

CentrePiece

The Magazine of The Centre for Economic Performance

Volume 27 Issue 1 Spring 2022

Natural experiments
Covid-19 in India
Domestic abuse

Footballers' pay
Further education
Women entrepreneurs



SOLVING LABOUR SHORTAGES

CentrePiece



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Editorial

Two years into the pandemic and more than five years since the referendum vote to leave the European Union, the UK economy faces numerous challenges. Economists are thinking about solutions but setting out a plan for recovery first requires a clear-eyed view of what is causing the problem. In this issue of *CentrePiece* magazine, we outline some of the latest efforts by researchers at the Centre for Economic Performance (CEP) to seek that understanding in several key areas, including education, immigration and the labour market.

Untangling the interactions between, say, immigration, education, trade and wages has long been the work of economists – but how this is done has been transformed by David Card, Joshua Angrist and Guido Imbens, recipients of the 2021 Nobel prize for economics. Just how their work on ‘natural experiments’ has influenced economic research is explained here by Jörn-Steffen Pischke.

The new laureates’ influence shines through in research highlighted elsewhere in this issue: Sarah Flèche and colleagues use the natural experiment of lottery wins to explore how access to capital alters women’s chances of taking the plunge into entrepreneurship. And Claudia Hupkau and Sandra McNally report on their investigation of the effect of giving large capital grants to colleges of further education: they find that spending money on buildings boosts the probability of students going on to higher education.

The use of huge datasets has enabled Ria Ivandic, Tom Kirchmaier and Neus Torres Blas to uncover the links between football matches, alcohol consumption and domestic abuse – by identifying matchday binge-drinking as a key driver of abuse, this important work points to how violence may be reduced.

In our cover story, Alan Manning looks at the evidence on labour shortages and immigration. Across the UK, there have

been calls to bring in immigrant workers for sectors ranging from HGV drivers to social care. Manning warns that while migration can address some specific localised shortages, such schemes need to be carefully designed.

CEP research on solving labour shortages is feeding into the Economy 2030 inquiry, which is being run jointly with the Resolution Foundation. This landmark collaboration, funded by the Nuffield Foundation, was launched last year and is investigating the impact of such seismic changes as Brexit, Covid-19 and the net-zero transition on the people, places and firms of the UK. As it continues, we will be bringing you more of the inquiry’s suggestions of how to rebuild the UK’s economic strategy to make a success of this decisive decade.

Helen Ward, Editor
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2021 Nobel
laureates
done for us?

**E M P
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How Pelé
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Reports of domestic abuse rise after football matches. **Ria Ivandic, Tom Kirchmaier** and **Neus Torres Blas** find that binge drinking is the key factor – with alcohol-linked violence against live-in partners happening more often on match days.

Football, alcohol and domestic abuse

The first instances of violence associated with football can be traced back to 14th century England. In 1314, King Edward II banned football in London (the game at the time was played with a pig's bladder as a ball) due to the disruption it was causing.

Fast forward to modern times and concerns around football hooliganism in England peaked in the 1980s, leading to the Football Spectators Act 1989, which introduced specific football-related offences and the ability to ban individuals from attending matches. The act was strengthened 11 years later after violent clashes during Euro 2000. Since then, the violence around football has reduced and it is now largely considered a thing of the

past. But while public and visible violence around stadiums may have lessened, has it moved to the more private sphere of the home?

Ann, a victim of domestic violence, described her experiences: 'I used to dread the World Cup 'cos he wasn't a drinker my husband but could guarantee come the World Cup he'd drink, 'cos he'd be with all his friends watching it at whoever's house, mine, in pub, wherever, and that's where he drinks and he get even nastier when he's had a drink, not a very nice person.' (Swallow, 2017).

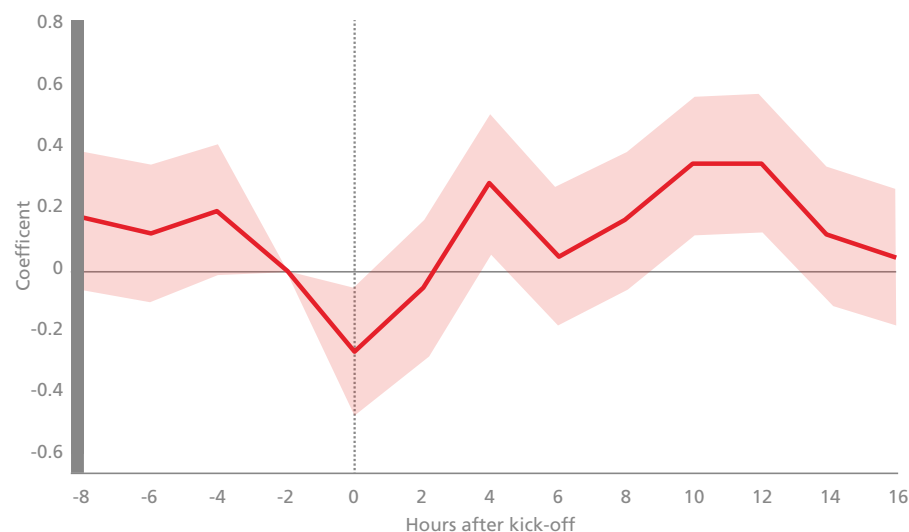
Police forces around the world have identified surges in domestic abuse reports following big sporting events in national and international competitions, like the football World Cup. But the existence

of a causal link between football and domestic abuse, and the mechanisms through which it runs, have not been comprehensively studied.

We use detailed data to estimate whether football triggers certain people to commit domestic abuse, and consequently, what are the hourly dynamics of violence against intimate partners during and after a game. We also investigate the channels through which perpetrators of domestic abuse are triggered by football – whether through heightened emotional states or increased alcohol consumption.

Our research uses detailed and confidential high-frequency administrative data from the UK's Greater Manchester police force, combining five datasets on domestic abuse calls and crimes over an

Figure 1:
Hourly effects of a football match on current partner domestic abuse



which domestic abuse levels return to their pre-game state (see Figure 1). This pattern shows that potential perpetrators give their attention to the game during that time.

After the match, domestic abuse incidents start growing by 5% every two hours in the first four hours following the game. The highest increases in magnitude (8.5%) occur 10 to 12 hours after the start of the game and then the effect disappears around 16 hours after the game.

We use the detailed information on the type of relationship, and victim and perpetrator characteristics to understand the conditions under which the rise in abuse occurs. As Figure 2 shows, we find that domestic abuse between ex-partners is not affected by football. Similarly, abuse committed by a woman perpetrator remains unchanged. Hence, the changes in domestic abuse are driven by abuse between current partners at home in the aftermath of the game, and are

eight-year period. These records contain the timing, location, description, type of relationship, information on the victim and the perpetrator, including whether they were under the influence of alcohol or drugs.

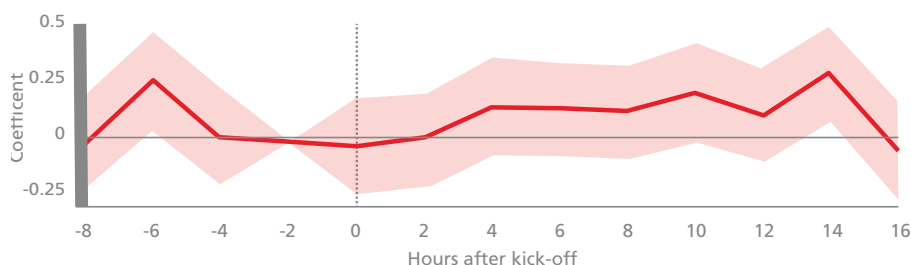
The novelty of these data allows us to investigate the channels through which football affects domestic abuse with great precision. We complement this with data on all matches involving Manchester United and Manchester City in different tournaments held between April 2012 and June 2019 – amounting to almost 800 games – with detailed data on the timing, location, result and pre-game expectations about the result of the game.

Our research design uses an event study to analyse whether there is a statistically significant change in the incidence of domestic abuse during or after football matches. To estimate the effect of the games, we calculate the expected rate of domestic abuse at any one time assuming it would have evolved similarly over time as it did in the past, in the absence of the game.

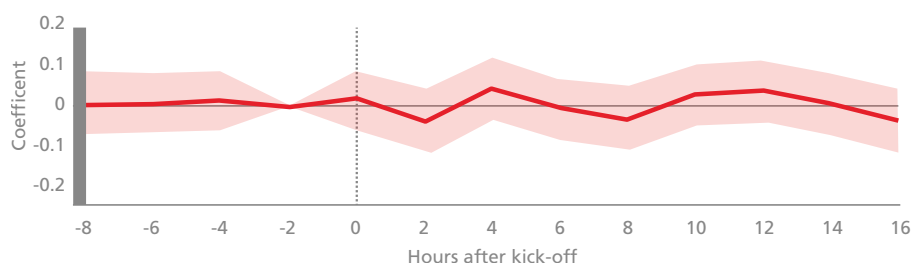
The immediate effect of a football match is a decrease of 5% in domestic abuse incidents (in absolute terms about 0.25 fewer incidents) during the game, compared with two hours before the game. This initial decrease lasts for the two-hour duration of the game, after

Figure 2:
Domestic abuse incidence broken down by type of relationship

Ex-partners



Women perpetrator on male victim



Domestic abuse starts increasing after a football match and peaks at about 8.5% more incidents than average around 10 hours after the game started

driven exclusively by male perpetrators on female victims.

Understanding why football matches lead to domestic abuse can have important implications for public policy actions such as how to organise games or how to design information campaigns. Two main explanations have been put forward by previous research: strong emotional reactions caused by the game; and increased alcohol consumption.

The first argues that the increase in domestic abuse is caused by strong emotional reactions of football fans to the game, which are stronger after unexpected results due to the effect of reference dependence (Wann, 1993; Card and Dahl, 2011). If increased emotions are the main channel, then increases in domestic abuse should be seen immediately following the game and be stronger for unexpected results. But if alcohol is the main channel, then increases in domestic abuse should occur a few hours after a game and abuse by perpetrators who have not been drinking alcohol should not be affected.

We use detailed data on the pre-game expectations about the result of the game (betting odds from betting agencies) and detailed flags on whether the perpetrator was under the influence of drugs or alcohol to test these hypotheses. We classify a match as an upset loss if the

probability of winning assigned by the betting market was higher than 55%, yet the team lost the game; and we classify a match as an upset win if the probability of winning assigned by the betting market was lower than 45%, yet the team went on to win the game.

