

## Academic Freedom Boosts Productivity Growth – Given Strong Judicial Quality

*While the debate over academic freedom has mostly focused on cultural issues, a new study investigates whether freedom of academic inquiry is also important for the economy. The results indicate that it is, so long as the quality of the legal system is high. Only then do entrepreneurs apply the new knowledge generated through research in ways that boost productivity growth.*

By Niclas Berggren



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When Adam Smith inquired into the nature and causes of the wealth of nations, he started the single most important research program in economics. Over the centuries, a great number of explanatory factors behind economic growth have been proposed, ranging from climate and natural resources to investment, education and taxes. Christian Bjørnskov and I have examined the importance of another factor – academic freedom (Berggren and Bjørnskov, 2022a).

The Encyclopædia Britannica defines academic freedom as “[t]he freedom of teachers and students to teach, study and pursue knowledge and research without unreasonable interference or restriction from law, institutional regulations or public pressure.” Why do we think academic freedom could be economically important?

Most centrally, academic freedom implies the absence of detailed regulation of what research academics undertake. Throughout history, the state, the church and the business sector have intervened in the research process and tried to steer it toward their own goals. Academic freedom, in contrast, allows researchers themselves to decide what aspects of the world need to be better understood. Researchers are arguably in the best position to assess what innovative ideas and methods have the greatest chance of producing novel insights and results that are potentially growth-enhancing.

Aghion et al. (2008) spell out how academic freedom can stimulate innovative activities. Freedom gives scientists decision rights over what research projects to pursue and what methods to apply, insulating them from (less creative) company managers. The most innovative ideas are often generated in early-stage or basic research that cannot easily be planned within the confines of conventional business models. Once new research findings have been generated, they can be used by entrepreneurs to develop business-oriented innovations that stimulate productivity growth.

However, even though academic freedom can contribute to productivity growth in this manner, there is no guarantee. Freedom, in this area as in others, implies the absence of outside interference, but what researchers then choose to do with their freedom is up to them. They are, of course, free to do work on topics that might lead to a better-functioning economy, but they need not do so and are free to undertake projects that either do not aim at economic growth or that turn out not to contribute to it. But even if researchers produce findings that have the potential to be productivity-enhancing, these findings still need to be introduced into the economy. This points to a key role for entrepreneurs and the incentives that motivate them. If the quality of legal institutions is low, such that intellectual and physical property rights, as well as contracts, are not well protected, this may deter entrepreneurs from taking useful knowledge from the academic world to the business sector. Without such legal protection, the fruits of risky business ventures may be confiscated or other-

wise eliminated or eroded, and that knowledge will not be put to productive use.

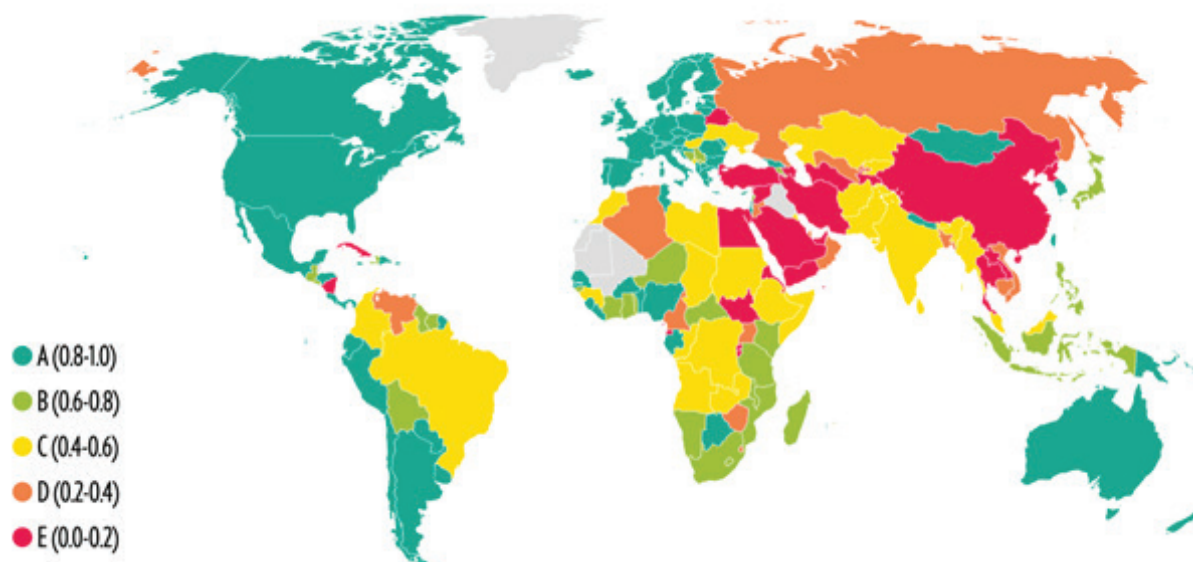
It is hence *a priori* an open question whether academic freedom does bring about higher growth. We have therefore analyzed empirically whether it does so in practice. Our results indicate that while productivity growth is not related to academic freedom on its own, there is a positive effect when the quality of judicial institutions is high. In that case, there is general legal protection of innovative ideas and practices, which we interpret as giving entrepreneurs incentives to utilize new knowledge stemming from academia in existing or new companies to create more value from existing inputs.

