, 2008.

Several factors may explain the WH-farmers' specialization and productivity advantages. The most obvious explanation is that these Huguenots settled on the best land. Aside from district dummies, the *opgaafrolle* contains little information on land. Historical sources and anecdotal accounts are therefore used to supplement the quantitative results.

The Huguenots settled mostly in the areas today known as Franschhoek (literally meaning 'French corner'), Simondium, Drakenstein and Dal Josafat (today merged into the town of Paarl), Stellenbosch and Wagenmakersvallei (Wellington). They were not the only settlers to inhabit these areas – many Dutch settlers moved to farms in the vicinity, as it was the policy of the Dutch East India Company to amalgamate the French into Dutch society. Figure 24 maps the location of the first 37 Huguenot farms, scattered between Dutch settler farms. All farmers were allocated similar land sizes – 60 *morgen* each (roughly 51 hectares) – on condition that they cultivate it within the first three years.

O.F. Mentzel (2008: 64, 65, my emphasis), travelling through the Cape Colony roughly five decades after the arrival of the Huguenots, describes the French influence in Franschhoek thus:

> This valley is on account of its extraordinary fertility the best portion of the Cape. It was unusually well cultivated through the *diligence* and *untiring industry* of the first French colonists and has been maintained in this state by their successors. The fertility of this little district can be imagined from the fact that the first colonists arrived there destitute of all means, and like all others had to borrow from the Company their cattle, farm implements, seed and bread-corn and everything else they needed; yet were the first to repay their debt amounting to many thousands of gulden.

In referring to the 'extraordinary fertility' of the region, it is clear that Mentzel is in fact referring to its *productivity*, as much as its soil quality or other environmental characteristics. His observations therefore correspond closely with my empirical results. He disputes the notion that the Huguenots had any advantage in capital or land, attributing their greater productivity rather to their greater 'diligence and untiring industry', a phrase which reflects Coertzen's (1997: 117) reference to 'hard work and an enterprising spirit', cited above. Such qualitative evidence is supported by the above empirical analysis; the inclusion of district dummies does not eliminate the WH-group dummy, suggesting that superior farming conditions in various districts did not account for their advantage. In specifications not shown, I remove those farmers who first settled in the close vicinity of Franschhoek (only eight families) and therefore may have had first pick of the best land, with no significant effect on the coefficients. The WH-farmers were not more productive because they happened to settle in a fertile region.

I have controlled for the quality and quantity of land and capital indirectly, but the question remains whether the French may have had access to more or better labour. Tables 25 and 26 report that the effect of slaves on production remains positive and statistically significant across all specifications – even when vines are included as an explanatory variable – underlining the importance historians have attached to the economies of scale and scope created by slave labour at the Cape, especially for the affluent wine farms close to Cape Town (Worden 1985). In contrast, the positive coefficient of wage labour (*knechts*) disappears when vines are controlled

for, as do the coefficients on all of the other agricultural coefficients. Yet none of these additional inputs explains away the advantage of the WH-farmers.

Could the differences between the Huguenots and Dutch have arisen from institutional factors? While the French did have a different legal tradition to the Dutch, they were subject to the same set of legal institutions in the Cape Colony. This is unlike the investment-inducing mechanisms posited by La Porta et al. (2008) in explaining cross-country variations in economic performance. Given the robustness of the results in the French sub-sample, there is also little indication that language or culture, broadly defined, could have mattered. Simon van der Stel made it clear that he expected them to amalgamate fully into Dutch society and, consequently, the French language disappeared from everyday use within two generations at the Cape. The only concession that was made was to provide a small church and a minister to preach in French. However, there should have been few Weberian differences as both the Huguenots and the Dutch were Protestant.

3.2.4 Wine quality

"The vine is more affected by the difference of soils than any other fruit tree."[69]

The difference, I posit, was skills. But which skills matter for wine production? Wine-making has three stages: viticulture (the cultivation of grapes), vinification (the process of turning grapes into alcohol through the fermentation of sugar) and maturation. It therefore involves both farming skills (viticulture, producing grapes) and manufacturing skills (vinification and maturation).

There is no doubt that the environment – climate, soil quality and grape varieties – is the major input in the first stage of production. According to Unwin (1996: 34), 'climatic conditions largely determine the parts of the world where it is possible to grow vines', which thrive in areas with 'long fairly hot summers and cool winters'. The *terroir* – an inclusive term which relates to the slope, aspect, soils, altitude, humidity, shelter, and drainage – was, at least before the twentieth century, the main factor influencing the character of a wine (Unwin 1996). Yet, skills are required throughout the production process. Given the importance of location, knowledge of *terroir* in selecting the area for cultivation is not a trivial skill of the viticulturalist, and the first stage of production also requires knowledge of pruning, irrigation, fertilization, cultivation and the timing of the harvest (Unwin, 1996).

The quality of wine is not necessarily correlated with the quantity of production. A successful grain farmer, for example, may measure his success in the number of *muids* (or *muiden*)[70] reaped over the number of *muids* sown – the yield – and probably not in the *quality* of wheat produced. Put differently, bread produced from the wheat of a successful harvest would *taste* roughly similar to that of a bad harvest, with the essential difference being only in quantity produced. The same is not true of wine. The quality of grapes produced depends on the *terroir*: while a farmer may produce a large quantity of grapes, their quality may not be good enough for wine production. Thus, unlike the case of the wheat farmer, the viticulturalist's skill in choosing

[69] Smith 1776, I. 11. 41.
[70] The unit used by the VOC to measure volume, approximately one hectoliter.

the ideal terrain and complementary cultivar constitutes an essential first step in producing marketable wine.

The second stage, the manufacturing of wine through vinification, and the third stage, maturation, practised by the oenologist, require more specialized knowledge and skills. As Spurrier and Dovaz (1983: 38) explain: 'The oenologist's mastery of vinification techniques is just as important as the grape variety, the soil and the climate … A good oenologist can stamp a wine with distinction; a bad oenologist can produce a bad wine even from excellent grapes'. Unwin (1996: 50) confirms that 'each *vigneron*, or wine maker, builds on local traditions … and his or her own skills and experience to create a particular style of wine'. These skills include pressing, sugaring, control of the fermentation process and ageing (or maturation).

In his description of the early eighteenth-century Cape Colony, Mentzel (2008: 181) notes that 'the inhabitants of the Cape do not yet know how to treat their wine properly', although he points to some exceptions, saying that instead of 'the muscatel wines which are openly sold in Germany under this name' he prefers 'the Cape wines', notably the 'red muscatel grape of which delicious red wine is made at Constantia' (Mentzel, 2008: 181). In his detailed depiction of harvesting and wine-making he mentions four things necessary for making good wines: location ('those of Constantia taking first place, and those round the Tygerberg being the most inferior') (p. 181), a press or squeezer ('he who possesses neither press nor squeezer has everything pressed out by hand but obtains less wine as a result and can use what remains in the husks for brandy only') (p. 183), barrels ('if only [the farmer] had enough barrels... but barrels are very scarce and expensive') (p. 184), and good preparation. Land (location) and capital (availability of a press or squeezer and barrels) seem to be the critical elements for wine-makers, yet Mentzel (2008) is most persuasive about the fourth thing: preparation. He (2008: 185, my emphasis) claims that this is the deciding factor between good and bad wine: 'It must be understood that not all Cape wines are suitable for maturing. What is not good wine by nature and quality (or, as I think, *has not been properly prepared*) is not improved by long seasoning, but only becomes sharp and prickly as they say there. Really good, well prepared and well cellared Cape wines improve with age'. High quality Cape wine – wine that had longevity – was the result of knowledge and skills.

3.2.5 Persistence

'Knowledge and skills' offers an answer to an interesting question raised by Figure 23: what causes the peculiar persistence of the productivity difference between the groups? Despite fairly thorough cultural assimilation, the Huguenot families maintained a productivity advantage in wine relative to others in the Cape Colony, which is consistent with strong intergenerational transmission of skills and capital (in this case, capital in the form of slaves and vineyards). The first Huguenots certainly had a strong advantage; specification 10 shows that within the sample of first arrivals (those Huguenots born abroad), the WH-farmers produce about 200% more wine per household member than the NWH-farmers. But this effect remains during the 80 years of the sample period: in all the specifications, a dummy for those Huguenots born abroad is included as an explanatory variable.

This persistent advantage is explained by the specific skills in viticulture that the Huguenot farmers brought from France. To demonstrate that these skills are specific to wine production, I run an OLS regression similar to specifications 1 to 4 in Table 25, but now with *Wheat reaped* as the dependent variable. The results are available in Table 27. The coefficients on both Huguenot dummies are small, and the statistical significance is weaker although still positive in the final specification (14), suggesting that the Huguenots had only limited specialization or production advantage in wheat production. I hypothesize that grain farming, unlike viticulture, uses more generic knowledge and farming skills, especially in the secondary production processes of making flour and bread. All groups had equal access (at low cost) to such knowledge or skills. The specific skills of viticulture and wine-making, where knowledge is transferred from father to son through extensive learning-by-doing, do not disseminate into the broader farming community; even controlling for the farmers born abroad (and thus the direct carriers of the specific skills), our dummy of interest remains positive and significant. Looking at this from the point of view of capability theory (Jensen and Meckling, 1992), the specialized skills gave farmers (firms, in Jensen's discussion) a sustainable competitive advantage, which they maintained independently of the enhancements brought about by acquisitions of capital (slaves) and labour (*knechts*). While such an advantage could be countered by a competitor who acquired more capital, there is little evidence that the competitor's advantage could be sustained given the higher cost implications.

Table 27: Dependent Variable: log(Wheat produced) (in muiden) full sample, OLS

		11	12	13	14
	Non-wine-producing	0.214	0.17	0.286	0.293**
Huguenot	Wine-producing	0.493***	0.227	0.389**	0.344**
	Slaves		0.207***	0.167***	0.01
	Knechts		0.114	-0.301*	-0.213
	Cattle			0.003	-0.003
	Horses			0.317***	0.137***
Inputs	Wine			-0.078***	0.007
	Non-wine-producing			-0.437***	-0.253*
Married to	Wine-producing			0.035	0.143
Wheat Sown					0.326***
Born Abroad		1.131***	1.100***	1.051***	0.651***
	Stellenbosch	0.487***	1.241***	1.330***	0.964***
	Drakenstien	-0.315**	1.179***	1.329***	0.969***
Region	Swellendam	-2.652***	-0.626***	-0.531***	-0.415***
	1702	-0.413	-0.271	-0.337	-0.256
	1705	0.137	0.194	0.108	0.166
	1709	1.328***	0.996***	0.744**	0.286
	1712	0.974**	0.546	0.266	0.156
	1719	0.852**	0.129	0.057	-0.008
	1723	0.669*	-0.089	-0.148	-0.253
	1731	0.644*	-0.484	-0.687*	-0.797**
	1738	-0.431	-1.884***	-2.057***	-1.697***
	1741	-0.274	-1.530***	-1.797***	-1.763***
	1752	-1.221***	-2.125***	-2.371***	-2.057***
	1757	-2.058***	-2.915***	-3.253***	-2.648***
	1762	-2.315***	-3.140***	-3.486***	-2.759***
Time	1773	-1.963***	-3.008***	-3.226***	-2.789***
Constant		-2.502***	-3.941***	-3.978***	-4.053***
R-squared		0.155	0.3	0.336	0.554
N		9078	9078	9078	9078
F statistic		248.576	242.689	209.815	311.495

Notes: Control groups are Wine-producing-Huguenots in the Huguenot dummy, Cape Town in the district dummy and 1700 in the year dummy. Wheat sown measured in *muids*. Vines planted numbered in 1000s. Wine measured in leaguers. Specification 10 only considers the sample of Huguenots that were born abroad. * p<0.1, ** p<0.05, *** p<0.01.

Specifications 5 to 9, which include only Huguenot farmers, provide more compelling evidence that it is specific skills in viticulture, rather than other institutional factors, that explain the difference. Given that only Huguenots and their descendants are included in the sample, all cross-group cultural traits, such as religion, language or other characteristics are implicitly eliminated. The variable of interest is thus the regional origin of the two Huguenot groups and only factors correlated with this could potentially bias the results.

One such measure could be the settlers' educational level. It might be that regions more conducive to viticulture were also more affluent and could thus afford higher educational attainment. The inclusion of a measure of average educational levels for regions of origin (numeracy scores, included in specification 9) controls for this possible bias, with little effect on the variables of interest. This further supports the notion that human capital as it is commonly understood may be too generic to determine settler success.[71] By differentiating human capital along the lines of specific skills and generic education, I obtain a more complete picture of the underlying causal mechanism that drives differences in production.

It may simply be that the Huguenots enjoyed first-mover advantage. Once they settled and used their superior skills in viticulture to obtain higher wine yields, they could acquire the best farms and expand their production. Given that a wine farm is a medium- to long-run investment, their initial skills advantage would in one or two generations grow to yield significant differences where they had control over fertile land.

There is however little evidence of such amalgamation of production over the period. In fact, the evidence suggests that farms became smaller, not larger, because of Dutch inheritance laws that divided ownership of property at death between the deceased's partner and their offspring in two equal shares (Dooling, 2007: 30). As noted above, fertility rates were relatively high, which meant that farms were often split between several sons, partitioning the property into smaller and smaller units.[72] Moreover, land was not a scarce resource. Viticulture was not only restricted to the Stellenbosch or Franschhoek region. In fact, as is evidenced by crop choice today, the land beyond the first mountains provided fertile opportunity for expansion in viticulture.[73]

The benefits of a first-mover advantage could also be acquired through market relations. In a strongly regulated market such as the Cape Colony it helped to have good associations with the owners of the alcohol *pachts* (the monopoly contracts that restricted the number of sellers of wine, beer, and brandy). Together with the Company, they were the only permitted private wine buyers. These *pachts* were sold annually by the Company to the leading bidders, although it seems to have not always been a perfectly competitive process (Groenewald, 2004).[74] Possibly the Huguenots, having established early roots in the wine industry, obtained privileged access to these monopoly rights. These *pachts* became an extremely lucrative industry during the

[71] However, a caveat applies. The measure is constructed for the entire French population in the various regions, and not only Huguenots who came to the Cape. These French sub-groups may have been substantially different in terms of education, and also from their descendants at the Cape.

[72] In fact, it may be that *smaller* households were able to sustain the scale required to remain more productive, because of fewer claims on the existing land. This would imply that the Huguenots from wine-producing regions had to have fewer offspring because they realised the importance of maintaining a certain operational size. This is, of course, contrary to the empirical evidence.

[73] It should be pointed out, though, that because of the difficulty of transporting goods across the mountains in the absence of any adequate passes (as was the case before the nineteenth century), viticulture in the interior would have been extremely costly. Swellendam was the first magisterial district to be established in this region in 1743 and from Mentzel's accounts, it seems that grapes were being grown in this region already by the mid-eighteenth century. However, the *opgaafrolle* show no evidence of wine production here up until 1773.

[74] As Groenewald (2004: 15) notes after reviewing the *pacht* auctions: 'I do not think that the state of the evidence allows us to deduce that these concessions were really auctioned off every year to the highest bidder.'

eighteenth century, the only one outside of agriculture that was open to the private market. And given the large and growing demand for alcohol and such pleasures from sailors and soldiers stationed on the passing ships during the first few decades of the eighteenth century, the rights to sell liquor in the taverns and inns of Cape Town might have provided the Huguenots with a more profitable outlet for their produce.

There is even less evidence to support the idea that the French had any unique privileges (or social capital) with regards to the *pachts*. In fact, in a survey of the 27 individuals who invested in the alcohol *pachts* during the 1730s (just as the Huguenots began to increase their advantage), there is only one French descendant – Jan le Roux, born in the Cape – who acquired four *pachts* (Groenewald, 2009).[75]

Both these arguments are unconvincing. Although other factors may have contributed to the growth in observed productivity differences, the specific viticulture skills of the WH-farmers seems the most plausible in explaining their persistent competitive advantage.

Their skills allowed them not only to produce *more* wine, given the number of inputs, but, I posit, to produce wine that could last longer – a higher *quality* wine. The biggest demand for Cape wine was from the passing ships. Every year, an estimated 6,000 soldiers and sailors anchored in Table Bay on their voyage between Europe and the East, a journey that would last at least three months each way.[76] Fresh produce, including wine, was the Cape's major export commodity, both for consumption in Cape Town and for the next voyage. What was needed, therefore, was wine that would last the three months at sea: high quality wine.

Private wine production[77] flourished with the arrival of the Huguenots in the Cape Colony. Yet a subset of these Huguenots – most of them from wine-producing regions in France (WH-farmers) – were better than their compatriots at producing high quality wine. Their sons, benefiting from their fathers' and mothers' secrets and know-how, continued and improved these techniques, producing high quality wines for which there was always a market in Cape Town, as Mentzel (2008: 184-85) explains:

> This then is the way in which wine is treated at the Cape of Good Hope, but every sensible man will surely presume that for good wine-making something more is necessary than what has been mentioned. There is no doubt that many colonists at the Cape do indeed know the secret of preparing good wine and therefore wines are made which stand the test, and grow mellower with age: but they are not such fools as to give away their secret and thus make the good wines more common.

Wine-making, unlike wheat farming, requires specific skills and knowledge that the WH-farmers possessed when they arrived at the Cape. They maintained their advantage by protecting these 'secrets' – either deliberately through protective behaviour or accidentally owing to the high cost of transfer (years of learning-by-doing). Other settlers may have attempted to catch up –

[75] According to Groenewald, 12 are German nationals, eight are Dutch, six were born in the Cape Colony and one was from Denmark.
[76] See Chapter 3.1.
[77] Until 1700, wine was mostly produced on the properties of VOC officials.

either by using resources such as capital (slaves) more efficiently or by marrying Huguenot wives – but the sustainable competitive advantage of the WH-farmers allowed them to prosper independently of these strategies.

3.3 Slavery and proto-industrial take-off

"Country workmen are almost everywhere obliged to apply themselves to all the different branches of industry that have so much affinity to one another as to be employed about the same sort of materials. A country carpenter deals in every sort of work that is made of wood, a country smith in every sort of work that is made of iron. The former is not only a carpenter, but a joiner, a cabinet maker, and even a carver in wood, as well as a wheelwright, a ploughwright, a cart and waggon maker."[78]

While wine-making was the largest secondary production activity in the Cape, it was not the only one. The extent and diversity of household assets suggests that most farmers maintained strong links with the market – even though this 'market' may only have been the Company, intermediaries or even other farmers. In order to acquire the household assets observed in the inventories, farmers had to produce a surplus to be sold in the market. The comparatively high levels of cattle and sheep ownership highlighted in the inventories, suggest that stock may have been an important source of revenue. Aside from the higher rates of return on stock farming, Neumark (1956) also notes that stock yielded numerous by-products that were in demand in the Cape market. Meat, of course, was in high demand from the passing ships in the Cape. But tallow, skins, soap and candles – produced by household labour on the farms – offered farmers an additional source of revenue within the regulations of Company rule, enough to acquire the goods observed in the inventories. Some of these goods were even recorded as exports by the Company during the second half of the eighteenth century, reflecting its growing comparative advantage.

The rapid rise in output, though, was dependent on satisfying the settlers growing labour demands as they expanded into the interior.[79] In that sense, the Cape Colony is a classic example of the Niebour-Domar hypothesis, which states that slavery as an economic system is profitable where labour is scarce in relation to land (and where capital is non-essential). As in seventeenth century West Africa, labour was scarce in relation to land, which created conditions for the profitable use of coercion to reduce the cost of labour (Hopkins, 1973).[80] The Company's decision at the start of the eighteenth century to encourage slave imports, instead of European immigrants, is at least partially a consequence of the land abundance and labour scarcity. Viticulture, practiced by the newly arrived Huguenots (see Chapter 3.2), has high labour demands, especially during the harvest season, and slave labour could fulfil this role better than expensive European labourers.

Slaves thus became by far the most important productive assets in the Cape, shown in Chapter 2 to represent 24% of total value in the auction rolls. While the first slaves had already arrived in the Cape in 1658, slaves were not widely dispersed amongst settlers until the take-off of viticulture at the beginning of the eighteenth century. This was because viticulture could yield

[78] Smith 1776, I.3.2
[79] Dooling (2007: 20) notes that labour was "one of the greatest difficulties the freeburghers faced".
[80] See Austin (2011) for a more recent interpretation.

economies of scale. In the absence of large numbers of wage labourers and with a view to addressing the constant objections against the low Company prices, the Company decided to encourage slave imports as a way of keeping farmers' input costs to a minimum. The proximity of the Cape to the slave markets of Africa (notably Mozambique and Madagascar) and Asia (India, and modern Malaysia and Indonesia) further reduced the costs of slaves vis-à-vis European settlers (compared with, for example, the North American colonies).

Slaves soon became an important investment for Cape settlers, responsible for most of the labour requirements in the Cape economy. Not only did slaves satisfy the demands of viticulture, but they also offered economies of scope on pastoral farms; the pervasiveness of slaves in the countryside reflects the usefulness of slaves as a substitute for capital goods even in the households of the less affluent. Slave labour also created the scope for personal leisure by substituting the need for farmers to farm actively, allowing them often to act only as the 'overseer' of work. Such a rational consumption choice dictated by a backward-bending labour supply curve was also prevalent in preindustrial Britain (Allen and Weisdorf, 2011). At a certain level of income, the benefits derived from additional consumer goods simply did not outweigh the benefits derived from leisure. Such 'leisure' substitution, of course, could also have been in the form of scouting, hunting or raiding, which were frequent frontier activities. Slave and household labour – and, Khoesan indentured labour, probably underrepresented although statistical evidence for this is virtually nonexistent – thus provided sufficient returns for the average farmer to discourage investment in other capital goods.

