

CentrePiece

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Apprenticeships
Housing and jobs
American inventors

Early education
Family firms
Brexit



Poor Productivity
An Italian Perspective

CentrePiece



THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE ■

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Editorial

Over the course of the past 25 years, Italy has gone from being among the fastest growing economies in the European Union to the 'sleeping beauty of Europe' – a part of the world that is rich in talent and history but suffering from a long-lasting stagnation. The cover story of this issue of *CentrePiece* magazine seeks to understand what lies behind its poor productivity performance – in part as a guide for Italian policy-makers and their electorates; but also as an object lesson for other Western countries, which have all experienced slowing growth since the financial crisis a decade ago.

One striking lesson is that there is a misallocation of capital and labour in Italy – not between sectors, geographical areas or firm size classes, but between the best and worst performing firms within these categories. The firms that seem to be over-resourced and are therefore constraining productivity growth include family firms, a finding that echoes the

evidence summarised in another article here. Drawing on the World Management Survey, which Centre for Economic Performance (CEP) researchers initiated over 15 years ago, Daniela Scur examines the problem of weak management practices in family-owned firms run by second-generation bosses.

A second longstanding CEP theme touched on in this issue is the link between labour markets and housing markets. Paul Cheshire and colleagues explain how planning restrictions on building new homes force people into longer commutes to work. And Alan Manning and Barbara Petrongolo explore the impact of the cost of distance on the size of local labour markets.

Elsewhere, we return to a third area in which CEP has long been active: the potential of education policies to promote social mobility and to improve national economic performance. Jo Blanden and co-authors reveal that free

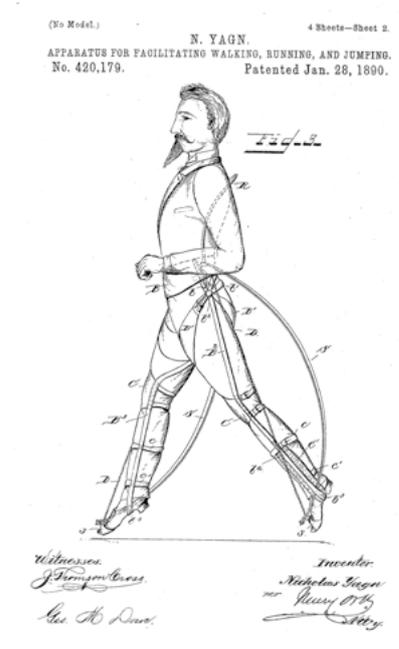
entitlement to part-time early education in England has been less beneficial for children's development than might have been hoped. And Sandra McNally and colleagues show that there is a high potential payoff to starting an apprenticeship, though much like university degrees, the returns vary across subject specialisms.

Finally, former CEP director John Van Reenen outlines his work on 'lost Einsteins' – the American children who excel at mathematics and science but aren't equipped to become inventors because they don't come from a rich family. He concludes that improving opportunities for disadvantaged children may be valuable not just to reduce disparities but also to spur greater innovation and productivity growth.

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Empty homes,
longer commutes



As part of an effort to transform the UK's post-16 educational landscape, the government is aiming for a massive increase in the number of apprenticeships. Research by **Chiara Cavaglia, Sandra McNally** and **Guglielmo Ventura** asks whether apprenticeships deliver a payoff in terms of higher earnings for young people.

Is there a payoff to apprenticeships for young people?

Is there an earnings differential for starting an apprenticeship over and above the pay of young people who have already had a full-time school or college-based education? Our research looks at people who finished their GCSE exams in 2003 and who were therefore 28 years of age in 2015. We use administrative data to follow them from 2003 through their education and into the labour market.

About 17% of this cohort had started an apprenticeship by the time we observe them in the labour market at age 28, all of them starting within five years of their GCSE exams. Although many of them did not complete, we focus primarily on the earnings differential from starting an apprenticeship because the potential benefit is derived not only from certification but also from on-the-job training, achievement of some (if not all) of the aims, and potential connections

made through the apprenticeship programme.

We compare those who start an apprenticeship with those with similar 'level 2' qualifications – GCSE or the vocational equivalent – or 'level 3' qualifications – A-levels or the vocational equivalent. In each case, comparisons are made for those whose highest qualification is at these levels. For the cohort who finished their GCSE exams in 2003, higher apprenticeships did not exist and very few individuals with an apprenticeship subsequently went to university. Of course, things are slowly changing.

Our approach involves netting out other things that make those who started an apprenticeship different from those who did not. For example, men who start an advanced apprenticeship are only half as likely to have been eligible for free school meals when at school (compared with the average for the cohort).

The earnings differential from starting an apprenticeship over leaving education with A-levels is over three times larger for men than for women



There are other characteristics we can control for: prior attainment at primary and secondary school; demographics, such as ethnicity and economic disadvantage; the secondary school attended; and post-education experience in the labour market. Thus, we compare the earnings of individuals with and without an apprenticeship after taking account of all these different factors.

The approach isn't perfect because we don't observe important qualities that matter to employers such as motivation, perseverance and social skills. So we shouldn't interpret the earnings differential as being attributable to the apprenticeship alone.

The earnings premium to starting an apprenticeship

Our research finds that by the age of 28, men whose highest educational qualification is GCSEs (with at least one GCSE result of A*-C) earn £19,709. After taking account of other factors, men who start an apprenticeship earn 23% more than those who left school with only GCSEs and roughly 16% more than those who left education with a level 2 vocational qualification.

For women, those who leave education with at most GCSEs earn £13,621. Those who start an apprenticeship earn 15% more than those who left school with only GCSEs and about 4% more than those who left education with a level 2 vocational qualification.

For those educated up to level 3,

Much like university degrees, potential returns to an apprenticeship vary across subject specialisms

the baseline earnings for men who leave education with at most A-levels are £22,464 by the age of 28. Those who start an apprenticeship earn 37% more than those who left education with A-levels (and who did not progress further) and 35% more than those who left education with a level 3 vocational qualification.

Women who leave education with at most A-levels earn £18,500 by the age of 28. Those who start an apprenticeship earn about 9% more than those who completed their education with A-levels by the time they are age 28 and roughly 15% more than those who left education with a level 3 vocational qualification (without progressing any further).

Even if the estimated earnings differentials partly capture individual characteristics that we can't control

for (for example, better 'soft skills' of those accepted on to an apprenticeship programme), they are suggestive of high potential returns to an apprenticeship.

But some apprenticeships lead to better prospects than others. Here the gender difference is particularly striking, especially for those educated to level 3, where the earnings differential is over three times larger for men than for women. Much of this is attributable to the sector of learning.

Most men with advanced apprenticeships are classified within Engineering and Manufacturing Technologies (53%) or Construction, Planning and the Built Environment (26%).

For women, the most important sectors for advanced apprenticeships are Health, Public Services and Care (35%), Retail and Commercial Enterprise (23%) and Business, Administration and Law (28%).

Table 1 shows the 10 most popular sectors for men and women respectively, along with their average earnings.

Strikingly, men who complete an advanced apprenticeship in engineering earn more on average than men with a degree in engineering at age 28 (although this differential disappears after taking account of all observable characteristics and post-education labour market experience).

At the other extreme, there are apprenticeship sectors that have a negligible or lower premium than alternatives for people educated to

Table 1:

Detailed sector composition of intermediate and advanced apprenticeships

Panel A: 10 most popular sectors of apprenticeships for men

Intermediate apprenticeships	Number of apprentices		Average earnings	Advanced apprenticeships	Number of apprentices		Average earnings
		%				%	
Building and Construction	4,806	24%	£19,562	Engineering	5,767	32%	£29,265
Administration	2,779	14%	£19,095	Building and Construction	4,081	23%	£24,044
Engineering	1,841	9%	£23,378	Transportation Operations & Maintenance	3,942	22%	£23,426
Transportation Operations & Maintenance	1,771	9%	£19,182	Administration	691	4%	£22,072
Hospitality and Catering	1,143	6%	£17,573	ICT Practitioners	562	3%	£27,134
Retailing and Wholesaling	1,099	5%	£17,580	Foundations for Learning and Life	539	3%	£25,627
Warehousing and Distribution	908	4%	£20,859	Accounting and Finance	494	3%	£26,090
Health and Social Care	770	4%	£17,862	Hospitality and Catering	472	3%	£20,025
Sport, Leisure and Recreation	752	4%	£19,262	Manufacturing Technologies	289	2%	£28,437
ICT for Users	723	4%	£19,679	Sport, Leisure and Recreation	254	1%	£21,064

Panel B: 10 most popular sectors of apprenticeships for women

Intermediate apprenticeships	Number of apprentices		Average earnings	Advanced apprenticeships	Number of apprentices		Average earnings
		%				%	
Administration	6,806	32%	£14,438	Child Development and Well Being	2,432	24%	£12,038
Service Enterprises (e.g. Hairdressing)	3,563	17%	£11,218	Administration	2,239	22%	£16,514
Health and Social Care	2,118	10%	£12,211	Service Enterprises (e.g. Hairdressing)	1,282	13%	£12,045
Child Development and Well Being	2,079	10%	£10,715	Health and Social Care	700	7%	£15,161
Retail and Wholesaling	2,079	10%	£12,554	Accounting and Finance	700	7%	£21,052
Hospitality and Catering	1,249	6%	£12,446	Travel and Tourism	493	5%	£14,849
Foundations for Learning and Life	495	2%	£12,836	Hospitality and Catering	489	5%	£14,852
Animal Care and Veterinary Services	418	2%	£13,287	Nursing and Vocations Allied to Medicine	385	4%	£13,237
Sport, Leisure and Recreation	394	2%	£14,585	Foundations for Learning and Life	291	3%	£14,602
Business Management	351	2%	£15,093	Retail and Wholesaling	237	2%	£15,349

the same level. This includes having an apprenticeship in service enterprises (such as hairdressing) for women educated to level 2 or level 3 and childcare at level 3 (also generally affecting women). Thus, much like university degrees, potential returns to an apprenticeship vary across subject specialisms.

What does all this mean for policy?

First, there is indeed a strong case for creating incentives for apprenticeship provision for young people. It is unfortunate that they have not been the major beneficiaries of the policy drive to increase numbers in recent years. Most new apprenticeships are for adults, and this might not be as beneficial for those who have already been in the labour market for some time (especially if the training is not for a new role).

Second, there needs to be better appreciation of different potential earnings across sectors. Apprenticeships

should not be thought of as equal to each other with regard to potential returns. There needs to be a greater effort to attract women to sectors such as Engineering where they are under-represented, despite high potential returns.

