in brief...

Peer effects in science: evidence from Nazi Germany

Are university scientists more productive when surrounded by able colleagues? **Fabian Waldinger** explores this question by looking at the impact of the dismissal of scientists by the Nazi government in Germany.

Shortly after seizing power in 1933, the Nazi government dismissed all Jewish and 'politically unreliable' scholars from German universities – roughly a fifth of all scientists. Many of the dismissed scholars were outstanding members of their profession, among them the famous physicist Albert Einstein, the chemist Georg von Hevesy and the Hungarian mathematician Johann von Neumann.

My research uses data on this unique historical event to measure the extent of 'peer effects' in science – the degree to which scientists are more productive when surrounded by able colleagues.

It is not easy to estimate the extra productivity of a scientist that is generated as a result of their peer group. The top departments might have the best staff but they also recruit the brightest prospects. It is thus not clear whether scientists in departments with outstanding colleagues are more productive because of the interaction with these colleagues or simply because the scientists in these departments are inherently better.

But because the scientists in Nazi Germany were not dismissed on the basis of their ability, and because some departments lost more than half their personnel while others lost none, this large-scale dismissal offers a 'natural experiment' that makes it possible to tease out the determinants of scientific productivity.

For example, it is possible to examine the impact of the dismissals on the peer group of physicists in German universities after 1933. Interestingly, the majority of the dismissals occurred in bigger and better departments. Researchers in affected physics departments experienced a dramatic loss in the number of peers and average peer

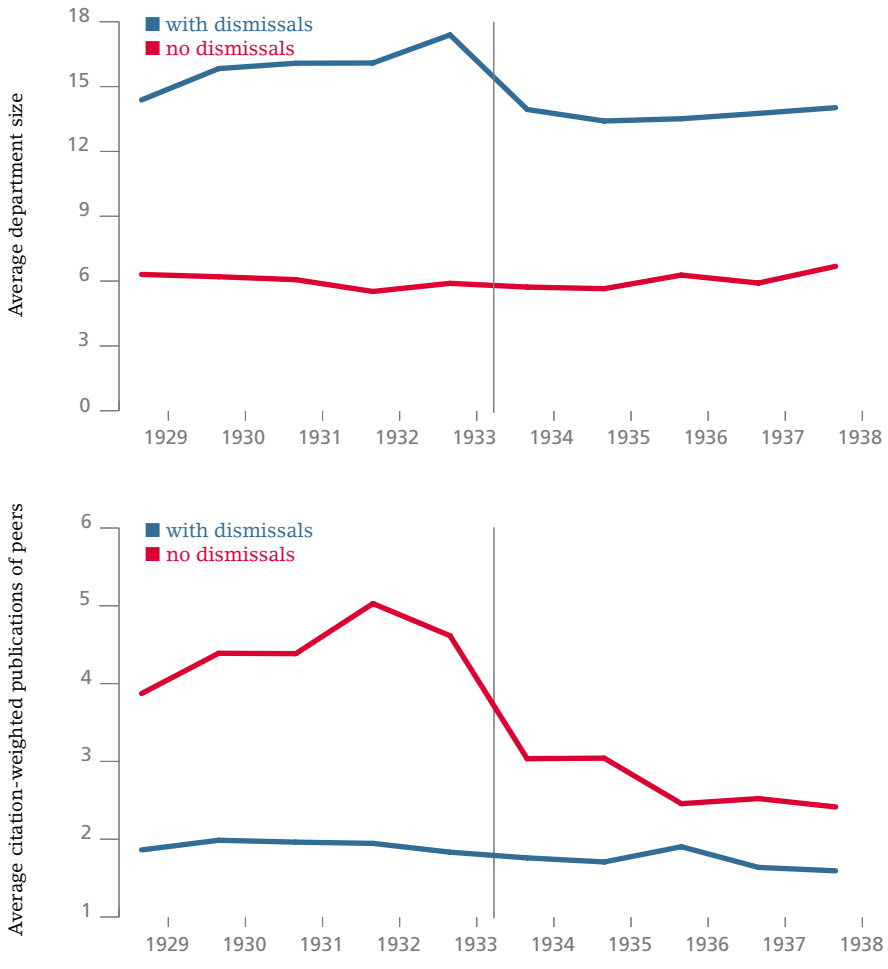
Scientists in Nazi Germany whose co-authors were dismissed suffered a significant loss in their productivity

quality as measured by citations of their work in scholarly books and journals (see Figure 1).

Using this dramatic change in the peer group of the scientists who stayed in Germany, I investigate peer effects among these 'stayers'. Specifically, I investigate whether the productivity of stayers declined in departments with many dismissals compared with the productivity of scientists in unaffected departments. The evidence suggests that dismissals in a department did not affect the productivity of stayers (see Figure 2).