Behind this seemingly simple production structure, a gradual process of proto-industrialisation emerged in the Cape. This was not easy to detect, and the availability of evidence explains why most historians have neglected its impact. Constrained by Company policies, the Cape economy did not follow the same trajectory as in other proto-industrial economies: the paucity of productive assets in non-agriculturally related industries that were often the first to develop in a proto-industrial economy – like spinning and weaving – reflects an economy principally specialised in agriculture. Whereas Dutch and English households would diversify into spinning and weaving, only three inventories in the sample of 2577 Cape probates report a spinning wheel (*"spinnewiel"*) or weaving loom (*"weefstoel"*).[81]

Yet, Cape settlers *did* diversify into other by-employment. Figure 21 provides evidence of the industry-related equipment available on farms, by showing the composition of equipment types in the inventories. The figure reports only equipment that was clearly defined by type. Of the 807 observations of some type of equipment in the inventories, 252 do not list any type and were thus classified as unknown and excluded here. Note that only equipment ("*gereedschap*"/"*gereetschap*") was searched for. The figure therefore excludes all the products that should have been classified as equipment, but that were listed separately (such as anvils and bench vices included in my above analysis). The importance of carpentry equipment probably shows that smaller items – such as chisels – would more easily have been bundled together under one category heading, in this case "*timmermansgereedschap*".

[81] Willem ten Damme in 1714 (MOOC8/2.117), Pieter Willem Regnault in 1765 (MOOC8/11.42) and Hand Diederik Mohr in 1785 (MOOC8/19.7).

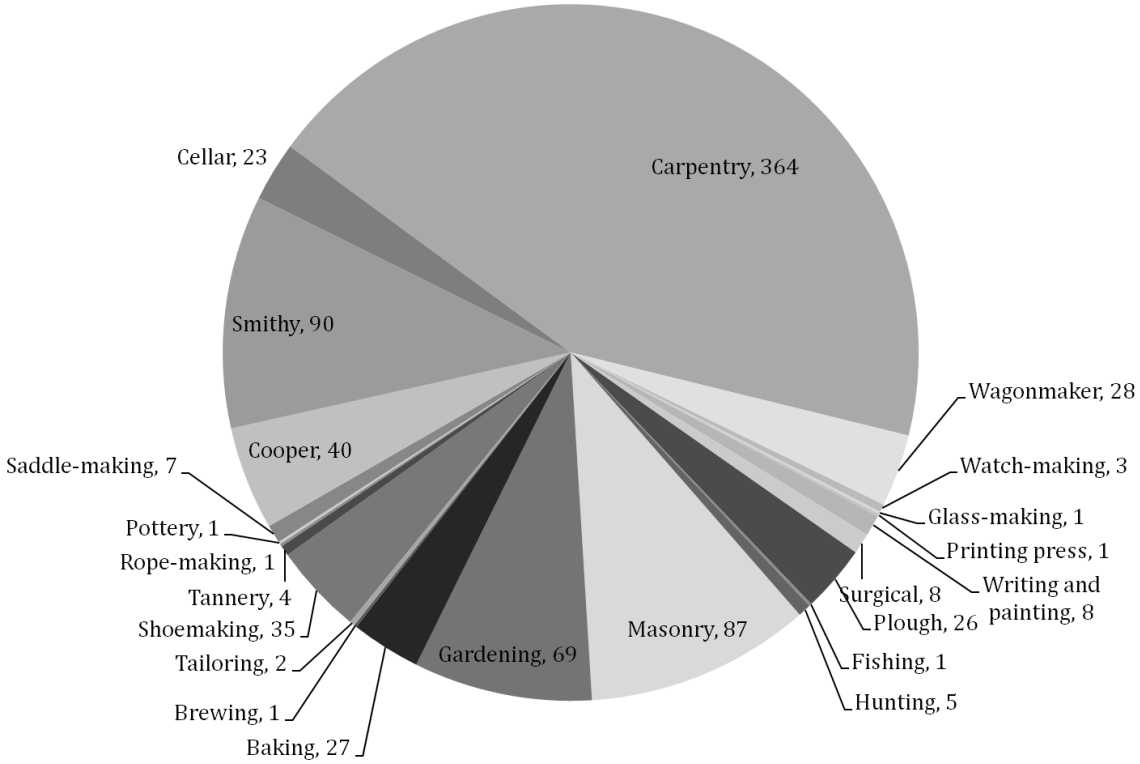

Figure 25: The composition of equipment types recorded in the 2577 inventories
Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.

Figure 30 shows clearly the bias in favour of equipment types that augmented agricultural production. Carpentry and woodworking equipment feature prominently, making up 44% of equipment types, followed by smithy (11%), masonry and construction (10%), and gardening (8%) equipment. There are also several entries for cooper and wagonmaking-equipment. The low occurrence of pottery, printing, watch-making and glass-making equipment, for example, depicts the dearth of non-agricultural output.

Figure 31 shows the percentage of inventories, ranked by product ownership, that include carpentry equipment. The white line represents the number of inventories (shown on the right axis). Carpentry equipment was predominantly owned by individuals who already owned several product items, i.e. wealthy individuals. A strong, positive correlation between equipment ownership and wealth (both the principal component analysis and wealth value were used as proxies for total wealth) corroborates this. (The same trends would have been visible if all equipment types had been included.[82]) The point is that equipment ownership – and thus the diversification of production – was mostly restricted to the upper echelons of Cape settler society, those settlers who would have owned several slaves.

[82] There is some evidence that certain types of equipment followed a different distribution. Shoemaking equipment, specifically, was rather equally distributed across the spectrum of product groups. The low absolute number of shoemakers, however, did not permit a robust interpretation of this distribution.

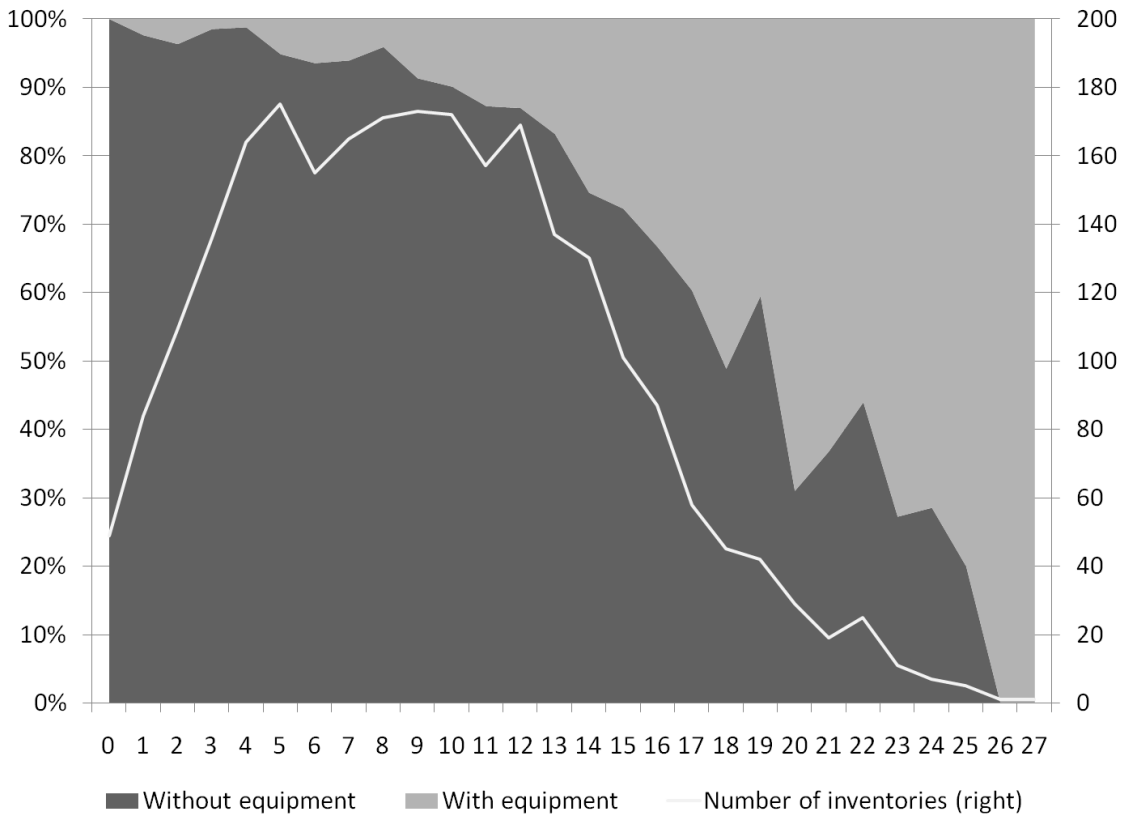

Figure 26: Percentage of inventories, ranked by number of products owned, that include carpentry equipment
Source: MOOC8 series, volumes 1-75; Krzesinkski-de Widt (2002); own calculations.

Overton et al. (2004) reports a similar rise in proto-industrial by-employment in England during the seventeenth and early eighteenth centuries. Their results suggest that, counter to De Vries's concept of an "industrious revolution", where specialisation would have occurred on farms driven by a greater demand for marketable items, by-employment (or the diversification of production) increased systematically as output increased. While by-employment was typically modelled as a risk-averse farmer mentality, Overton et al. (2004: 77-78) argues that "by-employment was a means of maximising household income rather than avoiding risk" by which "capitalist entrepreneurs can make the most money". Exploiting economies of scope rather than specialisation in a small and protected market, was the strategy followed by Cape settlers; a strategy by which productive farmers could utilise their most expensive capital item, slaves.

VOC policies certainly interfered with the process of proto-industrialisation in the Cape. Apart from vinification and brandy making, the only industries higher up the value chain that were actively promoted by the VOC (Van Zyl, 1974, Jooste, 1973), the barriers to entry in other formal sectors were insurmountable. The Company, for example, offered only one beer brewing license, sold to a distillery in Newlands. Even though the quality of the beer was occasionally considered too poor for consumption, the profits earned through licensing ensured that the Company would not consider competition in a free market a viable alternative. The system of monopoly contracts created absurd situations; De Kock (1924) notes the resident of Cape Town "who had a farm in the vicinity of the capital but could not use his own flour for bread. He was bound by

law to sell his corn to the monopolist, and the price that he received for it would not suffice to re-purchase half of it in bread".

While such policies limited the specialisation of non-agricultural production in urban centres, it turned wealthy farmers into proto-factories. Jan Martin Vogel, whose inventory was compiled on 2 April 1777, is one such wealthy settler. Vogel owned 10 houses and 2 farms. On one of these farms, in addition to the standard items to be found in the five-room house, an outside garden house, a carriage house, a pigsty and stables, the inventory lists a lime pen ("*kalkhok*"), a hay barn ("*hooijschuur*"), a pharmacy ("*aphoteequers winkel*"), a carpenters shop ("*timmermans winkel*"), a smithy ("*smitswinkel*"), a wheelwright ("*wagenmakers winkel*") and a millhouse ("*molenhuis*"). It is no coincidence that Vogel was, in fact, a wine farmer.

Such diversification explains why farmers continued to invest in slaves, even as slave prices increased vis-a-vis other forms of capital. Not only did slave labour, because of a backward-bending labour supply curve, result in more leisure for farmers, but slaves – in contrast to other capital goods – were ideal to cope with the diverse array of activities on the farms, benefitting from large economies of scope.

Investment in slaves as capital was a rational investment decision by Cape Colony settlers. It allowed them to prosper, as Chapter 2 proves, but also resulted in severe inequality, which Chapter 4 investigates, with detrimental consequences for the Colony's long-run growth prospects (Chapter 5).

Chapter 4 | The Distribution of Cape Colony wealth

"Wherever there is great property there is great inequality."[83]

Inequality is a major concern in many of the world's developing regions. South Africa is no exception, to which the large literature on the subject attests – see Bhorat and Kanbur (2006). Modern South Africa is one of the most unequal societies in the world, primarily as a result of institutionalised inequality under colonial segregation and apartheid, but potentially also stemming from the set of institutions created much earlier under Dutch and British colonial rule.

This chapter investigates the inequality of Cape society under European influence, which includes all those individuals (settlers, slaves and Khoesan) that appear in the colonial records. Engerman and Sokoloff (2002) suggest that inequality was highly persistent: countries that exhibit high inequality from the early stages of development generally continue to do so later on, while few policy prescriptions are successful in reversing the trend, even in times of high and sustained economic growth.

These observations have resulted in an emergent literature that uncovers the roots of inequality during a country's early stages of development, and explains the influence of these initial conditions on the subsequent distribution of wealth (Frankema, 2009, Acemoglu et al., 2008, Nunn, 2008, Williamson, 2009b). One strand of the literature focuses on newly settled societies. In particular, the initial factor endowments of good climate and a large native population seem to create institutions that promulgate persistent inequality. This phenomenon relates particularly to the set of institutions that are enabled by these factors and that allow the initially well-positioned in society to attempt to continually secure the balance of economic and political power. The second strand of this literature focuses on the dynamics of inequality in societies that are at the brink of entering a phase of industrialisation. Preindustrial growth may increase inequality during the early phases of development, in contrast to dominant theories that suggest that this only commences at the onset of industrialisation (Van Zanden, 1995).

The Cape Colony presents a case study of a society that was established with a set of institutions uninfluenced by the native (or precolonial) institutions. These institutions potentially had a large impact on both within- and between-group inequality. Two primary data sources – probate inventories (section 4.1) and *opgaafrolle* (section 4.2 and 4.3) – uncover not only the level of initial inequality, but also the intertemporal changes that shaped the trajectory of the colony's long-run development (Chapter 5).

4.1 Khoesan inequality

Unfortunately, little is known about the size and distribution of the Khoesan population group, which makes any attempt to meaningfully integrate them into the quantitative results a futile exercise. Anecdotal and archaeological evidence do point to inequality within the Khoesan population, although given different ownership systems (communal land, for example) even comparisons where information is available are fraught with difficulties. The Cochoqua, for

[83] Smith 1776, V.1.45

example, who arrived in Table Bay a few months after Van Riebeeck in 1652, were rich in cattle and gave the initial impression that all Khoe owned herds of livestock and were, therefore, relatively well-off (Elphick, 1977). Even though the Khoe were a semi-nomadic people, some of their villages were fairly large; a traveller into the interior during the seventeenth century estimated a Hessequa village to include more than "85 kraals, one beside the other" (Mossop, 1931: 69). Given that each clan was usually ruled by a chieftain, an additional layer of inequality should be noted (a sign of potential within-group inequality, but where the Khoe and the San are defined as a single group).

Intertemporal shifts in overall inequality are also important. The impact of the 1713 epidemic likely reduced inequality within the overall Cape population, as the most affected group was the Khoesan, which presumably lived in greater poverty than other populations. The effect of the gradual absorption of the Khoe into European society remains unclear: Elphick and Malherbe (1989: 3) claim that they may have experienced a rise in welfare as a result of greater access to European goods, while Baten and Fourie (2012) find a significant decline in Khoe numeracy levels during the period of rapid integration with the colonial economy. The effect on inequality remains unclear.

4.2 Probate wealth distribution

The first aim of this chapter is to establish the severity of inequality in the Cape within the settler household sample. To do this, I used the same probate inventory items described in Chapter 2. These probate records reveal to what extent the anecdotal accounts of an unequal Cape settler society apply to the entire settler population. In addition to the 28 products of Chapter 2, four 'wealth groups' were created to ascertain class differences in wealth accumulation over time. These groups refer to the traveler Mentzel's (2008) impressions of Cape society, dividing it into four groups. As per Guelke and Shell (1983), slave ownership was used to distinguish between the four groups (or classes), although their – arguably subjective – allocations were reclassified into three relatively equal groups (if Group 3 and Group 4 are taken as one). Group 1 includes all the farmers with zero slaves, Group 2 consists of farmers owning 1 to 4 slaves, Group 3, 5-15 slaves and Group 4 more than 15 slaves.

Table 28: Mean *rijksdaalders* per item by group, 1673-1800

Item	Group 1	Group 2	Group 3	Group 4	All
Slaves	0.0	242.0	953.2	2981.0	554.9
Cattle	292.2	399.8	678.2	937.0	473.4
Horses	35.9	65.8	138.3	381.9	99.0
Sheep	192.3	307.4	525.8	711.7	353.3
Ploughs	1.1	2.5	6.2	15.8	4.0
Corn sieves	0.1	0.3	3.0	12.3	1.9
Boats	0.3	0.6	0.7	3.1	0.7
Buckets	0.8	1.7	3.1	6.8	2.2
Spades	0.2	0.6	2.2	4.5	1.2
Guns	2.1	3.3	4.3	9.0	3.6
Brandy stills	1.1	3.0	10.0	21.8	5.6
Wagons	17.2	26.7	60.3	142.5	41.0

Anvils	0.3	0.3	0.9	4.6	0.8
Bench vices	0.3	0.6	0.9	2.5	0.7
Balances	0.2	0.7	1.6	3.3	0.9
Fire tongs	0.2	0.5	0.8	1.7	0.6
Ovens	0.1	0.2	0.5	1.2	0.3
Bedsteads	0.8	1.9	3.2	4.9	2.1
Chairs	3.0	8.4	16.9	40.3	11.2
Trousers	2.1	1.0	0.8	3.0	1.5
Irons	0.3	0.7	1.4	2.3	0.9
Books	1.3	1.2	2.2	16.5	2.7
Timepieces	2.0	2.5	4.9	11.9	3.7
Snuffboxes	0.3	0.8	6.1	3.4	2.1
Paintings	1.3	3.5	7.8	19.5	5.1
Mirrors	1.3	2.6	6.1	12.7	3.8
Bird cages	0.1	0.4	0.8	1.4	0.5
Gold rings	0.4	0.9	1.5	4.6	1.2
Total	557.1	1079.9	2441.9	5361.4	1578.7
Total (no slaves)	557.1	837.9	1488.7	2380.3	1023.8
N	883	870	610	214	2577

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

Table 28 reports the mean value of ownership (in *rijksdaalders*) by product across each of the four groups. The value increases with the group rankings for all but two products. One exception was 'trousers', of which members of Groups 2 and 3 owned fewer than Group 1. This probably highlights the poor reporting of trousers, which were often bundled together in wealthier households as a 'chest' or 'cupboard' of clothes. The second exception was 'snuffboxes', of which Group 3 owned close to double that of the elite Group 4. Figure 32 plots the proportionate size of the four groups over the eighteenth century.

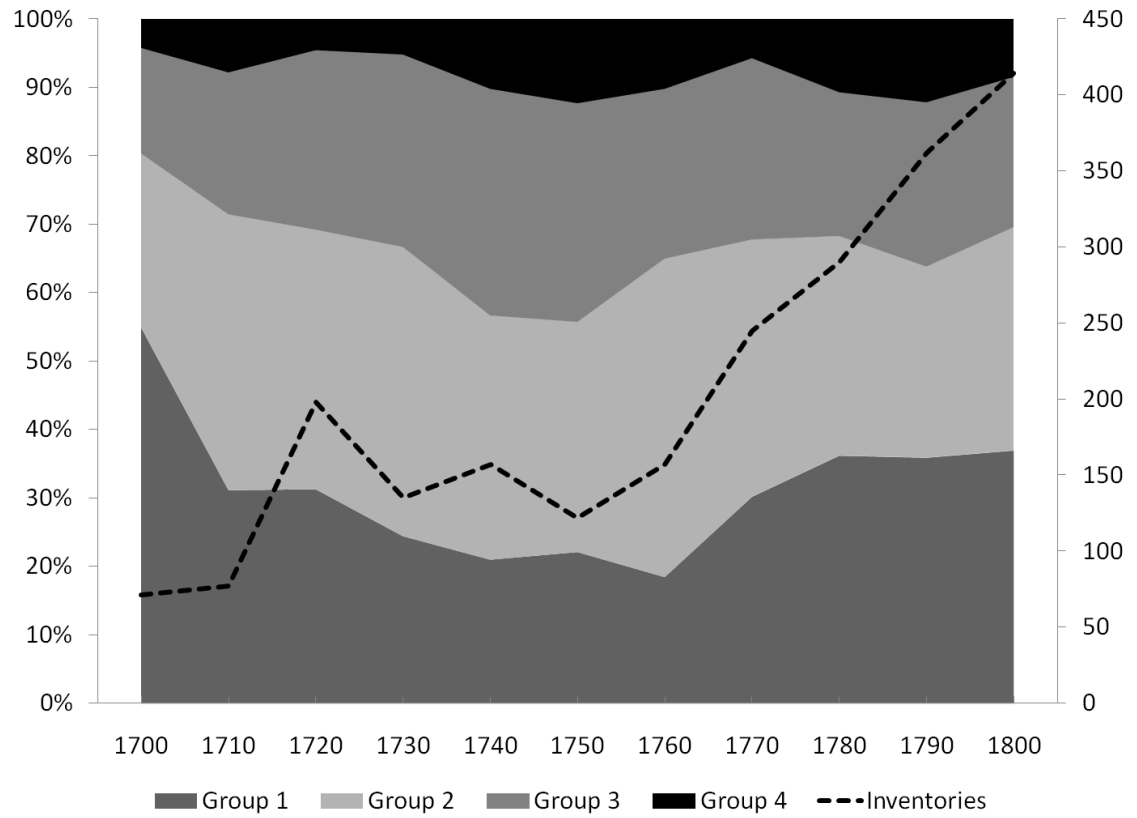

Figure 27: Proportion of inventories by wealth group, decade averages, 1673-1800
Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

From 1700, the proportion of each of the four groups remained relatively constant. The number of settlers owning zero slaves fell until the 1750s, after which they increased quite rapidly until the 1770s, where they stabilised at roughly a third of the total population. Households with 1 to 5 slaves made up another third of the population, with those between 5 and 15 adding approximately 25%. The elite (Group 4) made up close to 10% of the total population, rising steadily until the mid-1750s, declining to a low of 5% in the 1770s, and rising again over the last two decades.

