

Spinning out Success:

Demystifying UK university spinout trends, equity and investment

EXECUTIVE SUMMARY

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MARCH 2024

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The views and arguments expressed in this report are of the authors and do not represent the positions of organisations or expert groups of which the authors are currently, or were previously, members.

Citation

Please cite this work as: Ulrichsen, T.C. and Roupakia, Z. 2024. Spinning out Success: Demystifying UK university spinout trends, equity and investment – Executive Summary. Policy Evidence Unit for University Commercialisation and Innovation (UCI), University of Cambridge.

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ABOUT UCI

The Policy Evidence Unit for University Commercialisation and Innovation (UCI) is based at the University of Cambridge and aims to support governments and university leaders in delivering a step change in the contributions universities make to innovation and economic prosperity – nationally and locally – through their commercialisation and other innovation-focused activities and partnerships.

UCI seeks to improve the evidence base and tools available to key decision makers in public policy and university practice as they develop new approaches for strengthening university research-to-innovation pathways, with a particular focus on commercialisation. To do so it draws on the latest advances and insights from both academic research and policy practice, as well as lessons learned from experiences in the UK and internationally.

The Policy Evidence Unit is funded through a generous grant from Research England. It is based at the Institute for Manufacturing (IfM) at the University of Cambridge.

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Published by the Policy Evidence Unit for University Commercialisation and Innovation, Institute for Manufacturing, University of Cambridge.

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Acknowledgements

We would like to thank the Technology Transfer Offices (TTOs) of the fifteen UK universities that participated in our study. We are incredibly grateful for their support and efforts in providing us with the data necessary to deliver robust and systematic assessments of the UK spinout landscape and trends in spinout production, investment performance, and key deal terms. The quality and comprehensiveness of data provided allowed us to overcome important limitations to unlock new, robust insights on the relationship between university founding equity and investment success of spinouts. Crucially, their comments and insights enabled us to develop a much more nuanced understanding of the context of the spinouts being produced and the deals being negotiated, allowing us to more accurately interrogate the data and interpret the results.

Our project also greatly benefited from engaging with TTO directors, experts in the field of technology transfer and spinning out companies from universities, and data management professionals, ensuring the accurate interpretation of the data. Their insights and advice were invaluable to our ability to analyse and interpret the data.

We also wish to express our appreciation to PraxisAuril, the UK-based TTO directors from the TenU, and the Russell Group Enterprise Directors Forum for their support in helping to secure participation of key universities in our study, thereby ensuring a strong and representative sample from which robust conclusions could be developed.

Disclaimer

The views and arguments expressed in this report are of the authors alone. They **do not** represent the positions of organisations or other groups to which the authors belong, or the positions of any of the organisations engaging with the study.

The authors have made every effort to accurately capture and analyse the data and information generously provided by university TTOs as part of the study. Any errors in data linking, analysis and interpretation, and presentation of the evidence are the authors' responsibility.

Executive Summary



Executive summary

This report presents detailed empirical evidence to policymakers, university leaders and other stakeholders on:

- ❖ Key patterns and trends around spinout production and how this compares to similar universities in the United States.
- ❖ Equity and other deal terms being negotiated between universities and their spinout teams at the point of foundation, and how levels of university founding equity are changing over time.
- ❖ Spinout success in raising private investment to drive their development and growth, and the ability of the UK to retain spinouts as they scale and mature.
- ❖ The relationship between the level of equity a university takes in their spinouts at the point of their foundation and the success of these companies in raising private investment.

University spinouts have an important role to play in helping drive innovation-led economic growth, not least by providing a vehicle to commercialise breakthrough technologies which are able to open up new wealth-creating opportunities, seed new markets, and provide solutions to help other companies raise their productivity and efficiency. Once a critical mass is reached, they can also help to drive entrepreneurial dynamism within a local cluster or key industry.

Given this, policymakers around the world are turning their attention to strengthening their nation's entrepreneurial and innovation systems to produce more, high potential university spinouts. These ambitions often form part of strategies to better harness the power of a nation's science and technology base to drive national competitiveness and economic growth, and to tackle major global, national and regional challenges.

