The Quantitative Cape: Notes from a new historiography of the Dutch Cape Colony

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Abstract

The digitisation and transcription of rich archival sources and the use of statistical techniques combined with modern computing power, have, over the last decade, allowed social scientists to reinterpret eighteenth-century Cape history. This review essay summarises the main results from the burgeoning literature; assesses whether these new studies refute or support earlier hypotheses; shows how new quantitative evidence can inform our understanding of the process of economic development; and appeals to historians and economists to learn the language of the other.

Keywords: eighteenth century, Cape Colony, Dutch East India Company

1 Introduction

Over the last decade, research about economic life of the eighteenth-century Cape Colony, a Dutch outpost at the southernmost tip of Africa, has flourished. This is because the Colony, under the auspices of the Vereenigde Oost-Indische Compagnie (VOC, or Company), kept meticulous records of the economic activities of its own trading activities and, more importantly, of the activities of the settler community that developed from the nine company servants that was first released in 1657 to augment the supply of fresh produce for ships passing on their way to the East or back to Europe. These records, preserved over more than three centuries in the Cape archives, now provide economic historians with a wealth of individual-level information. Using the tools of economists, this rich source of data can help provide new insights into eighteenth-century life at the Cape Colony, informing questions about settler, slave and servant economic and social life.

But this burgeoning literature does more than simply recast Cape history. In the absence of a laboratory to validate or disprove their theories, economists

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must look to history. The wealth of data collected by the Company, and the transcription and digitisation of these records thanks to new technologies and funding, makes the eighteenth-century Cape Colony an ideal experiment for understanding one of the fundamental questions of economics: the causes of growth and development.

This review, then, provides an overview of the recent contributions that enriches our understanding of eighteenth-century Cape economic life. These contributions build on the strong foundations of earlier generations of historians, summarised in Section 2, which began to digitise and transcribe the wealth of records located in the Cape archives. But a more systematic approach is necessary. In Section 3.1 and 3.2, therefore, I combine earlier data series with more recent ones to report what we now know of the size and living standards of the Cape Colony. Cape settlers, the records show, attained living standards equal to those of the most affluent societies of the time. Why? Why did a small colony at the southernmost tip of Africa become so affluent within a generation to mirror eighteenth-century England and Holland? To answer this intriguing question, I turn to the economist’s standard production function to explore, in Section 3.3, the causes of Cape prosperity. Capital, labour, technology and institutions matter in explaining the high standards of settler living. This is not the end of the debate, though. Section 4 appeals to economists and historians to collaborate across methodological boundaries and national borders in order to digitise and transcribe sources that remain unexplored, and examine questions currently unanswered.

2 Rich pickings

The astounding thing about the eighteenth-century Cape Colony is the wealth of information, both quantitative and qualitative, that is available to scholars. In private correspondence Jan Luiten van Zanden, professor of economic and social history at Utrecht University, noted that “the Cape Archive has a more complete record of eighteenth century Cape Colony life than what is available in The Hague for economic historians of eighteenth-century Holland”.¹ What is even more surprising is the quality of the statistical information: many records are at the individual or household-level which allow for a micro-level investigation of settler behaviour and societal change not possible elsewhere. Van Zanden’s comparison to Holland is apt; even though the Dutch were the most affluent society of the eighteenth century, with arguably the best administration and strongest institutions, no full census of eighteenth century Holland exists. Hence, period scholars must resort to evidence from such sources as the ‘Personeel Quotisatie’ of 1742, much like a census but which excluded all income earners below 600 guilders (roughly double the income of a construction worker), and therefore included only the middle class and elite. In comparison, censuses of all free men were compiled annually at the Cape.

The reason for the thorough recordkeeping during the seventeenth and eighteenth centuries was, of course, the fact that a company – the Dutch East India Company, or VOC – ruled the Cape. The profit motive of the Lords XVII, the shareholders of the VOC in Holland, meant that all economic activity was a potential revenue source. Because the Company was the largest buyer of produce, and the private sale of produce directly to passing ships was prohibited, the detailed records of private production and Company expenditure provide a panorama of Cape economic performance. The Company also intervened in the market to its own advantage: it gave out contracts to specific butchers, for example, who sold meat to the Company at a given, low price, and were reimbursed for these losses by having a monopsony on meat sales to foreign ships, thus charging monopolistic prices. On wine, anyone could trade in wine by the barrel, but the sale of wine in smaller units to the Cape Town inns frequented by sailors and soldiers was reserved for those who won the tender (pacht) to do so each year. These tender prices, therefore, offer a tantalising view into Cape consumption.2

Trade within the colony was either recorded or restricted; while primary production of wheat, wine and meat was encouraged with the aim of providing refreshments for the passing ships (the original purpose of the Cape station), value-added production, notably manufacturing, was prohibited. Where possible, all manufactured goods were to be imported, adding a further revenue source to the Company coffers. Not all consumer and producer goods could be imported, though, and the prohibition gave rise to small-scale workshops on farms – proto-factories3 – where farmers could diversify their income with the help of skilled slaves. Settlers also purchased or rented these slaves either directly from the Company or through suppliers affiliated to them. And, most importantly of all, a variety of head, land and local taxes were imposed, which meant that accurate (annual) records of the entire settler population were required, a policy made practical by the relatively small size of the colony.

To support the fledgling settler population, the Company took responsibility for many tasks usually the domain of government, tasks that also warranted prodigious recordkeeping. Dan Sleigh describes the extensive buitepost infrastructure that protected and supported expanding settlement.4 Hans Heese discusses the functioning of the criminal justice system at the Cape,5 a system underpinned by recording probate inventories (MOOC 8) and auction rolls (MOOC 10). And evidence of an extensive credit network within the settler

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community – with the Company also playing its role of lender of last resort – is documented in the estate accounts (MOOC 14).

Not only were such detailed records kept, but, equally important, they remain well-preserved. Nearly all the original records are today accessible in the Cape Town Archives Repository in Cape Town’s Roeland Street. The absence of any great disaster or war on Cape soil contributed, but so too did the quality of paper used at the time (documents from the later British era are notoriously fragile), the interest by Joe Public caused by a patriotic and nationalist fervour during the early and mid-twentieth century in the history of Afrikaner roots and South African history in general, and a willingness by consecutive national and provincial governments to fund what is an increasingly expensive exercise.

