

# **Settler skills and colonial development: The case of the French Huguenots in Dutch South Africa\***

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The emphasis on location-specific factors, such as climate or disease environment, when explaining development outcomes in colonial societies implicitly assumes homogenous settler groups. Using tax records, this paper shows that the French Huguenots who immigrated to Dutch South Africa at the end of the 17<sup>th</sup> century were more productive wine-makers than the established non-French farmers. Standard factors of production or institutional factors usually associated with faster growth do not explain the differences between the two groups. We posit that the skills of the Huguenots – the ability to make quality wines – provided a sustainable competitive advantage that not only explains persistent but diverging productivity differences. We test this hypothesis by dividing the French settlers into two groups: those originating from wine regions, and those from wheat regions. We find that Huguenots from wine-producing regions in France were more productive than their compatriots from non-wine producing regions whose productivity resembled more closely those of the established Dutch farmers. This intuitive but important insight – that home-country production determines settler-society productivity, even in later generations – sheds new light on our understanding of how newly-settled colonial societies develop, and of the importance of knowledge and skills in economic growth.

Keywords: South Africa, Cape Colony, French Huguenots, VOC, wine, slaves

JEL: N37, D31, D63

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\* This paper was prepared for the Economic History Association meetings in Illinois, USA, September 2010. We are grateful to Jan Luiten van Zanden, Stan du Plessis and colleagues at the University of Pretoria, Northwest University (Potchefstroom campus) and the University of the Witwatersrand for their comments and suggestions on earlier versions. We also acknowledge the research assistance of Lydia-Maré Beukes and Ilze Boonzaaier.

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## INTRODUCTION

More recent 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 the incentives for the productive use of resources, which in turn affects the future distribution of resources. Furthermore, 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). Colonial societies are the setting for three important contributions to the field. Acemoglu, Johnson and Robinson (2001) (AJR hereafter) use settler mortality as a proxy for two potential sets of institutional outcomes – 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; 2000; 2005) 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 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 settlers were a homogenous group. In the context of La Porta *et al.* (2008), settlers in different colonies only differed to the extent that the legal origins of the ruling authorities were not the same in each territory. However, no distinction is made to account for the role that various settler groups had in the development of individual colonies.

This paper questions the notion of homogenous settler groups which is implicit in the earlier work. The arrival of French Huguenots in the Dutch Cape Colony is used as a natural experiment in a setting where the local geography and institutions (which were introduced by Dutch East India Company rule) were identical for both the already settled European and new immigrant populations. We show that new French Huguenot migrants were more productive at viticulture than wheat farming, while the established Dutch population specialised in wheat. This impact persists for later generations of settlers: by implication, human capital (knowledge of various types of farming) was transferred within various groups across generations, while culture had a less pronounced role in explaining this phenomenon. This is because in later generations, the French culture was completely assimilated into the Dutch society. In particular, the differences between Dutch and French descendants persist in wine production, suggesting that very specific skills are transferred to ensure later generations' success. This is not the case for wheat production, where convergence across groups was possible, suggesting that more generic skills could be learned to attain success.

We develop this hypothesis further 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, we would expect no differences in their use of capital and labour and in their formal and, especially, informal institutions and shared cultural identity. Their skills set is therefore exogenously determined by the geography within their homeland.

To demonstrate these propositions, we use the *opgaafrolle* which were recorded for the purposes of tax collection by the VOC. Detailed household-level inventories and records of

agricultural 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 obligation. The data used in this analysis spans the period from 1700 to 1773.

What explains the differences in productivity between the French and Dutch and between the Huguenots from wine-producing regions and those from non-wine producing regions? We refute a number of standard indicators that may explain the productivity differentials, including capital ownership, labour and household composition (household size, wage labour and slave use) and informal institutional attributes (education, language and religion). Within the Huguenot sample, our empirical results show that, controlling for different factors, the Huguenots from the wine-producing regions also practised viticulture more effectively in the Cape than their compatriots from elsewhere in France. This latter group more closely resembled their Dutch and German counterparts, suggesting that formal and informal institutions were not the defining factors determining the mode of production and productivity in the colony. We posit that specific wine-making skills of the Huguenot settlers were the main factor influencing their decision to make wine, and their ability to do so more productively vis-à-vis the Dutch and Huguenots from non-wine producing regions.

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 required a different production function to cattle and to some extent wheat farming. Viticulture was associated with short periods of seasonally high labour demand. In the absence of capital equipment (which would only be available by the end of the twentieth century), viticulture necessarily followed labour intensive production (at least during harvest season). While the indigenous Khoikhoi could potentially be forced to supply their labour, Dutch policy prevented farmers from enslaving them. Following the devastating smallpox epidemic that ravaged the Cape Colony in 1713 (with an estimated 9 out of every 10 Khoikhoi killed), the Cape policy unit in 1717 suggested to the Lords XVII in Amsterdam to import slaves rather than encourage European immigration. Wine making thus raised the demand for labour, encouraging slave imports and, as our earlier work shows, increasing inequality (Fourie and von Fintel 2010). Following the Engerman-Sokoloff hypothesis, severe initial inequality sustains unequal institutions that result in a lower level of comparative development today. South Africa is a case in point.

Our results have important implications for the literature on colonial societies. Colonial institutions are shaped not only by whether settlers stay or not (as per AJR), which legal system they adopt (as per La Porta *et al.*), or their language, religion or beliefs, but by the set of skills, knowledge and experience brought from their country of origin. Skills affect labour productivity and their areas of specialisation in the adopted homeland. This determines the incentives for productive activity and shapes the future distribution of resources and growth potential of the colonial settlement.

## SETTLERS, INSTITUTIONS AND HUMAN CAPITAL

While the debate still rages on as to which of geography or institutions explain economic development, it has arguably become more refined. Initial proponents of the geography-endowments hypothesis explained economic underdevelopment as a result of the quality of land, climate, the disease environment and labour availability, with each influencing the production technologies available. Temperate zones, for example, are considered to

produce higher crop yields, provide more suitable living conditions and are more conducive for technology-augmenting production techniques vis-à-vis tropical zones (Diamond 1997; Bloom and Sachs 1998; Landes 1998; Sachs and Warner 2001; Sachs and Malaney 2002). Landlocked areas far from major markets also struggle to trade (Frankel and Romer 1999; Anderson and Van Wincoop 2004), while ruggedness may increase trade costs and inhibit trade (Nunn and Puga 2009).

Recently, the institutional perspective has emerged as the more dominant view. Building on the role of geography, Engerman and Sokoloff (2000; 2005) argue that initial factor endowments (such as climate, soil and labour availability) influence the level of inequality early in a region's development. However, while it is not the geographic features that constrain or promote growth, the level of early inequality influences the type of political and economic institutions adopted. Severe inequality would result in growth-debilitating institutions that preserved the ruling elite's hegemony, by way of a narrow voting franchise, reserved property rights and low access to education. Easterly (2007) empirically verifies the Engerman-Sokoloff hypothesis, finding that agricultural endowments predict inequality, and that inequality predicts development.

In a seminal contribution, Acemoglu, Johnson and Robinson (2001) posit that geography's impact on today's development levels manifest through the colonial disease environment. They argue that two types of colonisation strategies were adopted: a favourable disease environment 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 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, Australia and New Zealand are examples of the former, while extractive institutions were mostly limited to the tropical countries of Congo, Ghana, Peru, Mexico to name a few. Moreover, AJR argue that these institutions remained after independence, influencing modern-day development levels. Easterly and Levine (2003) also show that measures of geography only explain cross-country differences in income today through their impact on institutions.

La Porta *et al.* (1997; 1998; 2008) were the first to emphasise settler-specific factors to explain cross-country variation in colonial settlements. They show that the legal origins of settlers determine the path of economic development through the laws pertaining to, in part, investor protection, the quality of their implementation and ownership concentration. While not without criticism (Klerman and Mahoney 2007), Le Porta *et al.* move closer to identifying the *mechanisms* through which colonial institutions influence later economic performance.

