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## Bombs, Brains and Science

The Nazi's dismissal of Jewish scientists and political opponents of the Nazi regime exacted a far greater and lasting toll on German universities than the Allies' bombing of campus facilities, **Fabian Waldinger** finds.

At the moment, many countries such as Brazil, South Korea, and especially China, are investing heavily in their university systems. Should they hire outstanding scholars or construct new laboratories to achieve the highest return on their investment? Similarly many other countries, such as the UK, are scrutinizing their expenditures for higher education. In which areas would spending cuts be less harmful?

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**The Allied bombing campaign led to a reduction in productivity that had only a fraction of the effect of the loss of faculty.**

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Investigating these questions is challenging because "star scientists" like to work in more productive universities but at the same time they enhance the productivity of their university. Similarly, high quality universities attract more funding for laboratories and buildings which further increases productivity. As a result, it is difficult to evaluate how much high quality scientists and better facilities contribute to the creation of scientific knowledge.

My recent study investigates these questions by analysing a historical episode that affected German and Austrian universities in the 1930s and 1940s. In 1933, just two months after the Nazi government seized power, Jewish scientists and scientists with opposing political views were dismissed from the German (and later from Austrian) universities. Overall, about 15 percent of scientists had to leave their positions. Among the dismissed were some of the best scientists of the time, such as physics Nobel Laureates Albert Einstein, Max Born, and Erwin Schrödinger and chemistry Nobel Prize winners Fritz Haber and Otto Meyerhof.

Universities that had employed many Jewish scientists therefore suffered a tremendous decline in the number and quality of their faculty. Some years later, Allied bombings during the Second World War destroyed facilities of some universities while leaving the buildings of universities in other cities completely intact. In my research I analyse how these temporary shocks affected German and Austrian universities both in the short and in the long run.

To control for other factors that may have changed over time I compare universities with dismissals to universities without dismissals. Similarly, I compare universities with bombing destruction during the Second World War to universities without destruction. My findings indicate that the dismissal of 10 percent of the faculty reduced departmental productivity by about 0.21 standard deviations in the short run. Strikingly, departments that had lost people during the Nazi era still had lower scientific output almost 50 years later.

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**By 1961, universities had recovered from the effects of the World War II bombing, but not from the loss of star professors.**

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The destruction of 10 percent of university buildings during the Allied bombing campaign lowered productivity by about 0.05 of a standard deviation in the short run; a reduction in productivity that was only about a quarter of the effect of the dismissal of 10 percent of the faculty. Furthermore the negative effect did not persist; by 1961, the productivity of departments that had been bombed during WWII had already recovered.

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## The Gap between Jobs and the Jobless

About half the rise in unemployment during the recession that began in 2008 was due to mismatch between the types of vacancies available and the characteristics of unemployed workers, **Jennifer Smith** reveals.

How far can policymakers hope to reduce unemployment before they start generating unwanted inflation? The structural, or natural, rate of unemployment can be thought of as a kind of policy barrier, beyond which attempts to reduce unemployment succeed only at the cost of inflation. In this situation, workers remain unemployed even in the face of labour market demand. For one reason or another, they are not readily or usefully employable.

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**Mismatch soared in the recession, leading to 280,000 'lost hires' – more than the net number of unemployed people who found work in any single year during decade.**

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The key explanation for this situation is 'mismatch,' the condition in which workers' characteristics do not match those required by firms – in terms of skills, industry or location, for example.

Did mismatch rise during the recent financial crisis? From a policy perspective, this is an important question to answer. For example, if a lot of construction workers are unemployed at a time when the only vacancies are for computer scientists, this would indicate a substantial mismatch problem. In this situation, using monetary policy to stimulate demand might help reduce unemployment somewhat, if the construction industry recovered; but because monetary policy is a 'blunt tool', it would exacerbate the skills shortage of computer scientists, likely bidding up wages and prices.

My work provides a method of decomposing changes in unemployment to see how much can be attributed to mismatch and how much is due to other causes (such as a fall in demand).