Due to fortitude and fortune, then, these detailed eighteenth-century records have remained intact and are now beginning to foster a new literature. This is not to deny that historians have not used these sources before; in fact, much of the new literature leans heavily on the meticulous and comprehensive archival work of earlier archivists and historians. The Genealogical Institute of South Africa’s records, for example, now digitised and exploited to calculate Cape fertility and life duration, were put together over several generations by the efforts of countless professional and amateur genealogists. The tax censuses of the Colony, recently used in several attempts to calculate Cape production and inequality, were transcribed and digitised by Hans Heese and Robert Shell in the 1970s Rijksarchief in The Hague. Most of what we know statistically of Cape slavery was put together painstakingly by historians Leon Hattingh, Nigel Worden, Robert Shell and others more than two decades ago. Some, like Hans Heese, are continuing this work, in a project to document the slave emancipation of 1834. And, most recently, 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 converted the hand-written Dutch records held at the Cape Town Archives Repository in Cape Town’s Roeland Street. The absence of any great disaster or war on Cape soil contributed, but so too did the quality of paper used at the time (documents from the later British era are notoriously fragile), the interest by Joe Public caused by a patriotic and nationalist fervour during the early and mid-twentieth century in the history of Afrikaner roots and South African history in general, and a willingness by consecutive national and provincial governments to fund what is an increasingly expensive exercise.

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Town Archives Repository into a digital database of XML code. A synopsis of this process is available in Liebenberg et al. Yet such transcription efforts were often undertaken for the purposes of genealogical and family histories, or for political and cultural histories of specific policies, periods or people. The earlier historiography tends to emphasise the specific rather than the general. From the wealth of records we have learned much about the particularities of the settlers, slaves and servants, their social customs, their beliefs, their interactions, their grievances. This often necessitated some quantification: historians have left behind series on settler households, land sales, ship arrivals, production figures, alcohol pachts, farm profits and slave prices. But, with few exceptions, such efforts have failed to answer even elementary descriptive economic questions like the average affluence of the settlers or trends in the price level or of changes in societal inequality.

9 XML code is the most basic form of digital coding available and is now an international standard for all archived digital data.


18 N. Worden, A history of slavery; R. Shell, Children of Bondage.

19 One exception is Guelke and Shell, ‘An early colonial landed gentry: land and wealth in...
Aside from the excellent contribution of Van Duin and Ross, Ross and to some extent Neumark, an interpretation of economic life at the Cape mostly remained parochial and without synthesis.²⁰

3 A burgeoning literature

What sets the new economic history of the Cape Colony apart is the use of large data sets at the individual or household level which gives confidence that the descriptive statistical findings are accurate. This is not to undermine the importance of qualitative work — not all of history can be described by numbers — but large data sets, together with a fast-improving econometric toolset, help economists to identify causal rather than merely correlated relationships. James Fenske argues the case for greater statistical analysis in history²¹:

“The concept of causation I invoke is intuitive. If X changes exogenously, how much does Y move on average? The challenge is separating out the causal effect from the influence of other, unseen variables. If we cannot, we learn very little from how X and Y are correlated in observational data. (E)conomists have focused on strategies that limit this bias.

Econometric techniques now allow researchers to move from asking ‘What happened?’ to ‘Why did it happen?’. Not only do such causal inferences allow a reinterpretation of the past, but it also informs existing theories of the process of economic change and development.

For much of the eighteenth-century Cape economy, however, we know very little about what happened. Section 3.1 and 3.2 therefore first summarise the ‘what’-questions that the new literature has addressed: How large was the Cape population? What was settler longevity? What was the nature of settler wealth? How unequal was Cape society? Section 3.3 then turns to the ‘why’-questions. It shows how micro-level data and econometric techniques combine to allow new perspectives on the causes of Cape settler wealth, with important implications for the broader literature on economic growth and development.

3.1 Cape Colony households

One of the fundamental figures that are central to any historical analysis is population size. The size and growth of the Cape population are now confirmed with recourse to several independent primary sources. Figure 1 provides estimates of the settler (free burgher) population from three primary sources: the annual number of settlers reported in the opgaafrolle ²², the number of household.

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²²The first series was published in Van Duin and Ross, The economy. The second series, only available for the years 1663, 167, 1682, 1685, 1688, 1692, 1695, 1700, 1702, 1705, 1709,
holds as recorded in the probate inventories, and the number of settlers that are recorded in the GISA records.

The four estimates are highly correlated; only the number of probate inventories deviates significantly from the other series in the 1740s and 1750s, probably due to undocumented households on the frontier. While the trend of the GISA population estimates resembles that of the opgaafrolle, the level is substantially lower. This is due to missing information; only settlers with both a birth or baptism date and a death date are included in Figure 1, reducing the sample significantly. The opgaafrolle thus provide the most accurate level of settler numbers: the population increases from 133 in 1663 to 14,952 in 1795, the final year of VOC rule, an increase of 3.6% per annum. Note that for the eighteenth century (1701-1795), annual growth falls to 2.6%.

Due to the meticulous recordkeeping of the Company, we also know much about their employees; Van Duin and Ross report these numbers, which is drawn from the monsterrolle of the Company. Compared to the settler population, the number of VOC employees grows at a much slower rate over the eighteenth century: an increase of 1.1% annually between 1701 and 1795, although this increases to 2.3% annually if growth is calculated between 1708 (when only 513 Company officials were stationed at the Cape) and 1789 (when 3,392 officials were employed, the highest number for the eighteenth century). As a lucrative trade and vital input into the production process, slave data is also readily available. Both Van Duin and Ross and Shell report slave numbers at the Cape, with substantial differences. Shell probably includes slaves housed in the slave lodge in Cape Town, while Van Duin and Ross concentrate only on those slaves held by freemen. I show both series in Figure 2. According to Van Duin and Ross, slaves increase from 1,838 in 1701 to 21,474 in 1795, an increase of 2.6% annually, a similar growth rate to that of the settler population. This strong correlation is also evident from Figure 2.

Unfortunately, much less quantitative information is available for the native Khoe population. Guesstimates abound; even though the Khoe were a seminomadic 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). Elphick estimates that in 1660 there could have been no more than 100,000 Khoesan that lived in the south-western Cape. But an expanding settler population and


24 Calculated by J. Cilliers and J. Fouire, ‘New estimates’.

25 P. van Duin and R. Ross, Economy.

26 Ibid.; R. Shell, Children of Bondage.

27 Mossop, Journals of the Expeditions of Olof Bergh (1682-1683) and Isaak Schrijver (1689), (Cape Town: Van Riebeeck Society, 1931).

colonial border engulfed the Khoe, forcing those that survived the skirmishes and disease to migrate deeper into the interior or to settle on colonial farms. Many settled, and recent research suggests that they constituted a sizable share of the labour force, especially on the expanding frontier. Yet quantifying this important source of labour has received little attention, at least compared to imported slaves, because they remained unrecorded in the official colonial censuses.

