

CentrePiece

75th Issue

The Magazine of The Centre for Economic Performance

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Intergenerational mobility
Extreme economies
Monopsony power
Trade and disease

Innovation
Skyscrapers
Past plagues
Happier lives

WHERE IS THE LAND OF HOPE AND GLORY?



CentrePiece



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Editorial

What can research tell us about the potential impact of the Covid-19 crisis and how families, organisations and policy-makers should respond? Among the contributions to this *CentrePiece* – the 75th issue of the magazine of the Centre for Economic Performance (CEP) – are some lessons from history, geography and the study of community wellbeing.

We go back in time to look at what happened after past plagues. We travel the world to see how people cope with the economic stresses of extreme circumstances. And as we celebrate 30 years of economic research and public engagement by the Centre, we explore answers to the question first posed by our founder director Richard Layard and which has assumed renewed urgency in these challenging times: how can we make the world a happier place?

Much of what we know about the human and economic shock of

coronavirus is deeply worrying. As our summer special issue showed, there has been particularly severe damage to the lives of women, school children, self-employed workers and young people starting out in the labour market. Here too we report bad news, including from the cities of India, where the crisis has decimated livelihoods and created a new underclass of urban workers who are being pushed into poverty.

Our last issue also considered the possibilities of 'building back better' – and there are some early positive signs in the UK. Survey evidence finds many businesses rapidly adopting new technologies and new ways of working in response to the massive disruptions caused by the pandemic. If such innovation continues, it could boost the economy in the long term.

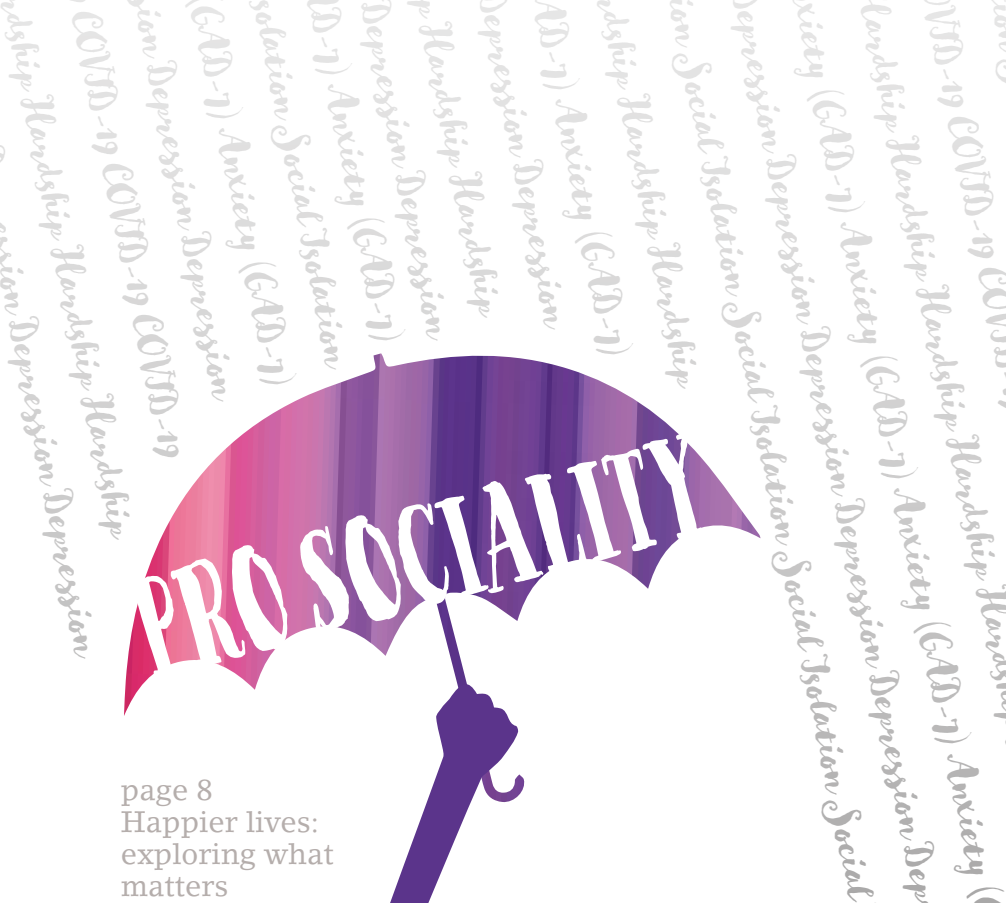
Finally, in our cover story, the Centre's current director Stephen Machin and

colleagues take a new perspective on a perennial concern of CEP research and a far wider community of social scientists and policy-makers: 'intergenerational mobility' or the extent to which young people's opportunities in life are affected by their family backgrounds.

It is well established that children's chances of doing well at school, going to university, getting a good job and owning a house are strongly influenced by their parents' education, occupation and home ownership. The new study investigates whether the role of family background is attenuated or enhanced by the part of the country in which children grow up. The researchers ask a question that feels especially resonant at this moment in national history: where is the land of hope and glory?

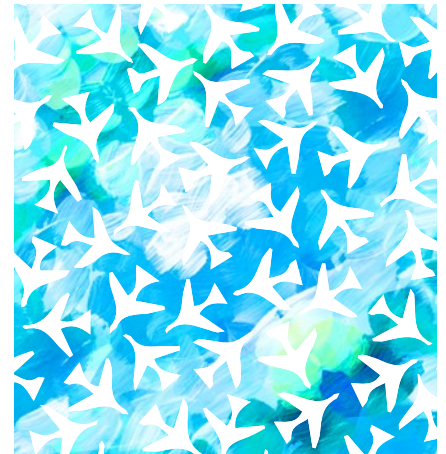
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The lasting impact of epidemics

Jeremiah Dittmar and **Ralf Meisenzahl** examine what we can learn about the potential effects of Covid-19 by looking at plagues of the past



Children's chances of doing well at school, going to university, getting a good job and owning a house are strongly influenced by their parents' education, occupation and home ownership – but what about the impact of where they grow up? **Brian Bell, Jack Blundell** and **Stephen Machin** explore the geography of intergenerational mobility in England and Wales.

Where is the land of hope and glory?



There is copious evidence showing that people's life chances are affected by their family backgrounds. Children whose parents went to university are themselves more likely to do so; they are more likely to be higher earners if their parents were; and it is the same story for home ownership.

What is far less clear is whether the role of family background is attenuated or enhanced by the place where children grow up. For example, is the link between parental and children's university attendance the same in Liverpool as in Lambeth? If your father was a low-skilled worker, does the probability that you become a high-skilled professional depend on whether you grew up in Oldham or Oxford?

For England and Wales, a paucity of data has made these questions difficult to answer reliably. We have conducted a new analysis of intergenerational mobility across three birth cohorts in England and Wales using decennial census microdata contained in the Longitudinal Study of England and Wales.

These data permit the study of mobility in occupation, home ownership and education at the spatial level through time. For these three 'dimensions' of intergenerational mobility, we estimate the relationship between parental outcomes and those of their children once they reach adulthood.

Figure 1 shows how the occupations of children born between 1974 and 1983 relate to those of their fathers for all England and Wales. To quantify the relationship, each occupation is assigned a 'Cambridge score', a measure of occupational status commonly used in sociology and based on behaviour in the marriage market. The highest scores are assigned to occupations such as scientists, who tend to have higher earnings and educational requirements. Fathers and children are ranked between 1 and 100 based on their score.

Figure 1 demonstrates a strong linear relationship between the scores of occupations of children and those of their

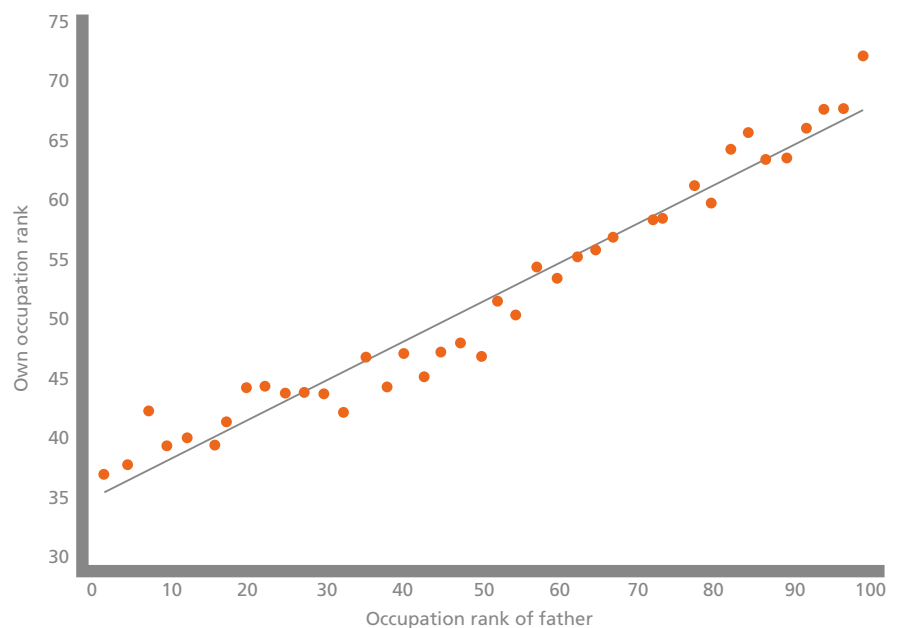
parents. To construct our geographical measure, this relationship is modelled within each of the 35 NUTS2 areas of England and Wales, and used to generate mobility measures.

As well as occupation-based measures, we generate measures in two further mobility dimensions. First, we estimate the relationship between parental education and children's education. To keep comparability over time, we are limited to looking only at how the probability of individuals obtaining a degree depends on whether or not their parents have degrees. We also estimate how the probability of owning a home depends on parental home ownership status.

It should be emphasised that the estimates generated here are not to be interpreted as causal, and the wording is deliberately phrased to be careful to avoid such an interpretation. The focus of effort has been to use the best available data to generate descriptive measures of intergenerational mobility for multiple cohorts at the national level and across geographies of England and Wales over time.

As found in the United States, intergenerational mobility in the UK tends to be higher in suburban areas outside major population centres

Figure 1:
Intergenerational mobility in occupation in England and Wales



Notes: Binned scatter plots of own occupation rank on occupation rank of father for 1974-83 birth cohort. Points displayed are values of own and father occupation rank in 40 quantiles of occupation rank of father. Cohort aged 8-17 at baseline, 28-37 at follow-up. Ranks determined by Cambridge score and calculated separately within gender. No controls are included.

Source: Longitudinal Study of England and Wales, Office for National Statistics

Significant geographical differences in upward occupational mobility, which are persistent over time

First, consider occupational mobility. Figure 2 shows a map of estimates for upward occupational mobility, again for the cohort born between 1974 and 1983. Darker areas of the map correspond to areas that are more upwardly mobile.

The map reveals a striking regional pattern with the most upwardly mobile areas in London, the South East and parts of the North West. It is perhaps easiest to interpret these differences in terms of probabilities of moving from the bottom to the top of the occupational distribution, for example:

- Children growing up in Outer West London and North West London whose parents were in the bottom third of occupations had a 32% chance of reaching the top third, compared with only a 12% chance in Cumbria.
- Children of fathers in lower-scoring occupations in the suburbs of London are more than twice as likely to have reached the top occupations than children from similar fathers in the North West.
- Other low-mobility areas include Devon and Yorkshire and the Humber.

These results echo the work of Chetty et al (2014), who find that mobility tends to be higher in suburban areas outside major population centres in the United States.

