



**BRIEFING PAPER**  
**ACADEMIC TO ENTREPRENEUR**

Unlocking the Potential of UK Spinouts

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## Introduction

Universities play a vital role in generating the innovation on which modern and successful economies are based. A primary way in which academic ideas are translated into the useful goods and services we benefit from in everyday life is through commercialisation: by licensing intellectual property to existing companies, or by using that intellectual property to establish entirely new ‘spinout’ companies.

A country’s spinout policy is hugely consequential for the overall rate of innovation in an economy. This is true globally, but especially so for the United Kingdom – which, relative to many other countries, has a research base that is highly concentrated within its universities, as opposed to private companies or other independent research institutes.<sup>1</sup> Ensuring policy in this area is fit for purpose will be essential if we are to realise the sorts of innovations necessary to grow the economy, tackle health inequalities, address climate change, and generally improve living standards.

Fortunately, the Government appears to fully appreciate this fact. In March 2023, the Chancellor Jeremy Hunt announced that he was commissioning an independent review into university spinouts.<sup>2</sup> Headed up by Professor Irene Tracey and Dr Andrew Williamson, this review seeks to understand: “how UK universities spin-out companies to ensure that the right incentives are in place for the UK to lead the world in turning university research into commercial success.”<sup>3</sup>

This short report serves, first and foremost, as The Entrepreneurs Network’s response to the spinout review. In it, we explain how we believe the process of spinning out can be improved, so that more ideas are brought to market instead of being left in the laboratory or lecture hall. Our research is underpinned by wide consultation with academics, universities, entrepreneurs, and investors, as well as an examination of the extensive academic literature.

We begin the report with a look at the development of the ‘tech transfer office’ (TTO) model – from its origins with Wisconsin Alumni Research Foundation, to the international adoption of the Bayh-Dole ‘university ownership model’. We then examine the objectives of TTOs, and their ability to successfully meet those objectives. Finally, we present alternative approaches to the Bayh-Dole model, and suggest what the UK should do to best promote the widespread adoption and commercialisation of university research.

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1 OECD (2023). [OECD Science, Technology and R&D Statistics](#).

2 HM Treasury (2023). [Independent review of university spin-outs: Terms of Reference](#).

3 Ibid.

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## A brief history of spinout policy

The United States sets the tone for much of the world's spinout policy, including in the United Kingdom. The first modern TTO, the Wisconsin Alumni Research Foundation (WARF), was founded in 1924 after biochemist Harry Steenbock discovered a method of increasing the Vitamin D content of foods through irradiation. Understanding the potential for the idea, as well as the potential for misuse, he patented it. Instead of selling the patent to Quaker Oats for \$1 million, he wanted the revenue from his idea to be returned to the University of Wisconsin-Madison to fund further research. Working with nine other Wisconsin alumni, Steenbock set up WARF in order to accept patents, license innovations, and return the revenues to the university. As a separate entity, it allowed the university to avoid financial and political liability. Steenbock's innovation was eventually licensed to Quaker Oats and to be used as a medicine, Vitamin D<sub>2</sub>. It is widely considered to have played an important role in the elimination of rickets in the US in the first half of the twentieth century. WARF also lends its name to the blood thinner Warfarin, which was commercialised by WARF in the 1940s. The institution remains one of America's largest TTOs by licensing revenues and, more recently, won the patents for human embryonic stem cells.

Despite the example of WARF, the TTO sector developed slowly, hamstrung by federal bureaucracy. In order to commercialise federally-funded research, universities required explicit permission from their funding agencies. Although federal agencies became more open to commercialisation, the need for intellectual property rights to be negotiated between the university and the agency made it difficult to bring ideas to market.