Research by myself and Jan Luiten van Zanden provide one solution to the absence of direct evidence of Khoe labour: we use the frequency of Khoe appearances in the Courts of Justice in Cape Town as a proxy for the size of the Khoe population that was under colonial rule. The records suggest a rapid increase of 6.2% annually in the number of Khoe under colonial rule, to total 10 737 by 1795. Such large numbers support the claim by historians that the Khoe formed an important part of the colonial economy, and that their contribution is often neglected (or attributed to slaves) because of their anonymity in Cape records. Our approach may have limitations though: given the anecdotal evidence of large deaths during the smallpox epidemic of 1713, a decline in Khoe numbers is expected but not found. Still, such proxies begin to quantify the previously unquantifiable and provide a baseline for future projections.

The sizes of the respective population groups begin to show a rapidly expanding colonial society, but say little about the living conditions of these people. Economic historians thus turn to estimates of demographic change, particularly as quantitative information about births, deaths and marriages are often more complete and reliable than the more traditionally used indices for measuring standards of living. This is especially true of the Cape Colony, where the transcription and digitisation of archival sources also allow more rigorous investigations of societal change within the Cape settler household. The sources that provide a starting point for such intra-household analysis are genealogical records collected over several decades and compiled in the South African Genealogies published in Adobe PDF-format on 17 CD-ROM discs by the Genealogical Institute of South Africa. These records are continually improving; at the time of writing, surnames A to K had already been updated to include nearly all settler families between 1652 and 1900.

Although the GISA records are in digital format, the choice of PDF-format does not allow an easy transfer to standard data management software (the orig-

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30 The Courts of Justice records were compiled by H. Heese, Reg and Onreg, and digitised by J. Baten and J. Fourie, ‘Numeracy’.
31 R. Elphick, Kraal and Castle, p.175.
34 A thorough overview of the primary sources used in the GISA dataset is offered in J. Cilliers and J. Fourie, ‘New estimates’.
35 The new collection is titled South African Families.
inal document is in Microsoft Word, an even less useful format). Transferring
the data proved enormously challenging; after several trials, a custom-designed
data-manipulation software programme was written to convert the text-based
PDF files into Microsoft Excel.\textsuperscript{36} Once transferred, though, the GISA records
provide a wealth of information on life duration, age at marriage, number of
marriages, early childhood mortality and other household characteristics of the
settlers. Figure 3 shows the number of individuals with birth, baptism, mar-
rriage and death information, by decade, recorded in the latest version of the
GISA records. Information on baptisms and marriages, in particular, seems to
be well-captured, at least until the early eighteenth century. Births are best
documented during the nineteenth century, with 44663 births recorded in the
last decade of the nineteenth century. After 1900 the trends in all the indicators
decline significantly, suggesting that the individuals recorded decline as a share
of the total settler population and that the demographic trends are therefore
less reliable as a true reflection of the total settler population.

Figure 4 provides an early descriptive snapshot of settler longevity over the
seventeenth, eighteenth and nineteenth centuries. The density curves are best
read as smoothed histograms, with the higher peaks denoting those ages at
which most people died. The average settler life-span, represented on the x-
axis, clearly increases over the period: from an average of 51 in the earliest
half-century, to around 67 during the first half-century of the twentieth-century.
Because the SAF data represents a falling share of the total population by
the early twentieth century, the final half-century should be interpreted with
cautions.

Table 1 also reports the median life-span which gives a more accurate re-
flexion of longevity given that high infant mortality may significantly reduce
the average. Median settler lifespan increases from 50 after 1652 to 66 by the
beginning of the twentieth century, with a slight decline in the first half-century
of the nineteenth-century. This decline can be attributed to several causes, in-
cluding the various Xhosa wars and the movement of the frontier farmers into
the more dangerous interior of the country.

What makes the genealogical records even more valuable, though, is their
ability to link multiple generations over time. The GISA records include families
with more than ten generations, spanning three centuries of settlement in South
Africa. Such depth over such a large population is extremely rare, and allow
for testing new hypotheses in the field of inter-generational social mobility. To
estimate inter-generational mobility, however, some measure of income or wealth
is required, measures that are not (yet) available in the GISA records. One team
of researchers have avoided this problem by using longevity as a measure of
welfare in their inter-generational analysis; in other words, whether parents that
live longer share this trait with their children and grandchildren.\textsuperscript{37} The results

\textsuperscript{36} We gratefully acknowledge the services of Linsen Loots of FireID. The full dataset is the
property of GISA and therefore cannot be distributed.

\textsuperscript{37} P. Patrizio, S. Muller, J. Cilliers and J. Fourie, ‘The transmission of longevity across gen-
erations: The case of the settler Cape Colony’, Research in Social Stratification and Mobility,
in press.
are promising: the authors find significant but declining covariance between parents and their children over multiple generations. Whether longevity is in fact correlated with higher incomes and living standards will only become clear as more information – on occupations, on slave ownership, on heights – is added to the genealogical records.

Instead of using large datasets covering several centuries, some scholars have used smaller samples with more detailed information on the households to study inter-generational mobility and transfers. One recent paper uses a small sample of eighteenth century women that lost a husband to death, as death in a household is traditionally associated with a loss of financial and social stability.\(^{38}\) But because of the Cape’s Roman Dutch partible inheritance laws, death of a spouse often gave Cape widows greater agency by monetizing their holdings, enabling investments in productive assets with prohibitively high fixed costs (like slaves and vineyards) which resulted in status and affluence. This supports Dooling’s conjecture that a ‘widowarchy’ was established through inter-marriage of elite families; widows thus acted as conduits for the accumulation and transmission of property and slaves from one generation to the next.\(^{39}\) Such results advance not only our understanding of the historical Cape, but also shed light on the theory of institutions, and could have important implications for development policies today.

### 3.2 An affluent but unequal society

Historians of the Cape are fortunate to not only have access to rich demographic information on Cape settlers, but a wealth of data on prices and product quantities owned and produced. For much of the twentieth century, this wealth had been more a curse than a blessing: transcribing the rich archival *opgaafrolle*, *monsterrolle*, *vendarolle*, *bandietenrolle*, *inventarisse* and *wissels* would take many months of painstaking work. In the absence of adequate computing power, any intricate statistical analysis would have required additional time, resources and skills.

