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About the Journal

This journal highlights the academic and research strength of the London School of Economics and her students of economic history. This Journal was produced as part of a university wide campaign for essays relating to economic and social history. For this inaugural edition we have received submissions from departments from across the LSE, incorporating all years of study. We would like to thank all those who submitted to the Spring 2019 Economic and Social History Journal. Although only ten essays were selected for publication, many of those submitted were of the highest quality and those who submitted are encouraged to continue towards publication in the future.

We are especially pleased to award the inaugural Leunig Prize for best essay submitted to the Economic History Society Journal to Joseph Miller for his work on London's guild community between 1580-1730. The Leunig Prize was created to honour Associate Professor Tim Leunig for his contributions to Economic History and the longstanding relationship Professor Leunig has had with the Economic History Department. Prizes were also awarded to both Edward Smith and Olaminde Duyile for encapsulating an extremely high quality of research and academic understanding, along with an insightful but clear means of structure and explanation.

To further advocate the LSE's commitment the economic history discipline, we on the Editorial Committee hope that this journal will continue to be published on an annual basis.

Lastly, the Editorial Committee would like to personally thank both those on the Academic Review Committee as well as Helena Ivins, Tracy Keefe and Jennie Stayner, for their support and assistance in promoting and assisting both the Journal and the 2019 LSESU Economic History Society.

Sincerely,

James H. Wallace

Editor-in-Chief
Treasurer, Economic History Society

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To What Extent did London's Guilds Form a Meaningful Social Community?

by Joseph Miller

Abstract

The social consequences of early modern London's guild system have been debated at length. Whilst some economic and social historians have stated that guilds played an important role in creating communities and generating social capital, others have argued that guilds were divisive and prevented social inclusion. This paper offers a new perspective by focusing on the intensity of social interaction across various guilds between 1580-1730. I draw on data that was collected by a team of 13 students under the supervision of Professor Patrick Wallis. Our findings provide evidence that guilds intentionally facilitated the formation of meaningful social communities and, consequently, stimulated the accumulation of social capital.

Introduction

The livery companies of the City of London were initially formed to regulate workmanship quality and guarantee that members were qualified to conduct a specific trade, craft or profession. Through training and apprenticeship schemes, the primary purpose of guilds was to develop the level of human capital within the labour force. In reality, they were far more. As total membership grew, most guilds evolved into micro-societies that altered the course of social interaction within the metropolis. The guild system created networks of relationships that fostered meaningful social communities. Through the organisation of shared events, such as dinners, social communities were deepened. Evidence of community can further be found within the sets of social norms and values that members upheld; how they behaved individually, how they treated one another and how they interacted with the establishment. While I concede there are several limitations to the evidence presented in this paper, it is clear, especially in the period after the Great Fire of London, that facilitating social interaction was the intention of most guilds. In this paper, I will propose two hypotheses. Firstly, the majority of guilds intentionally facilitated the formation of social communities by bringing people together through shared events and charitable donations. Secondly, communities formalised sets of social norms and values which, consequently, stimulated the accumulation of social capital.

Context

2.1 Historical Context

During the early modern period, London was characterised by rapid population growth. New migrants, such as apprentices, would often have to join a guild before they could be granted citizenship. As a result, institutions grew in number and density as there was greater demand for various economic and social activities. The political structure of cities, such as London,

was founded in the act of incorporation. Cities were granted a Charter that incorporated them from the crown. This was issued as an act of royal prerogative and did not come via parliament, giving the city the right to govern itself. Institutions, such as guilds, were therefore crucial to the evolution of English cities, providing multiple layers of government through which they operated.

Due to this rapid evolution, the metropolis differed substantially to the rural market towns that most migrants came from. Incumbent residents depended on institutions to maintain their popular voice amidst London's rapid rate of change and migrants sought a social identity when they arrived in the capital. The guild system offered this through social interaction with people of similar crafts, trades and professions. Social identities were not exclusively owned by institutions, but rather underpinned by multiple allegiances. Urban institutions, such as guilds, created communities by establishing a sense of belonging and loyalty amongst their members. This was achieved through gaining people's trust, as well as demonstrating economic and political power; examples include dispensing charity, organising economic activity, upholding grievances before the law and providing arbitration. From 1550 onwards, the guild member share of the aggregate workforce in London fell and continued to decline in proportion to the wider population. Consequently, relatively smaller and stronger social communities emerged from the guild system.

2.2 Literature Review

Most secondary literature has ignored the intensity of social interaction when analysing communities and measuring social capital. This was the motivation behind our research and underpins the value we add to the current debate. The most prominent critic of the guild system has been Ogilvie. In her work on efficiency, Ogilvie argued that guilds did not correct market failures and deepened social divisions.[1] Ogilvie failed to explain how guilds generated social capital among their members. Moreover, she misrepresented the social capital literature, such as Coleman, by failing to acknowledge that social capital was a consequence of the social interactions within communities.[2] Other notable arguments made by the 'harmful school' include that of Olson and Smith, who each posed variations of the argument that guilds were rent-seeking in nature and imposed deadweight losses on the economy.[3]

In stark contrast to the school that argued guilds were harmful and divisive, various economic and social historians have suggested that guilds sustained exchange and fostered an environment for economic growth. This includes Davids, Epstein and Prak who each argued

[1] S. Ogilvie, "Guilds, efficiency and social capital: evidence from German proto-industry", *Economic History Review,* vol.57, no.2 (2004): pp.286-333.
[2] J. Coleman, "Social Capital in the Creation of Human Capital", *The American Journal of Sociology*, vol.94, supplement (1988): pp.S95-S120.
[3] M. Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, MA: Harvard University Press, 1971), pp.5-53; A. Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (London: W. Strahan and T. Cadell, 1776), para.72, ch.10, book 1.

that guilds supported labour mobility and protected innovation.[4] Most recently, Wallis found evidence that craft guilds provided substantial volumes of charity in aid of supporting the poorest within their communities.[5] A recurring theme throughout both schools is the difficulty to pin down one conclusion regarding the economic and social consequences of guilds. The fact that guilds were substantially different means historical research in this area contains considerable variation and, more often than not, tells more than one narrative.

Source Description and Evaluation

3.1 Primary Sources and Limitations

This study relied on four primary sources: wardens' accounts, court minutes, ordinances and quarterage records. For each, we studied a sample of guilds from 1580, 1630, 1680 and 1730. Where complete records were not available, we took sufficient substitutes from a similar period.

Guild records from the early modern period have survived in considerable quantity and in most cases have been well preserved. Only two accounts were either missing or damaged; these were the Carpenter's and Cooper's court minutes from 1630.[6] A relatively complete archive allowed us to construct a well-balanced sample of guilds. Such variance in our selection increased repeatability and meant our results were representative of the wider guild system. Within each guild, the structure in which entries were recorded remained consistent throughout the period. In some instances, there was periodic overlap across source types; this was particularly evident for large annual events such as dinners on Lord Mayor's Day.

The wardens' accounts consist of guild receipts and expenditures. This provided us with a means of quantifying the intensity of social interaction across guild and time. The wardens' accounts could be used to measure the frequency of expenditure, but were relatively vague in description. They gave no insight into who attended an event or how the attendees interacted. Vagueness could be rectified by using the corresponding court minutes and so was not a serious limitation. The most significant pitfall of the wardens' accounts was the lack of consistency across guild. Differences in structure, as well as in the items that were accounted for, means that our guild comparisons are not robust. This was also the case for the quarterage records. While they are not as detailed as the wardens' accounts, the quarterage records highlight contact between guild members and wardens, providing insight into social interaction at different levels of hierarchy. These too are limited by the fact that they are inconsistent across guild. Moreover, the quarterage records are limited by their inconsistency over time. An

[4] K. Davids, "Guilds, Guildsmen and Technological Innovation in Early Modern Europe", *Economy and Society of the Low Countries Working Papers* (2003-2); S.R. Epstein and M. Prak, "Introduction", in *Guilds, Innovation and the European Economy, 1400-1800* (London: Cambridge University Press, 2008), pp.1-24.
[5] P. Wallis, "Guilds and Mutual Protection in England", *LSE Economic History Working Papers,* no.287 (2018): pp.1-28.
[6] Court minutes from 1630 were substituted with those from 1627.

example of this is that the Pewterers stopped recording quarterage all together in 1630. Not everyone paid quarterage and so this data only captured a proportion of total membership.

The court minutes added a new dimension to our research. Members of the Court often consisted of the master, wardens and assistants. Despite this council being somewhat elitist, they were elected officials who had no obvious hidden motives for bias. The court minutes consisted of a variety of entries, including; elections, fines, charitable donations and apprentices being bound or transferred. Recording community-related activities was not an obligation and so it is likely that relevant activity was missed. There was some sporadic evidence of social interaction which despite being limited, offered useful insights. Similarly to the quarterage records, the court minutes did not to capture the experience of a representative member, failing to differentiate between liverymen and freemen. The court minutes combined effectively with the ordinances, particularly in tackling my second hypothesis. The ordinances were thorough and pinpointed collective norms that were enforced at dinners, funerals, religious gatherings and within disputes. The main limitation of the ordinances, however, was that different guilds used different methods for recording them. We found that later ordinances tended to have less rules that were relevant to social capital which was a particular hinderance.

I concede that the primary sources used is this paper do not provide a holistic measurement of social interaction. Despite considerable variation across guild and time, using all four sources provided robust evidence of the types of community-related activities that guilds sought to organise, as well as the intensity at which they did so. This makes these sources, at worst, good proxies for social interaction.

3.2 Methodology and Research Design

The methodology differed depending on whether a source was quantitative or qualitative. For quantitative sources, such as the wardens' accounts, we built a dataset of financial records to analyse expenditure patterns over time. This included total spending on dinners, philanthropy and religious gatherings. All prices were deflated to 1550 pennies using Clark's cost of living index.[7] For the qualitative sources, our method consisted of selected transcribing; we searched each source for evidence of several criteria, including dinners, religious gatherings, charitable donations, funerals, disputes and punishments. By using a numbering system, we were able to key the evidence, making it easy to categorise and use in combination with other sources.

This research design supported both hypotheses because it used a combination of quantitative spending patterns and qualitative descriptions. The methodology was suitable for measuring the intensity of social interaction, but it was not without it's drawbacks. There is likely endogeneity in our expenditure data. In order to control for this in the future, it would be better to use an instrumental variables analysis. This paper has primarily used the quarterage records and ordinances to supplement the wardens' accounts and court minutes. In the future we could

[7] G. Clark, "Cost of living index", *Nominal and Real Wages, 1209-1869,* accessed on 4th January 2019. http://faculty.econ.ucdavis.edu/faculty/gclark/data.html

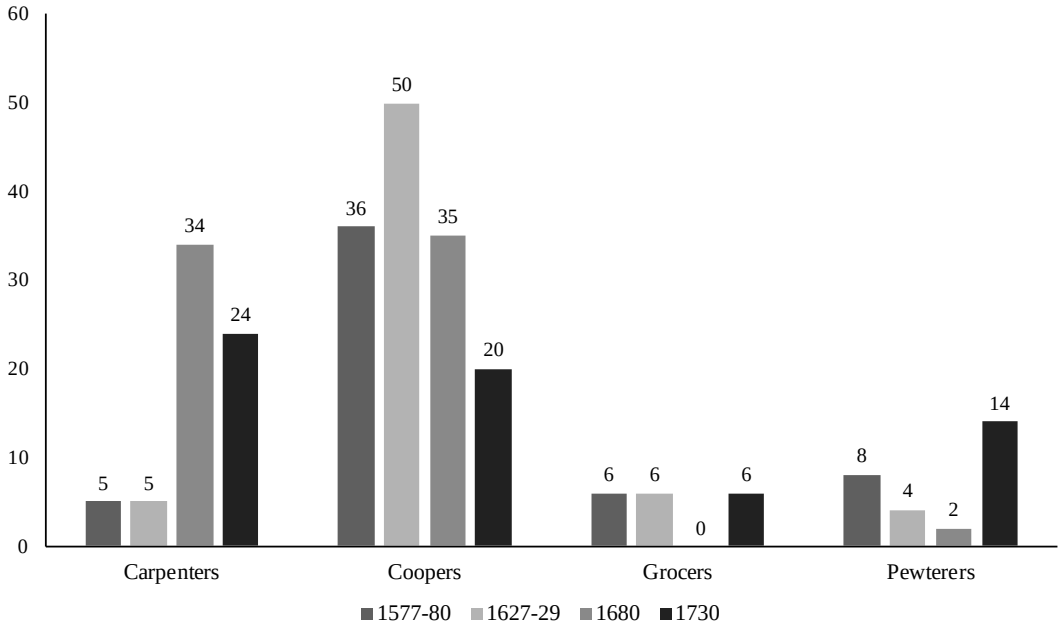
maintain a uniformed structure for recording results, allowing us to rely more heavily on quarterage and ordinance data.

Evidence and Analysis

4.1 Shared Events

Dinners were by far the most common event. Figure 1 shows the frequency of dinners over time. We have excluded the Lord Mayor's dinners in order to capture those that were not obligatory to attend. As stated in the court minutes, there were punishments for non-attendance at such events, meaning they were likely burdensome. This chart shows that there was substantial variation across guilds. Following the Great Fire of London in 1666, most guilds lost considerable amounts of money. Sharp declines in wealth resulted in less dinners in 1680 than 1630; the Grocer's, for example, held no guild-funded dinners in 1680. The Carpenters are an anomaly here as dinner frequency rose 580% between 1627 and 1680.

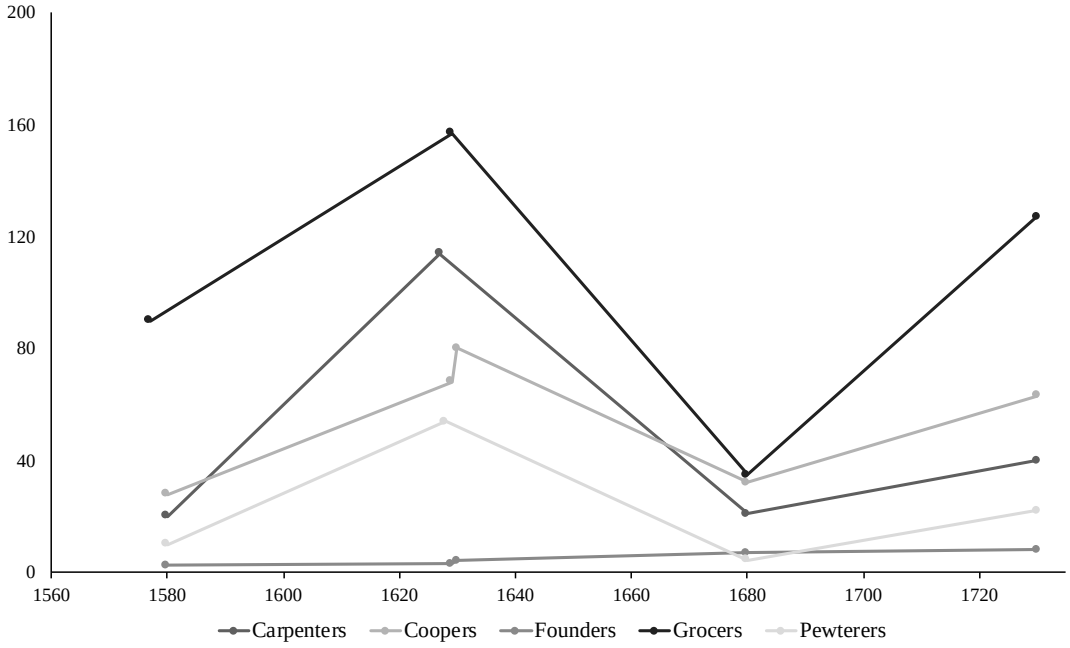
Figure 1: No. of Dinners by Guild



Excludes Lord Mayor and election dinners. Source: Warden's accounts, 1577-1730. See bibliography for full list of sources.

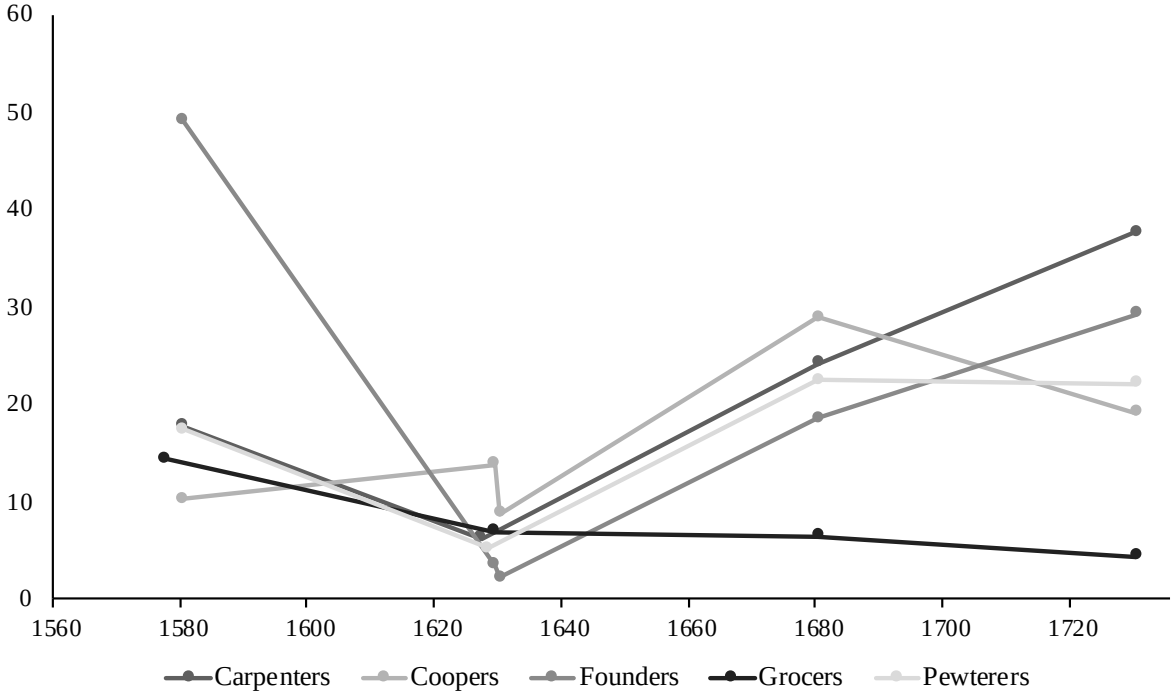
Figure 2 shows total expenditure increased between 1580 and 1630 as guilds grew. The quarterage records support this as total membership sums increased over the period. In combination with figure 2, figure 3 highlights two contradicting viewpoints on guild's attitude towards shared events. On the one hand, all guilds, except the Grocers, spent proportionally more on dinners in 1630 than 1680. Therefore, despite substantial losses during this period, spending on shared events remained important. This supports my first hypothesis as it would appear that guilds prioritised expenditure on dinners and intentionally facilitated social interaction. On the other hand, during this recovery period, the Coopers, Grocers and Pewterers percentage expenditure on dinners slowed, despite them all having far greater budgets. For example, the Coopers total expenditure increased by over 62% between 1680 and 1730, yet their percentage expenditure on dinners decreased 10 percentage points. This suggests that in times of financial recovery, shared events were treated more as a luxury than a necessity.

Figure 2: Total Expenditure by Guild



Total expenditure measured in 1550 pennies (000s). Source: Warden's accounts, 1577-1730. See bibliography for full list of sources.

Figure 3: Percentage Expenditure on Dinners by Guild



The percentage (%) of total expenditure that was spent on dinners. Source: Warden's accounts, 1577-1730. See bibliography for full list of sources.

The intensity of social interaction also depended on the level of guild-wide engagement. Despite our quarterage data containing a number of gaps, we were able to extract engagement figures to supplement the wardens' accounts. Engagement rates varied. Some of the smaller guilds appeared to be more engaged, with some estimated rates as high as 94%.[8] From the Pinners' and Wiresellers' court minutes, 1492-1511, we can infer that greater levels of engagement against smaller member bases were a trend over time.[9] In contrast, some of the larger guilds had far lower engagement rates which declined over the period. The Cooper's engagement rate fell from 35% in 1580 to 14% in 1681.[10] Moreover, the fact that dinner frequency was relatively inelastic when compared to dinner expenditure suggests that dinners were regimented. In some guilds, where dinners were frequent and spread out, there is somewhat of a false dichotomy. The average cost of such dinners was low. It can therefore be inferred that such frequent dinners were organised for few attendees; perhaps the elites within the guild. Whilst this cannot be verified as attendance is not well documented, it implies that the wider community were excluded from many dinners.

[8] London Metropolitan Archives, Guildhall Library, Worshipful Company of Pewterers, Fair copy audited and Wardens' Account Books, Volume 2: 1555-1592, CLC/L/PE/D/002/MS07086/002: pp.72v-4r.
[9] B. Megson, *The Pinners' and Wiresellers' Book, 1462-1511* (London: London Record Society, 2009), pp.1-51.
[10] London Metropolitan Archives, Guildhall Library, Worshipful Company of Coopers of London, Quarterage Records, Volume 2: 1580: CLC/L/CI/C/010/MS05614/002, pp.72r-4r; London Metropolitan Archives, Guildhall Library, Worshipful Company of Coopers of London, Quarterage Records, Volume 10: 1571-1611: CLC/L/CI/C/010/MS05614/010, pp.436v-8v.