Building and nurturing a successful university spinout ecosystem is a multifaceted challenge that requires many building blocks to be in place and strengthened. Despite this, much of the debate in the UK over recent years has been dominated by a narrow focus on the role of university founding equity in their spinouts, with some arguing that higher equity taken at the point of foundation results in spinouts finding it harder to raise investment.

Although some progress has been made in the past year, the university equity-investment success debate has historically been held back by a lack of robust and systematic evidence on deal terms, with previous studies either building on anecdotes, poor-quality data, or partial information about the deal. Our study attempts to address these limitations by working closely with the Technology Transfer Offices (TTOs) of 15 universities responsible for approximately half the spinout production in the UK to obtain internal data on their populations of spinouts, including founding equity and other key deal terms at the point of foundation and initial non-grant investments raised; data which can be very hard to obtain through public and commercial sources.

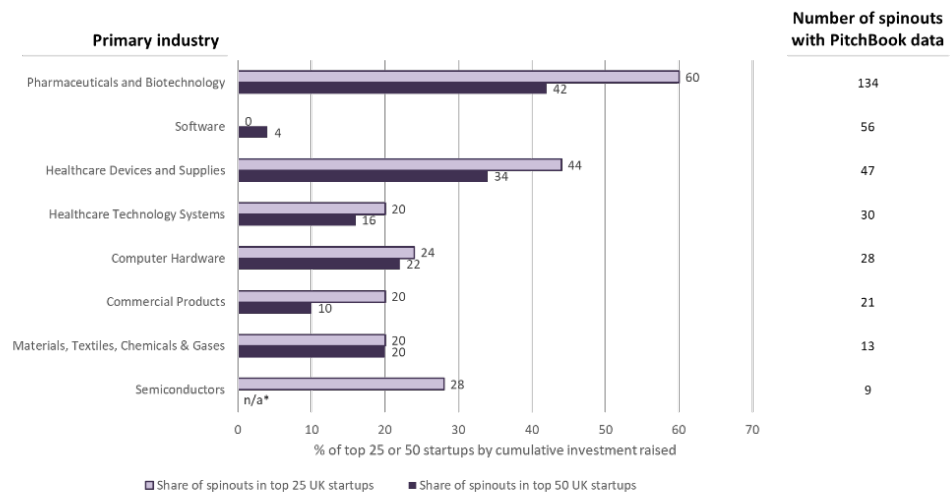
The following key findings emerged from our in-depth and systematic analysis of the data provided by these universities, integrated with data obtained from other sources.



1. UK university spinouts are an important driver of entrepreneurial activity in key sectors of the economy

Universities are key players in driving entrepreneurial activity in strategically important sectors for the UK, such as pharmaceuticals and biotechnology, semiconductors, advanced materials, and healthcare devices. Spinouts from 15 UK universities, representing about half of the nation's total spinout production, make up a significant proportion of investment-led start-ups in these sectors. Notably, university spinouts make up a substantial proportion of top-ranking start-ups in terms of investment, comprising 60% of the top 25 pharmaceutical and biotech start-ups, 44% of healthcare devices start-ups, 44% of healthcare devices start-ups, and 28% of semiconductor start-ups.

Although the number of academics involved in spinning out companies is relatively small, our findings underscore the vital importance that university spinouts play, as a part of their portfolio of knowledge exchange activities, for driving a science and technology-driven economy.



* Fewer than 50 companies were founded in the semiconductor sector between 2015-22 according to PitchBook

Figure X.1 | Prevalence of UK university spinouts founded between 2015-22 in the top 25 and top 50 UK-based start-ups identified in PitchBook founded during the same period raising the most amount of investment (Figure 12 in the full report)



2. UK universities have increased spinout production, with spinouts raising increasing amounts of investment

In recent years, the number of spinouts created by UK universities has increased, reaching an average of 180 per year, with evidence of strong survival rates. The production of spinouts is heavily skewed towards universities with larger research bases, with those generating over £90 million in research income accounting for 67% of spinouts over the past four years.

Spinout production appears to scale linearly with the amount of research undertaken once a threshold scale of research is reached (around £90 million), with the average spinout production rate similar across groups of universities of similar research scales. However, we do observe variations around the median for each group, suggesting potential differences in spinout production performance.