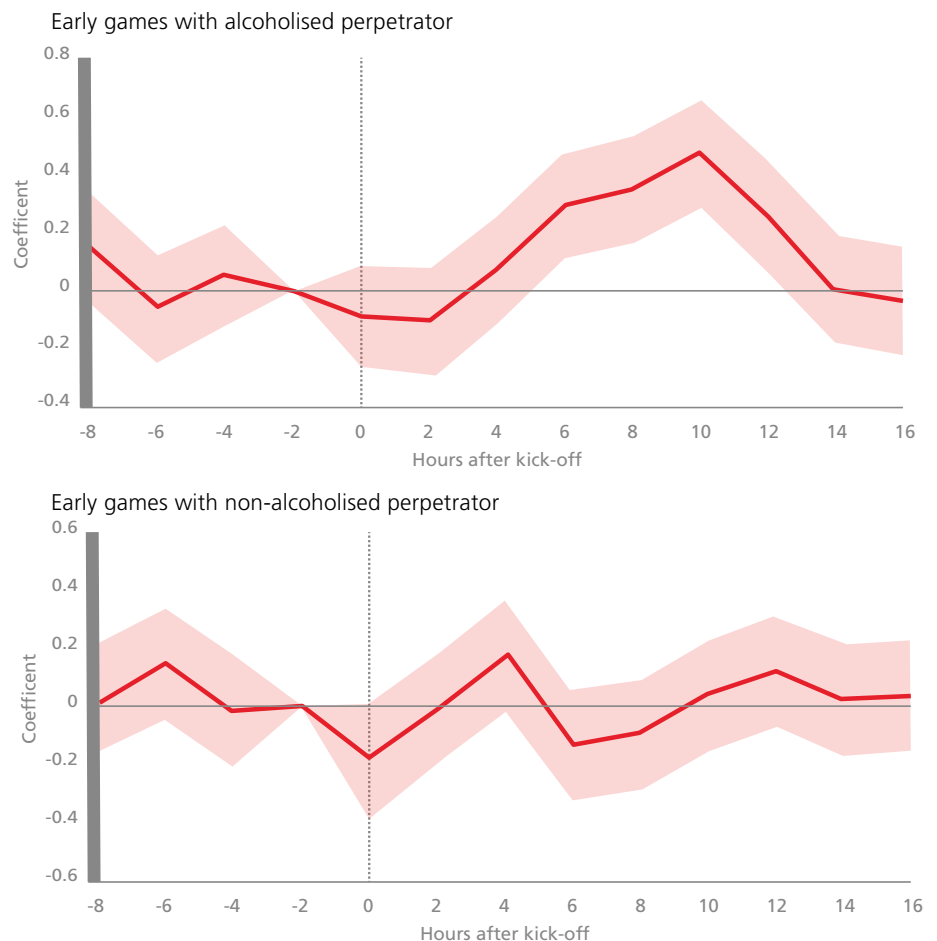
We do not find evidence that upset losses, those likeliest to induce the strongest negative emotional reaction, have any additional effects on domestic abuse incidence with or without alcohol. Moreover, we do not find any spikes in domestic abuse just after the game, hence our results do not confirm predictions on the importance of heightened emotions in triggering abuse.

To check whether football matches lead to domestic abuse through increased consumption of alcohol, we repeat our analysis looking at domestic abuse reports involving perpetrators who had been drinking alcohol and those who had not been drinking, across early games

It is not football itself that causes increased domestic abuse, but binge drinking by certain men

Figure 3 - continued overleaf:

Domestic abuse incidence broken down by the timing of the game and alcohol involvement



(starting before 6.30pm) and late games (after 6.30pm). We hypothesise that early games allow a longer time for drinking, as spectators would gather at a pub mid-afternoon before the start of the game and stay until closing time at 11pm.

We observe that following early games, domestic abuse incidents involving perpetrators who have been drinking alcohol start increasing after the first two hours after the match and keep increasing until they reach a maximum 10 hours later. At the peak, this equates to 0.5 incidents more than on similar non-match days, 25.3% more than average. The cumulative effect is an increase of 7.6% in all incidents over the 16-hour period. By contrast, we observe no effect when the perpetrator is sober, nor for late games.

Finally, it is important to emphasise that our research does not show that

football by itself causes domestic abuse. Football has no effect on domestic abuse dynamics of non-alcoholised perpetrators. Really, it is only through excessive consumption of alcohol that games trigger certain domestic abuse perpetrators.

This is also an important finding for policy-making as we discuss ways to reduce domestic abuse. Our research shows that a crucial way forward is to focus on policies that would reduce binge drinking, such as, but not limited to, scheduling games later in the day and reducing alcohol advertising associated with football. Moreover, our findings invite more research on whether policies, such as cognitive behavioural therapy for alcohol addicts, could mitigate the relationship between excessive alcoholisation and violent mental states.

This article summarises 'Football, Alcohol and Domestic Abuse' by Ria Ivandic, Tom Kirchmaier and Neus Torres-Blas, CEP Discussion Paper No. 1781 (<https://cep.lse.ac.uk/pubs/download/dp1781.pdf>).

Ria Ivandic is a lecturer in political economy at the University of Oxford and a postdoctoral research economist in CEP's community wellbeing and labour markets programmes.

Tom Kirchmaier is director of the policing and crime research group at CEP. **Neus Torres Blas** is a research assistant at CEP.

Further reading

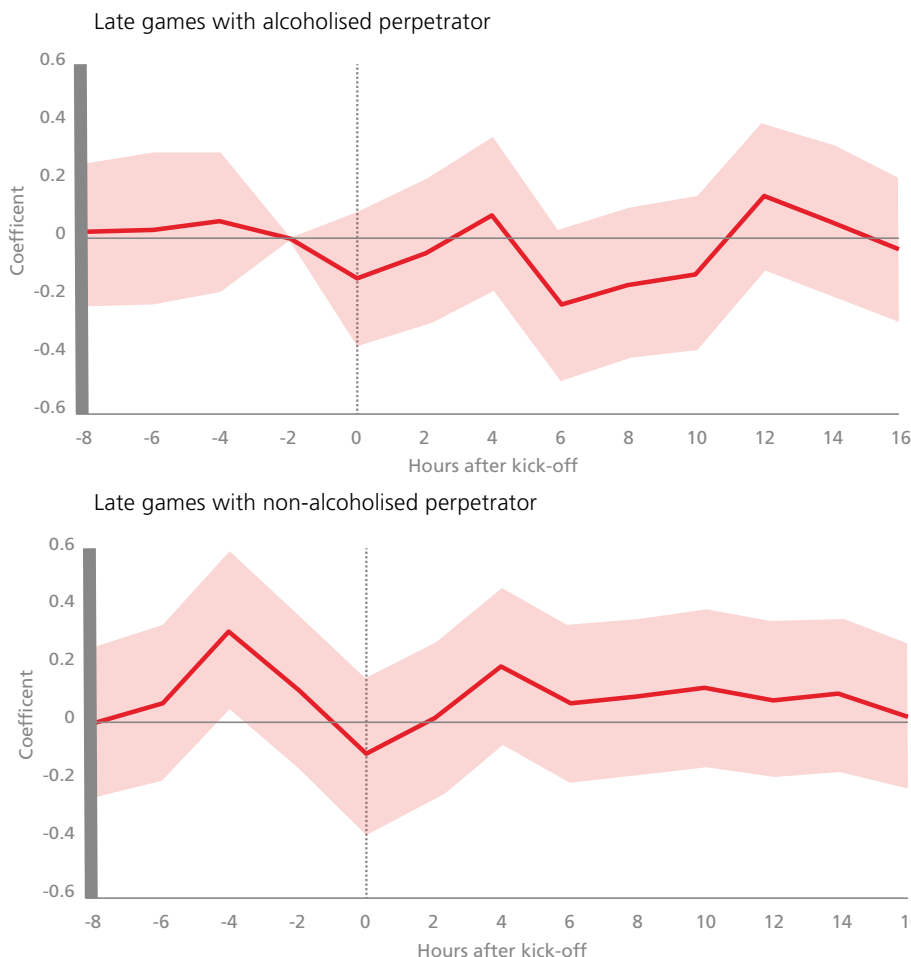
Jodie Swallow (2017) 'An Exploratory Study of Women's Experiences Regarding the Interplay between Domestic Violence and Abuse and Sports Events', University of Chester.

Daniel Wann (1993) 'Aggression among Highly Identified Spectators as a Function of Their Need To Maintain Positive Social Identity', *Journal of Sport and Social Issues* 17(2): 134-43.

David Card and Gordon Dahl (2011) 'Family Violence and Football: The Effect of Unexpected Emotional Cues on Violent Behavior', *Quarterly Journal of Economics* 126(1): 103-43

Figure 3:- continued

Domestic abuse incidence broken down by the timing of the game and alcohol involvement



Excessive consumption of alcohol rather than heightened emotions around football matches triggers domestic abuse

Tom Kirchmaier and Ria Ivandic worked with the LSE public affairs team to inform legislators about their research on domestic abuse.

Tackling domestic abuse: research into policy

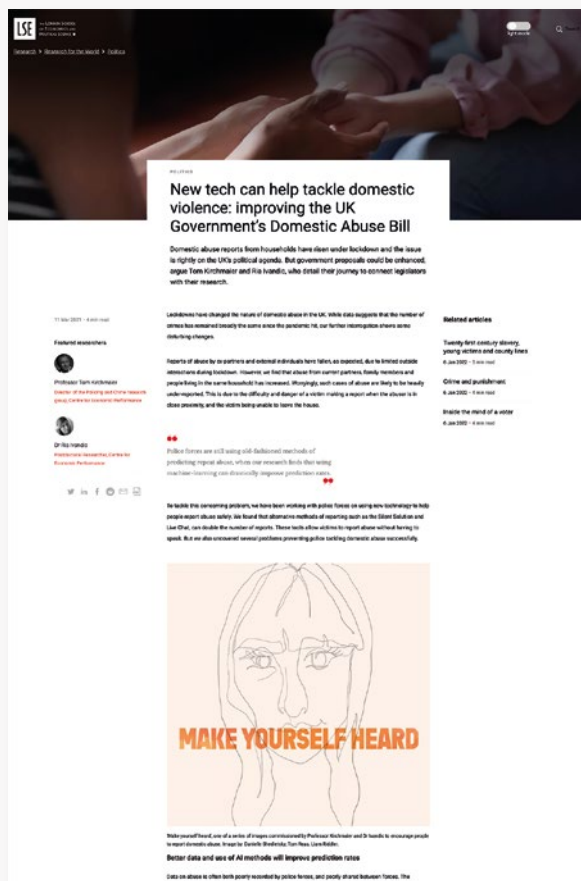
Lockdowns changed the nature of domestic abuse in the UK. While the number of crimes remained broadly the same, our research shows that abuse from current partners, family members and people living in the same household increased.

On a wider level, while police forces are still using old-fashioned methods of predicting repeat abuse, our research finds that using machine learning and better data can drastically improve prediction rates, and help the police to allocate resources quickly and more effectively.

When the Domestic Abuse Act 2021 passed through parliament, we worked with LSE's public affairs team to ensure that our findings were heard in the political debate around domestic abuse and in longer-term plans at the Home Office.

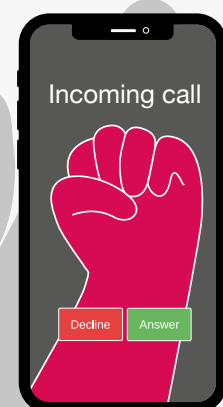
When the draft legislation was first introduced to parliament, we sent a briefing to MPs detailing our research and where improvements to the bill could be made. This was followed by meetings with MPs and members of the House of Lords. We were also invited to present our findings to the Greater London Authority's Police and Crime Committee, to discuss how they can contribute to change in the capital.

These meetings were fascinating, providing insight into the way policy-makers approach research. Politicians are adept at getting to the nub of issues quickly, and we were impressed at their interest and expertise. We were delighted, following this, to be asked to contribute to the government's domestic abuse strategy. This will ensure that our findings are properly captured in the Home Office's future work.