4.2 Charitable Giving and Religious Donations

Charitable giving often consisted of internal donations to people within the guild. This included widows, pensioners and poor members. For example, on 15th April 1580, the Grocers' granted that "William Ratcliff a poor man" would have the grant and room of an almsman be "void at Lullingstone of 8d a week".[11] Evidence of guilds supporting their poorest members was particularly common in 1580 and 1630. Following the Great Fire of London, guilds became increasingly parsimonious and the rate of charity declined. There was still evidence of charity in the later periods, such as the 5s granted to Mr George Hornloths' widow in February 1730, but this was far less frequent than in 1580 and 1630.[12] Our evidence supports Wallis' recent findings that guilds supported the poorest members within their communities.[13] However, the trend in charity overtime has more ambiguous implications. While the court minutes support the argument that guilds became increasingly parsimonious by being less charitable in 1680 and 1730, the wardens' accounts suggest that charitable donations across most guilds increased over the period. Our data is not thorough enough to corroborate either argument as either of the 1680 or 1730 findings may be anomalies. This being said, there is enough evidence to support the argument that guilds provided frequent amounts of internal charity to their poorest members which, assuming the records are representative, suggests that guilds were not an exclusive club for the elite. Instead, this suggests that guilds looked to engage with their most vulnerable members. This supports my first hypothesis to the extent that such internal charity would have strengthened the community and was, on its own, an example of social interaction.

Evidence of religious donations is scarce in both the court minutes and wardens' accounts. Despite the strong religious connections of most guilds, there are very few recorded donations to the church or any religious activity. This was particularly unusual in the case of the Apothecaries who had extensive religious ties. Such a strange finding should be taken lightly; it may be an inconsistency in our dataset. Religious donations may have been more regimented and so were not recorded in the same way that other charitable giving was.

4.3 Social Norms and Values

Compared to shared events and charity, there was the least variation across guild and over time when analysing social norms and values. The most striking evidence of social norms were in disputes. Most disputes were regarding apprentices. The court minutes give a good insight into the ways members of the guild interacted with one another and how that was viewed by the guild. For example, there is evidence that certain guilds protected their apprentices from mistreatment by masters. In 1580, the Coopers Court of Assistants fined John Plble 12d for

[11] Grocers' Court Minutes, 1580: pp.313r. Please see bibliography for full reference.
[12] Apothecaries' Court Minutes, 1730: pp.49r. Please see bibliography for full reference.
[13] P. Wallis, "Guilds and Mutual Protection in England", *LSE Economic History Working Papers*, no.287 (2018): pp.1-28.

"mysusing and striking George Wren".[14] Furthermore, there is evidence that guilds upheld a level of discipline amongst their communities. In 1730, an apprentice was summoned to the Coopers Court of Assistants for calling his master an "old fool and old blockhead".[15] This conduct was said to have been contrary to the laws of the company. Guilds formalised sets of norms where costs were involved and maintained a level of discipline amongst members. The types of activity and behaviour that was appropriate within the community was therefore shaped by the guild.

The ordinance records supplement the evidence in the court minutes. The most prominent feature of the ordinances was that hierarchy was important within guilds. Rank within the hierarchy was established and upheld as a collective norm. There were vast entries which covered the appropriate clothing, as well as the manner in which members should conduct themselves. For example, in the 1711 Grocers' ordinances, it was stated members must speak "in turne according to his seniority".[16] It is important to note that norms were not rules; this was one of the errors Ogilvie made.[17] Norms were only formalised when there were implied costs to the guild. In practise, social norms and values shaped the way members interacted with one another and, more importantly, set the framework for how they interacted with others. Such norms and values marked the boundaries within which social communities existed. This had non-rivalrous benefits for both smaller communities and society as a whole because it introduced a code of conduct that people lived by. Assuming these communities were non-excludable, this suggests that the accumulation of social capital was a direct consequence.

Conclusion

Primarily through dinners and internal giving, guilds facilitated the formation of social communities. Given the variation in our data, it is not possible to conclude beyond all reasonable doubt that these social communities were entirely 'meaningful'. There is plenty of evidence that suggests shared events were often exclusive. Furthermore, it is clear that guilds became increasingly parsimonious following the Great Fire of London. However, the relative intensity of social interaction with respect to overall spending was maintained. The fact that guilds sought to bring people together, even when funding was limited, is a good indication that they sought to facilitate meaningful social communities. In addition, meaningful social communities emerged from London's guild system through the collective norms and values their members upheld over time. Where social costs were involved, the community formalised sets of norms and values which were consolidated by social interaction. The extent to which social interaction can be modelled as a non-rivalrous and non-excludable economic good has a strong weight on whether communities stimulated the accumulation of social capital.

[14] Coopers' Court Minutes, 1580: pp.23r. See bibliography for full reference.
[15] Ibid, 1730: pp.274.
[16] London Metropolitan Archives, Guildhall Library, Worshipful Company of Grocers of London, Ordinances, Volume 1: 1711, CLC/L/GH/A/010/MS11640/001: pp.12-4.
[17] S. Ogilvie, "Guilds, efficiency and social capital: evidence from German proto-industry", *Economic History Review,* vol.57, no.2 (2004): pp.286-333.

This research could be expanded by introducing an endogenous growth model for social capital. Similar to how Romer adjusted the Solow model to describe the accumulation of human capital, it would be progressive to build a formal model for the accumulation of social capital.[18] While this paper suggests that social interaction was non-rivalrous, there remains ambiguity over whether it was non-excludable. Future research should focus on the extent to which social communities were open to all members. Tracking names in order to better understand who attended shared events would be a good starting point.

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For list of primary sources please contact ***joseph.cb.miller@outlook.com***

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[18] P. Romer, "Human Capital and Growth: Theory and Evidence", *Carnegie-Rochester Conference Series on Public Policy,* Elsevier, vol. 32, no.1 (1990): pp.251-86.

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Was the Glorious Revolution Conductive to Economic Growth in 18th Century England? Rethinking the Role of State Finance and Trade in the Aetiology of the Industrial Revolution.

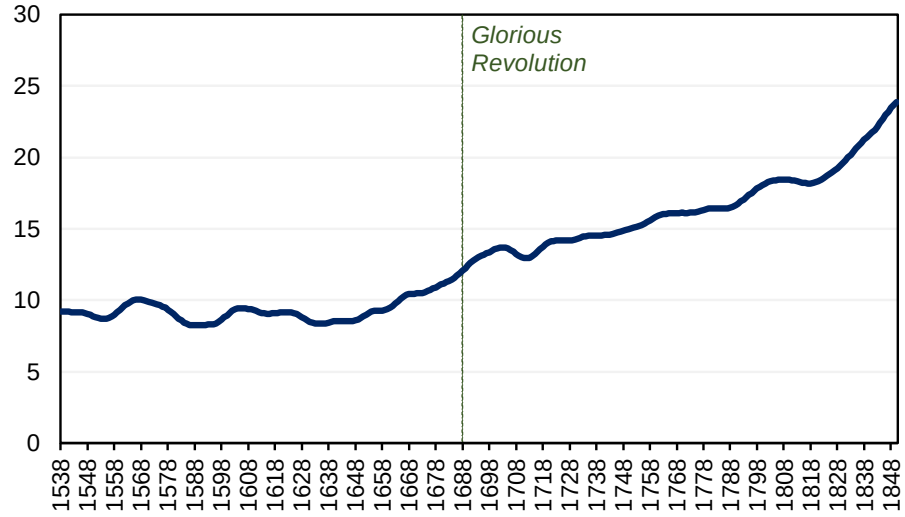
By Edward Smith

At first glance, it is not immediately clear that the Glorious Revolution marked a turning point in the path of England's economic growth. In Figure 1 I use the Hodrick-Prescott filter to extract a structural trend from Broadberry et al's time series of GDP-per-capita.[1] GDP-per-capita broke structurally from the Malthusian doldrums four decades before 1688. After William III's coronation, the economy grew more slowly before accelerating again in the final quarter of the eighteenth-century when Britain embarked on a path of modern economic growth. While the answer to our titular question does not lie in a superficial survey of the data, I contend that Britain would not have embarked on that path without changes brought by the Glorious Revolution. This is not a restatement of North and Weingast's seminal argument. Their contention – that a new pluralistic constitution and a "credible commitment" to uphold private property rights on sovereign debt set Britain on the path to modernisation and entrepreneurship, evidenced by booming private capital markets – has many flaws, as I will discuss.[2] It may have even hindered private consumption growth at first. Instead, I argue that a revolution in state finance that accompanied the new constitution was the institutional change with valency. The fiscal and financial revolution supported a decisive shift in foreign policy, allowing Britain to win a series of very expensive wars. Victory entrenched Britain's trading hegemony. And trade is a necessary precondition in many of the leading theories of why the Industrial Revolution occurred in Britain first, even if its *direct* role is a matter of much debate.

[1] Author's calculation from Ryland Thomas and Nicholas Dimsdale, "A Millennium of UK Data", *Bank of England OBRA dataset* (2017) using Broadberry et al. (2015)

[2] Douglass C. North and Barry R Weingast, "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England." *The Journal of Economic History* 49, no. 4 (1989): 803-32.

Fig 1. English GDP per capita, HP filtered trend



Source: see text

As soon as the revolutionary dusts settled, William plunged England into the Nine Years' War. By 1692 its coffers and its credit had deteriorated. The outlook was bleak. Another kind of revolution was required to secure victory: a financial one. This was not just in the interest of the King and his army; if the constitutional revolution was to consign state financial abuse to the history books, financial problems had to be solved. This revolution built upon the innovations of the late Stuarts that enlarged Britain's fiscal capacity and combined the result with financial practices inspired by William's Dutch advisors.

The Long Parliament had begun a new, *precise* administration of indirect taxes, motivated, as after 1688, by war financing. Charles II consolidated tax-collecting bureaus and deepened fiscal capacity as a contingency against future costly rebellions.[3] James II expanded fiscal capacity further still, but it was still to rival France.[4] After 1688, Parliament capitalised on these foundations: although there was a temporary state of administrative disarray in the 1690s, excise and customs capabilities expanded steadily. Average annual tax revenues doubled during the Nine Years' War, doubling again over the following forty years, far outstripping the growth of the economy.[5] England's legislative homogeneity was a great advantage: European neighbours lost much revenue to exemptions offered to territorial, ecclesiastical and myriad

[3] Indeed, George Downing established a system of Treasury accounting superlative even by Dutch standards. Larry Neal, *A Concise History of International Finance: From Babylon to Bernanke*. New Approaches to Economic and Social History (Cambridge, United Kingdom : Cambridge University Press 2015). p.76

[4] P. G. M. Dickson, *The Financial Revolution in England: A Study in the Development of Public Credit, 1688-1756*. (London: Macmillan, 1967). pp.42-3

[5] John Brewer, *The Sinews of Power: War, money and the English State, 1688-1783*. (London: Unwin Hyman, 1989). p.89-99

other bodies.[6] This was in no small part due to a European reliance on direct taxation; Britain's preference for indirect taxation combined with an administrative sophistication to limit losses.[7]

An impressive tax administration was a propitious basis for securing credit. Underexploited in 1688, this soon changed and a system of short- and, most importantly, long-term public borrowing developed, "*which enabled England to spend on war out of all proportion to its tax revenue*."[8] After 1707, at least 30% of annual state income went to servicing the debt.[9] Long-term government borrowing was expensive and small in its relative amount in the Nine Years' War, but it was innovative and experimental and was built upon even more successfully in subsequent conflicts. The sale of single-life annuities and tontine bonds, payable to contributor or a nominee, raised £1 million in 1693-94. These loans instituted the *regular* practice of earmarking by statute new taxes to pay interest on new loans, and were guaranteed by Parliament, thereby establishing the concept of a *national* debt.[10] In 1694 Parliament raised a further £1 million from the sale of interest-bearing lottery tickets, tapping the fashion for gambling and private-sector precedent.[11] Momentously, the Bank of England was incorporated in 1694, subscribed to with government debt. The Bank, the New EIC and other monied companies thereafter, adopted Dutch methods for assuring transparency of value, and improved upon those for transferability by opening transfer books for daily spot transactions. They also solved the governance problems of the Dutch antecedents, and explicitly allowed foreigners to own voting shares.[12] The variety and sophistication of the new financial apparatuses greatly expanded the circle of people willing to fund the government.

The Bank soon expanded its role from lender to administrator. As gatekeeper, it was especially important for lowering the risk of government debt and therefore its cost. Without it the government had the option to default without any *immediate* fiscal consequences; with it, default would mean immediate financial paralysis as cashflows would cease. In 1696 we see the Bank chastising Parliament for failing to honour its obligations, and it regularly stood down the government's demands.[13] As a joint-stock company it could take a longer-term view, and in 1697 the Bank averted a short-term debt crisis during war by buying deficient tallies and restructuring their terms.[14] Its fractional reserve system meant it was an especially nimble creditor.[15] By the eighteenth-century it provided quality assurance to many forms of

[6] Patrick O'Brien, 'Fiscal exceptionalism' in *The Political Economy of British Historical Experience, 1688-1914*. eds. Winch, Donald., O'Brien, Patrick, and British Academy. British Academy Centenary Monographs. (Oxford: Published for The British Academy by Oxford University Press, 2002). pp.256-9
[7] Brewer, *The Sinews of Power*. p.126
[8] Dickson, *Financial Revolution*. p.9
[9] Brewer, *The Sinews of Power*. p.116
[10] Dickson, *Financial Revolution*, pp.50-3
[11] Ibid. p.54
[12] Neal, *A Concise History*, pp.70-71, 74, 77, 79, 81-83
[13] Anne Murphy, "Demanding 'credible Commitment': Public Reactions to the Failures of the Early Financial Revolution." *The Economic History Review* 66, no. 1 (2013). p.193
[14] Dickson, *Financial Revolution*, p.65
[15] Of course, its initial temporary status meant that before 1720 it was undermined somewhat by alternative schemes such as the Land Bank or the South Sea Company, not always in the public's best interest, to say the least.

fundraising, acting, for example, as receiver for three of the four large lottery loans in 1711-12 to cover the revenue deficit.[16]

Government borrowing costs fell swiftly. Before 1688, the state borrowed at 8-12%.[17] The cost of long-term debt rose to 14% during the Nine Years' War but fell back to around 8% by the outbreak of the War of the Spanish Succession. That it continued to fall to 6% by 1710 is testament to the financial revolution's extraordinary success. The cost of long-term debt never spiked during war again.[18] This is all the more extraordinary given the ballooning public debt: the debt-to-GDP ratio increased from less than 5% to over 160% between 1688 and 1788.[19] Econometric work suggests that neither the debt-to-GDP ratio nor the budget deficit had a statistically significant impact on borrowing costs during the first half of the eighteenth century.[20] Unsurprisingly, the term structure of the public debt changed dramatically. Short-term debt constituted half of debt outstanding in 1700; by 1720 it was less than 10%.[21] As such, throughout the eighteenth century, the government could turn quickly to short-term debt during war, backed by a reliable system of retiring it with the issuance of cheaper long-term debt.[22]

New institutional interpretations take declining interest rates as evidence of constitutional change and a commitment to private property rights. Clearly, property rights are a prerequisite of low-cost, long-term financing, and while it may be tempting to see causation in the correlation of interest rates with Britain's constitutional change, that correlation is not apparent in the international cross-section. Britain did not borrow at lower rates than European countries with less protected property rights. It took forty years before the interest rate differential between England and Holland disappeared, despite Holland's considerably larger debt per capita.[23] Looking at Europe more broadly between 1300 and 1700, the long-term borrowing costs of republics were much lower than those paid by monarchies. At first glance this may seem to support the North and Weingast thesis because republics were based on collective institutions, but it does not explain variation of borrowing costs *between* republics. This is explained by administrative aptitude and fiscal capacity. Adept administrations paid the lowest rates: Florence's borrowing costs were below those of Venice even though Venice was more

[16] Dickson, *Financial Revolution*, p.71

[17] Although with abundant evidence that credit was rationed to Stuart kings, one has to question if such figures tell us much at all if there wasn't a competitive market where the interest rate moved with supply and demand. Stephen Quinn, "The Glorious Revolution's Effect on English Private Finance: A Microhistory, 1680-1705." *Journal of Economic History* 61, no. 3 (2001). p.596; Steven C.A. Pincus and James Robinson. "What Really Happened During the Glorious Revolution?" *NBER Working Paper Series*, 2011. p.15

[18] Nathan Sussman and Yishay Yafeh, "Institutional Reforms, Financial Development and Sovereign Debt: Britain 1690-1790." *The Journal of Economic History* 66, no. 4 (2006): p.909

[19] Future scholarship could investigate the extent to which public indebtedness limited economic growth across Europe in the eighteenth century. A regression of debt-to-GDP or debt service-to-GDP and a vector of other explanatory variables on GDP or GDP-per-capita (as performed for the twentieth century in Sala-i-martin et al, *Determinants of Long-Term Growth*). One could then assess the extent to which Britain's financial revolution made it an outlier.
Thomas and Dimsdale, *A Millennium of UK Data*

[20] Sussman & Yafeh, *Institutional Reforms*. p.926

[21] Ibid. p.922

[22] Michael D. Bordo and Eugene N White, "A Tale of Two Currencies: British and French Finance During the Napoleonic Wars." *The Journal of Economic History* 51, no. 2 (1991). p.305

[23] Sussman & Yafeh, *Institutional Reforms*, p.906

stable politically and more successful economically.[24] By the early 1700s, monarchies' borrowing costs had converged on republics'. Not all monarchies had undergone an institutional transformation: the driving factor here was that monarchies had adopted the more advanced fiscal and financial apparatuses of the republics.[25]

Britain's apparatuses surpassed them: this was the institutional change that mattered most to its cost of borrowing. Property rights were not new in England and the conjecture that the credible commitment to sovereign debt "*was part of a larger commitment to secure private rights*" is anachronistic.[26] Charles II's infamous repudiation, the Stop of the Exchequer, was acknowledged specifically by contemporaries as a violation of Common Law property rights. Private capital markets especially were secure since Henry VIII: promissory notes and bills of exchange had been used for a long time, involving enforceable property rights and assignability; the commodification of land also proves their existence.[27] Moreover, Parliament's commitment to its new creditors was not actually all that "credible" in the first few decades. Creditors themselves had to remind Parliament repeatedly of the importance of honouring its financial obligations.[28] Sinking funds were raided over and over for other spending purposes.[29] Interest payments, even on long-term debt, were often delayed, deferred and occasionally, as in 1708-10, suspended altogether. The 1697 Malt Lottery was a complete failure because it was offered when old tickets were yet to be paid: clearly then, the public questioned the state's credibility.[30] Yet despite flagrant missteps, Britain continued to fund ever-increasing expenditures at relatively low cost because of the innovative, multifaceted fiscal and financial apparatuses it could deploy even in difficult times, especially the Bank of England and the other chartered companies. As the next 150 years of global finance would show, banks with a strong "brand" could grant sovereign borrowers market access at a lower cost, regardless of the sovereign's attitude to the rule of law.[31]

North and Weingast's assertion, that the state finance revolution was a boon to private capital markets, rests implicitly upon the notion that sovereign yields acted as a benchmark for commercial borrowing costs. This has not been proven. Indeed the "risk-free rate" was most likely the commercial bills market, a globally-oriented market collateralised by commodities with international circulation, unaffected by 1688.[32] Econometric analysis of lending

[24] Stephan R. Epstein, *Freedom and Growth: The Rise of States and Markets in Europe, 1300-1750*. Routledge Explorations in Economic History; 17. (London: Routledge, 2000). p.19
[25] Ibid. p.24
[26] North & Weingast, *Constitutions and Commitment,* p.824
[27] Bruce G. Carruthers, *City of Capital: Politics and Markets in the English Financial Revolution*. (Princeton, N.J. ; Chichester : Princeton University Press 1996). pp.123-5, 128; H. R. French and R. W. Hoyle, "English Individualism Refuted—and Reasserted: The Land Market of Earls Colne (Essex), 1550–1750." *Economic History Review* 56, no. 4 (2003): pp.595-622; Gregory Clark, "The Political Foundations of Modern Economic Growth: England, 1540-1800." *The Journal of Interdisciplinary History* 26, no. 4 (1996): p.565
[28] Murphy, *Demanding 'credible Commitment',* pp.178-97
[29] Richard Sylla and Jack Wilson. "Sinking Funds as Credible Commitments: Two Centuries of US National-debt Experience." *Japan & The World Economy* 11, no. 2 (1999): p.205
[30] Dickson, *Financial Revolution,* pp.46-57
[31] Marc Flandreau and Juan H Flores, "Bonds and Brands: Foundations of Sovereign Debt Markets, 1820–1830." *The Journal of Economic History* 69, no. 3 (2009): 646-84.
[32] Marc Flandreau, Christophe Galimard, Clemens Jobst and Pilar Nogues-marco, "The bell jar: Commercial interest rates between two revolutions, 1688–1789" in *The Origins and Development of Financial Markets and*

undertaken by Hoare's Bank finds no statistically significant effect of government borrowing costs on private lending rates.[33] Stephen Quinn's evidence from the accounts of another goldsmith-banker show that the interest rate on a private, one-year £1000 loan was 4.2% in 1680-89 and 4.9% from 1690-97. He suggests government debt crowded out private lending and raised private rates of interest between 1690 and 1697. Thereafter, private rates did not fall back to pre-1688 levels, but Quinn sees evidence of a positive demand shock for long-term funds in the steepening of the private-sector yield curve (an increase in desired investment relative to desired savings). In other words, government borrowing became a complement to not a substitute for private debt.[34] However, the curve steepening he presents is slight.[35] Moreover, I am struck by the high p-values and low R^2 in Quinn's econometric analysis: the variation of private interest rates seems difficult to explain and this suggest credit rationing. This is most likely due to the stifling consequences of the usury law, which restricted market access and held back unsecured lending that prevented a genuine transfer of funds across time. Here we see the fiscal and financial revolution impairing private markets, insofar as the usury rate was lowered as a sop to parliamentarians disgruntled with higher taxes and liberal government borrowing.[36]

All other things equal, higher taxation meant less resource available for the private sector. Other disincentives after 1688 included new monopolies and privileges. The Bank of England's privilege included a limitation on the size of rival private banks to six partners, limiting their ability to diversify and increasing the system's vulnerability to shocks.[37] The bottom line is that it is far from clear that 1688 or the major military victory cementing the new regime in 1697 exerted a statistically significant impact on *private* rates of return.[38] Indeed private rates of return in the first few decades after the Glorious Revolution were not all that different than at any time since 1400.[39]

Indisputably, the revolution in state finance powered a new era of military dominance. 1688 brought about the "*emergence of a peculiarly British version of the fiscal-military state, complete with large armies and navies, industrious administrators, high taxes and huge debts.*"[40] Charles Davenant wrote in 1695, "[…]*that prince, who can best find money to feed, clothe, and pay his army, not he that has the most valiant troops, is surest of success and*

Institutions : From the Seventeenth Century to the Present. eds. Neal, Larry, and Atack, Jeremy. (Cambridge ; New York, NY: Cambridge University Press, 2009). pp.162, 197-8.
Indeed, commercial rates in France persistently traded around 2% below French government rates implying commercial credit could thrive in an economy overseen by a delinquent government and questionable property rights. Ibid. p.197

[33] Peter Temin and Hans-Joachim Voth. "Private Borrowing during the Financial Revolution: Hoare's Bank and Its Customers, 1702–24." *Economic History Review* 61, no. 3 (2008): 541-64.