Third, there appears to be inequality of opportunity when it comes to who can get on to an apprenticeship. For example, those from economically disadvantaged backgrounds and from ethnic minority groups are much less likely to start an advanced apprenticeship. The barriers to access need to be understood and addressed.

This article summarises 'Apprenticeships for Young People in England: Is there a Payoff?' by Chiara Cavaglia, Sandra McNally and Guglielmo Ventura, Centre for Vocational Education Research (CVER) Discussion Paper No. 10 (<http://cver.lse.ac.uk/textonly/cver/pubs/cverdp010.pdf>).

The research was co-funded by CVER and the Sutton Trust, and forms part of the Sutton Trust report 'Better Apprenticeships' (<https://www.suttontrust.com/research-paper/better-apprenticeships/>).

Chiara Cavaglia is a research economist at CVER. **Sandra McNally** is professor of economics at the University of Surrey, director of CVER and director of CEP's education and skills programme. **Guglielmo Ventura** is a research assistant at CVER and in CEP's education and skills programme.

There is inequality of opportunity in who can get on to an apprenticeship

Productivity growth has been slow in Western countries since the global financial crisis, but in Italy it has been stagnating for 25 years.

Fadi Hassan and **Gianmarco Ottaviano** investigate inefficiency and misallocation in the Italian economy to draw broader lessons about what lies behind the 'productivity puzzle'.

Poor productivity: an Italian perspective



Productivity has recently slowed down in many economies around the world. In the Eurozone, the UK and the United States, the standard measure of ‘total factor productivity’ (TFP) is still below the level it was at before the global financial crisis. In 2016, US labour productivity growth even fell into negative territory for the first time in the last three decades.

These trends are particularly worrying because productivity lies at the heart of long-term growth. A crucial challenge in understanding what lies behind this ‘productivity puzzle’ is the relatively short time span for which data can be analysed. An exception is Italy where productivity growth started to stagnate 25 years ago.

Figure 1 shows a growth accounting decomposition for Italy over the past four decades and the results are quite emblematic. TFP growth shrank throughout the decades, becoming negative in the 2000s. Italy turned from being among the fastest growing EU economies into the ‘sleeping beauty of Europe’ – a country rich in talent and history but suffering from a long-lasting stagnation.

TFP dynamics in the manufacturing sector, where measurement issues are less

tricky than in services, captures well the timeline of the Italian decline. Figure 2 shows a dramatic slowdown in TFP growth since the mid-1990s for Italy compared with France and Germany, where TFP continued to grow up to the global financial crisis. Italy therefore offers an interesting case to investigate in search of broader lessons that may hold beyond local specificities.

We analyse the firm-level dimension of aggregate productivity and focus on the concept of resource ‘misallocation’ and its impact on productivity. The ‘productivity’ we refer to – TFP – measures how effectively given amounts of productive factors (capital and labour) are used.

Italy is the ‘sleeping beauty of Europe’ – a country rich in talent and history but suffering from a long-lasting stagnation

Clearly the economy’s aggregate TFP depends on its firms’ TFP. This happens along two dimensions:

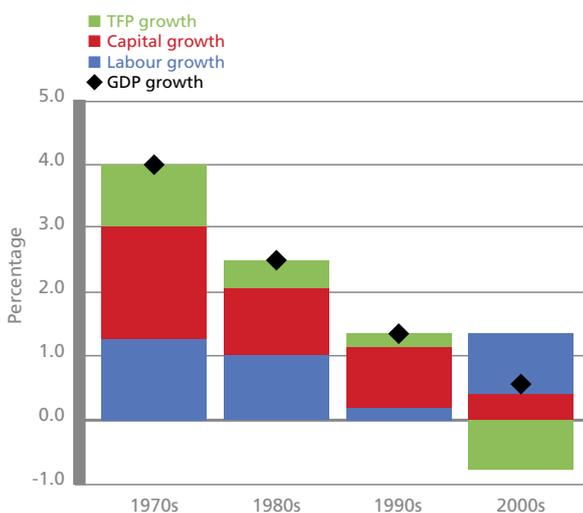
- On the one hand, for given amounts of factors used by each firm, aggregate TFP grows when individual firm TFP grows – for example, thanks to the adoption of better technologies or management practices.

- On the other hand, for given individual firm-level TFP, aggregate TFP depends on how factors are allocated across firms. As long as market frictions ‘distort’ the allocation of product demand and factor supply away from high-TFP firms towards low-TFP rivals, they lead to lower aggregate TFP than in an ideal situation of frictionless markets.

How do we measure misallocation? Building on a distinction between physical TFP (measured as the ability to generate physical output from given inputs) and revenue TFP (TFPR, measured as the ability to generate revenue from given inputs), we observe that in the absence of frictions, TFPR should be the same for all firms while firms can still differ in their physical TFP.

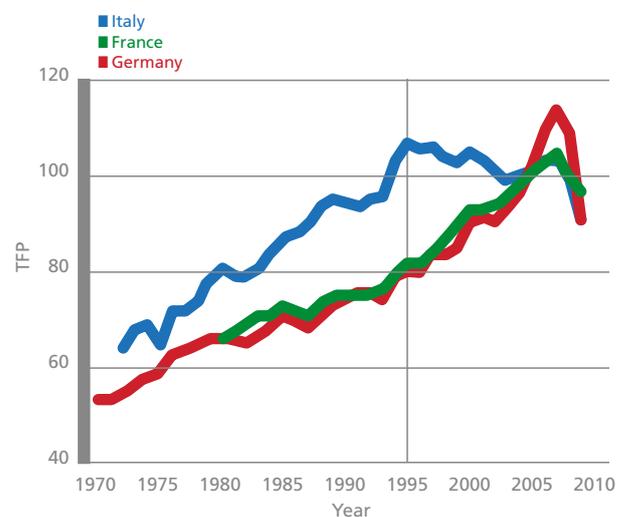
The idea behind this result is simple: with no frictions, the marginal revenue

Figure 1: Growth accounting, Italy



Data: EU-KLEMS.

Figure 2: Evolution of TFP in manufacturing



Data: EU-KLEMS.

product of inputs should be equalised across firms as factors move from low to high marginal revenue product firms. As marginal revenue product equalisation implies TFPR equalisation, Hsieh and Klenow (2009) call deviations from a situation in which TFPR is equalised ‘misallocation’. They propose a simple way to measure its consequences for aggregate TFP.

This is also the definition of misallocation that we adopt. It implies that the dispersion of TFPR across firms can be used to measure the extent of misallocation. It also implies that firms with a TFPR higher than the sectoral average are inefficiently small, while those with a TFPR below the sectoral average are inefficiently large. These are the two key implications of previous research on misallocation that we use.

With these definitions in mind, we study the universe of Italian incorporated companies over the period from 1993 to 2013. We find strong evidence of increased misallocation since 1995 (see Figure 3). If misallocation had remained at its 1995 level, aggregate TFP in 2013 would have been 18% higher than its current level. This would have translated into 1% higher GDP growth per year, which

Resource misallocation has played a sizeable role in slowing down Italian productivity growth

would have helped to close the growth gap with France and Germany.

We find that the main source of misallocation comes from the within-industry component rather than the between-industry component: misallocation has mainly risen within sectors than between them. This implies that moving factors of production from, for example, textiles into information technology would increase aggregate productivity less than ensuring that more efficient firms within textiles are the ones that absorb more resources.

Importantly, we find evidence that

misallocation has increased more in sectors where the world technological frontier has expanded faster when, in the wake of Griffith et al (2004), we measure the speed of technological change in a sector by the average change of R&D intensity in advanced countries. Relative specialisation in those sectors explains why, perhaps surprisingly, misallocation has increased particularly in the regions of Northern Italy, which traditionally are the driving forces of the Italian economy.

The broader message is that an important part of the explanation of the recent productivity puzzle may lie in a generally rising difficulty of reallocating resources across firms within sectors where technology is changing faster rather than between sectors with different speeds of technological change.

Analysis of the characteristics of firms that are inefficiently sized sheds additional light on the relationship between exposure to frontier shocks and misallocation within industries. In particular, we look at corporate ownership and management, finance, workforce composition, internationalisation and innovation.

We find that the firms that are more likely to be inefficiently small and thus under-resourced are those that employ a larger share of graduates and invest more

Figure 3:
Evolution of aggregate misallocation, 1993-2013



Data: CERVED.

Misallocation in the Italian economy has increased more within sectors than between sectors

in intangible assets. In contrast, those that are inefficiently large and thus over-resourced are the firms with a large share of workers under a wage supplementation scheme, and which are family-managed and financially constrained.

We interpret this as evidence that rising within-industry misallocation is consistent with an increase in the volatility of idiosyncratic shocks to firms, due to their heterogeneous ability to respond to sectoral frontier shocks in the presence of sluggish reallocation of resources.

What does this all mean for policies to raise productivity? One implication is that rather than trying to switch resources between sectors, policy intervention should aim at allocating capital and labour to the best performing firms within sectors.

Policy intervention should therefore focus less on moving capital and labour from – for example, textiles to electronics – than on facilitating the mobility of workers and capital towards the most productive firms within the textile sector. Similarly, higher benefits would be reaped by moving the factors of production to the most productive firms within depressed geographical areas rather than moving them to more vibrant areas.

This represents both an opportunity

Misallocation has risen more in sectors where the world technological frontier has expanded faster

and a challenge. An opportunity, because moving factors within sector or area is less costly than across them; but also a challenge, because it is harder to determine what prevents high-productivity firms from expanding and low-productivity firms from shrinking within the same sector or geographical area.

More generally, setting the framework conditions for the proper functioning of market-driven reallocations could be more effective than pursuing traditional industrial policies aimed at 'picking winners', whether they are sectors or regions.

This article summarises 'The Productivity Puzzle and Misallocation: An Italian Perspective' by Sara Calligaris, Massimo Del Gatto, Fadi Hassan, Gianmarco Ottaviano and Fabiano Schivardi, CEP Discussion Paper No. 1520 (<http://cep.lse.ac.uk/pubs/download/dp1520.pdf>).

Sara Calligaris is at the OECD. **Massimo Del Gatto** is at G. d'Annunzio University, Pescara. **Fadi Hassan** of Trinity College Dublin is a research associate in CEP's trade programme. **Gianmarco Ottaviano** is professor of economics at LSE and director of CEP's trade programme. **Fabiano Schivardi** is at LUISS University.

Further reading

Rachel Griffith, Stephen Redding and John Van Reenen (2004) 'Mapping the Two Faces of R&D: Productivity Growth in a Panel of OECD Industries', *Review of Economics and Statistics* 86(4): 883-95.