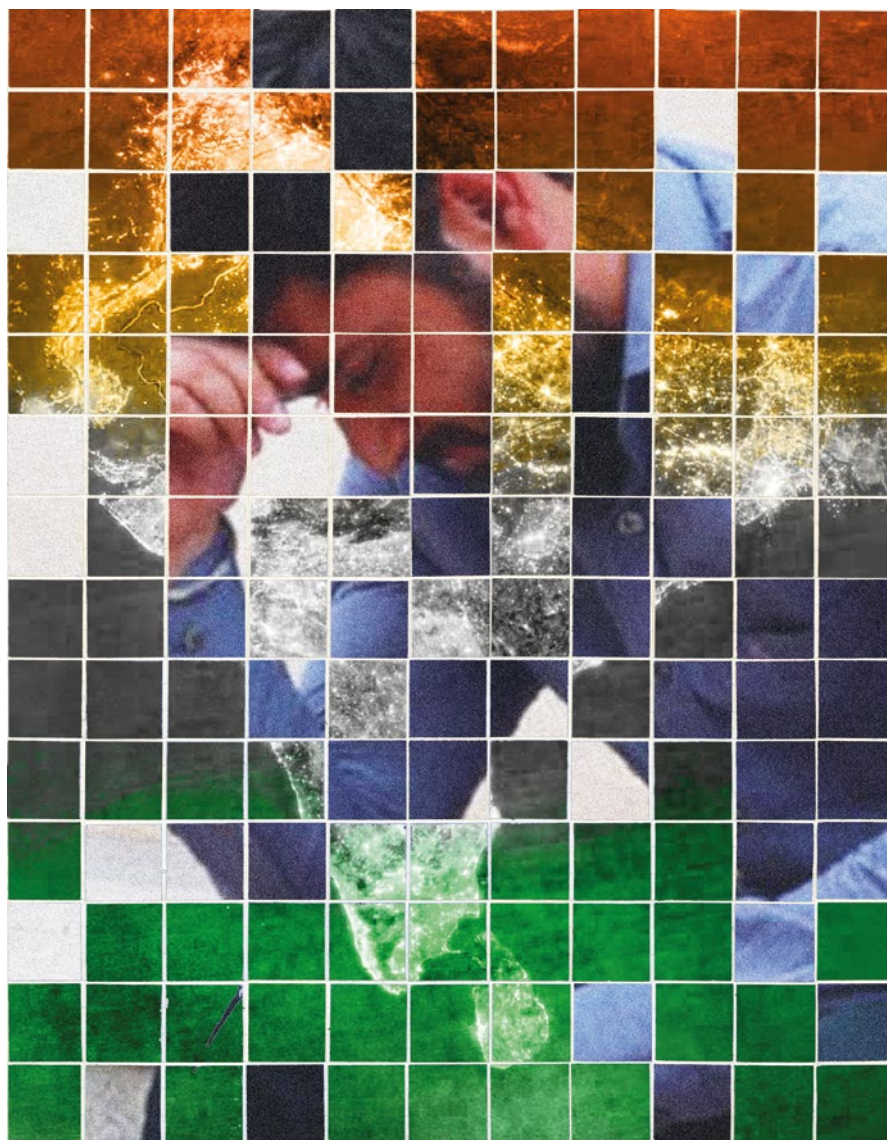
This is a shortened version of an article that first appeared in the LSE's *Research for the World* magazine (<https://www.lse.ac.uk/research/research-for-the-world/politics/new-tech-can-help-tackle-domestic-violence-improving-the-uk-governments-domestic-abuse-bill>)

Ria Ivandic, Tom Kirchmaier and Ben Linton (2021) 'The Role of Exposure in Domestic Abuse Victimization: Evidence from the COVID-19 Lockdown', (<https://ssrn.com/abstract=3686873>).



India has been hit hard by the pandemic, particularly during the second wave of the virus in the spring of 2021. **Swati Dhingra** and **Maitreesh Ghatak** reveal how the largest drop in GDP in the country's history may still underestimate the economic damage experienced by the poorest households.

India: the economic impact of Covid-19



From April to June 2020, India's GDP dropped by a massive 24.4%. According to the national income estimates published in May 2021, the economy contracted by a further 7.4% from July to September 2020 and the subsequent recovery in the following six months was weak, meaning that the overall rate of contraction in India was (in real terms) 7.3% for the whole 2020/21 financial year.

In the post-independence period, India's national income had declined only four times before 2020 – in 1958, 1966, 1973 and 1980 – with the largest drop in 1980 (5.2%). This means that 2020/21 is the worst year in terms of economic contraction in the country's history, and much worse than the overall contraction in the world (Figure 1).

The decline is solely responsible for reversing the trend in global inequality, which had been falling but has now started to rise again after three decades.

While economies worldwide have been hit hard, India has suffered one of the largest contractions. During the 2020/21 financial year, the rates of decline in GDP for the world were 3.3% and 2.2% for emerging market and developing economies. The fact that India's growth rate of 4% in 2019 was higher than 3.6% in similar countries and 2.8% for the world, makes the drop due to Covid-19 even more noticeable.

Comparing national unemployment rates in 2020, India's rate of 7.1% indicates that it has performed relatively poorly – both in terms of the world average (6.5%) and compared with a set of reference group economies with similar per capita incomes (6.4%). Unemployment rates were more muted within the reference group economies and were also kept low by generous labour market policies to keep people in work.

Despite the scale of the pandemic, additional funding for various social safety measures has been relatively low in India compared with other countries. The country might look comparable to the reference group in non-health sector measures with a 3% rise in above-the-line additional non-health sector fiscal measures, compared to 2.8% for the reference group. But the additional health sector fiscal measures are 0.4%, less than half those in the reference group (0.9%). More worryingly, the Indian government's announced allocation in the 2021 budget for such measures does not show an increase, once inflation is taken into account.

How has Covid-19 changed income, consumption, poverty and unemployment in India?

While the macroeconomic statistics provide a snapshot of India's economic position, they hide the large and unequal effects on households and workers within the country. Both wealth and income inequality have been on the rise in India. Estimates suggest that in 2020, the top 1% of the population held 42.5% of the total wealth, while the bottom 50% had only 2.5% of the total wealth. Post-pandemic, the number of poor in India is projected to have more than doubled and the number of people in the middle class to have fallen by a third.

During India's first stringent national lockdown between April and May 2020, individual income dropped by

The pandemic has brought severe economic hardship, especially to the young who are over-represented in informal work

approximately 40%. The bottom decile of households lost three months' worth of income.

Microdata from the largest private survey in India, Centre for Monitoring Indian Economy's 'Consumer Pyramids Household Survey' (CPHS), show that per capita consumption spending dropped by more than GDP, and did not return to pre-lockdown levels during periods of reduced social distancing. Average per capita consumption spending continued to be more than 20% lower after the first lockdown (in August 2020 compared with August 2019), and remained 15% lower year-on-year by the end of 2020.

Official poverty data are unavailable, and the CPHS data come with a caveat of 'top' and 'bottom' exclusions. For example, official statistics show a rural headcount ratio of 35% in 2017/18. But the CPHS data estimate it at 25%, which suggests exclusions at the lower end of the consumption distribution.

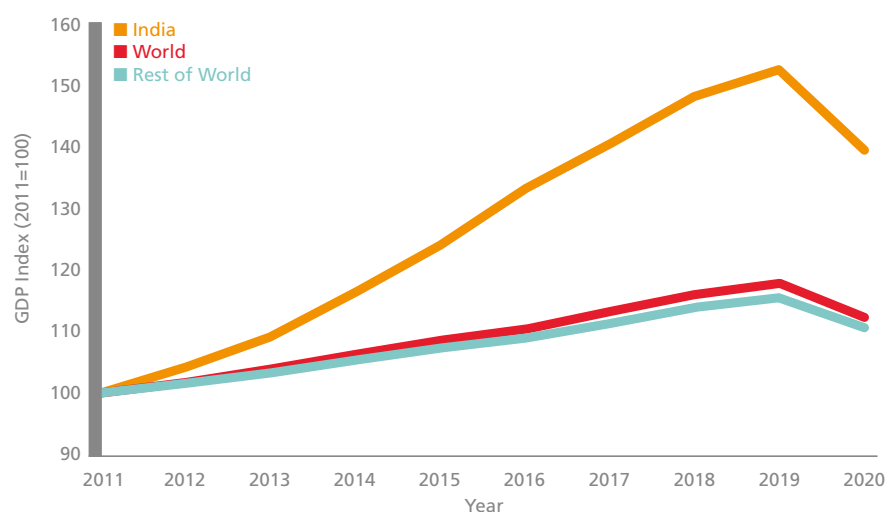
Despite these statistical concerns,

the CPHS does provide consumption numbers for a large sample of individuals, which can provide insights into changes in consumption levels arising from the pandemic. The current rural poverty line is set at 1,600 rupees (£15.50) per month or over, and the urban poverty line is 2,400 rupees per month (£23.37) or over.

Based on the latest CPHS data, rural poverty increased by 9.3 percentage points and urban poverty by over 11.7 percentage points year-on-year from December 2019 to December 2020. Earlier months of the CPHS show rural poverty increased by 14.2 percentage points and urban poverty by 18.1 percentage points year-on-year from August 2019 to August 2020. Yet the actual increase in poverty due to Covid-19 is likely to be higher than the CPHS data suggest, as indicated by other surveys. Despite the general trend of reduction in poverty, an estimated 230 million people in India have fallen into poverty due to the first wave of the pandemic.

Figure 1:

Economic contraction in India and the world during Covid-19



Source: *World Economic Outlook*, International Monetary Fund, April 2021.

Note: Gross domestic product (GDP) per capita, constant prices is measured at purchasing power parity, 2017 international dollars. GDP per capita of each series is normalised to 100 in 2011. Population-weighted average is the aggregation method.

The pandemic has heightened the risk of young people becoming long-term unemployed

Households in the middle of the pre-Covid-19 CPHS consumption distribution saw large drops in spending after the first wave of the pandemic, helping to create a new set of people entering poverty. The percentage of poor people in the second lowest quintile of pre-Covid-19 consumption jumped from 32% to 60% within a year. This was driven largely by rural areas, where the headcount ratio for the second quintile almost doubled.

In urban areas, the poverty line is set higher due to greater living costs and 72% of people in the second quintile of the urban income distribution were below this poverty line before the pandemic. Within a year, they were joined in urban poverty by many who had higher incomes before. Half of people in the third quintile and 29% of people in the fourth quintile fell below the poverty line after the pandemic.

This sharp rise in poverty after the first lockdown is consistent with a variety of surveys that highlighted the depth of the crisis. The year-on-year urban unemployment rate jumped from 8.8% in April to June 2019 to a staggering 20.8% in April to June 2020. The pandemic has brought severe economic hardship, especially to young individuals who are over-represented in informal work. India has a large share of young people in its workforce and the pandemic has put them at heightened risk of long-term unemployment. This has negative impacts on lifelong earnings and employment prospects.

A CEP study analyses the depth of continuing joblessness among younger workers in the low-income states of Bihar, Jharkhand and Uttar Pradesh (Dhingra and Kondirolli, 2021). The first round of the survey randomly sampled urban workers

aged 18-40 during the first lockdown quarter, finding that a majority of those who had work before the pandemic were left with no work or no pay. After the first lockdown in April to June 2020, 81% had no work or pay at all.

Ten months on from the first lockdown quarter, 8% of the sample continued to be out of work, another 8% were working zero hours, and 40% had no work or no pay. The rate of no work or no pay was higher (at 47%) among the youngest low-income individuals (those aged 18-25 who had below median pre-Covid-19 earnings). The recovery after the first wave was too muted to get many young Indian workers back into employment. For example, rural migrants continued to be reluctant to return to work in urban areas even before the second wave hit. And the second wave, which started in mid-February and appeared to be flattening out in June 2021, heightened these risks of long-term unemployment by increasing the spells of economic inactivity.

What do public health indicators reveal about the impact of Covid-19 on India's economy?

To avoid another livelihood crisis, India turned to local lockdowns during the second wave of the pandemic. Before the second wave, India's public health performance (in terms of confirmed cases and confirmed deaths), while not the best, was ahead of several reference group countries. But the second wave has made India's position significantly worse. The total confirmed cases per million now are comparable to those in the rest of the world and the rate of vaccination is lower in India.

While death rates seem lower in India, there is massive underreporting. After accounting for the underreporting within official statistics, India's total confirmed cases and deaths might exceed that of the rest of the world by a large margin.

In the conservative scenario, the total confirmed cases per million are about 13 times larger than in the rest of the world, and the total confirmed deaths per million are about 85% of that in the rest of the world. In the worst-case scenario, India is far behind the rest of the world.