Spinouts emerging from Greater South East universities attract significantly higher external investment than those from other UK regions, regardless of university size. However, the location also intersects with the research base: universities outside the Greater South East generate similar spinout numbers per £100 million of research income as their larger counterparts in the Greater South East. On the contrary, smaller research universities within the Greater South East (with annual research incomes between £30 million and £90 million) produce fewer spinouts per £100 million of research income than their counterparts in the rest of the UK.



3. UK university spinout production compares favourably with their US counterparts

Spinout production rates in the UK and the US are remarkably similar for larger research universities once differences in the scale of universities' research bases are accounted for. As with the UK, spinout production in the US correlates very strongly with the size of a university's research base. With the largest US research universities being much bigger than the largest UK universities, it is perhaps unsurprising that they produce higher absolute numbers of spinouts annually.

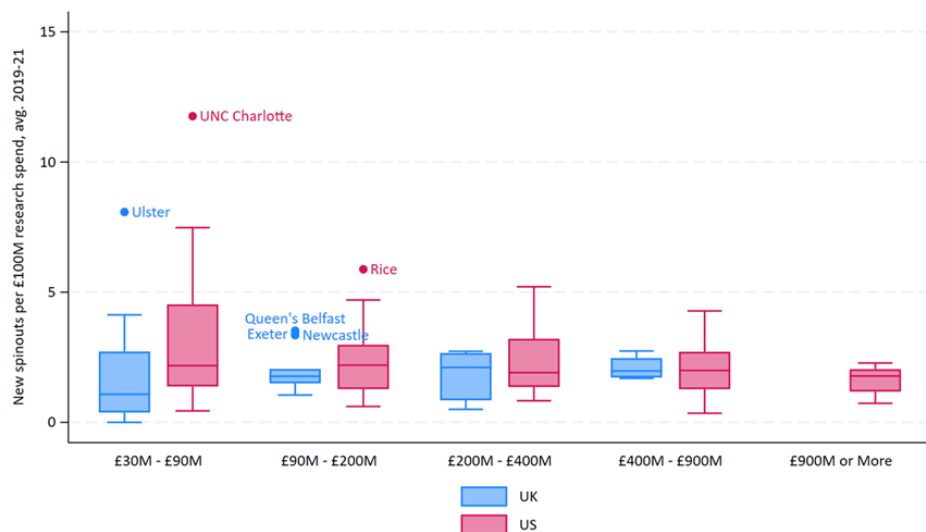


Figure X.2 | Spinout production normalised by the scale of the research base for universities of different sizes, US-UK comparisons (Figure 14 in the full report)



4. Our findings suggest challenges in the UK retaining value from their spinouts as they scale and mature

While universities perform well in producing spinouts, our findings tentatively suggest that the UK struggles to fully capitalise on the value potential created by its spinouts to drive long-term national and regional benefits. We observe the growing importance of overseas markets, investors, and companies in enabling UK-based spinouts to grow and scale. Further work is urgently needed to understand the scale, nature, and drivers of this challenge.

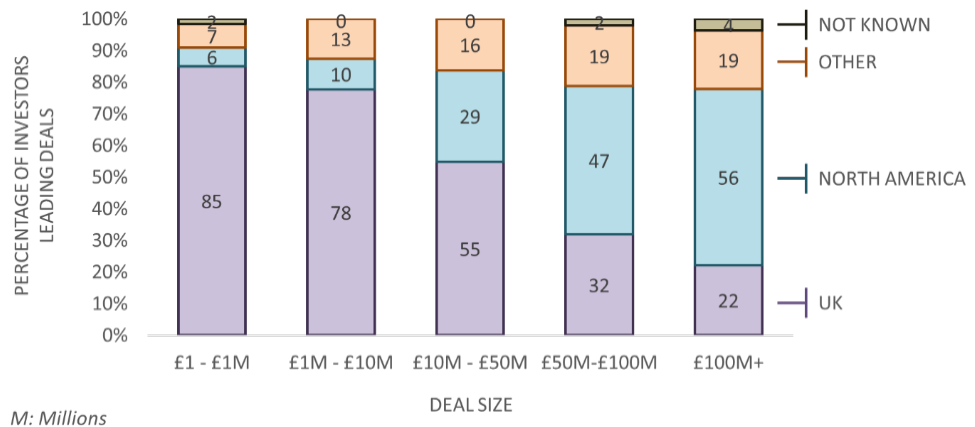


Figure X.3 | Location of lead investors in spinout deals of different sizes for spinouts founded between 2012-2021 (Figure 26 in the full report)