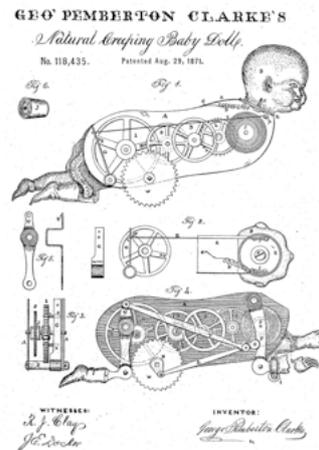
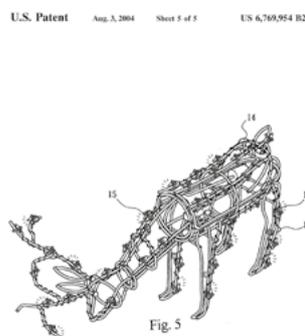
Chang-Tai Hsieh and Peter Klenow (2009) 'Misallocation and Manufacturing TFP in China and India', *Quarterly Journal of Economics* 124(4): 1403-48.



Misallocation has increased particularly in the regions of Northern Italy, which traditionally are the driving forces of the economy

Who are America's most successful inventors – and what can we learn from their experiences in designing policies to stimulate innovation? To answer these questions, former CEP director **John Van Reenen** and his colleagues have analysed data on the lives of more than one million inventors.

Lost Einsteins: who becomes an inventor in America?



Innovation is widely viewed as the engine of economic growth. As a result, many policies have been proposed to spur innovation, ranging from tax cuts to educational investments in STEM (science, technology, engineering and mathematics).

Unfortunately, the effectiveness of such policies is unclear because we know relatively little about the factors that induce people to become inventors. Who are the most successful inventors? And what can we learn from their experiences when designing policies to stimulate innovation?

To answer these questions, we study the lives of more than one million inventors in

the United States using a new de-identified database linking patent records to tax and school district records. Tracking these individuals from birth onwards, we identify the key factors that determine who becomes an inventor, as measured by filing a patent.

Our results shed light on what policies can be most effective in increasing innovation. In particular, we show that increasing exposure to innovation among women, minorities and children from low-income families may have greater potential to spark innovation and growth than traditional approaches, such as cutting tax rates.

Exposure to
innovation
substantially
increases the
chances that
children become
inventors

Our analysis yields three main lessons.

Lesson 1: There are large disparities in innovation rates by socioeconomic class, race and gender

Children with parents in the top 1% of the income distribution are ten times more likely to become inventors than children with below-median income parents (see Figure 1). There are analogous gaps by race and gender: white children are three times more likely to become inventors than black children; and only 18% of inventors are female. The gender gap in innovation

is shrinking gradually over time, but at the current rate, it will take another 118 years to reach gender parity.

Differences in ability, as measured by test scores in early childhood, explain very little of these disparities. Children at the top of their third grade (ages 8-9) mathematics class are much more likely to become inventors if they come from high-income families than if they come from poorer families (see Figure 2). High-scoring children from low-income or minority families are unlikely to become inventors. Put differently, becoming an inventor relies

on two things in the United States: excelling in mathematics and science *and* having a rich family.

The gap in innovation explained by test scores grows in later grades; by eighth grade (ages 13-14), half of the gap in innovation by income can be explained by differences in test scores. This is because low-income children steadily fall behind their high-income peers over time, perhaps because of differences in their schools and childhood environments. We next analyse what specific environmental factors contribute to these disparities.

Figure 1: Patent rates versus parent income

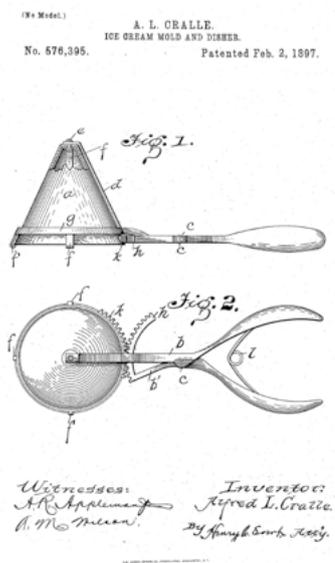
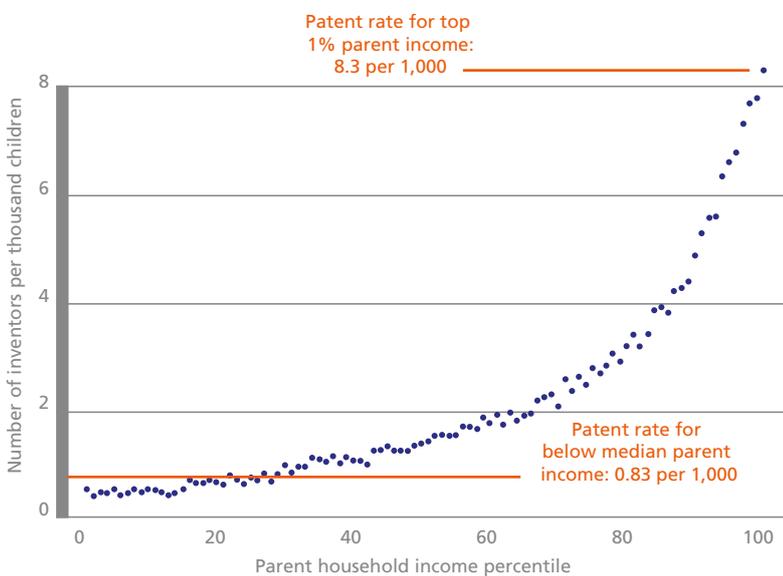
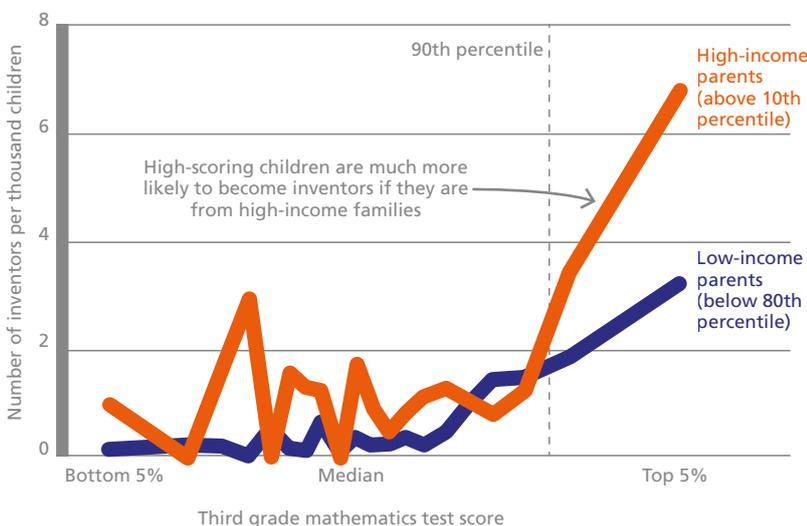


Figure 2: Patent rates versus third grade (age 8-9) mathematics test scores for children of low- versus high-income parents



Children from high-income American families are ten times more likely to become inventors than children from low-income families

Lesson 2: Exposure to innovation substantially increases the chances that children become inventors

Children who grow up in areas with more inventors – and are thereby more exposed to innovation while growing up – are much more likely to become inventors themselves (see Figure 3). Exposure influences not just whether a child grows up to become an inventor, but also the type of inventions he or she produces.

For example, among people living in Boston, those who grew up in Silicon Valley are especially likely to patent in computers, while those who grew up in Minneapolis – which has many medical device manufacturers – are especially likely to patent in medical devices. Similarly, children whose parents hold patents in a certain technology class (amplifiers, for example) are more likely to patent in exactly that field themselves rather than in other closely related fields (antennas, for example).

Exposure also matters in a gender-specific manner. Women are more likely to invent in a given technology class if they grew up in an area with many female inventors in that technology class. Growing up around male inventors has no impact on women’s propensity to innovate. Conversely, men’s innovation rates are influenced by male rather than female inventors in their area.

Our findings are consistent with recent evidence that exposure to better neighbourhoods in childhood improves children’s life outcomes. Neighbourhood effects have typically been attributed to factors such as school quality or residential segregation. Since it is implausible that some neighbourhoods or schools prepare children to innovate in a single field, such as amplifiers, the exposure effects here are more likely to be driven by mechanisms such as mentoring, networks and transmission of information.

Children from low-income families, minorities and women are less likely to have such exposure through their families and neighbourhoods, helping to explain why they have significantly lower rates of innovation. For example, our estimates imply that if girls were as exposed to female inventors as boys are to male inventors, the gender gap in innovation would fall by half.

Looking forward in young people’s lives, we find that innovation rates vary widely across colleges, but students from low- and high-income families at the most innovative colleges (such as MIT) patent at relatively similar rates. This finding reinforces the view that factors that affect children before they enter the labour market, such as childhood environment and exposure to innovation, drive much of the gaps in innovation we uncovered.

Lesson 3: Star inventors earn more than \$1 million per year, suggesting that further increasing financial incentives or reducing tax rates may have small effects on innovation

The average patent holder earns approximately \$256,000 per year in his or her mid-forties. But the individuals who make discoveries that have the greatest scientific impact – that is, those who produce the most highly cited patents – earn more than \$1 million on average per year (see Figure 4). Scientific progress is largely driven by a few star inventors who are highly compensated for their work by the market.

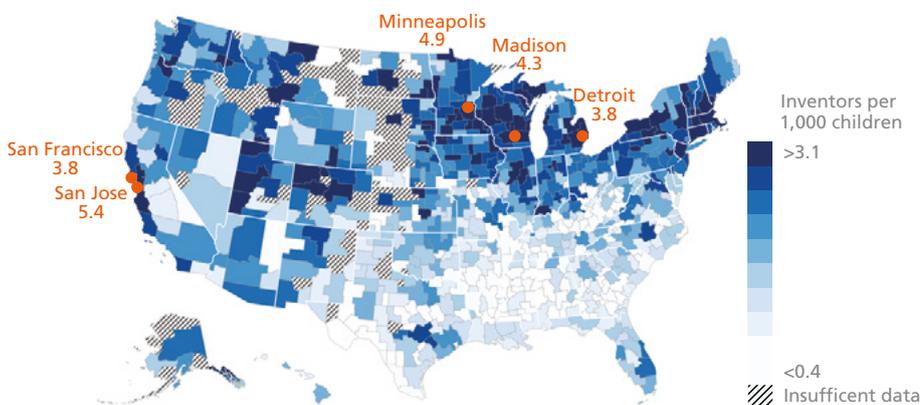
Women, minorities and individuals from low-income families are as under-represented among star inventors as they are among inventors as a whole. Given our finding that innovation ability does not vary substantially across these groups, this result implies there are many ‘lost Einsteins’ – people who would have had high-impact inventions had they become inventors – among the under-represented groups.