There is an important caveat: while the focus of this article is on India, underreporting of Covid-19 cases and deaths is prevalent globally.

How has India fared so far?

About two years have passed since India's first national lockdown was announced. There was talk of a trade-off between lives and livelihoods when the Covid-19 crisis erupted. As India struggled with the second wave, it became clear that the country did poorly in both dimensions.

While India's policy response was strong in terms of some aspects of lockdown stringency, it was ineffective in dealing with the public health and economic aspects of the crisis. What's more, it failed to limit the damaging impact of the crisis on the most vulnerable sections of the population. While expenditure on public services expanded after the second wave, the latest figures show GDP and labour force participation remain lower than their pre-pandemic levels.

Swati Dhingra is an associate professor of economics at LSE and a research associate in CEP's trade programme. **Maitreesh Ghatak** is a professor of economics at LSE and director of the development economics programme at STICERD, LSE.

Dr Dhingra thanks the ERC for Starting Grant 760037.

The authors would like to thank Ramya Raghavan and Fjolla Kondirolli for research assistance.

The original version of this article was published on the Economics Observatory in June 2021 (<https://www.economicsobservatory.com/how-has-covid-19-affected-indias-economy>).

Further reading

Swati Dhingra and Fjolla Kondirolli (2021) 'City of Dreams No More, a Year On: Worklessness and Active Labour Market Policies in Urban India', CEP Covid-19 Analysis Series No. 22 (<https://cep.lse.ac.uk/pubs/download/cepcovid-19-022.pdf>).

India's GDP dropped by 7.3% for the whole 2020/21 financial year – the worst yearly economic contraction in the country's history

The UK has seen a rapid increase in self-employed workers over the last two decades, but only one-third are women. **Sarah Flèche** and colleagues analyse data on lottery winners to show that improving women's access to capital could help reduce the gender gap in entrepreneurial activity.

What lottery wins reveal about the gender gap

Over the last two decades, self-employment in the UK has grown steadily, from about three million in December 2000 to a peak of more than five million at the beginning of 2020. But during this time, men have consistently been more likely to become self-employed than women.

According to the Office for National Statistics (ONS), in 2018 only 33% of self-employed workers were women. The UK is not an exception: men are substantially

more likely to become self-employed than women in all developed countries.

Self-employed workers have been hit particularly hard by the pandemic (Blundell and Machin, 2020) and among the self-employed, women have been more likely to suffer from the crisis than their male counterparts. Therefore, the entrepreneurial gender gap in the UK has widened – in 2021 just 30% of self-employed workers were women.

This raises two important questions: what causes the gender gap in self-

employment; and how do we close it?

There have been many contributions to understanding the determinants of self-employment. Previous studies have emphasised the importance of capital as one of the main factors. Others include individuals' desire for flexibility, as well as personality traits such as risk tolerance.

Women's reasons for entering self-employment might differ from those of men. Yet researchers have paid less attention to why women are less likely to become entrepreneurs.



Lottery pay-outs increase the probability of winners becoming self-employed

Lottery wins boost the likelihood of self-employment

In our research, we explore whether limited access to capital is one important barrier to entry for aspiring women entrepreneurs. We use data from the British Household Panel Survey (BHPS), a survey that follows the same representative sample of people over a period of years, between 1997 and 2008 to investigate whether lottery wins affect women's propensity to become self-employed.

Lottery wins provide a setting that is as close as possible to a natural experiment: conditional on winning, the amount of money won in the lottery is assumed to be randomly distributed across lottery winners.

Hence, the nature of lottery gains allows us to test whether an increase in capital has an effect on the probability of women becoming self-employed and whether this effect is the same in terms of direction and magnitude across genders.

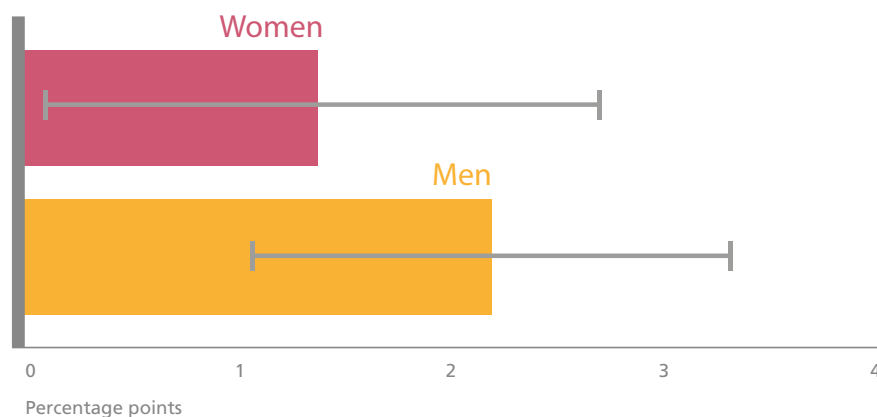
Much is at stake. Many countries, such as France, the UK, Germany and others, have implemented government programmes aimed at providing financial support to individuals who want to become self-employed. It is crucial to understand whether these policies will be efficient in increasing women's propensity to become entrepreneurs and help to reduce the entrepreneurial gender gap.

We find that lottery gains predict a significant increase in the probability of being self-employed. Seen through the lens of the theory of capital constraints on potential entrepreneurs, this result is not surprising: lottery gains are new resources that can be used.

We also find that the effect of lottery gains on the probability of being an entrepreneur is the same for men



Figure 1:
Effects of being in the top 25% lottery winners on the probability of self-employment the following year



Source: British Household Panel Survey (1997-2008)

Notes: The figure represents the total effect of being in the top 25% winners of the lottery in year t-1 on the probability of self-employment in year t by gender (using an interaction term to capture gender differences). The regression is estimated using logit models and random fixed effects. Control variables include age, age squared, the log of real household income, dummies for marital status, dummies for self-reported health, education dummies, home ownership, the number of days spent in hospital in year t-1 and the number of dependent children. Sample: individuals aged between 16 and 65 and who report at least one lottery win in year t-1. The bars show standard errors at the 10% level of significance.

Increasing women's access to capital could reduce the gender gap in entrepreneurship

and women on average. This suggests that capital constraints matter as much to women as men in determining the decision of whether to enter self-employment.

In terms of magnitude, the top 25% winners (an average win = £831.16) in any one year are significantly more likely to be self-employed in the following year, than winners of smaller amounts. Moreover, the increased probability of becoming self-employed is approximately 2.2 percentage points for men and 1.4 percentage points for women (see Figure 1): the difference is not statistically significant. Note that these are substantial effects: they are approximately 20-30% of the entrepreneurial gender gap, as there are only 4% of women compared with 12.7% of men (using the entire working-age population) that are self-employed in the BHPS between 1997 and 2008.

These results also hold when we restrict the sample to individuals not already self-employed in the year of the lottery win.

Access to capital matters

An extensive body of research (including Muravyev et al, 2009; OECD, 2012) has shown that access to capital varies substantially by gender. Other things being equal, it is more difficult for women to get an entrepreneurial project funded. Consequently, our results imply that if lottery gains increase women's probability of being an entrepreneur, increasing women's access to capital should, in principle, reduce the gender gap in entrepreneurship.

We do not find any significant differences across age, education, household income, marital status, parenthood or home ownership status. Overall, men are significantly more likely than women to be self-employed across all groups.

Nonetheless, we notice that lottery wins have a stronger effect on the likelihood of becoming self-employed for women who are aged 40 and above, with low levels of education and income (below the median), with a partner or a husband, with children and who own their house, compared to other women. This could suggest that for these women, self-employment can be seen as a substitute for part-time work or labour market inactivity, allowing them to have more

Access to capital matters for women's decisions to become entrepreneurs as much as for men's

flexibility and greater opportunity to deal with household/childcare responsibilities.

We also test whether being married or cohabiting with someone who wins the lottery matters. We find little evidence that a win increases the probability of self-employment in the following year for the spouse. Hence, effect of lottery wins on self-employment is only present among the winners.

We believe that our results provide a promising first step in highlighting how access to capital matters for women's decisions to become entrepreneurs. Although women's decisions to enter self-employment could depend on non-pecuniary factors (such as flexibility and the opportunity to work from home), policy-makers who wish to narrow the entrepreneurial gender gap should also consider the role of liquidity constraints – which are likely to be stronger for the aspiring women entrepreneurs than they are for men.

Of course, our study has limitations. Although lottery gains are randomly distributed among winners, lottery players are likely to have unobservable characteristics significantly different from the rest of the population. While this is not a problem for the internal validity of our study, its external validity might be somehow limited, as only slightly more than half of the UK adult population plays the lottery.

This article summaries 'The Importance of Capital in Closing the Entrepreneurial Gender Gap: A Longitudinal Study of Lottery Wins', published in the *Journal of Economic Behavior and Organization* 188: 591-607 (<https://www.sciencedirect.com/science/article/pii/S0167268121002304?dgcid=coauthor>).

Sarah Flèche of the Sorbonne Economics Centre, Paris, is a research associate in CEP's community wellbeing programme. **Anthony Lepinteur** is at the University of Luxembourg. **Nattavudh Powdthavee** is at Warwick Business School.

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The 2021 Nobel Prize in Economic Sciences was awarded to David Card, Joshua Angrist and Guido Imbens. **Jörn-Steffen Pischke** explains how the use of natural experiments in empirical economics, work in which they were pioneers, has ushered in much progress in the analysis of causal relationships, transforming the study of key policy challenges, including education, immigration and the minimum wage.

What have the 2021 Nobel laureates done for us?

Once, naively, asked Alan Krueger about the pioneers of natural experiments in economics. His somewhat sheepish answer was that this is like asking about the pioneers of rock music. It didn't take much research on my part to reveal the numerous protagonists of a movement in labour economics in the 1980s and 1990s that transformed the way empirical work is done in the field and in many areas of economics beyond.

Yet, like rock music, natural experiments have their Fab Four, and they are the 2021 Nobel laureates David Card, Joshua Angrist and Guido Imbens, plus the late Alan Krueger. I hope many will agree with me that this prize honours Krueger as well.

The important questions in economics are causal questions. How does immigration affect the labour market prospects of natives? What is the payoff to an additional year spent in school or to attending university? What are the effects of minimum wages on the employment prospects of low-skilled workers? But

these questions are difficult to answer because we lack the right counterfactuals.

For example, we don't know how natives would have fared had fewer immigrants arrived. Instead, we observe outcomes for the treatments that did occur – the levels of immigration that actually took place. The observed associations between realised treatments and outcomes may have three possible reasons:

- One is the actual causal effect of the variable of interest – for example, the impact of the arrival of immigrants on the wages of natives.
- Alternatively, causality could run the other way – for example, immigrants might settle in labour markets that are performing particularly well.
- The final possibility is that there may be a third variable (called a confounder) that is affecting both treatment and outcomes. In the case of the payoff to attending university, graduates may be more able or harder working than school leavers and

would have had higher earnings even if they hadn't gone to university.

The social science challenge is how to cut through these causality conundrums.

The primary methods that were to become the mainstays of the natural experimenters were well known to economists long ago. The key to uncovering causal effects is a clear-eyed view as to where the variation in the variable of interest comes from and a credible control group.

One method – differences-in-differences – is frequently used to analyse policy changes by comparing areas or groups, where some receive the treatment and others do not. The groups are tracked both before and after the policy change or intervention took place. By comparing changes over time in both the treatment and control groups, the groups don't have to be identical and yet time-varying confounders can be eliminated. It is enough that treatment and control groups evolve in a similar fashion.

The other method is instrumental variables. This links a source of variation, hopefully unrelated to outcomes and confounders, called the instrument, to the treatment, which in turn should affect the outcome. Instrumental variables can therefore be used to tease out causal effects and often lend themselves nicely to isolating variation stemming from natural experiments.