The system changed significantly in 1980 with the passage of the Bayh-Dole Act. Under this law, the inefficient system of haggling between universities and federal agencies was eliminated. In its place, universities and labs took ownership of federally-funded innovations. This created better incentives for commercialisation and subsequently led to a proliferation of TTOs. In the 56 years between the founding of WARF and the passage of the Bayh-Dole Act, only 23 universities set up TTOs. Just five years after the passage of the act, however, the number of universities with TTOs had more than doubled, to 67, and rose to 108 after another five years.<sup>4</sup> The Bayh-Dole TTO model is now ubiquitous, with most, if not all, research universities in the English-speaking world containing a formal TTO. The apparent success of the US model has led to similar reforms across Europe and Asia.

In the UK, as a result of the Patent Act 1977, employers were assumed to have ownership of inventions created by their employees in the course of their work.

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4 Sampat, B.N. (2006). Patenting and US academic research in the 20th century: The world before and after Bayh-Dole. *Research Policy*, Vol. 35, Iss. 6, pp. 772-789.

But academic inventions resulting from publicly funded research were managed by the National Research Development Corporation until 1981 and then by the British Technology Group which held the exclusive right to commercialise public-funded research. This changed in 1985, in an echo of Bayh-Dole, when universities could choose to manage their own intellectual property or to continue to use the British Technology Group's services. In the 1990s and early 2000s, a range of White Papers, reports, and guidelines encouraged universities to play a more active role in commercialising research themselves,<sup>5</sup> with new funding streams such as the Higher Education Innovation Fund created to support them.<sup>6</sup>

Despite all these efforts to promote technology transfer, there has historically been substantial variation in how UK universities act upon it. For example, while Oxford University possessed a TTO (ISIS Innovation, now known as Oxford University Innovation) as far back as 1988, Cambridge only set up a central TTO for the entire university in 2005.<sup>7</sup> As late as 1998, Cambridge did not assert ownership of its employees' patents. Faculty instead held the full rights to their inventions – a system known in other countries as Professor's Privilege, which until the 2000s was common in many EU countries, and which we will return to later.<sup>8</sup> The TTO model has, however, now become the dominant model in both the UK and abroad.

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5 Geuna, A. and Rossi, F. (2011). Changes to university IPR regulations in Europe and the impact on academic patenting. *Research Policy*, Vol. 40, Iss. 8, pp. 1068-1076.

6 Weckowska, D.M., Molas-Gallart, J., Tang, P., Twigg, D., Castro-Martínez, E., Kijeńska-Dąbrowska, I. and Meyer, M. (2018). University patenting and technology commercialization – legal frameworks and the importance of local practice. *R&D Management*, Vol. 48, Iss. 1, pp. 88-108.

7 Departments and colleges had created technology transfer units as early as 1975, however.

8 Geuna, A. and Rossi, F. (2011). Changes to university IPR regulations in Europe and the impact on academic patenting. *Research Policy*, Vol. 40, Iss. 8, pp. 1068-1076.

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## Do TTOs work?

TTOs aim to add value by filtering, refining, and packaging faculty inventions for industrial customers. This will typically, but not always, involve patenting the innovation to make it easier to sell or license. A good TTO should have a strong understanding of the requirements of industry and be able to identify potential licensees. As a TTO's resources are limited, it must identify which ideas are worth investing in and which are unlikely to find a buyer. And before the invention is put before any potential customer, it may require further investment in prototyping and proof-of-concept. An academic inventor operating alone may lack the financial resources to do this, so a TTO can provide liquidity if they believe there is a decent prospect of a licensing agreement at the end of the tunnel.

It can help to think of a TTO as a market maker. For example, a faculty inventor may have deep expertise in materials chemistry, but at the same time have no idea or experience of setting royalty rates for a patent. At a more basic level, in many cases they will not have formed relationships with procurement managers within potential industrial customers. In an idealised relationship, the inventor can specialise in developing a viable product, and the TTO can specialise in market-making – finding buyers and negotiating licensing fees on their behalf. To fulfil this latter function, TTOs must invest time in developing relationships with venture capitalists, industrial buyers, and accelerators.

