advantage

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Economic History Special Issue

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In this issue ...

Welcome to the Economic History special issue of *Advantage* magazine

In this issue we are celebrating research from our vibrant community of economists working on global economic history — the largest network of its kind based in the UK.

The findings of the articles speak for themselves. But it is easy to overlook the efforts undertaken to locate, organise and interpret the historical data underpinning them.

Much of the research in this issue is the result of hours spent in archives, photographing documents or taking handwritten notes. It is the fruit of careful labours to transcribe centuries-old handwriting or trawl massive online databases.

It is also the outcome of innovative thinking: our authors, for example, have successfully found ways to measure growth and GDP since 1270, long before official records began.

The compilation of historic datasets can be as impressive as the findings drawn from them. For this reason we are launching the CAGE Global Economic History Database ; we want to make our data accessible to scholars, who may otherwise spend hours in archives and libraries duplicating the same work. Much of the data underpinning these articles can be found there, alongside interactive visualisations. Do go and explore.

The articles in this issue reflect the global nature of CAGE's economic history group. We start in colonial India, where James Fenske describes the effect of railways on literacy. Bishnupriya Gupta investigates missing women in India, asking whether historic factors can offer some explanation for the deficit of women found today.

Next, we are introduced to innovative techniques measuring long-term global economic growth. Stephen Broadberry and Alexandra M. de Pleijt provide the first estimates of investment and capital stock in Britain 1270–1870, while Stephen Broadberry and Leigh Gardner extend our understanding of African economic growth in their longitudinal study of sub-Saharan Africa 1885–2008.

Moving to Europe, Marta Santamaria asks what effect borders — those centuries old and those recently formed — have on European trade. Sascha O. Becker, Francisco J. Pino and Jordi Vidal-Robert reveal the unintended consequences of religious censorship in the 16th and 17th centuries.

Mark Harrison's Parting Shot celebrates the importance of historical research as a means of making sense of modern events. But he also offers a poignant warning: when historic values are misrepresented, as they have been by Vladimir Putin, they can set us on unexpected and devastating paths.

Stephanie Seavers, Editor

Advantage
Spring 22

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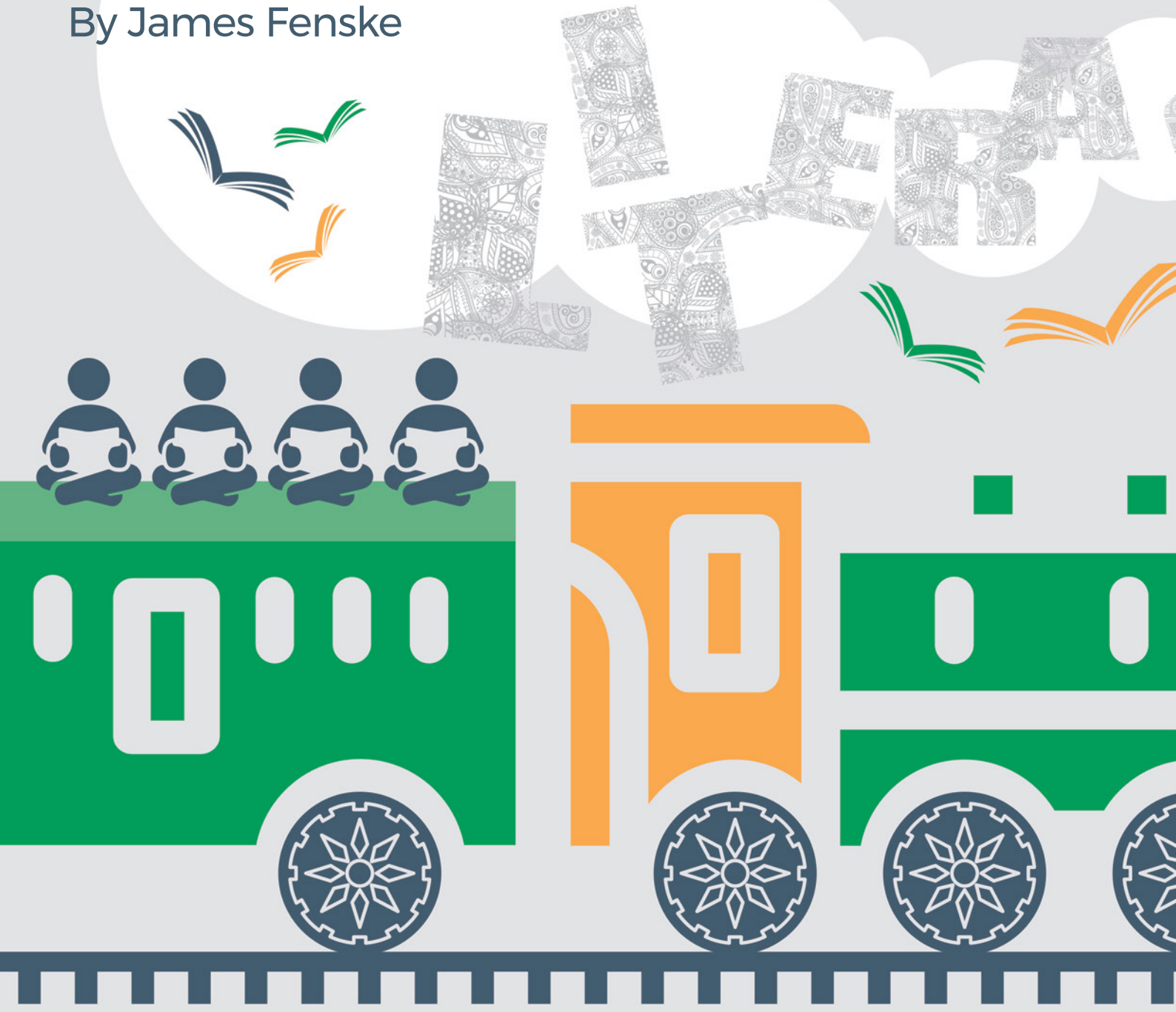
Did railways affect literacy? Evidence from India

By James Fenske



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PERCENTAGE OF SCHOOL-AGED CHILDREN ATTENDING SCHOOL IN LATE 19TH CENTURY INDIA

By 1900, colonial India had one of the largest railway systems in the world. In stark contrast, education in India was underfunded under British rule, with less than 10% of school-aged children in school as late as 1891.

Despite the lack of government investment to increase schooling, it is possible that railways contributed to more children going to school by increasing demand for education. Possible drivers for such a demand-driven increase include greater trade, rising incomes, and expanded labour market opportunities.

Latika Chaudhary and I set out to test whether there is any evidence for a demand-driven increase in schooling in response to the railway network in India (Chaudhary and Fenske, 2021).

We begin with data from the colonial censuses. These sources allow us to build a district-level panel on literacy rates by sex and age cohort for the years 1911 to 1921, and a district-level panel by sex that goes back to 1881.

But shifting definitions of literacy in the colonial censuses make it difficult to compare these rates from 1881 to 1921. So, using comparable rates from 1911 and 1921, we compare age cohorts in the same district and in the same census year who were differentially exposed to railways prior to the typical age for the beginning of primary schooling.

With this methodology, we side-step concerns of cross-district comparisons where railways may have arrived earlier in some districts due to favourable geography, trade, or other reasons that may also lead to higher literacy. ▶

Using this cohort-comparison approach, we find that a cohort for whom the railway had been present for an additional 17 years prior to the start of schooling — a one standard deviation increase in exposure — has literacy rates that are 0.29 standard deviations higher than the comparison cohorts in the same district and census year.

These results are driven by literacy of men and boys and are also present for literacy in English. We find no evidence, using this approach, that women and girls exposed to the railway for longer are more literate.

We complement these within-district, within-census comparisons of cohorts with an alternative approach that compares literacy rates across districts in any given census year. Here, we examine variation in railway exposure that can be explained by whether a district lies near either of two paths.

The first is a plan proposed in the early 1850s by the military engineer Major J.P. Kennedy. This plan favoured low-cost routes over flat terrain. The second is a minimal set of straight railway lines connecting the military cantonments that existed in the mid-19th century.

Therefore, rather than simply comparing districts based on how long they had had a railway, we are able to compare them based on the differences in railway exposure that can be attributed to construction costs and military concerns — factors that should not otherwise predict the spread of literacy.

Using this approach, we find results that largely confirm our cohort comparisons, as well as evidence of a possible positive impact on female literacy.

But why did this happen? A first step to understanding the link between railways and literacy is to study whether more children went to school. Generating new panel data on school enrolment from the District Gazetteers, we show that railways increased secondary school enrolment.