Two trends are at play here: the most intuitive may have been a rise in the per capita wealth of households over time. This may explain the fall in the size of Group 1 and the rise in the size of Group 4 until the 1750s. A second trend may, however, have been that of a demographic shift: The high fertility rates of the settlers rapidly enlarged the size of the population. With many of these households entering the distribution at the bottom, the increase in the size of Group 1 after the 1750s reflects positively on the earlier observation that the decline in per household wealth observed may simply have been a consequence of the rapid increase in the population of the interior, increasing the denominator in per household wealth.

To investigate this, a comparison was again made between the *opgaafrolle* and inventories. Using slaves as a measure of wealth in both datasets, Figure 33 plots the percentage of Group 1 individuals in the *opgaafrolle* and inventories. Given Chapter 2's results of a close correlation between the *opgaafrolle* and inventories, Figure 33 reveals a surprising difference between the two data sources: The proportion of the poorest wealth group relative to the *opgaafrolle* is

consistently approximately 20 percentage points larger than the inventory Group 1's share. While age bias may have played some role here, the difference between the two data sources are a result of differences in the way households were defined. In the *opgaafrolle*, young men (who might still have been living with their parents) were often included in the census as a household of their own (even though they were unmarried). In the inventories, these men (if they were younger than 25 and unmarried) were counted as part of the household.

Figure 28: Share of Group 1 (slaves =0) as proportion of all observations, 1692-1773
Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

Of more interest in Figure 33 is the parallel long-run trend between the two data sources, with a correlation coefficient of 0.7. A strong downward trend is observed between 1692 (the beginning of the probate sample) and the 1740s, followed by a slight increase until 1773 (the final complete available census). In addition to the results of Chapter 2, this is further proof that the wealth trends observed in the inventories closely approximates the full settler population.

Given the reliability of the inventories in portraying the true Cape settler population, Figure 24 plots household wealth by group. Slaves were excluded here, as the numbers of slaves owned was used as a proxy for class (group). Regardless of broader changes in the demography, Figure 34 illustrates household wealth growth (excluding slaves) within each of the four wealth groups over the eighteenth century.

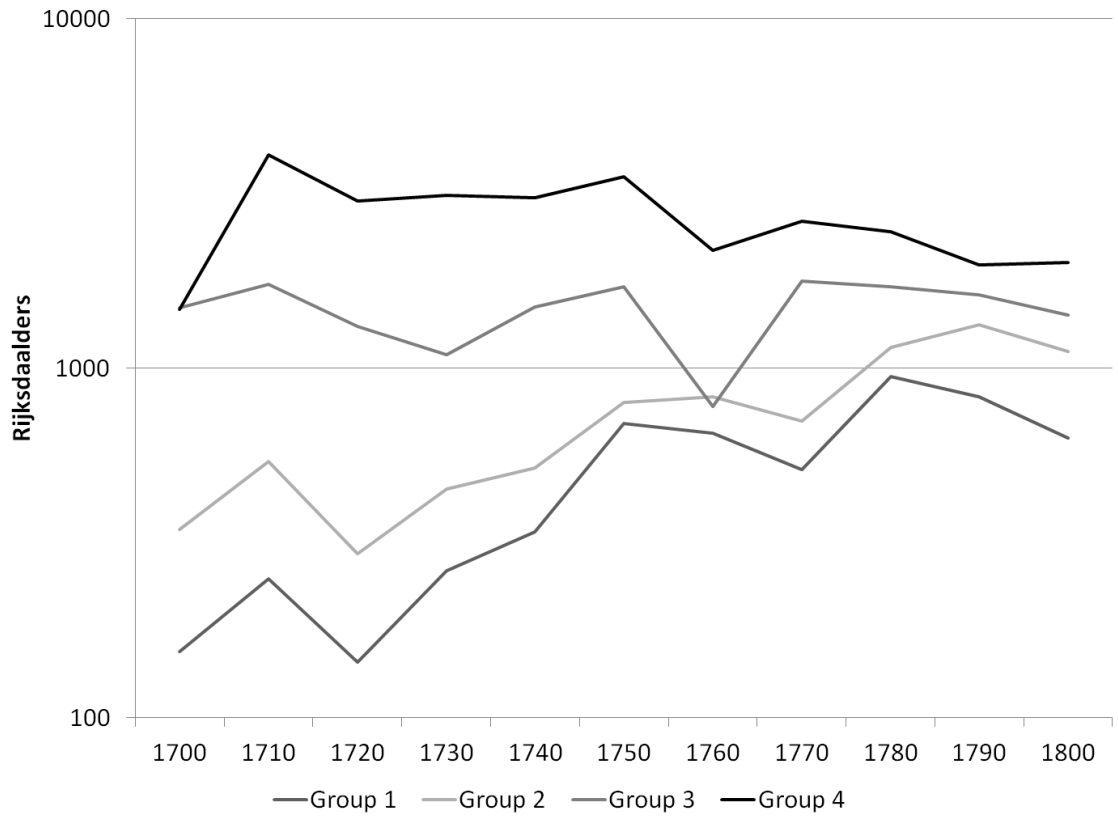

Figure 29: Per household wealth by group by decade, excluding slaves (logarithmic axis), 1673-1800

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

The four groups (excluding slaves) seemed to converge towards the end of the eighteenth century. Group 1 and Group 2 exhibit large increases in household wealth over the eighteenth century, with relatively weak growth for Group 3 and Group 4. The variation in the aggregate wealth measure (shown in Chapter 2) seems to be largely determined by the considerable variation in the wealth of the elite and their ownership of slaves. Figure 35, which includes slaves, and is shown on a nominal scale, shows the large variation in Group 4 compared with the two at the bottom.

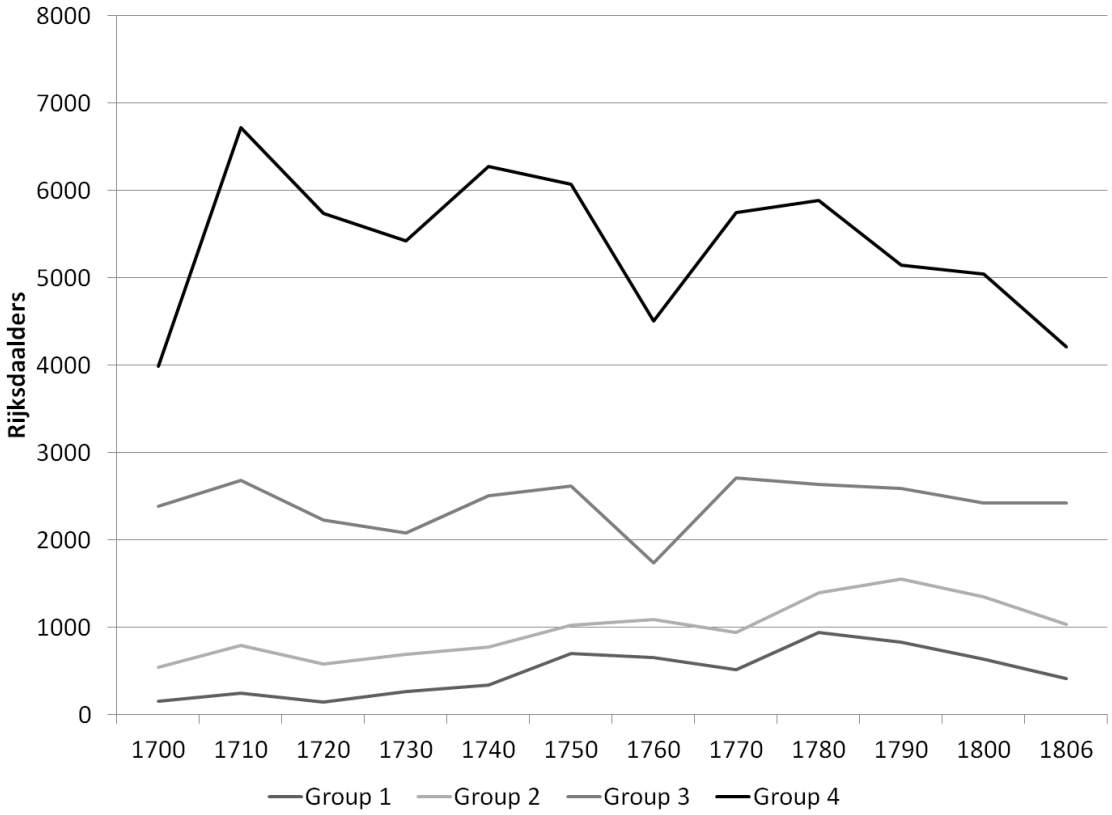

Figure 30: Per household wealth by group by decade, including slaves (nominal axis), 1673-1800

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

Figure 35 seems to tell a different story than Figure 34: While Figure 34 suggests rapid convergence between the four groups, Figure 35 suggests stark, persistent differences. The two graphs tell different stories as a result of the exclusion and inclusion of slaves. As the most expensive commodity, affluent households invested proportionately more of their wealth in slaves. Table 28, for example, reports that for Group 2, the average inventory basket including slaves totalled Rds 1079.9 versus Rds 837.9 excluding slaves. Slaves, therefore, comprised 22.4% of the total basket (i.e. the 28 products included). For Group 4, this percentage increases to 55.6%, more than double that of Group 2. (Group 1 has, by definition, no slave component.) This greater investment in capital goods is a feature of the elite behaviour that has been discussed above (in Section 3.3) and is again referred to in Chapter 5. It could ostensibly also have been consumption expenditure – for displaying purposes – rather than investment, as the imposition of the sumptuary laws of 1755 were an attempt by the Company to limit such expenditure, although the scale of such investment suggests that it was primarily an investment – not consumption – decision. Conversely, pastoral farmers of the interior, with cattle herding as their main economic activity, had less use for slaves. The pastoral farmers probably also made use of the Khoe as herders instead of using imported slave labourers, the Khoe being familiar with the territory and herding practices.

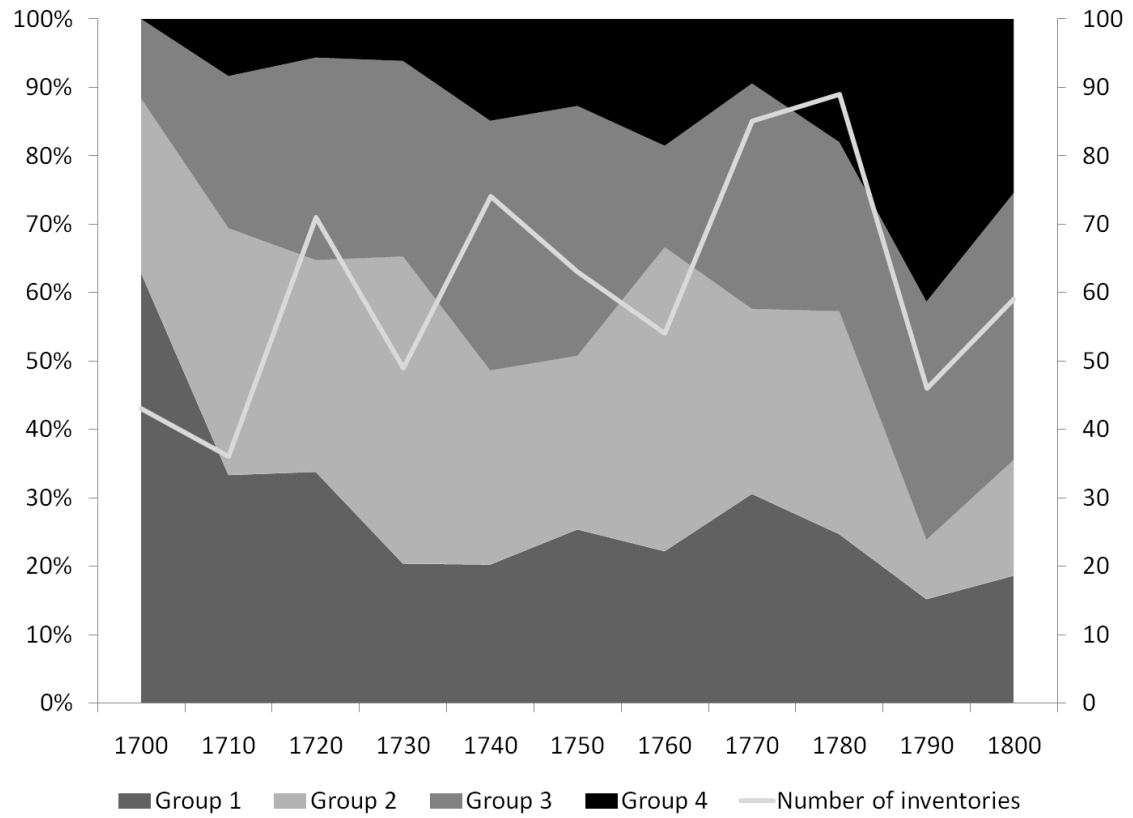

Figure 31: Proportion of inventories by wealth group, Stellenbosch district, 1692-1800
Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

One way to control for the effect of migration on wealth was to consider a geographically-fixed region. Figure 36 reports the movement in the proportion of households split by wealth group in Stellenbosch over the eighteenth century, showing the decline in the number of households (as a proportion of the total households) owning zero slaves (Group 1) and 1-4 slaves (Group 2). Group 3 and, especially, Group 4, in contrast, grew rapidly, especially towards the end of the century. Comparing Figure 36 with Figure 32, it is evident that, while group proportions in the entire Cape Colony stayed roughly constant throughout the eighteenth century, households within the geographically-fixed Stellenbosch district moved up the wealth ladder.

Figure 34 suggests that between-group inequality remained persistent throughout the decade. Figure 36, in contrast, points to the rising size of the top two wealth groups within the Stellenbosch region. This may suggest interesting movements in the between- and within-group inequality estimates, a topic I turn to next.

To measure the size of within-group inequality, the Pyatt (1976) inequality decomposition was used to decompose the standard Gini coefficient by group. The results are reported in Table 29. The 'Total' column shows that by the beginning of the 1760s, inequality had been substantially reduced, only to increase again towards the end of the century. It would seem that the initial decline was mostly due to a fall in the inequality of Group 1, falling from a high of 0.78 in 1710 to 0.58 in 1750, only to increase to 0.73 again by 1770. Inequality was mostly constant in the wealthier groups. Group 1 inequality, for example, was consistently higher than the other

groups, with a high of 0.73 compared with a high of 0.35 for Group 4. Between-group inequality declined over the period while overlapping- and within-group inequality rose.

Table 29: Inequality decomposition by group, 1673-1800

Year	Group 1	Group 2	Group 3	Group 4	Total	Between	Overlap	Within
1700	0.53	0.36	0.30	0.09	0.66	0.60	-0.01	0.07
1710	0.78	0.44	0.19	0.23	0.62	0.54	0.01	0.07
1720	0.73	0.38	0.27	0.26	0.61	0.54	0.00	0.08
1730	0.70	0.48	0.28	0.26	0.58	0.45	0.03	0.10
1740	0.71	0.46	0.33	0.21	0.57	0.46	0.02	0.09
1750	0.58	0.48	0.34	0.23	0.53	0.39	0.05	0.09
1760	0.66	0.59	0.32	0.23	0.57	0.31	0.13	0.13
1770	0.73	0.52	0.36	0.30	0.60	0.41	0.07	0.11
1780	0.66	0.53	0.45	0.32	0.60	0.35	0.13	0.12
1790	0.63	0.56	0.42	0.35	0.57	0.34	0.11	0.11
1800	0.69	0.54	0.32	0.31	0.58	0.37	0.10	0.11
All	0.70	0.54	0.37	0.30	0.60	0.40	0.08	0.11

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

To identify which of the 28 items contributed most to inequality among Cape households, the Gini coefficient was decomposed by asset type. Such decomposition results helped identify the mechanisms by which high initial inequality may have persisted over time, validating or refuting existing hypotheses (Engerman and Sokoloff, 2002). Shorrocks (1982) and Lerman and Yitzhaki (1985) propose decomposing the Gini coefficient into its sources as:

$$G = \sum_{k=1}^{K} S_k G_k R_k \qquad (1)$$

where S_k represents the share of asset k in total wealth, G_k is the Gini coefficient corresponding to the distribution of wealth from asset k, and R_k is the correlation between the distribution of asset k and aggregate wealth Gini coefficient G (López-Feldman, 2006). This aggregate measure was decomposed into six asset types (k): slaves, commodities, productive assets in the primary sector, productive assets in the secondary sector, basic consumer products, and luxury consumer products. The results are reported in Table 30.

Table 30: Decomposing wealth inequality by asset type, 1673-1806

Source	S_k	G_k	R_k	Share	% Change
Slaves	0.352	0.696	0.815	0.330	-0.022
Commodities	0.586	0.703	0.920	0.627	0.041
Productive assets in the primary sector	0.009	0.665	0.764	0.007	-0.001
Productive assets in the secondary sector	0.031	0.666	0.797	0.027	-0.004
Basic consumer products	0.011	0.626	0.364	0.004	-0.007
Luxury consumer products	0.013	0.780	0.313	0.005	-0.008
Total wealth		0.604			

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

Aggregate wealth over the entire period has a Gini coefficient of 0.604. 'Slaves' is the item (of the 28) that comprised the largest proportion of Cape wealth (35%). Together, commodities (excluding slaves) comprised 58.6%, with cattle (30%) and sheep (22%) making up the main component of this figure, and horses (at 6%) making up the balance. (See Table A2 in the Appendix for the product breakdown.) Combined, productive assets in the primary and secondary sector added 4% to total wealth, with wagons adding 2.6%. Consumer products added only 2.4% to total wealth.

Ownership of luxury consumer items was the most unequal, with a Gini of 0.78, while a Gini of 0.62 – the lowest of all the product categories – was found for basic consumer products. Productive assets in both sectors yielded a Gini of 0.66, while commodities revealed a high Gini of 0.70. Even though cattle and sheep were widely available in the Colony, their respective Gini's (0.73 and 0.77) suggest that their ownership was also highly unequal.

R_k represents the correlation between the distribution of asset k and the Gini G. While the correlations are high for slaves, commodities and productive assets, they fall sharply for consumer products, with a correlation of 0.36 for basic consumer products and 0.31 for luxury products. There can be various interpretations for this, the most likely being that luxury ownership might not have been concentrated in the hands of what I define as the most affluent. As explained in section 2.6, the acquisition of luxury items was often given priority over investment in productive assets. It is not surprising, therefore, to find Groups 2 and 3 owning significantly more of luxury items and spending a greater share of their total asset bundle on luxury items than the elite Group 4.

In addition, the middle groups may have included households engaged in secondary or tertiary production. Shop-owners, for example, would have possessed numerous luxury products for sale which would have been reflected in their inventory upon death, but which were not for the purposes of own consumption. Some settlers may also have *produced* luxury items as a source of revenue. While was is more difficult to find evidence of this (many farmers owned carpentry equipment, for example, which does not necessarily imply that farmers built their own furniture), soft clues do reveal a more complex web of interactions. Adriana Strijdom, a painter discussed in Chapter 2, is one such clue. Strijdom owned the most paintings of any settler throughout the period, yet she would only be classified as belonging to Group 2 because she owned 'only' five slaves.

The picture that emerges of the eighteenth century Cape economy is of a wealthy society, but with high levels of settler wealth inequality. Slave and stock ownership proved a strong indicator of affluence, although consumer products were certainly not limited to those at the top. The evidence points, contrary to the perceived wisdom, to higher living standards for all farmers in the Colony, but especially for those at the bottom of the distribution.

4.3 *Opgaaf* wealth inequality[84]

Although the measures of wealth inequality calculated in section 4.1 provided a first indication of the severity of early inequality in the Cape Colony, the 28 products selected are not a full reflection of Cape production. Wheat and wine, for example, two of the most valuable commodities in the Cape, and which earlier historians deemed responsible for the growth in inequality (Guelke and Shell, 1983), were not included in the inventory analysis. Also, because of small sample sizes, the inventories could add little to our understanding of the intertemporal nature of wealth inequality over the period. Guelke and Shell (1983), for example, claim the rise of an elite after the 1740s. Accurate measures of production inequality over the eighteenth century would validate or refute these claims.

This section, therefore, creates a set of asset indices with principal components' analysis, using the *opgaafrolle*. These constructs were used to estimate measures of asset inequality for the period 1663 to 1757, roughly the first century of Dutch settlement. They provided long-run quantitative inequality measures for a seventeenth and eighteenth century colony, allowing, for the first time, a dynamic rather than static analysis of inequality trends in a newly settled and preindustrial society in this period.

The *opgaafrolle* were recorded for the purposes of tax collection by the VOC. Detailed household-level inventories and records of agricultural and other business activities were captured during most of the first Dutch occupation (1652-1795), and even in the early period of British rule (1795-1803). This information was used to establish each household's tax burden. The data used in this analysis spans the period from 1663 to 1757, roughly the first century of VOC settlement. Chapter 1 explains its origin.