[34] Stephen Quinn, "THE GLORIOUS REVOLUTIONS EFFECT ON ENGLISH PRIVATE FINANCE: A MICROHISTORY, 1680-1705." *The Journal of Economic History* 61, no. 3 (2001): pp.593-615

[35] It is even slighter if one looks just at secured loans.

[36] Temin & Voth, *Private Borrowing*, p.542

[37] C. R. Hickson, and J. D. Turner, "Free Banking and the Stability of Early Joint-stock Banking." *Cambridge Journal of Economics* 28, no. 6 (2004): p.914

[38] Gregory Clark, *Political Foundations*, pp.579-83

[39] Epstein, *Freedom and Growth*, pp.17-18, 62

[40] Brewer, *The Sinews of Power,* p.250

conquest."[41] Alexander Hamilton returned at length to the Bank of England when contemplating the best financial system for independent America: "*Great Britain is indebted for the immense efforts she has been able to make, in so many illustrious and successful wars, essential to that vast fabric of credit raised on this foundation*."[42] Military success meant commercial success. "*[Spain, Portugal, France and Holland] ultimately lacked the fiscal and financial capacity required to compete with Britain in struggles for hegemony at sea, for colonies, and for dominant shares of international trade in commodities and services. That deficiency certainly delayed their transitions to industrial market economies.*"[43] Success in trade also lowered government borrowing costs: exports-to-GDP have a large and significant negative coefficient explaining Britain's costs of borrowing in the period.[44]

Commercial success was no by-product, it was understood to be an essential part of securing the revolutionary settlement.[45] England waged war against Bourbon France in 1702 not to overthrow Louis and rule France, but to limit or capture France's commercial power in the colonies. Overseas trade was increasingly regarded as the true key to prosperity and power.[46] In the three years of peace after the Nine Years' War, trade averaged 16% of GDP; in the three years of peace after the War of the Austrian Succession some fifty years later, trade averaged 25% of GDP.[47]

The twentieth-century historiography tended to dismiss the *direct* role of trade in stimulating the Industrial Revolution, favouring supply-side, technological interpretations.[48] That profits from the 'triangular trade' did not make a significant contribution to the supply of capital seems fairly certain.[49] Nevertheless, many new technologies, such as Cartwright's power loom, required economies of scale, and foreign demand seems crucial for manufacturers in the nascent phase of the Industrial Revolution, especially in 'crucible' sectors such as textiles. The ratio of industrial exports to industrial production increased dramatically in 1700-1760. While Nicholas Crafts suggested the ratio declined over the next twenty years, and so downplayed

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[41] David French, *The British Way in Warfare 1688-2000.* (London: Unwin Hyman, 1990). p.24
[42] H. Wayne Morgan, "The Origins and Establishment of the First Bank of the United States." *The Business History Review* 30, no. 4 (1956): p.479
[43] O'Brien, *'Fiscal exceptionalism*', p.247
[44] Sussman & Yafeh, *Institutions*, p.260
[45] Of course, this mindset was clearly more Whig than Tory. Although the majority of Whig MPs were not engaged in trade and commerce, the party relied upon the support of the new monied-men and proto-industrialists who were gaining most from trade. We can observe a significant relationship between the waxing and waning of Whig control in Parliament and government borrowing costs or stock market returns between 1688 and 1715.
Steven Pincus and James A. Robinson. *What Really Happened During the Glorious Revolution?*, 2011; David Stasavage. "Credible Commitment in Early Modern Europe: North and Weingast Revisited." *Journal of Law, Economics, and Organization* 18, no. 1 (2002): 155-86; John Wells and Douglas Wills, "Revolution, Restoration, and Debt Repudiation: The Jacobite Threat to England's Institutions and Economic Growth." *Journal of Economic History* 60, no. 2 (2000): 418-41.
[46] French, *The British Way,* p.24; Dickson, *Financial Revolution*, pp.7-8
[47] Authors calculations from Thomas and Dimsdale "A Millennium of UK Data", *Bank of England OBRA dataset* (2017) using Dean & Cole (1967) and Broadberry et al. (2015).
[48] Cf. survey in Joel Mokyr, "Introduction" in ed. Joel Mokyr, *The British Industrial Revolution : An Economic Perspective*. 2nd ed. (Boulder, CO: Westview Press, 1999). p.68
[49] Stanley Engerman, "The Slave Trade and British Capital Formation in the Eighteenth Century: A Comment on the Williams Thesis." *Business History Review (pre-1986)* 46, no. 000004 (1972). p.441

trade's role, Javier Cuenca Esteban's data based on free-on-board pricing rather than official figures suggest otherwise.[50] Of course trade was no free lunch, it required plenty of labour and capital itself, but the fact that hours worked increased throughout the 1700s suggests the economy was not operating at full employment and trade played a key role in stimulating both the demand for and the supply of labour.

Trade also features indirectly in a number of competing theses on Britain's economic transformation. Recently, a factor price approach has gained popularity. New technology was profitable in Britain first because of its unique price structure: high wages, cheap energy and cheap capital. British wages were high relative to European peers, in both nominal, exchange rate-adjusted terms, and in terms of silver, which meant a higher standard of living. Wages were also higher relative to the price of capital, and wages were exceptionally high relative to energy costs in what came to be Britain's industrial heartlands in the north and west.[51] Of course one has to ask why Britain's wages were so comparatively high. One of the theory's chief advocates is very clear: "*Britain's wage and price structure was the result of the country's success in international trade*."[52] Econometric analysis suggests that wages across Europe were propelled by the volume of trade per capita, via population growth, urbanization and the release of labour from farming.[53]

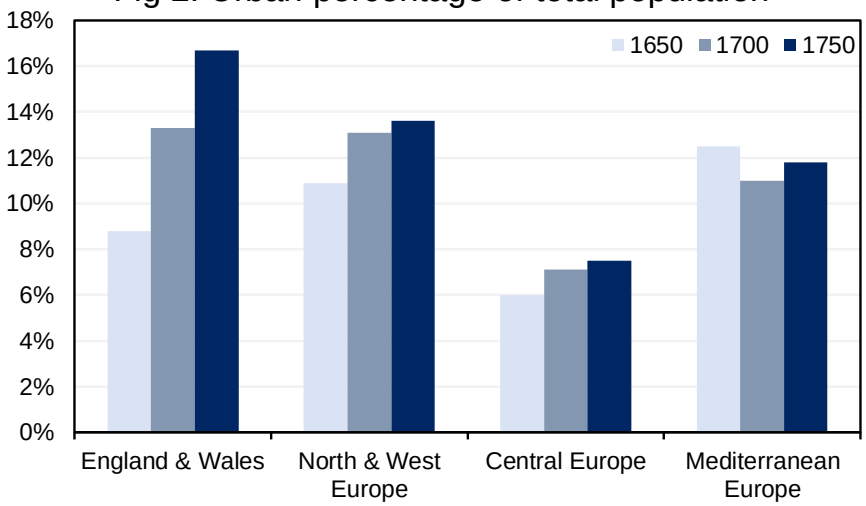
Urbanization features in various alternative explanations of Britain's industrial revolution: it stimulated the coal industry, transport networks and the market for consumer goods enthused by exotic imports.[54] England's urban share was not unique, but its transformation from relatively rural to relatively urban between the mid-seventeenth and mid-eighteenth centuries was quite singular (see figure 2). The geographic distribution clearly shows that it was driven by two activities: government and overseas trade.[55] Fiscal and financial revolution directly drove employment in government administration and drove employment in trade indirectly via its role in Britain's military – and therefore commercial – success.

Historians who focus their explanations purely on ideas and technological breakthroughs rooted in the Enlightenment also acknowledge that high wages made people better placed to buy education, augmenting the *supply* of technology. The Enlightenment, with its "economic

[50] N. F. R. Crafts, *British Economic Growth during the Industrial Revolution*. (Oxford : Clarendon 1985); Javier Cuenca Esteban, "The Rising Share of British Industrial Exports in Industrial Output, 1700–1851." *The Journal of Economic History* 57, no. 4 (1997): 879-906.
[51] Robert C. Allen, "Why the Industrial Revolution Was British: Commerce, Induced Invention, and the Scientific Revolution." *The Economic History Review* 64, no. 2 (2011): pp.358-59; Stephen Broadberry and Bishnupriya Gupta. "Lancashire, India, and Shifting Competitive Advantage in Cotton Textiles, 1700-1850: The Neglected Role of Factor Prices." *The Economic History Review* 62, no. 2 (2009): 279-305.
[52] Allen, *Industrial Revolution*, p.357
[53] Robert C. Allen, "Progress and Poverty in Early Modern Europe." *Economic History Review* 56, no. 3 (2003): pp.421, 432, 434.
[54] Gregory Clark and David Jacks. "Coal and the Industrial Revolution, 1700-1869." *European Review of Economic History* 11, no. 1 (2007): 39-72; Rick Szostak, *The Role of Transportation in the Industrial Revolution: A Comparison of England and France*. (Montreal: McGill-Queen's University Press, 1991); Jan de Vries, *The Industrious Revolution: Consumer Behavior and the Household Economy, 1650 to the Present*. (Cambridge: New York: Cambridge University Press, 2008).
[55] Jan de Vries, *European Urbanization, 1500-1800*. (London: Methuen, 1984). p.257

reasonableness" and redefinition of the public sphere in promoting private initiative, was a necessary conductor. Still, according to a leading proponent: "*Purely*

Fig 2. Urban percentage of total population



Source: Jan de Vries, *European Urbanization*, p.39

intellectual explanations need to be complemented by institutional ones."[56] The initial trade-based growth created the surplus necessary for such a large proportion of the population to work outside of agriculture, including as full-time intellectuals.[57] Britain uniquely saw trade-based, Smithian growth give way to technology-based growth, but this was no exogenous shock. We can also see the nexus between technology and trade at work in the revival of the shipbuilding industry and the linked expansion in the manufacture of ships' instruments which saw Britain as the world-leader.[58] Sophisticated gearing was an essential component of many crucial inventions of the late eighteenth century – indeed Arkwright referred to them as "clockwork" – and a large pool of labour skilled in its manufacture was essential for their spread (spinning machines did not come pre-assembled).[59]

To conclude, 1688 profoundly altered the path of eighteenth-century economic development, but not in the way North and Weingast set out. Paramount was the aggressive, commercially-minded foreign policy, whose success was only achievable thanks to the revolution in state finance. Success in international trade was contingent on military success and therefore successful government finance. International trade is a near ubiquitously-cited cited precondition for whatever the process that ultimately caused Britain's growth to shift paradigmatically in the late eighteenth-century. It was therefore no coincidence that the first nation to embark on modern economic growth was one which had undergone a profound financial revolution a century before.

[56] Joel Mokyr, "The Intellectual Origins of Modern Economic Growth." *The Journal of Economic History* 65, no. 2 (2005): p.340
[57] Ibid. pp.337-9
[58] Nuala Zahedieh, *The Capital and the Colonies: London and the Atlantic Economy, 1660-1700.* (Cambridge, UK, New York: Cambridge University Press, 2010). p.288
[59] Allen, *Industrial Revolution*, pp.374-5

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How Did the Centralisation of Pre-colonial African States Influence the Incidence of the Trans-Atlantic Slave Trade?

By Olamide Duyile

The assumption that the trans-Atlantic slave trade randomly accumulated an exceptionally diverse group of Africans couldn't be further from the truth. The composition of the trans-Atlantic slave trade was directly related to the level of centralisation of precolonial African societies. It is estimated that between the eighteenth and mid-nineteenth century, a West African person faced a one-in-five chance of being swept up in the trans-Atlantic slave trade.[1] Historians have come to an agreement that the proportion of Igbo's in those traded was particularly high, –from the port of Bonny this ranged from sixty to eighty per cent of all slaves.[2] When acknowledging that Bonny supplied two-thirds of all slaves shipped from the Bight of Biafra, these numbers are particularly interesting and a cause for further research.[3] The precolonial Igbo society has often been cited as a 'stateless society' or more formally, a decentralised state; it received a mere rating of one (petty chiefdom) out of five on the 'Jurisdiction hierarchy beyond local community' index. This case study seeks to assess the impact of decentralisation on the capture of the Igbo people. In line with literature, this case study will focus on the proliferation and eventual collapse of the Aro slave-trading network in the Igbo land. The impact of centralisation is best examined through the comparison of a well-known state –the Benin kingdom. The Benin kingdom was a large, walled, capital city ruled by a hereditary king known as 'Oba'. With a rating of 3 on the index of 'Jurisdictional hierarchy beyond local community' and controlled for geographic location, the Benin kingdom provides a compelling comparison for an examination of state development on the composition of slaves captured and sold in the trans-Atlantic slave trade.

Of particular importance to this case study is the acknowledgment that the historical accounts of the African precolonial era are scarce and has differed greatly as a consequence of perspective and historical period. Economic historians such as Allen and Mcphee perpetuated ideas that the economic progress of Africa has been comparatively recent and that nothing before the 16th century is worth studying. The Hamitic Hypothesis which states that black societies in sub-Saharan Africa never created 'complex' political organisations or states before encountering the Europeans is explicit evidence of this. [4] As a result, Africa is less studied archeologically than the rest of the world and this has led to an absence of records and materials. Hence, this case study will have a stronger focus on the Igbo as they have been more heavily

[1] Akyeampong, Emannuel, Robert H Bates, Nathan Nunn and James Robinson. Africa's Development in Historical Perspective. Cambridge: Cambridge University Press, 2014: 48
[2] Lovejoy, P & Richardson, D, 'This Horrid Hole': Royal Authority, Commerce and Credit at Bonny, 1690-1840. The Journal of African History (2004): 363-392
[3] Ibid): 363-392
[4] Hawthorne, Walter, 'States and statelessness', in John Parker and Richard Reid (eds), *The Oxford Handbook of Modern African History*, Oxford: Oxford University Press (2013): 77-93

researched during the slave trade era and the years following than the Benin kingdom. Yet still, Femi highlights the issue of invisibility when observing the Igbo numbers at the Bight of Biafra; he stipulates that European records could not distinguish between the Igbo, and non-Igbo groups who spoke the Igbo language.[5] Northup further points out the complexity of tracing slaves from their "port of embarkation to their homeland".[6] Recognising that this may be a limitation of my conclusions, this case study will draw on autobiographies like that of Oluadah Equina, slave journals and a combination of both Afrocentric and Eurocentric accounts of the precolonial era to draw meaningful conclusions.

The Igbo are till today one of the largest ethnic groups in Africa. With their homeland primarily in south-eastern Nigeria, the Igbo territory is located near the Bight of Biafra (also known as the Bight of Bonny) and this became the principal port region in which the Igbo people were sold during the trans-Atlantic slave trade.[7] In the first half of the 17th century, the Biafra region exported less than 6 percent of all captives exported from Africa, however, the Biafra soon become the most intensive slaving region.[8] In the 1740s, numbers began soaring; from 1741 to 1800 the annual mean number of captives rose to 13,800.[9] Astonishingly, 70 percent of captives exported from the Biafra are reported to have passed through the Aro network.[10] Causation is established as the settlement of the Aro network in the Igboland has been placed in the 1730s, just before the sudden surge in Igbo captives. The Aro network being the most influencing factor to shape the character of the Bight of Biafra in the trans-Atlantic slave trade will form the basis of our analysis of state development and Igbo enslavement. In 1733, an Arochukwu merchant settled his people on a major trade route 30km west of the Igboland; the Arochukwu were an intimate inland slave-trading network.[11] They worked by building trust networks in the Igbo heartland or what Charles Tilly might have called building "commitment making connections".[12] Integral to their operation were alliances with cross-river Igbo communities who took a defensive position in favour of the Aro. This was important because the Aro's main method of slave-taking was kidnapping.[13] Their vicious kidnapping method is also cited in the diary of the freed Igbo slave Oluadah Equiano who was kidnapped by the Aro alongside his sister. Overtime, enslavement to the Aro increasingly replaced execution as a punishment for

[5] Kolapo, Femi J. "The Igbo and Their Neighbours during the Era of the Atlantic Slave-trade." *Slavery & Abolition* 25, no. 1 (2004): 114-33.
[6] Northrup, David A. *Trade without Rulers: Pre-colonial Economic Development in South-Eastern Nigeria*. Oxford Studies in African Affairs. Oxford: Clarendon Press (1978): 59
[7] Nwokeji, G. Ugo., and American Council of Learned Societies. *The Slave Trade and Culture in the Bight of Biafra: An African Society in the Atlantic World*. ACLS Humanities E-Book (Series). Cambridge [England]; New York: Cambridge University Press (2010): 177
[8] Ibid: 193
[9] Ibid: 177
[10] Ejiogu, EC, and Njoku IC. "The Aru Igbo Trust Network and Slave-dealing in Igboland and the Lower Southeast Niger Basin: Assessing the Impacts and Consequences of Initial Abolitionary Efforts by Governments in the Atlantic World in the Period, 1787–1807." *Journal of Asian and African Studies* 52, no. 4 (2017): 514-50
[11] Nwokeji, G. Ugo., and American Council of Learned Societies. *The Slave Trade and Culture in the Bight of Biafra: An African Society in the Atlantic World*. ACLS Humanities E-Book (Series). Cambridge [England]; New York: Cambridge University Press, (2010): 180
[12] Ejiogu, EC, and Njoku IC. "The Aru Igbo Trust Network and Slave-dealing in Igboland and the Lower Southeast Niger Basin: Assessing the Impacts and Consequences of Initial Abolitionary Efforts by Governments in the Atlantic World in the Period, 1787–1807." *Journal of Asian and African Studies* 52, no. 4 (2017): 514-50
[13]Ibid: 514-50

theft, murder and witchcraft.[14] As previously stated, the Igbo were part of a decentralised state. They operated as forty to fifty independent villages and their governance resembled a quasi-democratic structure, including associations and assemblies such as a council of elders. Consequently, scholars have argued that the Aro dominated only because they developed strong state structures among a largely decentralised community. For instance, Ejigou and Njoku wrote that the decentralisation of the Igbo led to an absence of group encounters that would have developed trust networks between the Igbo villages that the Aro would have had to contend with.[15] In other words, the lack of state structures meant that the Aro could easily insert themselves. This argument is convincing. Nonetheless, a number of economic historians have disagreed that the Aro showed signs of centralisation. Northup insisted that there was an 'Aromania' in the literature in which historians were eager to find evidence of state-building within the Aro network.[16] Whilst this observation is meaningful, Northup's argument that the Aro were not a state rests heavily on the notion the Aro had many disputes thus resembling the Igbo community. However, a historical observation of even the greatest states show that disputes are commonplace. Nwokeji agrees with Northup that despotism did not exist in the Igboland but that does not mean that there were no state structures.[17] What is clear is that though the Aro did not need a high degree of centralisation to expand into the Igboland, they did develop a variety of state-structures and settlements. Ronald Cohen offers further insight into state theory. One of the main features he attributes to states is that they are 'highly adaptive'. The Aro are the perfect fit for this criterion as we will continue to see.[18] Hence, we can conclude that the lack of a centralised state among the precolonial Igbo community created a vacuum where the Aro could easily assert themselves. With a slightly higher level of centralisation and organisation the Aro were able to develop a slaving oligarchy with limited resistance and this heavily influenced the incidence of the Igbo in the trans-Atlantic slave trade.