These methods were known and used by economists well before the 1980s. One example is Theodore Schultz's 1964 work on the 'surplus labour hypothesis'. Schultz wanted to estimate the marginal product of labour in an agricultural economy and used deaths in Indian provinces during the 1918-19 influenza epidemic as a shock to labour supply.

But work using natural experiments was still very much the exception. And the 1970s and 1980s were rather a dark age for empirical economics. Edward Leamer's plea to 'take the con out of econometrics' highlights the dismay felt at the time.

Many economists understood the problems of confounding and reverse causality, and that the approaches being used were often poorly suited to the task. Discontent was brewing. At Harvard, Richard Freeman was heavily influenced by Schultz's work. Freeman tried to emulate Schultz by using similar shocks in his own work, but didn't quite get to a point that his work can be classified as proper natural experiments.

But one of his PhD students, Alan Krueger, did. Krueger joined Princeton as an assistant professor in 1986 where he became a colleague of David Card; Joshua Angrist was a PhD student at the time. They were part of a group of young economists determined to do better and create more credible empirical work.

Card's study of the Mariel boatlift to measure the effect of immigration on native workers highlights the difference in approach between the work of this new generation and what came before. To circumvent the problem that immigrants might settle in well-performing labour markets, he looked at the arrival of Cuban émigrés in the Mariel boatlift in 1980. The Mariel Cubans all landed in Miami and many stayed put, adding about 7% to the city's labour force over a few months.

Card carefully compares outcomes for Miami natives in a simple differences-

in-differences analysis with a number of comparison cities, which resemble Miami but didn't receive a large inflow of immigrants. The evolution of earnings and unemployment rates of Miami residents was roughly similar to that in other cities, but the results are somewhat noisy and not fully conclusive. Nevertheless, the Mariel study remains a natural experiment par excellence and influenced many researchers at the time.

David Card and Alan Krueger may be best known for their work on minimum wages and in particular their analysis of the impact of an increase in the state minimum wage in New Jersey. They compare employment effects at fast food restaurants in New Jersey to those in neighbouring Pennsylvania in another differences-in-differences framework and find similar changes in employment. Maybe New Jersey and Pennsylvania were different in some way, that was why one state raised the minimum wage and not the other, and this effect offsets any employment decline. Card and Krueger address this concern by also

comparing restaurants charging different wages before the minimum wage increase within New Jersey with similar results.

One innovation of this minimum wage study was that they collected data using their own survey at a time when economists were almost exclusively relying on secondary data sources. Finding good new data sources or generating your own is now commonplace in empirical economics.

It turns out that the quality of the New Jersey data was not tremendously good, as was pointed out by critics. Card and Krueger improved on it by using administrative records in a re-analysis, which confirmed the results. Critically re-evaluating their own work, and building on it where necessary, is another hallmark of these authors.

All the studies just described use differences-in-differences, but a key tool of the natural experiment movement was the instrumental variables method. Its use is highlighted in the study by Angrist and Krueger of the returns to completing an additional year of school.

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An innovation of the minimum wage study was that the authors collected their own data



They exploit the nature of compulsory schooling laws in the United States, which stipulate that students can drop out of school as soon as they reach the compulsory schooling age (16 in many places), even when their birthday is in the middle of the school year. Since school entry is only once a year in September, date of birth generates variation in the time in school for those who decide to drop out as soon as they can. This leads Angrist and Krueger to use quarter of birth, which is available in the large public use samples of the US Censuses, as an instrument for years of schooling.

This study in particular stands out as a turning point in terms of the modern, thoughtful use of instrumental variables. Angrist and Krueger carefully back up the inherent assumptions with subsidiary empirical evidence. For example, the authors document that compulsory schooling laws affect school attendance in younger cohorts in the census in exactly the way expected, although these are not the main cohorts used in the analysis. They also show that quarter of birth primarily affects those with high school education and less, who should be affected by compulsory schooling laws, but not individuals who obtain more education. As in many of the key natural experiment studies, simple graphical evidence supports its story and this transparency is another key feature of the natural experiment movement.

One of the surprises of Angrist and Krueger's study of schooling was that instrumental variables actually revealed a higher payoff to schooling than a more naïve analysis. This is surprising because most analysts expected the naïve association to be too large because

we believe that those who would have higher earnings anyway are also the ones getting more schooling, biasing the naïve comparison upwards.

This is where the work of Angrist and Guido Imbens comes in. Both had just finished their PhDs and met as assistant professors at Harvard. Clearly, different individuals will have different benefits from an additional year of schooling. One person may have a guaranteed job in the family firm and so completing high school may matter little; while for someone else, it may be life changing. So, whose return to education are we measuring? Imbens and Angrist show that it is those individuals whose schooling is affected by the instrument.

In the Angrist and Krueger case, this consists of individuals who drop out early. Their study tells us little about completing a university degree. While we don't learn the earnings effect of a year of schooling for everyone and not for every year of schooling, the results from studies using instrumental variables are often particularly relevant for groups that are a concern for policy purposes.

The Angrist and Imbens analysis has played a key role in Card's interpretation of the literature on returns to schooling, and the insights have been used and extended by numerous researchers since. It also highlights that any single study will only provide partial results on a question.

The classic studies of these authors have not gone without their critics. In fact, all the research papers mentioned here have been meticulously dissected and re-analysed by others. This process has led to a better understanding of the methods used and to many methodological improvements. The Fab Four have been much involved in this process themselves. Lo and behold, and maybe surprisingly, many of the studies have stood up rather well to scrutiny.

The natural experiment methodology has swept through not just labour economics, but many other fields of economics. Some worried that we would soon run out of good natural experiments and that the methodology would lead to a focus on narrow, relatively unimportant, questions. Instead, the opposite seems to have happened: as more researchers use the methods, we come across more and more good settings to exploit. Good questions have attracted good answers.

Jörn-Steffen Pischke is professor of economics at LSE and a research associate in CEP's community wellbeing and labour markets programmes. This is an edited version of an article published at VoxEU in October 2021 (<https://voxeu.org/article/natural-experimenters-nobel-laureates-david-card-joshua-angrist-and-guido-imbens>).

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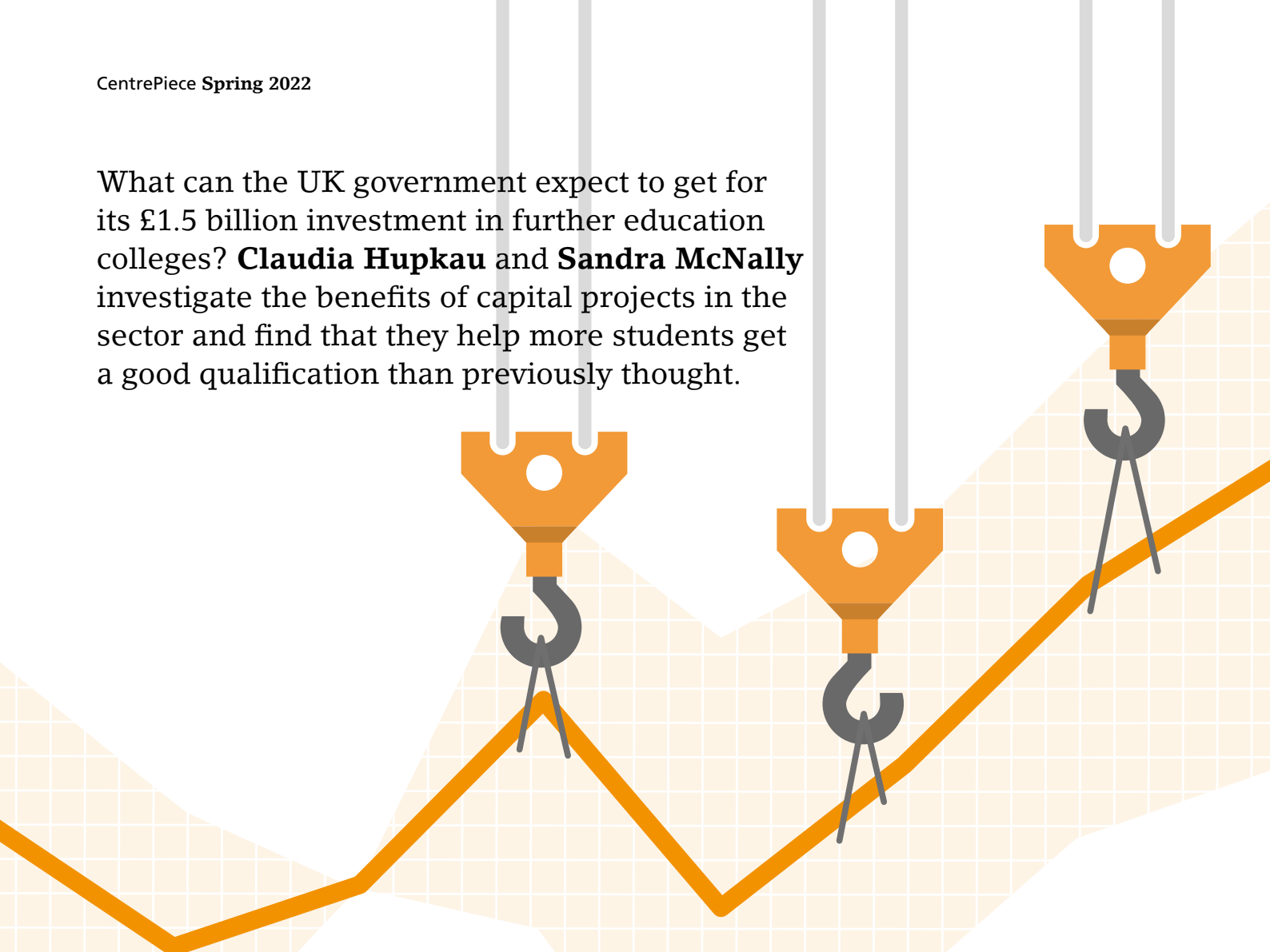
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Some have worried that we would soon run out of good natural experiments – instead, the opposite seems to have happened

What can the UK government expect to get for its £1.5 billion investment in further education colleges? **Claudia Hupkau** and **Sandra McNally** investigate the benefits of capital projects in the sector and find that they help more students get a good qualification than previously thought.



The effects of college capital projects on student outcomes

About half of school leavers in England attend institutions of further education (FE), although these FE colleges are often considered the poor relation of schools and universities, enrolling lower achieving students and spending less per student (Farquharson et al, 2021). Capital expenditure accounts for about 10% of FE college expenditure, and in the 2020 budget, the UK government committed £1.5 billion over five years to bring college facilities up to a good level.

Will this investment make much of a

difference to student outcomes? In new research (Hupkau et al, 2021), we suggest that it will help: getting more students to achieve a good upper secondary qualification, increasing enrolment in higher education and even improving employment outcomes.

This is a surprising, and welcome, finding. There is relatively little evidence about the effects of capital expenditure on educational outcomes at any stage of education. The current evidence is mostly from the United States and finds mixed results.

While of course there needs to be some general maintenance to buildings used for teaching and learning, it isn't obvious that large grants can be justified at a time when there are many demands on public expenditure. In fact, large capital programmes can be extremely disruptive while not necessarily leading to tangible improvements in educational outcomes over time. We set out to explore this issue in the context of investment in large capital projects in FE colleges in England.

We use information on capital expenditure programmes between 2006

and 2009, and link this to administrative data on individual educational and labour market outcomes up to 2017. Our strategy takes advantage of two features of the data and the way that the capital expenditure programme was implemented.

First, we have a rich dataset on student-level outcomes and characteristics, which allows us to control for prior attainment. Second, we can use the fact that not all capital expenditure programmes are undertaken at the same time to select a group of control students.