On the whole, however, TTO's are not often profitable. Some universities, such as Stanford and the Massachusetts Institute of Technology, draw in substantial sums of money from licensing revenue and equity in faculty startups. Stanford's licensing revenues from the patent on recombinant DNA brought in a gigantic \$255 million,<sup>9</sup> and their 2% stake in Google brought in \$33.4 million in 2004.<sup>10</sup> But the majority of TTOs in the US did not make a profit in the 2000s.<sup>11</sup> In fact, even the top 100 TTOs in the US only broke even on average. In Canada, every pound invested in TTO activities only returned 36 pence.<sup>12</sup> A 2009 survey of US TTO directors found that just 16% of TTOs are self-sustaining, when defined as: "bringing in enough income that, after distributions to inventors and for research, there are sufficient funds to cover the operating costs of the program."<sup>13</sup>

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9 Bera, K.R. (2009). The story of the Cohen-Boyer patents. *Current Science Association*, Vol. 96, No. 6, pp. 760-763.

10 Stanford Office of Technology Licensing (2021). OTL's First 50 Years: An Executive Roundtable.

11 Bulut, H. and Moschini, G. (2009). US universities' net returns from patenting and licensing: a quantile regression analysis. *Economics of Innovation and New Technology*, Vol. 18, Iss. 2, pp. 123-137.

12 Astebro, T. and Bazzazian, N. (2011). Universities, entrepreneurship and local economic development. In: Fritsch, M. (Ed.) *Handbook of Research on Entrepreneurship and Regional Development: National and Regional Perspectives*, pp. 252-333. William Edgar Publishing.

13 Abrams, I., Leung, G. and Stevens, A.J. (2009). How are US technology transfer offices tasked and motivated-is it all about the money. *Research Management Review*, Vol. 17, Iss. 1, pp. 1-34.

Tech transfer is similar to venture capital, however, in that a single big hit can generate more revenue than the rest of the portfolio combined. For example, of Stanford's more than 450 patent applications in 2008, fewer than 90 were licensed, and only three generated more than \$1 million in revenue.<sup>14</sup> TTOs in the rest of the world seem to perform similarly, though it is not always easy to tell – the measured profitability of university commercialisation activities can be inflated by more profitable activities like consulting. Universities may be tolerating loss-making TTOs on the assumption that they need to go through a significant volume of invention disclosures in order to generate a profit. TTOs are also often funded as part of the university's wider social functions, rather than being expected to always generate a return on investment.

But this widespread loss-making causes problems, especially when it places TTOs under pressure to fund themselves. This can result in relatively benign effects, such as TTOs increasingly relying on alternative metrics in order to justify further funding from their universities. More seriously, however, it can also incentivise short-termism – particularly a prioritisation of immediate licensing revenue, the demanding of stiflingly large equity stakes from potential university spinouts, and the charging of licensing fees to their own spinouts over encouraging spinouts to grow. TTOs frequently, in effect, treat the creation of a spinout as the creation of a new licensee.

At one level, this short-termism costs TTOs themselves. But it is understandable in the context of the majority of TTO revenue coming from licensing patents rather than from selling their equity in university spinouts, as well as from the relative risks associated with each kind of activity. A large equity sale from a successful spinout is a far more distant prospect than cash in the hand from licensing. Even at the UK's top six research universities, which have the highest level of spinout activity, two and a half times as much revenue comes from licensing than from the sale of spinout equity.<sup>15</sup> Outside the top six research universities, the inequality is all the greater, with only a handful of exceptions like Queen's University Belfast.

Although the importance of spinouts for UK TTO revenue has been on the rise, it appears to have largely benefited from a more general rising tide of UK venture capital and investment in startups. Over the course of 2011-19 the value of investment in university spinouts roughly doubled,<sup>16</sup> but the total value of investment in *all* UK startups rose sevenfold.<sup>17</sup> And TTOs have so far largely benefited from this change by charging licensing fees to their own spinouts for the underlying intellectual property on which they are based, once again favouring short-term revenue over the long-term success of their spinouts.

