

# BUSTING MYTHS AND MOVING FORWARD

The reality of UK university approaches to  
taking equity in spinouts

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TECHNICAL REPORT

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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 and commercialisation pathways. It draws on the latest advances and insights from both academic research and practice, as well as lessons learned from experiences in the UK and internationally.

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## 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, the views of the Steering Group or the organisations to which they 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 information generously provided to them by university technology transfer offices as part of the study. Any errors in interpretation, analysis, and presentation of this information are the responsibility of the authors.

# Contents

Executive summary .....	6
1 Introduction .....	18
2 Putting the equity debate into context.....	22
2.1 UK university performance in spinning out companies.....	22
2.2 Opportunities lost due to equity disagreements.....	23
3 The spinout journey and its many stakeholders.....	26
3.1 The spinout journey and its many stakeholders.....	26
3.2 Stakeholders involved in spinout negotiations.....	30
3.3 Risks and rewards along the spinout’s research-to-innovation journey .....	31
3.4 Potential effects of the misalignment between lifetime risks and lifetime rewards .....	34
4 Barriers and issues facing universities when spinning out companies.....	38
4.1 Barriers to spinning out companies: perspectives of TTOs.....	38
4.2 Main issues when negotiating spinout equity distribution .....	41
5 Equity and the wider spinout deal.....	45
5.1 Why universities typically take equity in spinouts.....	46
5.2 Transferring the IP into the spinout.....	48
5.3 Post-spinout rights for the university .....	52
5.4 Timing of university equity being taken spinouts.....	53
5.5 Dilution of founding equity prior to investment.....	53
5.6 Tranching equity .....	58
5.7 Types of shares held by universities in spinouts.....	59
5.8 Equity dilution as investment enters a spinout .....	59
6 Amount of founding equity taken by UK universities in their spinouts.....	64
6.1 The variety of university approaches to taking equity .....	64
6.2 Factors influencing the level of university founding equity.....	65
6.3 University founding equity for different types of spinouts .....	68
6.4 Equity and university performance in generating spinouts.....	70
7 How academic founders and inventors benefit from spinouts .....	74
7.1 Career choices of academic founders of spinouts.....	74
7.2 Treatment of founders that leave and remain in university employment.....	75
7.3 Ongoing academic engagement with spinouts.....	76
7.4 Mechanisms used to ensure non-founding inventors benefit from spinout success.....	77
8 Types of support provided by UK universities to their spinouts.....	80
8.1 Pre-foundation.....	81
8.2 Post-foundation .....	84
8.3 Covering patent costs .....	86
8.4 Access to investment .....	88
9 University reviews of spinout policies and approaches.....	93
10 Conclusions and moving forward .....	97
References .....	98
Appendix A: Survey of university approaches to taking equity in spinouts.....	101



# **Executive summary**

# Executive summary

This report provides an evidence baseline for policymakers, university practitioners, and others on the current state of UK university approaches to taking equity in spinouts and supporting them to commercialise university research.

University spinouts have an important role to play in driving innovation-led economic growth, not least by providing a vehicle to commercialise breakthrough technologies emerging from university research that can open up new wealth-creating opportunities in existing industries, help to seed new markets, and deliver new commercial solutions assisting other companies in raising productivity and efficiency. Once a critical mass is reached, they can also help drive the entrepreneurial dynamism of a local cluster or key industry.

There is currently an intense debate amongst policymakers and others focused on understanding how to strengthen the ability of the UK's research and entrepreneurial innovation systems to produce more, high potential spinouts to unlock new sources of economic wealth and industrial competitiveness.

Discussions, however, are dominated by a singular focus on the level of equity universities take in their spinouts and whether this is conducive to spinout success and the ability of companies to raise external financing to drive their development and growth. The debate is further complicated by the lack of robust and systemic evidence on the reality of *current* UK university approaches to supporting spinouts, *when they are typically deployed* (for example, to commercialise different types of IP), and the *reasoning* behind their approach. Much has been claimed on these topics, but many claims appear to be justified based largely on anecdotes and experiences with specific universities. Little evidence is presented on whether they represent the *typical* experiences and current practice.