“We find that a cohort for whom the railway had been present for an additional 17 years prior to the start of schooling — a one standard deviation increase in exposure — has literacy rates that are 0.29 standard deviations higher than the comparison cohorts in the same district and census year.’

This may be because railways affected how long students remained in school. It may also be explained by a particularity of the colonial Indian context: secondary schools were often institutions that also included elite primary schools that were not separately enumerated.

School enrolment is only the proximate link from railways to literacy. What are the deeper economic incentives that connect the two? Turning to several other variables, we show that the answer is not rising agricultural incomes. While railways raised agricultural incomes (Donaldson, 2018), the link between agricultural incomes and schooling is weak.

Rather, we find evidence that measures of the growth of the non-agricultural sector can help explain our results. Income taxes, urbanisation, and service sector employment all responded positively to railways, and in all cases they also predict literacy and school enrolment. As a result, they can all explain a large share of the link between railways and literacy.

While we do find a positive link from railways to literacy, it is not one that is quantitatively large.

Comparing our work to a study by Atack et al. (2012), the expansion of the railway explains a much smaller share of the growth in education in our context than the expansion of the railway in the United States over the 19th century.

Similarly, our results suggest that an additional rupee invested by the government in education would have had 200 times the impact on literacy as an additional rupee spent on railways. ◀

About the author

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Publication details

Chaudhary, L. and Fenske, J. (2021). Did railways affect literacy? Evidence from India CAGE working paper (no. 529).

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Missing women in India

By Bishnupriya Gupta

Three decades ago, Nobel laureate Amartya Sen highlighted the deficit of women in several countries in Asia. Among these countries, India was prominent. Colonial census data offer us clues to understand if the biases in the sex ratio today have historical origins. ▸

In most countries, the shares of men and women in the population are roughly equal. At birth, there are typically 106 boys to 100 girls. Male infants have a higher mortality, so by the age of five the sex ratio becomes balanced. Women's mortality at older ages is lower than that of men, leading to female-biased sex ratios at older ages.

In India, by contrast, sex ratios are generally male biased, and significantly so. In India, in the 2011 census, 57 women were missing for every 1,000 men and 81 female infants were missing at birth for every 1,000 male infants. In Delhi, for every 100 girls born, there were 122 boys. In some parts of the country, over 100 women were missing for every 1,000 men.

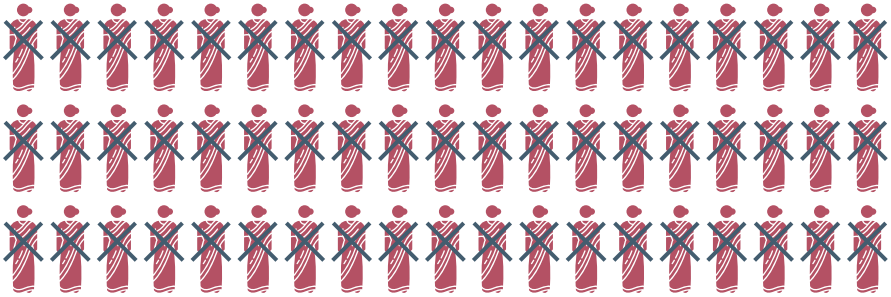
Across regions, a general pattern is visible: there are many more missing women in the North and West, and more balanced sex ratios in the South.

In search of missing women in India

What can explain India's missing women? We use data from the colonial censuses to understand the degree to which women are missing due to deeply rooted causes such as agricultural practices, and to what degree they are missing due to recent phenomena such as prenatal sex selection.

We ask two questions of the historical data. First: 'where' were women missing from? Second: 'when' did women go missing? In considering where women were missing from, we describe differences in the sex ratio by region, religion, and geography. In considering when women went missing, we describe sex ratios over the life cycle, for example at adolescence or in older age.

Our data come from censuses conducted every ten years by the colonial government between 1881 and 1931. We document the population of men and women by district over this period and calculate the share of women in the population by region, by religion, and by age group.



57 NUMBER OF WOMEN MISSING FOR EVERY 1000 MEN IN 2011 INDIA CENSUS

We test for correlations between the share of women in the population and geographical variables that could influence the economic role of women, such as the potential role in specific crops, the ruggedness of the terrain and access to the coast.

Today's gender bias is deep rooted

We find that in colonial India there were more missing women in the population in the North, which includes the colonial provinces of the Punjab and the United Provinces. The sex ratio was more balanced in the South, which includes Madras Presidency and the princely states of Hyderabad, Mysore and Cochin.

The sex ratio in the East was less skewed than in the North but less balanced than in the South.

The regional variation in the share of women and the divide between North and South are still found in India today. There is a high correlation between 1931 and 2011 in the share of women in the population at the district level, even looking across districts in the same present-day state.

This suggests that the gender bias in India today has deep roots. The regional variation in missing women in India in 1931 has persisted to the present day.

Prenatal sex selection has played a part

Next, we look at differences in sex ratio across religions in colonial India. The two largest religious groups are Hindus and Muslims. We do not find systematic differences in the female deficit in the two communities. The sex ratio was most male biased among Sikhs and most balanced among Buddhists and tribal communities.

Further, we find that sex ratios of different religious groups correlate across districts – where the population of one religious group was disproportionately male, the population of other groups were often more likely to be disproportionately male as well.

The relative similarity of Hindu and Muslim sex ratios in the past contrasts with patterns in the present, as today the deficit of women is higher among Hindus. Attitudes to prenatal sex selection technology in recent times accounts for some of this difference, as Muslims make less use of this technology (Bhalotra et al., 2021).

Geography and agriculture are not causes

Literature on the economic role of women in society has argued that women have greater economic value in rice-growing regions, but not in wheat-growing regions, because they

participate more in the cultivation of rice than in the cultivation of wheat (Bardhan, 1974).

Cross-country evidence shows that in countries where the plough was used historically in cultivation, gender norms are biased against women in the present (Alesina et al., 2013). Geography, then, can be a predictor of gender norms in society.

We do not, however, find a robust negative correlation between the share of women in the population and wheat cultivation, nor do we find robust positive correlation between the share of women in the population and rice cultivation. The lack of a robust correlation between wheat and the sex ratio remains if we consider external measures of the potential yield of wheat, rather than cultivation itself.

Early marriage and childbirth was a factor in colonial India

Finally, we consider sex ratios in the population in four age groups: 0–10, 10–20, 20–40 and 40+. Although there is a significant share of missing girls in the youngest age group in the North, the largest female deficit appears in adolescence. In every region and across all religions, we find a dip in the share of women in the age group 10–20.

There are two likely explanations. First, adolescent females were likely to be reported either as older if already married or younger if unmarried. Second, evidence shows maternal mortality to be high in colonial India, particularly during the first birth for mothers under the age of 15. In a society where the average age at marriage was 13, many women gave birth before the age of 15. ◀

About the author

Bishnupriya Gupta is Professor of Economics at the University of Warwick and CAGE Research Director.

Figure 1: Percentage female by age and region, 1901

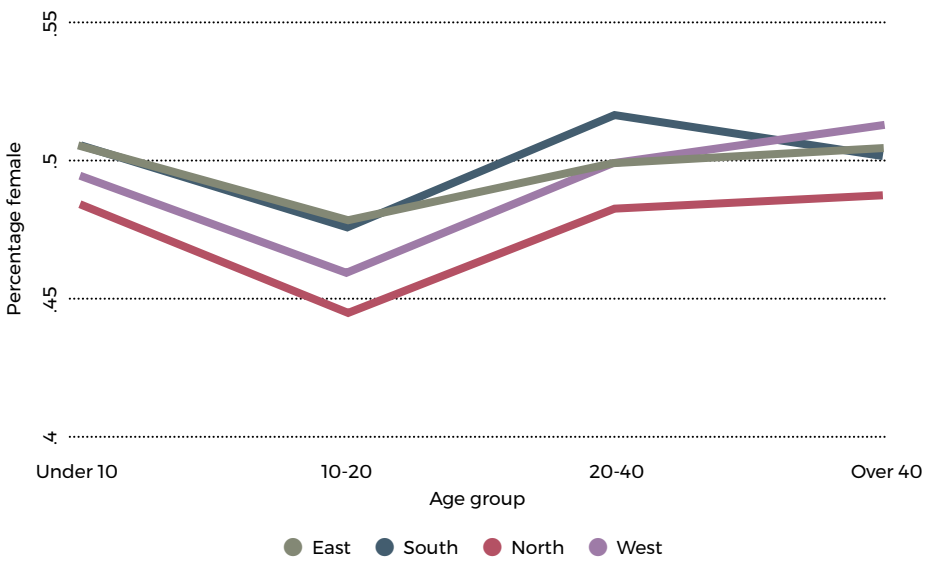
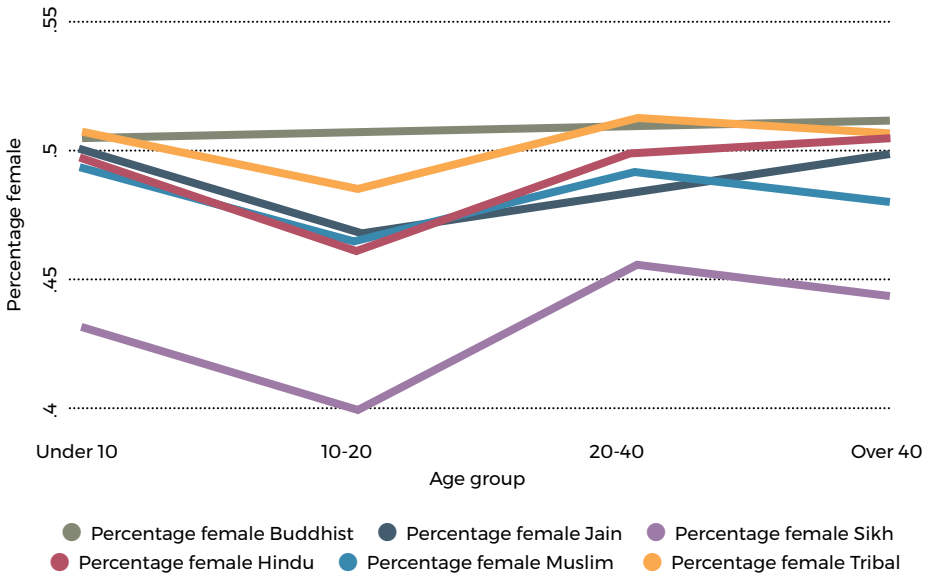