It is perhaps ironic, then, that the more statistical contributions dealt with slavery. Encouraged by the seminal book on American slavery by Robert Fogel and Stanley Engerman in 1974, *Time on the Cross*, and the broader cliometric revolution in the United States\(^{40}\), historians in South Africa began to incorporate more quantitative techniques in their investigations of slave prices, productivity and society at the Cape.\(^{41}\) This was not easy; desktop computers

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were still non-existing and any data required for analysis still had to be entered manually with punch cards. But the new evidence of average prices and the size of slave holdings that these results provided, added new historical insights to the standard literature that was mostly based on diaries, letters and official government pamphlets.42

Research into the standards of living of the other population groups, the VOC employees and the settler farmers, itself divided into several categories, followed. Trained as a geographer, Leonard Guelke made telling contributions in understanding the spatial dynamics of an expanding settler society.43 Robert Ross investigated marriage patterns and other settler demographic traits.44 But the standard view of Cape settlers – that for most of the eighteenth century they remained relatively poor, subsistence farmers – remained untested.

It was only in 1987 when Pieter van Duin and Robert Ross collaborated on *The Economy of the Cape Colony in the Eighteenth Century* that the standard view was first challenged. Using aggregated productive figures from the annual *opgaafrolle*, Van Duin and Ross argued in favour of a steady, market-based expansion of agrarian production

“It is notable that historians have given their portrayals of the Cape’s economy without any extensive empirical back-up, even though immense quantities of evidence, statistical and otherwise, exist on the nature of and changes within the economy of the Cape under the VOC. It is the intention of this work to test these sorts of theories against the evidence. When this is done, it becomes clear that the market for Cape agricultural produce was much larger, more dynamic and quicker growing than has previously been thought, so that a very considerable rate of agricultural growth was possible. This implies that capital accumulation occurred in the eighteenth century Cape to an extent that has generally not been appreciated.”45

Ironically, Van Duin and Ross’s contribution coincided with a shift in South African historiography: after two decades of productive research on the seventeenth and eighteenth century Cape Colony, culminating in several issues of Elphick and Giliomee’s *Shaping South African Society*, the end of the 1980s marked the end of apartheid and political change, shifting research interests and priorities towards explaining twentieth century history. Unfortunately, this also meant that Van Duin and Ross’s work did not receive the attention it deserved. The traditional view of the Cape as a ‘social and economic backwater’ remained: in Feinstein’s 2005 *An Economic History of South Africa*, little attention is given to the economic history of the seventeenth and eighteenth century or, summarised in Feinstein’s words: “markets were small, conditions difficult, and progress slow”. He fails to cite Van Duin and Ross.

Feinstein’s posthumous contribution marked a watershed in quantitative

42 See, for example, Hattingh’s use of quantitative methods to refute the claims of Willem Adriaan van der Stel. L. Hattingh, ‘Die klagte oor goewerneur WA van der Stel se shawbesit – in beoordeling met behulp van kwantitatiewe data’, *Kronos*, 7 (1983), 13-41.

43 L. Guelke, ‘Fronter settlement’.

44 R. Ross, ‘The ‘White’ population’.

45 P. van Duin and R. Ross, *The Economy*, p. 3.
South African (and specifically Cape Colony) economic history. A new generation of historians were exploiting the Cape archives, and larger transcription and digitisation projects were undertaken. The most notable of these were TANAP (Towards a new age of partnership), a Dutch, Asian and South African programme of cooperation, which allowed the transcription and digitisation of, inter alia, the full set of probate inventories (75 volumes, MOOC 8) and the first five volumes of the auction rolls (MOOC 8). These new sources opened the scope for a deeper interrogation of the Dutch period, and culminated in a 2006 conference and subsequent special issue of the South African Historical Journal.\textsuperscript{46} In a 2007 overview article, Nigel Worden, who initiated much of this new research\textsuperscript{47}, suggests that the contributions show “the kinds of new directions in which the historiography of the VOC Cape is heading”, that is to “place the Cape within the broader VOC world of the Netherlands and Indian Ocean, a comparative context which differs from the studies of the 1980s”.\textsuperscript{48}

The new direction for Cape historiography was again exhibited in a special issue of the SAHJ in 2010. In the introduction, Laura Mitchel and Gerald Groenewald praise the “vibrant intellectual milieu of pre-industrial Cape historiography” that “is characterised by a healthy diversity of topics, methods, theoretical formations, and interdisciplinary inclinations”. Yet, in a critique of \textit{Contingent Lives} published in the same issue, Nicole Ulrich argues that “most studies focus on the particularities of the colonial context”. As an example she argues that “consumption and buying patterns of the consumer are ignored”, suggesting that an “examination of commodities used in everyday life may provide a more balanced view” of Cape settlers’ standards of living.\textsuperscript{49} Responding, Worden summarises it well: “[S]he warns us against ignoring more materialist and macroscopic insights”.\textsuperscript{50} This reflects a broader tradition where “approaches which stress issues of political economy have never been dominant in the writing of pre-industrial Cape history”.\textsuperscript{51}

Fortunately, economists have begun to fill the void. Two recent papers have used price data, gathered from the archives in The Hague and Cape Town and from the digitised inventories of the \textit{monsterrolle}, to investigate the relatively prosperity of Cape society. Du Plessis and Du Plessis and also De Zwart have echoed the Van Duin and Ross (1987) hypothesis that the average Cape settler was more affluent than previously thought. Both show that Cape wages, in contrast with England and Holland, were increasing, so that Cape wage earners became more affluent over the course of the eighteenth century. While both find wage growth, the two sets of authors differ in their emphasis: Du Plessis and

\textsuperscript{46}N. Worden, \textit{Contingent Lives}.  
\textsuperscript{51}Ibid, p. 591.
Du Plessis argue that Cape society was already highly stratified at the start of the century, with some wage earners obtaining comparatively high standards of living. In contrast, De Zwart notes that wage growth was 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. Figure 5 shows the two series. 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, 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.