The attempts of the early institutionalists to explain cross-country variation have instigated further attempts at identifying these exact causal mechanisms. Forced labour systems (Nunn 2008; Nunn and Wantchekon 2009; Dell 2010), property right systems (Banerjee and Iyer 2005), public investment and infrastructure (Huillery 2009), technology and innovation (Mokyr 2002), culture (Guiso, Sapienza et al. 2006; Tabellini 2008), religion (Jha 2008) and values (McCloskey 2006) all influence economic outcomes through institutions.

One of these, education – or more broadly, human capital – seems to be a particularly persuasive factor, 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 Woessmann (2008) find that the relationship between 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”.

History also provides a valuable laboratory to test education’s impact on economic outcomes, although it requires innovative ways of quantification. Literacy rates are often the most reliable historical proxy for education, and are used widely to measure human capital’s impact on development. Chaudhary, for example, identifies the causes of illiteracy in India in order to explain educational, and consequently economic, inequality (Chaudhary 2009; Chaudhary 2010). Baten and Van Zanden (2008) use book production as a proxy for literacy, showing that those regions that had greater book production also yielded higher growth rates, controlling for various other factors. Another innovative technique to measure numeracy is age heaping, where poorly educated individuals in historical sources are found to round their age more often than the well educated. These studies reveal similar positive influences of human capital accumulation on growth (A’Hearn *et al.* 2009; Crayen and Baten 2010).

Education also effects growth through institutions. Bolt and Bezemer (2009) show that an instrument for colonial human capital better explains growth performance than instruments of extractive institutions, as per AJR. Their results are also stable when including measures of geography and legal origins in their model specification. Of course, while all of these are theoretically plausible, problems of endogeneity and multicollinearity haunt the researcher. Bhattacharyya (2009) uses dynamic panel regressions to empirically isolate the impact, and finds that both human capital (embodied in schooling) and institutions cause growth. While Bhattacharyya (2009) does not explain the mechanism through which schooling might affect institutions and growth, two recent examples by Becker and Woessmann (2009) and Nunn (2009) illustrate how religious institutions may impact growth through education. Becker and Woessmann (2009) posit that Weber’s hypothesis of the Protestant ethic is, in fact, captured in the higher literacy rates of the Protestants vis-à-vis Catholics. While Protestantism led to better economic performance (as per Weber), it also led to better education. Using evidence of Christian missionaries in Africa, Nunn (2009) shows that Protestant missionaries had a significant impact on Christian conversion rates, educational outcomes and economic performance indicators. Again, the link is through education.

Mostly because of data constraints, these studies often treat human capital (or education) as a homogenous concept. In reality, of course, it is multi-faceted: human capital can be acquired in different ways (learning-by-doing, formal education), and consists of different skills or capabilities (innate talents, trained competences or specialised knowledge acquisition). One distinction that is relevant for our later discussion is between skills and literacy, which we classify as two different capabilities. The former is associated with learning-by-doing while the latter reflects more formal education. We also distinguish between specific skills and generic skills. This derives from the literature on capability theory (Langlois and Robertson 1993; Argyres 1996; Teece, Pisano *et al.* 1997; Nelson and Winter 2002) which goes beyond the standard production function approach to explain organisational structure. We adapt Jensen and Meckling (1992) in defining “specific skills” as skills that are difficult (or costly) to transfer among agents; in comparison, “general

skills” are easy and inexpensive to transmit.<sup>4</sup> Reasons why “specific skills” are more difficult or expensive to acquire are not clear, but may be due to their technical nature or simply the speed at which knowledge can be transferred. We return to these issues in the final sections.

The wealth of cliometric studies that are emerging to identify the causal mechanisms determining economic performance have repeatedly highlighted the role of human capital as a key building block. Yet, more narrowly defined instruments are often difficult to find and could potentially be correlated with omitted variables. AJR’s disease environment variables, for instance, might potentially influence both domestic institutions and various education outcomes. What is needed, then, is a natural experiment where all other factors are held constant, with only the variable of interest altered. The arrival of French Huguenots in the Cape Colony in 1688 offers such an experiment.

## THE HUGUENOTS AND THEIR ARRIVAL IN THE CAPE COLONY

The first Europeans to settle in South Africa arrived 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, and his initial plans were 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 traded with the indigenous population of Khoikhoi.

Van Riebeeck soon realised the difficulty in supplying 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. Based on 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 dominant economic activity of the farmers, 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, instated in 1598 by Henry of Navarre, sought to create circumstances within which French Roman Catholics and Protestants could co-exist peacefully. With the murder of Henry of Navarre in 1610, however, religious intolerance and violence surfaced once more, which culminated in the Revocation of the Edict. 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 to the more remote French colonies of North America, and the Cape Colony (Morison 1972).

Only 159 French Huguenots arrived in 1688 at the Cape, augmenting the numbers of free farmers by nearly a third. Even given these new arrivals, the Colony expanded slowly. The supply of agricultural produce only exceeded the demand from local residents and ships after 1700. Due to frequent harvest failures and epidemics, it would be another three decades before supply would stabilise above demand. After 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 subsistence lifestyle.

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<sup>4</sup> Jensen and Meckling (1992) refer to specific versus general *knowledge*.

While Van Riebeeck 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. The arrival of Huguenots, however, shifted production towards viticulture, also satisfying the demand for alcohol from the growing numbers of passing sailors and soldiers (and for profit from the mercantilist Dutch East India Company) (Boshoff and Fourie 2008; Boshoff and Fourie 2010). In the following section, we show empirically that the Huguenots produced more wine – and did so more efficiently – than the other settlers.

The Huguenots that left France made significant contributions to the domestic economies wherever they settled. Scoville (1951; 1952; 1952) documents the impact of Huguenot immigration on England, Ireland, Holland, Germany and Switzerland, finding evidence of improvements in especially the textile (high-quality fabrics such as silk) and clothing (including hat-making) industries (Rothstein and Thornton 1960; Mathias 1975). Not only did they contribute directly to production, but they established schools, improved literacy and diffused knowledge through on-the-job training programmes in their adopted countries (O'Mullane 1946). Because of this, cities were eager to attract immigrants and provided various incentives to entice them to settle permanently.<sup>5</sup> Moreover, the emigration en masse of the wealthiest Huguenots had a highly detrimental impact on the French economy (Scoville 1953).

For these same reasons, Simon van der Stel, then commander of the Cape Colony, was eager to attract Huguenots to the Cape. He hoped to augment the existing settler population to ensure a stable supply of fresh produce for the Company's ships. While many Huguenots relied heavily on Company and Church support, struggling through the first few decades, the rapid growth in the wine industry during the eighteenth century suggests at least some tentative correlation between French arrival and output growth. It is therefore strange that few scholars have empirically investigated the impact of the French on Cape Colony production.

While the earlier historians speak in romantic terms of the French arrival - highlighting especially their significant demographic contribution to the Afrikaner people (Nathan 1939) - recent investigations into the early Cape economy have attributed less weight to the impact of the Huguenots (Guelke 1980; Schutte 1980; van Duin and Ross 1987; Giliomee 2003), often neglecting to mention their economic impact. Nevertheless, in what is now the standard text on the French Huguenots in South Africa, Coertzen (1997) notes that before the Huguenots' arrival, the Dutch farmers (knowing little about wine-making) focused mostly on wheat production. It was only through the endeavours of the Company (notably the Commander Simon van der Stel and his son Willem van der Stel) that wine production took off before the arrival of the Huguenots. On arrival, according to Coertzen (1997), the Huguenots did not all take up viticulture, mostly due to 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 farmers did pursue viticulture soon after settlement, notably those that "with some certainty could be linked to possessing some knowledge of viticulture". These were Isaac Taillefert, Pierre Joubert, Jacques Malan, François Retif, Josue Cellier, Paul Couvret and the three brothers, Pierre, Jacques and Abraham de Villiers (Coertzen 1997:111).