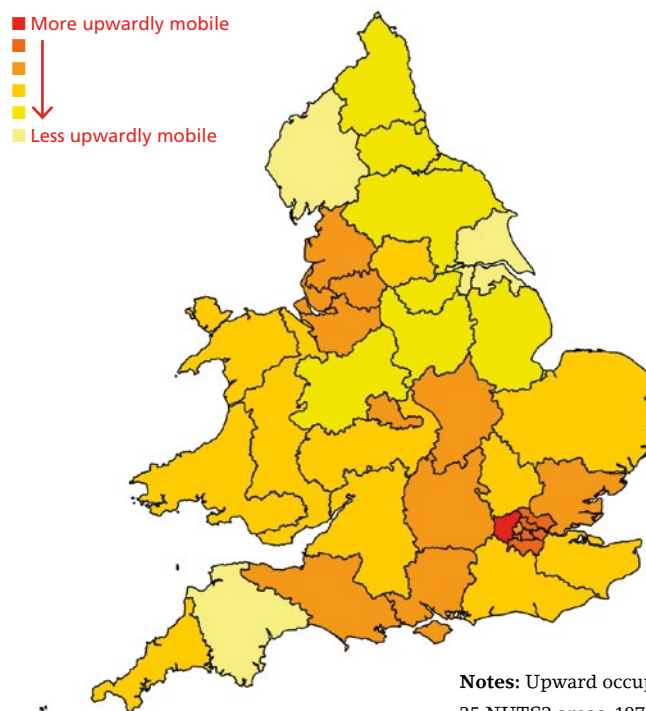
When we perform the same exercise for the cohort born 20 years earlier, we find very similar regional patterns. The two sets of estimates have a correlation of 0.7. The most notable differences are a decline in upward mobility in Inner London from the earlier cohort to the later cohort. Outer London, in contrast, shows consistently high upward occupational mobility for both birth cohorts.

Absolute and relative upward mobility are positively correlated

Second, across all measures, absolute and relative mobility are positively correlated. This means that areas in which those starting from the bottom do well are those where the gap in outcomes between those starting from the bottom and those starting from the top is smallest.

While this is true for occupations

Figure 2:
Upward occupational mobility across NUTS2 regions



Notes: Upward occupational mobility for 35 NUTS2 areas, 1974-83 birth cohort. Darker areas correspond to higher upward occupational mobility.
Source: Longitudinal Study of England and Wales, Office for National Statistics

and slightly less so for education, the relationship is strongest and the interpretation clearest for home ownership. Another way of looking at this is that in terms of the probability of buying a home, area matters significantly more for children of non-homeowner parents.

Upward educational mobility and upward occupational mobility are tightly linked

Third, there is a strong relationship between upward educational mobility and upward occupational mobility. Areas where children of non-degree-holding parents are most likely to obtain degrees are the same areas where children find it easier to climb the occupational ladder. This is unsurprising, given that degrees yield high wage returns in the UK, and are necessary to reach many of the top occupations.

The strong relationship between upward educational and occupational mobility suggests that comparisons based on upward educational mobility may be reasonably accurate proxies for upward

The children of low-occupation fathers in London are far more likely to reach top occupations than those from elsewhere

Areas where children of non-degree-holding parents are most likely to obtain degrees are the same areas where children find it easier to climb the occupational ladder

occupational or wage mobility. Given the less stringent data requirements for generating educational mobility measures, this is potentially a very useful result for the measurement of intergenerational mobility.

The geography of home ownership mobility is distinctly different from that based on occupation or education

Fourth, areas where children of non-homeowners are likely to buy a home themselves have low upward occupational mobility on average. As a very clear example, London is exceptional in its rate of upward occupational mobility, with children from low-occupation fathers being far more likely to reach top occupations than elsewhere. But it scores poorly in terms of home ownership mobility.

Children born to non-homeowners in London are very unlikely to own a home themselves. In Inner West London, children of non-homeowners have a 29% chance of buying a home, compared with a 73% chance for children of homeowners.

The broader lesson to take is that home ownership mobility need not align with occupational mobility. Area-level differences in intergenerational mobility are therefore multi-dimensional, and comparisons based on a single metric alone are not necessarily the complete picture.

Summing up

The focus of our research has been to generate consistent and robust estimates of geographical differences in intergenerational mobility for areas of England and Wales with the best data available. A particular emphasis is placed on the comparison of London and elsewhere.

Inspired by the recent US experience, in which initial descriptive work led to ample secondary analysis to inspect for causality, this offers a first step towards a greater understanding of intergenerational mobility in the UK.

Our descriptive work raises many questions for future research: how have local policy and economic shocks influenced intergenerational mobility across England and Wales? In areas of low upward mobility, do people who stay as adults have the same poor outcomes as those who move away? Is it inevitable that high-growth cities such as London will have high occupational mobility but low home ownership mobility? These are questions we hope to address in future work.

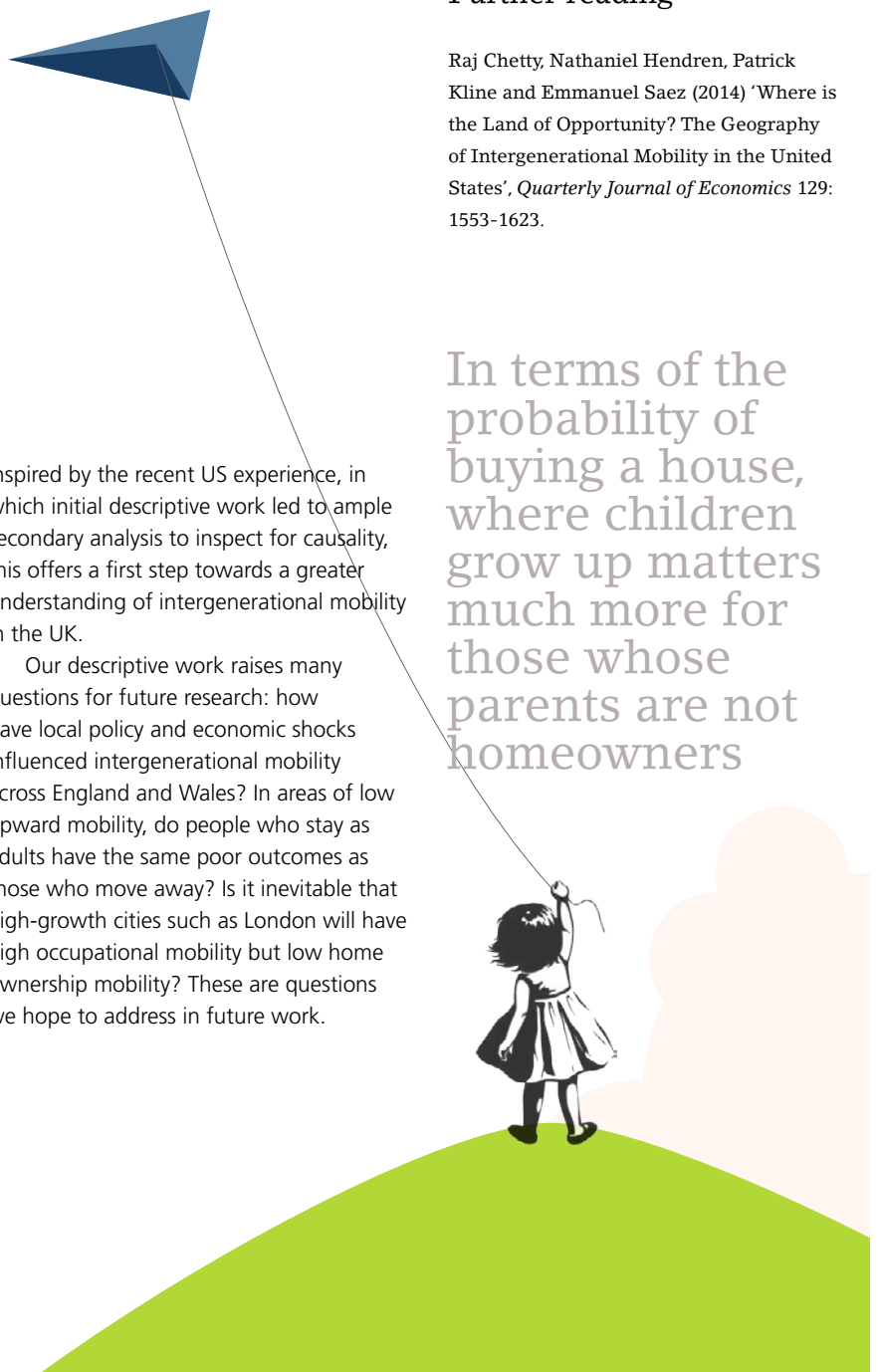
This article summarises 'Where is the Land of Hope and Glory? The Geography of Intergenerational Mobility in England and Wales' by Brian Bell, Jack Blundell and Stephen Machin, CEP Discussion Paper No. 1591 (<http://cep.lse.ac.uk/pubs/download/dp1591.pdf>).

Brian Bell of King's College London is a research associate in CEP's labour markets programme. **Jack Blundell** is a doctoral student at Stanford University and a research assistant in CEP's labour markets programme. **Stephen Machin** is director of CEP.

Further reading

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In terms of the probability of buying a house, where children grow up matters much more for those whose parents are not homeowners



in brief...

City of dreams no more: Covid-19 in urban India

The pandemic has decimated livelihoods in urban India and created a new underclass of workers who are being pushed into poverty. A CEP report by **Shania Bhalotia**, **Swati Dhingra** and **Fjolla Kondirolli** calls for a national work guarantee to prevent mass long-term unemployment.

Developing economies across the world have large informal sectors, where workers lack even basic social protection like sick pay. India is no exception. Employees on regular wages or salaries make up less than half of the urban workforce: 48% in 2018. The rest are in a hinterland of casual work, temporary contracts and self-employment. Even among regular employees, only 27% have a written employment contract, while a little over half have access to some benefits (provident funds, sick pay or health insurance) through the government or their employers.

The latter make up the flagship schemes for Covid-19 relief to workers in urban areas, which, at the outset, provided limited reach because of the large proportions of uncovered workers. Many workers are expected to be covered by these schemes. Yet old and new forms of informality persist, leaving many without basic social protection.

Like many developing economies, India has a young workforce: 62% are aged under 40 and most of them are in informal employment. To understand the different impacts of the pandemic, CEP conducted a survey of more than 8,500 workers in urban India aged 18 to 40 during the period from May to July 2020.

India recorded its first case of coronavirus in late January 2020. Since then, the number of confirmed cases has increased rapidly. The government announced a nationwide lockdown aimed at slowing the spread of Covid-19 on 24 March 2020. The lives of 1.3 billion people came to a standstill for 21 days. Businesses, factories, schools and transport were closed and almost everyone was asked to stay at home.

India's lockdown was one of the most restrictive in the world, and it was extended three times afterwards until 31 May. Most urban centres, especially big cities such as



Delhi, Mumbai, Pune and Kolkata, were classified as 'red zones' during most of lockdown. This had a large and immediate impact on employment. Millions of workers in urban centres saw their work come to a halt abruptly, and many workers who had migrated to these areas were stranded without any source of income.

Our research shows that the pandemic has had a dramatic impact on livelihoods in urban areas. Labour force participation rates in urban areas were already low (at 48%) and average daily wages were modest: 590.2 rupees or roughly £6 a day. In the period from May to July, 21.7% were unemployed or reported zero hours of work. Many had already not been working since the start of lockdown and had received zero pay in April (the first full month of lockdown) without any financial assistance. Counting them in, 52% of urban workers went without work or pay during lockdown.

Financial assistance from employers or the government was available to less than one-quarter of individuals. In the absence of job protection and government support, worklessness translated into huge reductions in incomes. On average, income fell by 48% after lockdown in April and May, compared with pre-pandemic labour income in January and February.

Covid-19 has exacerbated pre-existing inequities in urban India and those at the lower end of incomes are suffering the most. Workers in the bottom half of pre-pandemic labour income had bigger income losses than the top half. Informal workers, especially young informal workers from lower socio-economic groups, faced the biggest job cuts.

As a result, those in the top quartile of pre-pandemic income went from getting a 64% share of total income to a much higher 84% within three months. Policy made just a small dent in undoing this steep rise in labour income inequality, taking the share of the top quartile slightly lower to 80%, leaving them with a 16% higher share of income than before.

Growing urbanisation and an even faster-growing young workforce had already been posing massive challenges for the Indian labour market. The pandemic has intensified those difficulties, and they are expected to get even bigger as urban demography changes over the next couple of decades.

Among urban workers, the youngest (those aged 18 to 25) were already much less likely to be in work, more likely to be employed informally and more likely to be paid less. The pandemic has left the 'lockdown generation' with lower employment rates and a legacy of entrenched inequality.

National and state governments recognise the livelihood crisis, but for the most part, their recovery packages fall far short of outlays to overcome it.