Next I investigate peer effects among scientists who had collaborated very intensively, co-authoring papers before the dismissals. These co-authors sometimes worked in the same university but in many cases they worked in a

Figure 1:
Changes in the peer group of physicists (number and quality of peers) in Germany following dismissals by the Nazi government



different place. In 1933, some of these ties were severed because one of the co-authors was dismissed. The productivity of their co-authors still in Germany declined by 13-16% as measured by quality-adjusted publications in top journals (see Figure 3). This suggests strong peer effects among closely collaborating researchers.

Does any of this matter now? While it is plausible that localised peer effects are even less important nowadays as communication costs have fallen dramatically, the same need not apply to peer effects among co-authors. Indeed, it is likely that peer effects among co-authors have grown since the early 1930s as co-authored studies have grown in importance with increased specialisation and more 'big science' projects.

So a counterintuitive implication of the research is that getting the best researchers to work together in the same departments may not necessarily be the best way to increase scientific productivity. What does seem important is facilitating co-authorship by increasing researchers' exposure to other scientists with similar research interests from around the world.

This article summarises 'Peer Effects in Science – Evidence from the Dismissal of Scientists in Nazi Germany' by Fabian Waldinger, CEP Discussion Paper No. 910 (http://cep.lse.ac.uk/pubs/download/dp0910.pdf).

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Figure 2:
The effect of dismissal on the productivity of stayers (department-level peer effects)

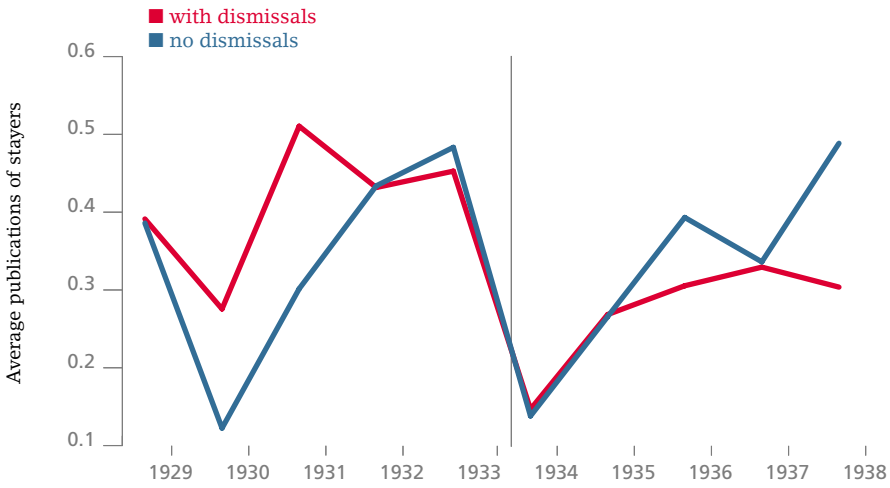
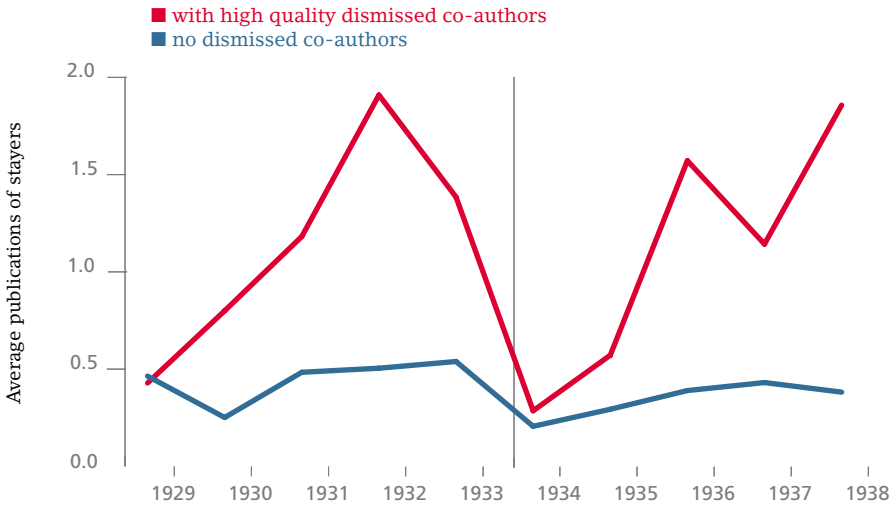


Figure 3:
The effect of losing a co-author due to dismissal (peer effects among co-authors)



Co-authorships should be encouraged by increasing researchers' exposure to other scientists with similar interests