Figure 2: Percentage female by age and religion, 1901



Publication details

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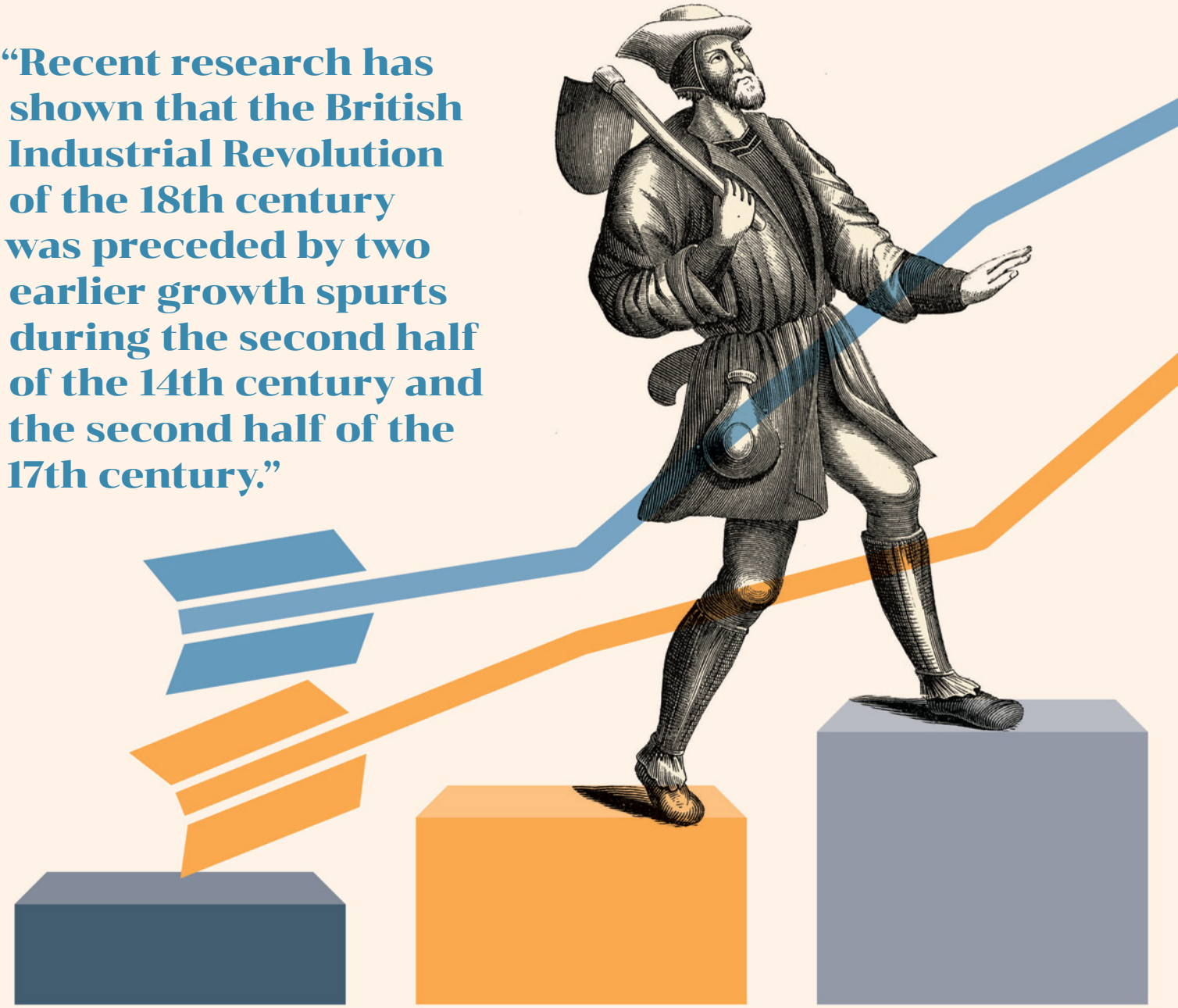
Capital and economic growth in Britain: 1270-1870

By Stephen Broadberry and Alexandra M. de Pleijt

"Recent research has shown that the British Industrial Revolution of the 18th century was preceded by two earlier growth spurts during the second half of the 14th century and the second half of the 17th century."



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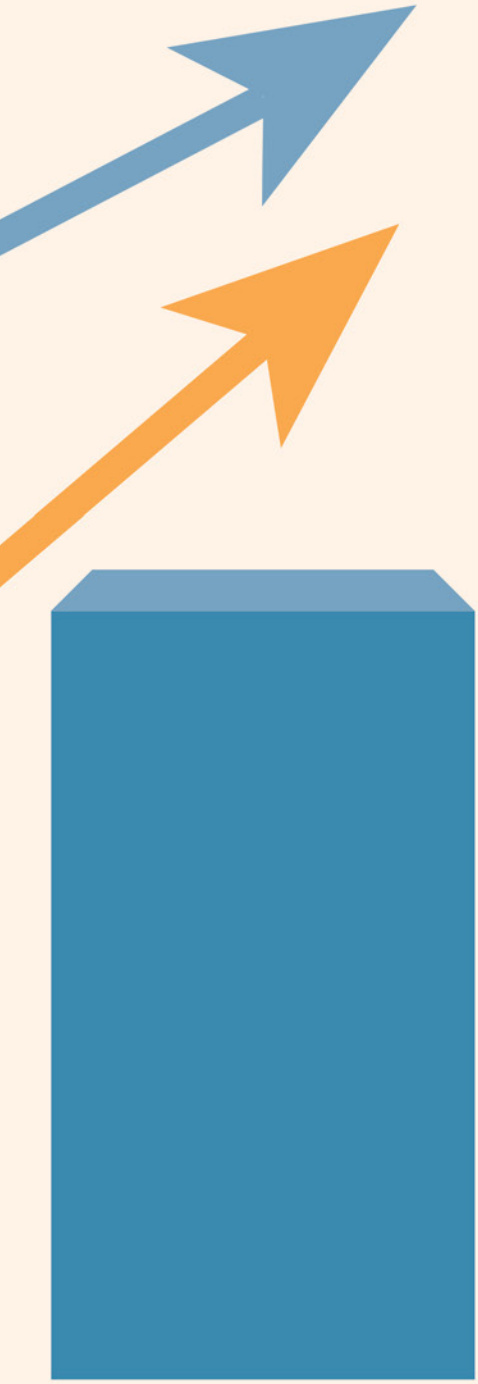
DOMESTIC INVESTMENT SHARE OF GDP IN BRITAIN BY THE 1860s

14%

TOTAL INVESTMENT SHARE OF GDP IN BRITAIN BY THE 1860s



Little is known about the role of capital in economic growth before the late 19th century. We provide the first estimates of investment and the capital stock in Britain for the period 1270–1870.

Although important changes did occur in the role of capital — such as the growing importance of fixed capital relative to working capital and a substantial increase in the investment share of GDP — growth-accounting analysis shows that productivity growth was more important than capital-deepening in explaining the growth of output per head. Economists and economic historians have often speculated about the role of capital in economic growth during the rise of capitalism. However, until now they have lacked the data needed to conduct a systematic analysis of the phenomenon.