The pandemic has left the 'lockdown generation' with lower employment rates and a legacy of entrenched inequality

Although India runs the world's largest jobs programme (which guarantees 100 days of work to households), it is limited to rural residents.

In urban areas, our survey shows that 31% of individuals had a guaranteed number of days of work. Among those who did not, an overwhelming 70% reported needing a guarantee of a minimum 100 days of work, for which they would be willing to pay almost a quarter of their daily wages (Dhingra and Machin, 2020). The youngest workers were much more likely to want job guarantees, primarily for the livelihood security that they provide in these hard times.

A few states in India are introducing state-level job guarantees for their urban residents, but workers in large parts of the country would fall outside the purview of these state programmes. A national level commitment to overcoming the livelihood crisis is therefore essential to prevent urban workers from falling into poverty and to provide a countervailing force against the sharp and sudden rise in inequality.

This article summarises 'City of Dreams No More: The Impact of Covid-19 on Urban Workers in India' by Shania Bhalotia, Swati Dhingra and Fjolla Kondirolli, CEP Covid-19 Analysis No. 8 (<http://cep.lse.ac.uk/pubs/download/cepcovid-19-008.pdf>).

Shania Bhalotia is a research assistant in CEP's trade programme. **Swati Dhingra** is associate professor of economics at LSE and a research associate in CEP's trade programme.

Fjolla Kondirolli is a research assistant in CEP's labour markets programme.

Further reading

Swati Dhingra and Stephen Machin (2020) 'The Crisis and Job Guarantees in Urban India', CEP Discussion Paper No 1719 (<http://cep.lse.ac.uk/pubs/download/dp1719.pdf>).

Can we teach people to live happier and more pro-social lives? Are there cost-effective and scalable interventions? And could the effects be sustained over time? **Christian Krekel** and colleagues have evaluated the impact of Exploring What Matters – a local community course that aims to promote mental wellbeing.

Happier lives: exploring what matters



For decades, enormous research effort has been put into exploring what makes people happier (Diener et al, 1999; Layard et al, 2014). At the same time, there is growing evidence showing that being happier is an important predictor of life outcomes, including health and longevity (Danner et al, 2001), productivity and income (De Neve and Oswald, 2012; Oswald et al, 2015) and even compliance with restrictions during Covid-19 lockdowns (Krekel et al, 2020).

Yet questions about whether and how we can teach people to live happier and more 'pro-social' lives remain largely open. Answering them is important, particularly in view of the Covid-19 crisis, in which social distancing measures and social isolation affect millions of people. Apart from the fears that oneself, a family member or a friend might contract the disease, the impacts of these measures and our starkly altered daily routines constitute some of the mental wellbeing costs of the crisis.

Before the pandemic, we evaluated the impact of the 'Exploring What Matters' course, a local community intervention aimed at promoting mental wellbeing and pro-sociality in the general, healthy adult population.

The course consists of eight consecutive weekly sessions, each lasting up to two and a half hours. Each session builds on a thematic question, for example, what matters in life, how to find meaning at

work or how to build happier communities. Participants discuss these topics and then use behavioural activities such as goal-setting and social commitment tools that help to translate discussions into action.

The course is run by Action for Happiness, a registered charity in England, which has become a global movement with more than 175,000 members across 180 countries. CEP's Richard Layard was a founder and its patron is the Dalai Lama, who helped to launch the course in London in 2015.

The course is led – normally face-to-face – by non-expert volunteers (lay people, screened for their motivation and skills) in their local communities, making it highly cost-effective and scalable. As such, 431 courses have already been completed in 26 countries.

In the context of the current crisis, interventions such as Exploring What Matters may gain in importance: they can play a vital role in alleviating some of the mental wellbeing costs of the crisis, allowing people to connect virtually and exchange over meaningful matters, and redirecting some of their attention towards the positive.

Strong positive effects on subjective wellbeing, mental health and pro-sociality

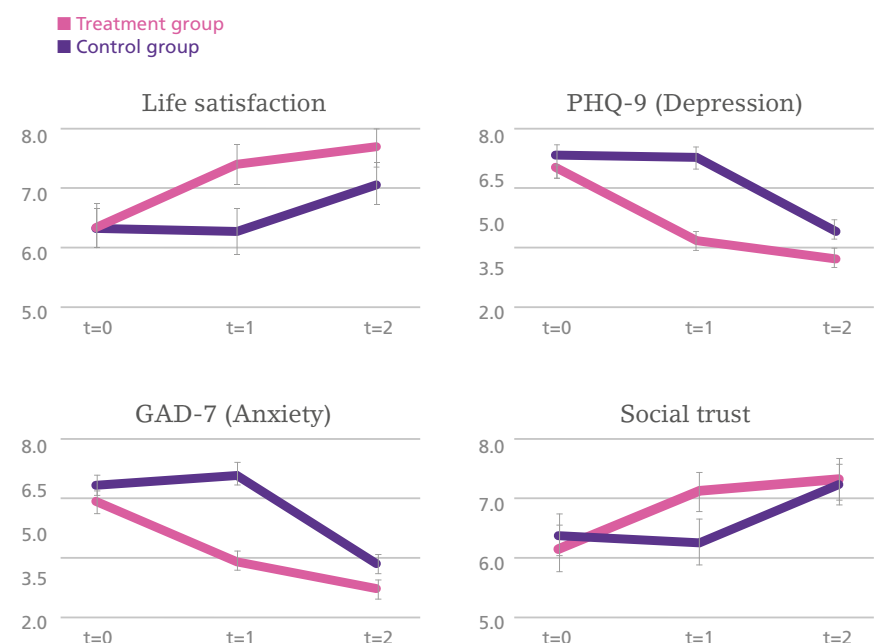
Figure 1 plots measures of life satisfaction, mental health (PHQ-9 for depression and GAD-7 for anxiety) and social trust of participants before and after taking the course. The course had strong positive effects on most outcomes:

■ First, between baseline (t=0) and endline (t=1), the course strongly improved the scores of Group 1 participants (who took the course during this period), whereas those of Group 2 participants remained constant.

■ Second, between endline (t=1) and follow-up (t=2), the course strongly improved the scores of Group 2 participants (who took the course then) in a similar fashion, while those of Group 1 participants were sustained or even continued to improve in the longer term.

Figure 2 shows the effect sizes more clearly: the course significantly increased subjective wellbeing by between 47% and 63% of a standard deviation. These are large effects. For life satisfaction, for

Figure 1:
Average scores of groups at different points in time



Notes: Life satisfaction and social trust are measured on scales from zero to ten, PHQ-9 for depression on a scale from zero to 27, and GAD-7 for anxiety on a scale from zero to 21. N=383 (146 at t=0, 133 at t=1 and 104 at t=2). Confidence intervals are 95%.

Sources: Own data collection, own calculations.

The Covid-19 crisis is primarily about physical health – but it is equally important to consider people's mental wellbeing

example, the effect size corresponds to an increase of about one point on a zero-to-ten scale – more than being partnered as opposed to being single (+0.6) or being employed as opposed to being unemployed (+0.7) (Clark et al, 2018).

Likewise, in terms of mental health, the course significantly reduced both PHQ-9 (depression) and GAD-7 (anxiety) scores, respectively, by about 50% and 42% of a standard deviation. In terms of pro-social attitudes, we find that it significantly increased both compassion towards strangers and social trust in general, respectively, by about 38% and 53%.

What were the mechanisms through which these positive impacts came about? We find that after taking the course, participants reported feeling more knowledgeable of what contributes to a happy and meaningful life. They also knew more about what matters to them personally; they felt more able to do things to improve their own wellbeing and the wellbeing of others; and they reported practicing mindfulness or meditation more often, treating themselves in a kind way more often, connecting with other people, and doing something kind or helpful for others.

A randomised controlled trial

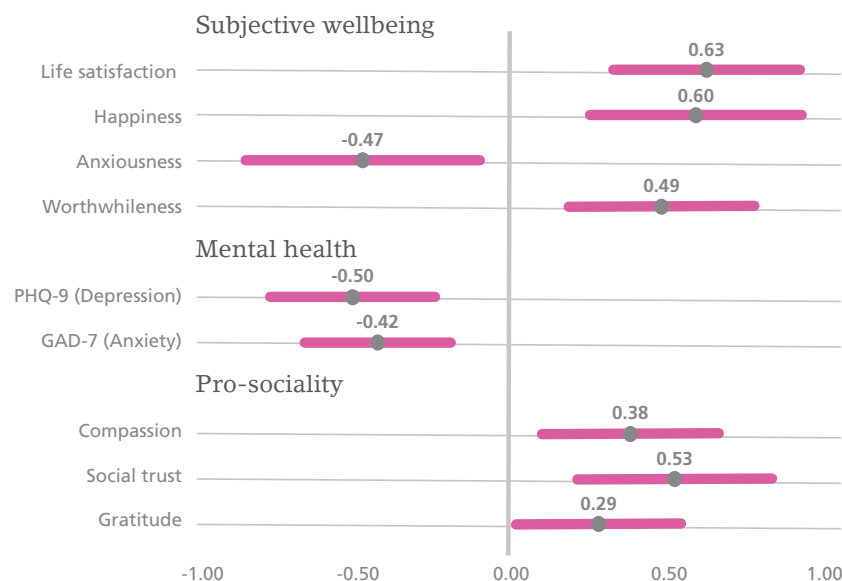
To reach these conclusions, we conducted a 'randomised controlled trial' of six courses that took place in London between August 2016 and December 2017, including 146 participants in total.

After registering for the course online, participants were first randomly allocated to either a 'treatment' or 'control' group. They were then invited to arrive on the same day to have their baseline data collected. Only participants in the treatment group (Group 1) started their course that day, whereas those in the control group (Group 2) started theirs later, after the treatment group had finished.

Randomisation ensured that observable and unobservable characteristics were balanced between treatment and control group. We then employed a 'difference-in-differences' research design that compared the evolution of outcomes between the groups over time to arrive at a causal interpretation of course impacts.

Figure 2:

Impacts on self-reported outcomes: subjective wellbeing, mental health and pro-sociality



Notes: Coefficients are standardised, with mean zero and standard deviation one (z-scores), using control group mean and standard deviation. They originate from a multiple regression analysis. Controls included age, gender, marital status, education, employment, income, religion, religious practice, preference for meeting new people and making friends, health (including pregnancy), health-related behaviour (including smoking and medication usage). Robust standard errors were clustered at the participant level. N=279 (146 respondents, of which 73 were in treatment and 73 in control). Confidence intervals are 95%.

Sources: Own data collection, own calculations.

Additional analyses

Impacts on biomarkers

Besides self-reported outcomes, we also collected data on biomarkers through saliva samples. These include cortisol – a steroid hormone responsive to stress – and a range of cytokines – immune proteins involved in inflammatory response associated with mental ill-health and depressive symptoms.

We do not find that the course had significant impacts on these biomarkers at conventional levels, which is most likely to be due to small sample size. With the exception of cortisol, we find that cytokines consistently moved in the hypothesised direction: pro-inflammatory cytokines (which correlate positively with mental ill-health and depressive symptoms) were decreased, whereas anti-inflammatory cytokines (which correlate negatively) were increased.



Replication using online surveys

Since its launch in 2015, 431 courses have been completed worldwide, totalling 5,621 participants. Right from the beginning, Action for Happiness has been collecting data on course outcomes at the participant level. In particular, by means of online surveys, data on course participants' life satisfaction, mental wellbeing, compassion and social trust have been collected. These data are high-powered and widely spread across geographical regions and over time.

Using simple before-after comparisons, we find that the course had strong positive impacts on these outcomes, of similar size as in our randomised controlled trial. Overall, this replication using online surveys confirms our findings.

Conclusion

The Exploring What Matters course shows that it is possible for people in the general, healthy adult population to live happier and more pro-social lives, by means of intervention, cost-effectively and at scale. Importantly, it shows that the effects seem to be sustained over time.

In the context of Covid-19, interventions like this could play an important mediating role when delivered online to a large number of people. Although the crisis is first and foremost about physical health, it is equally

important to consider the mental wellbeing of both the physically affected and the physically unaffected (De Neve et al, 2020). While our research focused on groups meeting in-person, Action for Happiness has been working to support similar local groups getting together online.