Social scientists studying modern inequality have the choice of using either consumption, income or asset measures found in household surveys. The availability of data in the *opgaafrolle* constrained this section to measuring wealth inequality. The first approach has been the more conventional of the two. However, the exploration of asset inequality has also featured prominently in the recent literature. Theoretical reasons for this shift include the notion that wealth informs decisions to invest in education and other long-term forms of capital: inequalities in initial wealth feed through to inequalities in returns to these long-term investments. Furthermore, asset possession is less sensitive to temporary economic fluctuations, as opposed to consumption and income which may be highly responsive to circumstances relevant to only a particular year. Assets therefore often serve as better indicators of potential *lifetime well-being*. Measurement is also a definitive concern in choosing asset over monetary measures of inequality. Income and consumption data are known to be plagued by measurement error, as a result of privacy concerns, seasonal fluctuations and recall bias. As assets compose fairly stable and visible features of households, they are less likely to be incorrectly measured. However, assets in modern studies are usually enumerated by carefully designed surveys. My reliance on preindustrial tax records (and the incentives for evasion surrounding them) may not offer the same hope of eliminating measurement error as modern

[84] This section is based on a published paper with co-author Dieter von Fintel. See Fourie, J. and Von Fintel, D. 2009. The dynamics of inequality in a newly settled, pre-Industrial society: Evidence from Cape Colony tax records. *Cliometrica*, 4: 229-267.

studies claim.[85] Nevertheless, the level of underreporting in the *opgaafrolle* would only have been problematic if there had been severe differences between the reporting of wealthier vis-à-vis poorer households, i.e. if large land-owners misreported a larger share of their total production. Given the treatment of Van Duin and Ross (1987) and Brunt (2008) to correct for such underreporting, and the evidence of Chapter 2, which shows the accuracy of the reporting of slave numbers in the opgaafrolle, mismeasurement should not have biased the estimates of inequality significantly.

This section uses the assets reported in the *opgaafrolle* and principal components analysis (PCA) to create various indices of wealth. Principal components analysis has been widely used to construct asset indices using household survey data (Filmer and Pritchett, 2001). The aim of using this technique was to identify and compress patterns in data without losing too much information. The first step was to calculate eigenvectors using a correlation matrix. The associated eigenvalues (principal components) maximised the proportion of variation explained in the original data. The first principal was then used to weight the original variables to create a new index, as it would contain the most information of the original dataset. Several principal component analysis (PCA) asset indices were calculated to test the sensitivity of inequality measures to the inclusion and exclusion of several possessions. The characteristics of the different input variables (as well as the historical context) were considered to establish credible constructs. Details of which variables were used to construct the various asset indices are outlined in Table 33.

Table 33: Composition of principal component analysis indices

	Long- & short-term	Long-term	Core 1	Core 2	Core 3
Adult male slaves	X	X	X	X	X
Adult female slaves	X	X	X	X	X
Boy slaves	X	X	X	X	X
Girl slaves	X	X	X	X	X
Horses	X	X	X	X	X
Cattle	X	X	X	X	X
Sheep	X	X	X	X	X
Pigs	X	X	X	X	
Vines	X	X	X		X
Wheat sown (in *muids*)	X				
Rye sown (in *muids*)	X				
Barley sown (in *muids*)	X				
Flintlocks	X	X			
Pistols	X	X			
Swords	X	X			

Notes: The crosses show which variables were included in the five PCA-constructed asset indices.

[85] The salient difference is that monetary incomes were poorly measured in modern surveys as they formed the unit of taxation; assets may have been poorly measured in Cape Colony records for precisely the same reasons.

Following the construction of asset indices at the household level, they were converted to per capita amounts, to account for differences between large and small households. All inequality indicators were then calculated by weighting household observations by household size to provide measures of individual inequality, rather than capturing differences at the farm level.

Two measures of inequality were often employed to test the robustness of the inequality results. The most well-known indicator of inequality, the Gini coefficient, is used here, while the Theil coefficient results are provided in Fourie and Von Fintel (2010). The former was sensitive to inequality in the middle ranges of the distribution, while the second emphasised inequality attributed to a large upper tail (Champernowne, 1974). The results for the settler population changed little over the two coefficients.

Using pooled PCA weights, and considering only the farming population, Figure 37 exhibits trends in inequality with regard to all relevant asset indices for the Gini coefficient[86].

Figure 32: Gini inequality trends based on pooled weights for the settler population only

In the initial stages of settlement, inequality was at its lowest level compared with the subsequent period of analysis for most indices investigated.[87] A stable path then emerged until 1682, when inequality accelerated rapidly until a turning point roughly around 1700. Thereafter, inequality declined steadily until 1738. The indices that include the more volatile

[86] Conclusions about trends based on Gini and Theil coefficients differ negligibly.
[87] The initial drop and correction in inequality displayed by the 'Short- and Long-Term' and 'Core 3' indices should be viewed with caution, particularly given the small sample sizes during this period.

assets delivered a stable (perhaps slightly increasing) trend in inequality for the rest of the period. The more robust indices (the three 'Core' indices) indicated stagnation after the 1720s.

The relatively low inequality (with a Gini coefficient of 0.501 based on the "Core 1" measure) initially registered is indicative of a society that was newly established. All households that settled in the Cape arrived with few possessions, and consequently there was little difference in the distribution of wealth of the settler population. It should also be noted that farming operations were still fairly homogenous during this period, with viticulture not yet established in the Cape. Two processes then emerged that caused higher inequality. Firstly, existing farmers were able to expand production and establish viable, non-subsistence operations, so that the wealth of first-generation immigrants increased. Secondly, fresh arrivals of immigrants arrived in the Cape, with few possessions, to farm on unsettled land. Both of these processes raised inequality, but the dynamics occurred at opposite extremes of the distribution.[88]

As the population expanded through migration, the colony's borders expanded north and east. The settlers in these new regions invested less capital in these new lands than those in the fertile area around Cape Town. This explains how a newly settled society could have experienced rising inequality during the initial periods of expansion purely as a result of migration patterns. After the turn of the century, when immigration was discouraged by the VOC, arrivals played less of a role in population dynamics. Population growth shifted to a predominantly endogenous trajectory, which meant that the bottom tail of the wealth distribution was not constantly 'replenished' by poor immigrants. Over time, poorer settlers were able to converge on the first generation of immigrants, as is shown in section 4.2, so that inequality declined. Migration and subsequent acclimatisation may therefore have had an important role to play in the evolution of inequality.

While the discouragement of immigration halted the arrival of new assetless individuals at the bottom of the distribution, those at the top grew affluent, which resulted in the emergence of an elite, a trend also identified by earlier scholars (Guelke and Shell, 1983). From roughly the 1730s, a new trend emerged. The rise in inequality was caused primarily by an emerging upper tail. By 1757, a small group of households had attained asset index values well above those of previous years. Several factors caused this rise: first, the settler immigrants of the late seventeenth century were by this stage established in viable farming operations, with many farmers already having transferred their assets to their offspring. Second, farming activities became progressively more diversified, with those skilled in viticulture able to distinguish themselves from the original farmers (see section 3.2). Third, the intricate network of VOC monopoly and oligopoly contracts were granted to selected individuals, for whom it became important to maintain this new balance of power. This elite would become the target of the sumptuary laws implemented in 1755.

The Cape Colony, of course, did not only comprise free settlers. As noted before, a lack of records hinders an analysis of the indigenous Khoe population. Throughout the analysis, slaves were treated as capital, assets that yield a return on an investment. However, following

[88] It was for this reason that the Theil coefficients (reported elsewhere) were used alongside the Gini coefficient, as the latter was less sensitive to differences in the tails of a distribution compared to at the mode.

Engerman and Sokoloff, I also included slaves as assetless households here to ascertain the level of inequality in the colonial economy. This, of course, resulted in the double counting of slaves (both as capital and as households), but the purpose here was simply to show how the ownership of slaves resulted not only in high inequality amongst settlers, but in even higher (and rising) inequality within the colonial economy.

Figure 33: Inequality trends using indices including and excluding slaves as assetless households

As shown in Figure 38, the inclusion of slaves as assetless individuals increased inequality in Cape society by roughly 0.2 Gini points over the period. The difference was likely to be somewhat overstated, as historical evidence suggests that slaves were not necessarily completely assetless (despite this not being reflected in the data). An important observation, however, was the apparent widening gap over the course of the eighteenth century. Although this result was admittedly driven solely by the increasing ratio of slaves to settlers and not by assets, it was the between-group inequality presented here that most closely matched the Engerman-Sokoloff hypothesis relating to the institutional persistence of inequality.

4.4 From wealth to income inequality[89]

Chapter 4.2 reports the dynamics of settler wealth inequality in the Cape for the period 1663 to 1757. While the results provide an important first estimate of inequality in the Cape, there were a number of limitations with using estimates of wealth inequality. Firstly, the focus was only on the farmer population, excluding Company officials and non-farmers (for which no data is

[89] This section is based on a published work by myself and co-author Dieter von Fintel. See Fourie and Von Fintel (2011).

available in the *opgaafrolle*). (It does account for slaves and European *knechts*, but each with zero asset values in the data.) Secondly and more importantly, wealth inequality was calculated based on the first principal component of a basket of core assets. Differences between assets as a stock concept and income as a flow concept invalidated any comparison with the *income* inequality measures calculated by Milanovic et al. (2008), which trace differences in preindustrial inequality across various regions of the world. The objective of this section, therefore, is to offer a more representative measure to complement section 4.2, and thereby to obtain a more comprehensive picture of Cape inequality.

To construct the representative income distribution of the Cape population under European influence was a complex undertaking, especially since wage data are lacking for the majority of the population: many households worked for their own consumption, or slave labour was paid in kind. Various sources of data were therefore synthesised in this section to provide an overall picture of inequality. The data and analysis of Cape income inequality are described at greater length in Fourie and Von Fintel (2011a).

The period of analysis was determined primarily by the ability to match the various sources of data concurrently. However, the resulting series of inequality estimates correspond with demographic shifts that directly affected inequality in the Cape. Cross sections of households were constructed for 1700, 1723 and 1757. As section 4.2 shows, the first two decades of the eighteenth century coincided with a peak in wealth inequality; during this time (in 1717), European immigration to the Cape was discouraged in favour of slave importation, thereby changing the composition of the lower tail of the wealth distribution substantially. In contrast, 1757 represented a time when policies were designed to limit the extravagance of a new Cape elite.

4.4.1 Incomes of the settlers, servants and slaves

Whereas section 4.2 uses the number of slaves, the possession of stock and some short-term assets recorded in these data to produce estimates of asset inequality in roughly five-year intervals over an extensive period from 1663 to 1757, this section turns away from stock concepts to income flows in specific years.

Yields (rather than short-term assets) were multiplied by prices from archival sources to calculate household income from farming activities. Prices were obtained from entries in the auction rolls (MOOC10 series). For years after 1748, prices available in the MOOC8 series (the probate inventories) are used. Though some variation did exist, the prices in 1757 were the most stable. In the robustness checks discussed below, this observation was taken into account to ensure that incomes estimated in this way were consistent across time. Table 31 summarises the units of production available in farmers' tax returns, as well as the archival sources of prices that were used in the relevant years. It is assumed that 15% of animals were sold to generate income in any given year (Van Duin and Ross, 1987). However, horses, not being strictly a consumption item, were assumed to be kept in greater numbers by farmers, and only 5% were sold in any period. Furthermore, horse rearing was an arduous task in the Cape, due to horse

sickness and other diseases, so that it was not a promising income source.[90] Hence, the ratio applied here is indeed an upper bound.

Table 31: Sources of prices and agricultural products to calculate farm income

Period	Unit of record in *opgaafrollen*	Price per unit	Source
1700	Grain (*muid*)	8.1	MOOC8/165
1724	Grain (*muid*)	6	MOOC10/3.42*
1757	Grain (*muid*)	6	MOOC8/9.29*, MOOC8/10.15*
1700	Wine (*leaguer*)	75	MOOC8/8.150
1724	Wine (*leaguer*)	51	MOOC10/3.53*
1757	Wine (*leaguer*)	48	MOOC8/8.23*
1700	Cattle (head)	30	MOOC8.150
1724	Cattle (head)	24	MOOC10/3.48*
1757	Cattle (head)	9.36	MOOC8/8.42*
1700	Horses (head)	50	MOOC8.150
1724	Horses (head)	90	MOOC10/3.42
1757	Horses (head)	10	MOOC8/8.42*
1700	Pig (head)	3.42	MOOC8/2.12*, MOOC10/1.21*
1724	Pig (head)	5.25	MOOC10/3.58*
1757	Pig (head)	4.2	MOOC10/5.22*
1700	Sheep (head)	2	MOOC8.150
1724	Sheep (head)	6	MOOC10/3.48*
1757	Sheep (head)	1.5	MOOC8/8.42*

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5.
Note: (*) indicates that prices were converted from rijksdaalders *to* guilders *in the ratio of 3:1 as per Van Duin & Ross (1987). Given that cattle, pigs and sheep each represented stocks and not flows, it was assumed that 15% of current stock was sold in each year at the given price, which generated the farming income used in this study. The conversion was suggested by Van Duin & Ross (1987). Horses, while also not representative of income flows, were not sold for food or other consumption purposes, and therefore did not generate as much income as other stocks: 5% of the stock of horses was assumed to generate income.*

The tax returns reveal that a substantial proportion of the population was not engaged in any agricultural activity whatsoever. Particularly in urban Cape Town, many settler households recorded only the ownership of slaves, horses and weapons, with no evidence of any seeds sown, vines planted, stock possessed or agricultural yields. Owing to the nature of the data, however, no other income was recorded, nor was there any indication regarding the mode of economic activity of these households. A simple imputation approach was adopted here to generate the income distribution of this section of the population. The log of total household incomes of farmers[91] was regressed on variables indicating the gender and adult-child split of slaves owned and household members, the number of horses, and the number of weapons in each period. Parameters from these models were used to construct incomes for the non-farming settler population.[92] Slavery was the most important predictor in this context. Slave ownership

[90] Our thanks go to Sandra Swart for pointing this out.
[91] Defined here as any household that at the minimum sows seed, has vines or has animals.
[92] In converting the predicted *log(Household Income)* back to the linear form, estimates were adjusted for prediction errors, as per the smearing estimate suggested by Wooldridge (2009: 210-212).

was strongly positively correlated with wine and wheat yields, suggesting that this was a good indicator of the capability to generate income (Armstrong and Worden, 1988). Indeed, the fit of the regression was satisfactory, and the proportion of variance explained was in excess of 0.5. However, this approach assumed that the monetary returns (in terms of income from outputs) on slave labour were the same for both farmers and non-farmers, while for the latter group it was not certain in which activities workers were employed, and whether these were indeed slave-intensive sectors that would have yielded the same returns as agriculture.[93] The distribution of this predicted income was narrower than that for farmers *a priori*, as the regression line moderates much of the dispersion in the data.

Up to this point, non-agricultural activity among free settlers had been largely uncaptured. However, the Cape Colony was not only well-known as a refreshment station for ships to replenish food supplies, but also as a stopover where sailors sought entertainment along the sea route. Alcohol monopolists (strictly speaking, they were oligopolists, although the literature tends to refer to these *pachters* as monopolist producers) played an important role in this social context. These individuals bought exclusive rights from the VOC to sell alcohol to the public. Groenewald (2007; 2009) provides a vital exposition of their role in Cape society. It is evident that the high prices that they paid for these licensing rights were rewarded by much higher returns. I identified the alcohol *pachters* in the *opgaafrolle* and recorded the amount that each oligopolist paid for these rights in the respective years. Krause (1955) cites two separate examples, one in 1684 and another in 1685, from which it was possible to calculate the ratio of gross profits to initial monopolist fees. Both indicate that the gross profits were 247% of the monopolist fee paid. This figure was applied to each of the alcohol sellers (who were incidentally also very successful wine farmers) who were recorded in the tax records.[94] However, this estimate of income from contracts appears excessive, and is not necessarily representative of the entire period of analysis. The result is that only a few households skewed the upper tail of the income distribution to very high levels. Given that this income type was atypical of the entire population, and that more reliable estimates of returns on monopoly contracts were not forthcoming, analyses included and excluded this source of income to test the robustness thereof. Monopolies or oligopolies also existed in other markets, but detailed information about the owners of these *pachts* was not available.

While slaves and European servants did not submit tax returns of their own, information on their numbers was included in the entries of their supervisors or owners. This information was exploited to inform the income distribution beyond the free settler population. However, averages were used for each type of labour to impute incomes to these individuals, as detailed micro-level information was not recorded for these population segments.

The main source of income data for these individuals was the transcript of a Policy Council meeting held in the Cape of Good Hope. A discussion document sent by the Lords XVII in Amsterdam to the Cape on the 24th of June 1716 requested feedback on a number of policy-

[93] While the assumption of equality of returns between agricultural production and non-agricultural production was strong, the fact that settlers could move freely between the town and the rural areas, and that the prices of slaves were determined in a 'free' market, one would expect that slaves would have been purchased by those who would have been able to extract the highest return, eventually equalising the marginal returns per worker.
[94] Only isolated cases were not found in the *opgaafrolle*.

related issues, of which a few relevant ones are listed here: Firstly, they wanted to establish whether more immigrants could find a means of subsistence in the colony without becoming a burden to the Company; secondly, they discussed whether European farm hands and agriculturalists would be less expensive than slaves, and thirdly, they wanted to know whether the colonial economy required more artisans. Seven Company officials, in 1717, responded to the discussion document, arguing in favour of or against the Amsterdam proposals, and some provided quantitative proof for their arguments. The letters were later translated by John X. Merriman and published in 1918 by the Van Riebeeck Society (De Chavonnes, 1918).

In terms of European servants, the following discourse followed. Jan de la Fontaine, later to be governor of the Cape Colony, wrote in a letter to the Council of Policy in the Cape of Good Hope, "The wages paid to a [European] farm labourer for a year and half would often pay for a slave, as the usual wage of such a labourer is 15-20 guldens a month, exclusive of food, which would be considerably more for a European than for a slave". D.M. Pasques de Chavonnes calculated the cost of a "pioneer" to be 9 gulden per month, and that of a youth in training, 6 gulden per month, plus approximately 2 gulden per head per month for bread, and another 2 gulden for lodging (De Chavonnes, 1918: 106). Van Beaumont also calculated the wage costs at 9 gulden per month, "the rate of a soldier's pay" (De Chavonnes, 1918: 100), while Cranendonk noted that a farm labourer would "cost the Company 14 gulden odd per month" (De Chavonnes, 1918: 98). Van der Meer Pietersoon estimated that "farm-servants here usually earn from 10 to 16 and even 18 guldens and more, in addition to good food and drink, besides 1 to 2 lbs. of tobacco per month." (De Chavonnes, 1918: 126). The wage and "in kind" cost of farm labourers was therefore estimated to be between 13 and 18 guldens per month, or between 156 and 216 guldens per annum. In this study, European servants (*knechts*) were all assumed to be paid 13 guilders per month in 1700, based on a soldier's salary and an allowance for food. A separate household was created for each servant employed by the free citizens – a lack of additional information meant that no wives or children were added to these households. Given that the servants were often unmarried Company employees stationed in the Cape (Romero, 2003), these servants likely had few dependants, and therefore the full income carries a weight of 1 person in per capita conversions. The impact of this assumption becomes clearer below.

Similarly, the policy documents were used to establish credible income imputations for slaves. Given that slaves did not strictly earn an income, a basic cost of living value was attached to each slave recorded in the data. Cranendonk, in his letter to the Council of Policy in 1717, examining the expenses for slaves for the previous five years, calculated that "every slave – adults, boys and girls – costs the Company about 40 gulden a year, including [the] expense of clothing" (De Chavonnes, 1918: 96). Van Beaumont also concludes that "a slave costs annually (everything included) about f40". According to Van der Meer Pietersoon, "each slave … costs the Company only 40 guldens per year, but as there are many children among them, the slave of a private person is usually estimated at f60, reckoning 1 rixdollar per month for food, a length of tobacco per week, 2 pairs of trousers and one coat per year" (De Chavonnes, 1918: 126). It seems that the cost per slave was between 40 and 60 guilders per annum or between 3.5 and 5 guilders per month in 1717, depending on whether they had dependants or not. Each adult slave was imputed with a value of 40 guilders, while the premium of 20 guilders was assigned to child slaves in the data. Again, a new household was created for each slave owned by a free citizen, which carries a weight of one in a per capita index. In contrast with the European servants, the number of female and child slaves owned by each free citizen was known, so that a

certain measure of household composition was obtainable. It was not clear which of the slaves were directly related, however; instead, artificial households for each male, female and child slave were created separately. These separate households also contributed a weight of 1 person for a per capita variable. Household weights were adjusted to account for under- or overrepresentation, as well as to inflate slave numbers to reflect the number of slaves in VOC possession. The latter's numbers were not linked to owners in the micro data, but aggregate figures of VOC slave ownership allowed me to inflate the weights so that the number of privately owned slaves also represented those owned by the Company.

4.4.2 Income of VOC employees and Company officials

Apart from the rural population, the Company employed a few hundred soldiers and officials in and around the fort. Other artisans, officials, teachers, medical staff and administrators were also employed by the Company. Data for these were sourced from the *monsterrollen* (records of VOC officials, their occupations and wages), as transcribed by TEPC (2008) and recently compiled into a wage index by Du Plessis and Du Plessis (2012). By comparing the total number of wage earners in these data with the number of company employees in van Duin & Ross (1987), it was evident that records were more complete in some years than others. Only those years with sufficient representation were kept in the analysis. The 1699 wage cross section was linked with the *opgaafrol* of 1700 to sketch a complete picture of the population in the Cape. Similarly, wage data for 1724 were merged with the 1723 free citizen tax data, as were the wage data from 1756 and the tax data from 1757. This allowed for almost complete population censuses in these three periods. Wage-earning households were also assumed to be of size 1, as indicated in the TEPC (2008) transcriptions, though it was possible that company employees did settle for longer periods with families. This had more severe implications for per capita income estimates in the case of *knechts*; the assumption that these households did not grow (which was not true for other European households) meant that per capita income could be overestimated for this group in later years.

4.4.3 Estimates of income inequality

Including all income types and population groups captured in the sample shows that Gini inequality declined from estimates of 0.792-0.837 in 1700 to 0.713-0.744 in 1757 (see Table 32). However, given that *pachter* income declined over the period (see Table 32), and that the returns on monopoly contracts were not reliably estimated, the decline in inequality was caused by a shrinking upper tail of the income distribution.