Recent research has shown that the British Industrial Revolution of the 18th century was preceded by two earlier growth spurts during the second half of the 14th century and the second half of the 17th century. But for Britain, the first economy to achieve modern economic growth, data on capital accumulation have been available only from 1760 onwards, making it impossible to provide long-run growth accounts.

Our research addresses this data gap. We estimate capital formation and the stock of fixed capital in Britain, for the period 1270 to 1870, providing data for the three main sectors of the economy (agriculture, industry and services) and combining them into aggregate fixed capital. We then combine fixed capital with working capital (farm stocks and non-farm stocks) to provide domestic reproducible capital, which we join with land and overseas assets to generate a series of national wealth. ▶

How has the composition of national wealth changed?
Our findings suggest that there was a sharp decline in the share of land and a corresponding rise in the shares of domestic reproducible capital and overseas assets.

These trends partly reflect the growing importance of industry and services relative to agriculture. They also indicate the increased importance of reproducible capital in all sectors, including agriculture.

The growth in the share of domestic reproducible capital was driven by the growing importance of fixed capital relative to working capital, while the growing importance of overseas assets was a relatively late phenomenon, beginning in the 1750s.

What has happened to capital-labour and capital-output ratios?
Trends in the capital-labour and capital-output ratios (see Figures 1 and 2) move broadly in line with Nicholas Kaldor's 'stylised facts' of economic growth, with the capital-labour ratio trending upwards but the capital-output ratio remaining stationary.

It should be noted, however, that these trends are dependent on the use of fixed capital. Using reproducible capital, the capital-labour ratio was stationary until the 19th century and the capital-output ratio trended downwards.

Figure 1: Capital per head of the population, 1270–1870 (£ at constant 1700 prices)

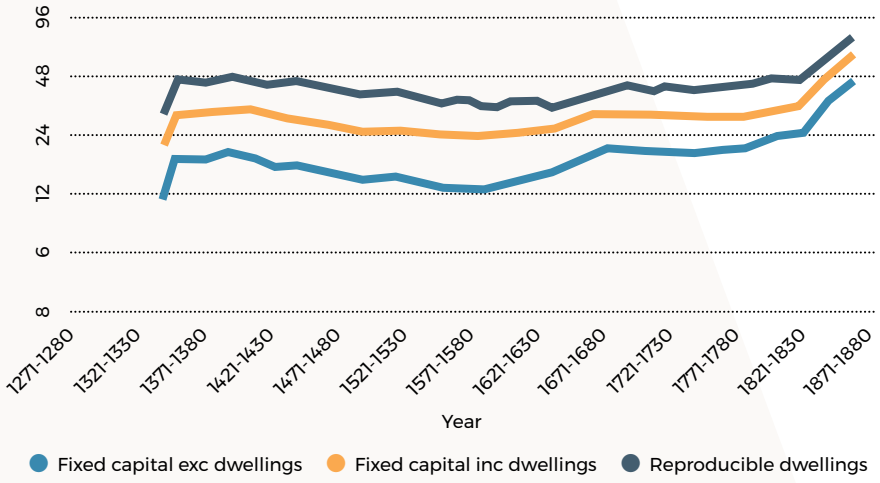
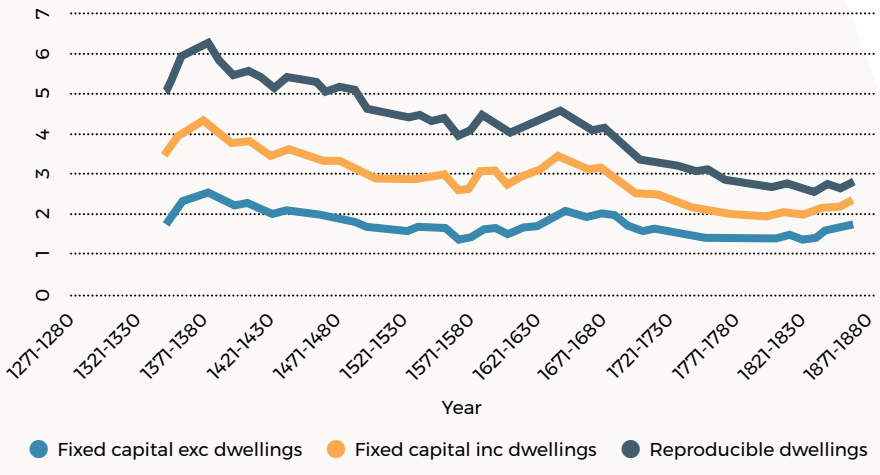


Figure 2: Capital-output ratio at constant 1700 prices, 1270–1870



What are the causes of economic growth in Britain?
We combine these new data on capital and investment with estimates of per capita GDP and labour input to assess whether economic growth came from the use of more factor inputs or from the more effective use of existing inputs. Growth accounts are provided in both extensive and intensive form, accounting for the growth of output and output per head, respectively.

Table 1 presents the results of the growth-accounting exercise in extensive form, using fixed capital excluding dwellings – but the findings are similar for reproducible capital. They suggest that output growth was driven largely by the growth of factor inputs rather than the more efficient use of factors (total factor productivity, or TFP growth). The one period that does not conform to this strong dominance of factor inputs over efficiency was between the 1640s and 1690s, when TFP growth made a much larger contribution to output growth.

However, in the intensive form accounts, depicted in Table 2, the growth of output per head was driven more by the growth of efficiency than by capital deepening (an increase in capital per head).

Deirdre McCloskey once wrote 'ingenuity rather than abstention governed the industrial revolution'. That picture is confirmed here in the intensive form growth accounts, with TFP accounting for over three-quarters of GDP per head growth

between the 1690s and the 1830s, although capital deepening then became more important between the 1830s and the 1860s.

How has the role of investment changed in Britain?

The investment share of GDP increased substantially during the transition from pre-industrial to modern economic growth, but in a much more gradual way than suggested by earlier researchers such as Walt Whitman Rostow. The domestic investment rate barely reached 10% by the 1860s, when the total investment rate including overseas investment was just 14%. This compares with much higher savings and investment rates of 30– 40% in many later-developing economies. ◀

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Publication details

Capital and Economic Growth in Britain 1270–1870: Preliminary Findings. CAGE Working paper (no.546).

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Table 1: Accounting for the growth of British GDP, 1340s to 1860s (% per annum)

	Output growth	Due to labour	Due to capital	TFP growth
1340s – 1400s	-0.73	-0.77	-0.17	0.20
1400s – 1450s	-0.21	-0.08	-0.18	0.05
1450s – 1640s	0.50	0.32	0.20	-0.02
1640s – 1690s	0.84	-0.03	0.20	0.67
1690s – 1830s	1.08	0.45	0.38	0.26
1830s – 1860s	2.28	0.70	1.15	0.43

Notes: Results for fixed capital excluding dwellings. Output and capital stock data are in constant 1700 prices. Weights for labour and capital are 0.6 and 0.4, respectively.

Table 2: Accounting for the growth of British GDP per head, 1340s to 1860s (% per annum)