These findings suggest that changes in financial incentives (for example, by reducing tax rates) have limited scope to increase innovation. This is for two reasons:

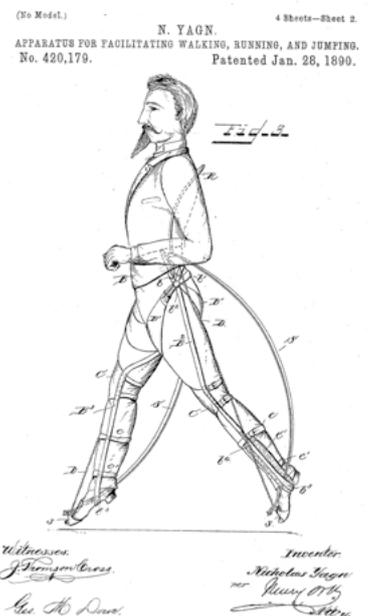
- First, changes in incentives affect only the small subset of individuals who have exposure to innovation.

Improving opportunities for upward mobility may spur greater innovation and growth

Figure 3: The origins of inventors: patent rates by area where children grow up



Notes: Darker colours denote areas where more children grow up to become inventors. The five American cities that produce the most inventors per capita are highlighted.



If girls were as exposed to female inventors as boys are to male inventors, the gender gap in innovation would fall by half

■ Second, such policies are unlikely to influence the decisions of star inventors who matter most for economic growth.

Star inventors – who typically earn more than \$1 million per year – would presumably be happy to work in their field even if they earned say \$950,000 instead of \$1 million per year. We caution, however, that these predictions remain to be tested empirically. Taxes could potentially affect economic growth through other channels, for example, by changing the behaviour of firms or other workers.

Policy implications

If women, minorities and children from low-income families were to invent at the same rate as white men from high-income (top 20%) families, the rate of innovation in the United States would quadruple. Our findings therefore call for greater focus on policies that harness the under-used talent in these groups by providing them with greater exposure to innovation. Such policies could range from mentoring programmes to internships to interventions through social networks.

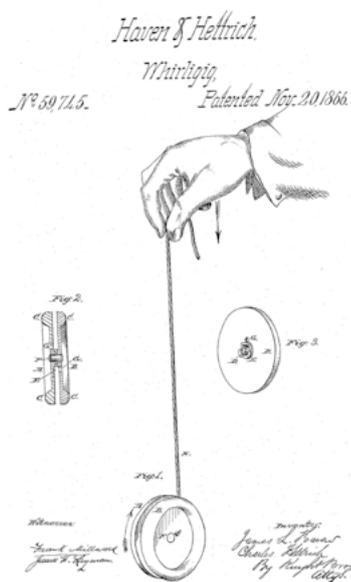
Our analysis does not tell us which programmes are most effective, but it does provide some guidance on how they should be targeted. Targeting exposure programmes to children from

under-represented groups who excel in mathematics and science at an early age is likely to maximise their impacts. Furthermore, tailoring programmes to participants’ backgrounds may be valuable: for example, women are more influenced by female rather than male inventors.

More broadly, our results suggest that improving opportunities for disadvantaged children may be valuable not just to reduce disparities but also to spur greater innovation and growth.

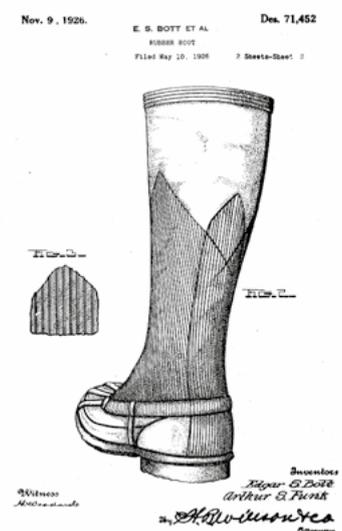
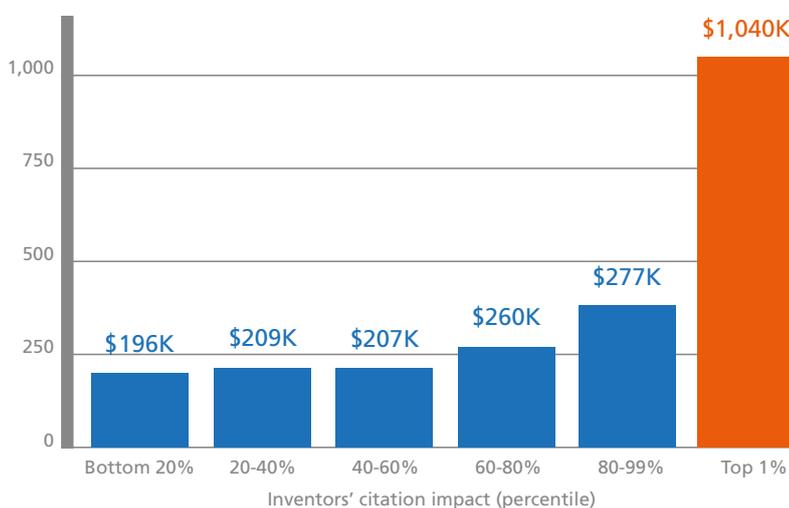
This article summarises ‘Who Becomes an Inventor in America? The Importance of Exposure to Innovation’ by Alex Bell, Raj Chetty, Xavier Jaravel, Neviana Petkova and John Van Reenen, CEP Discussion Paper No. 1519 (<http://cep.lse.ac.uk/pubs/download/dp1519.pdf>).

Alex Bell is at Harvard University. **Raj Chetty** is at Stanford University. **Xavier Jaravel** is at LSE. **Neviana Petkova** is at the US Treasury. **John Van Reenen** of MIT is a research associate in CEP’s growth programme.



There are many ‘lost Einsteins’ – people who would have had high-impact inventions had they become inventors

Figure 4: Inventors’ annual incomes by scientific impact



If we want to create jobs in disadvantaged local areas, the idea of 'local' needs to be revisited.

Alan Manning and **Barbara Petrongolo** explain the problem of thinking of geographical space as non-overlapping single labour markets.

Their study, which draws on evidence from job openings in London ahead of the 2012 Olympics, provides a useful toolkit to understand the likely impact of place-based policies.

How 'local' are local labour markets?

Place-based policies that target disadvantaged areas are widespread in both high-income and developing countries.

But their impact depends crucially on the effective size of local labour markets.

For example, if labour markets are very local, an effective intervention needs to be targeted to the disadvantaged areas themselves and more distant interventions will not benefit the target group. But if labour markets are not as local, targeted intervention is ineffective as it may simply benefit workers from other, more advantaged areas.

A broader question concerns the incidence of local shocks to labour demand and their impact on labour mobility. What happens, for example, if there is a sharp rise in job vacancies, as happened in and around Stratford ahead of the 2012 Olympics in London?

To answer such questions, we need a clear definition of a 'place'. Most research on the topic uses the output of government statistical agencies, which divides geographical space into non-overlapping areas that are assumed to be single labour markets. Examples include the 367 Metropolitan Statistical Areas for the United

States, or the 320 Travel to Work Areas for the UK.

In such classifications, the cost of distance within areas is implicitly assumed to be zero. Because people commute large distances to work in the centre of big cities, large metropolitan areas are generally classified as single labour markets. But those who live in the northern suburbs might not think of the southern suburbs as part of their labour market.

Second, the non-overlapping nature of labour markets constructed in this way causes inevitable discontinuities around the boundaries. Someone living just inside a large metropolitan area would be classified as living in a large labour market, while someone living just across the border would be classified as living in a modestly sized labour market. But these individuals live in essentially the same labour market.

The root of these problems is a failure to recognise the continuous nature of geographical space. In reality, the economy cannot be divided into non-overlapping segments, and there is always some commuting across borders. Typically, the labour market for one individual at one location overlaps with that for a second individual at a different but not too distant



New job openings attract not only local workers, but also those living in surrounding areas

A local labour market's size is determined by the cost of distance – measured as geographical distance, commuting time or commuting cost



location. The second individual's labour market then overlaps with that for a third individual, whose labour market may not overlap at all with that for the first individual.

Our study shows that if geographical space is treated as continuous, as opposed to a collection of non-overlapping units, one can attain a more realistic characterisation of local labour markets, with implications for the evaluation of local policies.

In our approach, a local labour market represents the set of jobs for which an unemployed worker, currently in a particular location, will apply. Its size is determined by the cost of distance, measured as geographical distance, commuting time or commuting cost. If the cost of distance is high, workers will be more reluctant to consider jobs in more distant locations than if that cost is small. This approach means that the boundary of a local labour market is fuzzy.

Jobseekers decide whether to apply for jobs at different locations on the basis of two considerations. The first is the probability of success, which is affected by how many other jobseekers are applying for these jobs. The second is the utility enjoyed on the job, which in turn depends on the distance to the job and the wage paid.

Linkages across areas arise because the number of applicants to jobs in a given area is likely to be influenced, even if only slightly, by unemployment and vacancies in other areas, as they are ultimately linked through a series of overlapping markets.

Data on the filling of vacancies allow us to infer the distance over which people look for work, as the ease of filling a vacancy in a certain area is determined by the number of jobseekers for whom the vacancy is in their local labour market. If the vacancy filling rate in area A responds to the number of jobseekers in area B but not in area C, we conclude that A is in the local labour market for residents of B but not for residents in C.

We use unemployment and vacancy data on 8,850 census wards in England and Wales, and combine these with micro data on wages and the use of transport modes to analyse commuting costs between any two wards.

Our estimates show evidence of high costs of distance. For example, the probability of a random job 5km distant

being preferred to a random local job is only 19%. We also find that workers are discouraged from applying for jobs in areas where they expect relatively strong competition from other jobseekers.

Our work provides a useful toolkit to understand the likely impact of place-based policies. High estimated costs of distance may suggest that local intervention would have heavily concentrated effects on target areas.

But this argument is deceptive if labour markets are overlapping: even though the labour market for an individual worker may be quite local, a local shock sends a ripple effect through surrounding areas, diffusing its impact over a much wider area than the typical commute. The extent of the ripple effect may be limited by 'firebreaks' – that is, natural or institutional borders across which few workers commute.

As an example, we consider an increase in the number of job openings in Stratford in East London, which was the main venue of the 2012 Olympics, and has an unemployment to population ratio

about three times the national average. We thus combine a large rise in labour demand from Olympic-related projects with a disadvantaged local labour market.