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## The Missing Years

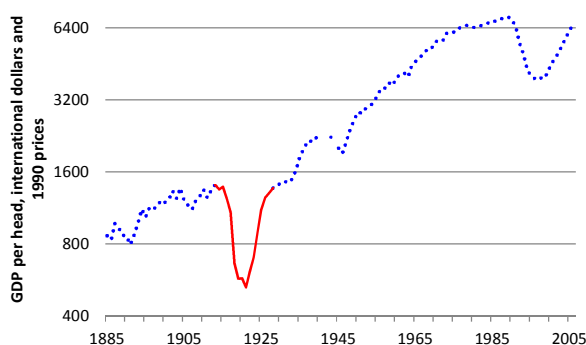
In prize-winning research, **Mark Harrison** and **Andrei Markevich** fill the last remaining gap in national income records of 20<sup>th</sup>-century Russia and reveal the contemporary lessons that cataclysmic period of history has to offer.

Most European countries today have historical national accounts of real GDP (final goods and services) stretching back through the nineteenth century or even earlier. Russia's go back to 1885 but a gap has remained between 1913 and 1928, one of the most catastrophic periods of its turbulent 20<sup>th</sup> century.

This period included World War I, the Bolshevik Revolution of 1917, the Civil War and post-war reconstruction years that set the stage for Joseph Stalin's forced-march industrialization campaign to "catch up and overtake" the West. It marked the deepest economic collapse of Russia's troubled 20<sup>th</sup>-Century history. The human toll, in terms of lives lost, was exceeded only by the casualties the nation incurred during World War II.

This period has rich potential for lessons concerning the relationship between state capacity, government policy, and economic development. These years offer a lens through which we observe the Russian economy going through critical transitions, including some of the worst things that can happen to a country. There was war and civil war. The economy suffered economic disintegration, isolation, and famine. There was a collapse of state capacity; then, authority was recentralized in the hands of a new state that pursued interventionism on an unprecedented scale.

In a recent paper, we build the first consistent annual measures of real national income on the territories of the Russian Empire (from 1913 to 1917) and the interwar Soviet Union (from 1913 to 1928). Our work shows that Russia's economic performance up until the revolution in 1917 was better than had been previously thought. After that, a combination of revolutionary mobilization and civil war drove the economy down to the level of the poorest countries in the world today, a level not seen in Europe since the Middle Ages.



The chart above shows our results, in solid red, for national income per head in the context of previously existing estimates, shown in dotted blue.

The data used to calculate GDP over the period were complicated by boundary changes, known biases, migration, and premature deaths. We estimate that within these years Russia suffered 13 million deaths from conflict and famine – representing one in 10 citizens.

Onto the changes in economic activity we can now map the changes in conflict (Russian defeat in World War I, then Bolshevik victory in the Civil War), state capacity (the Russian Empire collapsed and was replaced by a communist state), and the policy regime (the Russian

imperial state tried to regulate the war economy rather ineffectively; the communists quickly turned to violent methods of mass mobilization, were eventually forced to draw back, permitted the revival of a regulated market economy, and then returned to extreme coercion).

During the civil war, the Russian economy plummeted to a level not seen in Europe since the Middle Ages, equivalent to the poorest countries in the world today.

We find that Russia's economic performance was both better and worse than had been thought. Until 1917 Russia's economy was declining, but by no more than any other continental power. But the following economic catastrophe of revolution and famine was far deeper than had been believed. By 1919 average incomes in Soviet Russia had more than halved, falling to a level not seen in Eastern Europe since the seventeenth century and experienced today only in the very poorest countries of the world.

There are lessons to be learned from this period. When the state has the right amount of capacity there is honest administration within the law; the state regulates and also protects private property and the freedom of contract. When there is too little state capacity the economic order disintegrates into robbery and violence and security ends up being privatized by gangs and warlords. When the state has too much capacity there is still armed robbery but it is organized by the state. Somewhere between these two extremes is the right amount.

In Russian history the state has usually had either too much capacity or too little. In the short period of our study we see Russia flipping between the two extremes, and the devastating results. In World War I the state did not have enough capacity to regulate the war economy, and it was eventually pulled apart by competing factions. In the Civil War and again during the 1920s the state grabbed capacity back and gained powers to mobilize, build economic and military power, and starve and kill without restraint.

### Publication details:

"Great War, Civil War, and Recovery: Russia's National Income, 1913 to 1928," by Andrei Markevich and Mark Harrison, was published in the *Journal of Economic History* 71:3 (2011), pp. 672-703. A postprint is available at <http://goo.gl/D1eWp>.

### The authors:

In April 2012, the authors were awarded the Russian National Prize for Applied Economics for their research on this subject.