Table 32: Gini coefficient estimates over various specifications

	Sample	Deflation of settler income by price index[a]			Use 1700 prices[b]			Use 1757 prices[c]		
		1700	1723	1757	1700	1723	1757	1700	1723	1757
	Whole population[d]	0.792	0.761	0.742	0.792	0.757	0.713	0.837	0.816	0.744
	Whole population (excluding income from *pachts*)[e]	0.569	0.592	0.559	0.569	0.626	0.590	0.543	0.582	0.555
	Whole population (excluding income from *pachts* and slave population)[f]	0.475	0.563	0.578	0.477	0.586	0.539	0.479	0.587	0.575
Within Group Inequality	VOC employees	0.284	0.310	0.297	0.284	0.310	0.297	0.284	0.310	0.297
	Farming settlers	0.554	0.625	0.689	0.554	0.636	0.652	0.565	0.659	0.689
	Other settlers (Imputed figures)	0.402	0.576	0.433	0.402	0.568	0.426	0.417	0.546	0.433

Source: Fourie and Von Fintel (2011a).

Note: All estimates were constructed using per capita levels of household income, weighed by household size and other sampling adjustments. [a] *Farming income was adjusted by the overall price index of Du Plessis & Du Plessis (2012) to 1700 levels.* [b] *Prices of farming output were fixed at 1700 levels, while only allowing quantity to vary. All other groups' incomes were adjusted to 1700 prices by the overall index.* [c] *Prices of farming output were fixed at 1757 levels, while only allowing quantity to vary. All other groups' incomes were adjusted to 1757 prices by the overall index.* [d] *Includes the entire population and all income sources available.* [e] *Includes the entire population, income from pachts were excluded (though* pachters*' other income sources were used in constructing the income estimates).* [f] *Includes the entire population except for slaves; income from* pachts *was excluded (though* pachters*' other income sources were used in constructing the income estimates).*

Income from *pachts* was therefore disregarded in the next set of estimates, resulting in a slight increase in inequality from 1700 to 1757. Gini coefficients dropped from their high levels to estimates of between 0.543-0.569 for 1700 and 0.555-0.590 for 1757, to slightly higher estimates for 1723. While I acknowledge the potentially large role that *pacht* income played in raising inequality, the inadequate measurement thereof precludes any reliable level or trend analysis on this basis. Nevertheless, whether monopolist income was included or excluded, it is apparent that between-group inequality declined by between 5-13 percentage points (depending on the strategy followed to account for changing output prices) from 1700 to 1757. The decline was more rapid when *pacht* income was included, underlining that *pachters*' returns declined over time according to the calculations made here. However, it was not certain whether this was a real phenomenon (in light of the sumptuary laws) or purely a measurement issue (given the limited data on their real returns across time). The results of Chapter 4.1, for example, support the notion that between-group inequality declined over the course of the eighteenth century.

The decline in between-group inequality that remained despite excluding the income from *pachts* can be explained by movements at the bottom of the income distribution. Because I did not measure income differences among slaves, much of the inequality was by default driven by differences *between* slaves and Europeans. However, this was not such a heroic assumption, given what was known about the wellbeing of this group. When slaves were also excluded from the population (in addition to *pacht* income), inequality estimates fell even further in level

terms, now with a Gini lower-bound of 0.475-0.479 in 1700 and a climax of between 0.539-0.587 for 1757. The change from a decreasing to an increasing inequality trajectory was driven completely by changes in *between-group* inequality. Once slaves were excluded from the sample, most estimates showed that about 90% of European inequality occurred within groups rather than between groups, compared with only about 60% when slaves were also accounted for.[95] While slaves' low mean income relative to Europeans constituted a large component of inequality in the Cape, these results do emphasise that within-group inequality dominated the picture. This contrasts with the assumptions of Milanovic et al. (2008) who assume (based on the available data in the social tables) that within-group inequality was zero.

4.4.4 Income inequality within groups

Given the importance of within-group inequality, I analysed each of the subgroups separately. Among VOC employees, inequality was particularly low in levels and remained stable in the region of 0.30, as measured by the Gini coefficient. In contrast, income Ginis for farming settlers started at relatively high levels of 0.55-0.57 (depending on how output prices were accounted for) in 1700, and rose steadily thereafter to 0.65-0.69 in 1757. Closer scrutiny showed that rising inequality within the farming population was the result of greater inequality of agricultural income. Limiting the sample to only VOC wage earners and farming settlers, it was evident that in excess of 90% of inequality was found within groups, and that this figure possibly increased over time (under the assumption of fixing agricultural prices at 1700 levels). The severe inequality of the settler population was therefore not a condition of dramatic class differences, but of rising inequality within the farming cohort, driven primarily (in this analysis, at least) by differential agricultural incomes.

Given that agricultural income represents the thrust of reliably measured changes in within-group income inequality, this particular sector was decomposed by income source (as in Chapter 4.1) to understand which types of production drove the inequality. Results are presented in Table 33. S_k represents the share of asset k in total income, G_k is the Gini coefficient corresponding to the distribution of income from asset k, and R_k is the correlation between the distribution of asset k and aggregate income Gini coefficient G (López-Feldman, 2006).

Across all years it is evident that the distributions of wine, grains and cattle were consistently and highly correlated with the overall agricultural income distribution, suggesting that these income sources best reflected the overall distribution.[96] Further, these sources together represented more than 70% of traditional agricultural income. Wine was clearly the most dominant income source of farmers across time, constituting in excess of 40 per cent of agricultural income.[97] While this income source was never the most unequally distributed among products, its Gini coefficients were consistently high. In all years except 1723, it contributed more to the overall Gini coefficient than its percentage of income. The marginal effects revealed that most often, an increase in income from animals marginally decreased the

[95] Note, however, that the lack of variation in imputed slave incomes artificially drove this figure down.
[96] Cumulative densities (not shown) confirmed that this was true. In particular, the long upper tails that emerged in agricultural income by 1757 were discernable in each of these categories.
[97] 1723 was a notable exception. This was driven partially by the price decline between 1700 and 1723. However, this price did not recover in 1757, suggesting that quantities declined dramatically in 1723, but turned around by 1757.

Gini coefficient. This was in contrast to section 4.1, where animal stock resulted in marginal increases in the Gini (and slaves and other assets declined). Grains and wine consistently drove inequality upwards if income from these sources increased. However, these income sources did not have high Gini elasticities (with all figures below 1). Nevertheless, by 1757 it was evident that wine was the dominant contributor to inequality, and a 1 per cent increase in this income type lead to a 0.08% increase in Gini inequality. This provided corroborating evidence to the intuition in section 3.2 that viticulture created a class of elite Cape winemakers.

Table 33: Decomposition of Gini from agricultural income by source

Year	Source	S_k	G_k	R_k	Share	% Change
1700	Grain	0.274	0.628	0.898	0.281	0.007
	Cattle	0.206	0.570	0.855	0.183	-0.023
	Wine	0.436	0.621	0.900	0.444	0.008
	Sheep	0.076	0.754	0.822	0.085	0.010
	Pigs	0.001	0.860	0.694	0.001	0.000
	Horses	0.007	0.625	0.677	0.006	-0.002
	Total	1.000	0.549		1.000	
1723	Grain	0.312	0.765	0.916	0.348	0.036
	Cattle	0.223	0.603	0.897	0.192	-0.031
	Wine	0.203	0.773	0.819	0.205	0.002
	Sheep	0.236	0.685	0.900	0.232	-0.005
	Pigs	0.003	0.812	0.627	0.002	-0.001
	Horses	0.023	0.738	0.798	0.021	-0.001
	Total	1.000	0.628		1.000	
1757	Grain	0.258	0.905	0.888	0.301	0.043
	Cattle	0.156	0.592	0.711	0.096	-0.061
	Wine	0.441	0.880	0.921	0.519	0.078
	Sheep	0.134	0.604	0.651	0.077	-0.058
	Pigs	0.001	0.990	0.864	0.001	0.000
	Horses	0.010	0.647	0.771	0.007	-0.003
	Total	1.000	0.689		1.000	

Source: Fourie and Von Fintel (2011a).
Note: Income shares were calculated according to the relevant prices in the respective years, and not by normalising to one year. The 'descogini' STATA module (López-Feldman, 2006) used for the decomposition did not accommodate weighting. Here I expanded the dataset by the weights, so that frequency weights were implicitly assumed. Hence, minor differences in the overall Gini coefficients presented here and before exist. The '% Change' estimates the percentage change in the overall Gini coefficient if that income source increased by 1 percent.

4.4.5 Comparative performance

One purpose of measuring inequality in the Cape Colony was to add to estimates that tested the relevance or validity of theories postulating that high initial inequality may explain later inequality and underdevelopment, amongst others by Engerman and Sokoloff (2011). The claims made by these authors have been widely disputed, both on theoretical grounds but also because of empirical realities. Williamson (2009a; 2009b), in particular, has argued that while modern-day Latin America may be highly unequal, this is not as a result of inequality

immediately after colonisation. In fact, Williamson argues that Latin American exhibited average levels of inequality immediately after colonisation, with rising inequality during the 17th and 18th centuries. Following independence, inequality seemed to be no higher in Latin America than in other preindustrial societies or even the industrialised North. Only during the *belle époque* of the nineteenth century did Latin American inequality increase significantly above the inequality levels of comparator countries. While Williamson (2009a) points out that these findings are inconsistent with the Engerman-Sokoloff hypothesis, he calculates an extraction ratio for each of these countries, which does support the hypothesis.

Table 34: Comparative Gini coefficients across regions and over time

Country/region	Year	Gini	Source
Tuscany	1427	46.1	Milanovic, Lindert and Williamson (2008)
South Serbia	1455	20.9	Milanovic, Lindert and Williamson (2008)
Holland	1561	56	Milanovic, Lindert and Williamson (2008)
Levant	1596	39.8	Milanovic, Lindert and Williamson (2008)
England & Wales	1688	45	Milanovic, Lindert and Williamson (2008)
Cape Colony	1700	54.3 – 83.7	Own analysis
Cape Colony	1723	58.2 – 81.6	Own analysis
Holland	1732	61.1	Milanovic, Lindert and Williamson (2008)
Moghul India	1750	48.9	Milanovic, Lindert and Williamson (2008)
Old Castille	1752	52.5	Milanovic, Lindert and Williamson (2008)
Cape Colony	1757	55.5 - 74.4	Own analysis
England & Wales	1759	45.9	Milanovic, Lindert and Williamson (2008)
France	1788	55.9	Milanovic, Lindert and Williamson (2008)
Nueva España	1790	63.5	Milanovic, Lindert and Williamson (2008)
England & Wales	1801	51.5	Milanovic, Lindert and Williamson (2008)
Bihar (India)	1807	33.5	Milanovic, Lindert and Williamson (2008)
Netherlands	1808	57	Milanovic, Lindert and Williamson (2008)
Naples	1811	28.4	Milanovic, Lindert and Williamson (2008)
Chile	1861	63.7	Milanovic, Lindert and Williamson (2008)
Brazil	1872	43.3	Milanovic, Lindert and Williamson (2008)
Peru	1876	42.2	Milanovic, Lindert and Williamson (2008)
Java	1880	39.7	Milanovic, Lindert and Williamson (2008)
China	1880	24.5	Milanovic, Lindert and Williamson (2008)
Japan	1886	39.5	Milanovic, Lindert and Williamson (2008)
Kenya	1914	33.2	Milanovic, Lindert and Williamson (2008)
Java	1924	32.1	Milanovic, Lindert and Williamson (2008)

Source: listed.

Note: The Gini's were split into four groups: below 40, 40-50, 50-60, and above 60. Darker bands indicate higher Gini coefficients.

Table 34 provides a comparison of Gini coefficients for different regions across time, as measured by Milanovic et al. (2008), and the Ginis calculated here for the Cape Colony in the eighteenth century. The results show that the conservative estimates of inequality in the Cape (where the *pachters* were excluded) ranked as some of the highest inequality measures documented before the twentieth century. The Cape Colony was persistently more unequal than the European countries in the sample (except Holland in 1732) and shared similar high levels of

inequality to those of New Spain and Chile in the eighteenth and nineteenth centuries. It is especially these regions that Engerman-Sokoloff refer to when postulating their endowments-inequality hypothesis. Based on this evidence, one might conclude that high initial inequality in the Cape persisted to modern day South Africa.

However, the Cape's comparative record is subject to a number of caveats. Firstly, these estimates may be higher than the comparable figures of Milanovic et al. (2008), because they use social tables, where within-group inequality is assumed to be zero. This chapter reveals that (particularly within the farming population) within-group inequality was high relative to between-group inequality, though some subpopulations (for instance the VOC wage earners) displayed more moderate levels of inequality. Hence, using the social tables likely underestimated inequality, while the use of micro data here offered a more realistic view of the income distribution. Thus, either preindustrial inequality has been grossly underestimated for all regions using the social tables (and all societies more closely approximated the Cape Colony) or the Cape was indeed an exceptionally unequal society. The first case would counter any Kuznets-type argument that initial inequality was low in preindustrial societies, and would also not concur with the Engerman and Sokoloff notion that currently developed nations would have been relatively equal in the preindustrial era. The second scenario suggests that the Cape was indeed a highly unequal region in the 17th century and remained part of the developing world into the 21st century, with persistent inequality. Such a narrative fits the Engerman-Sokoloff hypothesis.

4.5 Cape inequality

How do the income inequality estimates compare with those of wealth inequality, notably those of sections 4.2 and 4.3? The results presented in 4.4 are in contrast with those of section 4.2, where stock variables were the drivers of inequality in the absence of wheat and wine production indicators, but remained consistent with the emergence of an elite society. The high Gini coefficients calculated for luxury item ownership (above 0.7) in section 4.2 reflect the high inequality of wine production reported in Table 8. A wine elite owning several luxury assets, but weakly correlated with stock variable ownership was responsible for the higher levels of overall inequality calculated here than in section 4.2 .

Section 4.3 shows that the assets of farmers increased over the period, with poor immigrants converging on more established settlers. The improvement in the position of the poor was consistent with the results of section 4.2. At the same time, some farmers were able to accumulate substantial amounts of assets to form an elite. Section 4.4 shows that the rising elite was mostly the result of rising agricultural incomes, driven notably by wine production. The fruit of the Cape vine was high inequality.

Because I use pooled rather than panel data, the persistence of inequality within the Cape society does not necessarily mean that the same families remained at the top. In fact, as Dooling (2007: 31) suggests, this was not a linear process of elite formation, with wine-maker son succeeding wine-maker father on the same estate. The Roman-Dutch system of partible inheritance meant that "wealth, whether in the form of land or slaves, could be easily scattered", and farms would, even of the wealthiest, would often be sold to compensate the heirs equally.

Nevertheless, the Colony's wealthiest families found "ways to cope with the destructive effects of particle inheritance", in the form of geographically propinquitous marriages (Dooling 2007: 36, 40). Widows, who often inherited half of their husband's assets, tended to remarry within the elite, so that, according to Dooling (2007: 40), "women were central to ensuring the preservation of landed and slave wealth". If the *opgaafrolle* could be converted into a panel data set, future research could potentially investigate the intergenerational (male) mobility of the wine farmers to quantify the impact marriage patterns may have had on Cape elite formation,

As already noted in Chapter 2.1, measuring inequality requires assumptions about the inclusion of slaves as part of the population or as part of the settlers' wealth. When measuring wealth inequality, the increasing numbers of slaves were considered to be assets in the hands of Europeans. Removing this asset from settlers, and creating households of these slaves not only caused a substantial change in the income distribution relative to the wealth distribution, but also suggests rising inequality over the period, validating the Engerman-Sokoloff hypothesis that predicts severe and persistent inequality.

Chapter 5 | Conclusions and consequences

This inquiry into the nature, causes and distribution of wealth of the eighteenth century Cape Colony offers new insights that are pertinent to both scholars of South African history and to economic historians interested in the determinants of growth. There are several reasons to investigate the early Cape: Its unique Mediterranean climate, low population density of native Khoe, and fertile soil made it ideal for European settlement, similar to the geographies of the North American colonies. The Cape is located on an important trade route between Europe and the East Indies, was a colony governed by a Company, and was also the destination for settlers from a variety of origin countries. But, being much closer to the slave markets of Africa and the East, the Cape was also a slave economy which, as is spelled out below, had important developmental consequences.

Investigating the Cape Colony also offered another distinct advantage: detailed records survive that allowed economic historians access into the lives of eighteenth century Cape households. I made use of several recently digitised records: probate inventories, auction rolls, tax censuses and ship arrivals. These rich sources, combined with standard econometric techniques, allowed for a reinterpretation of the wealth of the Cape Colony, and contributed to current debates about the causes and consequences of long-run growth.

5.1 The nature of Cape wealth

Until recently, the eighteenth-century Dutch Cape Colony, located at the southernmost tip of Africa, was seen as an "economic and social backwater", "more of a static than a progressing" slave-based subsistence economy that "advanced with almost extreme slowness" (De Kock, 1924: 24-40, Trapido, 1990, De Kiewiet, 1941). While close to Cape Town pockets of wealth emerged during the eighteenth century (Guelke and Shell, 1983), this relative affluence stood in sharp contrast to the increasing poverty of the pioneers who, "living for the most part in isolation, gained a scanty subsistence by the pastoral industry and hunting" (De Kock, 1924). As Dooling (2007: 22) summarises: "There is overwhelming evidence that the difficulties of these early decades were real."

These views were somewhat ameliorated by recent quantitative contributions from Van Duin and Ross (1987) and Brunt (2008). Du Plessis and Du Plessis (2012) and De Zwart (2011), using wage and price data, show that Cape settlers could afford high and improved living standards compared with their counterparts in Europe. While their conclusions are subject to criticism, their work supports the notion that the Cape was more dynamic and prosperous than previously held. The generally accepted view of the Dutch Cape Colony, however, remains that of a disparate society, succinctly summarised by Guelke (1980: 84): "At the top of the European population was a pocket of rich farmers with large estates and many slaves", however, "the average hard-working farmer could only with some effort eke out a subsistence living".

In Chapter 2, I use 2577 probate inventories to prove that the average Cape settler was not poor, destitute and backward, and there is no evidence to suggest that average wealth declined over the course of the eighteenth century. Throughout the eighteenth century, the average Cape settler acquired goods equal to and often in greater quantities than the settlers' countries of

origin and many other New World societies. I also show that in terms of income per person, the Cape Colony achieved some of the highest levels measured for the eighteenth century. A high male to female ratio and slavery may account for this.

I also provide evidence to suggest that the average, eighteenth-century Cape settler – and not only the elite – could consume a greater range of nonessential goods. The proliferation of objects in the settler homes – of paintings, mirrors, books, jewellery and other goods, even, as Randle (2011) would argue, these were second-hand goods – suggests that Cape settlers were part of what came to be known as the 'consumer revolution' (Pomeranz, 2000; McCants, 2007). Cape settlers not only were as affluent as citizens of Holland and Britain, but they had access to, and indulged in, the same fashions as their European counterparts.

5.2 The causes of Cape wealth

The role of settler communities in the economic development of colonial societies has received ample attention in the recent economic history literature. Most notably, the distinctions between 'extraction' and 'settler' (Acemoglu, Johnson and Robinson, 2001) or 'tropical' and 'temperate' (Engerman and Sokoloff, 2011) colonies suggests an often artificial division into two distinct extremes (Austen, 2008). The Cape Colony of the seventeenth and eighteenth century provides a case study of a newly settled, preindustrial society that does not fit either of these two extremes: The Cape settlement was established with the unique purpose of providing refreshments to passing ships on their way from Europe to the East and back.

I show in section 3.1 the rapid growth of the early settlers, determined by three demand-generating effects created by ship traffic. Passing ships required fresh produce to consume on the remaining part of their voyage. There is strong statistical evidence of a bidirectional long-run relationship between wheat production and ship traffic. The size of the correlation reveals that ships were more significant in their impact on wheat than vice versa. There is only partial evidence that ship traffic may have been the stimulating force for viticulture, while, when also controlling for long-run information (information with a time horizon exceeding 40 years), stock herding fluctuations appear to have been unrelated to ship traffic fluctuations. Some products were also exported to markets in the East. In contrast to the work of early historians, I found a statistically important impact of exports on output growth in the Colony. More importantly, while fluctuations in ship traffic certainly influenced exports, these fluctuations had an even greater effect on *overall* wheat production. This suggests that the demand created by the ships was not restricted only to goods that could be exported to other settlements, but it also stimulated the tertiary sector (to accommodate the thousands of sailors and soldiers arriving annually). The Cape Colony attained economic growth not only by exporting goods, but also by providing services (in modern parlance, travel service exports) to the passing ships.

These results bring new insights to our understanding of colonial development. While the Cape does not fit into the traditional 'staples thesis' of settler or temperate colonies given the presence of slaves and a labour-intensive crop, its growth was dependent on exporting goods and services. Neither was the Cape a fully 'extractive' or tropical colony, given the growth of a settler society. This colonial dichotomy of the institutional literature is rejected; Austin (2008: 1021) justifiably criticises these theories – the "emphasis on the primacy of a single cause is

stimulating but insufficient" – and calls for more case studies like this one to understand the nuances of development in colonial settlements. The Cape provides an alternative development model – perhaps akin to other coastal nexuses, like Jamaica and Jakarta – that explains why a society might arrive at high early standards of living, anchored by the demands of ship traffic.

Neither does the institutional literature suggest a link between settlers' origins and the development of settler regions. In fact, the seminal contributions nearly all reflect on the environmental conditions the settlers experienced on arrival to explain why certain regions developed growth-inducing versus growth-inhibiting institutions. In section 3.2, I posit that this neglects an important component of development. The French Huguenots who arrived in the Cape Colony in 1688/89 possessed uniquely different skills than the incumbent farmers, which allowed them to become more productive winemakers.