My own efforts have focused on answering questions about the nature and growth of settler affluence. I use 2577 uniquely identified households in the MOOC-8 probate inventories to ask two related questions: did Cape settlers’ living standards decline as they moved into the interior, and how affluent were they relative to their compatriots in Europe and in North America? To answer this, I count 28 products found in the inventories, including the number of slaves owned and commodities such as cattle, sheep and horses, productive assets like ploughs, corn sieves, brandy stills and wagons, households necessities like buckets and chairs, and luxuries like books, timepieces and gold rings. Adding these together with prices obtained from the MOOC-10 auction rolls, I calculate the average value of asset baskets for those households with probates between 1700 and 1795. Figure 5 reports the five-year moving average for all households that owned zero slaves.

All three series suggest that there is no reason to suspect that the poorest settlers’ and workers’ wealth or wages declined over the eighteenth century and no evidence that the average Cape settler was living at a subsistence level, deprived of comforts and luxuries. As Van Duin and Ross warn, we should be sceptical of passing judgement on the average economic position of the Colony's inhabitants.

56 The probate inventories are available for free on the TANAP website in PDF format. Given the large file size, I 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 analysis attempted, 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). I therefore obtained and used all 75 MOOC-8 volumes in XML format, through a formal request to the Western Cape Archives Repository. The letter was addressed to Erica le Roux, 8 October 2009. I would like to thank Erica for her help and support in processing the application.
settlers based on idiosyncratic travel accounts or farmer complaints.

But the affluence of the Cape settler is even more remarkable if compared to other eighteenth-century societies. By comparing probate inventories of Cape households to similar inventories left behind in Holland, England and the North American colonies, I show that, on average, Cape households owned more assets than their European or North American counterparts. Their asset abundance was not limited to what can be expected – far greater numbers of cattle and sheep ownership – but also to those luxury household assets that one would expect to find more commonly in the homes of European citizens, including books, paintings and timepieces. Jan de Vries calculates that not more than 28% of the probate inventories between 1711 and 1750 in Leeuwarderadeel, Friesland included paintings. McCants finds that only 25% of Amsterdam probates of the Orphan Chamber between 1740 and 1782 included paintings. In contrast, I show that a greater share of Cape settlers included in the records of the Orphan Chamber owned paintings; 38% and 34% for the two respective periods. These numbers compare even better against regions of England (outside London) and the Chesapeake region of North America. The stereotypical view of the Cape as an economic backwater is not supported by the probate evidence: instead, the rich probate inventories suggest a society that attained settler livings standards equal to those of the wealthiest countries of the time, Holland and England. In other words, it was far better to be a poor settler at the Cape, than to be poor in Amsterdam.

Jan Luiten van Zanden and I combine the estimates of De Zwart, Du Plessis, Van Duin and Ross and Fourie to construct a measure of Gross Domestic Product for the Cape Colony, which can then be compared to existing GDP estimates of Britain and Holland. Corroborating the above analysis, we show (in Figure 6) that Cape settler income levels were high throughout the eighteenth century. Even if the non-settler population that formed part of the colonial society are added to the GDP estimates, Cape per capita incomes are as high as those of England before the Industrial Revolution. The reasons for this high level of income will be discussed later.

The high average levels of settler income and wealth may of course mask a highly uneven society. An earlier literature already points out the skewed income distribution of official and settlers: Mentzel, a German traveller in Cape Town during the 1730s, divided Cape society into the affluent city dwellers residing in Cape Town, the landed gentry who owned large farms and lived opulently, the hard-working cultivators, and the poor, pastoral farmers of the interior.

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Perhaps the high level of income and wealth calculated earlier was isolated to pockets of wealth, with most settlers living in poverty?

The household level data of the opgaafrolle provide a rich source for testing these hypotheses. In work I did with Dieter von Fintel, we find that wealth inequality remained high as new immigrants arrived, fell as immigration was discouraged (after 1717) and the position of the poor began to improve, and then increased again as a small cohort of affluent farmers emerged in the 1730s and 1740s.\textsuperscript{62} Using price data from the MOOC 10 auction rolls, we also calculate income inequality, and compare it to similar estimates of other regions. Cape income inequality was severe and persistent throughout the eighteenth century, and surprisingly large within the settler community. Here we also show why household level data is so important: the Gini coefficients we calculate are much higher than the levels of inequality calculated using social tables (which assumes within-group equality). If only between-group inequality is assumed (i.e. between settlers and slaves, or between officials and farmers) as is done for other regions, then the level of inequality at the Cape would be significantly lower, and not a true reflection of the past reality.\textsuperscript{63}

The high and persistent levels of inequality explain why traveller accounts were less optimistic about the prospects of the frontier farmers. Yet such wide dispersion in living standards masks the fact that absolute poverty almost certainly declined, even as settlers moved into the interior. The wealth of those farmers with zero slaves increased significantly over the eighteenth century; they owned significantly more commodities and household items at the end of the century than at its beginning.\textsuperscript{64} While inequality may have increased, poverty for the average settler declined.

4 Understanding economic growth

Economic historians are not only interested in ‘what’ happened, but also in ‘why’ it happened. The toolset that economists use enable them to, where the data allows, sift through the complexity of history and truncate a multitude of correlates into one or a few causal determinants. This is not to deny that an event may have multiple causes. But the aim of statistical identification is to ascertain, firstly, whether a causal link between two phenomena exist (also known as statistical significance) and, secondly, the size of this impact (economic significance). Key questions, as highlighted by Fenske\textsuperscript{65}, include:

What is the control group? Is the sample large enough that the results are unlikely to be due to chance? Could unobserved factors be responsible for the results? Is there a ‘natural experiment’ that makes it possible to credibly claim that the possible cause of interest is uncorrelated with other confounders?

Because of the rich individual-level data available, the Cape Colony offers an

\textsuperscript{62} J. Fourie and D. von Fintel, ‘The dynamics of inequality’.
\textsuperscript{63} J. Fourie and D. von Fintel, ‘A history with evidence’.
\textsuperscript{64} J. Fourie, ‘The remarkable wealth’.
\textsuperscript{65} J. Fenske, ‘The causal history of Africa’, p. 126.
ideal setting for such statistical identification. What, then, can the data tell us about the reasons for the high levels of eighteenth-century Cape settler wealth and living standards?