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<sup>5</sup> Except in the case of Geneva, Switzerland, where there was a strong local opposition to their settlement.

The wine produced in the Cape Colony throughout the period of Dutch rule was widely considered to be of inferior quality to that of France.<sup>6</sup> For this reason many historians have portrayed the role of the Huguenots in the Cape wine industry with reservation (Bolsmann 2008). While there was some improvement in quality after Huguenot arrival (Coertzen 1997), the general consensus is that the few French viticulturalists were not necessarily better than their Dutch or German counterparts. While some Huguenot families seem to have been very successful only two decades after arrival, others “moved backward and gave up when the droughts and plagues hit them” (Coertzen 1996). He attributes this to the “hard work and an enterprising spirit” of the successful farmers and, to some extent, marrying into wealthy families. The skills brought over from the homeland seem to have been relatively unimportant.

There is some evidence to support the notion that French Huguenots elsewhere did “export” some knowledge of viticulture. Huguenots who settled in the American colonies (in contrast to those that 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 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). According to Hirsch (1930), had a £250 000 bribe not been offered to the British Minister to the American Department in the late eighteenth century to withdraw his support from the American wine industries, “America might easily have become one of the greatest wine marts of the world and France’s most daring rival” (Hirsch 1930:5).

In the following sections we consider the possible impact that the French settlers had on Cape Colony production of wine. Differentiating between French and non-French farmers, we show that French Huguenots were more likely to produce wine than wheat than their non-French compatriots, and did so more efficiently. We also split the French Huguenots into two groups: those originating from regions in France where wine was made versus those regions with little or no wine production. If we find that wine production was dominant amongst those farmers originating from regions in France which also produced wine, it supports our hypothesis that settler skills matter for colonial development.

## CONSTRUCTING THE DATA

The *opgaafrolle* are censuses of all free men at the Cape that were drawn up annually for tax purposes by the Dutch East India Company. A selection of these *opgaafrolle* – spaced roughly every five years and subject to the quality of archival sources – have been digitised by the authors based on earlier work by historian Hans Heese. A more complete description of these censuses can be found in Fourie and Von Fintel (2010).

Apart from household members, slaves and weapons, the censuses included 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 that farmers underreported actual stock and flow variables to evade Company taxation. Van Duin and Ross (1987) and Brunt (2008) have adjusted these figures upwards based on projections of

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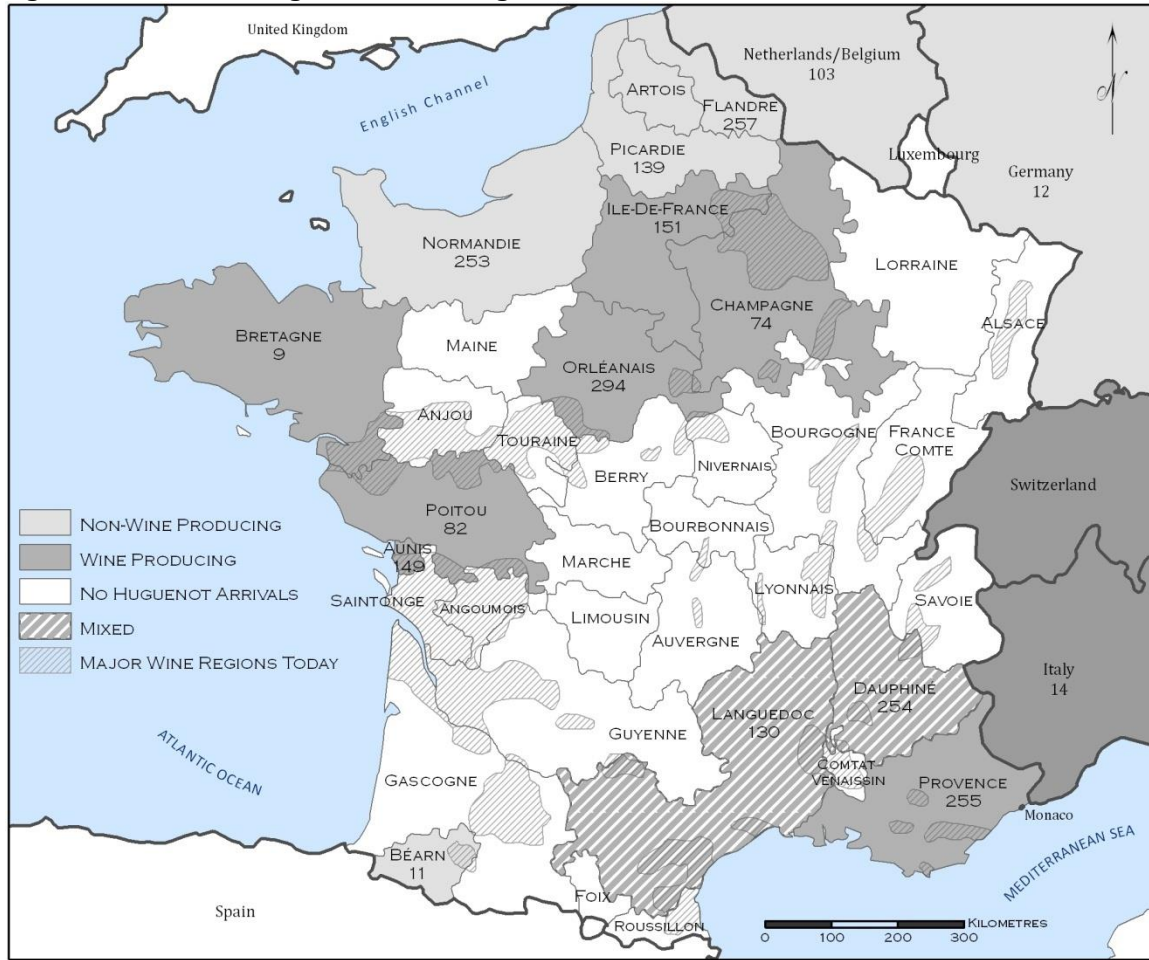
<sup>6</sup> The notable exception being the sweet wines of Constantia which was sent to dignitaries across Europe and which Napoleon requested while in exile on St. Helena.



consumption in the Cape Colony. Although Fourie (2010) argues that secondary and tertiary production was much greater than previously assumed and that (based on an analysis of probate inventories) a too narrow focus on agricultural indicators underestimates total production in the Cape Colony, there is no alternative to using the adjusted *opgaafrolle* as the only representative, multiple cross-section household-level data source. We use the raw census data, given the critique of Brunt (2008) of the Van Duin and Ross (1987) adjustments. Given that we focus on comparative production between households, aggregate adjustments would not influence our results if we assume that underreporting was random across the groups we wish to compare.

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 the Huguenot dummy, we trace the surnames of each of the 159 Huguenot arrivals for all the censuses after 1688. A subset of French provinces traditionally excelled at wine production while other regions within that nation, as well as Holland, did not enjoy this advantage. Their competitive advantage lay in the cultivation of wheat. A dummy variable is therefore constructed for surnames of settlers that originated from provinces in France that were wine-producing regions during the late seventeenth century. Here we follow the guidance of historians, primarily Boucher's *French Speakers at the Cape: The European background* (Boucher 1981). Figure 1 provides a visual presentation of these areas. The numbers provided on the map represent the number of Huguenot households in our dataset over all years. While we use historical sources to identify wine-producing regions, we also show that these are roughly correlated with Encyclopaedia Britannica's (2009) major French wine regions today.

Figure 1: Provincial origin of French Huguenots



To assess how the initial advantage was passed down to younger generations, we construct a dummy from historical records to indicate when Dutch settlers married Huguenot women, and similarly Huguenot women originating from wine-producing regions.