Comparing colleges

We focus on large capital projects only. We select treatment and control groups of colleges that invest in similar large capital expenditure projects (at different times) and examine later outcomes for students attending these colleges. Treatment colleges receive large capital grants between 2006 and 2009; control group colleges receive similar large grants, but after the time in which we look for effects (up to four years post grant approval).

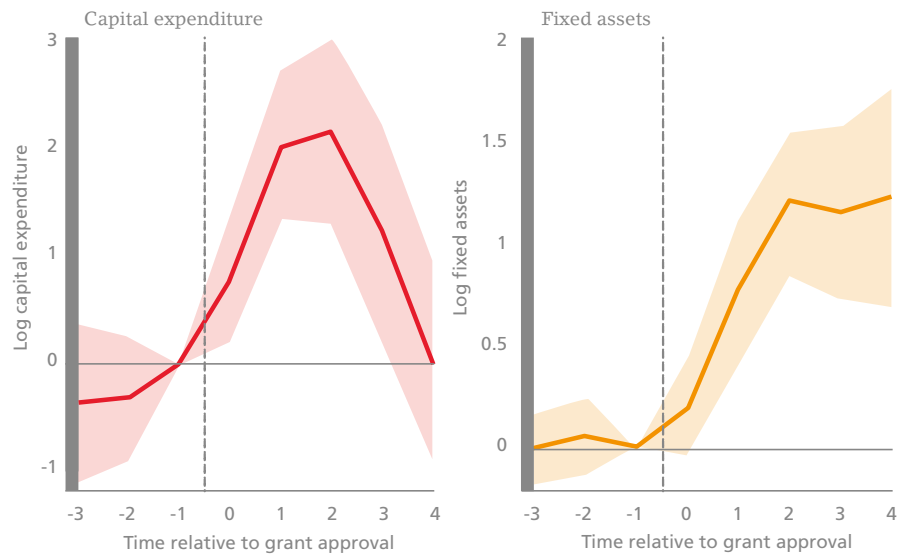
Figure 1 shows estimates of how the treatment and control groups of colleges differ in their capital expenditure and fixed assets between three years before the large capital grant was approved to four years afterwards. Before grant approval, they have similar levels of capital expenditure. Then, after grant approval, capital expenditure increases in treatment colleges for about three years, after which it goes back to the same level as in control colleges. This is reflected in an increasing level of fixed assets in treatment colleges, which then stabilise at a higher level relative to the control group.

Large capital grants do not change the number of full-time equivalent (FTE) students entering treatment colleges relative to the control group. But the composition of the student body changes. This is illustrated in Figure 2, where we see that the total number of students is unchanged (panel A) but students with better grades at GCSE enter treatment colleges about three years after they receive large capital grants (panel B).

The question then is whether we see an effect of large capital grants on student outcomes once we control for changes in the composition of intake. The answer is yes. Even once we take account of other variables (such as students'

Figure 1:

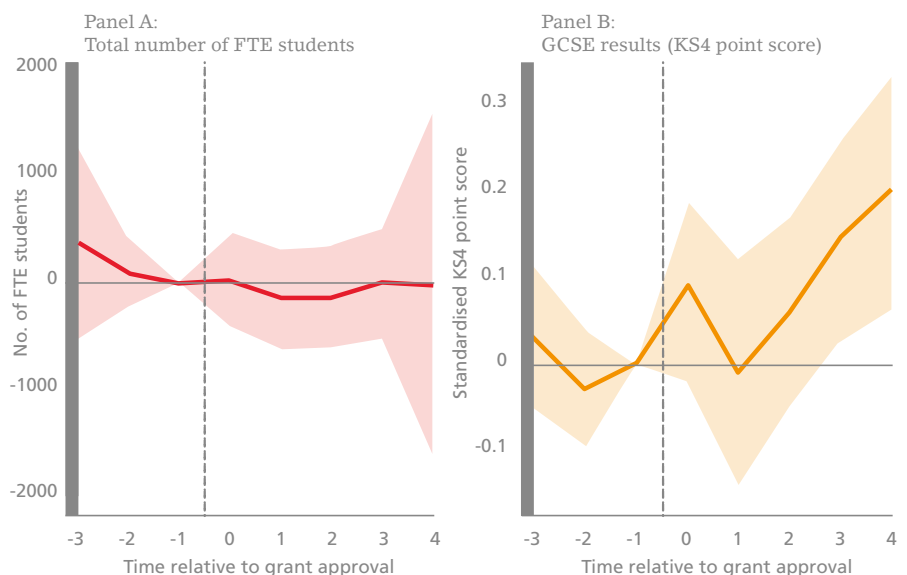
Project timing and college-level expenditure and fixed assets – treatment colleges relative to control colleges



Students at colleges that have benefited from large capital projects are more likely to go on to higher education

Figure 2:

Student numbers and composition before and after large capital grants – treatment colleges relative to control colleges



prior achievement), large capital grants lead to an increase of about four to five percentage points in the number of students enrolling in a level 3 qualification. This is a reasonably large effect. It is close to the effect of marginally achieving a good grade in the KS4 (GCSE) English exam, which has been shown to affect the probability of enrolling in a level 3 qualification by between 6.4 and nine percentage points (Machin et al, 2020).

Enrolling in a level 3 course matters because less than half of young learners entering FE colleges progress to these courses (Hupkau et al, 2016). Level 3 qualifications are associated with higher earnings (McIntosh and Morris, 2016) and are a pre-requisite for university.

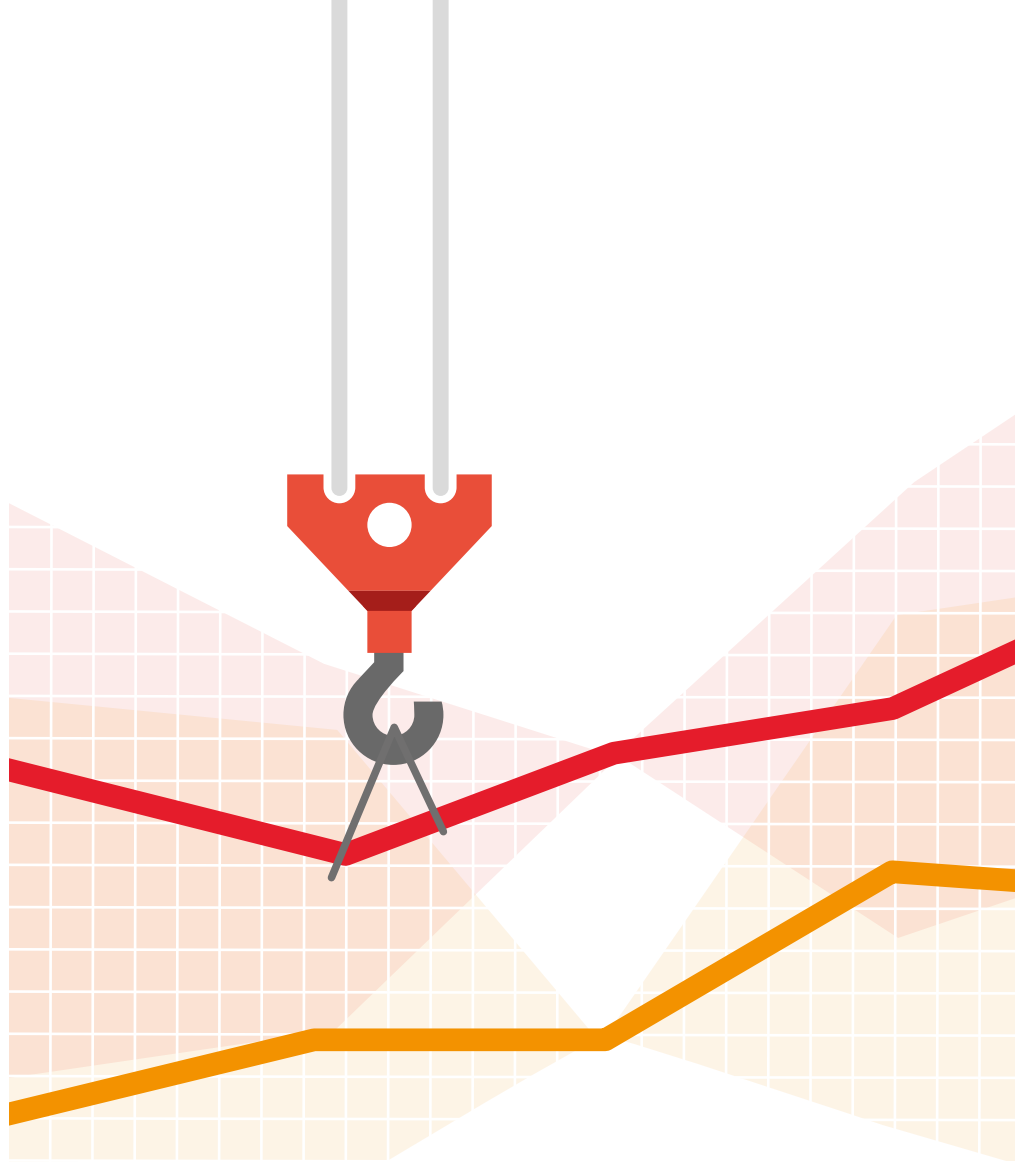
Conditional on enrolment, there is no effect of large capital grants on achievement rates at level 3. This is a good outcome because it shows that even though FE colleges with large capital grants manage to get more students on to level 3 courses, these students do not end up dropping out of their courses or otherwise failing to achieve their qualifications.

Higher education enrolment

Investment in capital projects also affects the probability of enrolling in higher education. Students that first attend treatment colleges about three years after grant approval are about five percentage points more likely to enter higher education at some point post-FE compared with those attending control colleges.

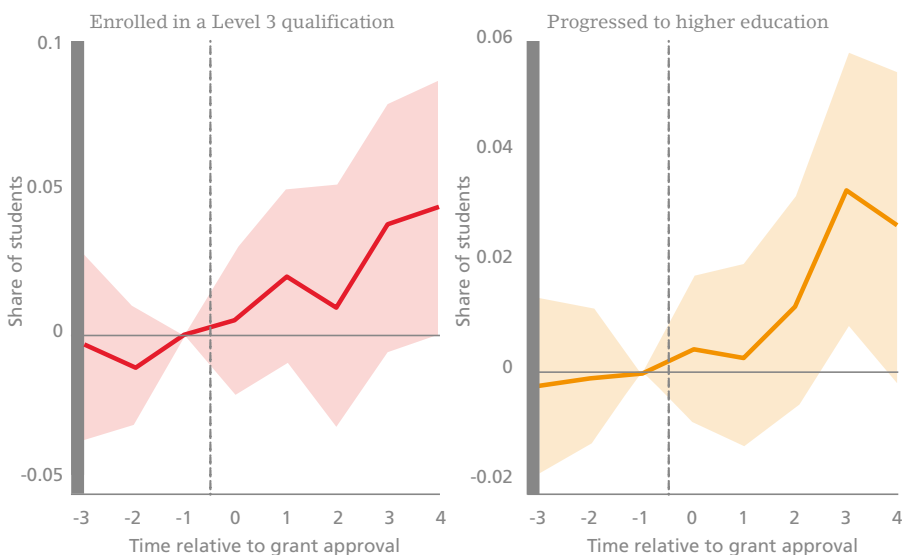
The magnitude of the effects goes down to about 3.4 percentage points after controlling for their GCSE results and demographics. Again, the magnitude of effect is within the same ballpark as effects shown by Machin et al (2020) for achieving a good grade in GCSE English. Furthermore, only about 28% of students in our sample progress to higher education – so changing this by over three percentage points is impressive.