Mark Harrison is a professor in the Department of Economics at the University of Warwick and a research associate at the Centre for Competitive Advantage in the Global Economy. He is a specialist in Soviet affairs.

Andrei Markevich, who focuses on Russian economic and social history, is an assistant professor at the New Economic School, Moscow, and an associate fellow at the University of Warwick.

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## Brains, Bombs and Science from page 1

Further results indicate that the drop in productivity was particularly large after the loss of “star scientists.” This shows that, at least for this historical period, brains were far more important than buildings for the quality of research output.

In recent decades scientific research has relied much more on expensive equipment, such as particle accelerators, and it is therefore not entirely clear how much these historical findings can inform current policy. Nonetheless they suggest that spending money on attracting high quality scientists may be money well spent if a university or country wanted to raise its research output.

## Publication details:

This article summarizes “Bombs, Brains, and Science: The Role of Human and Physical Capital for the Creation of Scientific Knowledge”. The full paper is available at: [www.warwick.ac.uk/go/fabianwaldinger/research/bombs\\_brains\\_and\\_science2.pdf](http://www.warwick.ac.uk/go/fabianwaldinger/research/bombs_brains_and_science2.pdf)

## The author:

Fabian Waldinger is an assistant professor in the Department of Economics at the University of Warwick and a research associate of the Centre for Competitive Advantage in the Global Economy. His work looks at labour economics, the economics of science and innovation, and economic history.

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## Mismatch from page 1

My research shows that from 2008-2010 mismatch rose dramatically. It became more difficult for unemployed workers to find jobs, and at the same time, it became more difficult for firms to find suitable workers to hire. Mismatch accounted for around half of the rise in unemployment during the recent financial crisis, my work shows.

Perhaps the most striking measure of the effects of mismatch comes from looking at it in terms of the number of the hires “lost” as a result. Between 2008 and 2010, mismatch resulted in roughly 280,000 hires lost - a figure that exceeded the net number of people who gained employment during any single year over the 2001-2011 decade.

These results imply that the rise in unemployment, from 5 percent to over 8 percent was not just due to deficient demand

Which workers were unable to find jobs? And which industries were unable to hire workers?

**The scale of mismatch has declined since 2010, but low labour turnover means that mismatch is having a lingering effect on UK unemployment.**

Proportionately, the construction industry suffered the greatest fall in vacancies and the largest rises in unemployment. This is typical: the construction industry’s labour market mirrors the very high cyclical volatility of construction activity. Manufacturing vacancies also showed their usual large response to a cyclical downturn.

On the other side of the mismatch phenomenon, vacancies continued to grow in the public sector (administration, health) until 2009, and in education until 2010 until austerity measures led to sharp drops in job openings.

The UK is not alone in facing this phenomenon. The US has a similar level and profile, a comparison shows. However, the US experienced a somewhat larger worsening of mismatch in the recent recession, and the UK re-adjustment of jobs and workers across industries appears to have been completed more rapidly after 2010.

Since 2010, the scale of mismatch in the UK has declined. For example, manufacturing and professional services vacancies returned to a level of mismatch the

same as had been seen before the recession began. Hires more recently are 3 percent to 4 percent lower than they would be if unemployed workers were perfectly distributed across industries in accordance with vacancies – as they were before the recession began.

The falling level of mismatch offers an encouraging signal for the future and for the ability of monetary and fiscal policy to stimulate demand without creating inflation. However, relatively slow UK labour market dynamics mean that mismatch is still having an impact, and is still in part responsible for the current high unemployment rate of 8.2 percent in early 2012. Mismatch-related changes in the rate at which the unemployed find jobs still have twice the effect on unemployment compared to the pre-recession period.

In light of the mismatch phenomenon in the UK, one solution may be to adopt an Austrian-style policy of government-led retraining when faced with large numbers of redundancies in a particular industry. The reforms to the UK’s JobCentre Plus have led to individualised job-finding assistance. This undoubtedly has enabled mismatch to fall fairly quickly after the financial crisis, but a more pro-active public policy could hasten adjustment after a shock that raises mismatch and the structural rate of unemployment. The basic message is that anything that increases the job-finding rate would enable a more rapid fall of actual unemployment following a mismatch-raising shock.