Along the western portion of the Gulf of Guinea was the Bight of Benin, its historical associations with the slave trade have also given it the name 'The Slave Coast'.[19] It was the principal slaving port of the Benin kingdom which was located in modern day southern Nigeria. The Benin kingdom was one of the oldest and highly developed precolonial African kingdoms -it is not to be confused with the West African country Benin, formerly known as Dahomey. Igbafe notes that prior to the European encounter, slavery was already a part of the societal structure within the Benin kingdom.[20] It is this system of enslavement that truly serves as a

[14] Nwokeji, G. Ugo., and American Council of Learned Societies. *The Slave Trade and Culture in the Bight of Biafra: An African Society in the Atlantic World*. ACLS Humanities E-Book (Series). Cambridge [England]; New York: Cambridge University Press, (2010): 184

[15] Ejiogu, EC, and Njoku IC. "The Aru Igbo Trust Network and Slave-dealing in Igboland and the Lower Southeast Niger Basin: Assessing the Impacts and Consequences of Initial Abolitionary Efforts by Governments in the Atlantic World in the Period, 1787–1807." *Journal of Asian and African Studies* 52, no. 4 (2017): 514-50

[16] Northrup, David A. *Trade without Rulers: Pre-colonial Economic Development in South-Eastern Nigeria*. Oxford Studies in African Affairs. Oxford: Clarendon Press, (1978): 62

[17] Nwokeji, G. Ugo., and American Council of Learned Societies. *The Slave Trade and Culture in the Bight of Biafra: An African Society in the Atlantic World*. ACLS Humanities E-Book (Series). Cambridge [England]; New York: Cambridge University Press, (2010): 184

[18] Ibid: 177

[19] Northrup, David A. *Trade without Rulers: Pre-colonial Economic Development in South-Eastern Nigeria*. Oxford Studies in African Affairs. Oxford: Clarendon Press, (1978): 65

[20] Igbafe, Philip A "Slavery and Emancipation in Benin, 1897-1945." *The Journal of African History* 16, no. 3 (1975): 409-29

testament to the kingdom's sophistication in comparison to governance in the Igbo community. Slaves were acquired from the military operations Benin engaged in as an imperial power, they were also obtained from the estate of the deceased and given to the Oba, slaves could additionally be gifted to the Oba or used as a tribute. Judicially, enslavement was also a punishment.[21] It is clear that slave-taking was already a component of warfare and state building before the trans-Atlantic trade.[22] The importance of slaves in the societal structure of Benin becomes increasingly relevant in the forthcoming section of the case study where we will study restrictions placed on slaves being sold to the Europeans by the Oba.

When the Portuguese arrived in the 16th century the first engagement they sought after were with African rulers.[23] This was only feasible in areas with centralised governments such as Benin; historians have even commented that there was a "diplomatic relation between the two kingdoms who considered themselves equal in most respects".[24] Hence, the encounter between the Benin kingdom and the 'slave-takers' was already distinguishable and we can attribute this difference to the higher level of centralisation in the Benin kingdom. Additionally, when the Portuguese initially arrived in the 1530's they were trading for Benin beads and not slaves.[25] Soon after, Oba Ewuare authorised the building of a commercial factory in the port of Benin called Gwato. It was the only formal market where trade could take place, the Gwato handled both trade in commerce and eventually in slaves.[26] The Gwato is again symbolic of the completely dissimilar ways trade could be organised amongst a community where economic activity was regulated and centralised, in contrast to the 'stateless' Igbo community with no apparent market economy. The protection formed around the Benin territory in regard to slave-taking is also significantly important. European inability to venture into the hinterland in the early stages of the trans-Atlantic slave trade was principally caused by the strict and effective instrument of the African social organisation which crippled their pursuit –Oba Ewuare of the Benin kingdom was at the forefront of this.[27] The citizens of the Benin kingdom were instructed by the Oba to resist any attempt to kidnap, lure directly or indirectly exchange their neighbours into slavery. Notably, the Obas also refused to sell male slaves to the Portuguese from their first encounter and this remained prohibited for an extensive period of time.[28] This embargo was likely to preserve the pool of men the kingdom needed for many reasons. For instance, free males and male slaves were heavily involved in the expansion of the guild system, they

[21] Igbafe, Philip A. "Slavery and Emancipation in Benin, 1897-1945." *The Journal of African History* 16, no. 3 (1975): 409-29
[22] Green, Toby, and ProQuest. *The Rise of the Trans-Atlantic Slave Trade in Western Africa, 1300-1589.* African Studies Series; 118. Cambridge; New York, N.Y.: Cambridge University Press, (2012): 256
[23] Ibid: 256
[24] Eltis, David, and Engerman, Stanley L. "Slavery in Non-Islamic West Africa, 1420–1820." In *The Cambridge World History of Slavery*, 81-110. Vol. 3. The Cambridge World History of Slavery. Cambridge: Cambridge University Press, (2011): 91
[25] Ibid:: 91
[26] Ume, Kalu E. *The Rise of British Colonialism in Southern Nigeria, 1700-1900: A Study of the Bights of Benin and Bonny*. Smithtown, N.Y.: Exposition Press, (1980): 92
[27] Ibid: 92
[28] Green, Toby, and ProQuest. *The Rise of the Trans-Atlantic Slave Trade in Western Africa, 1300-1589.* African Studies Series; 118. Cambridge; New York, N.Y.: Cambridge University Press (2012): 83

were the foundation of the work camps and the main labour force.[29] With males holding economic, military and social value in the Benin community there was a greater incentive and ability to hedge protection around them. This marks a clear difference between procedures in the Benin kingdom as a result of the slave trade, and procedures with the Igbo. Nevertheless, by the 17th century human trade began to take over as the Portuguese were challenged by the arrival of other Europeans. With the increased pressure to supply more slaves, the methods used by the Benin's were similar to those they used before the arrival of Europeans but intensified. Warfare became their most popular means of slave procurement.[30] Consequently, one of the prime differences we see between the Benin kingdom and the Igbo is that while the Benin were able to mobilise their troops for slave procurement, the Igbo with no centralised tactics became the ultimate victims of slave procurement. It is without doubt, that the benefits of centralisation reduced the incidence of the Benin people in the trans-Atlantic slave trade.

Lastly, a brief overview of the immediate events following the 1807 abolition of slavery by the British, lends further insight into why the number of Igbos traded at the Bight of Biafra remained disproportionately high even through the 19th century. Unfortunately, literature relating to the Benin kingdom becomes progressively futile after the advent of the slave trade and there is limited evidence to draw a wholesome comparison with the Igbo. Nonetheless, the development of the Aro network after the abolition further demonstrates the ways in which the centralisation of pre-colonial African states influenced the incidence of the trans-Atlantic slave trade. In acknowledging that the Aro were a network who established themselves primarily on the sale of African slaves to the Europeans, it is natural to expect that as the abolitionists vehemently pressed further for the abandonment of slave trading, the Aro would be brought to a halt. Yet, until the 1830s the trade of slaves continued to expand and the Igbo remained the main source of female and male slaves.[31] According to Nwokeji, this was because the Aro showed 'challenge-defying' flexibility and continued to attract slave traders.[32] It is noted however, that the 19th century saw record-level surges in violence in West Africa and the Aro in particular, are known to have adopted more militant tactics.[33] This shows that the Aro were challenged by the new conditions of the abolition but it also point us back to Ronald Cohen's insight into state theory; the Aro were a 'highly adaptive' state and this was undeniable. What is also certain, is that it was the lack of centralisation of the Igbo that gave the Aro this adaptability. What makes this finding particularly alluring is the connection established

[29] Green, Toby, and ProQuest. *The Rise of the Trans-Atlantic Slave Trade in Western Africa, 1300-1589.* African Studies Series; 118. Cambridge; New York, N.Y.: Cambridge University Press, (2012): 83
[30] Ume, Kalu E. *The Rise of British Colonialism in Southern Nigeria, 1700-1900: A Study of the Bights of Benin and Bonny*. Smithtown, N.Y.: Exposition Press, (1980): 90
[31] Ejiogu, EC, and Njoku IC. "The Aru Igbo Trust Network and Slave-dealing in Igboland and the Lower Southeast Niger Basin: Assessing the Impacts and Consequences of Initial Abolitionary Efforts by Governments in the Atlantic World in the Period, 1787–1807." *Journal of Asian and African Studies* 52, no. 4 (2017): 514-50
[32] Nwokeji, G. Ugo., and American Council of Learned Societies. *The Slave Trade and Culture in the Bight of Biafra: An African Society in the Atlantic World*. ACLS Humanities E-Book (Series). Cambridge [England]; New York: Cambridge University Press, (2010): 101
[33] Ibid: 108

between the decline of the slave trade and the growth of legitimate trade.[34] Although, we have established that the decline of the slave trade only began two decades after abolition, the Aro network did not collapse until the 1902 British colonial invasion.[35] Chima Korieh insists that this was because the Aro had managed to develop a major trade in palm oil simultaneously, yet independent, of the trade in slaves.[36] This severely undermines Hopkins theory on the 'crisis of adaptation. Hopkins argued that rulers and states in West Africa, depended heavily on the profits from the slave trade to maintain themselves, which then created an economic crisis after abolition.[37] However, the Aro continued to dominate distributive trade until the early 20th century, first with trade in slaves, then with trade in commerce and showed no real sign of a crisis.[38] Hence, the lack of precolonial centralisation in the Igboland meant that, not even the initial abolitionary efforts were enough to prevent them from being captured and transported across the Atlantic.

The centralisation of pre-colonial African states influenced three main factors during the trans-Atlantic slave trade: the governance of matters that surrounded the slave trade, the protection of citizens within a state and the means of enslavement. The Igbo were a decentralised state that operated without a main political leader or authoritative figure, their 'statelessness' created a power vacuum that was embraced by a calculative group who were able draw on all the weaknesses of 'statelessness'. The Aro were to govern the incidence of the slave trade from the 1740's till the beginning of the 20th century. In contrast, the Benin kingdom had the all-powerful Oba who controlled all matters relating to his kingdom and particularly the slave trade. The Oba was even able to place restrictive measures on the sale of his male subjects into the trans-Atlantic slave trade. Slave procurement also differed relative to centralisation. Alexander Falconbridge –a British slave ship surgeon stated: "There is great reason to believe that most of the negroes shipped off from the coast of Africa are kidnapped", this was true for the Igbos.[39] With no state-protection, it appeared relatively easily for the Aro network to kidnap the Igbos. On the other hand, Benin was a walled city, there was no space for an organisation like the Aro to perform kidnappings. Instead, the Benin kingdom waged war to attain slaves. The profits that were made from regulated trade even before the advent of the slave trade, allowed the kingdom to maintain a standing army that was used for imperial means and

[34] Ejiogu, EC, and Njoku IC. "The Aru Igbo Trust Network and Slave-dealing in Igboland and the Lower Southeast Niger Basin: Assessing the Impacts and Consequences of Initial Abolitionary Efforts by Governments in the Atlantic World in the Period, 1787–1807." *Journal of Asian and African Studies* 52, no. 4 (2017): 514-50
[35] Korieh, Chima J. "The Nineteenth Century Commercial Transition in West Africa: The Case of the Biafra Hinterland." *Canadian Journal of African Studies/La Revue Canadienne Des études Africaines* 34, no. 3 (2000): 588-615
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[39] Nwokeji, G. Ugo., and American Council of Learned Societies. *The Slave Trade and Culture in the Bight of Biafra: An African Society in the Atlantic World*. ACLS Humanities E-Book (Series). Cambridge [England]; New York: Cambridge University Press (2010): 218

protection. Consequently, this case study concludes that the higher proportion of Igbos taken during the trans-Atlantic slave trade was due to low levels of centralisation.

The events of the trans-Atlantic slave trade are especially important in African economic history as economic historians such as Nunn, have linked the impact of the slave trade to Africa's poor economic development.[40] Although this case study has only considered the immediate effects of the abolition, it is necessary to mention that the Bight of Biafra went on to dominate the production of palm oil and by the mid-19th century was producing more palm oil than all the West African ports together.[41] In short, decentralisation of pre-colonial African states does not seem to have affected the ability of the Bight of Biafra to adjust to the new trade of legitimate goods. Of course, the proportion of palm oil produced by the Igbo is unknown and surely a comparison with the Benin kingdom would have produced a more comprehensive conclusion, but unfortunately the legacies of the poor archaeological study of Africa plague the understanding of African economic development today.

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What Were the Main Factors Behind the Emergence of a Global Sovereign Debt Market in the Nineteenth Century?

By A.S.Karthik Narayan

The sovereign debt market and its origins has been a hotly contested topic in economic history for a considerable period of time, for an accurate historical understanding of the channels through which it emerged is essential to understand subsequent progress in the economic and financial spheres and to properly contextualize contemporary debates about the success/failure of sovereign debt markets. This essay will argue that while reputation building mechanisms played a crucial role in the emergence of such markets, it was the increase in the supply of loanable funds in international financial markets (on the back of successful industrial growth in Western Europe in the 19th century) that served as the underlying impetus behind the development of a global sovereign debt market.

Before we consider the issue of how these markets actually emerged it would be in order to first understand why the emergence of a market for sovereign debt had always been problematic before the 19th century. It has been termed by some authors as a "sovereign debt puzzle"[1]. The primary reason why a market for sovereign debt was very difficult to set up was because the borrowing state/sovereign enjoyed complete immunity[2]. There was no court of law to which a creditor could drag a sovereign in order to settle outstanding dues. Moreover, in a sovereign debt market there is an inherent asymmetry of power as we have multiple creditors dealing with a single borrower (i.e., the sovereign borrower of a country) creating problems of collective action and contracting[3] incentivizing the borrower to play one creditor against another (as defaulting on one creditor's dues will not stop the Sovereign from raising money from the potentially hundreds of other lenders on the international market). In that sense, without adequate "constitutional" restraints on government, sovereign debt markets cannot exist if financial markets are complete and perfectly competitive[4].

These two factors created a great disincentive for creditors, deterring them from lending, leading to potential problems in the emergence of a sovereign debt market. In this period the complete lack of financial information about the sovereign borrower among the general public further exacerbated the problem as this created an inherent asymmetry of information in any such market that were to emerge, which would further undermine the emergence of a market for sovereign debt.

[1] Flandreau, Marc H., and Juan H. Flores. "Bonds and Brands: Foundations of Sovereign Debt Markets, 1820-1830." *Journal of Economic History* 69, no. 3 (2009): 646-84. pp 647
[2] Ibid: pp 648
[3] Ibid: pp 648
[4] Bulow, Jeremy, and Kenneth Rogoff. "Sovereign Debt: Is To Forgive To Forget?" *The American Economic Review* 79, no. 1 (1989): 43.

Thus, many authors argue that for the above mentioned reasons sovereign debt markets did not emerge before the advent of the 19th Century anywhere in the world. In their view the 19th century saw the development of certain institutional innovations/change in government policy which made these markets come into existence. However, Douglass North and Barry Weingast (1989)[5] in a classic paper trace the origins of this market in England particularly to the late 17th century while Michael Tomz has provided evidence for their existence in Amsterdam in the 18th century[6]. We will consider their arguments a bit later. But, for the moment it would be safe to say that while sovereign debt markets have existed in certain places much before the 19th century, it is only in the 1800s that they truly became widespread [7][8].

Now that we have briefly outlined the "sovereign debt puzzle" and clarified certain doubts about the exact time period of its origins let us consider the various arguments that have been made by different authors on how these markets emerge. In order to better understand the plausibility of the arguments being made it would be instructive to consider how their accounts of what happened helped overcome the three problems of i)Sovereign Immunity; ii)Collective action and iii) Asymmetry of information which prevented such markets from emerging in the first place.

North and Weingast (1989) make the argument that the reason for the spectacular explosion of government debt in England[9] was the post-Glorious Revolution changes to the political structure that made it possible for the Sovereign to credibly commit towards repayment in any debt contract. This was made possible as post-1688, Parliament was given a veto over important decisions (which included how much the Sovereign could borrow) eliminating arbitrary decisions with regard to debt repayment by the King and as a result of the independence of the judiciary from the Crown being upheld[10]. They argue these "democratic" developments in political structure enabled the borrowers to develop a sense of trust in the government's commitment to repay, thereby increasing borrowing in the process of solving the problems of collective action, immunity and asymmetry of information through an independent judicial system and a transparent legislative process.

Now while this may be a sufficient account of why sovereign debt markets emerged in England they leave unanswered the bigger puzzle of why such markets were found in countries with

[5] North, Douglass C, and Barry R Weingast. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England." *The Journal of Economic History* 49, no. 4 (1989): 803-32.
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[10] Ibid: 817

undemocratic political structures like Austria, Prussia and autocratic Russia in the 19th century[11].

Flandreau and Flores (2009) offer a radically different framework for thinking about this puzzle. They argue that a sovereign debt market emerged in many countries in Europe and Latin America in the 19th century because of the crucial role played by the alignment of incentives that was brought about by underwriters seeking to protect their good name and reputation.

Such an imperative was placed upon underwriters of foreign securities, they argue, mainly because a certain George Macgregor managed to raise almost £200,000 as sovereign debt in favour of a fictitious state known as "Poyais" in Latin America in the 1820s in the London markets with the help of underwriters[12]. Before we proceed any further, it is important to pause and consider why underwriters during this period were particularly important in the process of sovereign finance.

Since foreign governments/companies would have found it very difficult to issue debt directly to lenders due to geographic constraints and the costs associated with contacting each lender individually, they usually sold their bonds to underwriters who then took on the responsibility of further reselling these bonds onto lenders. They became particularly important in the early 19th century due to the increasing amount of savings making themselves available for foreign investment, particularly in Britain, that had no way of accessing foreign financial securities directly[13]. In a market with asymmetry of information (as foreign financial markets were in this period, with borrowers knowing considerably more than lenders about their financial prospects) both borrowers and underwriters have an incentive to claim that a given financial security is worth more than it actually is and this was clearly seen in this case with "Poyais" bonds trading at yields as bonds from Argentina and Brazil[14].

Now when investors discovered that Macgregor had raised the money in the name of a country that did not exist and had fled to France with the money, trust in underwriters collapsed. In such a scenario the reputations of those underwriters who did not affix their stamp of approval to these murky undertakings went up considerably, according to Flandreau and Flores[15]. Notable among such underwriters were the House of Rothschild and Baring Brothers.

The authors further argue that those underwriters with the established "good" name and reputation in the eyes of investors credibly committed to signalling only sound loans to

[11] Flandreau, Marc H., and Juan H. Flores. "Bonds and Brands: Foundations of Sovereign Debt Markets, 1820-1830." *Journal of Economic History* 69, no. 3 (2009): 646-84. pp 650
[12] Tomz, Michael. *Reputation and International Cooperation : Sovereign Debt across Three Centuries*. Princeton, N.J.: Princeton University Press, 2007. pp 52
[13] Fishlow, Albert. "Lessons from the Past: Capital Markets during the 19th Century and the Interwar Period." *International Organization* 39, no. 3 (1985): 383-439. pp 387
[14] Tomz, Michael. *Reputation and International Cooperation : Sovereign Debt across Three Centuries*. Princeton, N.J.: Princeton University Press, 2007. pp 54
[15] Flandreau, Marc H., and Juan H. Flores. "Bonds and Brands: Foundations of Sovereign Debt Markets, 1820-1830." *Journal of Economic History* 69, no. 3 (2009): 646-84. pp 650

investors for fear of losing their reputation and long term earnings prospects. Investors trusted the securities issued by these "good" underwriters due to their past track record.

This gave these underwriters the incentive to provide favourable loan terms to countries that behaved well and penalize those that borrow too much by suspending market access. Sovereign borrowers were thus credibly committed to repaying the debts issued through these underwriters for fear of being cut off from access to credit on favourable terms in the future. This, according to the authors, paved the way for the functioning of a reasonably efficient sovereign debt market on a global scale in the 19th century by helping to transform the reputation of the underwriter into the reputation of the borrower.

Michael Tomz[16] makes a similar point about the importance for reputation building in the emergence of sovereign debt markets by citing evidence from Amsterdam in the 18th century and London in the 19th century. He observes how initially underwriters charged new borrowers a premium over the interest rate on seasoned borrowers and how depending on their responsible behaviour over subsequent years this premium was brought down slowly to levels that match that of the seasoned borrower (which he defines as one who has been borrowing for a period of more than 10 years). However, Tomz is silent about the incentive structures that actually made this possible.

In both of the above cases, it can clearly be seen how the authors place emphasis on the importance of reputation building on the part of the underwriters in order to create the incentives that will subsequently make sovereign debt markets possible by simultaneously solving the problem of sovereign immunity, collective action and asymmetry of information.

Now while it is undeniably true that credible commitment on the part of both borrowers as well as investors/creditors is essential for the development of any debt market in general and in particular a sovereign debt market, from the above cited examples it can be argued that credible commitment is at best a second degree cause for the development of such markets in the 19th century. This is so as while the credibility crisis brought about by the "Poyais" incident and the subsequent incentives good underwriters faced to credibly commit towards selling sound debt served as the channel through which these markets eventually developed, this account is insufficient to explain why markets became increasingly global in the 19th century.

As we have already seen in Tomz[17] underwriters have existed for quite some time before the 19th century and have experienced defaults of the kind that Europe witnessed during the 1820s. Therefore, if the Flandreau & Flores hypothesis were true we should reasonably expect such pervasiveness in sovereign debt markets in the 17th and 18th century itself for all the conditions they list for its emergence are satisfied in no small measure during these periods.