None of the standard factors of production explain these differences, nor any 'institutional' difference between the French and the Dutch. In fact, I controlled for the unquantifiable cross-group differences by showing that the Huguenots who originated from wine-producing regions were more productive in viticulture than the Huguenots from non-wine producing regions and also from all other countries. I posit that the Huguenots from wine-producing areas possessed 'specialised skills' in viticulture that could not be easily (cheaply) acquired, as was possible for the 'general skills' of wheat farming. In fact, an elite of Huguenot descendants from wine-producing regions maintained their advantage in wine-making in the Cape. This disparity cannot be satisfactorily explained through a first-mover advantage in production, ownership or social capital, or the Cape inheritance laws. Specialised skills – trade secrets – gave the Huguenots from wine-producing regions a sustainable competitive advantage.

The results of section 3.2 point to strong evidence that settler capabilities – specific skills acquired in the land of origin – mattered in colonial development and should be considered an important element – together with environmental conditions and resource endowments in the destination region – in explaining why countries follow different development paths.

Settler skills and ship traffic not only buttressed wine production, but viticulture also required a large labour force. Since the beginning of the eighteenth century, settlers invested their surplus in purchasing slave labour: one quarter of all movable assets owned by settlers was slaves. Slave labour was not only profitable at low levels of ownership: Through investment in other forms of capital and because of economies of scale and scope, slaves would yield increasing returns to the wealthiest farmers, most often to viticulturalists. The high marginal product of slave labour explains why demand for slaves continued even as real slave prices rose throughout the eighteenth century, and offers an economic perspective on why Cape settlers would reinforce the institution of slavery in the Cape Colony.

5.3 The distribution of Cape wealth

The use of slave labour created an affluent but unequal society. In Chapter 4, I report measures of inequality using three different approaches. All reveal high to severe levels of inequality. Depending on various assumptions, the Cape Colony Gini ranged between 0.543 and 0.837, which is high relative to other countries for which measurements exist for the preindustrial

period. The differences in mean incomes between slaves and Europeans only partially explains the high levels of inequality. Notably, within-group inequality (particularly among farmers) played an important role that could not be accounted for in the social tables often used in such studies. My results support earlier qualitative and quantitative evidence of a rising farming elite in the Cape Colony relative to the rest of the distribution. While recorded farming income declined in real terms across most of the distribution, this was due to not capturing by-product production, as was evidenced by the improvement in the living standards of the poorest groups in society.

Disaggregating the sources of inequality provided a more comprehensive analysis of agricultural income trends in the Cape. I found that wheat and especially wine production exacerbated inequality. This is consistent with the literature. The arrival of French Huguenots in the Cape in the late seventeenth century led to a shift towards viticulture. As viticulture was a labour-intensive industry, wine production resulted in a greater demand for slave labour. Slave imports increased after 1700 and especially after 1717 when the Council of Policy in the Cape restricted European immigration in favour of slave labour. Proximity to the slave markets in Africa and Asia probably also ensured relatively lower slave acquisition costs. These changes gave rise to a small elite in the Cape consisting mostly of alcohol *pachters* and wine farmers. Proof of this was provided by the rising inequality within the farmer population in my results.

5.4 Implications for long-run development

"The government of an exclusive company of merchants is, perhaps, the worst of all governments for any country whatever. It was not, however, able to stop altogether the progress of these colonies, though it rendered it more slow and languid."[98]

In a paper comparing the development of four major nineteenth-century staple economies, Australia, Argentina, Canada and New Zealand, Schedvin (1990: 545) argues that:

> "although the long-term development characteristics of primary producing economies are strongly influenced by the distinctive production function and other technical characteristics of the leading staple, the development path will also be influenced by the hierarchy of staple production: by the degree of dominance of the leading staple. If for economic or geographical reasons a single staple is of overwhelming importance (e.g. sugar in the eighteenth-century West Indian plantation economy), long-term development may be blocked. If the dominant staple also has weak domestic linkages, the development prospects are further diminished. On the other hand, if there is a broad spread of staple production and domestic linkages are strong, the economy is more likely to diversify in the way envisaged by staple theorists.

Wine, wheat and meat were the overwhelming staple products of the eighteenth-century Cape Colony. Each of these industries had strong domestic linkages: as Chapter 3.1 shows, not only did farmers benefit from the greater demand of ships, but so, too, did the tertiary industry in Cape Town. Partially diversified production and domestic linkages ensured that the Cape wealth

[98] Smith 1776, IV.7.33

was not only confined to a small group of affluent landholders (as Chapter 2 has demonstrated), even though the preference for viticulture – from both the demand and supply side – did create a highly unequal settler society (Chapter 4). But the main difference between the eighteenth-century Cape and later staple economies was that capital accumulation, as the in the antebellum South, was in the form of slaves (Wright, 2006). The ownership of slaves yielded high returns on private capital, but in the long-run harmed the Cape's growth potential.

A shortage of labour resulted in labour-saving capital investments first in Britain during the Industrial Revolution (Allen, 2009) and later in the North American colonies (where slaves were absent). This resulted in new innovations and technology that increased labour productivity. Where farmers replaced labour-substituting investments with slaves, though, there was little incentive to improve labour productivity that caused growth. Smith noted this effect in 1776, saying "slaves, however, are very seldom inventive; and all the most important improvements, either in machinery or in the arrangement and distribution of work which facilitates and abridges labour, have been the discoveries of freemen" (Smith, 1776, IV.7.46). This also adds a twist to the perceived importance of property rights to economic growth. Strong enforcement of property rights – in people – combined with the extremely asymmetric way in which the law of property operated in favour of settlers (Dooling, 2007: 16-17), reduced the incentives for landowners to find alternative inputs into the production process, either by way of wage labour or, like in Britain, in using labour-saving capital investments.[99] Slavery had thus put the Cape economy on a high plateau (Chapter 2).

Engerman and Sokoloff (2011) note another consequence of slavery that would affect its long-run development trajectory. They suggest that the mechanism through which initial factor endowments affect later development is inequality. Severe initial inequality would result in growth-debilitating institutions, such as low access to education, low levels of immigration, disenfranchisement, and property rights favouring the elite. By contrast. low levels of inequality would have resulted in high levels of educational attainment, the extension of the franchise, immigration and property right protection for all.

In Engerman and Sokoloff's model, initial inequality arises from the type of climate and the size of the native population: a temperate climate with a small native population would likely have resulted in low initial inequality, whereas a tropical climate with a large native population would have likely resulted in severe initial inequality. These initial factor endowments were less relevant in the case of the Cape Colony: The Cape was situated in a temperate climate and, although there was a sizable native population, the policies of the Company prevented settlers from enslaving them. Rather, the skills brought to the Cape by the arrival of the French Huguenots (section 3.2) and the demand for wines from the passing ships (section 3.1) shifted production towards viticulture, a labour-intensive crop.

The Company invested in slavery as a way to circumvent the shortage of labour on the farms and to keep production costs as low as possible. The institution of slavery created a highly unequal Cape society during the eighteenth century (Chapter 4). As predicted by Engerman and

[99] Suresh Naidu and Jeremiah Dittmar make a similar case for property rights in the United States. They argue that the weak enforcement of property rights in people – i.e. slavery – discourages investment in slaves and encourages investment in manufacturing.

Sokoloff, this high inequality would reinforce growth-debilitating institutions in the Cape, notably the choice to limit European immigration at the start and middle of the eighteenth century. In 1717 the Company officials in Cape Town requested that immigration to the Colony be discouraged as the objectives of the Cape settlement – to supply produce for passing ships – had been met as a result of the extension of the frontier. And again, in the 1750s, the Company – now with the support of a number of prominent settler farmers – discouraged European immigration because slave labour could fulfil all the labour requirements the farmers might have had.

What is less clear is how to weight the short-term "benefits" of slavery against the long-term "losses"? As Feinstein (2005) points out, the South African mining industry of the early twentieth century would have been considerably smaller and less profitable had it not been for the use of "artificially" cheap black labour. Without such low input costs, the mining industry would not have been able to make a significant contribution to the diversification of the South African manufacturing industry.[100] And while the inequalities and long-term disadvantages that Engerman and Sokoloff (2011) warn against did begin to affect the South African economy by the 1970s, to what extend did the low wages of more than half a century create an affluent (though unequal) and industrialised economy? In other words, if the counterfactual history had been relatively high wages and no wage coercion during the first few decades after the mineral discoveries, would a diversified South African economy have arisen at all?

Yet the long-term costs of slavery were severe. Slavery at the Cape was only abolished in 1834, and the slaves remained on the farms until at least 1838. Even after emancipation, de facto labour contracts and practices continued mostly as before, which meant that the institutions of the eighteenth century were entrenched in Cape society. The extent to which these institutions influenced later South African development is more contentious; the temptation is large to draw parallels between the high inequality of the eighteenth century Cape settlers and indentured labourers after emancipation. Perhaps these early institutions moved with Cape farmers on their Great Trek into the interior of South Africa in 1836 and were reinforced by the discovery of diamonds and gold at the end of the nineteenth century (which also made use of cheap, indentured labour on the mines).

The causal link connecting early inequality to twentieth century apartheid is even more questionable. Yet, there is little doubt that later developments in South Africa resemble the institutions of a wealthy but static eighteenth century Cape economy. As Terreblanche (2002: 393) notes, the institutions created during "Dutch colonialism" – the "racism and racial inequality in the distribution of political, economic and ideological power" – "contributed most, directly and indirectly, to the inequality in [South Africa's present] income distribution".

[100] An example both Gareth Austin and James Robinson cited during the closing debate of the World Economic History Congress held in Stellenbosch in July 2012.

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Appendices

6.1 Constructing the probate inventory data

The eighteenth-century inventories of the Cape Colony provided a wealth of information for the researcher. However, the thousands of entries also raised serious issues for any macro analysis, as was attempted here. These issues – and attempts to circumvent them – are discussed below, together with a summary of exactly how the data was constructed. A brief summary of each of the products analysed is also provided below. As yet, a complete demographic analysis of the inventory records is not available. This appendix, therefore, also provides insight into, *inter alia*, demographic growth during the eighteenth century and the representativeness of the sample (in comparison with the *opgaafrolle*).

6.1.1 The MOOC data[101]

As part of the Transcription of Estate Papers at the Cape of Good Hope (TEPC) project, which ran from October 2004 to December 2006 and was funded by the Royal Netherlands Embassy in Pretoria, a team of seven researchers transcribed and digitised the complete set of Master of the Orphan Chamber (MOOC) 8 inventory series (consisting of 75 volumes). The transcription team, consisting of three editors and four transcribers, converted the hand-written Dutch records held at the Cape Town Archives Repository into a digital database of XML code.[102] A brief synopsis of this process is available in Liebenberg et al. (2007).

The data is available freely on the TANAP website in PDF format. Given the large file size, the author obtained a free CD-ROM copy from Helena Liebenberg, the editor during the transcription process, in 2008. The PDFs allows for easy search functionality, particularly when an individual MOOC document was required. However, given the scale of the macro analysis attempted here, a PDF search was inefficient and impractical (except in cases where the products were not dispersed widely, such as fishing vessels, or when alternative spelling forms were checked). The author thus obtained all 75 MOOC8 volumes in XML format, through a formal request to the Western Cape Archives Repository.[103]

6.1.2 The process

Extensible Markup Language (XML) was used to encode and store information. It is widely used because of its simplicity and generality, and is increasingly the standard back-up language of various software applications (including Windows 7™). With the MOOC8 inventories transcribed into XML format, more refined search applications could be encoded to extract the relevant data. To extract specific XML data, an Extensible Stylesheet Language (XSL) was

[101] This section draws heavily from the online TANAP (2010) database documentation – see www.tanap.net.
[102] XML code is the most basic form of digital coding available and is now an international standard for all archived digital data.
[103] The letter was addressed to Erica le Roux, 8 October 2009. The author would like to thank Erica for her help and support in processing the application.

encoded in StylusStudio 2010 Home Edition.[104] All extractions from the XML data used here were made using StylusStudio 2010 and the XSL coding, which is available from the author on request.

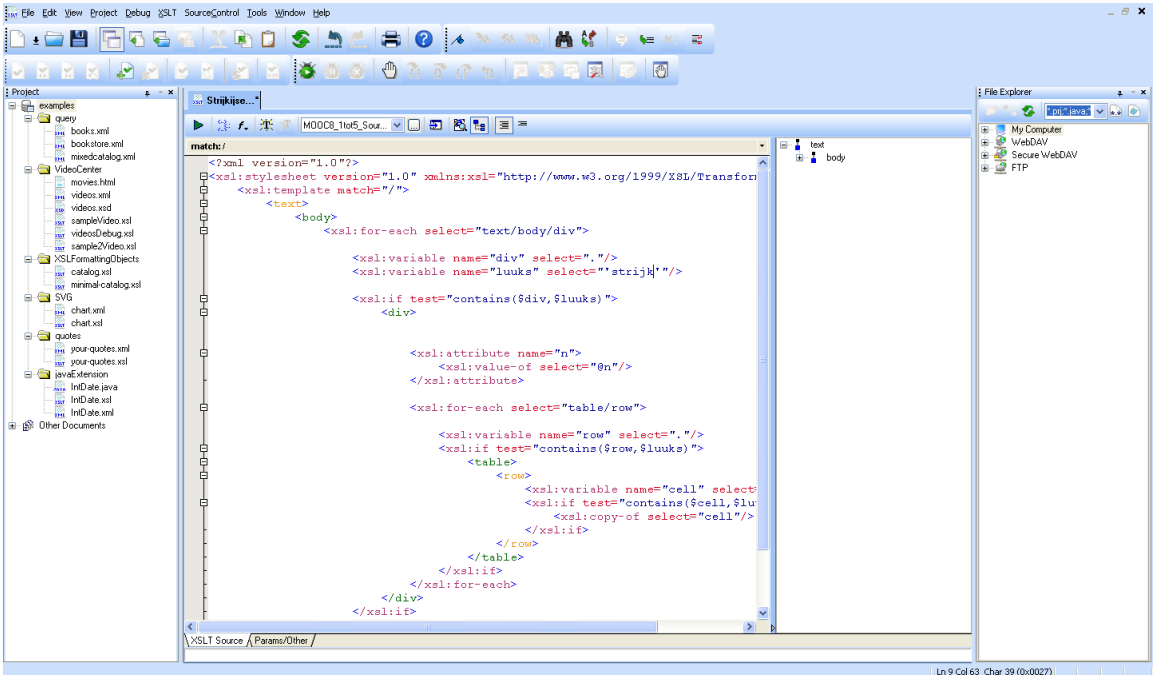


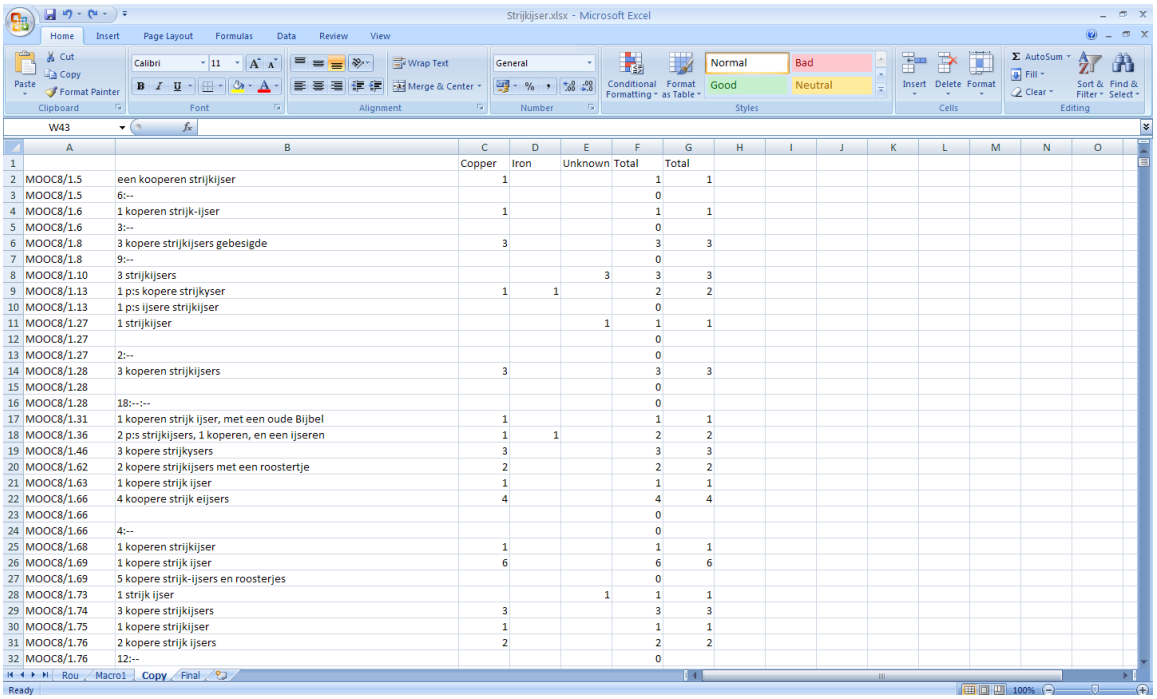
Figure 34: XSL file for *Strijkijsers* – the phrase searched was '*strijk*'

Once an XSL stylesheet had been encoded with the search word or phrase that the author wanted to extract from the data (in Figure 39, '*strijk*'), each of the 75 MOOC8 XML files was run in StylusStudio and saved as XML output. The XML files contained the MOOC number in the first column, with the extracted information next to it. These files were then opened in Microsoft Excel and combined into one file.

Once these files were grouped, the manual counting began. A value was entered next to each row representing the number of products written in the text column next to the MOOC number. This process could not be automated as the written records were idiosyncratic, using either numbers or numerals, and with various forms of spelling. Also, not all of the products referred to the product investigated – the search for *strijk* could have included a *strijkbank* or *strijkviool*, for example. Figure 40 shows the combined result for *strijkijsers,* once the values for each row had been manually entered.

To these results from the XML files were added idiosyncratic searches of different spelling alternatives. This was usually done on the PDF files, although it could have happened that, upon finding an alternative spelling that permeated the dataset, the technique for extracting keywords from StylusStudio described above was used for these alternative spelling forms as well. This often happened in the case of common products, such as cattle, which are described in different ways: *beesten*, *runderen*, *ossen* and *koeijen*, for example, each with its own spelling varieties.

[104] I would like to thank Johan Liebenberg for help with coding the XSL stylesheets.



	A	B	C	D	E	F	G
1			Copper	Iron	Unknown	Total	Total
2	MOOC8/1.5	een kooperen strijkijser	1			1	1
3	MOOC8/1.5	6:--				0	
4	MOOC8/1.6	1 koperen strijk-ijser	1			1	1
5	MOOC8/1.6	3:--				0	
6	MOOC8/1.8	3 kopere strijkijsers gebesigde	3			3	3
7	MOOC8/1.8	9:--				0	
8	MOOC8/1.10	3 strijkijsers			3	3	3
9	MOOC8/1.13	1 p:s kopere strijkyser	1	1		2	2
10	MOOC8/1.13	1 p:s ijsere strijkijser				0	
11	MOOC8/1.27	1 strijkijser			1	1	1
12	MOOC8/1.27					0	
13	MOOC8/1.27	2:--				0	
14	MOOC8/1.28	3 koperen strijkijsers	3			3	3
15	MOOC8/1.28					0	
16	MOOC8/1.28	18:--:--				0	
17	MOOC8/1.31	1 koperen strijk ijser, met een oude Bijbel	1			1	1
18	MOOC8/1.36	2 p:s strijkijsers, 1 koperen, en een ijseren	1	1		2	2
19	MOOC8/1.46	3 kopere strijkysers	3			3	3
20	MOOC8/1.62	2 kopere strijkijsers met een roostertje	2			2	2
21	MOOC8/1.63	1 kopere strijk ijser	1			1	1
22	MOOC8/1.66	4 koopere strijk eijsers	4			4	4
23	MOOC8/1.66					0	
24	MOOC8/1.66	4:--				0	
25	MOOC8/1.68	1 koperen strijkijser	1			1	1
26	MOOC8/1.69	1 kopere strijk ijser	6			6	6
27	MOOC8/1.69	5 kopere strijk-ijsers en roosterjes				0	
28	MOOC8/1.73	1 strijk ijser			1	1	1
29	MOOC8/1.74	3 kopere strijkijsers	3			3	3
30	MOOC8/1.75	1 kopere strijkijser	1			1	1
31	MOOC8/1.76	2 kopere strijk ijsers	2			2	2
32	MOOC8/1.76	12:--				0	

Figure 35: Excel file for *Strijkijsers*

Column A is the MOOC numbers; column B, the text from the XML file; columns C, D, and E are the manually counted values; column F is the total *strijkijsers* per MOOC; and column G is similar to F, but with the zeroes removed.

Once the counting was complete, Stata 11 was used to first merge similar MOOC files [collapse (sum) data, by(mooc)]. The unique MOOC numbers together with the final count values (data points) were then given an inventory number. A unique inventory number was created for each individual in the MOOC8 list (between 1673 and 1806). The reason MOOC8 numbers could not be used was multiple double entries in the MOOCs. Where deceased settlers lived too far from Cape Town, a local acquaintance was asked to complete an inventory of the property and assets and submit it to the Company. These were then completely rewritten by a clerk in Cape Town. Both sets of documents were transcribed in the MOOC8 series, and unfortunately, there is no consistent distinction between the originals and the copies made in Cape Town. Most often, an (a) and (b) inscription next to the MOOC number denotes the copy and original, respectively (copies were often written in standard eighteenth-century Dutch, whereas originals were written in various forms of Cape (rural) Dutch). However, there were a number of examples where a completely different MOOC number is used for the same individual. This lead the author to create a new inventory number for each of these individuals, following the name and surname on the MOOCs. It is possible that not all of the individuals were correctly grouped together – the name on the official inventory might be that of the deceased individual while the name on the next inventory might be that of his or her spouse. There is unfortunately no way around this, and in these and other cases, the author would have followed the principal of underestimating the property and asset bundle, or alternatively, overestimate the number of individuals.