## Publication details:

This article summarizes a Keynote Speech, “Unemployment and Mismatch in the UK,” presented at Chief Economists’ Workshop held recently at the Bank of England. The workshop brought together central bank chief economists from across the world and top academics to discuss developments in labour markets during the financial crisis. The presentation and full article are available at:

[http://www.bankofengland.co.uk/publications/Pages/events/ccbs\\_cew2012/programme.aspx#day1](http://www.bankofengland.co.uk/publications/Pages/events/ccbs_cew2012/programme.aspx#day1)

## The author:

Jennifer Smith is an associate professor in the Department of Economics at the University of Warwick and a research associate at the Centre for Competitive Advantage in the Global Economy. Her research explores labour market dynamics.

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## The Final Word

Director **Abhinay Muthoo** considers the need for the university community to cultivate leaders who are academics, entrepreneurs, politicians and visionaries – all in one.

John Bryan Conant, the university president whose '30s and '40s-era reforms made Harvard into a premier research institution, was fond of a remark that frequently proved useful in his line of work. "Behold the turtle," he frequently said. "He makes progress only when he sticks his neck out."

Conant's words seem particularly resonant to university leaders now. Institutions of higher learning are being challenged as never before by many forces – the tough and uncertain economic climate, profound changes in funding, and unprecedented global competition for the best and brightest students and faculty.

Success today requires universities to pursue excellence in the core functions of teaching and research, and, at the same time, to be more and to do more. Universities are being re-defined in many ways – as levers of social mobility, as engines of local economic growth, as founts of technological advances that are changing society. All this makes painfully clear that academics can't do all this by staying in our protective shells, within the so-called ivory tower of academia.

To be successful, universities now need top quality academic leaders and managers – be they heads of departments, chairs of faculty, pro-vice-chancellors and even vice-chancellors. We need the leadership of the kinds of people who are willing to stick their necks out.

The University of Warwick's rapid ascent into the top tier of the UK's academic institutions in less than 50 years is a prime example of why this kind of leadership is so fundamental to success. Thanks to successful and exceptional leadership, the university – rather improbably,

one could say – has managed to position itself at the forefront of academic excellence and in a frontline position on so many academic trends, particularly in forging international partnerships that will prove crucial in these competitive times.

But finding these kinds of people who have the skills and desire to take on this high-wire act is exceptionally difficult. Academics by nature are people suited to working "in the laboratory", so to speak – delving into the intricacies of their specialty with diligence. A university leader needs to be an academic to gain the respect of the faculty he or she leads and to fully understand at the ground level the nature of the university's core intellectual functions. Yet, at the same time, a university leader needs to be an entrepreneur, able to make the bold business decisions needed and to seize the initiative where required. A university leader also needs to be an adroit politician – able to work effectively with policy makers and to have the acumen to manage shifting political tides. The university leader needs to be a visionary – someone who can anticipate where trends are headed and to articulate a sense of mission to the university community and the public, to inspire people on the subject of learning at the top levels.

In short, mere managers need not apply.

It comes as no surprise that finding good quality heads of department, chairs of faculty, pro-vice-chancellors and vice-chancellors is an extremely difficult task. At the same time, it has become more important than ever. Top universities will need to be led by the best. We need to find a way to breed more of the rare and seemingly endangered species, the Neck-Extending, Progress-Forging Turtles.

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## The University of Warwick Economics Research Institute

The ERI is an integral part of the Department of Economics at the University of Warwick. Its members include the academic and research staff and research students of the Department of Economics; visitors attached to the Department of Economics; and scholars from other institutions who are associated with programmes of research administered within the Institute.

The Director of ERI is Professor Abhinay Muthoo ([a.muthoo@warwick.ac.uk](mailto:a.muthoo@warwick.ac.uk).)

The aims of ERI are to promote directly and indirectly research in economics and interdisciplinary research that has an economic aspect; to facilitate the funding and organisation of collaborative research projects involving the participation of members of the Department of Economics; and to support scholarly activities such as conferences and research networks that extend beyond the

routine scholarly life of the Department of Economics.

The Bulletin of the ERI appears once a term. Each issue features summaries of published or forthcoming research by ERI members. Karen Brandon ([k.brandon@warwick.ac.uk](mailto:k.brandon@warwick.ac.uk)) edits the Bulletin. Romesh Vaitilingam ([romesh@vaitilingam.com](mailto:romesh@vaitilingam.com)) is editorial advisor.

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