Interventions that enable people to come together virtually, discuss matters of mutual interest and direct their attention towards the positive will help to alleviate some of the hardships associated with the crisis. Importantly, they may be preventive and provide people with protection against some of the mental wellbeing costs. Interventions like Exploring What Matters will also be even more urgently needed as we move beyond the crisis and begin to restore our face-to-face connections and community wellbeing.

There is also a potential role for policy: to the extent that people are unaware of the availability of such interventions or do not believe in their effectiveness, policy can be an effective information broker to inform people and encourage take-up.

This article summarises 'A Local Community Course That Raises Mental Wellbeing and Pro-Sociality' by Christian Krekel, Jan-Emmanuel De Neve, Daisy Fancourt and Richard Layard, CEP Discussion Paper No. 1671 (<http://cep.lse.ac.uk/pubs/download/dp1671.pdf>).

Christian Krekel is assistant professor of behavioural science at LSE and a research associate in CEP's community wellbeing programme. **Jan-Emmanuel De Neve** of the University of Oxford is a research associate in CEP's community wellbeing programme.

Daisy Fancourt is at University College London. **Richard Layard** is co-director of CEP's community wellbeing programme and founder director of CEP.

Further reading

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Interventions to promote happier lives are vital as we begin to restore our face-to-face connections and community wellbeing



in brief...

Economics of skyscrapers

Many tall buildings appear to be out of scale given contemporary perceptions. But according to **Gabriel Ahlfeldt** and **Jason Barr**, the vast majority have a solid economic case for their construction.

Over a hundred years ago in 1913, policy-makers at the Heights of Buildings Commission in New York were convinced that ‘few skyscrapers pay large net returns’, and that ‘the very tall buildings demand many things out of proportion to their increased bulk’. Despite these sentiments, their belief in the death of the skyscraper was premature. The Empire State Building, which was viewed as nothing short of maniacal in 1931, is now decidedly second tier – the 41st tallest structure in the world.

In 2010, the Burj Khalifa in Dubai, which is 828 metres high, set the new record for the world’s tallest building. Industry experts felt that its height was driven by developers’ egos rather than compelling economics. Contrary to this widespread perception, our review of the economics of skyscrapers suggests that economic variables are driving the trend to ever taller buildings.

The role of fundamentals

Figure 1 shows the height of the tallest building completed each year around the world from 1900 to 2019, along with the height of the world’s tallest building. The first main finding is that there is a reasonable and sustainable long-run trend, suggesting that fundamental factors matter. The average annual trend growth rate for the tallest structures is 1.3%. As a comparison, since 1960, real global GDP has had a trend growth rate of 3.2%.

To think about the economics of tall buildings, it is useful

to distinguish between drivers of building height that affect demand versus those that affect supply. Urban residents and businesses are willing to pay to be in tall buildings because they are centrally located and make life more convenient. Developers are willing to build tall to accommodate this demand.

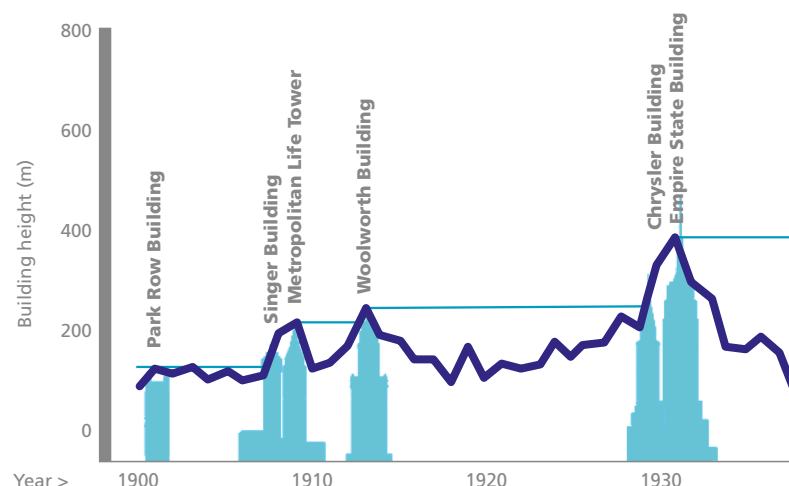
But constructing taller structures comes with extra costs. Taller buildings require more sophisticated structural engineering (to withstand wind forces, for example) and more facilities such as elevators. Intuitively, developers build up to the economic height: the point where the cost of adding a floor is just equal to the revenues from that floor. Above that height, the extra revenues do not compensate for the extra costs.

As cities grow, office and apartment rents will rise over time because there is limited central city land. Since higher rents imply greater revenues from additional floors, developers have a greater incentive to create vertical land in the sky. Furthermore, if residents are willing to use some of their rising disposable incomes to pay for better views, this will also provide incentives for buildings to go even taller.

On the supply side, the electric elevator and steel-framed structure inventions at the end of the 19th century removed many of the previous barriers to building tall. Since then, constant technological improvements have reduced the cost of adding floors. Computing software

Figure 1:
Height of tallest building completed each year (1900-2019) versus height of world’s tallest building

The vast majority of tall buildings have a solid economic case rather than being driven by developers’ egos



and wind tunnel testing has allowed engineers to design more efficient structures based on simulated tests. Such technological change reduces the costs of building tall buildings, increasing the economic height.

One of the insights of our analysis is that the incentive to respond to reductions in the cost of tall buildings is largest where rents are highest. Therefore, reductions in the cost of height lead to more than proportionate changes in building heights in the centres of global cities.

Non-economic motives

Returning to Figure 1, some buildings stand out as particularly tall relative to the trend and remain relatively tall for a very long time. This has fuelled the suspicion that some developers may have non-profit-maximising objectives.

In economic research, skyscraper development has been modelled as a race to gain personal satisfaction by owning the tallest building. Game theory predicts that the winning developer builds a much taller structure than the economic height to pre-empt would-be competitors.

This notion of pre-emption would suggest that buildings will retain their titles for a very long time, say for decades. But as of 2015, only three buildings in the world held the title of world's tallest for more than ten years (the Burj Khalifa recently joined this club). The median is just six years. Within countries, the average record length is less than ten years, and the median is only four. This fast succession substantiates the notion that long-run trends in economic fundamentals are essential drivers of vertical growth.

Yet there are exceptions, and the most impressive is the Empire State Building, which topped the world height ranking for 40 years. Its economics were frequently called into question; for example, it was called the 'Empty State Building' during the Great Depression.

While the skyscraper cost a historically impressive

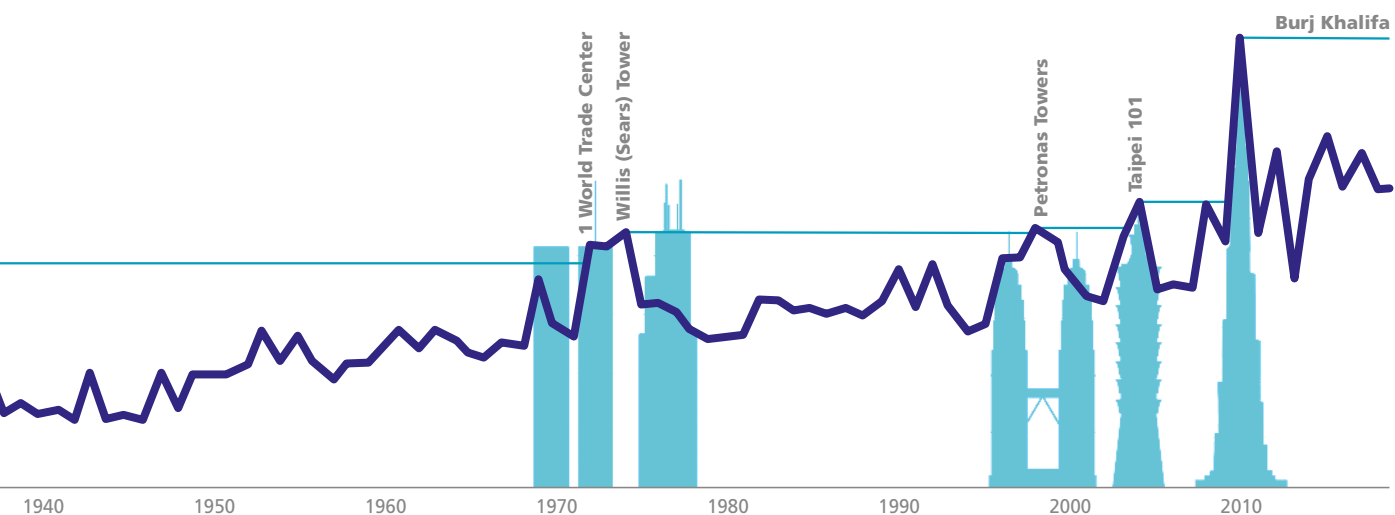
Reductions in the cost of height lead to more than proportionate changes in building heights in the centres of global cities

\$50 million for the land and structure (in roughly 1930 dollars), by 1950, its net operating income was about \$6.8 million, thus exceeding 10% of the inflation-adjusted total cost. Its net income has increased over the years in real terms, on average (not least, thanks to the observation deck, which, before Covid-19, generated \$130 million per year alone). Over its lifetime, the Empire State Building seems to have beaten the stock market in terms of returns on investment, which adds to the notion that a skyscraper's economics may be rejected too casually.

Being able to draw an exact line between the economic rationale and irrational developments is still work for future research. But in the meantime, we are safe in concluding that the vast majority of tall buildings – even if they appear out of scale given contemporary perceptions – have a solid economic case. If the history of height is any guide, the future direction for the economics of skyscrapers is only upwards.

This article summarises 'The Economics of Skyscrapers: A Synthesis' by Gabriel Ahlfeldt and Jason Barr, CEP Discussion Paper No. 1704 (<http://cep.lse.ac.uk/pubs/download/dp1704.pdf>).

Gabriel Ahlfeldt is professor of urban economics and land development at LSE and a research associate in CEP's urban programme. **Jason Barr** is at Rutgers University-Newark.



Businesses have rapidly adopted new technologies and new ways of working in response to the massive disruptions caused by the pandemic. A CEP report by **Capucine Riom** and **Anna Valero** suggests that if such innovation continues, it could boost the UK economy in the long term.

Innovation in the time of Covid-19



In a new survey of UK businesses, we report large-scale adoption of new technologies and practices during the first few months of the Covid-19 crisis, as firms transformed to survive. Will these innovations be permanent and productivity-enhancing – and how can policy support continued adoption into the recovery?

During the 2008 global financial crisis, a sharp fall in innovative activities occurred in almost every sector and region of the UK. Longer-term investments in innovation – such as research and development activities – have been disrupted due to Covid-19, and financing constraints are likely to harm these into the future.

But the unique nature of the current crisis has forced many firms to make rapid changes to their ways of working, and to adopt new digital technologies or management practices considered to be productivity-enhancing in normal times. If such innovation persists, it could induce lasting impacts on business performance and productivity.

We present new data from a survey of 375 UK businesses conducted in July 2020 in partnership with the Confederation of British Industry (CBI). Our survey sheds light on three questions:

■ To what extent have businesses adopted new technologies, capabilities

and management practices, or introduced new products in response to the Covid-19 crisis – and how do these vary by type of business?

■ Where firms have discovered new ways to harness technologies, what have been the impacts on business performance so far – and how do firms expect these to affect their workforces over time?

■ What policies are viewed by businesses as being valuable for supporting continued innovation into recovery?

The majority of firms have adopted productivity-enhancing technologies and practices, or introduced new products and services

We asked firms whether they had engaged in four different types of innovation in the period from the end of March to the end of July 2020.

The first three relate to ‘process innovation’: the adoption of new digital technologies (for example, customer relationship management systems and remote working technologies), digital capabilities (for example, e-commerce and cybersecurity) or management practices within the organisation (for example, new human resources and people management practices).

We also asked firms if they had

introduced any new products or services, which we refer to as ‘product/service innovation’.

We find a strong business response to the Covid-19 crisis across the four innovation categories (see Figure 1). Over 60% of respondents have adopted digital technologies and new management practices during the crisis, and 38% have adopted new digital capabilities. Of the non-adopters, one-third plan to adopt new digital technologies or capabilities in the near future, and 20% plan to adopt new management practices.