Once inventory numbers had been linked to MOOC numbers, the inventory numbers and the data points were merged in Excel to ensure that no double inventory numbers existed [collapse

(max) data, by(inv)]. The code [max] was used to avoid double counting. In some cases, two or more different inventories for the same farmer would include different products – for example, a wealthy farmer with more than one estate could have had cattle on all of his estates. In such cases, only one inventory number of cattle – the largest – would have been included. While this avoided the more serious problem of double counting, it might have lead to underestimating the size of assets, especially towards the end of the period when a farming elite emerged (Fourie and von Fintel, 2010). The inventory numbers together with the data points were then superimposed on the full inventory list. To this, the Stellenbosch inventories were added.

The Stellenbosch inventory list is a separate source of probate inventories to those of the Orphan Chamber. The records stored in the Stellenbosch Archives were transcribed by Annemarie Krzesinkski-de Widt in 2002, and stored in Word files on CD ROM (Krzesinkski-de Widt, 2002). The CD was purchased by the author from the Stellenbosch Museum in August 2010. While the MOOC8 inventories are also found on the CD, 134 unique Stellenbosch inventories are recorded that are not found in the MOOC8 series. Given that these inventories were only available in Word format, each of the products was counted manually by the author. A general observation is that it would seem as though these inventories are for more affluent individuals, some of whom will be discussed later in this text.

After the Stellenbosch inventories had been added, the full list of inventory numbers and data points were merged in Stata 11 to produce a single entry for each unique inventory number [collapse (max) data, by(inv)]. To this, the year tabs were added, and from this the mean [collapse (mean) data, by(date)], median [collapse (median) data, by(date)] and summation [collapse (sum) data, by(date)] graphs were drawn. The time trends were also presented in decades.

Table 35: List of products with Dutch names, technique used, words searched and versions found in primary data

	Product	Dutch	Technique	Word used in SS	Different versions
1	Slaves	Slaaven	Manually	NA	NA
2	Cattle	Beesten	SS, manually	Beest, ossen, koei, kalv	Beesten, besten, ossen, koeij, koei, kooijen, kalveren, coeij, calveren
3	Horses	Paarden	SS, manually	Paard, paerd, pard	Paard, paerd, pard, perd, paart, paert, merrij, hengst, veulens (various forms), ruijns
4	Sheep	Schapen	SS, manually	Scha	Schapen, schaapen, hamels, ooijen, oijen, oyen, lammers
5	Plows	Ploegen	SS, manually	Ploeg	Ploeg
6	Corn sieve	Koornharp	SS, manually	Harp	NA
7	Fishing boats	Schuit	Manually	NA	Schuijt, schuit, schuid, schuijd
8	Buckets	Emmers	SS, manually	Emmer	Emmers, embers, eijmers
9	Spades	Graaven	SS, manually	Gra	Graven, graaven
10	Guns	Geweer	SS, manually	Snap, geweer, musk	Snaphaan, geweer, zeijdgeweer
11	(Brandy) Stills	Brandewijnskeetel	SS, manually	Brandewijnskeetel, Disteleerkeetel	Brandewijn, brandewyn, brande wyn, distileer, disteleer, keetel, ketel, ceetel
12	Vehicles	Waagen	SS, manually	Waag, Wage	Waagen (osse, perde, lang, bolder), wagen, waegen, wage, kar, koets, chais, charet, chiees
13	Anvils	Aambeeld	Manually	Ambeel, anbeel	Aambeeld, ambeeld, aambeelt, ambeelt, anbeeld
14	Bench vices	Bankschroef	SS, manually	Schroe	Schroef, schroeven
15	Balances	Balans	SS, manually	balan, ballan	Balans, balance, ballans
16	Fire tongs	Tang	SS, manually	tang	Tang
17	Ovens	Stoven	SS, manually	stooven, stoven, stoof	Stooven, stoven, stoof
18	Bedsteads	Kadel	SS, manually	adel, atel	Kaadel, kadel, caadel, cadel, kaatel, katel, caatel, catel
19	Chairs	Stoel	SS, manually	Stoel	Stoel
20	Trousers	Broek	SS, manually	Broek	Broeken
21	Irons	Strijkijsters	SS, manually	Strijk, stryk	Strijkijsters, strykysters
22	Books	Boeken	SS, manually	Boek	Boeken
23	Timepieces	Horologie	SS, manually	Logie	Horologie, horlogie, horlosie, vriesse klok, zakhorologie
24	Snuffboxes	Snuijfdoos, tabakdoos	SS, manually	Snuijf, baks	Snuijfdoos, snuifdoos, tobaksdoos, tabaksdoos

25	Paintings	Schilderij	SS, manually	Schild	Schilderij, schilderyen, print, prent, portrait
26	Mirrors	Spiegel	SS, manually	Spieg	Spieg, spigel
27	Bird cages	Vogelkooij	SS, manually	Kooi, kouw, koij	Kooi, cooi, koij, coij, kooy, cooy, kouw, couw
28	Gold rings	Ring	SS, manually	Ring	Ring

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

Table 36: Annualised growth rates per product

	1700-1800	1700-1710	1710-1720	1720-1730	1730-1740	1740-1750	1750-1760	1760-1770	1770-1780	1780-1790	1790-1800
Slaves	0.6%	5.6%	-0.7%	0.6%	4.2%	-1.0%	-1.2%	-1.5%	2.1%	0.7%	-2.1%
Cattle	0.7%	6.9%	-4.8%	1.7%	3.9%	3.3%	-4.3%	-1.0%	4.9%	0.1%	-2.8%
Horses	1.4%	7.8%	-1.9%	-0.8%	7.2%	4.3%	-4.6%	0.5%	2.3%	2.2%	-2.1%
Sheep	0.8%	8.5%	-5.0%	0.6%	4.3%	2.4%	-5.1%	4.7%	0.6%	-1.4%	-0.7%
Ploughs	0.5%	4.7%	0.9%	2.1%	0.9%	1.8%	-5.7%	2.6%	-0.2%	0.2%	-1.8%
Corn sieves	0.7%	NA	NA	2.5%	7.6%	2.6%	-3.1%	-1.7%	4.1%	-0.5%	-5.0%
Boats	0.4%	NA	NA	-6.9%	5.6%	2.6%	4.5%	-10.8%	6.6%	-1.2%	-2.4%
Buckets	1.5%	14.1%	0.4%	2.5%	1.5%	1.7%	-1.3%	0.0%	0.9%	-0.6%	-3.5%
Spades	1.5%	11.4%	1.8%	-0.7%	2.4%	1.7%	8.1%	-5.3%	6.6%	-6.4%	-2.7%
Guns	1.6%	10.1%	3.7%	0.0%	0.9%	1.1%	-3.5%	2.3%	-1.4%	4.3%	-0.6%
Brandy stills	2.4%	26.1%	-3.4%	5.8%	2.0%	-1.4%	-2.5%	1.1%	0.9%	2.5%	-3.7%
Wagons	1.1%	5.8%	1.2%	2.2%	1.7%	2.3%	-5.3%	1.8%	0.9%	-0.6%	0.8%
Anvils	0.7%	3.3%	-9.0%	-0.2%	-8.1%	17.8%	5.8%	4.1%	0.1%	-3.9%	0.0%
Bench vices	2.6%	6.3%	-15.1%	19.4%	-1.5%	8.5%	3.7%	-1.8%	6.6%	1.7%	1.3%
Balances	3.2%	28.2%	8.1%	4.7%	-1.3%	-0.6%	5.1%	-6.2%	1.5%	-2.0%	-2.0%
Fire tongs	0.6%	7.5%	6.0%	-0.8%	-0.3%	-2.4%	2.9%	-1.4%	0.6%	-3.4%	-2.3%
Ovens	2.2%	-0.8%	12.2%	12.2%	-1.2%	2.6%	6.5%	-6.5%	1.7%	-1.1%	-1.8%
Bedsteads	0.9%	9.8%	6.0%	-0.3%	-2.0%	-2.0%	1.1%	0.0%	-0.4%	-0.9%	-1.5%
Chairs	1.5%	11.8%	4.0%	2.2%	2.0%	-1.6%	3.1%	-3.2%	0.8%	-4.8%	1.3%
Trousers	2.4%	12.4%	3.4%	-5.5%	3.1%	-1.6%	8.0%	-2.5%	-0.2%	5.3%	2.3%
Irons	0.9%	8.0%	1.6%	5.1%	-1.5%	-1.2%	6.3%	-6.7%	3.3%	-1.9%	-3.6%
Books	1.6%	24.1%	-8.6%	12.8%	-10.6%	-4.2%	6.5%	28.4%	-20.6%	2.3%	-3.7%
Timepieces	2.4%	6.3%	1.0%	0.4%	9.9%	-0.4%	4.1%	0.7%	-1.0%	0.3%	2.9%
Snuffboxes	1.8%	NA	4.0%	7.9%	0.7%	4.8%	17.5%	-16.4%	18.1%	-19.4%	6.2%
Paintings	1.8%	20.3%	-0.4%	3.4%	-0.4%	-4.1%	6.8%	-4.9%	-0.3%	2.4%	-3.2%
Mirrors	1.4%	6.9%	4.1%	2.3%	0.2%	-4.3%	9.0%	-5.7%	1.2%	3.0%	-1.6%
Bird cages	1.9%	19.9%	-2.7%	4.4%	4.6%	-5.0%	14.4%	-5.2%	-2.2%	-2.3%	-4.1%
Gold rings	0.2%	9.7%	1.9%	1.7%	0.6%	-2.4%	6.5%	-7.8%	-4.8%	0.0%	-2.3%

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

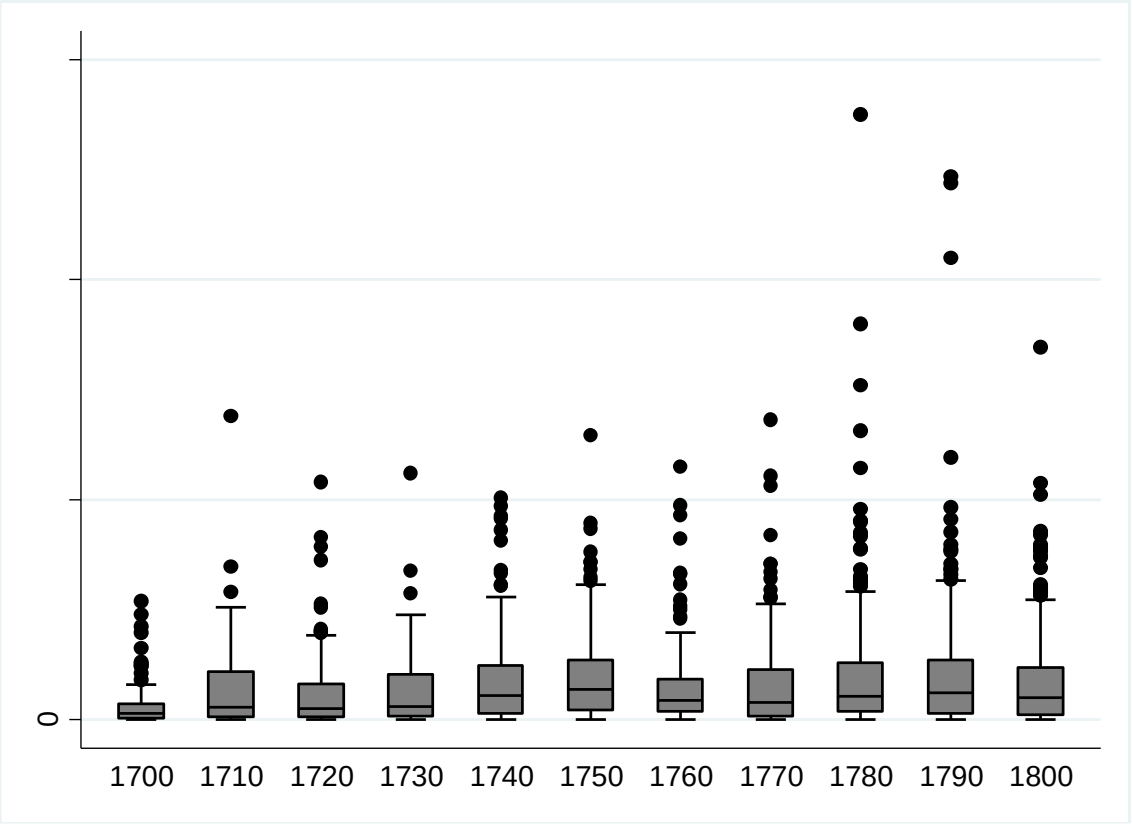


Figure 36: Boxplots of wealth distribution by decade, including outliers, 1691-1800
Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

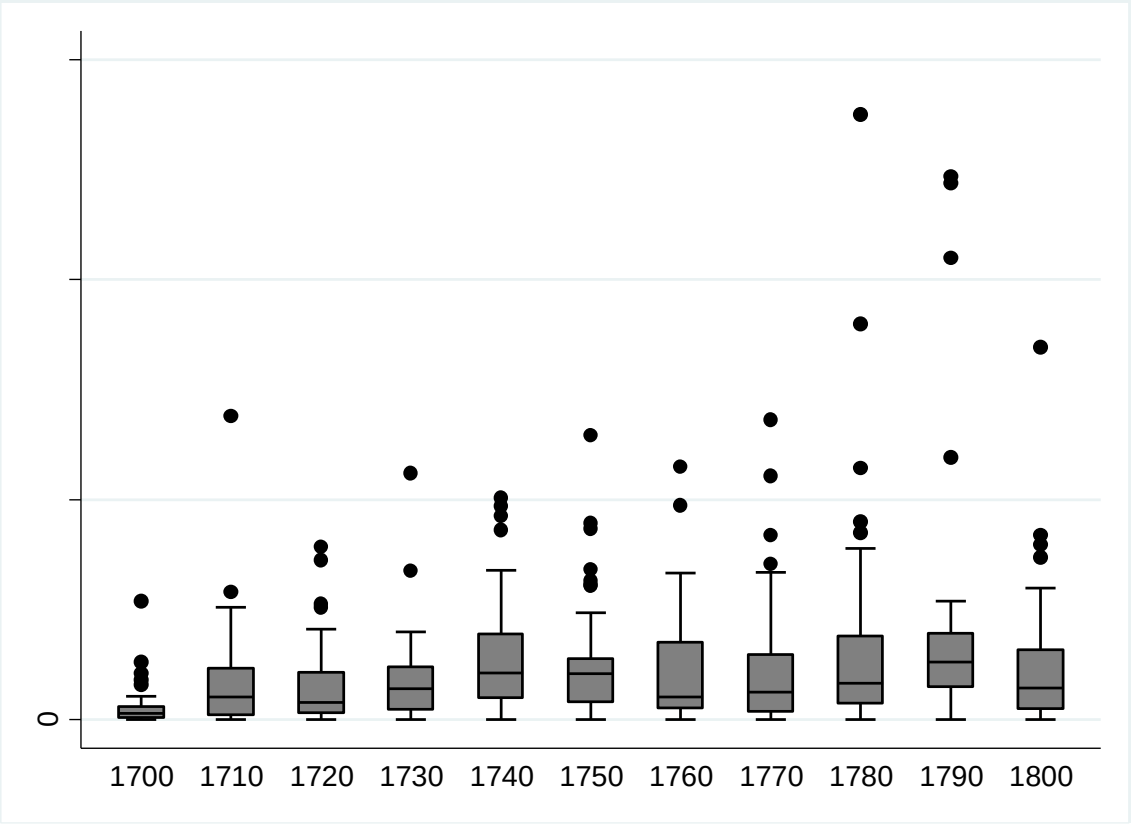


Figure 37: Boxplots of wealth distribution by decade, including outliers, Stellenbosch district, 1691-1800

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

Table 37: Descriptive statistics comparing Stellenbosch with other regions, 1673-1800

Regions other than Stellenbosch									
Date	N	Mean	SD	Min	Max	p25	Median	p75	p90
1700	28	1027.4	1479.6	0.0	4771.6	28.2	239.1	1800.3	3950.1
1710	41	1174.9	1571.1	0.0	6938.7	112.8	376.5	1918.8	3218.1
1720	127	880.1	1438.0	0.0	10793.4	119.5	388.7	1052.8	2366.3
1730	86	910.1	1179.6	0.0	5728.8	149.8	375.9	1233.1	2828.9
1740	83	1026.0	1539.5	0.0	9116.2	151.1	500.7	1378.8	2397.8
1750	59	1564.4	1980.9	0.0	7622.6	273.0	704.9	2201.9	4961.9
1760	103	1158.9	1440.4	1.3	9294.0	303.1	687.2	1537.0	2895.3
1770	160	1282.9	1620.8	1.1	10611.1	148.3	615.1	2053.8	3250.2
1780	201	1592.3	2179.5	0.0	15181.1	249.9	807.7	2031.0	4043.1
1790	316	1691.4	1864.9	0.0	9656.0	255.8	1031.6	2442.1	4328.2
1800	355	1516.3	1780.4	0.0	10736.8	225.5	886.2	2295.0	3853.4
Total	1559	1386.7	1769.2	0.0	15181.1	180.2	689.2	1975.8	3556.4
Stellenbosch									
Date	N	Mean	SD	Min	Max	p25	Median	p75	p90
1700	43	584.7	951.7	0.8	5406.1	101.3	302.6	601.1	1598.3
1710	36	1824.9	2563.0	0.0	13793.9	226.7	1052.1	2339.8	4598.1
1720	71	1520.0	1709.9	0.0	7838.3	322.3	782.2	2154.2	3837.2
1730	49	1773.7	1936.3	13.7	11226.0	490.3	1404.0	2415.1	3488.0
1740	74	2703.9	2416.3	0.0	10096.6	968.9	2134.8	3907.0	6086.1
1750	63	2570.7	2404.6	15.8	12907.7	797.5	2083.5	2788.3	6107.7
1760	54	2209.5	2493.1	0.0	11492.2	544.6	1034.1	3528.5	5468.4
1770	85	2072.7	2462.4	0.0	13640.1	391.3	1267.5	2980.4	4667.2
1780	89	2828.9	3835.0	11.5	27521.1	741.2	1657.1	3806.4	5535.1
1790	46	3952.3	5570.2	11.4	24680.2	1493.3	2614.0	3921.3	5408.3
1800	59	2338.8	2818.2	7.9	16929.9	518.7	1454.2	3175.3	5653.6
Total	669	2264.2	2944.0	0.0	27521.1	445.5	1457.2	3023.1	5022.6

Source: MOOC8 series, volumes 1-75; MOOC10 series, volumes 1-5; Krzesinkski-de Widt (2002); own calculations.

6.2 Estimates of GDP of the Cape Colony

The sources used for estimating the national accounts of the Cape Colony in the 18th century were almost all the result of the activities of the Dutch East India Company (VOC) there. The VOC was a large bureaucratic organisation, which kept detailed records of its activities and also tried to tax its subjects in order to raise revenue for the local (VOC) government. In the Cape, they were quite successful at implementing all kinds of taxes on, for example, agricultural output and assets (such as livestock). Moreover, these sources have been studied very carefully. In particular, the work by Van Duin and Ross (1987) should be mentioned here, because they ask the same questions as in Chapter 2.8 (how much did the

economy grow during the eighteenth century?), however, without putting their data into the framework of national accounts, or using the concept of GDP. Fourie and Van Zanden (2012) use the data they collected and the discussion of their reliability, and the limitations of the sources concerned, to report an estimate of gross domestic product for the Cape Colony, discussed in Chapter 2.8.

The approach used for estimating GDP was via the output-side of the economy: the first step was to establish the size of the population, and the structure of the labour force, and then attempt to estimate the value added in agriculture (by far the largest sector of the economy), industry and services (the VOC and 'other services').

POPULATION

There are reliable series for the European population (van Duin and Ross, 1987) and of the number of slaves (Shell, 1994: 444-447). The number of Khoesan active in the economy of the Cape during the 18th century was more difficult to establish, as they were not officially enumerated at that time. From 1817, however, the 'Hottentots' were included in the annual *opgaafrolle* (see NA SA, *opgaafrolle* I/5, no. 442). Their number was then 22760, compared with 31373 slaves, and the total population numbered 93279. Qualitative sources suggest that they were hardly integrated into the Cape economy during the first half of the 18th century, but that they began to play a larger role after about 1740 or 1750. This is confirmed by the records of the Cape Court of Justice. The number of Khoesan appearing in the Court of Justice in Cape Town increased significantly after the 1750s, suggesting their participation in the Cape economy (Baten and Fourie, 2012). Fourie and Van Zanden (2012) use the share of Khoesan as a percentage of the total number of individuals appearing in the Court of Justice records as a proxy for their labour force participation.

OUTPUT: Agriculture

The Cape Colony mainly produced three commodities: wheat, wine and meat, all of which were taxed and regulated by the VOC. These three commodities covered a very large part of agricultural output; for example, no wool was produced, and only in the nineteenth century did the production of tallow, candles and soap (made from the fat of sheep) become more important. There was a small production of butter, which Fourie and Van Zanden (2012) also included in the estimates (for the period after 1754, exports of butter were taken from Van Duin and Ross (1987), and these have been included in the output estimates). The evolution of these three sectors has already been analysed by Van Duin and Ross (1987). They also suggest a number of corrections for the under-registration of tax-related sources, which Fourie and Van Zanden (2012) incorporated into each of the series.