### **How Britain became rich**

Our study is inspired by the work of Joel Mokyr, a Professor of Economics and History at Northwestern University. In books such as *The Lever of Riches* (1992) and *A Culture of Growth* (2017), he explains in particular why Great Britain's economy has developed so strongly over the past centuries. One of Mokyr's key ideas is that inventors and innovators depend on their social environment to be successful. A culture that is open to dynamism and to challenging established ways of thinking and doing will stimulate entrepreneurs to innovate. Such openness was brought about by the Enlightenment, with its curiosity and urge to produce new knowledge about the natural world, and to apply this knowledge. As Mokyr (2005:291) points out: "[T]he cultural beliefs that began to dominate the elites of the eighteenth-century West created the attitudes, the institutions and the mechanisms by which new useful knowledge was created, diffused and put to good use." This stress on new knowledge generated and applied within the economy as key to economic growth also features prominently in endogenous growth theory.

In addition to culture, Mokyr stresses the role of formal institutions – in essence, laws protecting property and contracts. He notes how political institutions in Britain increasingly constrained executive power during the 17th and 18th centuries, providing more stable economic institutions. Moreover, he details a large number

Figure 1. Academic freedom in 2020.



Source: Kinzelbach et al. (2021).

of liberalizing reforms during the 19th century – such as the deregulation of trade, the abolition of laws prohibiting freedom of movement for workers, and the removal of monopoly privileges – all helping to stimulate growth in tandem with the innovation-friendly culture. In fact, Mokyr argues that the cultural shift to a large degree enabled the institutional reforms, as it changed political perspectives and priorities away from special interests. According to Acemoglu et al. (2005:395), countries whose economic institutions “provide security of property rights and relatively equal access to economic resources to a broad cross-section of society” tend to grow faster, especially if backed up by political institutions with checks and balances and a well-functioning legal system.

One interpretation of Mokyr’s ideas is therefore that creative and innovative activities are more likely to arise in a culture of openness, where scholarly ambitions to challenge prevailing beliefs pertain. However, for this to lead to economic growth, one also needs formal institutions that allow decentralized and free production of new and useful knowledge (i.e. academic freedom) together with formal institutions that protect the economic nexus and entrepreneurs (i.e. a high-quality legal system). Our study uses newly released

cross-country data to test Mokyr’s theory.

#### **An index of academic freedom**

A new dataset on academic freedom was developed a couple of years ago as part of the V-Dem database at the University of Gothenburg (Spanagel et al., 2020). This dataset, which is based on country-expert assessments, enables systematic studies of both causes and consequences of academic freedom. In our study, we use an average of five indicators from this dataset that capture different aspects of academic freedom on a scale from zero to one:

- Freedom to research and teach;
- Freedom of academic exchange and dissemination;
- Institutional autonomy;
- Campus integrity; and
- Freedom of academic and cultural expression.

We use data for the period 1960–2015 and look at averages in five-year periods to limit the effect of business cycles and other year-specific events.

Figure 1 illustrates how academic freedom varies between countries in 2020 according to the V-Dem data. North America, Oceania, most of Europe, along with a number of countries in Latin America and a few in Africa and Asia display high levels

East and Asia do not possess much freedom of this kind.