Thus, I think that one has to pay attention to the remarkable growth of the European economies in the 1800s in order to fully understand the pervasiveness of the sovereign debt market by the time of the end of the 19th century. It can be argued that industrialization and its rapid spread

[16] Tomz, Michael. *Reputation and International Cooperation : Sovereign Debt across Three Centuries*. Princeton, N.J.: Princeton University Press, 2007.
[17] Ibid.

through Europe's economies during the 19th century played a tremendous role in increasing surplus/savings in all the countries of Western Europe to different degrees and to different extents. It was this new found abundance of resource capacity in Europe coupled with European governments intense global outlook (encouraging foreign investment) that brought all of these savings into the international market in search of investment opportunities with attractive rates of return. Without this increased supply of loanable funds, no amount of institutional innovation would have sufficed to establish a truly global sovereign debt market.

One can reasonably say that it was this arrival of excess European resources on the international financial markets that served as the greatest impetus to the emergence of the global sovereign debt market although it is true that in the absence of underwriters who faced incentives to commit in the aftermath of a credibility crisis no such market would have emerged. Not much in the form of ready data is available to test this claim and this serves as a wonderful agenda for future research.

Therefore, in conclusion it can be said that while reputation building mechanisms were crucial for the emergence of sovereign debt markets on a global scale in the 19th century, it was the arrival of surplus Western European funds on the international financial markets on the back of successful industrial growth in these countries that served as the underlying cause behind the arrival of the market for sovereign debt on the world stage.

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Does Macroeconomics Need Microfoundations? Historical Roots of Modern Macro and its Current Development

By Simon Grothe

Abstract

This essay reviews the historical background of modern macroeconomic modelling and evaluates its usefulness from a philosophy of economics perspective. Since Robert Lucas' famous critique in 1976, there is a trend in economics to try to explain every macro phenomena on the microlevel. These so called microfounded models firstly featured rational agents but have changed over time reacting to criticism of its assumptions. This essay argues that no matter how good microfoundations become, its application is doomed to fail. It rejects three assumptions for microfoundations being useful by showing that its application faces inherent and unavoidable endogeneity and reverse causality biases, which economists would concern in any other application. The Cournot-Problem argument against microfoundations is extended by two even-if clauses. The essay then derives Hovers categories of supervenience and emerging properties and shows that pure macro is the more fruitful approach to understand financial markets. It concludes with a discussion of the objection of pure macro identifying only correlations but no causality.

Introduction

In this essay, I will argue that macroeconomics not necessarily needs microfoundations by showing that micro-based macro faces inherent and unavoidable endogeneity and reverse causality biases, which economists would concern in any other application. In the first section, I will briefly review the history of the term microfoundations and derive which assumptions its use imply. I will then turn to a methodological analysis. Section two discusses the problem of tracing all decisions of all individuals (Cournot-Problem), sections three and four extend this argument by providing two even if clauses. I will conclude that the observation of the outcome of interactions, hence macroeconomic variables, might be sufficient for understanding and predicting economic issues. A fifth section applies this theoretical finding to financial markets by comparing the results of the microbased efficient market hypothesis to Minsky's pure macro financial market instability hypothesis. The comparison shows that macroeconomics without microfoundations yields a better understanding of financial markets. Finally, I will discuss the challenge that macro without micro would just identify correlation but not causality.

Section 1 – Definitions

I shall start by defining core concepts. Microeconomics is the analysis of economic activity on the micro level, like consumer and firm behaviour on a specific market. Macroeconomics is the analysis of aggregates and their interaction, like inflation, the unemployment rate or growth. The term microfoundations had a narrow definition at the time it was introduced. In his 1976 paper Robert Lucas famously criticised macroeconomic analysis as covering just transitory correlations which are not robust to policy interventions.[1] His aim was therefore to build macroeconomics on a solid ground using concepts which Muchalski describes as the three pillars of Lucasianism: Representative Agent Models, Rational Expectations Hypothesis (REH) and the neutrality of money.[2] A Lucasian macroeconomic model works in the following way: Let's assume one rational utility maximising consumer representing all other consumers and one profit maximising firm representing all other firms. Then derive an equilibrium in the market in which they operate. Build a dynamic stochastic general equilibrium model which aggregates all equilibria from all markets to a general equilibrium. Lucas aim was to explain every macro phenomena on the micro level.

All elements of this approach were subject to a wide range of theoretical and empirical criticism. First, Hoover states that representative agents do not cover heterogeneity and are in fact aggregates. They therefore lack explanatory power on the micro level.[3] The REH is based on expected utility theory (EUT), which states that consumers maximise utility. Depending on how narrow *rationality* is defined, EUT is called an ex-hypothesis by Rabin and Thaler when considering findings from behavioural economics like risk aversion or unfalsifiable if we define every choice as unique by including more and more variables into individuals utility functions.[4]

It would be totally possible to include these critiques into a modern, broader definition of microfoundations capturing findings from behavioural economics and agent-based modelling.[5] Hence, observing heterogeneous agents on the micro-level, aggregate them to diverse entities like “irrational consumers” and “rational consumers” and let them interact. I will use a broader definition of microfoundations to make my critique robust to extensions of the original, narrow definition of the term. In line with Simon Wren-Lewis, I take microfoundations as a general two-step model approach, in which behaviour is observed on the individual level and than

[1] Lucas, Robert. “Econometric Policy Evaluation. A Critique.” *Carnegie-Rochester Conference Series on Public Policy*. Vol 1, (1976): pp. 19-46

[2] Muchlinsky, Elke. “The Lucas Critique and Keynes' Response – Considering the History of Macroeconomics.” *Macroeconomics 0503019* (University Library of Munich, Germany, 2005); note:The neutrality of money pillar is not important for the microbased macro discussion. In short: Lucas' agents are fully informed and anticipate the future rationally. Hence, an increase in the money supply leads to an immediate increase in the price level. However, there is a lag due to sticky prices and expectations which makes monetary policy work.

[3] Hoover, Kevin D. *The Methodology of Empirical Macroeconomics. Chapter 3.* (Cambridge: Cambridge University Press, 2001)

[4] Rabin, Matthew and Richard H. Thaler. “Anomalies. Risk Aversion.*” Journal of Economic Perspectives.* Vol. 15. (2001): pp. 219-232; and Hodgson, Geoffrey M. “On the Limits of Rational Choice Theory.” *Economic Thought.* (2012): pp94-108

[5] Farmer, Doyne and Duncan Foley. “The economy needs agent-based modelling.” *Nature*. Vol. 460 (2009): pp.685-686

extrapolated to the whole economy independent of any assumption on the micro level.[6] This approach appears to be desirable since it could turn correlation into causality by identifying the causes for macro phenomena on the micro level. In this sense it is often argued that if current micro models are not sophisticated enough, we should continue using pure macro as a second best approach until we develop good microfoundations.[7] In the following sections however, I will show that no matter how good microfoundations become, its application is doomed to fail.

It is hard to deny that macro phenomena result from individual action. I therefore interpret the question as being methodological: Do macroeconomics, without further explanation on the individual level, yield fruitful findings for understanding and predicting economic outcomes? In the next three sections, I will argue that macroeconomics does not necessarily need microfoundations by rejecting three assumptions for microfoundations being useful. The main reason for the call for microfoundations is the desire for having a stable ground on which aggregate models can be build on. However, this is only possible if three assumptions are fulfilled.

(I) We are able to identify and capture preferences on the micro level
(II) Preferences are stable
(III) Laws of composition are traceable

Violation of these assumptions implies

(I) not having a ground at all
(II) not having a solid ground
(III) not being able to extrapolate from micro to macro

In the following, I will argue, that all three assumptions are violated.

Section 2 – The Cournot-Problem

Assumption (I) states, that explaining aggregates on the micro level requires a comprehensive understanding of the whole micro level. However, this appears to be impossible since the economy features heterogeneous agents. Microeconomic research therefore faces the difficulty of capturing distinct motivations in microeconomic models. If the interaction of heterogeneous micro entities X1,X2...Xn (e.g. consumers) and Z1, Z2...Zn (e.g. firms) cause the macro entities Y1,Y2,...,Yn (e.g. prices), and X1≠X2≠...≠Xn and Z1≠Z2≠...≠Zn, in order to understand the microlevel, it is necessary to include X1,X2...Xn and Z1,Z2...Zn into the model. Hoover calls the impossibility to trace the decisions of all individuals the Cournot-Problem.[8] If we do not know the motivations, we can not state having any ground for extrapolation. Assumption (I) is violated.

[6] Wren-Lewis, Simon. "Microfounded and other Useful Models." Blogpost on *mainly macro*, 2012. Found at https://mainlymacro.blogspot.com/2012/03/microfounded-and-other-useful-models.html Last checked: 13.01.2019, 18:51

[7] Smith, Noah. "Why bother with microfoundations?" Blogpost on *noahpinion.*, 2012. Found at: https://noahpinionblog.blogspot.com/2012/03/why-bother-with-microfoundations.html Last checked: 15.02.3019 12:32

[8] Hoover, M*ethodology*

Section 3 – even if – the supercomputer – part (a)

One could reply that being able to tracing back the decisions of all individuals is only a matter of technological progress. I will therefore argue, that even if this was possible, there is no reason to assume that the observed decision patterns are stable over time, which would violate assumption (II). To show that, let's assume a supercomputer connected to the brains of all individuals capturing their motivations at a point in time. I will argue that the supercomputer would need to run a new set of observations in every moment since consumption and production decisions are not based on stable patterns like rationality and profit maximisation, but are itself outcomes of the production process. Micro level decisions reflect events occurring on the macro level. That means the elements in the vectors X and Z are itself a function of the elements of the vector Y, which is called a reverse causality bias in econometrics.

I will take stock markets as an example, in which previous prices (macro variables) determine future price movements (also macro variables).[9] Keynes explained this phenomena by introducing the concept of not determinable *uncertainty*. Compared to risk, uncertainty is not computable like the likelihood of having a certain number when throwing a dice. Uncertainty emerges from not knowing about future inventions, political disruptions or natural catastrophes.[10]

Individuals therefore develop conventions when making investment and consumption decisions. Keynes stated in 1937:

> "Knowing that our own individual judgment is worthless, we endeavour to fall back on the judgment of the rest of the world which is perhaps better informed."[11]

Decisions on the micro level (consumption/investment) are based on macro phenomena (conventions). Therefore micro decisions are affected by changes on the macro level. Expectations based on conventions are volatile since they are most likely to be imprecise exactly because of the fact that it is impossible to assign probabilities to every event. Especially financial markets are sensitive to these changes. It is at best observable when bubbles burst and conventions adjust. First few people start to sell a certain stock. Other people hear the rumours and also start selling that stock. At the end of a day, a the market value of a stock can crash by double digits without the underlying firm having changed at all but just the convention. Akerlof and Shiller framed this behaviour as animal spirit.[12] There is a constant interaction of the aggregate and the individual. Hoover calls this phenomena *supervenience* and argues that independent language and categories are necessary to understand the macro level.[13] I will

[9]Keen, Steve. *Debunking Economics*. Zed Books Ltd. London, 2001
[10] REH sets uncertainty and risk equal and therefore ignores unmeasurable factors or such with difficult assignment of probabilities.
[11] Keynes, John M. *The general Theory of employment.* Quarterly Journal of Economics. Vol. 51. (1937): pp. 209-223
[12] Akerlof, George A., and Robert J. Shiller. *Animal Spirits How Human Psychology Drives the Economy and Why It Matters for Global Capitalism*. (Princeton, N. J.: Princeton University Press, 2010)
[13] Hoover, *Methodology*

expand this insight in the sixth section when discussing macro modelling without microfoundations.

In this section, I have shown that even if we were able to trace the decisions of all individuals at a point in time, there is no reason to assume that these decision patterns are stable. There is no solid microeconomic ground from which to start, there are no laws of nature as in physics. Therefore there is no reason to assume that microbased models would be robust to policy changes.

Section 4 – even if – part (b)

One could argue that at a point in time, supercomputers could solve the problem arising from dynamic preferences by capturing the feedback effects from macro to micro decisions and include them into the action functions of consumers and firms. Assumption (III) states that traceable laws of composition are necessary in order to extrapolate from micro to macro. Hence, it must be possible to identify how decisions on the micro level translate into the macro phenomena to build a model capturing this effect. I will argue that this is impossible since an equilibrium on one market can cause a disequilibrium on another market, which can cause a disequilibrium on the first market. The interactions on the microlevel are non-linear and end in possibly infinite feedback loops.[14] This causes an endogeneity problem in econometric terms: Values in X are a function of other values in X and in Z and vice versa making causal inferences impossible.

Keen provides an example that illustrates this issue. A high growth rate is associated with low levels of unemployment as firms try to increase their output. When unemployment is low, the bargaining power of the workers increase, so they can archive higher wages. When wages rise, profits and investment declines. The growth rates decreases. Just these two mechanisms cause circular relationship between wages and growth.[15] The relationship between the micro level (production and employment decisions) and the macro variables (unemployment and growth) is non-linear. They do not converge to any equilibrium which can be derived from the micro-level.

When adding more markets to Keen's simple model, the interactions between the micro variables become non traceable since they create inherent dynamics. Hover framed characteristics that are caused by interactions of the microlevel but not observable at the micro entities *emerging properties*.[16] Keen explaines this very well with the example of a water.[17] Physical states are not observable when analysing a H2O molecule. A molecule cannot be liquid or gaseous. The physical state emerges from the interactions of the molecules and is just observable on the macrolevel. In the following section, I will show that instability is an emerging property from the interactions of individuals on financial markets. In line with

[14] Muchlinsky, *The Lucas Critique*
[15] Keen, Steve. *Debunking Economics*. (London: Zed Books Ltd., 2001)
[16] Hoover, *Methodology*
[17] Keen, Steve. *Can we avoid another financial crisis?* (London: Polity, 2017)

Hoover, I will argue that if emerging properties occur, it might be better to analyse the outcomes of the interactions, which are directly observable.[18]

Section 5 - a non microbased approach to macro

As derived in section 4, I will use Hover's concepts of supervenience and emerging properties when making the following argument. I will show that their use provides a better understanding of financial markets than micro-based macro. Supervenience allows to capture emerging properties by treating the macro level as different to the micro level. Hence, it can incorporate properties that are not observable on the micro level. I will now compare the results of the efficient market hypothesis (EMH), which is micro based, and Minsky's financial instability hypothesis (FIH), a pure macro theory.

EHM states, financial markets would self-equilibrate in the absence of shocks from outside the market. Volatility is nothing but agents incorporating new information. Hence, the market value of a stock just changes when future expectations of the profitability of the underlying firm changes. There is tones of empiric doubt against the EMH when observing repeated occurrence of bubbles and crises. Keen for example finds that extreme movements (he takes daily movements of 5% or more) occur 10000 times more often than predicted by the EMH and that large price movements are often followed by large price movements.[19]

Minsky's financial instability hypothesis is not micro based: Minsky argued that there are several stages of financing leading to a crisis. First, financial investment is relatively conservative. All projects go well, loans are paid back, so the underlying risk is assumed to having been to low. In the next period, more projects are financed. Finance becomes speculative. Firms are able to pay back interest on their loans, but need new loans to refinance the principal. The last stage is a 'Ponzi Scheme' in which new loans are taken to refinance both principal and interest. Instability emerges. Minsky finds that financial cycles are accompanied by a change in lending conventions (macro), which become less and less risk averse over time until loans to not get paid back followed by a rapid increase of risk aversion and a liquidity shock. As a consequence of the liquidity shock, more and more loans do not get paid back due to a rapid increase in refinancing costs.[20] We should therefore take the macro variables of increasing debt as indicators for other macro variables like financial stability as Post-Keynesian economists do.[21]

[18] Hoover, Kevin D. *The New Classical Macroeconomics. A sceptical Inquiry.* (Cambridge/ Massachussets: Blackwell, 1991)
[19] Keen, *Debunking Economics*
[20] Minsky, Hyman. *Inflation, Recession and Economic Policy.* (Sussex: Wheatsheaf, 1977)
[21] Arestis, Philip; Stephen P. Dunn and Malcom Sawyer: "Post Keynesian economics and its critics." *Journal of Post Keynesian Economics*. Vol. 21. (1999): pp.527-549

Section 6 – Potential challenges

I will now discuss potential challenges of the theoretical critique in sections 2-4 and the sketched macro without micro approach in section 5. First, the necessity of assumption (I) could be critiqued. One could argue that we do not need to fully understand human behaviour and preferences on the micro level but can approximate them by assumptions like rationality and the use of representative agents. Approximation runs difficulties when considering non-linear laws of composition as described in section 4. Even small measurement errors on the micro-level lead to tremendous errors on the macro level since non-linear functions are extremely sensitive to small deviations. Additionally, assumptions about human behaviour do not explain human behaviour on the micro level and therefore provide no empirical ground on which models can be build on. Likewise, representative agents do not explain behaviour on the micro-level, Hover calls them "aggregates in a microeconomic drag"[22]

Secondly, macroeconomic research as sketched in section 5 could be criticised by arguing that it just identifies random correlation but not causality. I will provide a practical and a theoretical response to that objection. First, by using rigorous econometric methods and controlling for omitted variables, it can be discovered what amount of past data variance in a variable is explained through other variables. The observed correlations appear to be a solid ground for economic theorizing like Minsky's stages of the financial cycle. These correlations are good indicators for the condition of the economy and might yield good estimates for predicting its future development. They can be tested against future data sets. However, there is still the causality issue. I take pure macro as a second best approach, whose replacement by sophisticated microfoundations appears to be theoretically impossible as derived in the sections 2-4. Macroeconomic variables cannot be explained on the micro level. Second, assuming causality on the individual level is arbitrary and could again just observe correlation as my supercomputer example shows. Is not individual behaviour really explained by neuroscience? Is not neuroscience based on biology, which is based on chemistry and physics? The reductionist mission is infinite. Matt Simpson argues on his blog:

> "There's a trade off between accuracy and analytical tractability while modelling. More microfoundations will tend to increase accuracy, but imagine if we started with physics for every single scientific problem."[23]

Conclusion

I have shown that all three assumptions required for the justification for the microfoundations approach to macroeconomics are violated. It is not possible to trace all decisions of all individuals, nor are they stable, nor are there traceable laws of composition. I have therefore come to the conclusion that macroeconomics as the analysis of aggregates and their

[22] Hoover, *New Classical Macroeconomics*

[23] Simpson, Matt. "Macroeconomics, The Lucas Critique, Microfoundations, and Modeling in General." Blogpost on *lesswrong,* 2009, Found at: https://www.lesswrong.com/posts/Ye47ZQ3d8RhQSP8Fw/macroeconomics-the-lucas-critique-microfoundations-and. Last checked: 15.02.2019 12:56

interactions, without further explanation on the individual level, yield indeed fruitful findings for understanding and predicting economic outcomes.

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The Contribution of Domestic Migrations to Personal Wellbeing and Income in Sending and Receiving Regions

By Ziming Zhu

The economic and social impact of migration has been the subject of ardent debates within social sciences. Domestic migrations in the history of economic development have been a ubiquitous feature in many countries. Assessing the extent of their benefits or drawbacks is thus vital for understanding the contribution of labour mobility to regional economic prosperity. Scholars of domestic migrations have documented a myriad of channels through which migration may have had a significant impact, positive or negative, on personal wellbeing and income in sending and receiving regions. Firstly, migrants were often positively or negatively selected on the basis of human capital, which may entail both skills and health. Secondly, the impact of selective migration may be magnified if there were human capital externalities. However, whether these externalities existed is still disputable. Thirdly, migrations have observable effects on migrants' economic opportunities or income, as well as their health. While the former tends to be largely positive, there are several studies that have demonstrated the detriments of migration on physical and mental health. Fourthly, out-migration from low- to high-wage regions should *a priori* lead to wage convergence under the neoclassical assumptions. Yet, evidence suggest that this may not be the case. Finally, out-migration and depopulation have often been associated with economic decline, but in many cases the reverse was true. Overall, the findings from these studies suggest that domestic migrations could either improve or exacerbate personal wellbeing and income of sending and receiving regions, depending on the type of migrants and regional economic circumstances.

Selective migrations have been well-documented by academics. Rural-urban migrations in England and Wales from 1841 to 1901, according to Long, were positively selected. Migrants had superior labour market prospects than those who stayed behind and experienced substantial improvements in their socio-economic status on average.[1] Salisbury studied short-distance migration in the United States and found that unskilled workers with greater potential for occupational upgrading migrated to places where they were more likely to achieve upward mobility.[2] This suggests that there was positive selection among a pool of negatively selected potential migrants. Since migrants experienced upward occupational mobility, they clearly accrued gains to their living standards, which highlights the positive economic contributions of migration to the wellbeing and income of migrants in receiving regions. Furthermore, positively selected migration could be interpreted as a brain drain, as sending regions undergo

[1] Jason Long, "Rural-Urban Migration and Socioeconomic Mobility in Victorian Britain," *Journal of Economic History* 65, no. 1 (March 2005): 28-30.
[2] Laura Salisbury, "Selective Migration, Wages, and Occupational Mobility in Nineteenth Century America," *Explorations in Economic History* 53 (July 2014): 41.

an exodus of more skilled workers with greater earning potential. This would naturally lead to a decrease in the average level of personal wellbeing and income in sending regions and an increase in the receiving regions, *ceteris paribus*. This effect is under-explored by Long and Salisbury, but Clark and Cummins demonstrated how selective migration contributed to economic decline in the North of England vis-à-vis the South. They found that North-South migrations were positive selected, while South-North migrations were negatively selected;[3] this was the principal cause for regional disparity between the North and the South.[4] Thus, selective migrations contribute to changes in the average level of personal wellbeing and income in sending and receiving regions through the effects of sorting. Moreover, migrants were not simply selected based on skills – their health also had important consequences for migration. In a pioneering analysis of contemporary domestic migrations, Wilding et al. discovered that poor health restricted labour mobility in England and Wales.[5] The theory of health-selective migration is further supported by Lu and Qin's study of rural-urban migration in China. According to them, rural residents with better self-reported health were more likely to migrate and less likely to return.[6] Since health affects both earning potential and wellbeing, health-selective migrations could lead to an improvement in the average level of personal wellbeing and income of receiving regions and a deterioration in sending regions. Therefore, selective migration based on human capital, which encompasses factors such as skills and health, could lead to a divergence in the average outcomes of sending and receiving regions.