A measure of formal human capital in the French sample is also included. We obtain this from Dorothee Crayen and Jörg Baten's age-heaping estimates of human capital in pre-industrial France (Crayen and Baten 2010). This variable represents the extent of numeracy in the areas from which each of the French settlers came. Potentially more numerate farmers would perform better at their trade. However, numeracy (a more general skill) may not necessarily be relevant to farming, and in particular wine farming (which possibly requires very specific knowledge). In this manner we separate the impact of generic from specific skills on production.

Given the predominance of agricultural indicators, we remove all non-farmers (those households with zero scores on all agricultural variables) from the 17 292 household observations in our dataset to exclusively focus on the farming population. There is a possibility that we remove rural actual farmers, but who simply had no farming assets on record. 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 wealth (especially housing and trading stock).

## RESULTS

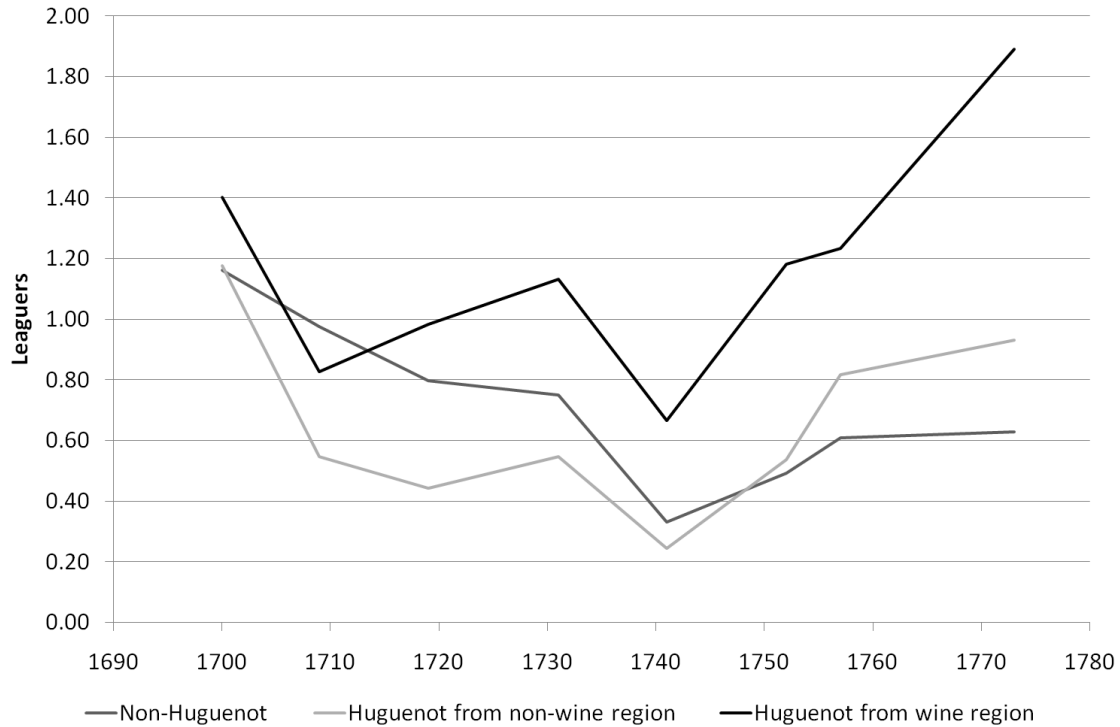
We first commence with a descriptive analysis to establish whether differences did indeed exist between the various groups of farming settlers. Following this, an extensive set of regression models uncovers the patterns that underlie the differences, and also considers whether these changed over time.

Firstly, we use linear ANOVA regressions with three group dummies. Dummy variables for each group represent that group's "inherited" competitive advantage. Controls for other important determinants of production are also introduced. Most notably, slavery serves as one of the strongest predictors of success and most closely proxies for the role of capital (which was otherwise largely absent). European labour (*knechts*) is also controlled for. Secondly, quantile regressions are run, weighted at the 80<sup>th</sup> percentile, because a large bottom tail in each group produced similarly poor amounts. Thirdly, we limit the sample to only the Huguenot descendants. This more focussed analysis allows us to use French human capital data calculated by Crayen and Baten (2010). The non-numeracy scores are included to control for the "generic skills" component of human capital. This allows us to conclude whether the dummy variable estimates do in fact capture very specific characteristics of the separate populations, or whether they simply represent an overall measure of "generic" human capital found within these groups.

### *Descriptive results*

In Table 1 (appendix) the average per capita wine and wheat production per household is depicted by group over time. While no formal tests for mean differences are shown, it is evident that in all years wine production was strongest amongst descendants from French wine producing regions. This is illustrated in Figure 2, where the mean per capita household output for various years between 1700 and 1773 are plotted. Initially there appears to be little difference between the three groups (the non-Huguenots, the Huguenots from wine-producing regions and the Huguenots from non-wine producing regions). The first difference between Huguenots from wine-producing regions and the other two groups appear in 1719 and the disparity remains and increases towards the end of the period, i.e. there is already some evidence in the descriptive results that point to an increasing advantage in viticulture at the Cape for Huguenots from wine-producing regions. While this suggests that the inherent advantage by region of descent was present from the beginning, these initial advantages 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 compared to the first arrivals of wine-producing Huguenots. This is investigated more closely in the regression models, when controls for the use of slaves and other labour are introduced. However, as a first observation, it is useful to remember that some of the first French arrivals required some time to establish their operations and were plagued by droughts and other hardships (as mentioned above). Once they were successfully settled, their competitive advantage could bear fruit.

Figure 2: Mean household per capita output of wine, 1700-1773



Cumulative density functions corroborate this evidence, but move the focus away from averages to the entire distribution (see Figures 3 and 4 in the Appendix). In 1700 there is no stochastic dominance in wine production for any group, suggesting that the “average” dominance of the descendants from wine producing regions is driven by a long upper tail. Consequently, the “clear” success of this group in the early period is only true for a small group of farmers that could speedily adjust to local conditions and establish high levels of production. Indeed, the smaller farmers lagged behind, indicating that there is a scale requirement for the specific skills of the Huguenots to bear fruit. However, in later years a clearer ranking emerges across a slightly larger portion of the upper tail, with Huguenots from wine-producing regions performing consistently the best. Nevertheless, up until the 60<sup>th</sup> to 70<sup>th</sup> percentile, most farmers in all groups hardly produced any wine. The true differences emerged at the 80<sup>th</sup> percentiles in later years, suggesting that it was only the most successful farmers that could distinguish themselves on the basis of their heritage. For this reason, much of the model based analysis also makes use of quantile regressions at the 80<sup>th</sup> percentile to isolate where the relevant impact appears in the production distribution. Furthermore, French descendants from non-wine producing regions more closely resembled non-Huguenots in early years, and then gradually converged on those descended from wine-producing regions.

A similar story emerges for wheat production, though now non-Huguenot settlers are the clear winners (see Table 1). This group had, however, already established their presence at the Cape before the arrival of the French, so that the initial advantage may only be a reflection of more mature farming operations. In most periods, the Huguenots from wine-producing regions appear to be the poorest wheat farmers, probably reflecting their focus towards 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.

The distributional analysis also sheds light on the finer dynamics at play in wheat production. Again, the distribution is highly skewed, so that it is only the most successful farmers that exhibit the differences we are interested in. Initially, both groups of French settlers in the top quintile perform equally poor relative to the success of non-Huguenot descendants.<sup>7</sup> Gradually this dominance deteriorated over time so that resources other than their initial advantage could allow convergence, and even reversals in rankings to appear. Indeed, it appears that the initial advantage required to be successful in wheat production was not as entrenched as in wine production, so that both groups of Huguenots could converge on the more established farmers.

#### *Model-based analysis*

Simple ANOVA-type regressions are conducted to verify the descriptive findings. The coefficients of the two applicable dummy variables are reported in Table 2: Huguenots descended from wine-producing regions, and Huguenots descended from non-wine producing regions. The non-Huguenots are therefore the control group.