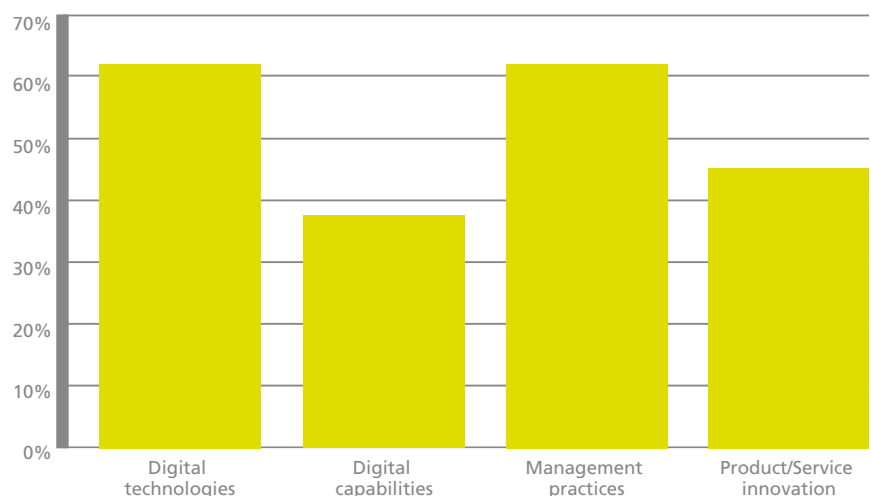
With respect to product innovation, 45% have introduced a new product or service, with 75% of these firms saying that they have introduced entirely new products or services, and nearly 60% improving existing products or services.

These innovation rates are greater than what we might have expected in the absence of the Covid-19 crisis. The most recent UK Innovation Survey found that around 13% of businesses were process innovators and 18% were product innovators over the three years to December 2018.

Moreover, the technological response to Covid-19 so far appears to be larger than that following the global financial crisis: data from the Workplace Employment Relations Study in 2011

Figure 1:

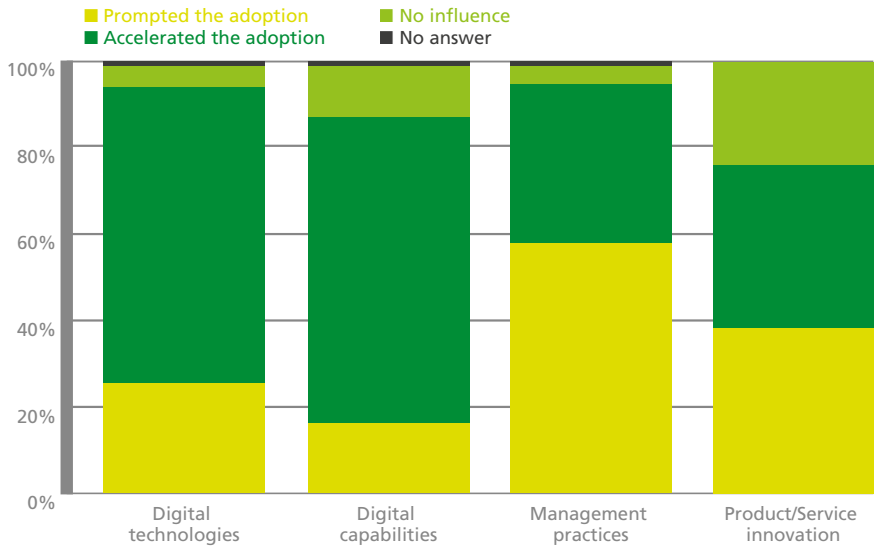
Innovation responses to Covid-19 (March to July 2020): shares of surveyed firms adopting new technologies, capabilities and management practices, and introducing new products and services



Note: N=375, N=374, N=371 and N=365 responded to each question, respectively.

A survey of UK firms reveals greater innovation rates than might have been expected in the absence of Covid-19

Figure 2:
Influence of Covid-19 on innovation



Notes: N=231, N=139, N=225, N=163 (those who adopted) in each column, respectively.

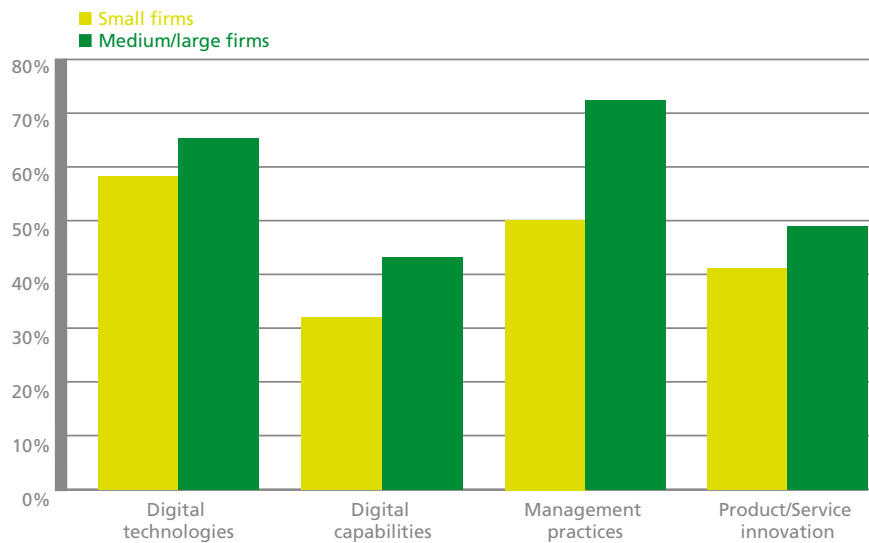
Nine out of ten UK firms say that new ways of working are here to stay after the pandemic

showed that 48% of employers had introduced or upgraded technologies, 38% had introduced changes in workplace organisation and one-third had introduced new products and services over the two years prior to the survey.

Of the innovating firms in our survey, the vast majority say that Covid-19 has accelerated or prompted these activities (see Figure 2).

We also explore how adoption patterns vary by firm type. In general, smaller firms (those with fewer than 50 employees) are less likely to have innovated (see Figure 3).

Figure 3:
Innovation rates by firm size band



Notes: N=375, N=374, N=371 and N=365 responded to each question.

In analysis where we control for key business characteristics including size, we find that firms that had previously adopted digital technologies are significantly more likely to have adopted new technologies, capabilities and practices, and to have introduced new products. London-based businesses are more likely to have adopted digital technologies, but there is no clear regional pattern to innovation in other measures.

Firms expect that their innovations will outlive the crisis and raise the productivity of workers or allow a reallocation of tasks, rather than substitute workers

The question is whether such changes will be temporary or whether they represent more permanent changes that could improve performance beyond the immediate crisis. Over 90% of adopting firms across the four types of innovation report that they intend to continue with these innovations. In addition, across the four types of innovation, around three-quarters of innovating firms consider that innovation has had a positive impact on profitability. Only a small minority (1-10%) report a negative impact.

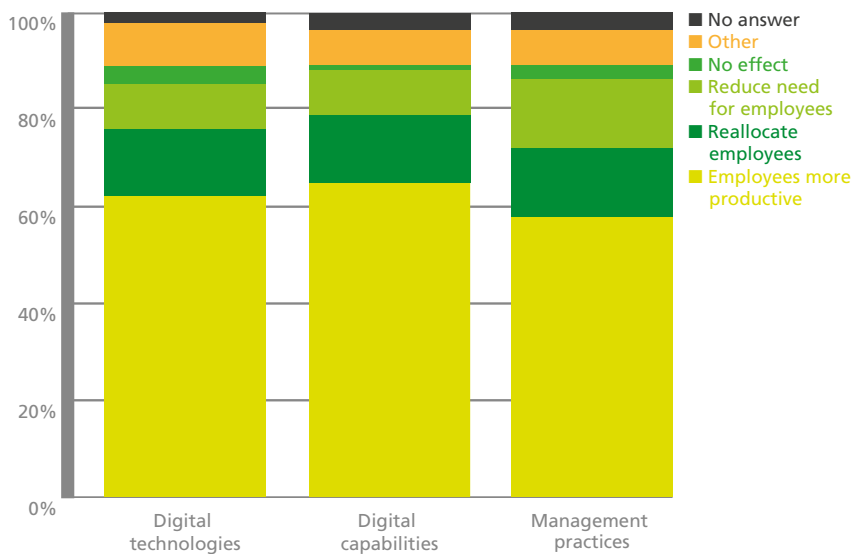
In the case of the adoption of new technologies, capabilities or management practices, we asked about business expectations about the impact of continued adoption on their existing workforce. Most firms expect that continuing to employ such process innovations will increase the productivity of employees in their current tasks or allow employees to be allocated to more productive tasks (see Figure 4).

Only a minority (10-15%) consider that such process innovation will imply a reduced need for employees over time. This suggests that the types of technologies or practices in question are not, for the most part, considered by firms to be labour-replacing. Among those that answered 'other', many highlight benefits for employees due to the increased workforce flexibility resulting from technology adoption.

New financial incentives are the most popular policy to support continued innovation adoption

Firms rank macroeconomic uncertainty and financing constraints as the two largest

Figure 4:
Expected workforce impacts of continuing process innovation



barriers to investment in new technologies and practices. The two policies considered most useful to support innovation adoption are new tax incentives and business grants or vouchers (see Figure 5).

Smaller firms in particular welcome the latter, as well as improvements in telecommunications infrastructure. Larger firms highlight the importance of investments in the digital and professional skills of younger people entering the workforce.

Looking to the future

The nature of the Covid-19 crisis appears to have accelerated certain types of innovation in a way that previous crises might not have done. Our results highlight a number of positive messages: firms that have been forced to adopt innovations during the pandemic expect these to persist after the crisis, to have a positive impact on firm performance and to augment productivity, without substituting workers.

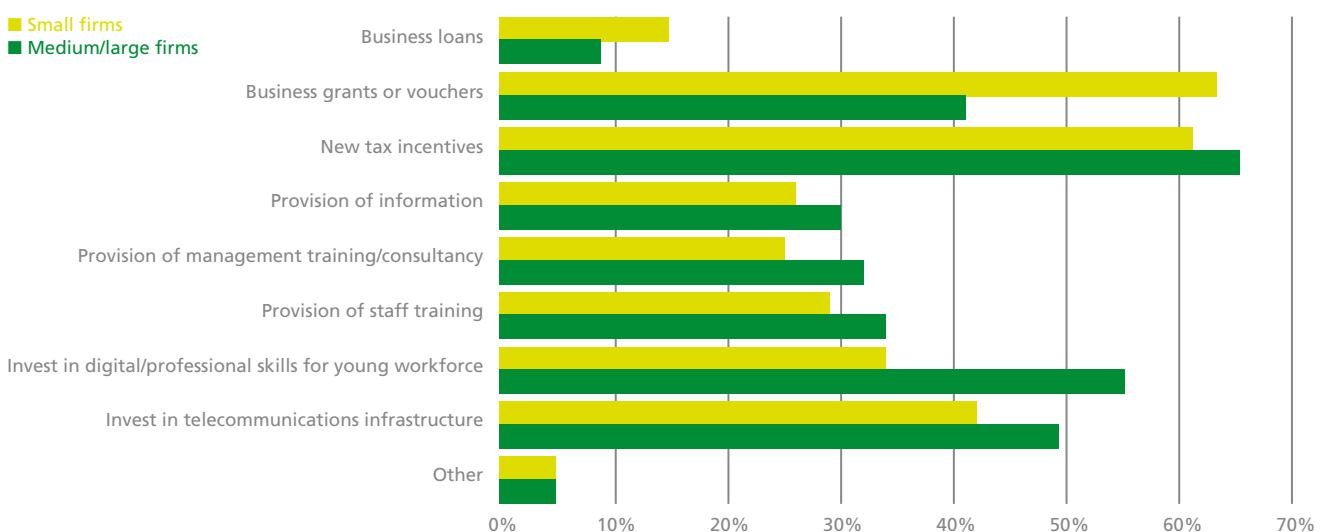
This article summarises 'The Business Response to Covid-19: The CEP-CBI Survey on Technology Adoption' by Capucine Riom and Anna Valero, CEP Covid-19 Analysis No. 9 (<http://cep.lse.ac.uk/pubs/download/cepcovid-19-009.pdf>).

Capucine Riom is a research economist at the What Works Centre for Local Economic Growth. **Anna Valero** is an ESRC Innovation Fellow at CEP.