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14 Astebro, T. and Bazzazian, N. (2011). Universities, entrepreneurship and local economic development. In: Fritsch, M. (Ed.) *Handbook of Research on Entrepreneurship and Regional Development: National and Regional Perspectives*, pp. 252-333. William Edgar Publishing.

15 Ulrichsen, T.C. (2019). Developing University Spinouts in the UK: Key Trends in Spinout Activity, Investments and Investor Involvement.

16 Beauhurst (2021). Spinning Out Success: UK academic spinout trends.

17 Dumitriu, S. (2020). Unlocking Growth.

In this context, it is unclear to what extent TTOs promote spinout growth. Just four research-intensive universities – Oxford, Cambridge, Imperial and University College London (UCL) – are responsible for one third of all UK spinouts, all of which already had lively cultures of faculty entrepreneurship before their TTOs were created.<sup>18</sup> The presence of specialist venture capitalists in Oxford, Cambridge and London is a much more obvious predictor of spinout creation and success. At Oxford, for example, the annual number of spinouts has more than doubled since the 2015 founding of the early-stage venture capital fund Oxford Science Innovation.<sup>19</sup> And similar may be said for university funding budgets. The number of spinouts is likely determined more by general funding for the underlying research – the scale of the input – than it is at successful TTO support in commercialising it. Octopus Ventures' Entrepreneurial Impact Ranking, when adjusted for university research funding budgets, places Queen's University Belfast and Cardiff University above UCL, Imperial, and Oxford (though Cambridge remains high).<sup>20</sup>

The apparent success of some TTOs at producing spinouts must thus be evaluated in relation to the university's other advantages and inputs, as well as the would-be founders who happen to be at the university. Only a small proportion of faculty ever commercialise their research, and the handful that do tend to be serial commercialisers. In a fine-grained study of one university, just 12% of the faculty in engineering, mathematics and science subjects were responsible for 80% of the university's commercialisation activities.<sup>21</sup> After such a serial commercialiser's first attempt, likely with the backing of a TTO, it is unclear whether the TTO would continue to add any value to each subsequent attempt – serial commercialisers will tend to accumulate a network and expertise of their own. Thus, just because a TTO oversees the creation of many spinouts, it does not necessarily mean that those underlying technologies may have been more successfully implemented and commercialised without its involvement.

Indeed, in practice many university employees and students bypass TTOs by not disclosing their inventions to them. These so-called 'sneak-outs' may be common, though it is unclear how common. A 2008 study found that of almost 24,000 faculty members who had patented, 42% had bypassed their TTO at least once, with faculty who failed to disclose their inventions being more likely to start a business.<sup>22</sup>

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18 Breznitz, S.M. (2014). *The Fountain of knowledge: The role of universities in economic development*. Stanford University Press.

19 Octopus Ventures (2019). Research to Riches: Entrepreneurial Impact Ranking 2019: Measuring the success of UK universities in converting research into successful companies.

20 Ibid.

21 Hoyer, K. and Pries, F. (2009). 'Repeat commercializers,' the 'habitual entrepreneurs' of university-industry technology transfer. *Technovation*, Vol. 29, Iss. 10, pp. 682-689.

22 Markman, G., Gianiodis, P. and Phan, P. (2008). Full-time faculty or part-time entrepreneurs. *IEEE Transactions on Engineering Management*, Vol. 55, No. 1, pp. 29-38.

(Though note that some of their patents may have been developed through external consulting work, rather than through work for the university, so it is unclear exactly what proportion of faculty patenting without TTO involvement would count as sneak-out formation.<sup>23</sup>) The degree to which researchers bypass their TTOs is also likely to vary widely by field.