We first use the OLS results to establish differences between groups in wine and wheat production at the mean (columns 2a, 2b, 2e and 2f).<sup>8</sup> Secondly, the results are compared by weighting at the 80<sup>th</sup> percentile using quantile regressions (columns 2c, 2d, 2g and 2h).

The first set of results suggests that we cannot reject the main hypothesis of this paper: that the Huguenots and non-Huguenots were quantitatively different. At the mean, descendants from wine producing regions consistently and significantly produce between 175% and 205% more wine than non-Huguenots per capita across the period. For descendants from non-wine producing France the premium only becomes significant from 1741, and ranges from a magnitude of 38% to 40%.

Given that the cumulative density functions report most activity to occur at the top of the distribution, columns (2c), (2d), (2e) and (2f) report quantile regressions run at the 80<sup>th</sup> percentile. Columns (2a) and (2b) reveal that Huguenots from wine-producing regions did perform better at wine production in the Cape than the non-Huguenots, on average. This affect diminished over time, perhaps suggesting that the initial levels of specific skills inherited from France were “lost” over time by the average farmer. This issue is considered below. Importantly, the average Huguenot from non-wine producing regions performed no differently from other settlers in most periods. However, once controlling for the use of slaves, it is evident that the average Huguenot from non-wine producing regions could mimic the specific skills of their French counterparts. Among average farmers, therefore, specific skills could, to some extent, be substituted with capital (proxied by the implementation of slaves).

Columns (2c) and (2d) reveal an important result: a large and significant *increase* in the size of the coefficients for the wealthiest Huguenots from wine producing regions. Given the intuitive inference that settlers’ initial advantage should dissipate as the French

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<sup>7</sup> However, those in the very top of the tail are Huguenots, suggesting that this was an exceptional group of elites rather than the norm.

<sup>8</sup> The complete set of regressions is available from the authors on request.

amalgamate into Dutch society, this is a surprising result and a conundrum that much of the rest of this paper attempts to explain.

While Huguenots from non-wine French regions also exhibit an advantage over non-Huguenots across most of the period at the 80<sup>th</sup> percentile, this advantage is significantly smaller than for Huguenots from wine-producing regions, especially at the mean. This seems to suggest that there is some common denominator in the French population from which a productivity advantage arise. However, as we show in Table 4, this advantage disappears when we control for the marriage patterns of French Huguenot wives, suggesting another mechanism through which the advantage is transferred.

Considering wheat production, a similar pattern exists at the mean (columns 2e and 2f), where the wine-descendant Huguenots perform statistically better and with similar magnitudes with respect to wine. However, different to wine, this result diminishes and ultimately disappears over time. Farmers from non-wine producing France exhibit smaller advantages in wheat production compared to the non-Huguenots, which eventually become negative.

Table 2: Huguenot dummy coefficients of wheat and wine production

Group	Year	Wine production				Wheat production			
		OLS		80th percentile		OLS		80th percentile	
		No controls	Controls for capital and labour	No controls	Controls for capital and labour	No controls	Controls for capital and labour	No controls	Controls for capital and labour
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Hug from wine region	1700	2.15***	2.61***	0.29***	0.79***	1.73***	2.60***	-0.18	0.89***
	1709	1.25***	1.66***	-0.18	0.92***	1.41***	2.00***	-0.73***	-0.22***
	1719	1.39***	2.01***	0.01	0.77***	1.72***	2.46***	-0.61***	-0.51***
	1731	1.74***	2.79***	1.10***	2.45***	0.61*	1.75***	-0.98**	0.12**
	1741	1.81***	1.82***	1.35***	6.21***	1.24***	1.07***	-0.18	0.17
	1752	1.95***	1.72***	7.51***	6.47***	0.87***	0.70**	0.18	6.79***
	1757	1.62***	1.26***	7.45***	6.26***	-0.11	-0.16	0.58***	0.00***
	1773	1.70***	0.60***	7.86***	4.01***	0.17	-0.11	0.00	0.00
Hug from non-wine region	1700	0.38	0.49	0.51***	1.01***	-0.31	0.96**	0.04	0.86***
	1709	0.27	0.96**	-0.37**	0.28***	0.66*	1.50***	-0.76***	-0.11**
	1719	-0.30	0.98**	-0.67**	-0.26	0.95**	1.51*	-0.36	0.41***
	1731	0.38	1.59***	0.00	1.15***	0.07	-0.33	0.05	0.16**
	1741	0.48**	0.59**	0.41**	5.26***	0.42	-1.36***	0.49**	-1.18***
	1752	0.51**	0.19	6.32***	0.00***	-0.20	-0.48**	-0.92***	0.00**
	1757	0.22	0.42**	5.81***	0.00	-0.69***	-0.31**	-7.13***	0.00***
	1773	0.40**	0.55***	0.00	0.00***	0.56***	0.14	8.29	0.00

NOTES:

Total farmer sample. Control group: non-Huguenots. Capital is proxied by the use of slaves. Interactions with each group (not shown) illustrate how each group was able to use capital conditional on and complementary to their initial inherited skills. Similarly (paid) labour is represented by the number of European *knechts* employed. Wine and wheat are converted to household per capita levels so that household size does not bias results. \*\*\* denotes significance at the 0.1% significance level, \*\* at 1% and \* at 5%.

Three control variables are used as proxies for labour, physical capital and human capital. The Cape was a slave economy, and the slave population exceeded that of the settler population throughout the eighteenth century. Slave ownership was also widespread (Guelke and Shell 1983; Fourie and Von Fintel 2010), and with the strong prohibitions on manufacturing and high tariffs on imports, slaves was an important investment in physical capital. The full regressions, reported in the appendix, show that slaves had a consistently large role to play in both wheat and wine production. We also include interaction terms between the Huguenot dummies and slave ownership. These are mostly insignificant at the mean, but become consistently negative and significant for Huguenots from wine-producing areas at the 80<sup>th</sup> percentiles, suggesting that other groups used slaves (physical capital) to substitute for the advantage the Huguenots from wine-producing areas maintained.

*Knechts* were European labourers hired by farmers. Their numbers are quite low throughout the period reflecting their high price relative to slaves. Yet, they also yielded positive and significant coefficients, suggesting that more *knechts* resulted in higher production. Further interaction terms provide no consistent results.

We repeat the estimations above with only Huguenots in the sample. By only including Huguenots, we exclude all cross-group unobservable differences that may arise from comparing the Huguenots with the rest (Dutch, German, British, Scandinavian and a few Free Blacks). Moreover, we can now include an additional explanatory variable – non-numeracy, as a proxy for human capital – to possibly explain the disparity between the French originating from wine-producing regions and those that came from non-producing regions.

Table 3: Huguenot from non-wine French region dummy coefficients: wheat and wine production with only Huguenots in sample

Year	Wine				Wheat			
	OLS		80th percentile		OLS		80th percentile	
	No controls	Controls for capital, labour and numeracy	No controls	Controls for capital, labour and numeracy	No controls	Controls for capital, labour and numeracy	No controls	Controls for capital, labour and numeracy
1700	-1.77***	-2.30***	0.22***	-0.69***	-2.03***	-2.03**	0.22	-0.08
1709	-0.97***	-0.81	-0.18*	-1.02***	-0.75	-1.22*	-0.03	-0.83***
1719	-1.69***	-1.08*	-0.68	0.47***	-0.77*	-0.58	0.25	0.76***
1731	-1.35***	0.28	-1.10***	1.26***	-0.54	-2.08***	1.03***	0.12***
1741	-1.33***	-0.70	-0.94***	-1.11***	-0.82*	-2.53***	0.67*	-1.58***
1752	-1.43***	-1.86***	-1.19***	-6.15***	-1.08***	-2.41***	-1.10***	-6.84***
1757	-1.40***	-1.32***	-1.64***	-6.31***	-0.59**	-0.45*	-7.71***	0.00***
1773	-1.30***	-0.51**	-7.86***	-5.89***	0.39*	-0.39*	8.29*	0.00***

NOTES:

Only Huguenot sample. Control group: Huguenots from wine-producing regions. Capital is proxied by the use of slaves. Interactions with each group (not shown) illustrate how each group was able to use capital conditional on and complementary to their initial inherited skills. Similarly (paid) labour is represented by the number of European *knechts* employed. Non-numeracy controls are sourced from Crayen & Baten's (2010) whipple index of age heaping in French regions. Wine and wheat are converted to household per capita levels so that household size does not bias results. \*\*\* denotes significance at the 0.1% significance level, \*\* at 1% and \* at 5%.