Drawing on detailed insights shared by the Directors of 24 UK university technology transfer offices on their approaches to spinning out companies, our report aims to move the debate beyond perceptions of practice to an understanding of the reality of current university approaches to taking equity in 'typical' spinout cases and why and how they seek to support academic founders in commercialising university research. It also seeks to bring clarity to what is inherently a complex process involving multiple individuals and organisations with competing motivations and obligations. Only then can we begin to have a constructive debate about what can be done to improve the status quo.

Our report is set against a backdrop of positive indicators in the development of the UK spinout landscape. Over the period 2012 – 2021, the number of spinout deals has doubled, the amount of investment raised by UK spinouts increased from £970 million to over £5 billion, and leading UK universities with very different approaches to spinout equity have raised substantial amounts of capital dedicated to investing in their spinouts. A major review of UK university-investor links in 2019 by the former Deputy Group CEO of Standard Chartered, Mike Rees, found that the system was not broken, but as with all systems, there are always ways to improve.

## X.1 Headline findings

### ***UK university spinout system is evolving***

Our research reveals a UK university system evolving and adapting to changing external and internal conditions and pressures. In recent years, many spinout-producing universities have reviewed their spinout equity and IP policies. Policies typical in the 2000s appear to have changed in many institutions. Some highlighted highly consultative review processes aimed at balancing the competing interests and motivations of key internal and external stakeholders.

### ***To strengthen the UK spinout system, we need to move beyond a singular focus on equity to account for the lifecycle and systems nature of the spinout process***

As policymakers review how they can act to strengthen the UK's spinout system, it is important that we account for both the systems-nature of the spinout process, and the lifecycle of the journey from research to commercial application. We urgently need to move beyond a singular focus on the amount of equity a university takes in its spinouts at foundation to understand the wider set of deal terms and conditions that shape who benefits, when, and how. This includes not least license terms and ongoing access to university facilities and expertise), both of which will shape the company's valuation.

Negotiating equity can be challenging, but it is often resolvable. However, setting up spinout companies to commercialise university research face many further barriers that should command our attention, not least the ability to de-risk technologies and the business venture sufficiently before having to incorporate and seek investors; the ability of spinouts to find sufficient talent and expertise – entrepreneurial, managerial, commercial, technical – in their local economies, and access the necessary facilities and equipment to further their development; the investment environment readily accessible to universities and founding teams; and the availability of resources within universities to support increasing numbers of academics seeking to commercialise their research.

### ***We also need to recognise the wider set of stakeholders involved and the risks they bear, in investing in the spinout journey***

We must also recognise the individuals and wider organisations that influence and contribute to the research-to-innovation journey of the spinout beyond those directly involved in the negotiations, including research funders, non-founding inventors, TTOs, and their wider university. Pre-foundation some will invest their time, expertise, and money directly to enable the development of the technology or business idea to the point where it can attract commercial investors. Others work to create more conducive and supportive conditions and environments within which the commercialisation opportunity can develop and incubate. Their role post-spinout foundation inevitably changes as other stakeholders enter to drive the future development of the company.

Along the spinout journey the various stakeholders bear different types and levels of risk. Given the long time from research to commercial return,

they also have very different abilities to influence how any rewards are shared over the spinout's lifetime, which may lead to a misalignment between the distribution of lifetime risks and rewards across stakeholders.

**Many universities have developed a 'segmented model', with different approaches to equity for different types of spinouts**

Many universities have developed a 'segmented model', with different approaches to equity and the wider deal seeking to reflect the circumstances and needs of different types of spinouts. Key factors influencing the level of founding equity sought by universities include the amount and type of IP entering the spinout, the level of support provided (including financial) and the license terms (royalty/fee bearing or free).

Where the spinout is built around significant university IP and has benefited from investment of university resources (in-kind or financial) to develop the technology and/or business, the median level of university equity at foundation pre-money is 33%. Pre-agreed equity pools for an incoming CEO, employee options, or other purposes, typically dilute both the university and founders proportionately. Accounting for these pools results in a median university founding equity position of 20% pre-money. Where universities take this level of equity the IP is often licensed either royalty-free or with favourable terms.

Where the university has made less contribution to the spinout (less IP or investment of support), the median university pre-money founding equity is 10%, reducing to 5% once pre-agreed equity pools are accounted for.

Most universities take ordinary shares that *fully dilute* alongside other founding shareholders. If they cannot co-invest as the spinout grows, their initial stake typically is diluted to single digits once the company scales up.