Simply put, a given TTO's ability to turn academic ideas into commercial success appears highly dependent on the university in question, and many founders appear to find TTOs' control of the intellectual property that they develop to be more of a hindrance than helpful. Most universities support highly specialised research in a very wide range of fields, which their particular TTO may not be best-suited to support. A 2011 paper found that the average UK TTO employs about 38 people, with the largest employing as many as 240, but the vast majority employ just a handful.<sup>24</sup> And these few staff must split their efforts between more immediate licensing and supporting longer-term spinouts. Unless a TTO takes on the added and significant cost of employing dozens more people, it can only ever specialise in a handful of fields – and likely far fewer than the university as a whole. A TTO may choose to specialise in biotech, for example, be able to provide lucrative connections with investors in that field, but then lack specialists to support a researcher who happens to develop a breakthrough in artificial intelligence. In such a situation, the researcher generally has no option but to use their own university's TTO, regardless of its suitability or effectiveness. In such a situation, the monopoly of TTOs on managing their own university's intellectual property will end up imposing a deadweight loss on the rest of society by restricting the path of innovations to widespread adoption.

The resource constraints on TTOs may also impose another deadweight loss in terms of preventing innovations from being commercialised at all. The vast majority of inventions disclosed to universities are not commercialised, either through licensing or spinouts. Only 30% of inventions disclosed to universities in the US are ever brought to market, and the figure is likely only 10% or less in the UK.<sup>25</sup> Many of these inventions will, of course, be economically unviable. But an under-resourced TTO will likely struggle to accurately identify a commercial opportunity worth pursuing, especially in a specialism in which it lacks expertise.

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23 Kenney, M. and Patton, D. (2009). Reconsidering the Bayh-Dole Act and the current university invention ownership model. *Research Policy*, Vol. 38, Iss. 9, pp. 1407-1422.

24 Clarysse, B., Tartari, V. and Salter, A. (2011). The Impact of Entrepreneurial Capacity, Experience and Organizational Support on Academic Entrepreneurship. *Research Policy*, Vol. 40, Iss. 8, pp. 1084-1093.

25 Haley, C. (2013). *Futures of University Technology Transfer: After the Incumbent Model*. Unpublished.



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## What are the alternatives?

The typical university TTO lacks the resources proportionate to adequately commercialising and spreading all of the advancements produced by its university. Yet because the university owns the intellectual property of its faculty and students, they typically have no choice but to use their university's TTO. Each TTO therefore effectively exercises a local monopoly over its university's commercialisable research outputs.

The obvious alternative to this state of affairs is for academics to instead own their own intellectual property, rather than assigning it to universities. This would give them the ability to decide how best to use it – whether to release it to the world free of charge, attempt to commercialise it independently, commercialise it using pre-existing business contacts (especially for serial academic entrepreneurs), or commercialise it through a university TTO – not just their own university's TTO, but potentially that of another university, which may be better-suited to their specialisation, or have more resources at its disposal. Such a system is usually referred to as the Professor's Privilege, though it should be noted that in the UK its adoption could also apply in the case of many students – both funded and unfunded – who at the moment are generally forced to assign any intellectual property created in the course of their study or with university facilities to the university to which they pay their fees.

Professor's Privilege has become a rare model. It was the default in some European countries before the 2000s, but over the course of that decade it was replaced with a model of university ownership in Denmark, Germany, Austria, Norway, and Finland. This was because of an OECD-backed push to emulate the US, in the belief that university ownership of intellectual property would result in more academics commercialising their inventions. Italy, which had seemingly bucked the trend by introducing Professor's Privilege in 2001, eventually followed suit in 2022, though in practice Italian universities had simply neutralised the effects of the 2001 reform by using employment contracts to override and thus acquire academics' intellectual property rights anyway.<sup>26</sup>

The only significant exception in Europe is Sweden, which has since 1949 maintained a true system of Professor's Privilege and has repeatedly resisted periodic calls to bring its policies in line with other European countries. This is because the overwhelming evidence emerging from the past few years is that, contrary to the expectations of those who followed OECD recommendations, the abolition of Professor's Privilege has invariably led to decreases in patenting by academics – an especially concerning trend, considering that the TTO model overwhelmingly relies on patents alone rather than other means of commercialising innovations or encouraging their widespread adoption more broadly.