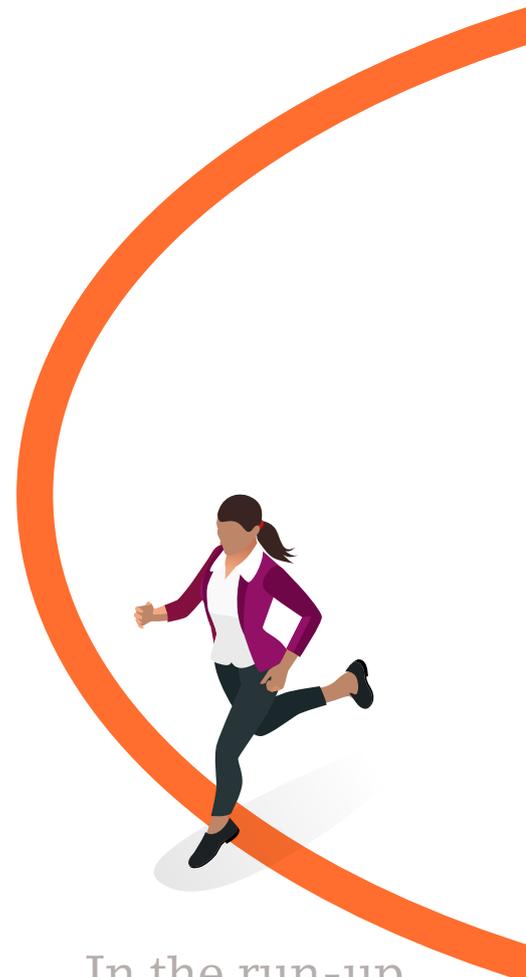
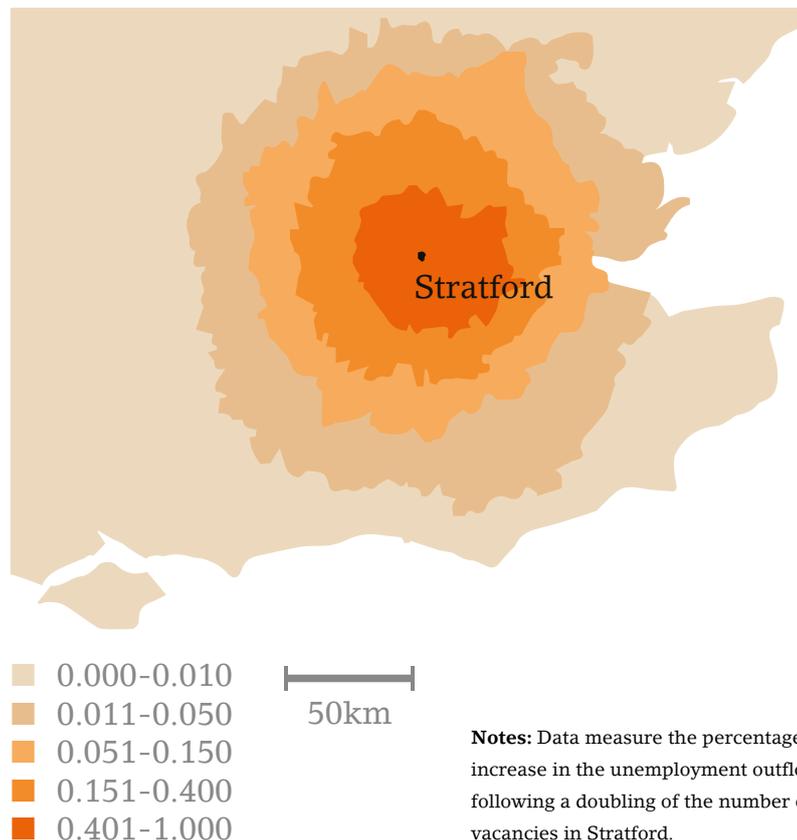
The rise in job openings predicts only a tiny (0.4%) increase in the local job finding rate, because unemployed workers living relatively close to Stratford diverted some of their job search effort from their local wards towards Stratford. This raised job competition in Stratford, reduced job competition in their local wards, attracted applications from elsewhere, and so on.

The bottom line is that even strong local stimulus has a limited bite on the local outflow rate from unemployment, because a series of spatial spillovers dilutes any local shock across space (see Figure 1). This prediction is confirmed by actual labour market trends in and around Stratford: while vacancy data record a sharp rise in Stratford in the run-up to the 2012 Olympics, there was hardly any increase in job finding in Stratford or surrounding areas as a result of the spike in vacancies.

This article summarises 'How Local Are Labor Markets? Evidence from a Spatial Job Search Model' by Alan Manning and Barbara Petrongolo, *American Economic Review* 107(19): 2877-2907 (earlier version available as CEP Discussion Paper No. 1101: <http://cep.lse.ac.uk/pubs/download/dp1101.pdf>)

Alan Manning is professor of economics at LSE, a research associate in CEP's community programme and chair of the UK's Migration Advisory Committee. **Barbara Petrongolo** is professor of economics at Queen Mary University of London and a research associate in CEP's labour markets programme.

Figure 1:
Jobs in and around Stratford in the run-up to the 2012 Olympics: effects of a localised labour demand shock on the unemployment outflow in surrounding areas



In the run-up to the 2012 Olympics, there was a spike in vacancies in and around Stratford but hardly any increase in job finding

The UK government has expanded the popular ‘free entitlement’ to part-time early education and care from a universal 15 hours per week to 30 hours per week for working parents. But research by **Jo Blanden** and co-authors reveals that the original policy was less beneficial for children’s development than might have been hoped.

Nursery attendance and children’s outcomes

The potential for early education to be beneficial for children’s development has led many countries to invest in universal provision in the pre-school years. In the UK in 1998, for example, the Labour government announced that it would introduce an entitlement to free part-time early education for all 3 and 4 year olds in England. This followed a similar policy announced by the Conservative government in 1996 for all 4 year olds.

Our research is the first to use administrative data on all children who go through the state school system to assess the impact of the free entitlement on their outcomes. We take two approaches to this issue. First, we consider whether children who were in areas who received free places before the full rollout of the policy did better in the first years of school (Blanden et al, 2016).

Second, we use the fact that children are only eligible for a free place the term after they turn 3, so that children who were born just a few days earlier receive

an extra term of free entitlement than those who were born just a little later. This second approach (Blanden et al, 2017a) enables us to consider the impact of the free entitlement once it was fully up and running.

When the free entitlement was being introduced in the early 2000s, some local authorities saw the availability of free places for 3 year olds increase considerably. This was not the case where councils were already providing nursery schools and classes. In addition, there was variation in the timing of the build-up among those

areas that funded new places.

If the free entitlement has an impact on children’s development, we would expect new places to be associated with educational outcomes some time later, controlling for other factors varying at local level, such as investment in Sure Start (an important early intervention policy at that time) and local economic conditions. We look at children’s performance in the Foundation Stage Profile (FSP) at age 5 and their key stage 1 and 2 results at ages 7 and 11 respectively for children who joined reception classes in the academic years 2002/03 to 2007/08.

The rules on eligibility mean that children who are born between 1 September and 31 December receive five terms of free early childhood education and care before they start school; children born between 1 January and 31 March receive four terms; and those born between 1 April and 31 August receive three terms. Our analysis makes use of this arbitrary entitlement rule, which generates a sharp difference

The free entitlement to part-time early education and care has failed to live up to expectations

in entitlement for children only a few days apart in age.

To pick up the effect of the additional term of the free entitlement, we compare only those children who are born within four weeks of either the December or March cut-off. Within these samples, the children who are eligible will be older than the others at the time of their FSP assessment, so we take care to control for differences in age, even within these narrow windows. Studying children who started school in the academic years 2008/09 to 2011/12 gives us a sample of more than 600,000 children born in 16 weeks of the year.

To understand our results on educational outcomes, we also need to examine the extent to which families change their behaviour when the free entitlement becomes available. Our investigations reveal some striking results.

Between 1999 and 2007, the percentage of 3 year olds in England receiving a free early education place rose by about 50 percentage points –

from 37% to 88%. But the number of children receiving any kind of formal early education increased by much less: from 82% in 2000 to 96% in 2007.

An area-level analysis relating places taken up to the number of free places available reveals that for every four children given a free place, only one child began to use early education. For the other three children, the policy effectively gave parents a discount on the early education and care that they would have paid to use without the policy.

In a similar vein, the Family Resources Survey for the period from 2005 to 2013 indicates that children are 10-12 percentage points more likely to be attending eligible childcare in the terms they are eligible for a free place than they were prior to entitlement.

If the only way that children's outcomes are affected by the policy is through attendance at nursery, our results imply that the impact of the policy is likely to be smaller than it would be if more families responded to the policy

The pre-school experience delivered by the free entitlement is not leading to sustained benefits



by enrolling their children. But this is not the only route through which the free entitlement could affect outcomes: it could also influence parental employment (which increasingly became a clear objective of the policy). Reductions in childcare costs might also help parents feel less stressed or enable them to spend money on other things that would benefit their children.

We therefore think about our results as a consequence of the policy as a whole and then attempt to understand the different mechanisms that might explain them.

Our analysis of the rollout of the policy reveals that the increase in free places improved the outcomes of children at age 5 by less than two percentage points on average. In levels, the policy as a whole shifts the average from a score of 87.5 in the FSP to a score of 89.2. (The FSP has a maximum value of 117 and allocates up to nine points for each of 13 areas of learning.)

We find evidence that new free places affect outcomes more strongly in areas where attendance rose the most as free places became available, implying that attendance matters. If we assume that all the benefits of the policy were felt by children who only took up a place because it was free, we find that the introduction of the policy meant that children who would otherwise have had no pre-school experience achieved an additional six points in the FSP. Disappointingly, there is no evidence that these effects were maintained through to age 7 or 11.

When we make use of eligibility rules to consider the benefit of an extra term, we find (at best) a very small positive effect. Some of this is doubtless explained by the fact that most children do not start to attend at the point of eligibility.

But even allowing for this, the effects of an extra term in nursery are substantially smaller than the benefits of

an extra term in the first year of school found by Cornelissen et al (2013) using the same outcome measures and making use of staggered school starts by month of birth (a more common policy in the mid-2000s than now). It might be that schoolteachers concentrate their efforts on children who begin school at lower levels and are therefore closing gaps between children with different nursery experience.

Nonetheless our results suggest that the pre-school experience delivered by the free entitlement is not leading to the sustained benefits we might have hoped for.

International research indicates that some systems do better than others in generating developmental gains. There is also some evidence showing that some settings have characteristics that are more successful than others. A consensus has therefore developed that 'high-quality' early education and care is important. So perhaps places offered through the free entitlement are not high-quality enough to benefit children?