**Universities are increasingly investing to support technology and commercial readiness of spinouts**

Many universities generating spinouts have invested actively over the past decade to build up a system of support to help budding academic entrepreneurs develop their ideas into viable commercial opportunity. While much of the support is in-kind (staff time, free/discounted access to facilities, free training and access to mentors etc.) more universities have been creating internally or externally managed funds to invest in the pre-seed/seed stage of the venture, with some of the larger institutions establishing large-scale funds allowing them to follow-on their investments as the company scales.

Lastly, we must recognise that universities in the UK, while largely publicly funded, are autonomous organisations typically established as 'exempt' charities. This places legal obligations and restrictions on what they can do and how they operate. One such obligation is a requirement to seek financial reimbursement if they use their assets for economic purposes. Spinout equity and IP licensing provide one such mechanism. Moreover, a university has a duty to reinvest any financial returns from success to advance its charitable aims. When reinvested in the commercialisation support and funds, this ultimately helps to reduce the burden on the taxpayer to fund this important activity.



## X.2 Findings in more detail

Below we set out in more detail the findings from our study aiming to capture the current state of UK university approaches to taking equity in spinouts.

### Barriers and issues facing the spinning out process

#### *Need to broaden focus of barriers to producing and nurturing spinouts away from singular focus on equity*

The current debate on how to strengthen the UK system to produce more high potential spinouts is also dominated by a singular focus on the difficulties of reaching an agreement on equity distribution at foundation. However, we know that commercialising research through a spinout is challenging. In our survey, university TTOs articulated a more comprehensive set of barriers beyond negotiating deal terms, including:

- Whether the **technology being commercialised is sufficiently de-risked** to attract investors and whether the **venture is 'commercially ready'**
- The **time, motivation and entrepreneurial capabilities** of the founding teams
- The ability of the spinout to **access the necessary facilities and expertise** (e.g. technical, managerial, commercial) within their local economy to drive the development of the spinout
- The **investment environment** within which the spinout and university are based
- The availability of **university resources** to devote to supporting the spinout, and the **effectiveness of university spinout-related processes** and policies

#### *University TTOs confront a range of issues beyond equity, including ensuring deals meet their institution's charitable obligations*

Furthermore, in addition to resolving the equity distribution amongst founders, TTOs have to confront and resolve a broader range of issues during spinout negotiations. These include:

- Ensuring a **fair distribution of equity, managing expectations, and securing buy-in** of the approach amongst key stakeholders
- Addressing **post-spinout equity** considerations such as access to technological improvements and IP pipelines
- Agreeing non-equity related terms such as **license terms, ongoing costs, and future access** to university expertise and facilities
- Navigating and applying **university IP policies**, and ensuring deals comply with the **university's obligations as an exempt charity**
- **Considering the effects of the specific deal on the wider university** community and entrepreneurial and research culture. This will include effects on the research groups and departments of the founders, as well as risks for other partnerships and efforts the university, as a large complex organisation, have underway

## University founding equity in spinouts

***Equity decisions are often (but not always) tied up with decisions on other terms***

Equity is one part of a spinout deal. In many universities, decisions on equity are tied up with decisions on other terms (not least e.g. financial terms on license and future access and support from university), and the type of IP at the heart of the spinout's value proposition and degree of investment (in-kind and/or financial) by the university in helping the spinout to de-risk the IP and become commercially ready.

***Universities typically take ordinary shares that are diluted along with other founders***

In most cases, universities take ordinary shares in their spinouts, with their equity diluting along with other founding shareholders. Crucially, decisions at foundation on reserving pools of equity for different purposes – e.g. to incentivise incoming CEOs and management (typically 10-15%), to create option pools to incentivise future employees (typically 10-15%), and in some cases, equity to compensate for third party support in developing the company pre-foundation – can immediately dilute founding shareholders.

***Equity pools to incentivise CEOs or future employees typically dilute universities and founders proportionately***

We found that where universities take higher amounts of founding equity, both universities and founders will see their initial equity shares dilute due to these equity pools. Where they take low equity, these reserved pools of equity are more likely to come out of the founders' shares only. One exception here is any equity taken by universities as part of obligations to research funders to compensate for their investments in the research. These typically dilute the university's share only.

***Founding equity can get diluted very quickly once investment enters the spinout***

We also show through 'synthetic' examples, based on highly anonymised yet real-world data, how the founding equity for both universities and founders can get diluted very quickly as investment enters the spinout unless they are able to invest alongside investors.