London-based businesses are more likely to have adopted digital technologies

Will these innovation activities indeed lead to higher productivity, business growth and hence increased employment? Will businesses continue to seek out and adopt new technologies and practices during the next phase of the Covid-19 crisis and beyond? We will investigate these questions further in our survey and analysis of secondary data one year on.

Figure 5:
Potential new government assistance schemes for adopting new technologies, capabilities or practices



Notes: N=346 (firms that responded to this question). Firms could select more than one option, so the bars do not sum to 100%.



Pandemics are only possible because of international travel. But perhaps surprisingly, in the absence of social distancing, a more globalised country will not necessarily suffer a worse outbreak. **Pol Antràs, Stephen Redding and Esteban Rossi-Hansberg** set out a new framework for analysing the interaction between globalisation and pandemics.

Globalisation and pandemics: surprising interactions

On 26 and 27 February 2020, 175 executive managers attended a biotech conference in Boston, Massachusetts. An event that would normally have been praised as an example of the marvels of globalisation ended up spreading Covid-19 to at least six US states and three European countries, and caused close to 100 infections in Massachusetts alone.

Of course, this example is by no means unique: contagion via international business travel is common throughout history. In fact, the word quarantine originates from the Italian *quarentena* – a 40-day period of isolation required of ships and their crews during the Black Death.

Our research develops a new framework for studying the two-way interactions between globalisation and pandemics. In our framework, households choose the number of varieties to source from each country. Sourcing these varieties involves interactions with other households, which create the threat of infection. We show that this framework

provides joint microfoundations for both the canonical model of international trade in economics (what's known as the 'gravity equation') and the seminal model of pandemics in epidemiology (the susceptible-infected-recovered or SIR model).

By jointly modelling these two phenomena, we highlight a number of interactions between them. On the one hand, the contact rate among individuals – which is a central parameter in epidemiological models – responds to both economic forces (for example, the gains from international trade) and the dynamics of the pandemic (for example, the perceived health risks associated with international travel).

On the other hand, we study how the emergence of a pandemic and the perceived risk of future outbreaks shape the dynamics of international trade, and the net gains from this trade once the death toll from the pandemic is taken into account. We develop our argument in three steps:

- First, we focus on a case in which globalisation affects pandemics, but pandemics do not feed back to affect globalisation, by assuming that people are unaware of the threat of infection and there are no deaths from the disease.
- Second, we allow for 'general equilibrium' feedbacks from pandemics to globalisation, by allowing for deaths from the disease, while maintaining the assumption that people are unaware of the threat of infection.
- Third, we allow for both general equilibrium and behavioural feedbacks to globalisation, by allowing people to become aware of the threat of infection and the risk of death from the disease.

Starting with the first step, even if people are unaware of the threat of infection and there are no deaths, globalisation influences the dynamics of the disease because it changes patterns of human interaction.

In particular, we show that there are cross-country epidemiological

externalities, such that the condition for a pandemic to occur in the global economy (a global reproduction rate, R_0 , greater than one) depends critically on the disease environment in the country with the highest rate of domestic infection. Therefore, even if a country has a healthy disease environment and would not experience a pandemic in the closed economy (because it has a domestic R_0 less than one), it can experience a pandemic in the open economy if its trade partner has an unhealthy disease environment (that leads to a global R_0 greater than one).

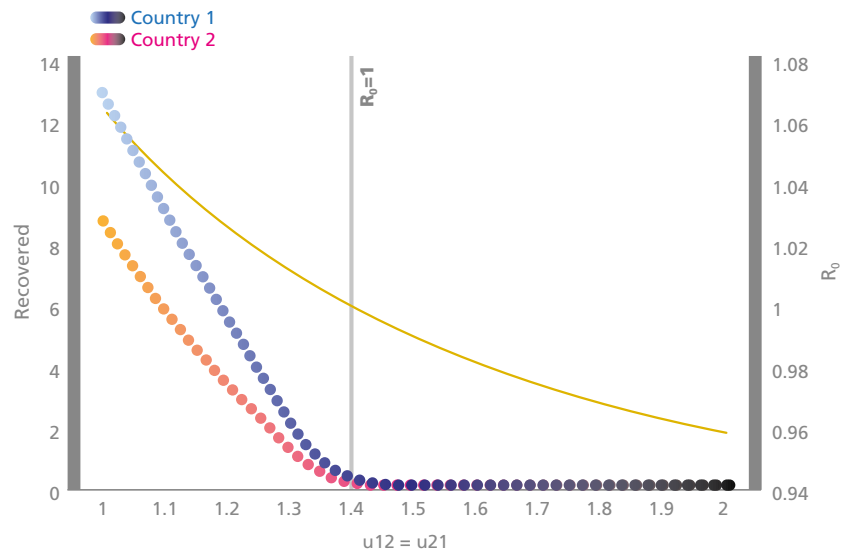
Perhaps surprisingly, these epidemiological externalities imply that a reduction in trade or mobility frictions can make a pandemic either more or less likely, and can make a pandemic either more or less severe when it occurs. On the one hand, if countries are sufficiently similar to one another, globalisation increases the prevalence and severity of pandemics. In this case, a common decline in barriers to international trade or the mobility of people increases the overall number of human interactions (domestic plus foreign), which in turn leads to increased disease transmission.

We illustrate this case in Figure 1 for a world of two countries and symmetric reductions in mobility frictions. As trade or mobility frictions fall towards one, the resulting increase in overall human interactions raises the global R_0 . As this global R_0 rises above one, the percentage of people infected during the pandemic (and recovered at the end of the pandemic) increases sharply in both countries.

On the other hand, if countries are sufficiently different from one another in terms of their epidemiological parameters (for example, as a result of different health policies), globalisation can reduce the prevalence and severity of pandemics. In this case where one country has a much worse disease environment than the other, trade liberalisation can reduce the share of that country's interactions that occur in this bad disease environment, thereby taking global R_0 below one.

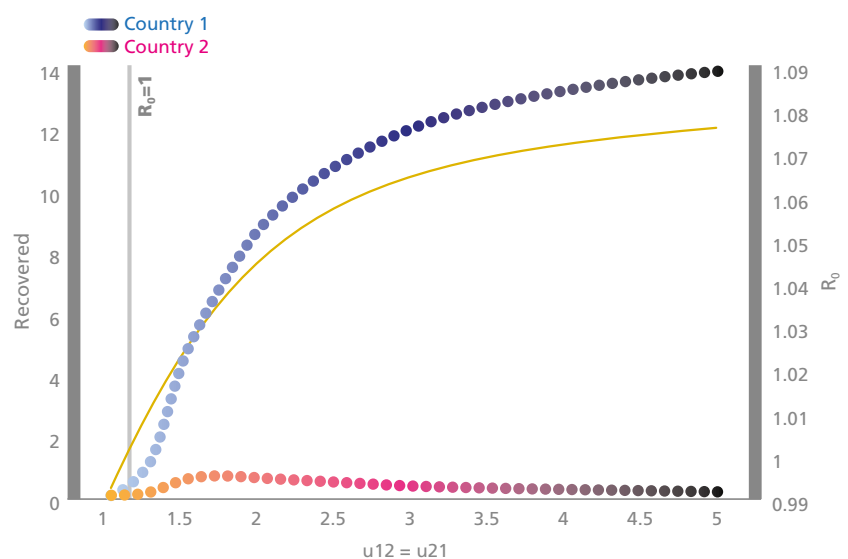
We illustrate this case in Figure 2, again for a world of two countries, where country one is a healthy country (with a low infection rate) and country two is an unhealthy country (with a high infection rate). As mobility frictions fall towards one, more of the unhealthy country's interactions occur abroad in the healthy

Figure 1:
Lower trade or mobility costs can prevent pandemics (symmetric countries)



Note: Figure shows reductions in mobility costs (values closer to one are lower mobility costs); left axis shows the percentage of people who were infected during the pandemic and are recovered at the end of the pandemic; right axis shows the global R_0 ; vertical line shows the value of trade or mobility costs at which the global R_0 exceeds one and a pandemic occurs.

Figure 2:
Lower trade or mobility costs can prevent pandemics (asymmetric countries)



Note: Figure shows reductions in mobility costs (values closer to one are lower mobility costs); left axis shows the percentage of people who were infected during the pandemic and are recovered at the end of the pandemic; right axis shows the global R_0 ; vertical line shows the value of trade or mobility costs at which the global R_0 exceeds one and a pandemic occurs.

The pandemic has substantial effects on aggregate welfare, through both deaths and reduced gains from international trade

country, which naturally reduces the percentage of its population infected during the pandemic.

Somewhat surprisingly, the fact that more of the unhealthy country's interactions occur abroad can even reduce the percentage of the healthy country's population that are infected during the pandemic (as observed for mobility frictions below 1.5).

This is true even though this healthy country receives more visitors from the unhealthy country as mobility costs fall. The reason is that redistributing the interactions of the unhealthy country from its bad domestic disease environment to the good foreign disease environment reduces the severity of the global pandemic. Similar examples can be found for reductions in trade frictions.

Moving now to the second step of our analysis, we allow the infection to cause deaths (or reduce productivity in the labour market), but assume that people remain unaware of the threat of infection, and hence continue to have no incentive to alter their individual behaviour.

In this case, a country with more infections experiences more deaths, which leads to a reduction in its relative supply of labour and an increase in its relative wage. This relative wage increase reduces the share of interactions that occur in the country with more infections, which again can take the global economy below the threshold for a pandemic to be self-sustaining.

Therefore, the effects of the pandemic on wages and trade patterns induce a form of general equilibrium social distancing from unhealthy countries. This operates even in the absence of

purposeful social distancing motivated by the threat of infection.

Finally, turning to the third step of our analysis, we allow households to become aware of the threat of infection and the risk of death. In this case, when choosing how many interactions to engage in to source varieties from each country, households internalise the possibility that they will become infected and die.

As a result, people engage in purposeful social distancing, in which they reduce their interactions and the number of varieties that they source from a country with more infections. This leads to a reduction in the relative demand for labour in that country and a decrease in its relative wage.

The reduction in interactions and the number of varieties sourced in response to the threat of infection leads to a rise in the price index (the cost of living) in both countries. Since foreign interactions are subject to international trade frictions, they are relatively more costly than domestic interactions. As a result, when households engage in purposeful social distancing, they cut back more on the relatively high cost foreign interactions, which leads to a large fall in the ratio of trade to income in both countries.

Introducing these behavioural responses is central to generating large reductions in the ratio of trade to output, and implies that the pandemic has substantial effects on aggregate welfare, both through deaths and through reduced gains from international trade.

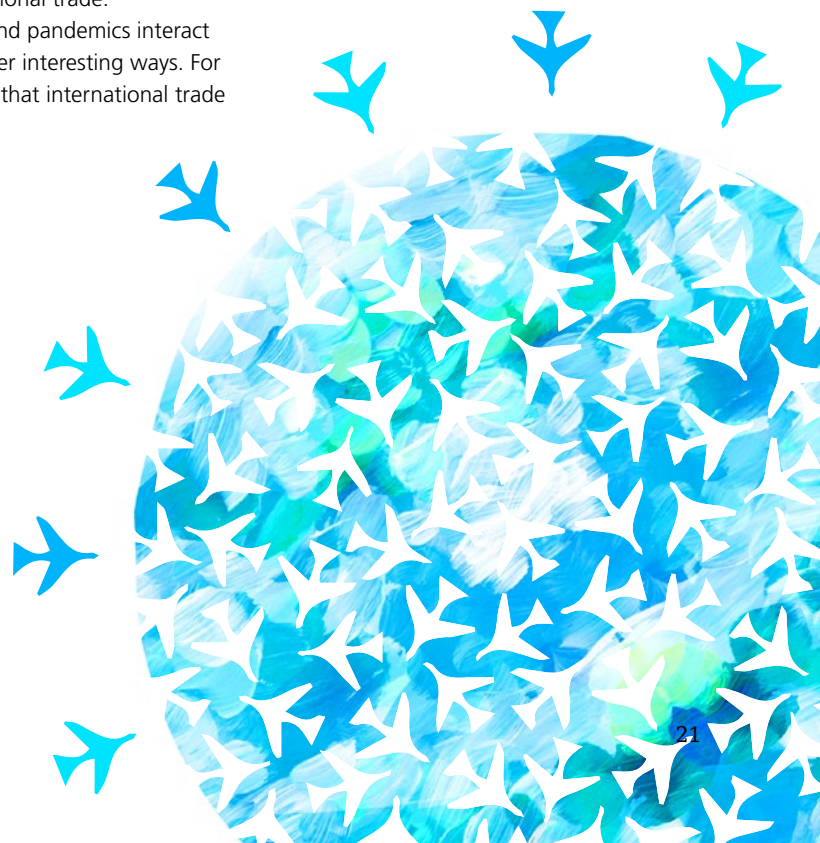
Globalisation and pandemics interact in a number of other interesting ways. For example, we show that international trade

More resilient policies are needed for a globalised world in which pandemics are a more frequent threat

and mobility can lead to multiple waves of infections even without government-mandated lockdowns. The richness and plausible relevance of the interactions we uncover deserve, we believe, more analysis and an empirical quantification. They could be important to improve the design of more resilient policies for a globalised world in which pandemics are a more frequent occurrence.