Table 3 presents the results. We again find clear evidence that the Huguenots originating from wine-producing regions are significantly more productive in viticulture than their Huguenot compatriots who originate from non-wine producing regions. This trend is consistent at the mean and at the 80<sup>th</sup> percentile, controlling for capital (slaves) and labour (*knechts*), across the entire period.<sup>9</sup> While the Huguenots from wine-producing areas also appear to be better at wheat production, the statistical evidence is slightly less convincing than for wine production.

Including a measure of formal human capital (non-numeracy, as defined earlier), we find no substantial change in the coefficients of the relevant dummies. While the numeracy variables are statistically significant (not shown), the coefficients are economically marginal and often have reverse signs. There is thus little evidence that formal education in France explained farming productivity at the Cape. These results are interpreted below.

#### INTERPRETATIONS AND ROBUSTNESS CHECKS

The arrival of the French Huguenots increased the production of wine at the Cape. A selection of the French descended from wine-producing areas was significantly better at viticulture than either their French compatriots from non-wine producing areas, or the non-Huguenots. While the mean French farmer within two generations lost his inherent advantage, an elite group of French Huguenots from wine-producing areas maintained and augmented its advantage in wine-making. While the Huguenots were initially also more productive in wheat farming, they soon lost this advantage. The results therefore suggest that Huguenots that specialised in wine production maintained an inherent advantage vis-à-vis the other groups in viticulture which could not be transferred to or sustained in wheat production.

We therefore need to answer two related questions: What could explain the initial advantage in farming? And, why was the initial advantage maintained and even increased in viticulture, but disappeared in wheat production?

The first suspects to explain the initial advantage are of course the standard factors of production – land, capital and labour. Maybe the French had access to more or better land, a greater stock of capital or access to more labour? Given that no information on land is contained in the *opgaafrolle*, we turn to historical sources and anecdotal accounts.

The Huguenots settled mostly in the areas today known as Franschoek (literally meaning French corner), Simondium, Drakenstein and Dal Josafat (today merged into the town of Paarl) 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. All farmers were allocated similar land sizes – 60 *morgen* each (which equal roughly 51 hectares) – on condition that they cultivate it within the first three years.

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<sup>9</sup> We notice that in 1719 and 1731 (at the 80<sup>th</sup> percentile), the Huguenots from non-wine producing regions actually perform better than the Huguenots from wine-producing regions. This advantage seems unimportant; it is relatively small, non-existent at the mean and disappears in 1741 with the Huguenots from wine-producing regions becoming more productive and sustaining this advantage until the end of the sample period.



O.F. Mentzel, travelling through the Cape Colony roughly a century after the arrival of the Huguenots, provides the following summary of the French influence:

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." (Mentzel 1944:64, 65)

While Mentzel refers to the "extraordinary fertility" of the region, it is clear from his elaboration that he refers in fact to its *productivity*, rather than soil quality or other environmental characteristics. His observations therefore correspond closely with our empirical results. He refutes the notion that the French had any advantage in capital or land; the greater productivity of the Huguenots, according to Mentzel, is simply due to their greater "diligence and untiring industry", reflecting Coertzen's (1996) observation relating to "hard work and an enterprising spirit". To test whether the results are driven by one "favourable" region, we exclude the Huguenots that settled in the Franschhoek district from our sample (Table 4, columns a, b, c and d). While the coefficients are smaller, they are still positive and significant and reflect the narrative above. The results imply that some unobservable characteristic is at play, rather than an advantage gained through the size and fertility of the land.

While no significant differences existed in the quality and quantity of land or capital, did the French possibly have access to more or better labour? At the household level, there is no indication from historical records that the fertility of the French exceeded that of the Dutch. Moreover, given that our regressands are calculated as household per capita quantities, we implicitly control for the size of the household. We also control for *knechts* (European servants) in our estimations, which have little impact on the heritage dummies. There is thus no reliable evidence to suggest that the French were more productive because they had access to or utilised more labour resources. However, there is some evidence to suggest that the Huguenot from non-wine producing regions were able to mimic the advantage that their French compatriots possessed by using physical capital, i.e. more slaves. At the margin, therefore, these producers attained similar quality wines but at higher costs.

Could the differences between the Huguenot 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 of course dissimilar to the investment-inducing mechanisms posited by La Porta *et al.* (2008) in explaining cross-country variations in economic performance. There is also little indication that language or culture, broadly defined, could have mattered. The French language disappeared within two generations at the Cape. Simon van der Stel, Governor at the Cape at the time of the Huguenot's arrival, made it clear that he expected them to amalgamate fully into Dutch society. The only concession that was made was to provide a small church and a minister to preach in French. However, there should have been little Weberian differences as both the Huguenots and the Dutch were Protestant.

Table 4: Huguenot dummy coefficients for alternative tests

Group	Year	Excluding Franschhoek				Including Franschhoek	
		Mean		80th percentile		Mean	80th percentile
		No controls	Controls for capital and labour	No controls	Controls for capital and labour	Controls for capital, labour and Huguenot wives	
		(a)	(b)	(c)	(d)	(e)	(f)
Hug from wine region	1700	2.04***	2.41***	0.29***	0.79***	2.15***	2.03***
	1709	1.00**	1.80***	0.00	0.92***	1.25***	1.74***
	1719	1.07***	1.89***	-0.39*	0.14	1.39***	1.42***
	1731	1.60***	2.60***	0.92***	2.41***	1.74***	2.49***
	1741	1.38***	1.74***	1.25***	6.21***	1.81***	1.09***
	1752	1.75***	1.60***	7.16***	6.19***	1.95***	1.67***
	1757	1.21***	0.97***	7.26***	5.43***	1.62***	0.69***
	1773	1.33***	0.74***	7.48***	6.00***	1.70***	0.27
Hug from non-wine region	1700	0.67	0.76	0.51***	1.01***	0.38	-0.32
	1709	0.13	0.90**	-0.37	0.51***	0.27	0.58
	1719	-0.36	1.13***	-1.36***	-0.26	-0.30	0.53
	1731	0.27	1.40***	0.00	1.15***	0.38	1.39***
	1741	0.54**	0.61**	0.41**	5.26***	0.48*	-0.16
	1752	0.50**	0.17	6.32***	0.00	0.51*	0.16
	1757	0.21	0.38*	4.83***	0.00***	0.22	-0.11
	1773	0.43**	0.62**	0.00	0.00	0.40*	0.22

NOTES:

Total farmer sample, wine output. \*\*\* denotes significance at the 0.1% significance level, \*\* at 1% and \* at 5%.

Many French Huguenots also took Dutch wives, and vice versa. We investigate this link in Table 4 (columns e and f). We include a dummy for Dutch men who married Huguenot women, to see whether there is some ‘spillover’ of initial advantage to non-Huguenot families. The coefficient on the dummy for Huguenots from wine-producing regions (reported in 4e and 4f) is not quantitatively different from our earlier narrative. Yet, the higher productivity of the Huguenots from non-wine producing regions vis-à-vis the non-Huguenots seems to have disappeared (compare column 2b with 4e), suggesting that marrying a Huguenot wife, especially those from wine-producing areas, may have contributed to initial better performance of the Huguenots from non-wine producing regions. The positive coefficients on the marriage dummies (not shown here) corroborate this evidence.