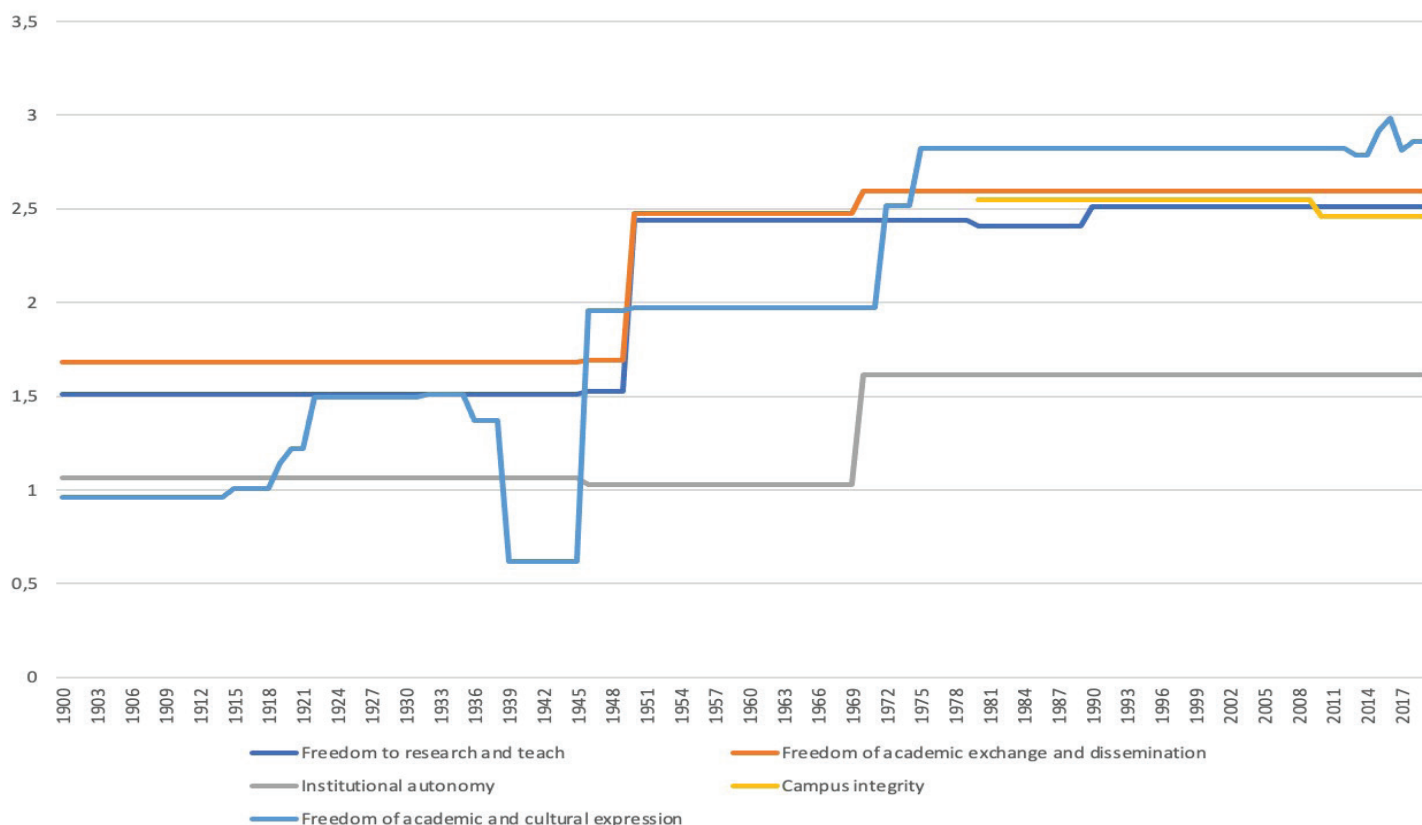
As a further way to illustrate what the V-Dem data look like – even though we do not use Swedish data any more than data for other countries in our study – we show the development of academic freedom specifically in Sweden in Figure 2. When looking at the five indicators, here measured on a scale from 0–4 each year, the situation since the early 1970s is quite stable. The indicator that deviates from the others, institutional autonomy, is shown by the grey line and is based on the question “To what extent do universities exercise institutional autonomy in practice?” This seems to be the area where there is a particular scope for improvement. The strongest indicator is the that capturing freedom of academic and cultural expression, shown by the light-blue line, based on responses to the question “Is there academic freedom and freedom of cultural expression related to political issues?”