This article summarises 'Globalization and Pandemics' by Pol Antràs, Stephen Redding and Esteban Rossi-Hansberg, CEP Discussion Paper No. 1716 (<http://cep.lse.ac.uk/pubs/download/dp1716.pdf>).

Pol Antràs is at Harvard University. **Stephen Redding** of Princeton University is a research associate in CEP's trade programme. **Esteban Rossi-Hansberg** is at Princeton University.



in brief...

Monopsony in labour markets: what it is, why it matters

Many firms are able to exploit the fact that it is hard for workers to move from one employer to another, keeping wages lower than they would be in a competitive market. As **Alan Manning** explains, labour markets are becoming less dynamic and one consequence is to increase this 'monopsony power' of employers.

You have almost certainly heard of monopoly, but are less likely to have heard of monopsony. The literal definition of monopoly is a situation where there is only one seller of a product, although the term is used more loosely to refer to the case where there are a few sellers and not much competition between them. Such firms have what is called 'market power': some ability to set their own prices.

The consequence of monopoly is that prices are higher than they would be in a competitive market. Monopsony refers to the same idea but for employers; the consequence is that wages are lower than they would be in a competitive market.

In the labour market, employers have monopsony power because it is hard to change jobs. An employer that pays lower than average wages may find it harder to recruit and retain workers but is still able to hire some.

Monopsony is not a new idea – it was invented by the economist Joan Robinson in 1933. On paper, the competition laws of many countries (including the UK) could be applied to monopsonists just as much as monopolists. In practice, there was almost no action taken on monopsony; in the United States, many mergers have been blocked because of fears they would increase monopoly power, but none have been blocked because of concerns about increased monopsony power.

The monopsony power of employers has been neglected for too long: we need to do something about it



In the United States, that began to change when it became apparent that some employers were engaging in what seemed to be blatantly anti-competitive practices in the labour market. In one case – eventually settled out of court – household names Apple, Google, Intel, Adobe, Lucasfilm, Pixar and Intuit were accused of having agreements between them to limit the hiring of each other's workers.

Steve Jobs tried at one point to enter a similar arrangement with Palm, only to be told by its chief executive that such an agreement was immoral and likely to be illegal. At this point, Jobs appeared to threaten Palm with litigation over alleged patent infringements. In response to this and other cases, the US Department of Justice issued guidance on human resources practices in 2016. Other countries are yet to take this as seriously.

In product markets, a practical way to limit monopoly power is to increase the ability of customers to change from whom they buy. Similarly, measures to increase the mobility of workers are a powerful way to limit the monopsony power of employers. Yet we do not do this.

Imagine you want to change the supermarket where you buy your groceries; your existing supermarket allows this but only if your new shop is more than half a mile from them. Unthinkable!

Yet many workers sign employment contracts containing 'non-compete' clauses or restrictive covenants that limit their ability to work for rival employers in the future. In the UK, the High Court has ruled it acceptable for a hairdressing salon to prevent its employees from working for other salons within half a mile. Half a mile might not sound like much but 50% of commutes for hairdressers are less than ten minutes so this may be a sizeable reduction in employment opportunities.

Utility regulators in the UK have actively made it easier for consumers to switch supplies of gas, electricity and water in the belief that this promotes competition. Yet your employment contract probably contains a lengthy notice period that makes it harder for you to change employers. These notice periods are so normal that we do not reflect on whether they are anti-competitive.

The monopsony power of employers has long been an unrecognised problem, but it may also be an increasing problem. In my Marshall Lecture to the 2020 European Economic Association annual congress, I presented evidence that the monopsony power of employers has been increasing over time. Contrary to common belief, labour markets are becoming less dynamic and one consequence of this is to increase the monopsony power of employers.

So, what can be done about monopsony? One way is to raise wages directly, for example, through minimum wages. This approach has its place but can only help to

Ways to limit monopsony power include minimum wages, trade unions, competition policy and regulation of employment contracts

address monopsony power at the bottom end of the labour market.

Elsewhere, perhaps we need measures to give countervailing power to workers, either through a more supportive environment for trade unions or giving workers a louder voice on boards. Trade unions are often accused of raising wages above competitive levels but if we start from a point where wages are too low, we want wages to be higher.

The competition authorities need to be more alert to the possibility of anti-competitive collusive practices among employers. In *The Wealth of Nations*, Adam Smith wrote that 'We rarely hear... of the combination of masters; though frequently of those of workmen. But whoever imagines, on this account, that masters rarely combine, is as ignorant of the world as of the subject.' It has taken us over 200 years to realise that he had a point.

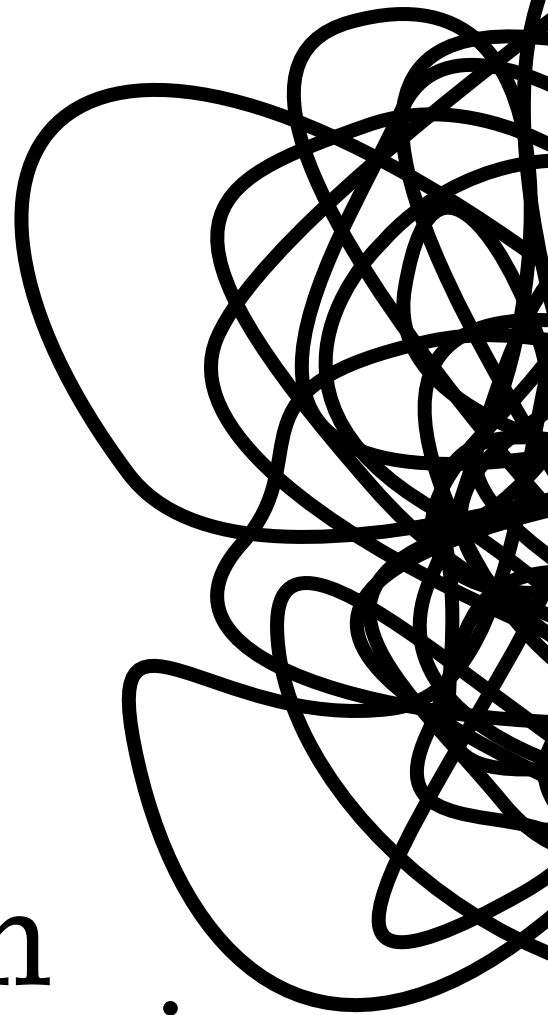
We also need to think about how to regulate what is and what is not allowed in employment contracts, including non-compete clauses and notice periods, but also zero-hours contracts and fake self-employment among many other issues. The general approach here is too often hampered by the view that if an employer and worker voluntarily sign a contract, the presumption is that both parties benefit from it (otherwise they would not have signed it).

But in labour markets (and some other markets) we often have a situation akin to one where a professional is interacting with an amateur; an employer typically has experience of dealing with many more workers than a worker has experience of employers. Part of being a professional is to be skilled in getting the other party to agree terms favourable to you but not them. The state needs to step in to influence what is allowable and what is not.

The monopsony power of employers needs to be taken seriously. It has been neglected for too long – and we need to do something about it.

Alan Manning is professor of economics at LSE and co-director of CEP's community wellbeing programme. This article is a summary of his Marshall Lecture, 'The Measure of Monopsony', delivered at the European Economic Association's annual congress in August 2020.

Covid-19 has shifted attention away from day-to-day matters to a question that is more fundamental, yet rarely asked by economists: how can we ensure resilience in the most pressurised times imaginable? **Richard Davies** draws lessons for responding to the pandemic from his experiences in nine extreme economies.



Lessons in resilience from extreme economies

Pandemic economics is unlike regular economics. To see why, consider a dimmer switch. Regular economics studies what happens when the dial is turned: as quarterly output and employment figures ebb and flow, the light of the economy brightens and dims. Some years, like 2008, are darker than others and some are brighter – but the bulbs are always on.

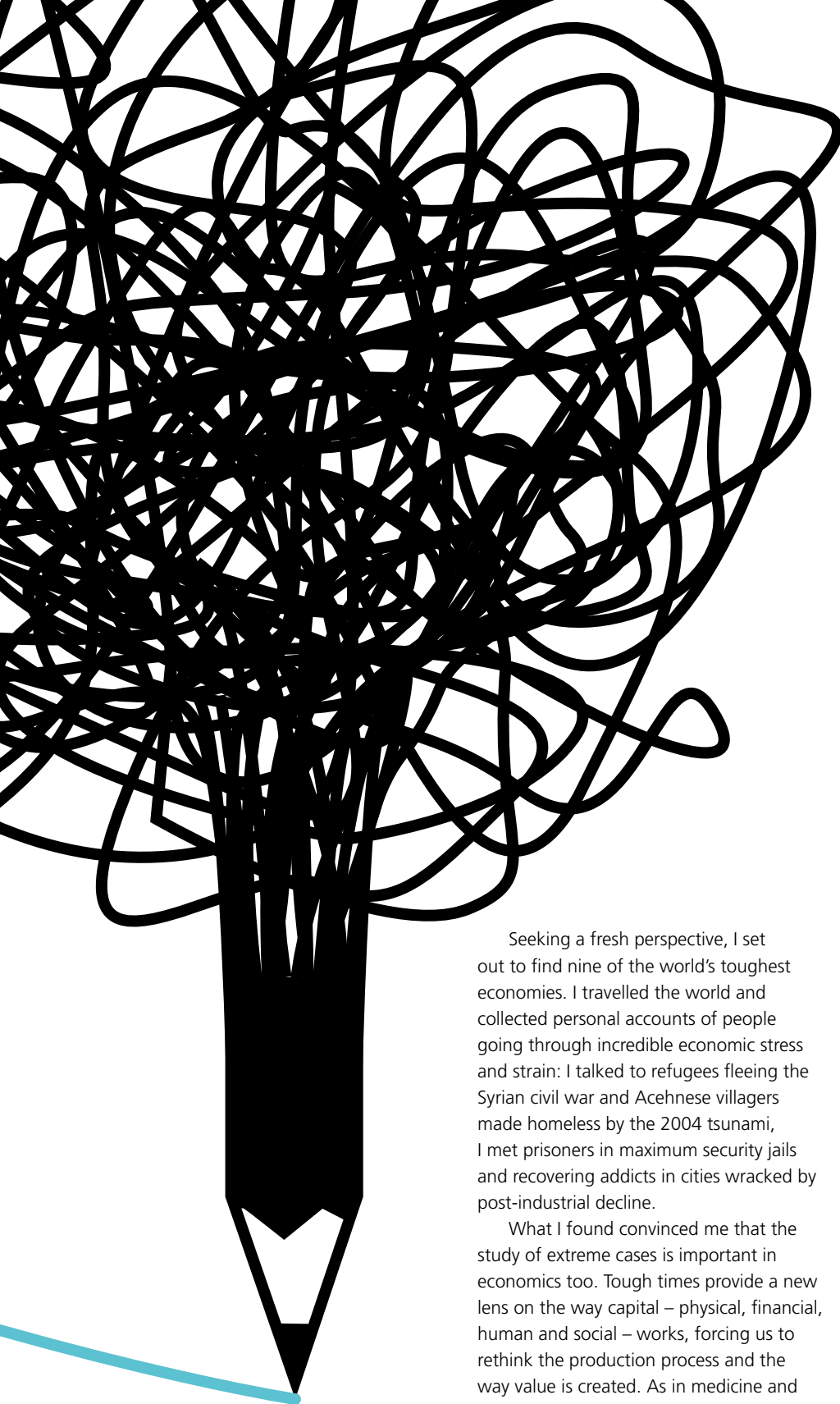
Pandemic economics is different: in early 2020, policy-makers had to hit the switch, so the lights went out completely. The Covid-19 pandemic, an extreme event, has shifted attention away from day-to-day matters to a question that is more fundamental, yet economists rarely ask: how can we ensure resilience in the most pressurised and testing times imaginable?