## Academic founder career choices, non-founding inventors, and spinout deals

***Senior academics founders remain at the university while junior researchers typically join the spinout***

Not all academic founders engage with the spinout in the same way. In many universities we found that most senior academics founding spinouts remain in employment with the university and continue to contribute to the company through other means such as consultancy, part-time roles, and secondments. This allows them to continue driving their research endeavours.

By contrast, most early career researchers involved will leave to join the company.

*While some approaches treat founders the same, others differentiate between those that leave and those that remain.*

While about half of the universities in our sample currently treat founders that leave university employment to join the company the same as those that remain when negotiating terms, about half acknowledge important differences in the levels of risk being taken and reflect these in the equity split between founders as well as in other terms.

*Important to recognise and reward non-founding inventors*

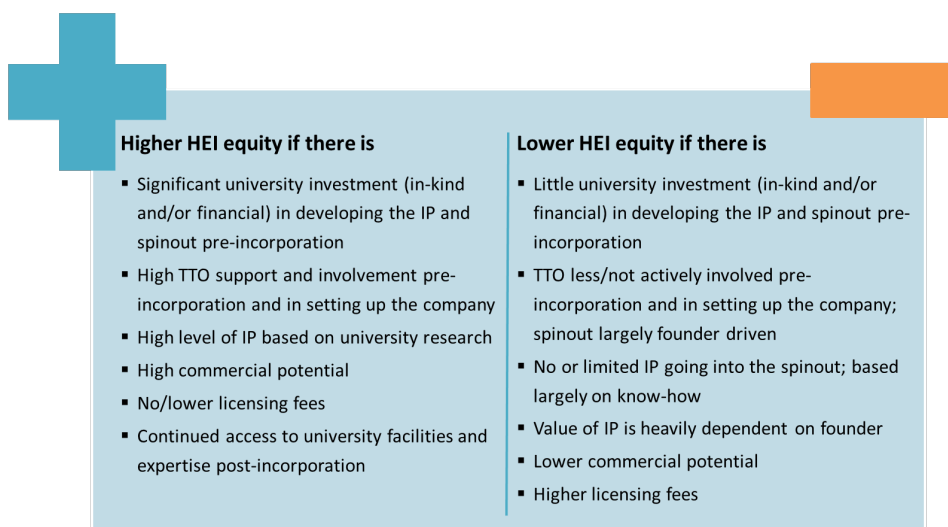
We must also recognise the importance of academics that contribute to the development of the IP but are not involved in founding the spinout. Failing to appreciate their contributions can lead to adverse effects on the wider research community from which the spinout has emerged. In our sample, these ‘non-founding inventors’ typically benefit through a range of mechanisms, including being allocated equity, benefiting from revenue from any equity sale or royalty and milestone payments, or indirectly through an ongoing relationship with the spinout.

## University approaches to taking equity in spinouts

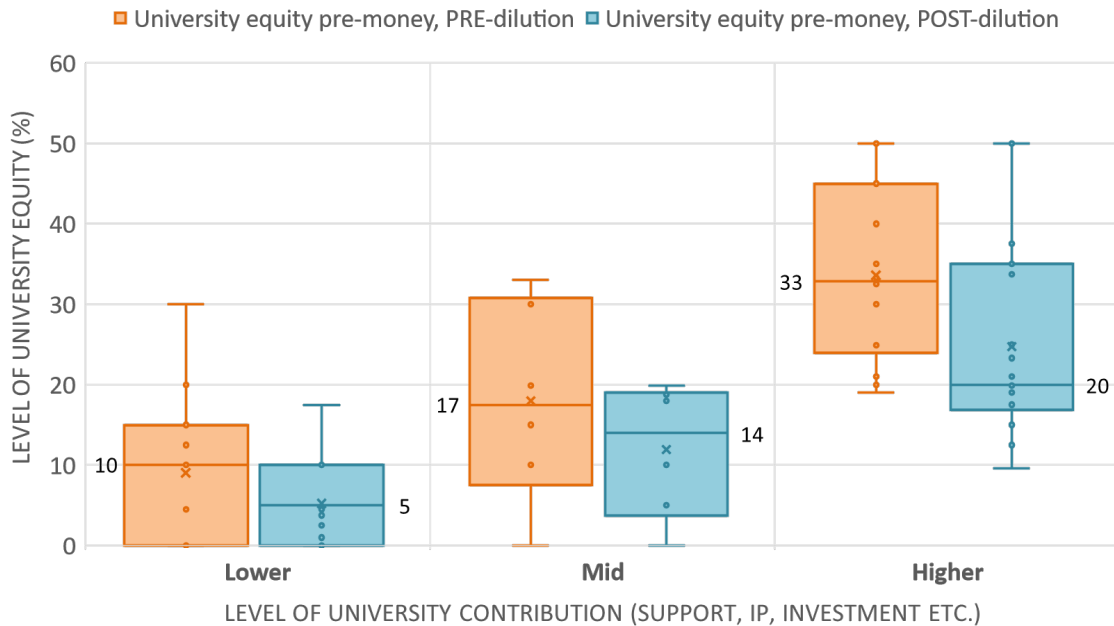
*Many universities use a ‘segmented model’ with different levels of equity for different types of spinouts*