### Academic freedom and productivity growth

The outcome variable in our study is productivity growth – we look both at growth in labor productivity and in total factor productivity (TFP), using averages over five-year periods for up to 127 countries. The TFP measure comes in two versions: one full and one simple, the latter ignoring differences in human capital. The advantage is that we can include many more countries, since in particular under-developed and non-democratic nations tend not to have detailed data on human capital.

We model productivity growth as a function of academic freedom along with control variables that are standard in cross-country growth regressions: lagged productivity, relative investment price, government spending, trade volume, judicial accountability and whether the country is communist, an electoral autocracy or a democracy, along with country and period fixed effects to account for characteristics that are not otherwise controlled for.

Figure 2. Academic freedom in Sweden, 1900–2017.





Judicial accountability is our indicator of the quality of the legal system, which we use, in a second step, to examine how the relationship between academic freedom and productivity growth might change with legal quality. It captures the degree to which effective procedures for disciplining and removing misbehaving judges (often corrupt or politically motivated) are used to keep the judicial system effective and fair. We thus interpret this measure as capturing the degree to which judicial officials are likely to enforce rules – not least intellectual and physical property rights – which is of key importance for providing proper incentives for entrepreneurs who innovate and build business ventures on the basis of scientific discoveries. It is based on expert assessments and is measured on a scale of zero to one.

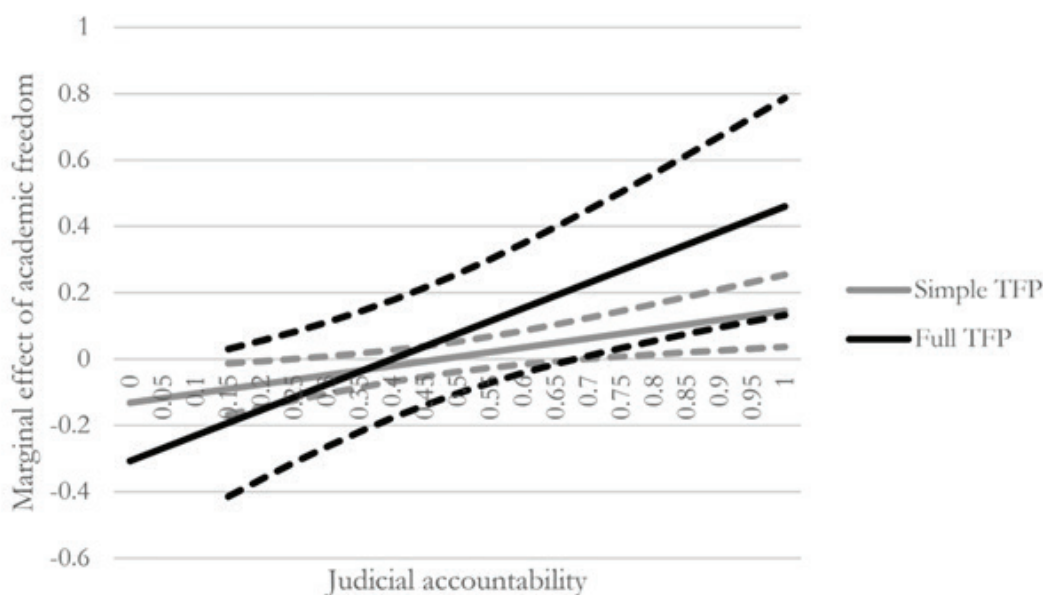
### Academic freedom alone does not suffice

Our first finding is that academic freedom is not related to either labor or total-factor productivity growth in a statistically significant way. This is perhaps not surprising, given that we pointed out above that certain conditions need to be met for a relationship to obtain. The researchers must

want to be willing and able to work on topics that are growth-relevant; and entrepreneurs must face proper incentives based on institutional protection.

However, when we interact academic freedom with judicial accountability – that is, when we see how the relationship between academic freedom and productivity growth varies as we go from low to high judicial accountability – academic freedom becomes significantly associated with productivity growth in countries where judicial accountability is above 0.7 (on a scale of 0–1). This can be seen in Figure 3, which shows how the point estimates of academic freedom vary with judicial accountability in relation to the two TFP outcome variables. When the dashed lines are both on the same side of zero, this indicates statistical significance at the 5% level. The threshold 0.7 is the current level in, for example, Bolivia, Fiji or Niger; around 25% of the observations in our sample and 40% of all democratic observations are above it. The figure therefore shows that the stronger is judicial accountability above the threshold, the stronger is the positive effect of academic freedom.