Given these findings, we posit that the productivity disparities between the Huguenots and other settlers arise from specific human capital differences. These differences were encapsulated by the “specific skills” in viticulture the Huguenot farmers brought from France. Why “specific skills” in viticulture? The results for wheat farming suggest that, although the French from wine-producing regions were initially more productive in both wheat and wine production, the advantage in wheat production dissipated over time. We hypothesise that wheat farming, different to viticulture, utilises more generic knowledge and farming skills. Within a generation all groups had equal access (at low cost) to such knowledge or skills. The “specific skills” of viticulture, where knowledge is transferred from

father to son through extensive learning-by-doing, did not disseminate into the broader farming community. Even within population groups, this knowledge stayed only within families that had the largest levels of wine production. Following capability theory, these specialised skills gave farmers (firms) a sustainable competitive advantage, which grew independently from the enhancements brought about by acquisitions of capital (slaves) and labour (*knechts*). While such an advantage could be countered through the acquisition of more capital (slaves), there is little evidence that such an advantage could be sustained given the higher cost implications.

The set of regressions which only include Huguenot farmers provide more compelling evidence that it was a “specific skill” in viticulture, rather than other institutional factors, that explain the divergence in wine productivity. Given that only French Huguenots are included in the sample, all cross-group cultural measures, such as religion, language or other traits, are implicitly eliminated. Our variable of interest is thus provincial origin of the two Huguenot groups and only factors correlated with this could potentially bias the results.

One such measure could potentially be the educational attainment of the citizens. It might be that provinces more conducive to viticulture were also relatively more affluent and could thus afford higher educational attainment. Our inclusion of a measure of educational attainment (non-numeracy scores) attempts to control for this possible bias. We find no evidence that Huguenots from provinces with productivity were systematically more numerate. And when included in the estimations, the coefficients of interest – the dummies of the French Huguenot farmers descendent from wine-producing areas – remain highly positive and significant. This further supports our notion that “human capital” as it is commonly understood may be too generic to determine settler success. By differentiating human capital between skills and education, and further between “specific skills” in viticulture versus the “general skills” of wheat farming, a more complete picture emerges of the underlying causal mechanism that drives economic performance.

The quantile regressions suggest that it is the top of the income distribution that drives the differences between groups. While at the mean the French Huguenots from wine-producing regions maintain relatively constant productivity coefficients over the period, the quantile regressions at the 80<sup>th</sup> percentile suggests that the elite substantially improved their productivity over the eighteenth century, especially when controlling for inputs used (see Table 3, columns c and d). Whereas the initial differences in the settler skills permeated all of Huguenot society, the diversion of these rates over time seems to have been only an elite phenomenon.

This may provide a further clue to explain the productivity divergence between the Huguenot-elite from wine-producing regions and the other groups. Although premature and speculative, two possible causes are discussed.

It may simply be that the French Huguenots enjoyed first-mover advantage. Once they settled and utilised their superior skills in viticulture earning comparatively higher returns, 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 have control over the scarce resource, 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 enforced at the Cape. These laws divided ownership of property at

death amongst the deceased's partner and their offspring in two equal shares. As noted above, fertility rates were relatively high, which meant that farms were often split between sons, partitioning the property into smaller and smaller units. 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.<sup>10</sup>

The benefits of a first-mover advantage could also transpire through market relations. In a strongly regulated market such as the Cape Colony it helps 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) who were the only private wine buyers together with the Company.<sup>11</sup> 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 2004:15).<sup>12</sup> 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 eighteenth century, the only one outside of agriculture 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. Yet, there is even less evidence to support 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).<sup>13</sup>

Both arguments are unconvincing in explaining the rapid divergence between the Huguenots and the rest. While the first-mover advantage is probably applicable, there is no clear evidence to suggest which mechanism is at play. Because the elite drive the results, 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 fewer offspring because they realised the importance of maintaining a certain operational size. Perhaps it was not fewer children, but that only one or two inherited the farm, and that the others were forced to move away, or marry the daughters of other wealthy farmers. Why the French from wine-producing regions would have been comparatively more amenable to this idea is not clear.

While other mechanisms may have contributed to the growth in observed productivity differences, the specific, viticultural skills of the Huguenots from wine-producing regions,

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<sup>10</sup> It should be pointed out, though, that because of the difficulty of transporting goods across the mountains in the absence of any adequate passes (which were the case before the nineteenth century), viticulture in the interior would have been extremely costly. While Swellendam was the first magisterial district to be established in this region in 1743, our data show that no wheat or wine farming were practiced here up until 1773.

<sup>11</sup> Most beer was imported.

<sup>12</sup> As Groenewald (2004:15) notes after reviewing the apparent *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."

<sup>13</sup> 12 are German nationals, 8 are Dutch, 6 were born in the Cape Colony and one is from Denmark (Groenewald 2009).

transplanted to their heirs through years of learning-by-doing, seems the most plausible explanation in explaining their growing advantage. Soon after the arrival of the Huguenots, a number of farmers – both Huguenots and non-Huguenots – harvested grapes. Yet, a small group of these farmers – most from wine-producing regions in France – were more efficient at producing wine than their compatriots. Their sons, benefiting from the secrets and knowhow of their fathers, continued and improved these techniques, producing quality wines for which there was always a market in Cape Town. The traveller Mentzel (1944:186-187) alludes to this in his description of wine-making at the Cape:

“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 wine 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, different to grain farming, requires specific skills and knowledge that the Huguenots from wine-producing regions possessed when they arrived at the Cape. They maintained their advantage by protecting these “secrets” – either deliberately through protective behaviour or accidentally due to the high cost of transfer (i.e. years of learning-by-doing). Other settlers tried to catch up – either through acquiring more resources such as capital (slaves) and labour (*knechts*) or through marrying Huguenot wives – but the sustainable competitive advantage of the Huguenots from wine-producing regions allowed them to prosper independently from these tactics.

Three decades after the arrival of the Huguenots, the Dutch East India Company’s Policy Council, noting inter alia the demand from wine-makers for labour around harvest time, sought to encourage slave imports rather European immigration. It would take another three decades for the emergence of an elite, notably due to a small group of affluent wine farmers. The elite would contribute to the emergence of a highly unequal society which would continue to permeate Cape society and, reinforced by the discovery of diamonds and gold to the north, be an inevitable ingredient of severe South African inequality today.

## CONCLUSIONS

The institutional literature suggests no link between settlers’ origin 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. We posit that this neglects an important component of migration and development theory. The French Huguenots that arrived at the Cape Colony in 1688/89 possessed uniquely different skills than the incumbent farmers that allowed them to become more productive viticulturalists. We further show that they maintained this advantage for close to a century after arrival, and attempt to provide reasons for this.

None of the standard factors of production explain these differences, nor any “institutional” difference between the French and the Dutch. In fact, we control for the unquantifiable cross-group differences by showing that Huguenots that originated from wine-producing regions were more productive in viticulture than the Huguenots from non-wine producing

regions and also all other countries. We 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, we see an elite of Huguenot descendants from wine-producing regions increasing their advantage in wine-making at the Cape vis-a-vis the other groups. This growing divergence cannot be satisfactorily explained through 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.

Our results point to strong evidence that settler capabilities – specific skills they acquired in their land of origin – matter in colonial development and should be considered an important element – together with environmental conditions and resource endowments at the place of settlement – in explaining why countries follow different development paths.