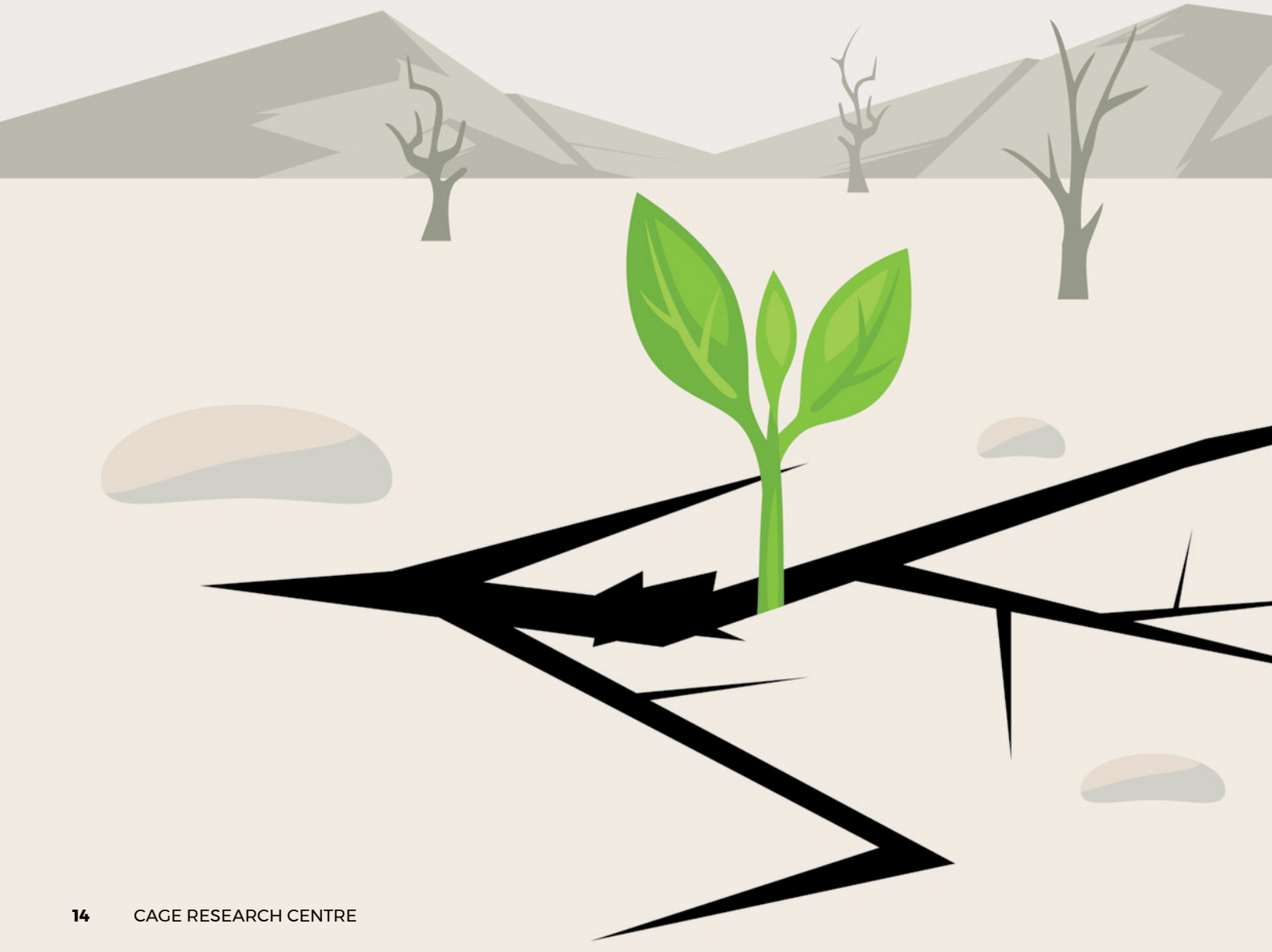
	Output per worker growth	Due to capital capital deepening	TFP growth
1340s – 1400s	0.54	0.34	0.20
1400s – 1450s	-0.08	-0.13	0.05
1450s – 1640s	-0.03	-0.01	-0.02
1640s – 1690s	0.88	0.22	0.67
1690s – 1830s	0.34	0.08	0.26
1830s – 1860s	1.11	0.68	0.43

Notes: Results for fixed capital excluding dwellings. Output and capital stock data are in constant 1700 prices. Weights for labour and capital are 0.6 and 0.4 respectively.

"For Britain, the first economy to achieve modern economic growth, data on capital accumulation have been available only from 1760 onwards, making it impossible to provide long-run growth accounts. Our research addresses this data gap."

Economic growth in sub-Saharan Africa: 1885-2008: Evidence from eight countries

By Stephen Broadberry and Leigh Gardner



"Avoiding episodes of shrinking needs to be given a higher priority in understanding the transition to sustained economic growth."

Research on African economic growth has often focused on the question of what went wrong. The only available data on Africa's long-run economic performance began in 1950, and showed that most African economies had grown little between 1950 and 2000. Conversely, a resurgence of growth since 2000 prompted new questions about what changed and whether Africa had finally turned a corner.

Could a longer-term view give us a more complete understanding of economic growth in Africa? In other regions, historical national accounts have extended our knowledge of patterns of growth and development over centuries into the past (Broadberry, 2021). In a recent paper we apply a similar approach for Africa. We present annual estimates of GDP per capita in countries spread across sub-Saharan Africa for the period 1885–2008, encompassing both the colonial and post-independence periods (Broadberry and Gardner, 2022).

Historical national accounts for sub-Saharan Africa

The absence of annual data on per capita incomes in Africa over the long run has limited Africa's appearance in comparative historical work on economic growth and development. Prior to the publication of our paper, South Africa was the only country for which there existed annual estimates for the Cape Colony (Fourie and van Zanden, 2013).

We use economic data collected by colonial governments to reconstruct historical national accounts for eight countries from across sub-Saharan Africa (Ghana, Nigeria, Kenya, Uganda, Malawi, Zambia, Zimbabwe and South Africa) to reconstruct annual measures of GDP per capita before 1950. We then splice these estimates onto existing series from 1950 onwards to create annual estimates of GDP per capita for the colonial and post-independence periods. ▶

Economic growth in sub-Saharan Africa

Our annual series provide a more detailed picture than previous estimates for the colonial period, which have been restricted to benchmark years (see, e.g., the pioneering work of Prados de la Escosura, 2010) or single countries (Jerven, 2014). The data show that many African economies had per capita incomes above subsistence from at least the late 19th century.

As an example, Figure 1 compares the growth trajectories of Ghana, Nigeria and South Africa. It shows that the three countries were comparable in terms of their levels of income during the late 19th century. Ghana kept pace until the interwar period, when the expansion of South Africa's manufacturing sector provided the basis for more sustained growth there.

We also show that Africa as a whole was not significantly poorer than large Asian economies until the late 20th century. Figure 2 compares a weighted average of our eight countries with the GDP per capita of China, India and Latin America.

While Latin America had systematically higher levels of GDP per capita since the late 19th century, levels of GDP per capita in Africa were comparable or even higher than India and China until Africa's long period of shrinking in the 1980s.

Our data also show, however, that overall gains in per capita income were limited due to repeated periods of negative growth, or shrinking. Studies of other regions suggest that the transition to sustained growth depends not so much on increasing the pace of growth as on reducing the frequency and severity of periods of shrinking (Broadberry and Wallis, 2017).

Table 1 shows the average rate of change of per capita income during periods of both growing and shrinking, comparing African economies to that of the UK. It shows that while African economies grew faster than the UK through most of the period, they also shrank faster and more frequently.

Figure 1: Per capita GDP in West Africa compared with South Africa (1990 international dollars, log scale)

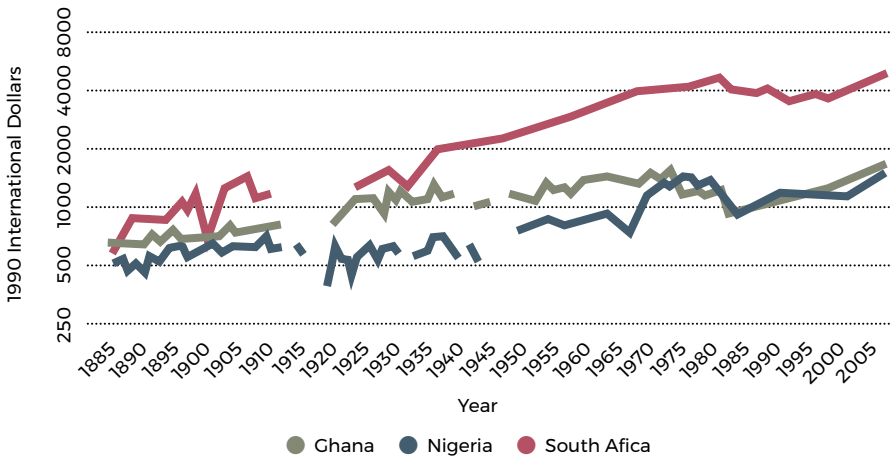
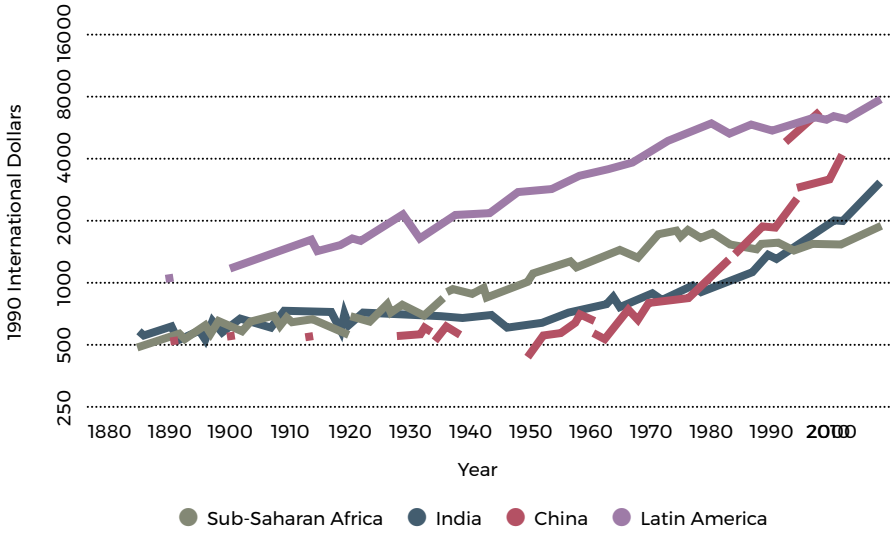


Figure 2: Per capita GDP in developing countries (1990 international dollars, log scale)



Next steps

This is not yet a complete picture of African growth. The sample of countries include only British colonies. Colonisation was not random, and it may be that the economic performance of British colonies was systematically different from countries colonised by other powers or those which remained independent. However, it does provide several lessons for those interested in Africa's long-run development.