In further work (Blanden et al, 2017b), we match the administrative data on outcomes to information on the settings that children attend in order to understand if some types of nursery characteristics lead to better educational outcomes. Our findings suggest that some of the observable measures of 'quality' are not strongly associated with early educational outcomes. Although outcomes are associated with the nursery a child is sent to, this appears to be only weakly related to having staff with graduate-level qualifications or an Ofsted rating of 'Outstanding'.

Our research therefore opens up a debate about whether and how we can better design the free entitlement to ensure that it promotes child development more effectively, as well as supporting parental employment and helping parents with childcare costs.

This article reports work by Jo Blanden, Emilia Del Bono, Kirstine Hansen, Sandra McNally and Birgitta Rabe published in the first three studies listed below. The results of this research are summarised in 'Evaluating the Impact of Nursery Attendance on Children's Outcomes' by Jo Blanden, Kirstine Hansen and Sandra McNally, published by the Nuffield Foundation (<http://www.nuffieldfoundation.org/news/early-childhood-education-has-had-little-impact-outcomes-inception-free-entitlement-and-politic>).

Jo Blanden of the University of Surrey is a research associate in CEP's education and skills. **Emilia Del Bono** and **Birgitta Rabe** are at the Institute for Social and Economic Research, University of Essex. **Kirstine Hansen** is at the Institute of Education, University College London. **Sandra McNally** of the University of Surrey is director of CEP's education and skills programme and the Centre for Vocational Education Research.

Further reading

Jo Blanden, Emilia Del Bono, Sandra McNally and Birgitta Rabe (2016) 'Universal Pre-school Education: The Case of Public Funding with Private Provision', *Economic Journal* 126(592): 682-723.

Jo Blanden, Emilia Del Bono, Kirstine Hansen and Birgitta Rabe (2017b) 'The Impact of Free Early Childhood Education and Care on Educational Achievement: A Discontinuity Approach Investigating Both Quantity and Quality of Provision', University of Surrey School of Economics Discussion Paper No. 06/17.

Jo Blanden, Kirstine Hansen and Sandra McNally (2017a) 'Quality in Early Years Settings and Children's School Achievement', CEP Discussion Paper No. 1468 (<http://cep.lse.ac.uk/pubs/download/dp1468.pdf>).

Thomas Cornelissen, Christian Dustmann and Claudia Trentini (2013) 'Early School Exposure, Test Scores and Noncognitive Outcomes', University College London mimeo.

The effects of an extra term in nursery are substantially smaller than the benefits of an extra term in the first year of school

in brief...

Empty homes, longer commutes

In areas of Britain where there are empty houses, planners typically allocate less land for development and make it more difficult to build or adapt houses. Research by **Paul Cheshire, Christian Hilber and Hans Koster** exposes the unintended and undesirable consequences of additional local restrictions, including more, not fewer, empty homes and longer commutes.

We have long argued that the fundamental problem with housing in Britain is a lack of supply: the country has been under-building for two generations. Updating the simple estimate one of us made four years ago (Cheshire, 2014), the housing shortfall in England just since 1994 has risen from about two million homes to two and a half million. And we go on building the wrong sort of houses in the wrong places: we built more than twice as many per person in low-demand areas like Doncaster and Barnsley over the past 15 years than in Oxford and Cambridge.

In pursuit of 'urban density', 'building on brownfields' and the 'compact city', we build too many cramped flats and maisonettes in less attractive cities or city neighbourhoods but almost no family-friendly homes with gardens within reach of high-paid jobs. We are spending £18 billion on Crossrail but once it gets over the 'green belt' boundary, we can build no new houses.

There is a price to pay for building on brownfields and not allocating enough land: a crisis of affordability and a hugely inequitable transfer of housing assets to the rich and the old. Our housing crisis is a long-term crisis of supply: an endemic lack of supply interacting with rising demand.

One of the many arguments used for allocating less land for housing is 'all those vacant homes'. Even one of the least restrictive English regions, the East Midlands, argued in their 'regional spatial strategy' that they could allocate less land because they assumed they would reduce housing vacancies by 0.5 percentage points (that is, by about 12.5% of the long-term average). And Islington Council moved to use the planning system to tackle the 'scandal of empty homes' in 2014.

A logically equivalent assertion has been made by Lord Rogers, an advocate of urban density, in arguing against allowing offices to be converted to housing to help

with London's housing supply: '... why should we rush to convert office blocks when we already have three-quarters of a million homes in England lying empty...?'

The trouble with interventions in the housing market is that however well intentioned, they often generate all sorts of unintended consequences. Markets respond by generating new and sometimes perverse incentives. Reflecting this, one of our most recent research findings is that more restrictive local planning actually has the net effect of increasing the proportion of vacant homes (Cheshire et al, 2018).

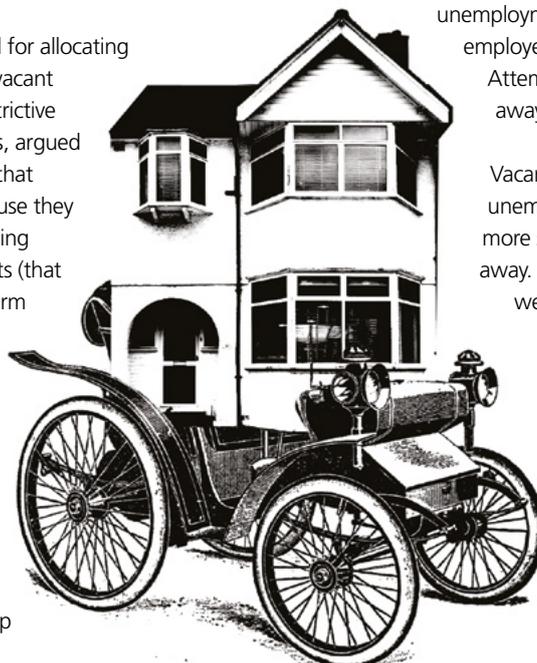
Having fewer empty houses is in itself a good thing. We have a shortage of houses and using the stock more intensively is a way of increasing efficiency. That is just how cut-price airlines operate: they keep their seats full and their aircraft in the air. But they do not just assume planes will spend more of their lives in the air and seats will be fuller. They have an analysis of how to achieve this.

Unless we understand why houses are vacant, we cannot hope to reduce the numbers that are empty just by being more restrictive. It would come as no surprise to economists to observe that in well-functioning labour markets, there was

unemployment. Workers search for jobs and employers seek (better) qualified workers.

Attempting to regulate unemployment away makes no sense.

Vacant houses are analogous to unemployed workers, so it makes no more sense to try to 'regulate' vacancies away. That does not, of course, mean that we should not have policies to try to minimise their number.



The net effect of more local planning restrictions is to increase the proportion of empty homes substantially

What really happens if a local housing authority makes housing even scarcer by tightening planning restrictiveness (saying no to more development proposals)? On the one hand, it will make housing in the area more expensive (Hilber and Vermeulen, 2016). This will increase the incentives to occupy housing and so reduce vacancies.

Unfortunately, planning that restricts the modification of existing homes or the allocation of land for new homes also makes it harder to adapt the characteristics of the housing stock to the constantly changing patterns of demand. Jobs grow in a locality, so demand for houses increases. The local school gets better so the demand for family-sized homes increases; people buy a car, so they want parking; they have fewer children or separate, so they want smaller homes – the list is potentially endless.

The result of this is that in more restrictive locations, people wanting a home find it more difficult to match their preferences to what is available. So they have to search longer or further afield. The result is that there are more empty houses in the more tightly regulated places and more people living and commuting from the less regulated places further afield. Both these effects work at the same time but in opposite directions. So which one dominates is an empirical question.

Our recent study goes to great lengths to deal with problems of reverse causation and endogeneity. We have 30 years of data for 350 English local authorities, and our results show with substantial reliability that the net effect of more local restrictiveness is not just to increase the proportion of empty homes but to increase it substantially. A one standard deviation increase in local restrictiveness causes the local vacancy rate to increase by nearly a quarter.

What's more, because local restrictiveness makes finding a suitable house locally more difficult, it also increases the average distance people have to travel to work. The same increase in local restrictiveness causes a 6.1% rise in commuting distances.

So attempting to regulate housing vacancies away by allocating less land or being more restrictive with respect to new building or adaptation of existing houses, in fact increases the proportion of local homes that are empty as well as making people who work in the area commute further. This is the absolute opposite of what advocates of the planning policy want to achieve.

It is the mismatch between the preferences of households and the housing stock on offer that leads, other things equal, to higher vacancy rates in the more regulated – typically more desirable – places. Such constraints will likely cause a significant welfare loss. This is because too much housing stays empty in the most regulated, most desirable and, by implication, most productive places with the strongest demand and highest valuations for living space.

Aiming for a 'compact city' makes planning policy more restrictive, with unintended consequences that include raising average commuting distances

So people are induced to commute further, while living in the 'wrong' places.

The policy lesson is that planners should not allocate less land for development on the grounds that there are empty houses; nor should they make it more difficult to build or adapt houses. Rather they should encourage more flexibility with the number, location and type of houses.

There is moreover a nice irony for advocates of the 'compact city'. The most common policy to attempt to implement this ideal is to impose growth boundaries (make land scarcer) and be more restrictive with respect to adaptations of the existing stock. Aiming for a compact city, in other words, makes planning policy more restrictive.

Our results show that this will have exactly the opposite to the intended effect because average commuting distances will lengthen as residents search further afield for housing that they can afford and which more closely matches their preferences.

Paul Cheshire and **Christian Hilber** are both professors of economic geography at LSE and research associates in CEP's urban programme. **Hans Koster** of the Vrije Universiteit Amsterdam is an affiliate of CEP's urban programme.

Further reading

Paul Cheshire (2014) 'Turning Houses into Gold: The Failure of British Planning', *CentrePiece* 19(1): 14-18 (<http://cep.lse.ac.uk/pubs/download/cp421.pdf>).

Paul Cheshire, Christian Hilber and Hans Koster (2018) 'Empty Homes, Longer Commutes: The Unintended Consequences of More Restrictive Local Planning', *Journal of Public Economics* 158: 126-51 (earlier version available as Urban and Spatial Programme Discussion Paper No. 181: <http://www.spatial-economics.ac.uk/textonly/serc/publications/download/sercdp0181.pdf>).

Christian Hilber and Wouter Vermeulen (2016) 'The Impact of Supply Constraints on House Prices in England', *Economic Journal* 126(591): 358-405 (earlier version available as Urban and Spatial Programme Discussion Paper No. 119: <http://www.spatial-economics.ac.uk/textonly/serc/publications/download/sercdp0119.pdf>).