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26 Lissoni, F., Pezzoni, M., Poti, B. and Romagnosi, S. (2013). *University Autonomy, the Professor Privilege and Academic Patenting: Italy, 1996–2007*. *Industry and Innovation*, Vol. 20, Iss. 5, pp. 399-421.

In Germany, the most comprehensive study of the 2002 adoption of a US/UK-style university intellectual property ownership model – which compared the six years before and six years after the reform – showed that it led to a significant decline in patenting by academics who already had connections with industry. This failed to be offset by an increase in the number of patents by professors who did not have prior industry connections. And controlling for patent quality, as measured by the number of citations that patents received, the effect was overwhelmingly negative – not only was there a greater decline among academics who already had connections with industry, but there was even a decline of 15% among professors who had not had industry connections. Among people who only became academics after the reforms, there was also a decrease in patenting.<sup>27</sup> Overall, this suggests that the effect of giving universities ownership of academics' intellectual property in Germany was to decrease the quantity of academics' research that is commercialised, by a dramatic 29%, as well as to decrease the overall quality of the remaining academic research that still is commercialised.

Much the same effect was identified in Finland. The announcement and subsequent execution of the abolition of Professor's Privilege led to a dramatic 46% drop in patenting by academics – even though government funding of university R&D was simultaneously substantially increased. The authors of this study note that the reform shifted ownership of academics' patents away from companies and towards universities – in other words, commercialisation was taken out of the hands of organisations solely devoted to commercialising inventions, and instead put in the hands of organisations with competing priorities and relatively lacking in expertise and resources.<sup>28</sup>

In Norway, too, recent research shows that the abolition of Professor's Privilege in 2003 led to a dramatic 50% decline in both academic startup creation and patenting. This decline in the quantity of university research that is commercialised has also been accompanied by a decline in quality: a decline in the number of citations per patent, much as in Germany, as well as a decline in the number of patents with an international scope, and a decline in the success of university spinouts.<sup>29</sup>

And in Denmark, the first of the European countries to drop Professor's Privilege in 2000, there was a substantial decrease in biotech patenting by university academics compared to Sweden.<sup>30</sup>

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27 Czarnitzki, D., Doherr, T., Hussinger, K., Schliessler, P. and Toole, A.A. (2015). Individual versus Institutional Ownership of University-Discovered Inventions. USPTO Economic Working Paper No. 2017-07.

28 Ejerimo, O. and Toivanen, H. (2018). University Invention and the Abolishment of the Professor's Privilege in Finland. *Research Policy*, Vol. 47, No. 4, pp. 814-825.

29 Hvide, H.K. and Jones, B.F. (2018). University Innovation and the Professor's Privilege. *American Economic Review*, Vol. 108, No. 7, pp. 1860-1898.

30 Finn, V. and Lund-Jensen, R. (2007). Effects on academia-industry collaboration of extending university property rights. *Journal of Technology Transfer*, Vol. 32, Iss. 3, pp. 251-276.

Although there was an increase in Danish university-owned biotech patents, this was more than offset by a much larger decrease in company-owned patents by university researchers: “the larger part of the inventive potential of academia [in Danish biotech], previously mobilised into company-owned patents, seems to have been rendered inactive as a result of the reform.”<sup>31</sup> Just as in other countries, there was an overall decrease in the commercialisation of university research, with the remaining commercialised research taken out of the hands of specialised and well-funded organisations with relevant expertise, and instead placed in the hands of unspecialised, under-funded university TTOs.

Correspondingly comprehensive evidence for the remaining country to drop Professor’s Privilege, Austria, is still lacking – but even the evidence for Germany, Finland, and Norway has only emerged in the last few years. The research on Denmark was the first to emerge in 2007, and was not as comprehensive.