First, it is possible to use historical data to reconstruct historical national accounts for Africa, and this paper is intended to inspire further studies on other parts of the continent so as to bring the continent more firmly into narratives of long-run growth.

Second, the paper calls for greater attention to the causes and consequences of periods of shrinking. Studies of African economic development have tended to focus on growth — either explaining its absence, or proposing methods to increase its rate. However, our data suggest that long-run gains in per capita income have been undermined not by a lack of growth but by the frequency of shrinking. ◀

Table 1: Average rate of change of per capita income in growing years and shrinking years in Africa and the United Kingdom 1885–2008 (% per annum)

	1885–1910	1926–1938	1950–1980	1980–2008
South Africa				
Growing	10.49	7.92	2.37	2.15
Shrinking	-11.06	-4.37	-0.89	-2.53
Zimbabwe				
Growing	—	3.41	4.50	4.26
Shrinking	—	-3.29	-2.86	-4.70
Ghana				
Growing	2.69	7.33	4.08	2.28
Shrinking	-1.69	-6.55	-4.44	-7.17
Nigeria				
Growing	3.59	—	5.28	3.33
Shrinking	-5.36	—	-6.20	-3.73
Kenya				
Growing	—	11.89	3.73	1.93
Shrinking	—	-9.95	-4.28	-1.89
Uganda				
Growing	—	5.28	3.09	3.32
Shrinking	—	-5.55	-3.85	-3.95
Zambia				
Growing	—	5.59	5.70	3.08
Shrinking	—	-1.40	-4.23	-4.73
Malawi				
Growing	—	4.42	3.75	3.88
Shrinking	—	-2.67	-2.83	-4.49
UK				
Growing	2.54	3.07	2.67	2.56
Shrinking	-1.69	-3.43	-0.88	-1.09

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Publication details

Broadberry, S. and Gardner, L. (2022) Economic Growth in Sub-Saharan Africa, 1885-2008: Evidence from Eight Countries. *Explorations in Economic History* 83: 101424.

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Borders within Europe

By Marta Santamaria

269 Number of European regions in our region-level trade dataset

24 Number of European countries in our region-level trade dataset

2.2% Share of spending the average region attracts from a domestic region

0.8% Share of spending the average region attracts from a foreign region

Most borders in Europe are the result of political events that played out decades if not centuries ago. But as well as marking political boundaries, borders also have an important economic role. They can restrict trade flows, control the migration of workers and create regulatory differences between neighbours.

Over the last few decades, the European Union has sought to increase cross-border integration and support the free movement of people and goods. So, are the borders in Europe's single market an obstacle to trade today?

We find that borders in Europe remain a significant barrier to trade: two regions that belong to the same country trade five times more than if they were in different countries. Importantly, more than half of this effect seems to come from borders established in the last 100 years rather than from centuries-old political divisions.

A new dataset to disentangle the effects of borders and geography

Understanding the effect of borders on trade is challenging. We need detailed data of how domestic regions trade among themselves relative to how they trade with foreign regions.

We construct a new, region-level dataset of trade in Europe covering 269 regions in 24 countries exploiting a rich micro-dataset of transport of goods by road (Santamaria, Ventura and Yesilbayraktar, 2021). This dataset allows us to observe how trade circulates within and across borders. ▶

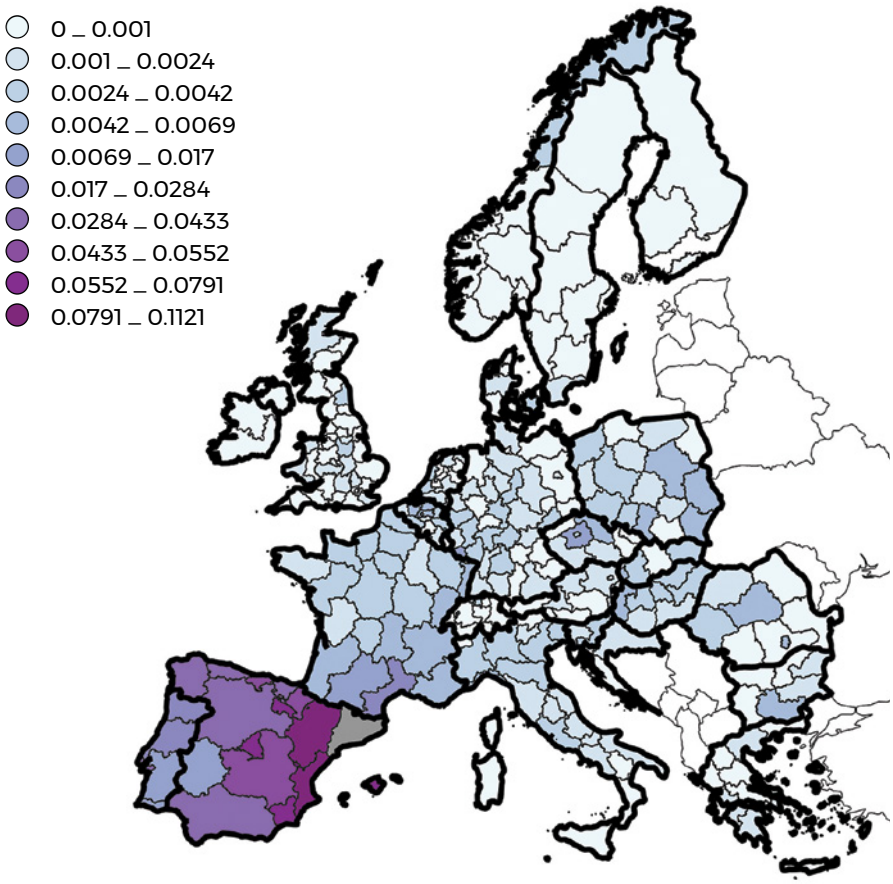
Consider Catalonia, a Spanish region bordering France. Figure 1 shows sales from Catalonia (shown in grey) to 268 European regions as a share of total spending in each destination region. Catalonia's total share of Spanish markets, excluding Catalonia, is 5.8%; while its total share of non-Spanish markets is only 0.26%.

Is this twenty-fold difference due to the presence of a border? In other words, if the border between France and Spain had never existed, would we expect trade between Catalonia and French regions to be 20 times larger? Or would geographical factors such as distance, mountains or rivers still restrict trade?

Borders are the result of historical events, whose impact on trade is difficult to establish. However, borders often also follow natural barriers such as rivers or mountains. These geographical factors can affect trade flows.

Indeed, the French–Spanish border runs along the Pyrenees Mountain range, which separates the Iberian Peninsula from the rest of Europe. The large difference in trade between Spanish and French regions could come from the additional cost that it takes to ship goods across the mountains. Or from the fact that, separated by mountains for centuries, the preferences and culture of the French and Spanish people has evolved differently. Attributing these trade obstacles to the presence of a political border would lead us to overestimate the negative effects of borders on trade flows.

Figure 1: Sales from Catalonia to European regions (share of total spending)



Note: The figure shows spending on Catalan goods as a share of total spending in the region. The shading represents the value of the spending share, with darker shares representing larger market shares. The spending shares come from our newly built regional trade dataset.

The impact of political borders on trade

To take geographical barriers into account, we study the allocation of a border as a treatment, following the causal inference framework (Imbens and Rubin, 2015). We estimate the probability of there being a border between any two regions in Europe, based on the geographic factors between them (such as distance, insularity, remoteness, mountain ranges or river basins).

Figure 2 shows the probability of finding a border between Catalonia and the other 268 regions in our data. As we can see, borders become very likely as regions become more remote from Catalonia. Our estimation shows that around half of the borders in Europe can be explained by factors such as distance or the presence of mountains and rivers.