However, the impact of selective migration may not be limited to the effects of sorting. Theories of human capital externalities assert that the concentration of human capital – in particular education – could generate positive spill-overs on productivity.[7] This implies that positively selected migration will lead to productivity spill-overs on the native population of receiving regions, which could then lead to increases in personal wellbeing and income, while those who stay in sending regions bear the costs of losing these positive externalities. Moretti offered some evidence for the existence of positive externalities: for example, a one percentage point increase in the share of college graduates in the labour force increased the wages of high-school dropouts and high-school graduates by 1.9 and 1.6 percent respectively.[8] Whether there is a causal relationship is unclear, as higher wages and higher share of college graduates may reflect an improvement in macroeconomic conditions instead. He also acknowledges that more

[3] This was based on the comparisons of status, such as Oxbridge Attendance or wealth at death, between people with ancestral Northern surnames dying in the South and their counterparts dying in the North, and between people with ancestral Southern surnames dying in the North and their counterparts dying in the South.
[4] Gregory Clark and Neil Cummins, "The Big Sort: Selective Migration and the Decline of Northern England, 1780-2018," *Neil Cummins Economic Historian, LSE*. June 28, 2018. http://neilcummins.com/Papers/ClarkCummins_NS1.pdf (accessed November 16, 2018), 20-21.
[5] Sam Wilding, David Martin, and Graham Moon, "The Impact of Limiting Long Term Illness on Internal Migration in England and Wales: New Evidence from Census Microdata," *Social Science and Medicine* 167 (October 2016): 111.
[6] Yao Lu and Lijian Qin, "Healthy Migrant and Salmon Bias Hypotheses: A Study of Health," *Social Science and Medicine* 102 (February 2014): 45-46.
[7] Enrico Moretti, "Human Capital Externalities in Cities," in *Handbook of Regional and Urban Economics, Volume 4*, eds. J. Vernon Henderson, & Jacques François Thisse (Oxford: Elsevier Science, 2004), 2254.
[8] Ibid., 2279.

research is needed on the magnitude of these externalities.[9] Rauch, in an earlier study, found that each additional year of average education raised total factor productivity by 2.8 per cent.[10] The limitations of his methodology include not accounting for the endogeneity of aggregate human capital and not distinguishing between externalities and complementarity between skilled and unskilled workers.[11] In addition, Krashinsky studied the urban agglomeration premium on wages using a sample of twins. Under the premise that twins are equal in ability, the difference in earnings between a twin in a large city and his sibling in a smaller city will be attributed to city size.[12] His findings reveal that agglomeration wage premium becomes statistically insignificant after controlling for familial ability – unobserved characteristics played a large part in determining wages.[13] This is consistent with Clark and Cummins' argument that the South did not benefit from any positive spill-over effects of selective migration. People with ancestral Northern surnames, who are still disproportionately located in the North nowadays, are not disadvantaged in terms of occupation, political power, or wealth compared to their counterparts with ancestral Southern surnames.[14] This shows that selective migration was the only explanation for the different outcomes in the North and the South. In light of the evidence, the existence and extent of human capital externalities is still subject to further research.

Focusing specifically on migrants, scholars have found that migration often improved economic opportunities for those that migrated. The migration to the western frontier in the United States in the second half of the nineteenth century is a renowned phenomenon that featured heavily in the studies of domestic migrations. Ferrie found that migrants to the frontier, who were predominantly unskilled, experienced a 45 percent gain in wealth between 1850 and 1860.[15] This shows that the economic benefits of migration were not exclusive to those with more skills or higher earning potential that the likes of Long and Salisbury recognised. Moreover, Stewart arrived at similar conclusions for those who migrated westward between 1860 and 1870. Migrants were negatively selected – many were poorer than non-migrants and had little wealth in 1860 – but experienced significant improvements in wealth accumulation as a result of migration; non-migrants also accrued gains in wealth.[16] This suggests that domestic migrations benefited both movers and stayers, leading to gains in income in both sending and receiving regions. While the economic aspects of domestic migrations seem promising, the impact on wellbeing is less optimistic. Tarricone et al. examined the impact of internal migration on mental health in modern-day Bologna and found that the adjusted

[9] Ibid., 2288.
[10] James E. Rauch, "Productivity Gains from Geographic Concentration of Human Capital: Evidence from Cities," *Journal of Urban Economics* 34, no. 3 (November 1993): 397.
[11] Moretti, "Human Capital Externalities," 2277.
[12] Harry Krashinsky, "Urban Agglomeration, Wages and Selection: Evidence from Samples of Siblings," *Labour Economics* 18, no. 1 (January 2011): 81.
[13] Ibid., 85.
[14] Clark and Cummins, "The Big Sort," 19-21.
[15] Joseph P. Ferrie, "Migration to the Frontier in Mid-Nineteenth Century America: A Re-Examination of Turner's 'Safety Valve'," Department of Economics, Northwestern University Manuscript, 1997, 13.
[16] James I. Stewart, "Migration to the Agricultural Frontier and Wealth Accumulation, 1860-1870," *Explorations in Economic History* 43, no. 4 (October 2006): 561-64.

incidence rate of First Episode Psychosis was 93 percent higher for migrants compared to the natives. They attribute this partly to the higher rate of single status, people living alone, and Cannabis abuse for migrants.[17] These results are complemented by Cardona et al.'s study of the offspring of domestic migrants in Turin during the Italian Economic Miracle, who suffered a higher risk of psychosis compared to the natives due to factors such as exclusion and social discrimination, as well as an inadequate schooling system.[18] The issue of urban penalty features heavily in the discussion of rural-urban migration. Kesztenbaum and Rosenthal claimed that rural migrants in France in the nineteenth century were healthier than urban dwellers, but their health superiority declined drastically as their mortality rate converged to the native urban mortality rate in approximately 15 years.[19] This has important consequences for assessing the negative impacts of rural-urban migration, especially for developing countries, as the existence of urban penalty suggests that increased migration will lead to worse health and thus productivity for both rural migrants and urban natives. These findings suggest that improvements in economic outcomes do not always lead to concurrent developments in personal wellbeing. Although public infrastructure and services should enhance as societies continue to develop, which may lead to some improvements in the quality of life for migrants, there is no guarantee that they will become more inclusive. Furthermore, Lu et al. claims that adults left behind in rural China by departing migrants were more vulnerable to psychological distress.[20] Hence, domestic migrations may lead to better income for sending and receiving regions but may lead to worse outcomes in personal wellbeing in sending and receiving regions.

On the other hand, domestic migrations may not necessarily lead to an increase in the average level of income in receiving regions if neoclassical assumptions pertaining to wage convergence hold. As workers migrate from low- to high-wage regions, the wage level of sending regions should rise and that of receiving regions should fall. This implies an improvement in the welfare of the former and a decline in the latter. The evidence regarding the contribution of domestic migrations to wage convergence paints a mixed picture. Enflo et al. found that migration from low- to high-wage areas led to convergence in Sweden prior to the First World War. In the absence of migration flows, Stockholm's wages would have been 30 percent higher.[21] Yet, despite significant rural-urban migrations in the late-nineteenth century in England and Wales, the rural-urban real wage ratio remained relatively stable –

[17] Ilaria Tarricone et al., "Risk of Psychosis and Internal Migration: Results from the Bologna First Episode Psychosis Study," *Schizophrenia Research* 173 (May 2016): 92-93.
[18] Mario Cardano, Cecilia Scarinzi, Giuseppe Costa, and Angelo d'Errico, "Internal Migration and Mental Health of the Second Generation. The Case of Turin in the Age of the Italian Economic Miracle," *Social Science and Medicine* 208 (July 2018): 148.
[19] Lionel Kesztenbaum and Jean-Laurent Rosenthal, "The Health Cost of Living in a City: The Case of France at the End of the 19th Century," *Explorations in Economic History* 48, no. 2 (April 2011): 221.
[20] Yao Lu, Peifeng Hu, and Donald J. Treiman, "Migration and Depressive Symptoms in Migrant-Sending Areas: Findings from the Survey of Internal Migration and Health in China," *International Journey of Public Health* 57, no. 4 (August 2012): 696.
[21] Kerstin Enflo, Christer Lundh, and Svante Prado, "The Role of Migration in Regional Wage Convergence: Evidence from Sweden, 1860-1940," *Explorations in Economic History* 52 (April 2014): 107.

between 0.724 and 0.756 from 1870 to 1912.[22] Central to the question of whether wage convergence occurs is labour market conditions. If the supply of migrant labour in receiving regions is met by increasing demand for labour, then there is little reason to believe that in-migration should reduce the wage level. This may have been the case in England and Wales.[23] Therefore, migration driven by demand for labour in receiving regions could lead to economic benefits for migrants without lowering the wage level of receiving regions, whereas wage convergence may occur if migration is solely driven by poor economic conditions in sending regions. Moreover, labour market integration, particularly access to labour market information, becomes important in coordinating migrant flows. More readily available information about employment opportunities increases the likelihood of demand-driven domestic migrations. Labour market restrictions are also an important determinant of labour market dynamics. Han and Li discovered a complementary relationship between the wages for native and migrant workers due to the *hukou* restriction, which significantly reduced the substitutability between native and migrant workers and led to job segregation. The wages of migrant workers actually moved parallel to the wages of native urban workers.[24] Thus, the economic conditions of sending and receiving regions play a large part in determining the contribution of domestic migrations to personal wellbeing and income in the respective regions.

Finally, out-migration has often been associated with or seen as the aftermath of economic decline, but there are ways in which out-migration could lead to *de facto* regional economic growth. Davis emphasised the role of out-migration in providing an alternative to working in declining industries. West Virginia, between 1950 and 1970, saw a 13 percent decline in population and a per capita income growth that was 13.5 percent faster than the national average. In the absence of out-migration, the population of 1970 would have been 40 percent higher, and these people would have had to make a living in declining or low-wage industries, such as agriculture or mining. This would have led to a deterioration in income and living standards.[25] Another way in which out-migration could lead to economic development in sending regions is through its influence on relative factor prices. The Great Mississippi Flood of 1927 led to a mass exodus of cheap black agricultural workers in the South, which made labour much more expensive relative to capital. This encouraged the innovation and adoption of capital-intensive and labour-saving technologies. Consequently, agriculture in regions that experienced out-migration became mechanised, giving them a sustained lead in labour productivity over other areas in the South.[26] These findings indicate that both the types of migrants as well as regional economic circumstances matter in determining the impact of migration. Lastly, the role of remittances is essential in assessing the contribution of domestic

[22] George R. Boyer and Timothy J. Hatton, "Migration and Labour Market Integration in Late Nineteenth-Century England and Wales," *Economic History Review* 50, no. 4 (November 1997): 717.
[23] Ibid., 724.
[24] Jun Han and Shi Li, "Internal Migration and External Benefit: The Impact of Labor Migration on the Wage Structure in Urban China," *China Economic Review* 46 (December 2017): 81.
[25] Kingsley Davis, "The Effect of Outmigration on Regions of Origin," in *Internal Migration: A Comparative Perspective*, eds. Alan A. Brown, & Egon Neuberger (New York: Academic Press, 1977): 163.
[26] Richard Hornbeck and Suresh Naidu, "When the Levee Breaks: Black Migration and Economic Development in the American South," *American Economic Review* 104, no. 3 (March 2014): 980-81.

migrations to sending regions, especially for developing economies. In China, the rural population benefited from out-migration as migrant workers remitted a large proportion of their income back to their families in rural areas. This resulted in an improvement in living standards and income through increases in agricultural productivity.[27] This is supported by Lu et al., who argued that remittances partly compensated for the absence of family members, reducing the mental health costs by nearly half so that they were no longer statistically significant.[28] Thus, the fear of out-migration is in many ways mistaken and anachronistic. A reduction in the size of the workforce does not necessarily precipitate an economic crisis, nor is its increase a *sine qua non* for economic development. Evidently, out-migration could lead to an improvement in the wellbeing and income of sending regions depending on the types of migrants as well as the economic conditions.

In conclusion, debates concerning the impact of domestic reveal the multifaceted nature of migrations and the numerous possible outcomes that could arise. Positively selected migration allocates workers with greater human capital to receiving regions and those with lesser human capital to sending regions; the reverse is true if selection is negative. This contributes to a divergence in the average level of personal wellbeing and income in the respective regions. While externalities associated with the concentration of human capital could intensify the benefits and harms of selective migration, more evidence is required to prove the existence of such externalities and the extent of their impact. In terms of economic opportunities, both skilled and unskilled migrant labour tends to benefit from migration, while the physical and mental health costs of migration are a detriment to their wellbeing as well as those left behind in sending regions. This suggests that income in receiving (and possibly sending) regions improve as a result of domestic migrations at the expense of personal wellbeing in sending and receiving regions. The economic benefits of domestic migrations to receiving regions could be partly negated by the process of wage convergence, which lowers the wage level in receiving regions, thus damaging the economic prospects of the native population. Whether this occurs in reality is highly dependent on labour market conditions and labour market integration. Finally, out-migration under the right circumstances could be beneficial to sending regions, by reducing competition for jobs in declining or low-wage industries, by encouraging the diffusion labour-saving and capital-intensive technologies, and through remittances from migrant workers. To summarise, the contribution of domestic migrations to personal wellbeing and income in sending and receiving regions is highly dependent on economic conditions and the types of migrants. In many cases, domestic migrations contributed positively to income but negatively to wellbeing.

[27] Emmanuel Olusegun Stober, "China's Rural-Urban Migration: Who Gains, Who Loses?" *Junior Scientific Researcher* 2, no. 2 (November 2016): 7.
[28] Lu et al., "Migration and Depressive Symptoms," 696.

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To What Extent Did The Black Death Produce Economic Growth?

By Charlie Udale

If there is one thing the Black Death produced it was death. Though precise estimates of the initial death toll are notoriously inaccurate, probably from one to two thirds of the British population were killed in the first few years[1]. The plague did not just strike once but recurred throughout the 14th century leading to a continuing decline of the population, stabilising only in the mid 15th century. The plague hit England again in 1360-1, 1369 and 1374 and an estimated twenty times in the 15th century[2] it continued to influence population mortality until the 17th century. Aside from death, this essay will argue the spread of Yersinia Pestis produced little, whilst it may have increased economic growth in the years following the outbreak, it was only an accelerator for longer term changes in tenancy institutions and the prevailing pattern of marriage which were already visible in England.

There is a general agreement that the reduction in the size of the population caused an increase in real incomes of peasants although the link between increasing real wages and increasing national output per capita is unclear. Clark's real wage series shows a significant jump in the hundred years following the arrival of the Black Death[3]. The explanation for this jump is that there was a corresponding increase in the marginal supply of labour. The Black Death, by wiping out so many people, reduced previous population pressure on the land and increased the marginal returns to labour. This ensured only the best land is farmed and by an optimal number of people, raising per capita output[4]. However, considering before the Black Death, servile and customary labour was common, the assumption that wages reflected marginal products in any precise way is unjustified[5]. Labour markets, as far as they existed, were determined by custom. However, Campbell provides further evidence of the increase in the marginal product of labour and the real wage in the years following the Black Death by comparing grain yields and wages. During the decade after the Black Death, yields fell, and the price of labour increased rapidly[6]. The increase in the marginal product of labour and the cessation of diminishing marginal returns meant more grain output per head. Using only using grain yields may have led to a misleading picture. As Epstein points out, using only 'crude'

[1] Hatcher, John. "England in the Aftermath of the Black Death." Past & Present, no. 144 (1994): 3.
[2] North, Douglass C., and Robert Paul Thomas. "An Economic Theory of the Growth of the Western World1." Economic History Review 23, no. 1 (1970): 1-17; North, Douglass C., and Robert Paul Thomas. The Rise of the Western World: A New Economic History. Cambridge: Cambridge University Press, 1973.
[3] Clark, Gregory. "The Long March of History: Farm Wages, Population, and Economic Growth, England 1209–1869." Economic History Review 60, no. 1 (2007): 97-135.
[4] Ibid, p.122.
[5] Epstein, Stephan R. Freedom and Growth: The Rise of States and Markets in Europe 1300-1750. Routledge, 2000, p.57.
[6] Campbell, Bruce M. S. "Nature as Historical Protagonist: Environment and Society in Pre-industrial England." Economic History Review 63, no. 2 (2010): 304.

grain per seed calculations cannot adequately reflect agricultural output[7]. We do not know how the marginal product of labour changed after the Black Death with any certainty and so we do not know how far the increases in real wages were a reflection of this productivity. Increases in real wages might instead reflect the changing ratio of lord to labour. After all, each lord extracted a surplus from their peasants which was sufficient to provide for themselves, below a critical threshold this may have been difficult. When like at Eynsham Abbey in 1349 there were 'scarcely two tenants remained in the manor,' [8] it might be understandable that redistribution of output would occur with the recognition that the Abbots would have to feed themselves. In this case real wages would rise as a result of redistribution rather than growth.

However, though the initial effect may have been redistribution and not growth, the institutional change brought about by this renegotiation may have led to growth in the future. The commutation of servile dues to more equitable contracts where peasants receive a higher share of their output could have incentivised investment and more industrious work, therefore producing output growth. But this required the relations between peasants and lords to change. In parts of Eastern Europe the lords had strong rights, highly consolidated landholdings and were well organised as a result they were able to contain the demands for better relations with their peasants[9]. Why did this not occur in Britain? Acemoglu and Robinson point to the relative weakness of the lords in England already by that date[10] which is supported by Epstein's claim that England had witnessed the centralisation of jurisdictional control which had been sapping the power of the lords for two centuries by the time the Black Death arrived[11]. The breakdown in feudal tenancy institutions was already occurring before the Black Death, it thus accelerated this process by empowering the peasant and urban elites who favoured the king over the lords. The effect of the shock was thus to accelerate the process, not to produce it.

Though it is unclear that the Black Death caused economic growth in the immediate years following the initial shock, it is often argued that the sudden loss of population led to the development of a new and lasting demographic regime which created high real incomes through the operation of a Malthusian 'preventive check' [12]. The West European Marriage Pattern (WEMP) is based on a 'simple household,' centred on one couple who married relatively late due to their need to accumulate resources by entering the workforce. The WEMP is important for future growth because it created a link between the prevailing economic conditions and the level of fertility. The lower real wages, the greater the time it would take to accumulate the assets to marry and establish an independent household, marry and thus have

[7] Epstein, Freedom and Growth, p.45
[8] Ibid, p.98
[9] Acemoglu, Daron, and Robinson, James A. Why Nations Fail: The Origins of Power, Prosperity, and Poverty. London: Profile, 2012, P.101
[10] Ibid, p.101
[11] Epstein, Freedom and Growth, p.55
[12] Pamuk, Evket. "The Black Death and the Origins of the Great Divergence across Europe, 13001600." European Review of Economic History 11, no. 3 (2007): 307; Voigtlnder, Nico, and Hans-Joachim Voth. "Malthusian Dynamism and the Rise of Europe: Make War, Not Love." American Economic Review 99, no. 2 (2009): 252

children[13]. By keeping the population below the 'Malthusian precipice' real wages were maintained which then fits with the 'high wage thesis for industrialisation[14]. Thus, the Black Death becomes an important part of the story of the industrial revolution[15].

However, the evidence for the WEMP being the product of the Black Death is weak. Most of the factors that are supposed to have led to its development were in operation before 1348. For instance, the increase in the availability of land led to an increase pastoral agriculture, which provided new employment opportunities for women[16]. Aside from the fact that it ignores the employment women were already engaged in, the argument also cannot account for estimates which show that pastoralism made up a third of rural GNP even before the Black Death[17]. Why then would women not have been employed before the Black Death as well? Furthermore, private property rights of women are considered another important part of the emergence of WEMP[18] but here too there is historical evidence that questions the timing. The argument is that the ownership of property incentivises women to work as so they enter the labour market and accumulate resources before marrying. However, in many legal aspects relating to property rights and inheritance women were 'on a par with men' even before the Black Death[19]. Why did the incentives become more pronounced later? Finally, there is direct evidence of 'regulation at first marriage…to restrict household size[20] in the period before the Black Death. Thus, the emergence of the WEMP cannot be attributed directly to the population decline caused by the plague if pastoral agriculture and property rights are taken to be reason for its emergence.

The Black Death certainly produced considerable population decline and a redistribution of income in England, though not elsewhere. In the immediate years it may have produced some growth in output per capita although the extent to which this occurred depends on strenuous assumptions. Finally, the Black Death's effects on demographic patterns are mostly limited to mortality, the origins of the WEMP seem to pre-date this catastrophe. In the last analysis, despite the efforts of those who wish to see the good produced by this horrific event, the Black Death was a catalyst for change rather than its cause and so can only take a small proportion of the credit.

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[16] Voigtlnder, Nico, and Hans-Joachim Voth, Malthusian Dynamism and the Rise of Europe

[17] Epstein, Freedom and Growth p.47.