The current debate over university equity in spinouts leads one to believe that UK universities have a single approach to equity, taking a fixed level of equity in all their spinouts. We show that this is far from reality. Most universities in our sample **have a ‘segmented’ model with multiple ‘typical’ approaches** used in different circumstances. Where multiple approaches exist, they are typically distinguished by the level and type of university contributions to the spinout. Factors driving higher versus lower equity approaches are shown in the figure below (note that the specific combination of factors depends on the particular university).

**Figure X1 Factors driving higher and lower equity positions for individual spin-out cases**



**Figure X2** *Level of university founding equity pre-money, pre- and post-dilution equity, for different levels of university contributions to the spinout*



**Median university pre-money, pre-dilution equity is circa 33% for spinouts with higher university contributions**

Where universities make high levels of contributions to the spinout, they typically take 33% equity at foundation (median) before any money enters the spinout *and* before the dilutive effects of any agreed pools of equity reserved for incoming CEOs, employee options and other purposes are taken into account. If we account for these, the pre-money, post-dilution equity taken by universities where they make higher levels of contribution drops to 20%

**Where they make lower contributions pre-money, pre-dilution equity is often less than 10%**

Where universities make lower levels of contribution to the spinout, they typically take 10% equity in the spinout at foundation (median) before money and dilution due to reserved equity pools. This reduces to 5% pre-money, post dilution.

## Reviews of university approaches and policies

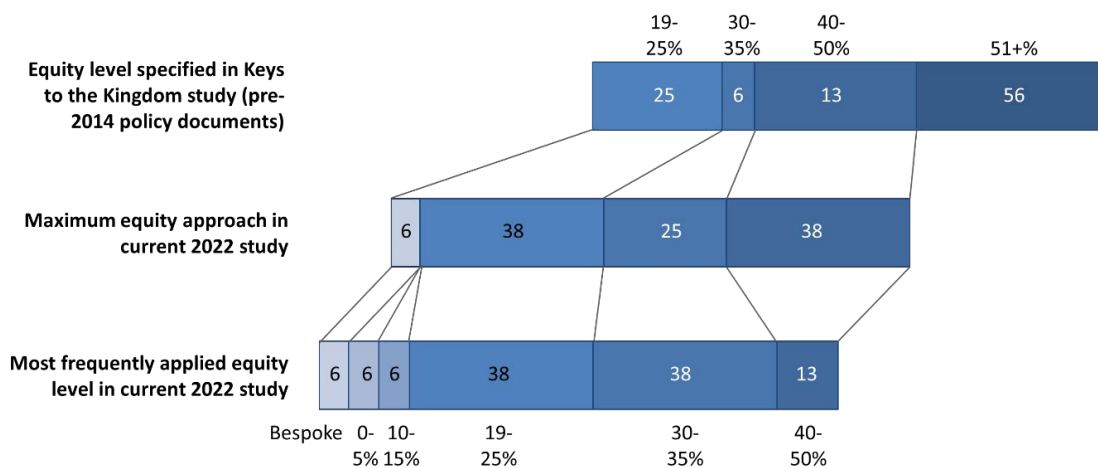
**Many universities have recently reviewed their spinout approaches and policies**

A striking result emerging from our study is that far from being static and fixed over the long term, most universities have relatively recently reviewed their spinout-related policies and approaches or are about to do so. Moreover, many universities in our sample are reviewing their policies within 5-year timeframes. In reviewing approaches, some highlight their active attempts to benchmark and consult with key internal and external stakeholders.