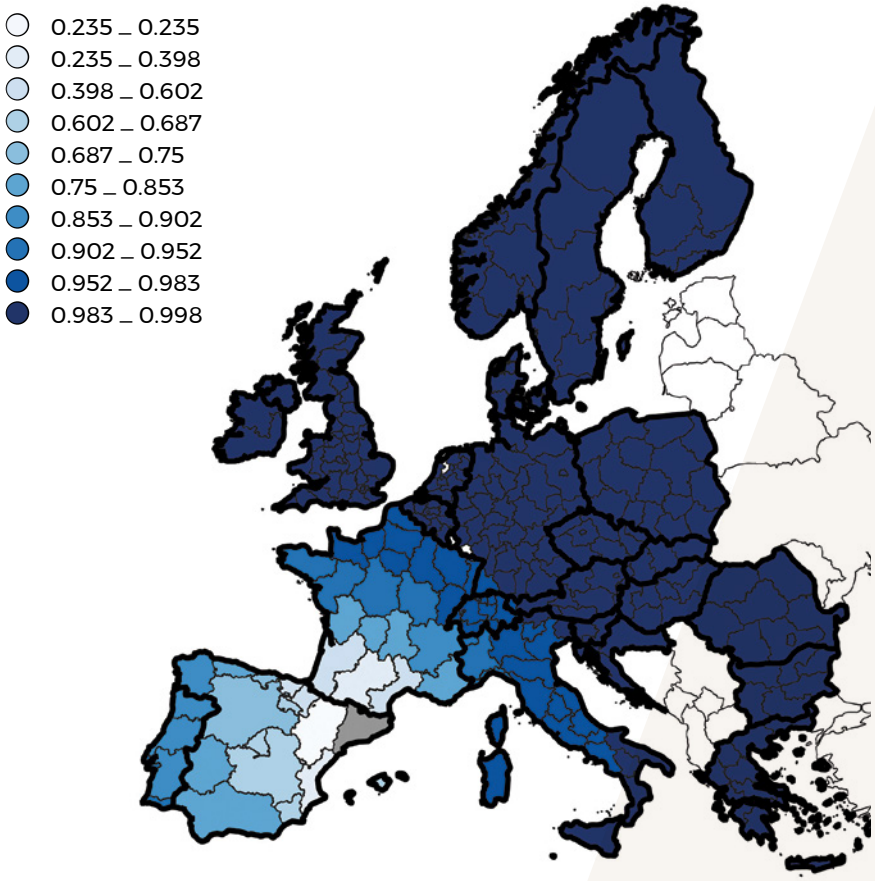
Once we have estimated the probability of being separated by a border, what we call our 'treatment', we need to find the right group of control regions. We group every region-pair in Europe into blocks according to their probability of having a border between them. The key to this approach is that we can compare, within a block, the regions that have borders (treated region-pairs) with the regions that are in the same country (control region-pairs), knowing that all of them had the same ex-ante probability of being separated by a border.

Assuming that inside a block the actual determination of the border is 'quasi-random', we can estimate the effect of a border by comparing trade in treated and control groups.

Our findings show that a border between two regions reduces trade flows to 17.5% of their trade potential. We find a very similar effect across all industries within manufacturing.

These effects on trade are large and should be interpreted as follows: trade between two regions would increase five times if these two regions had always belonged to the same country.

Figure 2: Probability of being separated from Catalonia by a border



Note: The figure shows the estimated probability of finding a border between Catalonia and each European region based on a set of geographical variables. The shading represents the probability, with darker shares representing probabilities closer to one.

Borders today and borders in the past

We know, and think it important to acknowledge, that sharing a country does not just mean eliminating trade frictions. It also means sharing a language, an institutional framework and a common history. Could a long-established shared history affect how countries trade today?

If reduced cross-border trade is due to persistent factors such as culture, policymakers will have a hard time eliminating these obstacles. If, on the contrary, reduced cross-border trade is caused by specific policies, there is hope for governments to reverse them and increase cross-border integration.

We exploit Europe's combative past to explore this question. Up to 1910, Europe lived through a phase of centralisation and consolidation into large empires. After the First World War, however, the trend reversed. With the collapse of the Austro-Hungarian Empire (1918), the German Empire (1918), and the further border reorganisations after the Second World War (1949), several new countries were founded.

To estimate the effect of these more 'recent' borders, we compare region-pairs that were part of the same country but were divided after 1910 with region-pairs that shared a country until 1910 and continue to do so today.

We find that these post-1910 borders also reduce trade: regions separated post-1910 trade around one third as much as regions in the same country. This effect is surprising; even for regions that shared a country and a history for centuries, the creation of a border has huge trade-reducing effects. Recent policies seem to be responsible for a large part of the border effect we estimate.

> "Our findings show that borders still shape trade today and that despite its efforts, European regions are still far from the single market the EU sought to achieve."

Our findings show that borders still shape trade today and that despite its efforts, European regions are still far from the single market the EU sought to achieve. ◄

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Publication details

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The unintended consequences of censorship

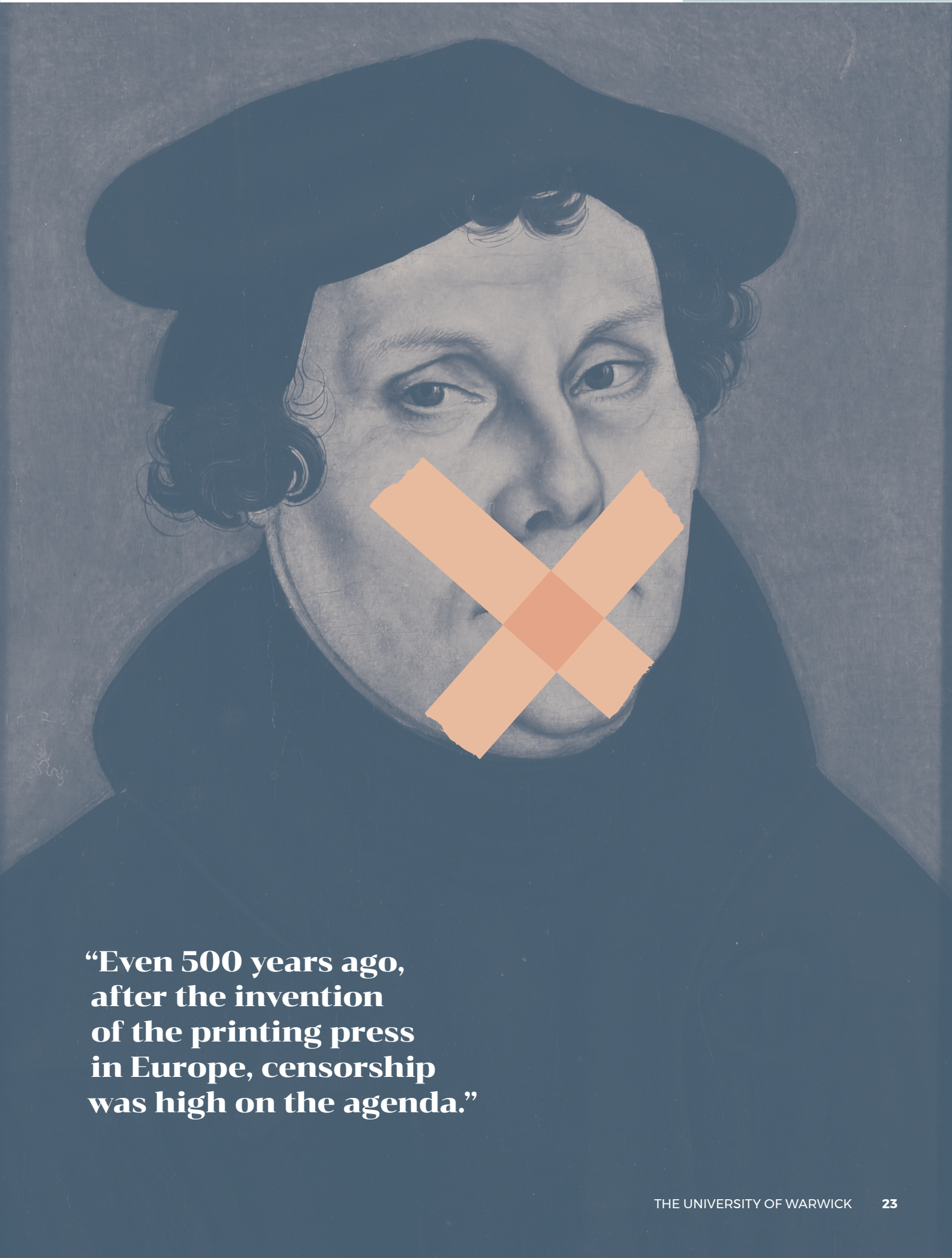
By Sascha O. Becker, Francisco J. Pino and Jordi Vidal Robert

In the 16th and 17th centuries, the Catholic Church tried to stop the spread of Protestantism by suppressing the printing of works written by Martin Luther (1483–1546) and his followers. On the surface, this succeeded in reducing access to forbidden books in Catholic areas. But it also encouraged creative people to move from areas that suppressed freedom of the press to those that resisted censorship.