Figure 3 illustrates effects for these two outcomes in an 'event study' framework. It shows an estimate of the effect of the grant approval for a capital project on outcomes over time (noting that before the approval, there should be no effect). After we take into account a student's previous achievement and demographics, there is no immediate difference in outcomes between treatment



Safe and clean classrooms – with no overcrowding, good lighting and heating – could lead to higher student and teacher morale and greater effort

Figure 3:
Project timing and educational outcomes



This article summarises 'The Effects of College Capital Projects on Student Outcomes' by Stephen Gibbons, Claudia Hupkau, Sandra McNally and Henry Overman, Centre for Vocational Education Research (CVER) Research Paper No. 35 (<https://cver.lse.ac.uk/textonly/cver/pubs/cverdp035.pdf>).

Stephen Gibbons is professor of economic geography at LSE, head of the department of geography and environment at LSE, and a CEP research associate. **Claudia Hupkau** is assistant professor in economics at CUNEF, Madrid, and a CEP research associate.

Sandra McNally is professor of economics at the University of Surrey, director of CEP's education and skills programme and director of CVER. **Henry Overman** is professor of economic geography at LSE and research director of CEP.

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and control colleges. Differences take about three years to emerge.

Our research shows that effects are usually larger for the largest grants. They also show that the positive effects on learning outcomes at FE college are also reflected in early labour market outcomes. After taking account of controls, students who attend FE colleges four years after the college received large capital grants are more likely to be in sustained employment than those who went to control colleges, by around one to two percentage points. Any effect on earnings is more uncertain, though the interpretation is complicated because large capital grants induce students to study for longer (by increasing the participation rate in higher education).

To summarise, large capital grants increase the probability of achieving better education and employment outcomes for those entering colleges around three years after grant approval (that is, when the project is likely to be completed). How could capital expenditure lead to these positive effects?

A visible effect on outcomes

First, spending on new equipment, laboratories or workshops may improve

learning on courses that rely on specific and costly assets (for example, engineering).

Second, better buildings may improve the learning experience. Safe and clean classrooms – with no overcrowding, good lighting and heating – could improve concentration and lead to higher student and teacher morale and greater effort.

Our study is one of very few to evaluate the effect of capital expenditure for students in post-secondary education. Our use of micro-data and our careful attention to causality allow us to go beyond the government's own analysis of FE capital expenditure (BIS, 2012) – which only found small effects on student numbers and no effect on achievement or retention. Our study suggests that these effects were underestimated.

Our results show that capital investment in college infrastructure has a visible effect on student outcomes within a reasonable timeframe. Investing in capital infrastructure can benefit many cohorts of students and is best considered a long-term investment. These results are, however, reassuring for policy-makers who may be more concerned about short-term returns as they show that for large capital projects, the benefits materialise as soon as the project is complete.

The probability that those entering FE colleges will achieve better education and employment outcomes rises around three years after grant approval

Can the shortages of workers reported by the UK's food and drink sector be solved by making it easier to hire migrants? How will wages in these sectors change? And is there a conflict between short- and long-term fixes? **Alan Manning** sets out the trade-offs involved in answering these questions.

UK labour shortages and immigration: looking at the evidence



Employer lobbying on worker shortages unsurprisingly tries to talk up the seriousness of the consequences, often using emotive images – fruit and vegetables left to rot in fields (or given away for free) or healthy pigs slaughtered on farms rather than at abattoirs.

These claims may be accurate but they could also be exaggerated. Employers are likely to present their case as being in the national interest, but first and foremost, what they are asking for is generally in

their interest. In many situations, what is 'best for business' is 'best for Britain', but not always. We would never have had the Equal Pay Act or the National Minimum Wage if we had uncritically accepted the arguments of business at the time suggesting that they were bad policies.

When immigration can be used to address labour shortages... and when it can't
Work migration policy cannot be used for generalised labour shortages.

Immigration increases the supply of labour but as migrants spend their earnings, it also raises the demand for labour; any gap between the supply and demand for labour is the same.

To think that migration is a possible solution to generalised labour shortages is to fall into the 'lump of labour' fallacy – the view that there are a fixed number of jobs in an economy. The mistake is often made in recessions by those who are generally hostile to immigration when arguing that immigration causes high

levels of unemployment. But it is also made by those favourably inclined to immigration in a booming labour market who argue for immigration to solve widespread labour shortages.

But work migration policy can and should be used to address some localised shortages. There are a number of questions to reflect on: how serious is the shortage, what is the cause of the shortage and is it sensible to address the shortage through migration policy?

How serious is the shortage?

Not all labour shortages are equally serious. The more serious ones include shortages of workers who deliver key products and services, so limiting economic activity in other sectors. Shortages of doctors are more serious than shortages of bar staff. And shortages of HGV drivers can cause bottlenecks in the economy when shortages of bar staff don't.

Even where shortages are not of great concern from the perspective of the economy as a whole, they may have serious implications for the affected businesses.

The causes of shortage

Sometimes a shortage occurs because there are not enough people able to do the job. In other cases, it is a shortage of people who want to do the job, almost always because of poor pay and/or conditions.

For some of the sectors complaining about shortages – agriculture, food processing, hospitality, social care – the basic problem is some combination of poor pay and conditions and low status, which mean that these sectors struggle to compete for local workers with other sectors and look to the government to provide them with a source of migrant labour with fewer options.

In the case of HGV drivers, the appropriate licence is needed and there seems to be a shortage of the suitably qualified. But there may also be some issues with pay and conditions; a former editor of *Trucking* magazine claims there are 600,000 people in the UK with the necessary licence who do not drive for a living. Understandably the sectors prefer to emphasise that the shortage is the result of the lack of necessary skills or an unfair perception of the quality of jobs rather than low pay.

These claims need to be evaluated

Work migration policy can, and should, be used to address some localised shortages

critically. Many of the affected sectors have long-standing issues with the recruitment and retention of workers, but these problems are more acute now. The pandemic is one cause. At the end of June 2021, there were still 1.9 million workers on furlough from 580,000 employers, some of them in the same sectors that are also reporting shortages.

Brexit has also played a role. The latest figures from the Office for National Statistics (ONS) suggest that the employment of European Union (EU) nationals fell from 2.5 million in January to March 2020 to 2.23 million in July to September 2021. The fall is among East European nationals. As workers from these countries are known to be more likely to work in the sectors complaining about shortages, these estimates, while subject to more uncertainty than usual, seem plausible.

It is understandable that many of these workers left the UK in the depths of the pandemic to move closer to family and where the cost of living is lower. Much of this would probably have happened even if the UK had remained in the EU. But now, as the economy reopens, it seems hard to persuade many of these workers

back to the UK. Even before the Brexit vote, the business model that relied on a steady stream of new migrants from Eastern Europe was probably running out of road; the EU was not expanding, and options at home and elsewhere in Europe were improving.

For HGV drivers one other important factor seems to be HMRC's IR35 rule, which has forced many drivers to swap (bogus) self-employment for employee status, resulting in falls in income of up to 25%.

Solutions to shortages

If the shortage is caused by a lack of people with the necessary skills, then the best long-term solution is to increase training. But if the shortage is acute and it takes time to train workers, migration is a very tempting stop-gap. The risk, however, is that allowing migration removes the pressure to train more and a temporary policy becomes a permanent one.

To give one example, in 2016, the Migration Advisory Committee considered whether nurses should be placed on the shortage occupation list (SOL) to receive priority in the allocation of work permits. The Department of Health (as it then was) argued that this was needed as a short-term measure before their ambitious plans to train more nurses came to fruition. To nobody's great surprise, this did not happen, and nurses remain on the SOL to this day.

For shortages in the food and drink sector, HGV driving stands out as the job where there might be a shortage of people with the necessary licence. But getting an HGV licence takes much less time than training to be a nurse or doctor; in normal times about eight to 10 weeks. The pandemic has led to a bottleneck in obtaining new licences. But the long-standing shortages in this sector are probably the result of a training model where workers have to find the time and money themselves and do not consider that the pay and conditions are worth it.

Where the shortage is caused by poor pay and/or conditions, the obvious solution is to improve them. That should increase the supply of people who want to work in the sector, but may also raise prices and reduce the demand for workers. There is a long-standing academic debate about the link between immigration and wages; the many current reports linking a lack of migrants to labour

Even before Brexit, the business model that relied on a steady stream of new migrants from Eastern Europe was probably running out of road

shortages and rising wages probably shifts the balance of evidence a bit towards the view that migration can sometimes affect pay.

But the economics leads us to expect bigger impacts in the short run than in the long run. Over time, business models adjust, leading to a smaller rise in wages. Workers in these sectors currently being offered higher wages might be well advised to take advantage of the current situation as it may not last forever.

Sectors where shortages are caused by poor pay, conditions and low status are unable to recruit and retain workers in the open labour market; people who could do these jobs vote with their feet and go elsewhere. This is why these sectors like visa schemes, which provide them with a ring-fenced supply of migrants who are unable to leave for more attractive jobs. These schemes need to be justified by an argument that one wants to give privileged access to labour for the sectors covered.

So far, the government has announced a handful of ring-fenced schemes – for drivers, poultry workers and pork butchers. These may be one-offs or the start of a new trend.

The return of the guest worker?

Temporary work permits for low-paid migrants are best thought of as a guest-worker programme, extensively used in many European countries in the 1950s and 1960s and still common in the Gulf, Singapore, Canada and Australia, among other countries. The phrase guest worker (translated from the German *gastarbeiter*) is a strange one – we normally think of a guest as someone we are doing something for, whereas this is really the other way round. Servant worker might be a better term.

The classic guest-worker scheme involves hiring migrants temporarily with no path to settlement, no right to bring dependents, on contracts with severely limited employment rights (for example, no right to change jobs) and very limited, if any, access to welfare benefits. The proposed new visas tick all these boxes.

The pros and cons of guest-worker schemes

It is reasonable to infer that guest-worker schemes are good for many employers, given how hard they lobby for it. The



schemes may be good for consumers of the products produced by the guest workers – either because they mean lower prices or, in crises, more availability. And the schemes may be good for the migrants if the only alternative is not to be able to migrate at all. Organisations like the World Bank have argued for more such schemes as an effective development policy.

But there is a trade-off. The worse the conditions under which the migrants are hired, the worse it is for the migrants, but probably the better it is for employers and their customers. And these schemes are probably not so good for any local workers who remain in the sectors – as pressure to improve pay and conditions is reduced or removed.

Guest workers are also a part of our society – while any individual worker may only be here a short time, there can be

large transient populations. These groups will almost certainly be the poorest people in our society, which becomes more unequal as a result.

Historically, there has also been a tendency for guest-worker programmes to become permanent. Although there is some work that is very seasonal, restricting the length of an employment contract is artificial in many cases. At the end of the visa period, the migrant wants to stay, the employer wants them to stay and there is lobbying for this to be possible. And once the length of stay increases, labour market rights are expanded – you can't keep people trapped in a job forever. And longer stays lead to demands to allow families and then access to welfare benefits, otherwise their children may grow up in extreme poverty.

With more rights, the migrants leave the sectors where the pay is so poor, some of them perhaps even become unemployed. Many of the guest workers who came in the 1960s went on to have high unemployment rates for a number of reasons: low skills, discrimination and poverty among them.

Conclusion

There are pros and cons to using migration to resolve shortages. They have to be understood to arrive at an informed decision; too often attitudes seem decided by whether someone is generally for or against immigration.

Visa schemes that provide low-pay sectors with a ring-fenced supply of migrants who are unable to leave for more attractive jobs need to be justified

This article first appeared on the LSE Business Review blog as: 'UK labour shortages and immigration: looking at the evidence' (<https://blogs.lse.ac.uk/businessreview/2021/09/10/uk-labour-shortages-and-immigration-looking-at-evidence/>) and 'Return of the guest worker: guest or servant?' (<https://blogs.lse.ac.uk/businessreview/2021/10/11/return-of-the-guest-worker-guest-or-servant/>).