Pro-Brexit rhetoric mixes up two distinct interpretations of what made people vote to Leave the European Union – and they have very different policy implications. As **Thomas Sampson** explains, those voters wanting to reclaim sovereignty may view the likely negative economic impact as a price worth paying. But ‘left-behind’ voters blaming Europe for their economic problems will need policies other than Brexit to address the underlying causes of their discontent.

Brexit: the economics of international disintegration



The Brexit campaign succeeded because it received the support of a coalition of voters who felt left behind by ‘modern Britain’

The period since the Second World War has been marked by growing economic and cultural globalisation and, in Europe, increasing political integration under the auspices of the European Union (EU). Brexit runs counter to this trend and has ignited a debate about the future of the EU and the extent to which further globalisation is inevitable.

For example, after the Brexit vote, the European Commission issued a white paper laying out scenarios for the future of the EU. The options included not only muddling through or committing to closer integration, but also scaling back the EU to just the single market or building a multi-speed Europe.

It is too soon to know whether Brexit will prove to be merely a diversion on the path to greater integration, a sign that globalisation has reached its limits or the start of a new era of protectionism. In a recent study, I attempt to shed light on the implications of Brexit by summarising what research suggests are its likely economic consequences and discussing the evidence on why the UK voted to Leave the EU.

The economic consequences of Brexit

Forecasting the economic consequences of Brexit is made difficult by the lack of a

close historical precedent and uncertainty over the form that future relations between the UK and the EU will take. Facing this challenge, researchers have used three approaches to estimate the effects of Brexit:

- Historical case studies of the economic consequences of joining the EU (Campos et al, 2014; Crafts, 2016).
- Simulations of Brexit using computational general equilibrium trade models (Aichele and Felbermayr, 2015; Ciuriak et al, 2015; Dhingra et al, 2017).
- Data-driven estimates using evidence on how EU membership affects trade and how trade affects income per capita (Dhingra et al, 2017).

Each of these methodologies is subject to several limitations, but there is a consensus that in the long run, Brexit will make the UK poorer because it will create new barriers to trade, foreign direct investment and immigration. There is substantial uncertainty over how large the effect will be, with plausible estimates of the cost ranging between 1% and 10% of the UK's income per capita. EU countries are also likely to suffer from reduced trade, but in percentage terms their losses are expected to be much smaller.

The uncertainty over the size of the

Brexit effect has two sources:

- First, alternative research strategies produce quantitatively different results. Methods that attempt to capture the effect of Brexit on foreign direct investment and productivity growth lead to larger losses.
- Second, the losses will depend on the terms under which the UK and the EU trade following Brexit.

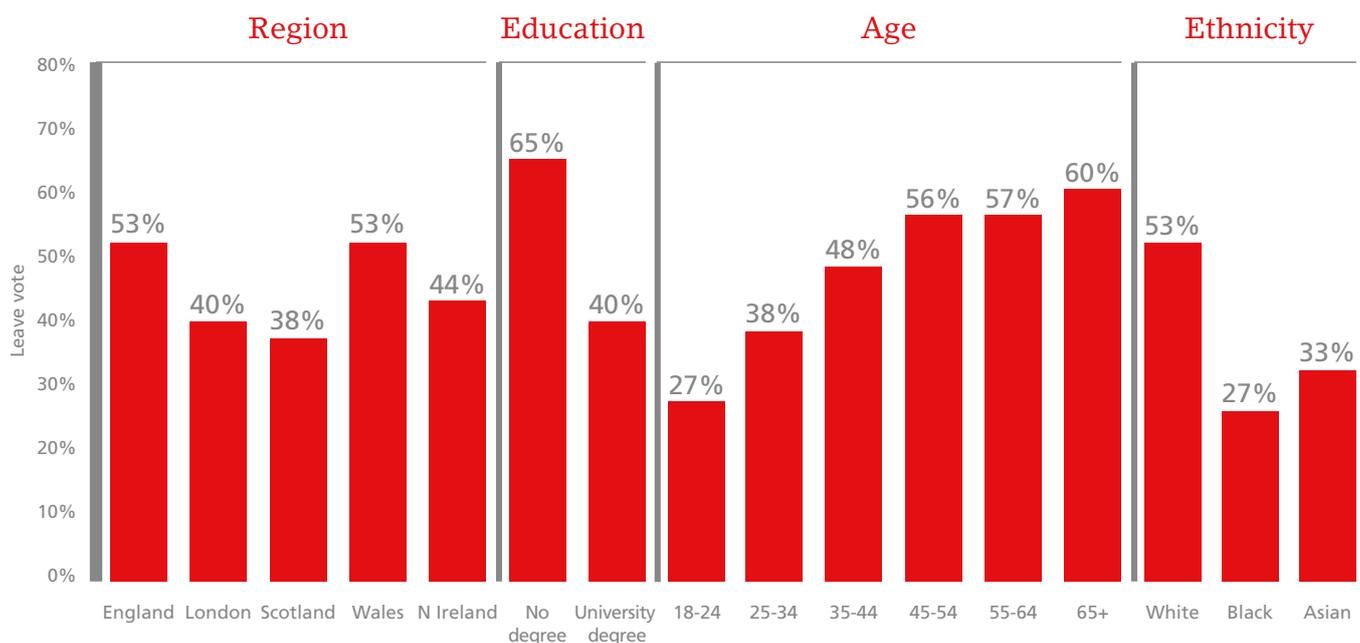
Continued membership of the single market is the best option for the UK and European economies. But if the UK leaves the single market, the research shows that to minimise the costs of Brexit, UK-EU negotiations should prioritise keeping non-tariff barriers low by avoiding regulatory divergence and ensuring market access in services rather than purely focusing on tariffs.

Who voted for Brexit?

The referendum split the electorate on the basis of region, education, age and ethnicity. Figure 1 shows data on voting patterns. England and Wales voted to Leave, while Scotland and Northern Ireland voted to Remain.

Within England, support for Brexit was noticeably lower in London, where only 40% voted to Leave. Older and less educated voters were more likely to vote

Figure 1: Voting patterns in the 2018 Brexit referendum based on region, education, age and ethnicity



Source: Regional data from the Electoral Commission; demographic data from Lord Ashcroft Polls (2016).

Broadly speaking, a feeling of social and economic exclusion appears to have translated into support for Brexit



Leave, while large majorities of black and Asian voters supported Remain. Voting to Leave the EU was also strongly associated with holding socially conservative political beliefs and thinking life in the UK is getting worse rather than better.

Econometric studies of voting outcomes by area (Becker et al, 2017) and voting intentions at the individual level (Colantone and Stanig, 2016) have established three main regularities:

■ **Education and age:** These are the strongest demographic predictors of voting behaviour, with education stronger than age.

■ **Poor economic outcomes:** At the individual or area level, these are associated with voting to Leave, but economic variables account for less of the variation in the Leave vote share than educational differences.

■ **Immigration:** Support for leaving the EU is strongly associated with self-reported opposition to immigration. But a higher share of EU immigrants in the local population is actually associated with a reduction in the Leave vote share. There is some evidence that growth in immigration, particularly from the 12 predominantly East European countries that joined the EU in 2004 and 2007, is associated with a higher Leave vote share, but the effect is small and not always present.

Overall, the picture painted by the voting data is that the Brexit campaign succeeded because it received the support of a coalition of voters who felt left behind by 'modern Britain'. People may have felt left behind because of their education, age, economic situation or because of tensions between their values and the direction of social change. But broadly speaking, a feeling of social and economic exclusion appears to have translated into support for Brexit.

Why did the UK vote for Brexit?

Knowing that left-behind voters supported Brexit does not tell us why they voted for Brexit. One possible explanation can be ruled out immediately. The vote was not the result of a rational assessment of the economic costs and benefits of Brexit.

As discussed, EU membership benefits the UK economy on aggregate. In addition, there is no evidence that changes in either trade or immigration due to EU membership have had large enough distributional consequences to offset the aggregate benefits and make left-behind voters worse off. This suggests that there are two plausible hypotheses for why the UK voted to Leave:

■ **Primacy of the nation-state:** Successful democratic government

requires the consent and participation of the governed. British people identify as citizens of the UK not the EU. Consequently, they feel the UK should be governed as a sovereign nation-state. According to this hypothesis, the UK voted to Leave because Brexit supporters wanted to 'take back control' of their borders and their country.

■ **Scapegoating of the EU:** Many people feel left behind by 'modern Britain'. Influenced by the anti-EU sentiments expressed by the country's newspapers and 'Eurosceptic' politicians, these individuals have come to blame immigration and the EU for many of their woes. According to this hypothesis, voters supported Brexit because they believe EU membership has contributed to their discontent with the status quo.

It is likely that both hypotheses played some role in the referendum outcome, but the evidence is insufficient to assess their relative contributions. When Leave voters are asked to explain their vote, national sovereignty and immigration are the most frequently cited reasons, but these responses are consistent with either hypothesis. They could reflect voters' attachment to the UK as a nation-state or they may mirror the language used by pro-Brexit newspapers and politicians.

But the hypotheses have quite

different implications for how policy-makers should respond to Brexit and for the future of European and global integration.

Brexit and the future of international integration

The nation-state hypothesis is closely related to Dani Rodrik's (2011) idea that nation-states, democratic politics and deep international economic integration are mutually incompatible.

From this perspective, the deep integration promoted by the EU, in particular free movement of labour and regulatory harmonisation, cannot co-exist with national democracy. For Europe to remain democratic, either the people of Europe must develop a collective identity or the supranational powers of the EU must be reduced.

But the nation-state hypothesis does not directly threaten the sustainability of shallow integration agreements that aim to lower tariffs and non-tariff barriers. The UK government's current approach to Brexit is based on the assumption that the nation-state hypothesis explains the Leave vote.

The scapegoating hypothesis does not call into question the ideal of the EU as a supranational political project or provide an immediate reason to reconsider the desirability of deep integration. But it does pose a different challenge to the future of international integration.

As long as geography continues to be an important determinant of group identity, international institutions will always be more vulnerable to losing popular support than domestic institutions. The finding of Colantone and Stanig (2016) that exposure to Chinese import competition had a positive effect

on support for Brexit is consistent with scapegoating of the EU.

If the scapegoating hypothesis proves correct, policy-makers seeking to promote European and global integration have two main options available:

- One option would be to channel popular protests against another target.
- Alternatively, policy-makers could focus on tackling the underlying reasons creating discontent among left-behind voters. Addressing economic and social exclusion is a daunting challenge, but enacting policies to support disadvantaged households and regions, and to broaden access to higher education would be an obvious starting point.