Plenty. On the demand-side, the Cape was a refreshment station for ships sailing between Europe and the East. These ships offered a ready market for Cape produce, notably wheat, wine and meat. This, historians have known for a long time. But to what extent did the arrival of ships boost Cape production? Based on qualitative sources, an older literature suggest that ship traffic mattered a lot to Cape production while Van Duin and Ross suggests that much of domestic production was driven by changes in domestic demand. Willem Boshoff and I use a digitised series of ship traffic combined with techniques borrowed from the business cycle literature to investigate the causal impact of ship traffic on the production of wheat, wine and meat (cattle). We find that ship traffic did matter, especially in the production of wheat and to a lesser extent wine, which supports the view of earlier historians. The evidence suggests that causality runs from ship traffic to production which is the direction we would expect; evidently, ships did not visit Cape Town because of fluctuations in production. There is, however, no evidence of co-movement between the arrival of ships and the production of meat, suggesting that the pastoral farmers of the interior reacted little to the fluctuations in demand created by ships anchored in Table Bay.

While fluctuations in demand from ships may have caused fluctuations in production, we are mostly interested in the reasons for the long-run growth of settler wealth. Ship traffic cannot explain this, as the number of ships to visit Cape Town annually remains fairly constant throughout the century. We, therefore, turn to supply-side factors and, more specifically, the standard production function of economics.

In a standard production function, Output (Y) is a function of Capital (K), Labour (L) and Technology (A). Let’s consider Capital. Few settlers arrived with significant capital at their disposal; in fact, because most immigrants were Company workers whose contracts had expired or who were released from service to become farmers, they were, in Mentzel’s words, ‘destitute of all means’. The Company offered to support these immigrants by providing affordable loans for ‘cattle, farm implements, seed and bread-corn and everything else they needed’. Not only could settlers borrow from the Company, but, following in the tradition of their compatriots in Holland, they also borrowed from each other. These networks of capital were essential in creating a high level of financial sophistication in sixteenth and seventeenth century Holland, and may

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68 O. F. Mentzel, A geographical-topographical description, p. 64.
69 O. F. Mentzel, A geographical-topographical description, p. 64, 65.
70 J-L. van Zanden, J. Zuijderduijn and T. de Moor, ‘Small is beautiful: the efficiency of credit markets in the late medieval Holland’, European Review of Economic History, 16
have played an even greater role in the Cape’s development. The rise and impact of these networks are the subject of ongoing investigations.

In addition to capital, land was relatively ‘free’; the Khoesan were pushed deeper into the interior through conquest and disease. But this availability of capital and land did not immediately stimulate growth: the farmers’ inexperience of agriculture together with the Cape’s tough fynbos vegetation and strong south-easterly winds meant that, at least during the first few decades, expansive, pastoral farming was an altogether more feasible option. Attrition rates were high. Life was difficult.

The expansion lead by Commander Simon van der Stel into the fertile area immediately west of the first mountain ranges encouraged wheat farming and especially viticulture, buttressed by the arrival of around 160 Huguenot settler families. But the extensive farming practices soon caused settlers to search for pasture beyond the mountains. Here the Company would not allow private ownership but, to generate an income for the Company, sold annual leases instead. Whereas wheat and wine dominated production in the region bordering Cape Town, cattle and sheep farming was the staple of the interior.

There were several reasons for this geographical distinction. The fertile land west and south of the mountains was ideal for the cultivation of wheat and vine. Beyond the mountains the land was drier, although certainly not unsuitable for growing vine, as can be seen from the vast area in this region that is covered by vineyards today. Yet the main barrier to the growth of crop production here was the high cost of transport, which meant that only goods that required little or no assistance in crossing the mountains could be produced for the Cape Town market.

The choice of crop also had implications for labour demand. Wheat cultivation and viticulture required large numbers of workers, at least during harvest season. But labour was expensive at the Cape: servants could be hired from the Company but supply was unreliable and wages high in comparison to the low final good prices offered by the Company. Servants whose contracts expired chose to settle on their own, given the relatively low cost of land, rather than to sell their labour for wages. This caused a severe shortage of labour and one the Company decided to fill by importing slaves.

The introduction of slavery at the Cape seems to support the Nieboer-Domar hypothesis, which states that a high land-labour ratio will push wages higher forcing landlords to adopt slavery to limit labour exit from farms. However, suggests two reasons why the Cape example necessitates a revision of the classic Nieboer-Domar hypothesis: Firstly, slavery emerged at the Cape in an urban setting, and not in agriculture. Secondly, slavery at the Cape increased in parallel with other forms of labour, including Khoe, wage and household labour, and “can only be understood in relation to a wide range of existing labour contracts”,

(2012), 3-22.  
72E. Green, ‘The economics of slavery in 18th century Cape Colony: Revising the Nieboer-
Whether slavery caused the great demand for labour on farms or arose to fill it, does not deny the fact that by the early eighteenth-century, the Cape was a slave economy. I calculate that slaves, seen by economists as a capital input into the production process, constituted 24% of all wealth in the probate inventories of settlers between 1673 and 1806. This is in stark contrast to the total wealth invested in cattle (12%) and sheep (10%).

Why did slaves constitute such a large proportion of settler wealth? One argument is that slaves allowed farmers to not only increase production (economies of scale, especially in viticulture) but also to diversify production (economies of scope). The prohibition on manufacturing in the Cape limited the rise of workshop industries in Cape Colony towns and necessitated home manufacturing. Jan Martin Vogel, whose inventory was compiled on 2 April 1777, was a wealthy settler who created a proto-industry on his farm using slave labour:

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, his inventory lists 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”).

Slaves also increased settlers’ leisure, utility which is not measured in estimates of Gross Domestic Product. Slave labour would often require farmers to only ‘oversee’ work and allowed them to engage in hunting or related practices. This created a typical backward-bending supply curve, also found in pre-industrial Britain: at a certain level of income, the benefits derived from additional consumer goods do not outweigh the benefits derived from additional leisure. Slave labour provided sufficient returns to discourage investment in other capital goods.

Jan Martin Vogel’s inventory also suggests that the benefits of slavery may have been biased towards the wealthier landowners. This is confirmed by recent research into the productivity of Cape slaves. Using slave prices from Shell’s Changing Hands and the opgaafrolle, Du Plessis, Jansen and Von Fintel estimate a hedonic price function for Cape slaves between 1700 and 1725 and argue that slave prices track the marginal productivity of slaves closely, which suggests that slavery was profitable over most of the period. Yet there are sharp differences between large- and small-scale farmers: small-scale farmers show no signs of profitability, suggesting that they attempted to mimic the production processes on larger farms but unsuccessfully so. Small farmers invested in slaves without

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72 J. Fourie, ‘Slaves as capital’, p. 154.
74 J. Fourie, ‘Slaves as capital’.