Alan Manning is professor of economics at LSE and co-director of CEP's community wellbeing programme. His talk on the issue of labour shortages and migration, Pastures New, was part of the Economy 2030 Inquiry. The inquiry is being run jointly by CEP and the Resolution Foundation, and is funded by the Nuffield Foundation.

in brief...

How Pelé changed Brazilian football (again)

A ban on non-compete agreements in Brazilian football led to an increased lifetime income for players. But as research by **Bernardo Guimaraes, João Paulo Pessoa and Vladimir Ponczek** reveals, it was older players who gained the most, whereas the wages of young players fell.

Non-compete agreements, which temporarily prevent employees from competing with their previous employer, make it impossible – or at least very costly – for many workers to accept job offers in similar fields, firms or markets. It has been estimated that 18% of all US workers are currently bound by such clauses in their employment contracts. This figure rises to 39% for those with a professional degree and 46% for those earning over \$150,000 a year.

The prevalence of non-compete agreements has seen them become an important policy issue in recent years. Towards the end of 2020, for example, the UK government launched a public consultation about a possible ban on them.

The effects of non-compete clauses are theoretically mixed. On the one hand, they might be beneficial for strategic reasons, such as protecting trade secrets. On the other hand, they might adversely affect wages – and by imposing costs on labour mobility, they could hinder the efficient matching of employers and employees.

But how important are these effects? Perhaps surprisingly, football might well provide an answer. Generally, the labour market for footballers involves transfer fees. In August 2020, for example, Lionel Messi made public his intention to leave FC Barcelona. But since his contract was due to expire in 2021, a rival club would have had to pay a £630 million fee to sign Messi. Since no club was willing to pay such an astronomical sum, Messi decided to stay one more year and

(potentially) leave the club for nothing at the end of his contract.

Although it is now a common feature in the market for professional footballers, moving freely at the end of a contract was not always an option. Until 1995, clubs in the European Union could demand transfer fees even after the contract had expired. It was only when the Belgian midfielder Jean-Marc Bosman successfully challenged the legality of this state of affairs via the European Court of Justice that football changed forever.

In Brazil, meanwhile, legal arrangements between players and clubs remained as they had been in Europe prior to the Bosman ruling. This changed in 1998 with the Pelé law, named after the great Brazilian player and then minister of sports who had been a leading light in the campaign for a ban on non-competes. After the new law came into force, teams could still include clauses demanding transfer fees for players, but only during the term of their contracts.

What are the effects of non-compete agreements?

In a recent study, we explore this policy change to study how non-compete agreements affect wages and efficiency in the labour market. Brazilian football constitutes a particularly appropriate context for exploring these effects for a couple of key reasons. First, because the end of non-compete clauses was an unexpected policy change, with players and clubs not affecting its timing and main aspects. Second, because the new law had an important effect on the labour market for first-class professional footballers but virtually no impact on the economy as a whole. With few occupational switches between football and other professions, labour market policies and economic shocks affecting other sectors are not a major source of concern.

Players aged around 28 gained the most from a change in the law, but the wages of young players fell



Figure 1 shows how the new law affected the wages of Brazilian footballers. It shows the estimated relationship between wages and age in the two years just before and just after the Pelé law, controlling for the characteristics of the players that are constant over time. We can see that players' lifetime incomes increased in the years following introduction of the new law, but the age-earnings profile changed. Players aged around 28 gained the most, but the wages of young players fell.

Understanding changes in wages after the Pelé law

What is behind this change in the age-earnings profile? It could be a distributional effect: the law could have raised players' bargaining power. Alternatively, it could be an efficiency effect: by removing barriers to transfers, it could have improved the allocation of players to clubs – for example, making it easier for clubs to hire players that are a good fit with the squad. Both mechanisms could be at play, but what is making the difference?

To separate distributional and efficiency effects, we study the effect of the main elements of the employment contracts used for professional athletes and some other high-paid occupations: long-term contracts; transfer fees; uncertainty about players' performances; and auctions to sign players when contracts expire. The auction requires the payment of a fee to the owner club when non-compete clauses are in place, while no fee is required in the absence of non-competes. We also use a rich dataset on wage and turnover to explore the effects of the Pelé law.

We show that introducing non-compete clauses in labour contracts changes the wage as in the data: a player's lifetime income goes down with non-compete frictions, but the salary for young players rises.

We can also ascertain how well players and clubs are matched, both with and without non-compete agreements.

We find that the average pairing quality goes up slightly with the Pelé law, meaning that players and clubs are in more productive matches because, for example, a midfielder can now move more easily to a club where his style fits better with the coach's strategy. But this effect is minimal and accounts for less than 1% of the increase in players' lifetime income.

The main driver of the effects on wages is the auction for a player between clubs after an agreement expires. In a situation with non-compete agreements, the current club gets a fee if it loses the auction, paid by the winning club. This implies that losing the auction is not as bad for the current club when compared to the case without non-competes. At the same time, the buying club takes into account that it has to pay this extra fee to the current club if it wins the auction. Hence, both clubs have incentives to bid less for the player, which substantially reduces players' wages.

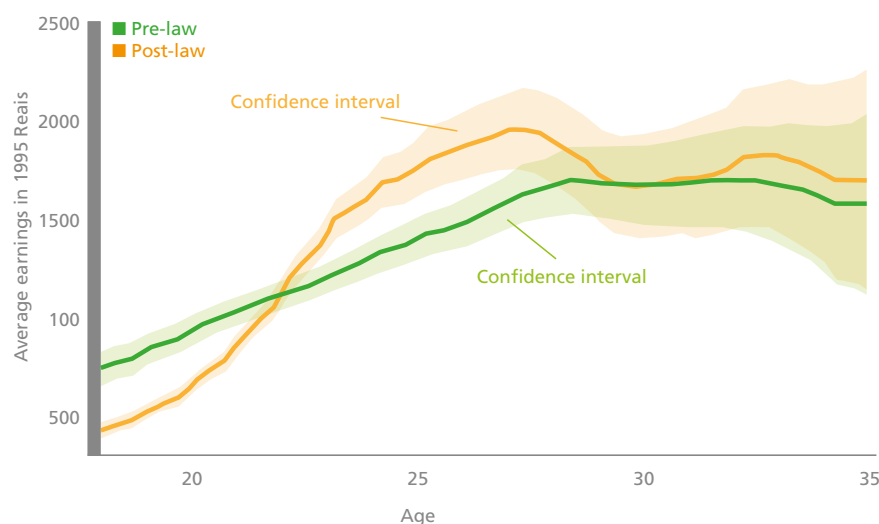
In sum, the presence of non-competes put workers in a weaker bargaining position. This channel is likely to operate in other settings, although more research is needed to assess the external validity of our findings.

With the above caveat in mind, our study has implications for policy. For low-paid workers, the effects on wages are very important. For high-paid workers, distributional concerns are less relevant, and efficiency issues are crucial. Hence, we find support for restrictions on non-competes for low-income workers but not for high-paid employees.

This article summarises 'Non-compete Agreements, Wages and Efficiency: Theory and Evidence from Brazilian Football' by Bernardo Guimaraes, João Paulo Pessoa and Vladimir Ponczek, CEP Discussion Paper No. 1751 (<https://cep.lse.ac.uk/pubs/download/dp1751.pdf>).

The authors are all at the Sao Paulo School of Economics-FGV. **João Paulo Pessoa** is a CEP research associate.

Figure 1.
Wages of Brazilian footballers by age



Notes: The shaded areas are the respective (95%) confidence intervals, which provide a range for the variability of the wage estimates.



Remembering David Marsden

David Marsden, who passed away in August 2021, was involved in CEP research for many years, working on employment and industrial relations, youth employment and training, performance-related pay, performance management and individual employee voice. His long-time colleague **David Metcalf** recalls his broad-ranging contributions to academic life.

The Oxford English Dictionary defines a polymath, as 'a person of varied learning, a great scholar'. Quite a lot of people I know have got one of these characteristics. Very few have got two, but David did. He was truly a polymath. I want to take three areas: his time as a super distinguished LSE academic, his international links, and his public service. David hadn't actually retired, he was still going, still active, after four decades. Some academics hang on too long, but in David's case it was because he had got so much to contribute. That's a terrific way of describing his commitment to institutions and to colleagues.

On his research, I first came across David when he wrote a terrific book in the 1980s called *The End of Economic Man? Custom and Competition in Labour Markets*, which was well ahead of its time. It tried to distil standard economics but also custom and practice, which was quite an ambitious task. I think this is a trait that David demonstrated in his academic

life: to take quite difficult things and grapple with them. He was very much in the tradition of two distinguished LSE people from the first half of the century: Henry Phelps Brown, a distinguished labour economist, and Ronald Coase, who was a Nobel prize winner at LSE and then went to Chicago.

On research I would also pick out his work on youth employment and training, and his material on how to elicit better performance in the public sector. In particular, David was always concerned about outcomes. He wasn't just worried about the institution, or what the process was, he wanted to know what the outcome was. And actually, there are a lot of people who don't do that: that's by far the most difficult part of doing this sort of research, and David very much grappled with it.

On teaching: he was excellent at mentoring junior staff.

He knew employment systems in loads of different countries. He was a world expert on what we call comparative labour relations. In more recent times, he'd rather changed gear and taught a very successful course, somewhat to my surprise, on negotiation. I don't think of David as a negotiator. Sometimes I think of him as sort of standing firm, but I never really thought of him particularly as negotiating. But he taught an excellent course, which the students all loved, on Negotiation Analysis.

And then of course, inevitably in academic life, you have to do some administration. Quite a lot of people try and hide from that, but David didn't. And let me tell you, dealing with LSE egos is not easy. David definitely had to grapple with that. He was also the general editor of the journal which the department put out, the *British Journal of Industrial Relations*, and he served on the LSE Council, the academic board and as the head of department. He was particularly brave about reorganising the department administration when many of us had let it go for about ten years. He had a real backbone in dealing with the administration, which many of us didn't have.

The second thing to mention is his international links. David was a wonderful linguist: French, German, Mandarin. He has been a visiting professor at the universities of Aix, Rome and Trier. Most academics will go to places like Australia or America as a visiting professor, David didn't do that – he went somewhere where he had to speak a different language.

He was also president of SASE, the Society for the Advancement of Socio-Economics. He was the editor of a French Ministry of Labour journal *Travail et Emploi*. And he founded the *German Journal of Industrial Relations* and the *Socio-Economic Review*, which are both still thriving. If you read the tributes to David on the LSE website, you will see that tributes come from all over: Japan, the United States, Australia, France, Germany, India, Britain of course. He had international connections and the love of the students from all over.

And I also would emphasise his public service. David was certainly an adviser to many international bodies – the European Union, the International Labour Organization, the OECD, the World Bank and so on – and two or three British trade unions as well. The topics were very varied. I've touched on productivity in the public sector and youth employment. He was particularly keen on making sure that teachers' performance-related pay worked.

He'd been asked specifically by Martine Aubry, who was the French Minister of Labour – Jacques Delors' daughter – to advise on the French 35-hour week. David was gracious and explained how you could actually manage it, and finesse it and make sure it worked, which was excellent. He was always concerned with trying to improve the lot of all working people both in the workplace but also more generally in society. The tributes to him have emphasised his intellectual distinction, his collegiality and his empathy. We have truly lost a polymath.

David was always concerned with trying to improve the lot of all working people, both in the workplace and more generally in society

This is an edited version of the eulogy given by Sir David Metcalf in memory of David Marsden.

David Metcalf is emeritus professor at LSE and a research associate in CEP's labour markets programme.

David Marsden, who joined LSE as a lecturer in 1980, had a long and distinguished career, first in the Department of Industrial Relations where he was promoted to professor, and subsequently in the Department of Management and as a CEP research associate.

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