Conclusions

Understanding and responding to the motivations of voters who oppose the EU will play an important role in determining whether the many benefits of economic and political integration can be preserved for future generations. If voters supported Brexit to reclaim sovereignty from the EU, then provided they are willing to pay the economic price for leaving the single market, they will view Brexit as a success. But if misinformation drove support for Brexit, then leaving the EU will do nothing to mitigate voters' discontent.

If misinformation drove support for Brexit, then leaving the EU will do nothing to mitigate voters' discontent

This article summarises 'Brexit: The Economics of International Disintegration' by Thomas Sampson, *Journal of Economic Perspectives*, 31(4): 163-84 (earlier version available as CEP Discussion Paper No. 1499: <http://cep.lse.ac.uk/pubs/download/dp1499>).

Thomas Sampson is assistant professor of economics at LSE and a research associate in CEP's trade programme.

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Although family firms are widely praised as the ‘backbone of the economy’, their productivity is often hampered by weak management. Research by **Daniela Scur** and **Renata Lemos** provides new evidence on the performance of ‘dynastic’ family-owned firms and explores why those led by family bosses adopt fewer structured management practices.

Family firms: the problem of second-generation bosses

Family firms are the most prevalent type of firm in the world. This is especially true in emerging economies, where they account for over half of medium-sized firms in the manufacturing sector. Indeed, a quarter are ‘dynastic’ family firms – those in which the founding family owns a controlling share and which have appointed a second-generation (or later) family member as the chief executive officer (CEO).

How do these firms operate and what is their impact on the economy and labour markets? Although there is mixed evidence on whether family ownership of firms is a good thing, the weight of the evidence is that dynastic family CEOs are usually bad news for productivity. But why is that the case?

Poor management practices have been widely shown to be an important influence on productivity. Our study presents the first causal evidence that dynastic family firms have worse management practices. The extent of this bad management is broad, implying a possible productivity hit of 5 to 10%.

But if better management practices lead to better firm performance, why are CEOs not adopting them? To consider the reasons behind this managerial

underperformance, we explore how family firm-specific ‘reputation costs’, which seem to push first-generation CEOs to do better, might act as a constraint on adoption of innovative management processes by second-generation CEOs.

Despite the global prevalence of family firms, research on this topic is often stymied by a lack of good data on private firms. One large project that has worked to remedy some of this gap is the World Management Survey (WMS).

The WMS uses a survey tool covering 18 management topics scored on a scale of 1 to 5 (worst to best). With over 15,000 data points in the worldwide dataset, one stubborn pattern keeps on cropping up: family firms are consistently placed in the bottom of the management quality rankings.

Dynastic
family-owned
firms have worse
management
practices, but only
if they are run
by family CEOs



Figure 1:
Firms run by dynastic CEOs tend to have worse management



Note: World Management Survey data. Excludes founder-owned firms. N=11,857;
N(not family-owned)=8,592; N(family-owned, professional CEO)=565;
N(family-owned, family CEO)=2,700.

Figure 1 shows the cumulative distribution of management scores for firms run by dynastic family CEOs, firms run by a professional CEO but owned by families, and all other non-family firms. What is immediately obvious is that family ownership does not seem to be an issue per se. Rather, the difference seems to be driven by the choice of CEO. But how should we address the question of the direction of causality between management quality and choice of CEO in succession decisions?

Previous research has either focused on public firms or exploited the rich datasets of Denmark. To help address the endogeneity inherent in succession decisions, we developed a new survey to collect data on the history of succession of ownership and control, as well as family characteristics of family CEOs.

We used the WMS sample of firms and interviewed over 2,700 firms in 2013 and 2014, though a large share of these firms were still first-generation founder firms or had not been founded by a single family or founder. At the end, a total of 810 firms from 12 countries had undergone at least one succession originating from a founder or family firm at the time we interviewed them.

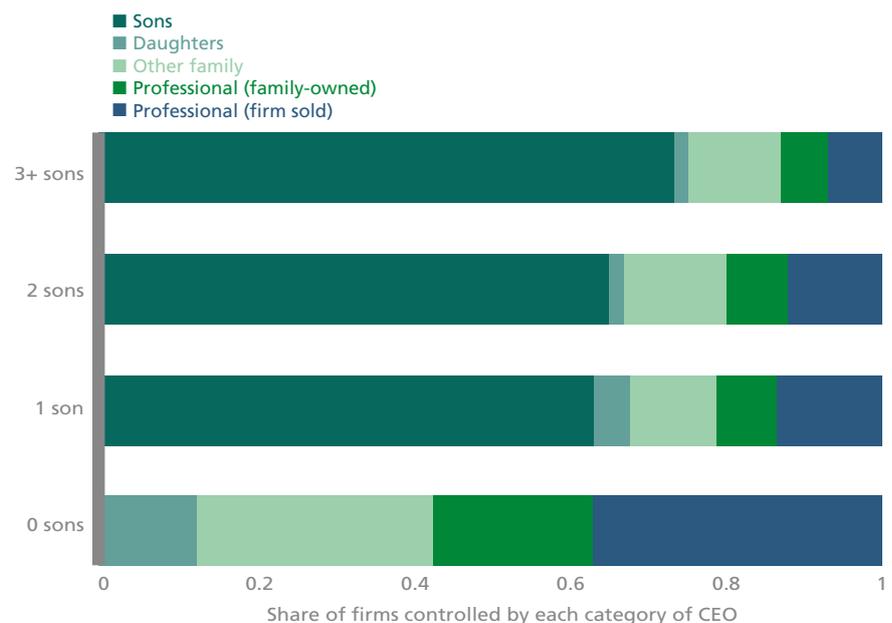
To identify the causal relationship

between dynastic CEO successions and management quality, we used the following approach. Given the total number of the outgoing CEO's children, the number of them that happen to be boys is as good as random. This gives us an instrument for dynastic CEO successions: we find that outgoing CEOs who have at least one son are about 30 percentage points more likely to keep the firm in the family than those who had no boys.

Figure 2 depicts this pattern: for each category representing the number of sons of the outgoing CEO, each block indicates the identity of the new CEO. Assuming that the gender of the outgoing CEO's children is unrelated to their choices of management practices, we find that

Family firms could hire professional CEOs, but there are often institutional constraints, particularly in emerging economies

Figure 2:
Outgoing CEOs who had at least one son are more likely to keep the firm in the family



Note: 'Other family' includes primarily male family members such as grandchildren, nephews, in-laws etc. This graph includes all successions included in the sample used for the analysis. N=818.

The 'reputation costs' for family firms of firing workers may deter them from adopting better management practices

a succession to a family CEO leads to significantly worse management practices relative to firms with successions to non-family CEOs. But why might that be?

The second part of our analysis focuses on understanding why firms led by family CEOs adopt fewer structured management practices. There are a number of reasons underlying the difficulties in effecting organisational change.

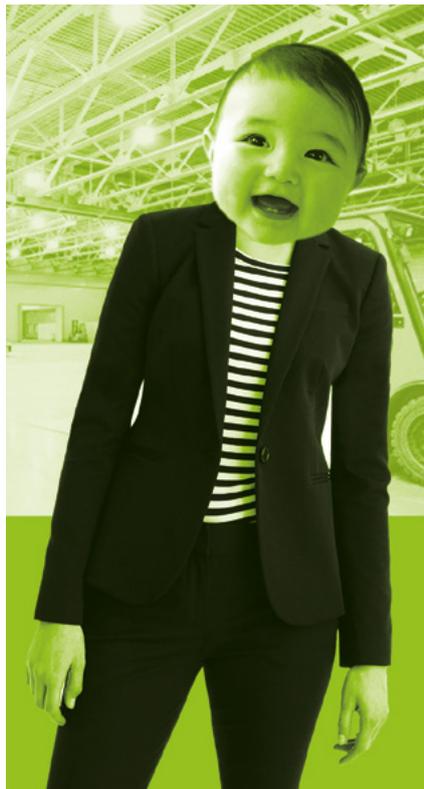
The two mechanisms often ascribed to family firms relate to lower levels of skills and lack of awareness of managerial underperformance. While relevant, neither of these mechanisms fully explains the gap in management underperformance.

We propose a different explanation based on the wealth of evidence suggesting that family firms have implicit employment commitments with their workers. Evidence of such commitments includes providing better job security as a compensating differential for lower wages and firing fewer employees when hit by negative productivity shocks.

In our analysis, we propose that because of these implicit commitments, family CEOs incur 'reputation costs' when firing workers. If we think of management as a monitoring technology that allows CEOs to observe their workers' productivity, it is only worthwhile to invest in the technology if the CEOs then use the information to discipline the low-productivity workers. Thus, the 'reputation costs' incurred by family CEOs may act as a constraint on investing in this technology.

We find empirical support for the predictions of our analysis.

A naive solution could be that all family firms hire professional CEOs. But that would be an unrealistic prescription given the institutional constraints that bar many firm owners in emerging economies from pursuing this avenue. For example, there



are often shortages of managerial talent or weak legal systems that might fail to protect owners from devious CEOs. Owner-managers might also simply prefer being their own boss.

So, if we accept that family control is the necessary (or preferred) control structure for many firms, it is crucial to understand what may be the barriers to investment in better management practices within family firms.

While policy-makers can seek to improve the environment to allow firm owners to consider hiring professional CEOs, family firm CEOs can also tackle some of the following issues:

- The first prescription is to go through an honest self-diagnostic: the WMS website has a tool that allows for self-evaluation as well as national and industrial benchmarking.
- The second prescription is to take the identified bottlenecks from the self-evaluation tool to fix the issues. If it is not immediately obvious how to do it, there are a number of online resources that can help improve management skills.
- Third, acknowledging that the relationship between family CEOs and their employees is distinct from other firms, it is important to involve employees in the process of organisational change so that

This article summarises Daniela Scur's job market paper 'All in the Family: CEO Choice and Firm Organization', co-authored with Renata Lemos of the World Bank and CEP research associate.

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change can be long lasting. In particular, it is important to understand that improving monitoring in the firm can be useful even if dismissing employees is not an option – there are still a number of employee improvement policies that can be enacted once the diagnosis is made.

Our research is innovative in two main ways: first, we show the first causal evidence that dynastic family CEO successions lead to worse management.

Second, we go beyond the usual suggestions of improving information and skills, and suggest that the specific labour context in which family firms act is important.

We propose that the implicit employment commitments between family managers and their workers should factor in both how projects to upgrade management are presented to prospective firm managers, as well as the expected take-up and long-term adherence of such improvements. This is a key consideration as many organisations around the world push forward in enacting management upgrading projects.

It is crucial to understand the barriers to investment in better management practices within family firms

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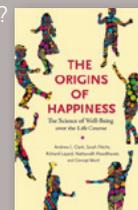
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