OUTPUT: Wheat

Fourie and Van Zanden (2012) constructed two series: (1) using the output estimates published by Van Duin and Ross (1987), including the correction factors as estimated by them (this series also included the rather marginal output of barley and rye), and (2) estimating the demand for wheat on the basis of the population estimates (adults were

assumed to consume 2.5 mud per capita, children 1.25 mud), the number of ships visiting Cape Town (assuming that they bought 40 mud per ship), and the exports of wheat, again from Van Duin and Ross (1987). Both series showed the same trend; they took the average of the two series to estimate net wheat output.

OUTPUT: Wine

Van Duin and Ross (1987) produced a series for wine output in *leggers*, but also make the point that this included only wine marketed in Cape Town and/or sold to the VOC, not consumption in the countryside. Fourie and Van Zanden (2012) calculated the average consumption of wine for the inhabitants of the city between 1748 and 1795 (for which data on exports of wine were also available): The average for this period was 0.38 *leggers* per capita per year (about 221 litres). They assumed that consumption in the countryside was lower, at 0.30 *leggers* per year (174 litres) and added rural consumption to the net production estimates to get the total output of wine.

OUTPUT: Meat

Again, two approaches were possible. The output could have been estimated on the basis of the number of livestock (cattle and sheep) produced, corrected for under-representation in the *opgaafrolle* via a comparison with the number of cattle and sheep registered in the probate inventories – see Chapter 2 for a discussion of the discrepancy between the *opgaafrolle* and the inventories). Van Duin and Ross (1987) also give (for 1780 and 1790) estimates of the consumption of meat (of mutton and beef) based on a number of sources. This method (assuming constant consumption per capita and constant exports of meat per ship visiting Cape Town) could also have been used to create a series for meat consumption. The data for 1780 and 1790 show that almost 80% of meat output consisted of mutton, and that an average sheep weighed/yielded 42 pounds, and an average cow 300 pounds. Fouri and Van Zanden (2012) again used the average of the two series (output and consumption).

Capital formation in agriculture: livestock, land, vines

The fourth part of the output of the agricultural sector consisted of the increase in the number of livestock (including horses), the cultivated area (sown with wheat or other crops) and the increase in the number of vines. Detailed data for all three of these were taken from Van Duin and Ross (1987), and Fourie and Van Zanden (2012) used the same correction factors to amend under-registration that were used for the estimates of meat production.

Prices of agricultural commodities

Fourie and Van Zanden (2012) used prices as received by farmers: meat prices (from Van Duin and Ross, 1987), wheat prices (Van Duin and Ross, 1987) and wine prices as registered in the inventories (see Chapter 2). More problematic were prices of livestock, vines and land. They assumed that the prices of an extra 'mud' of land that was added to the cultivated area was twice the value of the seed that was used on it (Van Duin and Ross give detailed figures of yield ratio's and amounts of seed used in wheat production). The cost of

investing in vines was derived from the 'business model' of a wine farmer presented by Barrow (1801: II,113-123) – Fourie and Van Zanden (2012) assumed that this price remained the same during the 18th century. The value of the investments in cattle and sheep were derived from the value of the meat that comprised them.

VOC sector

VOC income consisted of (1) wages and salaries earned by VOC employees (2) the income in kind received by them (and by the slaves working for the VOC) (3) the income earned by those employees from their own trading activities and (4) the income earned by the VOC from imports and exports to the Cape Colony. Data for (1) are readily available (Van Duin and Ross, 1987). On the basis of the estimated costs of the budget of a Cape Town labourer, the income in kind could also be estimated. It was more difficult to estimate the proceeds from other activities carried out by VOC employees, but Fourie and Van Zanden (2012) use the money they transferred back to the Netherlands (in the form of *wissel* transfers); these *wissel* transfers increased a lot during the 18th century, a trend commonly attributed to the increase in semi-legal activities by VOC employees. They have therefore assumed that 50% of the *wissel* transfers resulted from semi-legal incomes acquired by them, and that this had to be added to their income (the other 50% may have been related to agricultural activities – investment in houses or land or vineyards – the total value of the *wissel* transfers were therefore not included). The final part of the VOC income can be estimated on the basis of what is known about VOC sales in the Cape and VOC exports from the Cape (Van Duin and Ross, 1987); Fourie and Van Zanden (2012) assume that the value added of the VOC station was 10% of gross imports and 10% of gross exports.

Rest of the economy

The rest of the economy consisted of a variety of activities, as follows:

(1) Trade not covered by the VOC, which was mainly the slave trade.

(2) The sale of wine and other consumption goods to visiting sailors and the population of Cape Town, which was a very large sector as discussed in Chapter 3.1 – Fourie and Van Zanden (2012) estimated the difference between the price of wine as received by the farmer and as charged to the consumer (the latter series from De Zwart 2011), which was multiplied by the estimated amount consumed in the city.

(3) Fourie and Van Zanden (2012) also assumed that bakers and butchers added 10% of value to the domestic consumption of wheat and meat.

(4) Construction activity was quite important in this rapidly growing economy – Fourie and Van Zanden (2012) use the number of new applications for leases from 1712 onwards (except for the first years when the numbers were too high, probably due to a backlog in applications), which give information on new farms set up in the countryside. They also estimate population growth in Cape Town which gives an indication of rising demand for houses there. Combining these indices gives a very rough proxy of building activity (which has also been included in the estimates of the level of investment).

The rest of the economy consisted mainly of craftsmen (as the census of 1732 reported in Chapter 1 shows); Fourie and Van Zanden (2012) estimated their income as the wage income that would have been earned by similar craftsmen employed by the VOC.

Constructing GDP

The GDP deflator used was a weighted average of the price index of three agricultural commodities (wheat, wine and meat) and CPI as constructed by De Zwart (2011). CPI represents VOC and 'rest of the economy', agricultural price index represents agriculture. The base year 1701=10. Results are GDP per capita series in constant prices for 1701. Also estimated was the average income per European, assuming that Khoe and slaves only received a subsistence minimum income (as calculated by De Zwart, 2011).

Comparison with European (Holland, England) income levels

Fourie and Van Zanden (2012) could also compare the purchasing power of the Cape guilder with the Dutch guilder (or the English pound), because of the availability of the costs of a minimum basket of consumption goods in the three countries from research by Allen (2001), Allen et al. (2011) and De Zwart (2011). Fourie and Van Zanden (2012) used the implicit PPPs of the real wage literature to convert the purchasing power of Cape guilders into that of the Dutch guilder, making possible a direct comparison of real income levels. Moreover, the Dutch series was continuous until 2009, and could be expressed in dollars of 1990 (using the Maddison framework).

6.3 Ship traffic techniques and production data

Pesaran, Shin and Smith (2006) suggest an econometric method to test for the existence of long-run relationships based on the first step of the autoregressive distributed lag (ARDL) approach to co-integration. The advantage of their method over conventional co-integration tests – such as the Johansen (1988) system approach – is that it overcomes the need for unit root pretesting – i.e. that it is not necessary to know whether the time series contain stochastic trends in order to apply the technique. The method is based on the following ARDL(p) model:

$$\Delta y_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1,i} \Delta y_{t-i} + \sum_{i=1}^{p} \alpha_{2,i} \Delta x_{t-i} + \alpha_3 \Delta x_t + \beta_1 y_{t-1} + \beta_2 x_{t-1} + \varepsilon_{y,t} \quad (1)$$

$$\Delta x_t = \phi_0 + \sum_{i=1}^{p} \phi_{1,i} \Delta y_{t-i} + \sum_{i=1}^{p} \phi_{2,i} \Delta x_{t-i} + \phi_3 \Delta y_t + \beta_3 y_{t-1} + \beta_4 x_{t-1} + \varepsilon_{x,t} \quad (2)$$

where y is a measure of economic activity (such as wheat production), x is a measure of ship traffic, and p is the lag length (in years). All variables are in logarithmic form.

The method consists of testing the null hypotheses $\beta_1 = \beta_2 = 0$ and $\beta_3 = \beta_4 = 0$ against two-sided alternatives. The null hypotheses $\beta_1 = \beta_2 = 0$ and $\beta_3 = \beta_4 = 0$ serve to establish,

firstly, whether a long-run co-integration relationship exists between y_t and x_t and, secondly, whether one of the two variables is long-run forcing (i.e. whether the long-run relationship is unidirectional). The intuition of the method lies in its close analogy with tests for weak exogeneity in co-integrated systems (Ericsson and Irons, 1995, Engle et al., 1983): the equations above can be seen as representing a co-integrated system, with the β coefficients representing the long-run adjustment parameters. For example, if the hypothesis $\beta_1 = \beta_2 = 0$ is rejected, this is akin to suggesting that the variable y_t is weakly exogenous and does not contribute towards re-establishing a long-run equilibrium between y_t and x_t.

Null hypotheses of the form $\beta_1 = \beta_2 = 0$ and $\beta_3 = \beta_4 = 0$ involve multiple parameter restrictions and are usually tested using an F-statistic. Pesaran, Shin and Smith (2006) suggest a bounds-testing approach, which involves two critical values (an upper and a lower bound) depending on the time-series properties of y and x. Values falling below the lower bound indicate the absence of a systematic relationship, while values exceeding the upper bound confirm such a relationship. Where the test statistics fall between the two critical values, it is necessary to test for unit roots in the individual series. If both series contain unit roots, the upper bound is the critical value. Where both series are stationary, the lower bound is the critical value. In cases where one variable is stationary and another contains a unit root, the test is inconclusive if the test statistic falls between the boundary values.

If equations (1) and/or (2) suggest the existence of long-run relationships, one may use the estimated coefficients in these equations to estimate long-run relationships:

$$y_t = \pi_0 + \pi_1 x_t + \nu_t \quad (3)$$

$$x_t = \lambda_0 + \lambda_1 y_t + \nu_t \quad (4)$$

where $\pi_0 = -\alpha_0 / \beta_1$ and $\pi_1 = \beta_2 / \beta_1$ and, similarly, $\lambda_0 = -\phi_0 / \beta_3$ and $\lambda_1 = \beta_4 / \beta_3$ and ν_t are zero-mean stationary (Atkins and Coe, 2002).

The econometric methodology described above requires consistent time-series data on various forms of economic activity as well as on ship traffic. The following subsections describe the agricultural production data for wheat, wine and cattle as well as the ship traffic data used in this study.

6.3.1 Wheat production

Traditionally, the literature on the economic history of the Cape Colony holds that wheat production did not increase significantly during the eighteenth century. De Kock argues that restrictions on trade with passing ships and, more generally, on exports from the Cape Colony frequently generated cereal shortages: “This continued throughout the eighteenth

century and led to a repetition of famines in bad years. Many farmers, having found by experience that they could not dispose of their surplus produce at satisfactory prices or even at all, adopted the custom of sowing only sufficient grain to meet the needs of their own family. If the crops turned out to be a failure in some districts on account of unfavourable weather conditions, a deficiency in the supply of grain might easily result, as such farmers had not allowed for a surplus" (1924: 48). De Kock offers only anecdotal evidence – citing a shortage in 1786 – and a report from De Mist in 1792 – stating that the Cape had only eighteen days' supply of cereals and attributing this to the "ill-conceived intentions and bad statesmanship of the Directors of the Dutch East India Company" (De Kock, 1924: 48). These have led economic historians to argue that the supply of wheat in the Cape Colony only levelled with demand by the turn of the eighteenth century.

Van Duin and Ross (1987) challenge the view of persistent wheat shortages and argue that the official *opgaaf* data on which historians rely is inaccurate and that production growth was much higher. The *opgaafrolle* were the rolls on which the annual returns of population and production were recorded by the VOC. Given that *opgaaf* records were the basis on which taxes on grains were calculated, Van Duin and Ross argue that there was an incentive to underreport grain production levels and that the level of underreporting was significant: Van Duin and Ross (1987) note, for example, the bizarre situation of grain exports exceeding official production figures for the period 1769-1783. These authors then use corrective coefficients to adjust the official *opgaaf* figures and also to test the plausibility of the adjustment via a comparison with other relevant information. The corrective coefficients are based on the demand for wheat in the Cape, which is the total of local consumption, consumption by ships and their crew, and exports. A comprehensive explanation of the size and construction of the corrective coefficients is provided in Van Duin and Ross (1987: 21-31).

Until recently, the corrections have not been discussed, though Armstrong (1988) notes that the correction coefficients appear to be plausible: "[H]igher figures will merely strengthen the … thesis, while lower figures seem unlikely". However, Brunt (2008) has recently revised the Van Duin and Ross corrective coefficients further upward. While van Duin and Ross (1987) are successful in better accounting for year-to-year changes in the *opgaaf* data, Brunt (2008) argues that they underestimate the overall trend in wheat output. Assuming that wheat output and consumption should be equal on average, Brunt (2008) uses, firstly, a wheat consumption model to estimate the trend in wheat output and, secondly, other cross-validation techniques to estimate wheat output at the start and the end of the time series.

The quantitative evidence suggests that wheat production did not increase significantly during the first two decades of the eighteenth century, although the level of output was certainly higher than initially estimated. This is consistent with other historical accounts that report a number of poor harvests, especially in the Stellenbosch district, over this period (Sleigh, 1993: 15). However, the second half of the 1720s and the early 1730s saw a rapid increase in production. The 1740s was a period of dissatisfaction, according to Van

Duin and Ross (1987: 30). Between 1743 and 1745, following a reduction in the official price of wheat, there were numerous complaints from farmers about their precarious financial positions. Travellers in the interior of the country noted that many of these farmers lived in poverty and complained of the unstable demand for their produce (Thunberg, 1986: 94). The farmers requested a revision of the price, a reduction in taxes and free trade of their goods (Van Duin and Ross, 1987: 30). Yet, by the end of the 1740s, even though the VOC colony did not respond to these requests, wheat production had picked up again, showing rapid growth until the early 1750s. Until the mid-1760s, wheat production fluctuated, with serious harvest failures in the Cape district in 1764-65. Wheat production then increased at a dramatic pace until the early 1780s, after which it declined sharply. According to Van Duin and Ross, harvests were generally poor between 1782 and 1787, with 1786 being particularly disastrous, to the extent that wheat had to be imported from the United States (Van Duin and Ross, 1987: 31). Thereafter (1789-1793), production returned to and exceeded former levels, with 1793 being the year of the highest recorded volume of wheat production.

In the econometric analysis of Chapter 3.2, I relied on both the Brunt (2008) and Van Duin and Ross (1987) wheat output data to ensure robustness. An alternative to wheat output may have been wheat sown, as wheat sown may have more readily reflected the production decisions of farmers in response to ship traffic. The problem with wheat sown was that the type of corrections by Van Duin and Ross (1987) and Brunt (2008) were not possible. While wheat output was not identical to wheat sown due to weather conditions and farmer capability, it could not have changed significantly in the medium- to long-run without concomitant changes in wheat sown.

In addition to recording overall wheat production data, Chapter 3.2 also tests the relationship between wheat exports and ship traffic. One of the demand-generating impacts of the ships will have been that they carried agricultural exports to the Netherlands and the East. Unlike the other wheat time-series data, wheat exports are surprisingly accurate, mostly due to the monopolist position of the VOC as a wheat trader (Van Duin and Ross, 1987: 17).

6.3.2 Wine production

Van Riebeeck introduced the first vines in 1655 (Van Zyl, 1974), and the first Cape wine was produced by 1659 (De Kock, 1924). Viticulture also interested Van Riebeeck's successors. The settlement of Huguenots from France, especially in the district of Drakenstein, gave particular impetus to viticulture, so that winemaking soon became an important branch of Cape agriculture. According to official statistics, the colonists and officials had planted 400000 vines by 1688 (De Kock, 1924: 50).

Until 1743, a tax was charged on the basis of the *opgaaf* records generated from information submitted by farmers. Thereafter, taxes were levied at the moment wine was brought into Cape Town (Van Duin and Ross, 1987: 43). This measure was an attempt to reduce

suspected evasion, as all traffic had to travel along the same road between Devil's Peak and the sea on entry into Cape Town. However, Van Duin and Ross argue that, contrary to the data on wheat production, there is no evidence that these figures underreport actual production to a significant extent (Van Duin and Ross, 1987). However, they do suggest that the number of vines, rather than actual wine production, may be a more appropriate variable, as the former were probably not as sensitive to bad weather conditions as the latter. Van Duin and Ross (1987) provide data for total wine production and the number of vines planted for the period 1700 to 1793 on the basis of *opgaaf* figures[105].

Wine production was generally stagnant for the first four decades, followed by rapid expansion. Both wine production and the number of vines have a common outlier towards the end of the sample period. However, it can be argued that, although the amplitude is probably overstated, the general upward movement is not. Long periods of expansion were interspersed with short periods of decline, notably in the early 1760s and again in the 1770s and 1780s. According to Van Duin and Ross (1987: 45), these slowdowns were due to harvest failures and not disinvestment. The number of vines also exhibits no real periods of decline other than during the 1730s.

6.3.3 Stock farming

With the Colony expanding into the interior, cattle farming became more important, as it represented the sole means of subsistence and the only means of transport. The stock farmers of the interior, many of whom lived a nomadic life on the frontier, had little incentive to settle down for long periods of time (Schutte, 1980). Land was available relatively freely, and as soon as the pasture became depleted the farmers moved on. In this way, the farmers were limited in their accumulation of capital to only those goods that could be transported on ox back or by wagon. Sheep farming was also important, but data problems prevent a further analysis here.

[105] The production of brandy was also encouraged, although no data are available (De Kock, 1924).

Samenvatting

Dit proefschrift heeft drie belangrijke vragen over de Nederlandse Kaapkolonie onderzocht: 1) hoe rijk waren de kolonisten op de Kaap, 2) welke oorzaken lagen ten grondslag aan deze rijkdom en 3) hoe was de rijkdom verdeeld? Ik gebruik voor het beantwoorden van deze vragen verscheidene statistische bronnen, voornamelijk de boedelinventarissen en vendurollen die de Vereenigde Oostindische Compagnie (VOC) aanlegde en bewaarde, die nu zijn gedigitaliseerd door historici van de Kaap. Uit de analyse van deze bronnen met empirische economische technieken komt een ander beeld naar voren dan het heersende beeld dat de Kaap een economisch onderontwikkeld gebied was, een kolonie waar kleine rijke gebieden verdwenen terwijl het arme grensgebied van de Kaap steeds groter werd. Het bewijs suggereert daarentegen een uitzonderlijke rijke kolonie en er is weinig bewijs dat de snelle bevolkingsgroei deze hoge welvaart deed afnemen. De eerste bijdrage van dit proefschrift is daarom een significant andere blik op het verleden van de eerste kolonistengemeenschap in Zuid-Afrika.

De tweede bijdrage van dit proefschrift ligt in een nieuw perspectief op de oorzaken van groei in een kolonie. Vraag en aanbod speelden hierin een belangrijke rol. De vraag veroorzaakt door scheepvaart langs Kaapstad gaf de Kaap een monopoliepositie voor hun goederen, zoals ook het geval was voor Canadese exportgoederen volgens de “staples thesis” van Harold Innes. Wat betreft de vraagzijde laat ik zien dat niet alleen locatiegebonden factoren van de nederzetting het ontwikkelingstraject van een kolonie beïnvloeden, zoals veel comparatieve ontwikkelingstheorieën suggereren, maar dat ook de herkomstgebieden van de kolonisten, wat de productiefunctie kan beïnvloeden.

Ten derde laat ik zien dat de unieke mercantilistische instituties die de Vereenigde Oostindische Compagnie oplegde – voornamelijk de volharding in kostenverlagingen om de levensvatbaarheid van boeren veilig te stellen in het licht van de lage, niet marktconforme prijzen van de Compagnie – zorgden voor een zeer scheve verdeling van de rijkdom onder de kolonisten. De investeringsmogelijkheden van de kolonisten stimuleerden de slavernij en dit resulteerde in een nog hogere ongelijkheid in de Kaapkolonie. De zeer ongelijke verdeling van rijkdom had negatieve gevolgen voor de groeimogelijkheden op de lange termijn.

Summary

Three important questions about the Dutch Cape Colony are investigated in this dissertation: 1) how affluent were Cape settlers, 2) what were the causes of such wealth, and 3) how was the wealth distributed? Using a variety of statistical sources, most notably the detailed probate inventories and auction rolls kept and preserved by the Dutch East India Company and now digitised by Cape historians, and empirical techniques common in the field of economics, I find results that differ from the consensus view that the eighteenth century Cape was an economic backwater, a colony where pockets of wealth withered against a continuously expanding subsistence frontier region. The evidence instead points to an extremely wealthy settler society, with little evidence that these high levels deteriorated significantly even as the population increased rapidly.

This dissertation's first contribution is therefore to offer a significantly different view about the economic past of South Africa's earliest European settler community. The second contribution of this dissertation is to offer new perspectives on the causes of growth within a settler society. Both demand and supply played important roles. The demand created by the ships travelling past Cape Town offered a captive market for Cape goods, akin to the Staples thesis proposed for Canadian exports by Harold Innes. On the supply side, I show that a colony's development trajectory is influenced not only by the location-specific factors of its settlement, as suggested by existing comparative development theories, but also by the settlers' regions of origin, which can influence the production function.

Thirdly, I show that the unique mercantilist institutions imposed by the Dutch East India Company – notably its insistence on reducing costs to ensure farmer viability in the face of the low, non-market prices of the Company – resulted in a highly skewed distribution of settler wealth. Settlers' investment incentives favoured slavery, which exacerbated the high levels of inequality in Cape society. The highly unequal distribution of wealth would have negative consequences for the Colony's long-run growth prospects.