5. UK university founding equity has been trending downwards in recent years

Fifteen universities with research incomes exceeding £90 million shared detailed data on their spinout populations and key deal terms at the point of foundation for those founded from 2015 onwards. The median equity held by these universities in their spinouts was 20%, with a range of 5% to 37%. For spinouts attracting the most initial investment (top decile of investment), the median equity was 24%, ranging from 7% to 47%. Equity stakes varied notably across different industrial sectors, from 25% in pharmaceuticals and biotechnology to 10% in IT software.

Consistent with our 2022 landscape report on the reality of UK university approaches to spinout equity, our analysis finds that the level of equity taken by a university in their spinouts has been trending downwards since 2015. The reductions were driven by those that historically took higher levels of equity.



6. Universities outside the largest research institutions are more likely to balance equity terms with fee-bearing licenses in deals

Our analysis reveals varied approaches to balancing equity and fee-bearing licenses for intellectual property (IP). While the largest research universities often secure some form of fee-bearing licenses alongside equity, universities with research incomes ranging from £200 to £400 million exhibit a more nuanced approach. Approximately half of the spinouts from these universities involve a combination of fee-bearing licenses and equity. Conversely, spinouts from universities with more modest research incomes typically only seek fee-bearing licenses when combined with minimal or no equity.



7. Spinouts from universities in the Golden Triangle typically raise considerably more than others in initial rounds of investment

Spinouts in our study typically secured a median average of £600,000 in their initial funding round from private investors (i.e. excluding grants), which increased to £1.2 million in their second round. Moreover, in line with broader findings, spinouts originating from universities within the Golden Triangle generally raise substantially more in both their initial and subsequent funding rounds compared to those from universities located outside this area of the UK.



8. Long development times from initial investments to raising significant financing to drive scale-up or securing a positive exit

More than half of the 7- to-8-year-old spinouts in our study, established between 2015 and 2016, secured funding exceeding £15 million. Additionally, 20% of these spinouts raised more than £25 million, and an additional 22% achieved favourable outcomes in the form of acquisitions or initial public offerings (IPOs). As expected, these shares reduce for more recent companies, likely reflecting the long development times for many spinouts and challenges in securing the necessary financing to scale.



9. Evidence of only a weak, non-linear relationship between university founding equity and the initial investment success of spinouts, with the shape dependent on context

We find evidence of only a very weak (albeit statistically significant), non-linear relationship between university founding equity and the initial investment success of spinouts, with the shape dependent on context. We suggest that other factors, such as the value proposition, team strength, support available, investor access and relationships, and market access likely play a more significant role. Further research is needed to better understand the relative contributions of these different factors.

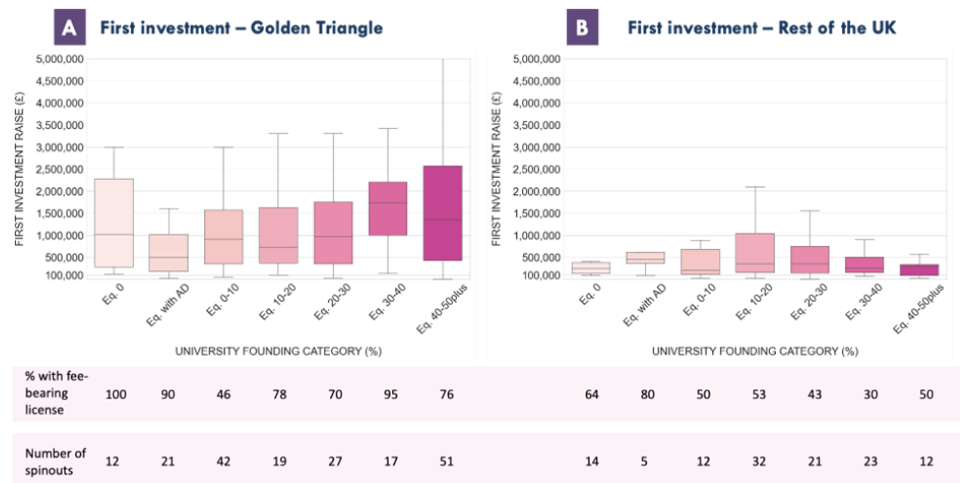


Figure X.4 | Investment raised by spinouts for different university equity categories: deep dive in location, Golden Triangle versus Rest of UK. Golden Triangle universities in our sample are dominated by very large research universities (Figure 33 in the full report)