[18] De Moor, T and Van Zanden, J. 2010. Girl power: the European marriage pattern and labour markets in the North Sea region in the late medieval and early modern period. The Economic History Review, New Series, Vol. 63, No. 1, pp. 1- 33. P.8

[19] Macfarlane, Alan. The Origins of English Individualism: The Family, Property and Social Transition. Oxford: Blackwell, 1978, p.132.

[20] Epstein, Freedom and Growth. p.44

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How do the determinants of the location of agriculture and manufacturing differ?

By Vishay Dodia

Agriculture is defined as the science and art of cultivating plants and livestock whereas manufacturing is the process of converting raw materials into finished goods. Agriculture provides the basic needs for mankind such as providing food and supplying raw materials while manufacturing is included in the secondary sector as it utilises these raw materials. As these two sectors are quite different, factors which determine their location will also differ. Although all modes of production need the same basic fundamentals to operate, I have identified four key areas which determine the location of either agriculture or manufacturing but not both. When studying Von Thunen's model and applying this analysis to Prussian and Italian agriculture we see that agricultural location depends on the distance to alternative industries as transport costs are lower when situated closer to the demand source. However when observing industrial location in the EU, distance to neighbouring industries is not a strong determinant of location. The Chicago printing industry offers an insight into how manufacturing actually attracts business rather than being drawn by them. We also find that liberal reforms are a stronger determinant for agricultural location compared to manufacturing. While reforms are not a detriment to manufacturing location, the case study of Spain will show that it was not as strong a determinant to industry compared to agriculture. The determinants of manufacturing lie with market potential whereas factor endowments determine the location of agriculture as the American manufacturing belt shows. Finally it is seen that technological change is a stronger determinant for manufacturing location than agricultural location as the shift from water to steam greatly affected the concentration of manufacturing firms.

A key determinant for agricultural location that is not as strong for manufacturing is the distance to alternative industries. This can be seen when observing Italian agricultural concentration during the interwar period. The development of the non-agricultural economy in Northern Italian cities drove the location of agriculture northwards.[1] During the interwar years Southern agriculture experienced a growth failure and output was increasingly concentrated in the North while employment shares remained constant for Italian agriculture as a whole.[2] This shows that agriculture was not declining as a profession as the same amount of people were being employed however the location of agricultural employment had shifted northwards. The primary reason for this is because Northern cities industrialised faster thus the number of people in non-agricultural sectors grew.[3] These people needed to be fed so naturally farmers would want to be located closer to the rising demand for their products. It was the extra three million people employed in Northern industry and urban sector[4] that pushed the location of agriculture further North than South. A similar pattern is seen when studying Prussian

[1] Martinelli. P, *Von Thunen south of the Alps: access to markets and Italian interwar agriculture*, (European Review of Economic History, Volume 18, Issue 2) May 2014. P107
[2] Ibid P108
[3] Ibid P109
[4] Ibid P140

agriculture during the Industrial Revolution. Within Prussia, agricultural growth was highly correlated to the proximity to the demand centre.[5] This means that farms were situated closer to industrial hubs as it was more profitable to be located closer to their main demand source. Being located closer to industrial sectors also reduced the transportation costs that farmers endured when taking their products to market. It can be argued that agriculture reacted to urban and industrial development.

When observing the manufacturing industry we find that its location is less dependent on the distance to alternative industries. The locations of industry within the EU tell us that the "distribution of demand becomes unimportant for the location of production."[6] This means that how close manufacturing firms were to other industries was not a significant determinant in their location. Instead we find that the opposite happening with manufacturing location compared to agricultural location. The manufacturing sector exerts a pull for other industries rather than being pulled towards other sectors. Within the EU this is seen as industries dependent on forward and backward linkages locate close to centres of manufacturing supply and demand.[7] Similarly this is seen with the Chicago printing industry as this industrial district pulled in demand from regions reaching hundreds of miles from the city centre.[8] While distance to other industries is a determinant of the location of agricultural production, manufacturing location is not determined by this factor but instead seems to determine the location of other industries itself.

Von Thunen's studies on economic geography support the distance to neighbouring industries being a determinant for the location of agriculture. Von Thunen found that, with respect to a single agricultural product, the intensity of that product decreased as distance to market increased.[9] It was also found that as distance to market increased, yield from farmers decreased.[10] In order to maximise production, it follows that agricultural producers would be located closer to the market.

Liberal reforms also had differing effects on determining the location of agriculture and manufacturing. It can be argued that reforms had a stronger effect on being a determinant of agricultural location compared to manufacturing. When observing agricultural society in Spain from 1904 to 1934, we can see that reforms affected agricultural location. During the nineteenth century, Spain underwent a market orientated reform and as a result the organization of agrarian

[5] Kopsidis M & Wolf N, *Agricultural Productivity Across Prussia During the Industrial Revolution: A Thunen Perspective*, (The Journal of Economic History), 2012. P638
[6] Midelfart-Knarvik K.H, Overman H.G, Venables A, *Comparative advantage and economic geography: estimating the determinants of industrial location in the EU,* (LSE Research Online), 2001. P1
[7] Ibid. P19
[8] Lewis R, *Industrial Districts and Manufacturing Linkages: Chicago's Printing Industry, 1880-1950,* (The Economic History Review, New Series, 62, no.2), 2009. P384
[9] Visser S, *On Agricultural Location Theory*, (geographical analysis, Vol 14, Issue 2, The Ohio State University), April 1982. P167
[10] O'Kelly M & Bryan D, *Agricultural Location Theory: Von Thunen's Contribution to Economic Geography,* (Progress in Human Geography 20, no.4), December 1996. P461

production changed significantly.[11] Due to the reforms, large estates were divided amongst smaller renters[12] which indicates a change in the location of agricultural production as it became less concentrated. A similar effect of liberal reforms on agricultural location is seen when we observe Prussia during the nineteenth century. The Prussian agrarian reforms was a pivotal point in Prussian agriculture as it abolished feudalism and allowed the majority of peasants to become full owners of their farms.[13] As a result vast quantities of land were no longer concentrated in the hands of the rich landowning class thus the East of Prussia rose to prominence as an agricultural powerhouse. It was a long held suspicion that the Prussian East had fed the West.[14] These two examples show that liberal reforms did determine the location of agricultural production. In Spain the reforms decreased the concentration of production as large estates were broken up. In Prussia the reforms gave peasants more landowning power which saw the rise of agriculture in the East.

With manufacturing location, reforms are still a contributing factor but hold less importance compared to agricultural location. During the 19th century, Spain went through its first period of industrialisation which coincided with the implementation of institutional reforms. However it is unwise to assume that these reforms caused industrialisation and directly affected the location of manufacturing. This industrialisation period saw a change in the geographical distribution of manufacturing activities within Spain, namely a concentration of manufacturing in the peripheral regions of Catalonia and Basque Country.[15] From 1790 to 1910 the share of manufacturing employment within these regions increased from 12 percent to 25 percent.[16] These institutional reforms did reduce restrictions that hindered interregional trade thus allowed manufacturing firms to relocate to regions like Catalonia and Basque.[17] However other forces were also at play that effected the location of manufacturing firms. The integration of goods market and the fall in transport costs that followed the expansion of railways also contributed to the increase in manufacturing firms in the peripheral regions.[18] Removing trade barriers, like the reforms did, cannot alone cause manufacturing firms to relocate. The expansion of railways physically allowed firms to move as it lowered transportation costs. With manufacturing location liberal reforms lay the political foundation[19] however in order to fully explain the shift in location other factors, such as falling transportation costs, are required. For agricultural location liberal reforms on its own provides for a stronger determinant of its location.

[11] Carmona J & Rosés J.R, *Land markets and agrarian backwardness (Spain 1904-1943)*, (European Review of Economic History, Vol 16, Issue 2), February 2012. P75
[12] Ibid. P75
[13] Opcit Kopsidis M & Wolf N. P651
[14] Ibid. P638
[15] Martinez-Galarraga J, *The determinants of industrial location in Spain, 1856-1929*, (Universitat de Barcelona, Espai de Recerca en Economica), 2010. P255
[16] Rosés J, *Why Isn't the Whole of Spain Industrialized? New Economic Geography and Early Industrialization, 1797-1910*, (The Journal of Economic History, Vol 63, Issue 4), 2003. P997
[17] Ibid. P257
[18] Ibid. P273
[19] Opcit, Rosés J. P999

A key determinant for the location of manufacturing is market potential whereas factor endowments are more important for agricultural location. For the existence of the manufacturing belt in twentieth century America, market potential was far more important than factor endowments. Market potential is defined as the "notion of market access."[20] This refers to the size of the market a firm has access to, not to be confused with distance to other industries or marketplaces. For manufacturing firms forward linkages become increasingly important over time as it encourages firm growth. A forward linkage is created when investment in a particular project encourages investment in subsequent stages of production.[21] Access to a larger market was seen as an attractive place for manufacturing firms to produce goods as it provided better access for firms to produce goods at lower costs and create more forward linkages.[22] Empirically this is seen when an increase in a firm's market potential generates an increase of a state's share of manufacturing employment by a range of 13 percent from 27 percent.[23] The benefits that market potential brought caused a spatial concentration of manufacturing firms in the North East of the United States, an area which became known as the "manufacturing belt." Market potential gave firms high market accessibility in addition to the opportunity to expand through forward linkages thus determined manufacturing location by causing a concentration in regions that offered this.

While market potential is important for manufacturing location, agricultural location is more dependent on factor endowments. Factor endowment interactions are found to be weaker than market potential interactions for manufacturing firms however for farmlands factor endowments provide much stronger interactions.[24] When observing Italian agriculture we can see just how important factor endowments are. In southern Italy, agriculture was much more inefficient than the North due to differing rates in factor accumulation.[25] For agriculture, in order to accumulate factors of production and utilise them, the region must be endowed with these factors. Factor accumulation allows agricultural supply to expand to meet demand.[26] This is not possible without having these factors in the first place. Southern Italy was home to inefficient institutions[27] which meant that farmers could not utilise human or physical capital as efficiently as the North. As a result agricultural production shifted northwards. From 1891 to 1951 agricultural output in Northern Italy increased by 75 percent whereas it only increased by 25 percent in the South.[28] The shift in location of agricultural output to a region that was endowed with better factors of production shows that factor endowment is a key determinant of agricultural location. Market potential determined the location of the manufacturing firms which is seen when observing the US manufacturing belt. Empirical statistics demonstrate that factor endowment were less of a determinant for manufacturing location.

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[20] Klein A & Crafts N, *Making sense of the manufacturing belt: determinants of US industrial location, 1880-1920,* (Journal of Economic Geography, Vol 12, Issue 4), July 2012. P777
[21] Agarwala A.N, Singh S.P, *Accelerating Investment in Developing Economies,* (Oxford Press, London), 1969. P439
[22] Opcit, Klein A & Crafts N. P776
[23] Ibid. P779
[24] Ibid. P794
[25] Opcit, Martinelli. P109
[26] Ibid. P109
[27] Ibid. P108
[28] Ibid. P140

There is evidence to suggest that technological change effects the location of manufacturing but does little for the location of agriculture. Within the German Empire, during the late nineteenth and early twentieth century, there is a relationship between technological change and the spatial distribution of manufacturing firms. The technological change observed here is the change from water power to steam power. An increase in the average size of steam power operations was associated with a rise in geographic concentration by one quarter of a standard deviation.[29] On the other hand a one standard deviation increase in the rise of water operations was associated with a drop in geographical concentration by one sixth of a standard deviation.[30] What these empirical results show is that the transition of technology from water to steam power effected location by causing a geographical concentration of manufacturing. This is because steam power created a dependence of coal which was expensive to transport. As a consequence manufacturing firms would be located closer to coal mining regions.[31] The introduction of electricity reversed this geographical concentration. The use of electrical motors decreased geographical concentration as it encouraged manufacturing firms to relocate to the south of Germany where large water power sites existed.[32] These sites were more conducive to the use of electric motors than steam power plants. Nineteenth century Germany shows that technological change has a clear effect on manufacturing location. The shift from water to steam power increased concentration of firms in the north however the shift from steam to electricity decreased spatial concentration once again.

The Ogallala district in the United States indicates that technological change does not determine the location of agricultural plants to the extent that it determines manufacturing location. Technological progress and change increased access to groundwater which generated substantial gains within the agricultural sector.[33] However these gains did not generate large enough spillovers to encourage a spatial concentration of agricultural production in the Ogallala district. Ogallala water was not directly transferred to non-Ogallala counties for use thus there were minimal direct spillovers in access to water.[34] Although technological change increased production, the benefits were not shared to the surroundings regions thus there was very little incentive for agricultural producers to move to this district. Unlike with manufacturing there is not an increase in the spatial concentration of agricultural producers in the Ogallala district. Technological change has less of an effect in the location of the agricultural sector compared to the manufacturing sector.[35]

[29] Gutberlet T, *Mechanization and the Spatial Distribution of Industries in the German Empire, 1875 to 1907,* (The Economic History Review, Vol 67, Issue 2), May 2014. P466
[30] Ibid. P466
[31] Ibid. P467
[32] Ibid. P467
[33] Hornbeck R & Keskin P, *Does Agriculture generate local economic spillovers? Short-run and long run evidence from the Ogallala Aquifer,* (National Bureau of Economic Research, Cambridge, MA), September 2012. P1
[34] Ibid. P14
[35] Ibid. P2

Overall we see each of these four factors have differing effects on determining the location of manufacturing and agriculture. A factor determines the location of either agriculture or manufacturing by causing or altering a spatial concentration in production. The distance to alternative industries effects agricultural location more than manufacturing location. This is seen in Italy where agriculture concentrated in the North in close approximation to industry and in Prussia where farms were located close to industrial hubs. However, regarding manufacturing location a spatial concentration around neighbouring industries is not seen. Instead, industrial production in the EU and Chicago indicate that manufacturing hubs attract demand from other industries but the location of manufacturing firms themselves does not change. Liberal reforms are another factor that effects the location of agriculture more than manufacturing. Spanish and Prussian reforms decreased the concentration of agricultural production by making more land accessible to lower class farmers and in the case of Prussia, saw agriculture rise in the East. During the Spanish industrial revolution, the spatial concentration of industrial production did change when liberal reforms were implemented however the true reason for the change in location was due to the combined effect of reforms with the decrease in transportation costs. This suggests that reforms were a stronger determinant for agriculture than manufacturing.

Market potential is a stronger determinant for the location of manufacturing whereas factor endowments determine agricultural location. The spatial concentration of manufacturing firms in the north east of the United States was due to access to a larger market that created positive externalities such as forward linkages. On the other hand the success of agricultural plants depended on factor accumulation. As interwar Italian agriculture shows, agricultural production was concentrated in the north due to superior factor endowments. Similarly manufacturing location is more conducive to technological change. Shifts from water power to steam and then to electricity changed the concentration of manufacturing firms each time. Technological progression in the Ogallala district did not attract other farmers as the spillover effects were not shared.

Agriculture and manufacturing are very different processes and are located at different points in the production process thus there exists many more differences in how the location of these two sectors differ. Nevertheless a distinct observation can be made. Agricultural location is often determined by manufacturing location. For example in Italy the efficient institutions that aided agriculture and caused its concentration in the north were located near manufacturing hubs.[36] Manufacturing location is determined more by innovation, such as forward linkages and technology, whereas agricultural location seems to be much more dependent on industry.

[36] Opcit, Martinelli P. P119

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Did the Gold Standard as a 'Good Housekeeping Seal of Approval' Enable Unprecedented Levels of Financial Globalisation in the Pre-war Era?

By Josiah Burke

The pre-war era, 1870-1914, was distinctively and indisputably characterised by a high degree of globalisation. International trade sharply increased, as did the transfer of labour and capital between the continents. In their 1994 paper Bordo and Rockoff argue that the Gold Standard unleashed this surge in globalisation by acting as a 'Good Housekeeping Seal of Approval' for investors which lowered borrowing costs and encouraged investment. In this paper I will contend that this is a misguided claim; careful study of the data shows that indebtedness and fiscal track record were a great deal more significant that adherence to the Gold Standard in determining a country's borrowing costs. I will argue that the integration of capital markets observed during this period can be largely attributed, not to the Gold Standard, but to the particular economic fundamentals of countries such as the United States which were attractive to European investors.

In their 1994 paper *The Gold Standard as a "Good Housekeeping Seal of Approval"* Michael Bordo and Hugh Rockoff lay out the Gold Standard system as a *'contingent rule or rule with escape clauses'*[1]. Members of the club were required to faithfully maintain convertibility to gold, with exceptions provided in the cases of war or other emergencies; after such emergencies had passed members were expected to return to convertibility as soon as was possible. If faithfulness to this rule is a criterion of success, the Gold Standard did quite well; a core group including England, France and Germany stayed on until 1914, and a strong number of other 'peripheral' countries either stayed on successfully, or at least attempted to do so. The important question is, what motivated these countries to adhere to the Gold Standard system? Bordo and Rockoff argue that since, in their calculations, adherence lowered the cost of capital, this constituted therefore a powerful motivation to stay on gold. Maintaining convertibility was, according to Bordo and Rockoff, a sign to potential investors that the country in question was financially prudent and would only run up large fiscal deficits in the event of an emergency. This was the 'Good Housekeeping Seal of Approval', and the lower debt costs it made possible enabled the financial globalisation of the pre-war era.[2] The authors argue, quite convincingly, that the gold standard was useful in that it acted as a 'commitment mechanism'; for example, governments could in theory raise debt to fund expenditure, and then farther down the road default on this debt; in the Gold Standard system, however, such a policy would violate the 'rules of the game', and that government would then find it far more difficult to raise debt in the future. Adherence to Gold provided investors with peace of mind that their creditors were

[1] Bordo, Michael D., and Hugh Rockoff. "The Gold Standard as a "Good Housekeeping Seal of Approval"." *The Journal of Economic History* 56, no. 2 (1996): 389. http://www.jstor.org/stable/2123971.
[2] Ibid. 390

very unlikely to default on their obligations. Bordo and Rockoff argue that maintaining convertibility should result in lower debt costs, and examine the long-term bond yields for nine peripheral countries to prove their hypothesis. Their results show that, indeed, countries such as Canada and the United States which were strongly committed to the Gold Standard accessed capital at lower rates than could countries such as Brazil which struggled to maintain convertibility. The authors conclude: *"We interpret these findings to mean that adhering to gold was like the "good housekeeping seal of approval."*[3]

There is seems however to be an inherent problem with this reasoning. Adherence to the Gold Standard may have indicated prudent management of the economy, and therefore the availability of cheap capital; but it seems one can then simply say that prudent management of one's economy led to the availability of cheap capital, and that investors funneled capital to that country, not because it was on the Gold Standard, but because the management of the economy was efficient? In their paper *The Making of Global Finance 1880-1913* Marc Flandreau and Frederic Zumer make a number of points criticizing the approach of Bordo and Rockoff; they point out firstly that those countries that could borrow more cheaply tended to share some common characteristics: *"because the countries always on gold tended also to be richer and more developed than the rest of the sample (so that they tended, ceteris paribus, to face lower borrowing rates)"* and therefore that *"gold adherence was, on average, associated statistically with lower borrowing rates across countries and time"*[4]. The authors conducted a study of the relationship between interest spreads and debt burdens on a range of countries; the results showed that when you control for level of debt and fiscal reputation, the effect of adhering to the Gold Standard all but disappears.[5] The data showed that the debt burden was of particular interest to investors, with a 10 per cent rise in the burden roughly effecting an increase in borrowing rates by up to 80 basis points. Likewise, defaulting on previous debt led to a sharp increase in rates, persisting at 45 basis points above average even ten years after a debt renegotiation.[6] This data raises serious questions about the wisdom of viewing the Gold Standard as a seal of approval as the basis for the financial globalisation of the pre-war era; when the data is stripped down, it appears investors cared first and foremost about reputation and level of indebtedness.

But this conclusion leads us to a more important question; If not the Gold Standard system as a good housekeeping seal of approval, what then fuelled the surge in globalisation seen during this period? I believe to answer this question we must look closely at the direction of capital investment during this time and draw insights therefrom. In 1914 Europe dominated foreign investment; the United Kingdom made up 42 percent, France 20 percent and Germany 13

[3] Ibid 416
[4] Zumer, F. and Flandreau, M. (2004). *The Making of Global Finance 1880-1913*. [online] Graduateinstitute.ch. Available at: http://graduateinstitute.ch/files/live/sites/iheid/files/users/Stefano_Ugolini/public/Flandreau%20&%20Zumer%20(2004).pdf [Accessed 6 Feb. 2019].
[5] Ibid. 39
[6] Ibid. 41

percent.[7] The pre-eminence of the United Kingdom is stark, and of course leads one to connect this with Britain's vast empire; surprisingly, however, from 1870-1913 only 16.9% of British foreign investment was directed towards its colonies (excluding Australia, Canada and New Zealand). Over 50 percent of British capital exports however went towards areas of recent settlement which had large natural resource endowments such as North America; Broadberry and O'Rourke argue that Britain invested heavily in these types of countries in order to exploit resources which it itself required in large amounts; *"If the New World land was to produce food for European consumers and raw materials for factories, railroads had to make it accessible, land had to be improved and housing and infrastructure had to be provided for the new frontier communities."*[8] This view is echoed by Clemens and Williamson in their 2004 paper *Wealth Bias in the First Global Capital Market Boom, 1870–1913;* in this paper they test the effects of country 'fundamentals' (natural resource endowment, schooling, population growth and immigration) on the direction of capital flows.[9] They find that these fundamentals are the top determinants of capital investment, significantly outweighing the gold standard; *"Our results leave no doubt whatsoever that markets mattered far more than flag for private-sector British investment heading abroad. British colonies did get a larger share of capital flows to government recipients, but market concern was the first-order determinant of destination".* They go on to unequivocally rank economic fundamentals as more important that the Gold Standard in determining the direction of capital investment: *"There are many possible explanations for our finding but the prominent one is that the effects of economic, demographic and geographic fundamentals simply outweighed the effects of the Gold Standard."*[10] The case of Argentina is insightful; Bordo and Schwartz in the 1996 book *Currency Convertibility: The Gold Standard and Beyond* admit that the major determinant in providing Argentina with access to capital at the turn of the century was not the Gold Standard, though that may have played a small role, but the opening up of the country's resources for development: *'adherence to the rule by Argentina may have had some marginal influence on capital calls...before 1890...but that the key determinant was the opening up of the country's vast resources to economic development once unification and a modicum of political stability were achieved';*[11] this is a significant admission from the man who championed the Gold Standard as a Good Housekeeping Seal of Approval. There is a strong case that the new, resource-rich markets such as those in North America opening up in this pre-war period played a key role in fuelling the globalisation seen at this time.