The study of extremes – catastrophic tail events, surprising one-offs – is commonplace outside economics.

In medicine, the tradition goes back to the early 1600s and Londoner William Harvey, an anatomist whose investigations of extreme patients – their bodies damaged yet surviving – revealed how the heart worked and blood circulated. Our understanding of the gastric system and brain rely on similarly gruesome outlier cases.

In engineering, the master of analysing extremes was David Kirkaldy, a Scot who collected fragments of warped rail track and bent bridges following disasters to understand the weaknesses in materials and how to eliminate them. As economists, we tend to avoid analysing economic life in marginal and extreme places. The hard sciences would view this as a mistake.

In extreme economies, human capital, not physical or financial capital, is the foundation of resilience



Seeking a fresh perspective, I set out to find nine of the world's toughest economies. I travelled the world and collected personal accounts of people going through incredible economic stress and strain: I talked to refugees fleeing the Syrian civil war and Acehnese villagers made homeless by the 2004 tsunami, I met prisoners in maximum security jails and recovering addicts in cities wracked by post-industrial decline.

What I found convinced me that the study of extreme cases is important in economics too. Tough times provide a new lens on the way capital – physical, financial, human and social – works, forcing us to rethink the production process and the way value is created. As in medicine and engineering, this rarer type of study – economics when the lights go out – may help us understand our economies in more normal times too.

Capital in a volatile world

Introductory textbooks, papers and models give primacy to physical capital: plant and machines are the foundation of production. Yet from tsunami-ravaged Aceh, Indonesia, to the Zaatari refugee camp in northern Jordan, I met people who showed that

damage to physical capital is a problem that can be solved relatively quickly.

This controversial idea was well understood by classical economists. In 1848, John Stuart Mill puzzled over rapid recoveries following disaster, writing that 'An enemy lays waste a country by fire and sword ... all the inhabitants are ruined, and yet in a few years after, everything is much as it was before.' The 'enemy' was an extreme event – for Mill, an earthquake, flood or war – and his observation was the surprising pace with which damaged physical capital was put back together.

The reason for the innate human ability to deal with damage to physical capital, Mill thought, is depreciation. Things decay – machines rust, buildings crumble – so people are constantly adapting to varying levels of physical capital and working to offset its decline.

Extreme economies show that he was right. Acehnese entrepreneurs described how they quickly built a pop-up version of former businesses following the tsunami, cobbling together a self-built oven, smaller boat or makeshift store. The entire Zaatari refugee camp is a lesson in capital redeployment and repurposing: any waste wood or metal quickly used as extensions to homes or to crate storefronts, steel frames of bicycles cut up and welded back together to create wheelchairs for those with war injuries.

The damage in these places is devastating but when physical capital is eradicated, resilience seems to be a fundamental human skill – adapting and rebuilding comes quickly and naturally.

Financial capital operates in fascinating ways in extreme environments. I was surprised to find that my travels to marginal and stressed places were, in a way, a tour of informal monetary and financial systems. Everywhere I went, some new form of money, lending or insurance had sprung

Skills and knowledge are goods in themselves – but they are also insurance against hard times ahead

up. I heard how currencies had formed overnight with the conversion of a durable good – powdered milk, coffee, tobacco – into an underground money.

An extreme event often shifts resources between groups so that wants, needs and the resulting trades that markets facilitate will change. When financial systems are damaged, inaccessible or seen as unfair, a new type of money often arises.

This organic rebound goes much further than currency – it includes informal versions of complex financial products and arrangements. In Aceh, chunky bangles made of solid gold, owned and worn by women, served as a form of self-insurance: selling or pledging the jewellery a way to access cash fast. In Glasgow, tight-knit tenement communities hit by industrial decline would loan goods for pawning when work at the shipyard dried up. In Louisiana, prison inmates described a new 'dot' payment system, a traceless way to trade contraband using pre-paid debit cards.

Economists tend to think of finance as the most formal part of the economy, one where particular expertise or training is needed. Yet this self-built, outsider financial system exists everywhere: measuring and engaging with it is vital to understand how economies really function.

In extreme times, it becomes clear that human capital, not physical or financial, is the foundation of resilience. It is an amorphous asset, existing in minds and ideas rather than in factories or bank accounts. Precisely because it is intangible, human capital is durable – impossible for a natural disaster or pandemic to destroy.

In Aceh, I met people who fished, cooked, cut hair and traded coffee beans as a way to rebuild their lives following the tsunami, using prior knowledge as a safety net. Human capital is also flexible: in Zaatari, I met refugees who had redeployed their skills – car mechanics who became bicycle repairers, logistics experts who worked as fashion buyers. The flip side of these stories of survival were places, like Glasgow, where the damage done by the extreme event – in this case a sudden loss of industry that made shipbuilding skills obsolete – had been primarily to human capital.

Regular economics gets into a pickle when it comes to human capital. Studies often find it hard to justify skill-boosting policies since estimating the impact of

The pandemic is a reminder that economics is a discipline that we must constantly renew

an extra year's schooling or a vocational or technical training course is fiendishly difficult. Yet extreme economies make the case clearly. Even if training is never used so that skill and abilities lie dormant, they make up a pool of potential that can be called on if needed.

Attempting to link human capital to output, value-added or other measures of productivity will miss this. Of course, skill and knowledge are goods in themselves, but they are also latent assets – an option on the future and insurance against hard times ahead.

A final resource, social capital, is priceless in extreme environments. Most economists tend to avoid analysing or even talking much about social capital. There are a host of reasons why. The most ethereal of assets, it is hard even to define – existing as norms, traditions, reciprocal favours and cooperation – let alone measure accurately. Anyone wanting to do empirical work is wise to give it a miss.

Others take the understandable view that social capital is inherently political – those on the left regard reliance on it as an excuse for austerity, while those on the right think supporting it is government overreach. This means anyone seeking a workable centrist policy should duck discussing social capital too. The result is the near expulsion of social capital from mainstream economics.

On the ground, in the most extreme places, one can see why this is a mistake. Where social capital was high, I witnessed informal economic arrangements relying on trust – from unmanned vegetable markets in northern Japan where elderly gardeners would leave excess produce for sale, to the 'menage' credit unions that helped Glaswegians finance the purchase of tools.

Often the benefit of this reciprocity can

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be seen in capacity utilisation: any given level of tools, money or skill will go further where social capital is high. By contrast, the places I visited where economic stress had eroded trust and made cooperation harder – including the lawless Darien Gap and inequality-riven Santiago – showed a concerning lack of resilience.

Renewing economics for extreme times

The Covid-19 pandemic is a reminder that economics is a discipline that we must constantly renew and improve. At present, the way we discuss and model factors of production means we have an inaccurate picture of how economies work. This miscasting and mismeasuring leads to analysis that is incomplete, and often wrong, eroding the positive or descriptive mission of economics. More deeply still, as economists we should embrace the fact that making discoveries is not just a matter of building better models or analysing larger data sets: facts also lay hidden in human narratives.

Understanding the economy also means talking to people at length, engaging with their lives, stories and challenges. In other words, adopting a more qualitative and human approach to gathering information is key. This material is harder to quantify but to ignore it makes economists seem out of touch with reality, and erodes the normative or moral mission of economics, which is to design better policies.

As Alfred Marshall put it in the first line of his landmark textbook: 'economics is a study of mankind in the ordinary business of life'. To ignore this day-to-day, informal and organic economics – which comes to the fore clearly in extreme times – is a great mistake.

in brief...

The lasting impact of epidemics

What can we learn about the potential effects of Covid-19 by looking at plagues of the past? According to **Jeremiah Dittmar** and **Ralf Meisenzahl**, history suggests that experiences of severe suffering can lead populations to reject poorly performing ruling elites and generate more inclusive social arrangements.

Epidemics drive profound social and economic changes through their effects on politics and beliefs. Living through epidemics changes what people want and imagine. Death and suffering lay bare the fragility of the existing social order and highlight the shortcomings of incumbent elites.

What can history tell us about how epidemics drive social and economic change? The death and dislocation occasioned by epidemics transform politics. The Black Death of the 1340s, which killed one-third of Europe's population, led to a shortage of workers and higher wages, but it did not usher in significant changes in the role of government. In contrast, later epidemics – which were not so deadly – gave significant impetus to reform movements that reshaped government and social and economic life.

European history has been marked by repeated plague outbreaks. These struck cities that formed the economic,

political and cultural backbone of society. Typically, the wealthy fled to their country homes. City rulers often abandoned their responsibilities. Public authority fell into disarray. Bodies piled up, and orphans wandered the streets. This bleak situation persisted from the time of the Black Death until new social contracts were developed.

In the 1500s, epidemics struck societies in which the existing order was already subject to profound criticism. This was especially true in Germany, where Martin Luther and his comrades criticised the corruption of religious and secular authorities in the early 1500s. They developed a clear alternative: a religious and political reform agenda. The reformers proposed a new design for city governments and a dramatic expansion in the role of public authorities in providing for the common good.

Experience with the plague highlighted the shortcomings



German cities that experienced plague outbreaks in the 1500s were far more likely to pass laws formalising an agenda of reform

of the old regime and the attractions of the Protestant agenda. In this era, citizens in German cities rose up to demand the implementation of a new religious and political order. Protests, marches and disturbances pushed local elites to accept a new political equilibrium. In our research, we find that cities that experienced plague outbreaks in the early 1500s were far more likely to pass laws formalising the reform agenda.

These political changes led to some of the most important and consequential institutional innovations in European history. With the help of invited experts, cities designed Europe's first large-scale experiments with mandatory public schooling, public health provision, welfare transfers, subsidies so that the children of the poor could attend university, and anti-corruption measures to preserve the sanctity of public finances.

Martin Luther's confessor, Johannes Bugenhagen, drafted laws for many cities in Germany. Bugenhagen's laws make explicit provision for the staffing of plague hospitals. The laws themselves state that it is 'disgraceful' for poor women to be unable to afford professional midwives and that access to healthcare must be provided for all. The laws established common chests – lock-boxes to collect all municipal and church income. These funds were used, for example, to provide dowries to poor women. Put simply, in this new order the role of government fundamentally expanded.

How did these changes affect businesses and economic growth? We find that cities that institutionalised the

provision of public goods embarked on new trajectories. Reformers emphasised the importance of educated civil servants who were needed to cement a new social order. Cities that expanded public goods provision in the 1500s began to attract and to educate talent that flowed into careers in education, public service and the reformed church.

With time, and as an unintended consequence, business in these cities boomed. Over the next two hundred years, cities that formally expanded public goods provision grew far faster than those that did not. This difference in fortunes was driven by the institutionalisation of public goods provision and not by the spread of Protestantism *per se*. Protestant cities without institutionalised public goods provision did not enjoy economic booms.

The lessons one can draw from plague outbreaks in the 1500s are not unique. There are other examples of how epidemics may swing politics and lead to social change, such as the mismanaged cholera outbreak in Hamburg in 1892. History suggests that experiences of severe suffering can lead populations not only to reject poorly performing rulers but, more hopefully, to demand more inclusive social arrangements.

In the middle of the Covid-19 pandemic, we have already seen calls for a European fiscal union and for the transformation of US healthcare provision. These calls may mark the beginning of large-scale transformations in what citizens imagine, demand and ultimately receive.

This article draws on 'Public Goods Institutions, Human Capital, and Growth: Evidence from German History' by Jeremiah Dittmar and Ralf Meisenzahl, published in the *Review of Economic Studies* 87(2): 959-96 in March 2020.

Jeremiah Dittmar is associate professor of economics at LSE and a research associate in CEP's growth and urban programmes. **Ralf Meisenzahl** is a senior economist at the Federal Reserve Bank of Chicago.

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Cities that institutionalised the provision of public goods embarked on new trajectories of growth

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