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yielding concomitant increases in production; large-scale farmers could benefit from economies of scale and scope.

While the ownership of slaves was rational, in the long-run it harmed the Cape economy’s growth potential. High wages in eighteenth-century Britain caused labour-saving capital investments in new technologies which caused higher labour productivity. The spinning jenny is the classic example. At the Cape, where settlers substituted high wages with slave labour, there was little incentive to improve labour productivity.

Moreover, slaves were less adept at innovation. Adam Smith observed this in his 1776 treatise, the Wealth of Nations:

Slaves, however, are very seldom inventive; and all the most important improvements, either in machinery, or in the arrangement and distribution of work which facilitate and abridge labour, have been the discoveries of freemen.

These two consequences of slavery combined to put the Cape economy on a high plateau.

But slavery was not the only factor of production that contributed to Cape wealth. Because labour was scarce, those settlers willing to sell their labour in the market earned high wages in comparison to their compatriots in Europe. Few migrants, however, worked as wage labourers after being released from their contracts; most invested in a farm of their own, using household labour, at least initially, to sow, harvest or tend livestock. Yet, as research by Dieter von Fintel and me has shown, not all settlers were equal. Some settlers brought with them skills that allowed them to be more productive than the rest or, in economic jargon, Cape wealth depended not only on the quantity of labour employed but also on its quality.

Using the opgaafrolle, we show that French Huguenot settlers were more productive wine-makers than other Cape settlers, i.e. they owned more barrels of wine compared to non-Huguenot wine-makers given the same number of inputs (land, slaves, knechts and vines) into the production process. We identify skills as the reason for this advantage by splitting the Huguenot sample into two groups: those that originate from wine-producing regions in France and those from wheat-producing regions. These settlers were allocated plots randomly in the Cape and their production thus provides a natural experiment to test whether their skills mattered. It did, but to our surprise we found evidence that it mattered over several generations: the difference between the descendants of Huguenot wine-makers and their wheat-producing compatriots increased over time. What can explain such a persistent difference? Mentzel, the early eighteenth-century traveller, has one suggestion:

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

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grow mellower with age: but they are not such fools as to give away their secret and thus make the good wines more common.\textsuperscript{81}

Those farmers with wine-making skills protected their skills, either deliberately as suggested by Mentzel or accidentally due to the high cost of transferring such knowledge, allowing a small group of settlers to become a wine-making elite. While skills created an elite, slavery helped to sustain it.

Skills did not differ only within the settler community; slaves possessed varieties of skills that allowed them to fetch higher prices at auction, or in the growing market for slave hire. Joerg Baten and I use the Court of Justice records, published by Heese, and match these to the lists of convicted persons that were banished to Robben Island.\textsuperscript{82} We have to match these records because each contain information that will allow us to assess level of education of convicts: their origin region (available from the Robben Island records), and their given age (available from the Court of Justice records). The final dataset includes 937 convicts: settlers, slaves and Khoesan born between the 1670s and 1790s.

But how do we calculate levels of education from information on convicts’ ages? Here we rely on a now common tool in the economic history literature, the Whipple Index, to calculate estimates of numeracy based on a society’s ability to report their age. The less-educated, the argument goes, will often report their ages to the nearest rounded figure, like 25 or 40, a process known as age-heaping. Calculating the extent of age-heaping in a society provides a proxy for that society’s level of numeracy.

This method is surprisingly robust between countries and over time. Linking the ages with the convicts’ regions of origin allow us to ascertain the numeracy levels of eighteenth-century societies as diverse as Mozambique, Madagascar, India and present-day Malaysia and Indonesia. We can also compare the numeracy levels of these convicts to those of Europeans and slaves born at the Cape, and to the native Khoesan. We find very high levels of numeracy for the descendants of European settlers at the Cape, surprising perhaps given that these settlers would have been the poorest cohort in their countries of origin. But the most interesting results are obtained for slaves from various destinations: slaves from India, Indonesia and Mozambique attained the lowest levels of numeracy, followed by those slaves born at the Cape and then by a small sample of Chinese convicts. The relatively high levels of numeracy for Cape-born slaves suggest that formal education in the slave lodge, imitation behaviour (through learning-by-doing from European owners) and better nutritional status may have given locally-born slaves an advantage. Most surprising to us, during the early period the Khoesan did not perform any worse than the Cape born slaves. However, their numeracy levels declined significantly during the eighteenth century, which may point to the adverse affect on their living standards of integration in the settler economy.

Skilled and unskilled labour, however, do not function in a vacuum. They are

\textsuperscript{82} J. Baten and J. Fourie, ‘Numeracy’.

20
created and operate within a set of institutions, formal and informal, that may itself be influenced by more fundamental parameters, like climatic conditions, the disease environment, and historical accident. Over the last two decades, social scientists have emphasised the role of the institutional environment in explaining the development divergence between the West and the rest. The most prominent of these — Acemoglu, Johnson and Robinson — use an innovative instrumental variable-approach to show the persistence of institutions introduced by settlers in the colonial regions they entered.\textsuperscript{83} Where settlers faced little resistance to settlement (i.e. where the disease environment was conducive to settlement, such as areas with no malaria) they established growth-enhancing institutions, like property rights and public education. However, in areas with a high disease burden, the settlers established growth-debilitating, extractive institutions. Acemoglu, Johnson and Robinson show how these institutions — and their consequences for development — persist to the present.

Following a similar line of reasoning, Engerman and Sokoloff posit that in tropical climates with large indigenous populations, settlers will establish plantation-type farms that produce labour-intensive crops like sugar or tobacco. This will result in high levels of inequality between the land-owners and labourers (be they indigenous peoples or imported slaves), which will have various growth-debilitating effects such as limits to education and the ballot box. According to Engerman and Sokoloff, the rise of large plantations in many Latin America and the Caribbean regions are examples of such institutions. In contrast, the northern colonies of what would become the United States had no large native populations that survived the arrival of Europeans. In those temperate regions, wheat was the staple commodity, requiring less labour-intensive production processes. As a consequence, smaller farms were settled, property rights were protected and universal education and voting rights were established.

It is difficult to pin the Cape to one of these extremes. The Cape exhibited characteristics of both a settler colony — wheat farmers with relatively small farms which established a judicial system protecting property rights — and an extractive, slave-based society, based on labour-intensive wine-making and characterised by high levels of persistent inequality. The Cape, being ruled by a Company, had some rather unique institutions too: the Company organised the market to its own benefit, prohibiting manufacturing and direct trade with passing ships or with the indigenous Khoe. Most importantly, the Company imposed various taxes to boost revenue. Such policies caused the settlers considerable irritation, which they vented in petitions to the Company.