Flandreau and Zumer (2004) make an interesting investigation into the relations between 'risk perceptions' and 'development policies'. They contend that the pre-war globalisation occurred not because of government commitment to sound finances, but because this period was marked

[7] O'Rourke, K. (2010). *Cambridge Economic History of Modern Europe, The v2*. 1st ed. Cambridge: Cambridge University Press, pp.10-11.
[8] Ibid. 13
[9] Clemens, Michael & Williamson, Jeffery. 2004. "Wealth Bias in the First Global Capital Market Boom, 1870–1913". *The Economic Journal*. Oxford: Blackwell Publishing.
[10] Ibid. 333
[11] Macedo, Jorge Braga de; Eichengreen, Barry J & Reis, Jaime. 1996. *Currency Convertibility: The Gold Standard and Beyond*. 1st arg. Routledge.

by ‘remarkable economic growth’; in reaching this conclusion, they acknowledge the need to identify, if not the Gold Standard, what methods then were used to ‘test’ a country’s suitability for investment. They argue that before 1890 the test was that country’s level of national exports, known as the ‘trade test’; if the country was committed to free trade, then investment would follow.[12] The 1890 crisis in Argentina which saw the government default on its debt is presented as a watershed moment, which revealed the necessity for good fiscal administration; the ‘trade test’ gave way to the ‘tax test’, as investors now looked more carefully at public finances and debt burdens.[13] Those nations which did not meet the new criterion found it almost impossible to access capital. Flandreau and Zumer conclude their work by pointing out the reality that re-globalisation post-WW1 was to all intents and purposes impossible, as debt burdens were at an all-time high and growth levels crippled by poor policies in the 1920s and the Great Depression in the 1930s.

Notwithstanding my arguments in this paper, it would be fallacious to claim that the Gold Standard played no role at all in the integration of global markets from 1870-1914. The very fact that it endured throughout this period with little formal international cooperation speaks to its influence at this time. Its most impressive achievement was a persistent consensus among diverse members that monetary policy must focus on maintaining convertibility to gold at all costs. This system did result in some exchange rate stability which undoubtedly helped develop global capital markets, but it was not the main player. To return to the question this paper seeks to address, the Gold Standard *may* have played some role in *facilitating* the globalisation of the pre-war era, but not by acting as a Good Housekeeping Seal of Approval; the main drivers of pre-war globalisation were economic fundamentals such as natural resource endowment in newly settled countries, which provided lucrative opportunities for foreign investment. Conversely, investors were wary of countries that sustained a poor repayment reputation and ran up unsustainable debt levels, and charged higher interest rates on capital to these countries as a result.

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[13] Ibid. 53

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The Economic Impact of Apprenticeships on London and Other Cities in the Early Modern Period.

By Owen McGiveron

Apprenticeships had a profound and positive impact on early modern cities and the wider economy. Whilst the significance of this impact did differ both geographically and over time, the overwhelmingly positive central tenets remained consistent. The most important of which was the development and preservation of human capital. The apprenticeship literature is less divisive than that of the overarching guild literature however significant divisions still remain. Epstein and Prak laud guilds for their significant contribution to the preservation and training of human capital.[1] In addition, more recently Wallis' contributions have illuminated the imperfect nature of apprenticeship contracts as well as the surprisingly egalitarian nature of apprenticeship recruitment. Concluding that the few real barriers to entry for apprenticeships funnelled labour from all social strata into London which had an extraordinary impact on urbanisation and structural change in the English economy.[2] Kelly, Mokyr and Ó Gráda as well as Humphries also acknowledge the importance of apprenticeships in structural economic changes and even attribute it as a main determinant in 'English exceptionalism' and as a driver of modern economic growth.[3] Opposing this, classical economists such as Smith decry the repressive nature, high potential for fraud and the misaligned incentives (unpaid apprentices allegedly have no incentive to work hard) of apprenticeships as detrimental to growth and development.[4] Finally there is the more nuanced debate of whether the benefits from apprenticeships justified the alleged negative economic consequences of the guilds that were necessary to facilitate them. Overall the most important economic impact of apprenticeships on early modern cities was the creation and deepening of human capital and the consequent structural change. The productivity gains reaped from human capital deepening fostered economic growth within cities and contributed significantly to their development. Whilst apprenticeships had other significant impacts such as greater efficiency labour markets, these were of slightly lesser importance when compared to the growth of human capital and its implications.

Apprenticeships solved the generational transmission problem by facilitating flows of human capital across generations. The consequence of this was idea creation and refinement, leading to productivity growth over time which contributed to economic development within early modern cities. The link between apprenticeship and idea generation is explained eloquently by De La Croix, Doepke and Mokyr's model. A core component of the apprenticeship system was

[1]Epstein, S. R., and Maarten Prak. *Guilds, Innovation, and the European Economy, 1400–1800*. Cambridge: Cambridge University Press, 2008.: 7.

[2] Patrick, Wallis, 'Apprenticeship in England, 1500-1800', in Prak & Wallis, *Apprenticeship in Europe* (Cambridge, forthcoming).

[3] Jane, Humphries, Humphries, Jane, "English Apprenticeship: A Neglected Factor in the First Industrial Revolution.*"* In *the Economic Future in Historical Perspective*, Oxford University Press, 2003.
Kelly, Morgan, Joel Mokyr, and Cormac Ó Gráda. "Precocious Albion: A New Interpretation of the British Industrial Revolution." 6, no. 1 (2014): 363-89.

[4] Adam, Smith. 'Chapter X', *The Wealth of Nations*. London: Everyman's Library, 1991.

the teacher. The master artisans produced a set of two connected outputs: a commodity or service, and new craftsmen.[5] These new craftsmen were trained through their observance and absorption of tacit knowledge over the duration of their apprenticeship. The model possesses Darwinian characteristics as at its core is the premise of the survival of the most productive technique. Whereby apprentices train under multiple masters and thus are exposed to multiple techniques but they will only adopt the 'best' technique they were taught. They will then develop this technique and teach it in the future. Thus, over time the most productive techniques, in theory, become more prevalent over generations and thus average productivity in the city economy rises. When the consideration is made that in mid sixteenth century London, two-thirds of all adult males had served apprenticeships the impact of these increases in productivity on the growth of London are enormous.[6]

This model can be expanded further with additional theoretical analysis by incorporating Wallis' research on early termination.[7] Lax enforceability and high contract termination rates were a hallmark of English apprenticeships, with cities such as Bristol having a rate of only 30% of apprentices becoming Freemen.[8] Outside of incorporated cities in England, it is probable enforcement of apprenticeship contracts was even more lax. This is because official enforcement was the domain of local courts in the relatively uncommon occurrence where master or apprentice pursued legal action against each other.[9] Termination was normally through mutual consent.[10] This finding increases the velocity of the model; a greater quantity of apprentices are cycled through masters quicker, this increases the quantity of apprentices involved in the mechanism of technique survival. This results in higher productivity over time than the original model would stipulate. This is the case as masters were often restricted to a set number of apprentices at a time. Early termination thus cleared the 'human capital market' by allowing them to take on more apprentices to replace those who had joined a different master.[11] Furthermore, early termination would allow apprentices to learn under a greater number of masters and thus have a wider pool of techniques to select the best from, thus increasing the efficiency of the model as well. When incorporated into the model, this level of

[5] David, De La Croix, Matthias Doepke, and Joel Mokyr. "Clans, Guilds, and Markets: Apprenticeship Institutions and Growth in the Preindustrial Economy *." *The Quarterly Journal of Economics*133, no. 1 (2017): 1-70.

[6] Steve Lee, Rappaport. *Worlds within Worlds : The Structures of Life in Sixteenth-century London.* Cambridge Studies in Population, Economy, and Society in past Time ; 7. Cambridge: Cambridge University Press, 1988: 232.

[7] Patrick, Wallis. "Apprenticeship and Training in Premodern England." *Journal of Economic History*68, no. 3 (2008): 832-61.

[8] Ilana Krausman, Ben-Amos. "Failure to Become Freemen: Urban Apprentices in Early Modern England." *Social History* 16, no. 2 (1991): 155-72. 155-72. For examination of the analytical significance of this figure see Wallis, Apprenticeship and Training, 839.

[9] T. K. Derry, "The Enforcement of a Seven Years Apprenticeship under the Statute of Artificers.", D.Phil. Thesis, University of Oxford, 1930; M.G, Davies. *The Enforcement of English Apprenticeship, a Study in Applied Mercantilism, 1563-1642*. Harvard Economic Studies. v. 97. Cambridge: Harvard University Press, 1956.

[10] Patrick, Wallis. "Labor, Law and Training in Early Modern London: Apprenticeship and the City's Institutions." 2012: 844.

[11] Analysis on 'soft caps' to apprentice numbers per master to artificially create scarcity found in Minns, and Wallis. "The Price of Human Capital in a Pre-industrial Economy: Premiums and Apprenticeship Contracts in 18th Century England." *Explorations in Economic History* 50, no. 3 (2013): 339-40.

early termination may contribute in explaining the superiority of English city productivity (principally London) over that of its rival cities on the Continent. For example, apprenticeships were regulated far more stringently in the cities of Antwerp, Montreal and Paris where apprenticeship contracts were strictly specified in high detail to limit the scope for early termination and opportunism.[12] This may have weakened the magnitude of generational productivity progress.

However, the significance of the above analysis must be hedged by the numerous limitations to the validity of the model. The authors state that 'the young can observe the efficiency of masters only by working with them as apprentices'.[13] However, it is highly probable the significant variation in premiums paid to masters were partially driven by the masters' abilities as teachers and therefore the efficiency of the masters' training. Thus, potential apprentices, or more likely their parents, could roughly gauge the efficiency of a master based on the premium the master was able to charge. This consideration indicates that the model under-estimates its significance. As it shows potential apprentices did have some information on masters' efficiency before joining; this means they would have been able to select more productive masters and thus learnt greater productivity techniques. Therefore, this increases the productivity gains above that of what the original model would stipulate. A second issue is that the model assumes apprentices would be accurate in selecting the best technique to adopt following the competition of their training. In some professions this would be intuitively the case, for example a member of the Coopers should be easily able to quickly ascertain the most efficient method of cask creation he knows. Whilst in other guilds such as the Apothecaries or Barbers, it cannot be expected that a member relatively new to the craft could confidently ascertain, with complete accuracy, what the best technique was. Thus, this reduces the potency of the model in regard to its expected productivity gains. However, despite these limitations the model illuminates the positive economic impact of the apprenticeship system on productivity. Through these productivity gains it suggests that apprenticeships were a significant factor in accelerating economic growth and development within early-modern cities.

Apprenticeships also solved the spatial transmission problem by greatly increasing geographical labour mobility, this led to economic growth in early modern cities. In doing so apprenticeships facilitated the flows of labour from rural areas (abundant supply of labour) to cities (scarce supply of labour). Apprenticeships provided an apparatus for migration to large cities by partially reducing friction in migration caused by communications, risk and information transaction costs. Migration friction was reduced by apprenticeships as they provided a wage (in England usually just board and perhaps clothing), training and future employment in the chosen profession for example. It was the primary method of vocational

[12] Gillian Hamilton, Hamilton, Gillian. "The Market for Montreal Apprentices: Contract Length and Information." *Explorations in Economic History* 33, no. 4 (1996): 496-523.; Steven, Kaplan. "L'Apprentisage au XVIIIe Siècle: Le Cas de Paris." *Revue d'Histoire Moderne et Contemporaine 40*, 1993: 436–479; Bert De, Munck, Munck, Bert De. *Technologies of Learning : Apprenticeship in Antwerp Guilds from the 15th Century to the End of the Ancien Régime*. Studies in European Urban History (1100-1800) ; 11. Turnhout: Brepols Publishers, 2007.

[13] De La Croix, Doepke, Mokyr. Clans, Guilds, and Markets, 24.

training and perhaps even of rising out of one's social class.[14] These rewards incentivised young individuals to move to cities, it was the first step in securing them as very valuable urban citizens.[15] Furthermore, this flow of apprentice labour would have partially helped to combat the haemorrhaging of early-modern cities' labour forces. For example, pre-modern London experienced massive levels of in-migration which was 'essential for its economic and demographic survival'.[16] In addition, cities such as Venice were able to rebound from plague quicker than the natural rate of population growth due to migration, which was in part from apprentices.[17] For such a large number to in-migrate so quickly following bubonic plagues, there must have been economic incentives for the potential migrants. For many young potential migrants, apprenticeship was this incentive.[18] As apprentices consisted of a not insignificant number of in-migrants then it appears apprenticeship, or rather the incentive to obtain one, partially drove migration into early-modern cities. In doing so they positively contributed to the cities' economic and demographic survival and development. However, these benefits were not evenly distributed across cities. For example, London had the vast majority of England's corporate apprentices and remained the hub of urban training. Inequality in the share of apprenticeship migration, and hence its benefits, was further exacerbated by cities such as Venice restricting emigration of citizens linked to artisanal trade.[19] Thus whilst it is probable that all cities benefitted somewhat from the migration of labour seeking apprenticeship, the bulk of these benefits were reaped by only the largest cities in their respective nations.

Finally, apprenticeships led to a structural change in the nation economies it was prevalent in; the largest positive economic impact of this being enjoyed by London. The structural change consisted of an increasingly trained workforce participating in industry and thus signalled a seismic shift away from England being an 'agrarian backwater'.[20] The exodus from agriculture benefitted premodern cities immensely as it provided them with the skilled workforce and the population growth they needed to develop. In England and Wales, the structural change caused by apprenticeships was via two avenues. Firstly, as examined above, apprenticeships provided vocational training and an incentive to migrate to cities and thus away from agriculture. This led to cities flourishing with a better trained workforce and consequently, greater urbanisation. Secondly apprenticeships led to a greater diffusion of human capital throughout the country. This was achieved through the increasing prevalence of masters offering apprenticeships, with

[14] Wallis, *Apprenticeship and Training*, 832-61; Patrick, Wallis, 'Apprenticeship in England, 1500-1800', in Prak & Wallis, *Apprenticeship in Europe* (Cambridge, forthcoming).
[15] Minns et al. "Contracting for Apprenticeship in Early Modern Europe". 2016, https://beucitizen.eu/wp-content/uploads/Deliverable3.5_Final-1.pdf (accessed 22 Feb 2019).
[16] Chris, Galley. *The Demography of Early Modern Towns : York in the Sixteenth and Seventeenth Centuries*. Liverpool Studies in European Population. Liverpool: Liverpool University Press, 1998: 2-30.
[17] A particularly bad bout plagued Venice in 1347-48 where 60% of the population are estimated to have perished; Paul, Slack. "Responses to Plague in Early Modern Europe: The Implications of Public Health." *Social Research* 55, no. 3 (1988): 433-53.
[18] For analysis on 'Push' and 'pull' factors of potential migration see Jan, De Vries. *European Urbanization, 1500-1800*. London: Methuen, 1984: 199-217.
[19] S. R., Epstein and Maarten, Prak. "Craft Guilds, the Theory of the Firm, and Early Modern Proto-industry." In *Guilds, Innovation, and the European Economy, 1400–1800*, 25-51. Cambridge: Cambridge University Press, 2008: 71-78.
[20] Patrick, Wallis, 'Apprenticeship in England, 1500-1800', in Prak & Wallis, *Apprenticeship in Europe* (Cambridge, forthcoming).

premiums, outside of large cities. As shown below the presence and depth of the English and Welsh apprenticeship system increased significantly over the 18th century.[21] In addition, the remigration of city trained apprentices back to their rural dwellings or towns would have also contributed to the nationwide diffusion of human capital and trained labour.[22]

Figure 1: Maps of the distribution of apprenticeships with premiums in England and Wales, c.1710 and c.1790. Patrick, Wallis, 'Apprenticeship in England, 1500-1800', in Prak & Wallis, *Apprenticeship in Europe* (Cambridge, forthcoming).

It is probable this greatly expanded the average human capital of English and Welsh non-agrarian workers and thus reaped significant productivity gains throughout the country as per the model detailed above. The productivity gains and higher human capital outside of cities would have likely had significant positive spill over effects into large cities as well. One example being the increased probability of important inventions (sometimes even 'macro inventions') being discovered outside of London. An interesting case being the bridge innovations of Abraham Darby III who lived in Severn Valley, far from London.[23] Innovations and inventions produced outside of London could then be exploited by the larger economies of scale enjoyed by the city. In addition, increased human capital throughout the country would have improved the stock of potential migrants that would later move to London. Furthermore, the increased productivity from the nationwide diffusion of human capital would have almost certainly increased the efficiency of the essential supply lines which kept London alive such as

[21] 'The maps plot apprenticeships with premiums in the 1710s and 1790s where masters are in identifiable locations. Locations are represented by circles weighted by apprentice numbers. For 1710, a six-year sample contained 30,542 indentures; 85.2% were successfully geo-located. For 1790, the six-year sample contained 36,102 indentures; 84.6% were successfully geo-located'; Patrick, Wallis, 'Apprenticeship in England, 1500-1800', in Prak & Wallis, *Apprenticeship in Europe* (Cambridge, forthcoming).

[22] Klemp, Marc, Chris Minns, Patrick Wallis, and Jacob Weisdorf. "Picking Winners? The Effect of Birth Order and Migration on Parental Human Capital Investments in Pre-modern England." *European Review of Economic History* 17, no. 2 (2013): 210-32.

[23] Neil, Cossons; Barrie Stuart, Trinder. *The Iron Bridge: symbol of the Industrial Revolution*. Phillimore, 2002; his magnum opus, the Iron Bridge, resides in the appropriately named town of Ironbridge.

foodstuffs and raw materials. Thus, London was able to fully reap the positive economic impact of the structural changes caused, in part, by apprenticeships. Whereas it is unlikely cities in German regions would have benefitted in a similar manner as the training of apprentices was regulated far more rigorously and thus the nationwide diffusion of knowledge was limited.[24] In these regions the economic impact was far more muted that than that of London as the structural change caused by apprenticeships was, initially, curtailed.

However, it is important to not overstate the significance of the apprenticeship system by directly attributing it as a cause of the Industrial Revolution. In doing so this would over-estimate the positive economic impact of apprenticeships on early modern cities as London, in particular, benefitted immensely from the Industrial Revolution. One suggestion that this is not the case is the relative lack of apprenticeship activity in the conception cities of the Industrial Revolution such as Lancashire. As shown by figure 1, apprenticeship concentration appears notably absent from the Industrial Revolution heartlands. Thus, while apprenticeships likely contributed to a solid foundation of human capital upon which the industrial revolution could be built, it appears unlikely to be a proximal cause. Therefore, whilst apprenticeships did have a positive economic impact on early modern cities, this impact should not be overstated by crediting the institution for the Industrial Revolution.

Overall the institution of apprenticeship had a substantially positive economic impact on early-modern cities. This positive impact was multi-faceted but includes at its centre the creation and preservation of human capital across generations and countries. The productivity gains from this were mostly reaped by cities as this was where many of the apprentices would reside upon competition of their training. They became urban citizens and contributed to the growth and urbanisation of the cities they inhabited. Those that returned to their original parish still implicitly contributed to the development of cities as they contributed to the diffusion of higher human capital across the country. Apprenticeship also contributed to city growth by incentivising migration to cities. This, in addition to vocational training, increased the number of citizens working in industry and manufacturing. Consequently, this contributed to a structural transformation that, at least in England, reaped massive productivity gains by shifting away from agriculture and towards industry. However not all cities benefitted equally as it appears the English apprenticeship system had an efficient level of contract incompleteness which cultivated the benefits reaped by London described above. Whereas outside of London, in Antwerp, Paris and cities in German regions, contract enforcement was too stringent, among other factors, which prevented these cities benefitting from apprenticeship on the same scale as London enjoyed. Furthermore, the impact varied overtime with London enjoying the height of the benefits after the late eighteenth century as the apprenticeship institution had become entrenched and accessible throughout England. In conclusion, apprenticeships had positive economic impacts on early modern cities. However, the magnitude of these benefits did vary between city to city with London receiving the largest positive economic impact when compared to its rivals on the Continent.

[24] David, Nicholas. "Child and Adolescent Labour in the Late Medieval City: A Flemish Model in Regional Perspective." *The English Historical Review* 110, no. 439 (1995): 1103-131.

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