Indeed, recent evidence from Sweden, which alone has maintained a system of Professor’s Privilege, suggests that the assumption that the US is superior at commercialising university research – which was the basis of the five European countries dropping Professor’s Privilege in the 2000s – may have been flawed all along. Sweden appears to have had a slightly higher rate of academic entrepreneurship than the US in the very period that the other European countries were abolishing Professor’s Privilege.<sup>32</sup> The results suggest that Professor’s Privilege leads to academics being more likely to create spinouts than if universities assert control over their intellectual property rights. Swedish academic entrepreneurs also appear to have had lower rates of commercial failure, “consistent with the fact that they have larger cash-flow rights and control rights than US academic entrepreneurs.”<sup>33</sup>

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31 Ibid.

32 The study compares Natural Science, Engineering and Medicine students who received PhDs in 1999-2008 in Sweden, and those who received NSEM PhDs in 1993-2006 in the US.

33 Åstebro, T., Braguinsky, S., Braunerhjelm, P. and Broström, A. (2019). Academic Entrepreneurship: The Bayh-Dole Act versus the Professor’s Privilege. *ILR Review*, Vol. 72, Iss. 5, pp. 1094-1122.

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## What should the UK do?

The evidence emerging from four of the five European countries that swapped academic ownership for university ownership, and from Sweden which kept to a model of academic ownership, is overwhelming. It all suggests that when academics retain ownership of their intellectual property, they are much more likely to commercialise it, and commercialise it successfully, than when ownership is vested in their universities, as well as retaining the ability to take advantage of other, non-commercial ways of encouraging the adoption of their innovations. Indeed, there is every reason to suggest that academic ownership of intellectual property would succeed in the UK: a recent preliminary study of UK spinouts created between 2010 and 2021 finds that the higher a stake that a university takes in a spinout, the more it reduces the likelihood of the spinout raising venture capital; and that when universities reduce their stakes, more spinouts are created.<sup>34</sup>

This is not all to say that TTOs should be abolished – far from it. A move to a system of Professor's Privilege – control of intellectual property by the individuals or teams responsible for creating it – would most likely actually benefit many TTOs. Those TTOs that have developed industry-specific expertise or connections, for example, would be enabled to support and obtain stakes in the inventions of academics who are based at other universities, whom they could not otherwise have supported. It would open up the supply of academic inventors available to all TTOs, and the academic-specific support on offer to all academic inventors, which at the moment is monopolised by each TTO according to the university that controls it.

One justification used for TTOs and university ownership is that faculty and students might be unmotivated or even resistant to commercialising their innovations. By having their intellectual property assigned to the university, TTOs are in theory able to commercialise their intellectual property without them. In practice, however, few, if any, innovations are commercialised without at least some cooperation from the individuals or teams who invented them. And a system of academic ownership, in any case, does not prevent academic inventions being commercialised without much involvement from the individual academics: companies, either directly or through the intermediation of a TTO, would still be able to make academics financial offers to obtain the use of their intellectual property. And TTOs, if they wished to obtain a stake, would likewise be able to make financial offers to academics that are sufficiently attractive to induce their cooperation. They would simply need to do so in competition with other TTOs and companies.

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34 Hellman, T.F., Mulla, J. and Qian, M. (2023). How does Equity Allocation in University Spinouts affect Fundraising Success? Evidence from the UK.

Ultimately, faculty and students who *are* actively interested in commercialising research – and in any case, the most likely to succeed at putting an innovation along the path to commercialisation and widespread adoption – should not have to suffer restricted choice, worse terms dictated by their university, and have to pay licence fees to use their own work, just because of the potential existence of a tiny minority of hypothetical holdouts, who in any case could be induced to commercialise their innovations by being offered competitive terms in a more open system.

One potential alternative to full ownership of intellectual property by university researchers is to force open the market for TTOs, enabling them to compete with one another. This could be achieved without the need for primary legislation governing intellectual property rights, by simply tying government funding of universities to them adopting policies that allow their researchers the choice of commercialising their research without their own university's involvement, giving them the ability to use other universities' TTOs instead, or perhaps not to use them at all. Imperial, for example, offers such a system of Founders' Choice, though it still requires that the university take a cut of undiluted founding equity.