Acemoglu, Johnson and Robinson first noted the fiscal system as one mechanism through which extraction may occur.\textsuperscript{84} Sokoloff and Zolt argue that elites in Latin America used the fiscal systems to cement inequalities, with more regressive tax systems and lower levels of redistributive spending.\textsuperscript{85} In contrast,\textsuperscript{83} D. Acemoglu, S. Johnson and J. Robinson, ‘The colonial origins of comparative development: an empirical investigation’, American Economic Review, 91 (2001), pp. 1369-1401. \textsuperscript{84} D. Acemoglu, S. Johnson and J. Robinson, ‘Colonial origins’. \textsuperscript{85} K. Sokoloff and E. Zolt, ‘Inequality and the evolution of institutions of taxation: Evidence from the economic history of the Americas’, in S. Edwards, G. Esquivel, and G. Márquez

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Frankema finds that settler colonies imposed heavier tax burdens on their subjects, the revenue which they could then use for necessary public spending programmes and macroeconomic stability, boosting growth.\textsuperscript{86} In a recent paper, Jansen, Siebrits and I show that the Cape government was not as ‘extractive’ as claimed by those early settlers.\textsuperscript{87} The profit-making Company, reporting to shareholders in Holland, was responsible for all aspects of governing: collecting taxes, protecting the rule of law, providing public goods, and caring for the poor. In fact, throughout the eighteenth century, the Cape government spent more than double their annual revenue on salaries and other expenditures. We find that taxes were mostly progressive, with the rich carrying a heavier tax burden.\textsuperscript{88} Instead of an extractive colony, the fiscal regime of the Cape fit more closely those of the settler societies of Australia, Canada and New Zealand.

This sharp dichotomy between extractive and inclusive institutions, or tropical and unequal versus temperate and equal societies is almost certainly too rigid.\textsuperscript{89} Gareth Austin argues that the causal relationships of Acemoglu, Johnson and Robinson lack nuance, that it “compresses history” in our search for the causes of economic progress. The Cape Colony therefore provides a useful benchmark to find what Austin calls “a more flexible conceptual framework, and a more complex explanation” in understanding long-run development.

\section{Future work}

The noble efforts of historians over the last decade to digitise and transcribe the Cape’s rich archival sources have allowed economic historians to deepen our understanding of the Colony’s economic past. Based on their wage earnings, asset baskets and longevity, Cape settlers attained living standards much higher than an earlier generation of historians surmised, especially in comparison to other eighteenth-century societies. The roots of this prosperity can be found in the natural and institutional environment that was conducive to capital accumulation, settlers’ ability to exploit slave and Khoesan labour, and the entrepreneurship exhibit by the settlers, possibly due to their high levels of human capital and strong social networks.

But there is still much more to this story which future research can elucidate. This would require a return to the archives. Several primary sources,

\begin{thebibliography}{99}
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including the auction rolls (MOOC 10-series), of which only the first five of seventy-five volumes have been transcribed, and the estate accounts (MOOC 14s), which have only been indexed, remain largely inaccessible. Digitising, transcribing and then linking these rich sources – which not only include the quantity of assets but also values – to the genealogical records could provide fertile ground for investigations into inter-generational social mobility and the persistence of wealth. Moreover, tools are now available to map these records spatially through historical geographic information systems (GIS), which would inform our understanding of historical labour movements, migration and trade.

Such ambitious projects, though, cannot be undertaken within ivory tower silos. Little of the research work reported above would have been possible if not for the laborious dedication of archivists and historians over the last few decades – and most would not have been able to predict the possible applications of their efforts. This, then, is a call for greater collaboration – within and between departments, domestically and abroad – in search of the considerable research funds required to continue what is an increasingly expensive undertaking, but also to stimulate new research ideas, new approaches and new networks. This requires an intellectual openness and a willingness to learn the language of the other. The quantitative Cape has yielded many treasures; hopefully, it is only a beginning.

References


Table 1: Mean and median life-span of settlers

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Source: South African Families, Genealogical Institute of South Africa; own calculations.

Figure 1: Four estimates of the size of the settler population, 1652-1800

Source: Both y-axes are in logarithmic scale. Van Duin and Ross use the aggregate figures of the opgaafrolle to calculate population size. Fourie and Von Fintel use the micro-data, collected in the 1970s by Hans Heese and Robert Shell, to calculate aggregate population sizes. Their series closely approximates the Van Duin and Ross series. The Genealogical Institute of South Africa full population estimates, calculated by Cilliers and Fourie, are significantly lower than the opgaafrolle because it excludes all individuals for whom either birth or baptism, and death dates are not available. The trend of their series, though, follows that of the opgaafrolle closely. The probate inventory series (here represented on the right-hand y-axis) shows that the number of probate inventories increase with the rise in the population, except for the 1740s and 1750s, when the trend deviates from the other series.
Figure 2: The size of the four population groups at the Cape, 1701-1895

Source: The y-axis is in logarithmic scale. The estimates for Europeans (settlers and knechts), VOC employees and slaves (VD&R) are from Van Duin and Ross. The second slave estimate is from Shell. The estimates for the Khoe-population (that was part of the Cape economy) are from Baten and Fourie (2011).

Figure 3: Number of individuals in *South African Families*, by decade (1650-1930)

Source: The y-axis is in logarithmic scale. *South African Families*, Genealogical Institute of South Africa; own calculations.
Figure 4: Life-span of the Cape settler population by half-century, 1650-1949

Source: *South African Families*, Genealogical Institute of South Africa; own calculations.

Figure 5: Average value of 28 products per inventory, 1700-1795

Source: 'Probate inventories (Fourie)' is a centred, five-year moving average of the average wealth of a basket of 28 goods calculated by Fourie (2013) for all household probates that owned no slaves (526 households between 1700 and 1790). 'Welfare ratio (De Zwart)' is a real wage series for unskilled workers at the Cape as calculated by De Zwart (2013) divided by the wage required for subsistence. 'Welfare ratio (Du Plessis and Du Plessis) is a real wage series for soldiers stationed at the Cape as calculated by Du Plessis and Du Plessis (2012) divided by the wage required for subsistence.
Figure 6: Comparisons of annual Gross Domestic Product, 1701-1795

Source: Fourie and Van Zanden (2013).