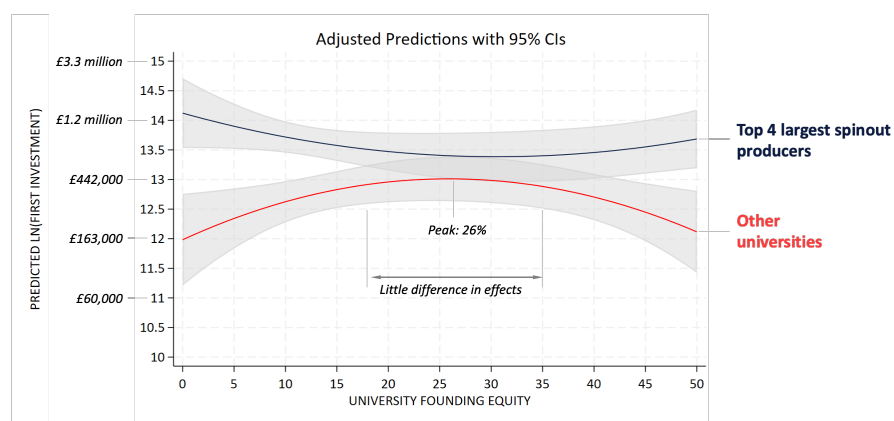


Figure X.5 | Predicted (marginal effects) of the natural logarithm of the amount of investment raised during the first (non-grant) funding round for different levels of university founding equity for spinouts emerging from the top 4 universities producing the most spinouts and other universities (Figure 35 in the full report)

In interpreting our findings, it is important to note that our empirical study is necessarily based on historical data. As such, should conditions in the spinout ecosystem change significantly – for example, changes in market conditions, investor and founder preferences, university leadership and support, government policies and translational funding – the continued relevance of our findings would need to be re-tested. To address this, it is crucial to keep a finger on the pulse of the health and performance of the UK spinout ecosystem, and the drivers, conditions and preferences of universities, funders, founders, and investors that shape success.

Moving forward:

- We need to **expand the debate** beyond the traditional focus on university founding equity to identify the critical factors influencing spinout success and find ways of building and reinforcing them.
- We need a concerted effort to **understand how the UK can scale and grow spinouts** and ensure that more of the long-term value unlocked by spinouts is captured for the benefit of the UK and across regions and nations.
- We emphasise the importance of **leveraging data-driven insights to inform policymaking and guide efforts to strengthen the UK spinout ecosystem**. Given the rapid developments in the ecosystem, we need to actively monitor and track the health and performance of the system, and the conditions, preferences and drivers that shape success. Given the importance of spinouts in driving innovation in strategically important technologies and sectors of the economy, we need to get much better at classifying spinouts to understand the unique potential of spinouts in different technology or market segments, and ensure policy and funding are well targeted. The development of a national spinouts register is a critically important first step towards this.
- We highlight the necessity of **better aligning policy efforts across different domains** to ensure that the UK spinout ecosystem is able to help deliver on the Government’s ambitions for global leadership in key technology sectors. This includes policy areas such as: science and technology (research commercialisation, strategic technology prioritisation etc.); economy and finance; geography (clusters, local conditions, etc.); education and skills, immigration, business (supply chains); and trade (access to key markets, development partners, and overseas investors, etc.).

In summary, our proposals aim to foster a more comprehensive understanding of spinout dynamics and to formulate strategic policies that support their sustainable growth and success. By broadening the scope of the debate, leveraging data-driven insights, and aligning policy efforts across multiple domains, we can enhance the UK’s position in the global technology landscape and capitalise on the potential of spinouts to drive innovation, economic growth, and societal advancement.