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# APPENDIX

Table 1: Mean household per capita production levels, by population groups over time

Year		Wine (leaguers)			Wheat Reaped ( <i>muids</i> )		
		Non-Huguenot	Huguenot		Non-Huguenot	Huguenot	
			French Non-wine region	French Wine region		French Non-wine region	French Wine region
1700	M	1.16	1.18	1.40	4.32	2.65	3.69
	SD	2.50	1.44	1.47	9.15	3.92	4.32
	N	727	108	117	727	108	117
1709	M	0.98	0.55	0.83	17.45	7.30	8.14
	SD	2.74	1.37	1.69	39.28	9.68	11.06
	N	962	179	191	962	179	191
1719	M	0.80	0.44	0.98	9.45	5.93	3.76
	SD	1.92	0.98	1.67	22.17	9.50	4.75
	N	1058	154	218	1058	154	218
1731	M	0.75	0.55	1.13	8.68	6.65	5.46
	SD	2.36	1.31	2.12	18.02	11.69	12.43
	N	1536	245	305	1536	245	305
1741	M	0.33	0.25	0.67	10.55	11.76	8.33
	SD	2.20	0.67	1.03	28.67	24.46	20.79
	N	2045	306	360	2045	306	360
1752	M	0.49	0.54	1.18	4.72	3.54	4.20
	SD	1.93	1.92	2.36	17.51	10.91	14.88
	N	1986	362	462	1986	362	462
1757	M	0.61	0.82	1.23	3.36	1.64	1.53
	SD	2.51	3.49	2.85	14.86	6.34	5.41
	N	2960	431	636	2960	431	636
1773	M	0.63	0.93	1.89	3.73	5.51	2.82
	SD	2.65	2.95	4.34	12.83	16.71	8.04
	N	4547	653	932	4547	653	932

## NOTES:

Means (M), standard deviations (SD) and population totals (N) are given on respective lines for each year. All figures are weighted to reflect the household size of each farmer. Only farming households are included in the sample.

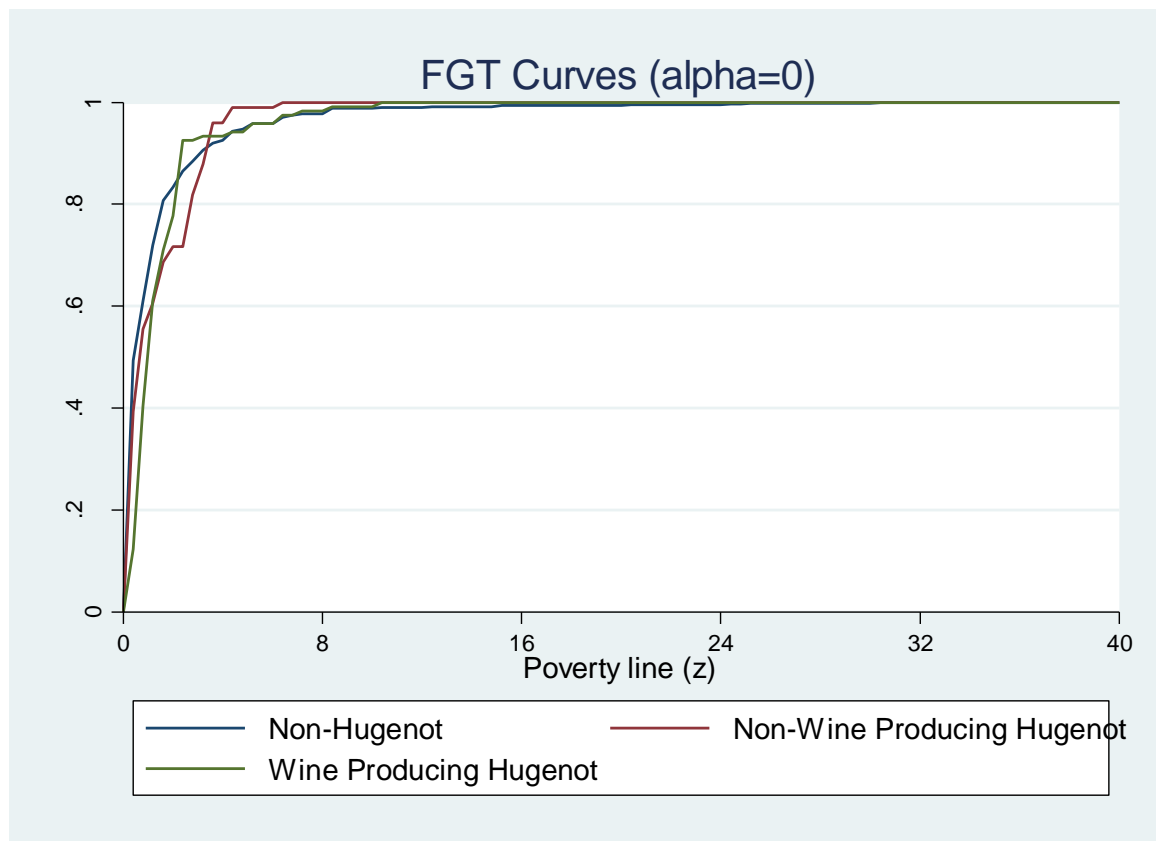


Figure 3: Cumulative Density Functions of Wine Production by group, 1700

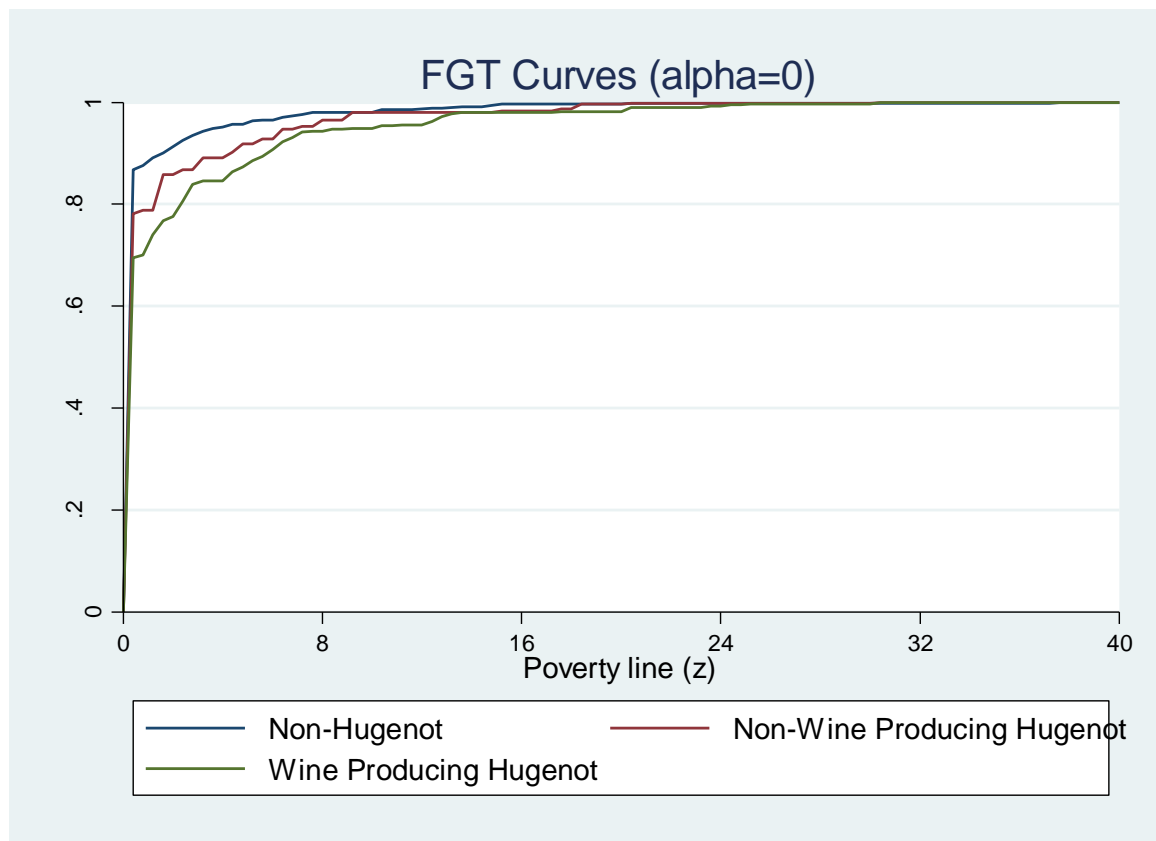


Figure 4: Cumulative Density Functions of Wine Production by group, 1773