Care should still be taken, however, to ensure that a system of Founders' Choice does not close off many other potential avenues for how university research is commercialised or spread. A TTO-only version of Founders' Choice would have the distinct disadvantage that it would assume TTOs are necessary to increasing the adoption of academic research, when in fact it can be commercialised independently by academics, with the help of their own prior industry contacts (especially for serial entrepreneurs), through the direct involvement of companies, and perhaps even not commercialised at all, but spread through other means.

All of these other routes can perhaps be closely approximated by creating a more expansive version of Founders' Choice, which still maintains university ownership. But it seems significantly less complicated and less prone to negative unintended consequences to simply break the localised monopolies that universities enjoy and place ownership in the hands of the academics themselves. A system of Founders' Choice is, in effect, a reverse-engineered version of Professor's Privilege, though with the risk that through poor design it ends up being only partial, without the full benefits.

Regardless of the precise mechanism chosen, adopting a system of Professor's Privilege, or a kind of fully simulated version of it, would both open TTOs up to competition with one another and increase the opportunities available to the TTOs best able to genuinely add value to spinouts. This would likely benefit those higher-quality TTOs that appear to punch above their weight, rather than just those that happen to control the intellectual property of especially well-funded universities.

It would also increase the opportunities available to institutions that compete with TTOs for stakes in spinouts. The status quo of university ownership necessarily restricts the viable size of the UK's venture capital industry, as it forces essentially all investors – except in cases where universities voluntarily waive their rights – to first deal with TTOs and accept their equity stakes and licence fees, irrespective of whether the university or its TTO actually added value to the process or not.

This is not all to say that TTOs cannot add value. They can, and often do. But they currently do so from a typically privileged, monopoly position, which would be considered unacceptable and anti-competitive in any other industry. Faculty and students should at least be given the option to commercialise their own research in the way they see fit, increasing the diversity of routes by which new technologies can succeed and go on to improve general living standards. Simply put, the best way to support UK spinouts would be to adopt the tried and tested, evidence-based model of academics controlling their own inventions.

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## Conclusion

British universities are a wellspring of innovative ideas. From advances in material science, to medical breakthroughs, and much more besides, we should be proud of our long tradition of translating academic genius into the goods and services which make us more prosperous and better equipped to deal with pressing society-wide challenges.

Yet, a growing base of evidence suggests that we could be doing even better – and that the success stories we have witnessed in recent years have perhaps occurred in spite of, rather than because of, the current arrangements which typically govern the commercialisation of academic research.

In this paper, we have outlined alternative approaches of differing levels of ambition with respect to how to do this. We believe a system of Professor's Privilege, or a system of Founders' Choice that almost wholly reverse-engineers its beneficial effects, would put the UK in a markedly stronger position when it comes to nurturing successful spinouts. The sooner that the Government gets on with enacting them, the more assured it can be that it is doing all it can to deliver its aspiration of making the UK a science and technology superpower.

**The Entrepreneurs Network is a think tank for Britain's most ambitious entrepreneurs, with an aim to make Britain the best country in which to start and grow a business.**

**WE SUPPORT ENTREPRENEURS BY:**

- Producing cutting-edge research into the best policies to support entrepreneurship;
- Campaigning for policy changes that will help entrepreneurship flourish;
- Hosting regular events to bridge the gap between entrepreneurs and policymakers;
- Updating entrepreneurs on how policy changes will impact their business;
- Making the case in the media for entrepreneurs' contributions to society.

**APPG FOR ENTREPRENEURSHIP**

We are the Secretariat of the All-Party Parliamentary Group for Entrepreneurship, which was set up to encourage, support and promote entrepreneurship and to engage with entrepreneurs; and to ensure that Parliament is kept up to date on what is needed to create and sustain the most favourable conditions for entrepreneurship.



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