**Figure 3.** How the point estimates of academic freedom vary with judicial accountability.



*Note: The fully drawn lines show how the point estimates of academic freedom from our growth regressions vary with judicial accountability, for full TFP growth and simple TFP growth (which ignores differences in human capital but which enables us to include more countries). The dashed lines show the 95% confidence intervals.*

These results are compatible with the notion that academic freedom has the potential to stimulate TFP growth so long as the legal system provides strong protection of private property, in a way that provides incentives to entrepreneurs to further develop scientific discoveries and introduce them into the economy. We do not have data that allow us to test this exact mechanism – entrepreneurs putting academically produced innovations to good use – but we hope future research can shed light on its empirical importance.

### **The issue of causality**

Of course it is difficult to ascertain whether these relationships are causal, given the observational, cross-country nature of the data. We have examined the plausibility of a causal interpretation through an instrumental-variable analysis. The idea is to find some indicators that relate to academic freedom but not, in themselves, to productivity growth. Such indicators ideally allow us to identify a causal effect from academic freedom, via the instruments. We use two instruments to this end: a dummy for successful political coups and an indicator of the existence of *de jure* private property rights.

The first-stage results, where we model academic freedom as a function of the two instruments, are satisfactory according to established statistical standards (with F-statistics at or above 10, indicating joint statistical significance for the instruments). When using the predicted values for academic freedom in the second stage, the results appear to suggest a causal association between academic freedom and productivity growth (especially in democracies). That is to say, the stronger academic freedom, the higher the productivity growth.

However, we do not want to make strong causal claims. It is impossible for us to guarantee that all technical conditions hold for the instrumental-variable analysis. This is especially problematic with regard to the so-called exclusion restriction, which requires that the instruments are not correlated with the error terms conditional on the other covariates.

### **Politics and academic freedom**

If academic freedom contributes to productivity growth, we might want to know more about how it arises and can be sustained. We have examined how the features of different political systems influence the extent of academic freedom in different countries (Berggren and Bjørnskov, 2022b). Using data for 64 countries for 1960–2017, drawn from the same dataset on academic freedom as above, we found that elections are beneficial for academic freedom. When a country moves to electoral democracy, but also when a country moves from an autocratic system without elections to electoral autocracy, this is generally positive for academic freedom. Legislatures that are bicameral are associated with more academic freedom, as are legislatures that get a more diverse party presence and that become more right-wing. Proportional electoral systems also strengthen academic freedom. Communism is clearly detrimental for the freedom of scholars to pursue the research they desire, while presidentialism and coups do not appear to hold much significance.

The results suggest that the rules for and structure of political decision-making influences the degree to which scholarly activities are free.

### **Conclusions**

Academic freedom has a long history in the Western world. It has been championed because it is seen as socially beneficial to offer scholars a protected sphere within which they can take on the research they themselves consider most important.

As argued by Joel Mokyr, the historic experience of Great Britain suggests that academic freedom in combination with a reorientation of scholarly activity towards producing new useful knowledge and a high-quality legal system were important in enabling modern economic development to take off in that country. The type of knowledge that became more valued – especially under the influence of Francis Bacon in the early 17th century and the intellectual elite in the Republic of Letters – was practically applicable. They held that the natural world is understandable and that knowledge about it could and should be used for improvements in human welfare. The legal system provided important incentives for entrepreneurs to make positive

of academic freedom, while especially the Middle and creative use of this kind of “scientific” knowledge to further material progress.

Christian Bjørnskov and I have tested the general plausibility of this idea, using recent data on academic freedom, and we have found support for it. We have also identified a complementary relation between academic freedom and high judicial accountability in generating productivity growth in the period since 1960 in up to 127 countries.

As emphasized decades ago by Robert Solow, without productivity growth there can be no sustained long-run economic growth. Our results indicate that academic freedom in conjunction with a fair and effective legal system is a distinctly beneficial component of modern economic development. While public debates about academic freedom in recent times have tended to focus on cultural aspects – not least how free scholars should be to investigate topics that are controver-

sial – there are also economic aspects to consider, since countries suffer economically from curtailing academic freedom.

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