Censorship is common in many parts of the world today. Independent media are suppressed or highly regulated in countries such as Russia or Turkey. But censorship is not new. Even 500 years ago, after the invention of the printing press in Europe, censorship was high on the agenda, as the Catholic Church battled the insurgency of the Protestant reformer Martin Luther and his followers.

The Protestant Reformation in the early 16th century challenged the monopoly of the Catholic Church. The printing press helped the new movement to spread its ideas well beyond the cradle of the Reformation in Luther's city of Wittenberg, Germany.

During the Counter-Reformation of the 16th and early 17th centuries, the Catholic Church tried to halt the spread of Protestantism by issuing an Index of Forbidden Books which blacklisted not only Protestant authors but all authors whose ideas were considered to be in conflict with Catholic doctrine. ▶



"Even 500 years ago, after the invention of the printing press in Europe, censorship was high on the agenda."

But how successful was this censorship? Did the printing of forbidden books continue or was there compliance with the Index of Forbidden Books? If there was compliance, did some cities comply more, while others largely ignored the rulings of the Catholic Church? We study printing in Europe to find out.

We use newly digitised data on authors censored by the Catholic Church during the Counter-Reformation (Becker, Pino and Vidal-Robert, 2021). The Index of Forbidden Books (*Index Librorum Prohibitorum*) issued by the Pope was intended to apply universally. But the Catholic Church and Catholic rulers also issued local editions of the Index at different points in time over the course of the 16th century. We combine this information with data from the Universal Short Title Catalogue (USTC), containing information on book titles, authors, printers and printing locations between 1450 and 1650.

We look at the decades before and after a specific local index was issued (e.g., the Paris Index in 1544) and we compare the number of editions printed in cities with a printing press, of works written by forbidden authors and works by authors who were not censored.

We find that printing of forbidden authors dropped once authors were listed on the Index. But compliance was not uniform in space. Cities closer to a town where an index was issued show stronger compliance than those further away. This could be due either to printers further away being less aware of the Index, or due to weaker enforcement by authorities.

Religiosity could also be an important factor for compliance of Christian printers and readers, especially when being told that certain works should no longer be printed and read. Obviously, there are no survey data from the 16th century telling us about beliefs of individuals. But we can proxy the degree of religiosity of a location by looking at which municipalities honour a Christian saint in their name, such as St. Etienne in France, or St. Peter(-Ording) in northern Germany. We find that compliance was generally stronger in printing cities surrounded by more municipalities with names honouring saints.

Our results suggest that the Catholic Church succeeded in its primary aim of quelling dissenting ideas. But that is not the end of the story. We might expect that creative people, who often challenge traditional ideas, preferred to live in locations where their ideas could flow unhindered. So, did 'thinkers' move away from cities that suppressed the freedom of the press and move to places where freedom of the press was allowed?

To analyse this, we focus on Germany, the heartland of the Protestant Reformation where the fight over orthodox and new ideas was fiercest, and various religious wars were fought over the course of the 16th and 17th centuries.

> **"Our results suggest that the Catholic Church succeeded in its primary aim of quelling dissenting ideas. But that is not the end of the story."**

Using data from a collection of biographies known as the *Deutsche Biographie*, we look at the places of birth and death of famous Germans. Place of birth proxies for the location of their formative years. Place of death proxies for their place of work, under the assumption that most people in early modern Germany would die during or soon after the end of their work life.

We find that cities which defied the Index of Forbidden Books were better at attracting famous people. Our results suggest that these thinkers in turn helped their adoptive cities to develop new ideas and grow faster over time.

In summary, while the Catholic Church seems to have successfully suppressed dissenting ideas in some areas, it came at the cost of losing creative people from those places. Censorship was thus a mixed blessing for the Catholic Church.

These unintended consequences of censorship are still relevant today. While censorship may help quell dissent, it comes at the cost of losing creative minds. ◀

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Publication details

Becker, S.O., Pino, F. J. and Vidal-Robert, J. (2021). Freedom of the press? Catholic censorship during the Counter-Reformation. CAGE Working Paper (no. 562).

Parting Shot

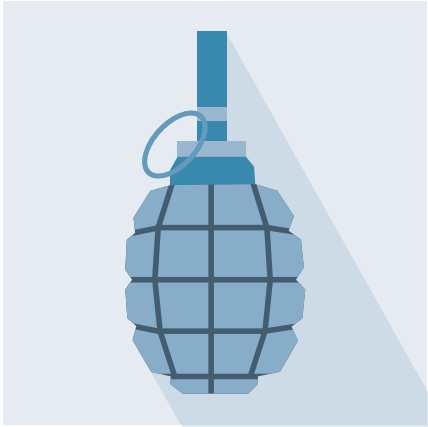
Russia's war on Ukraine will have shocked and surprised many readers. How far back in history should we look to find the roots of this terrible event?

By Mark Harrison

The difficulty of this question is illustrated by a recent anecdote. A broadcaster asks a journalist, a political scientist, and a historian where they would start. The journalist says: 'At the end of 2021 Russia demanded that Ukraine should never join NATO'. The political scientist says: 'In 1991 the Soviet Union broke up and Ukraine became an independent nation state'. The historian says: 'In the ninth century the Vikings arrived in the region bordering the Black Sea and settled there …'

As this issue of *Advantage* shows, history casts a long shadow. Why are some countries rich today while others are poor? Why are boys advantaged over girls, and men over women? Why are some cities more vibrant than others? Why are some regions more integrated than others? All of these questions are shown to find at least partial answers in events that were distributed accidentally across a far distant past.

Why does history matter, and how do its effects persist? A completely different view is found in the claims of blood-and-soil nationalists across the world. Their ethnic communities, they commonly maintain, are descended from the first people who long ago settled in a region, made it their homeland, married among themselves, and defended their community against outsiders. The descendants, they suggest, have come to embody a set of national values that is unique and unchanging to the present day, untouched by events and shocks that might have disturbed the community in the time since its primordial foundation.



"As this issue of *Advantage* shows, history casts a long shadow."

The views of Vladimir Putin on the Russian people and its values provide an example. On various occasions, the Russian president has claimed that 'respect for parents and family and love for our soil', and 'family, friendship, mutual assistance, and compassion' are shared values of the Russian people, arising from their common history.

When subjected to scholarly investigation, however, historical evidence undermines the idea of national values that are distinct, innate, and unchanging. Attitudes to gender roles, education, and trust in others turn out to vary across space and over time. While some variation responds to state borders and ethnolinguistic boundaries, much variation is found within national boundaries and within ethnic groups. Within-group variation can often be attributed to differences in exposure to historical events that were at least partly random, such as distance from disasters, arbitrary enforcement of laws and prohibitions, different personal experiences of forced settlement and expulsion, and exogenous leads and lags in improvement of transport and communications.

The evidence also shows that values have consequences. A large literature testifies to the economic losses suffered by communities where values prevail that are associated with distrust, discrimination, and restricted access to education and employment.

In the present crisis, even fictitious values have had consequences. Russian leaders have falsely claimed unique national values that are supposedly shared by all Russians, except for a few renegades. The crisis has arisen, they maintain, because these values are increasingly threatened by corrupt and unscrupulous outsiders and their collaborators, against whom the nation is entitled to defend itself by any means.

Thus, an imagined set of national values has been invoked to call Russia to arms and to rationalise the crime of planning and waging an aggressive war against Ukraine. ◀

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CAGE is a research centre based in the Department of Economics at the University of Warwick. We conduct independent policy-driven research informed by history, culture and behaviour. Our aim is to move beyond traditional measures of economic success to consider broader influences on global prosperity: from cultural and behavioural attitudes to voter preferences and political institutions. We analyse historical and contemporary data to draw out lessons for modern policy. CAGE is supported by the Economic and Social Research Council (ESRC).

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We are a small team of experts seeking to apply economic principles to ask new and innovative questions of data. We want to know how and why economies are successful, and the ways in which history, culture and behaviour shape the global economy (and vice versa).

We produce robust evidence to inform policymakers and journalists and influence both policy and debate. Our core team consists of eight Research Theme Leaders and Deputy Leaders who work across four Research Themes. We also have a number of internal and external associates who contribute to our research.

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Our academic working paper series showcases the research of our team and our associates. We also publish a bi-annual magazine, *Advantage*, which highlights the best of our policy-driven research for an informed non-academic audience. Our policy briefings and themed policy reports seek to draw out policy recommendations and findings to inform current debate.

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