***This has significant implications for relying on evidence from more than 5 years ago***

Overall, our evidence suggests significant changes in policies over the past decade, with many universities adopting lower equity positions than previously. **A crucial implication of this is that we need to be cautious about relying on evidence and claims about university spinout equity approaches from more than approximately 5 years ago as they are likely to be out-of-date.**

**Figure X3 Comparison of pre-2014 equity policies and current most frequently used approaches (percentage of universities seeking equity within the given range)**



## Relationship between equity and university performance in generating spinouts

***Little evidence of a negative relationship between university equity and university spinout performance***

This study focuses on setting out how universities currently support their spinouts and identify the equity they typically take at foundation under different circumstances. While we did not explicitly focus on investigating the relationship between a university’s founding equity in spinouts and its ability to generate ventures able to raise external financing, our study tentatively suggests that there is little evidence of a negative relationship once the scale of the research base is controlled for.

Approaches that took 19-25% equity generated slightly higher spinouts per research investment than those that took 30-35% (6.7 versus 5.8 per £100 million research income) and the spread is higher in the latter. However, due to the small samples involved we cannot be at all certain these differences would be statistically significant.

***But universities that take high levels of equity exhibit much higher variations in performance than***

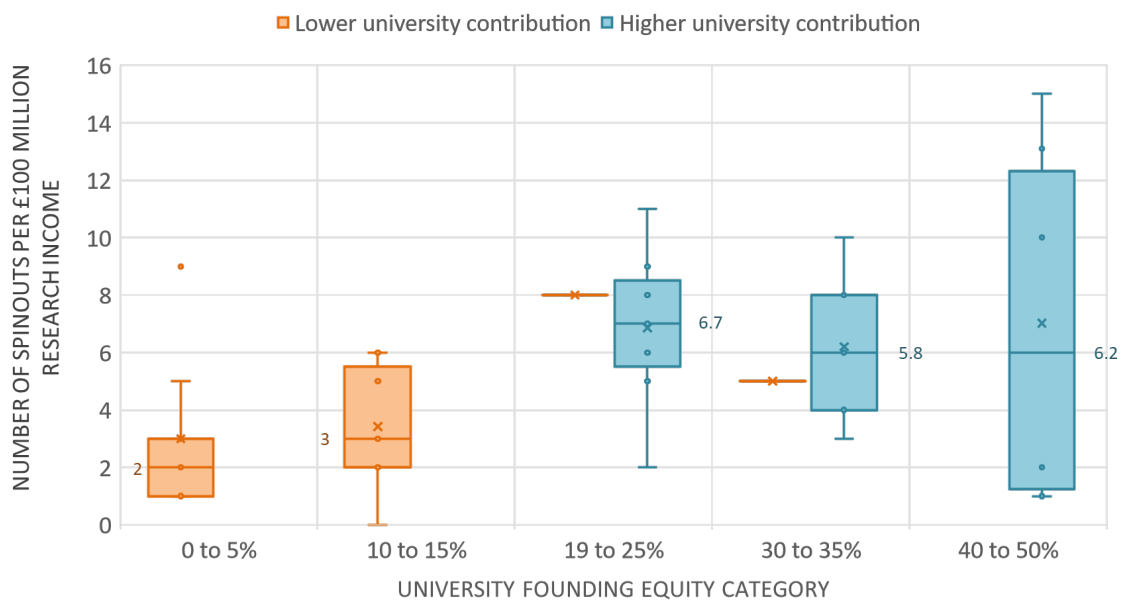
Also striking was that where universities take high levels of equity (40-50%) the median number of spinouts generated per £100 million of research income is similar to approaches where universities take much less equity, but the spread of performance is much higher. This suggests that while

**those with lower levels**

some universities are making the higher equity approach work, others may be struggling. This may, of course be due to other factors, not equity, and is worth further examination.

Furthermore, where universities make low levels of contribution to their spinouts, approaches that take 10-15% equity in their companies appear to generate more spinouts controlling for the scale of the research base than approaches that take 0-5%.

**Figure X5** Distributions of spinouts generated per £100 million research income associated with different university equity approaches, for spinouts with low university contribution (left-hand orange boxes) and high university contribution (right-hand blue boxes)

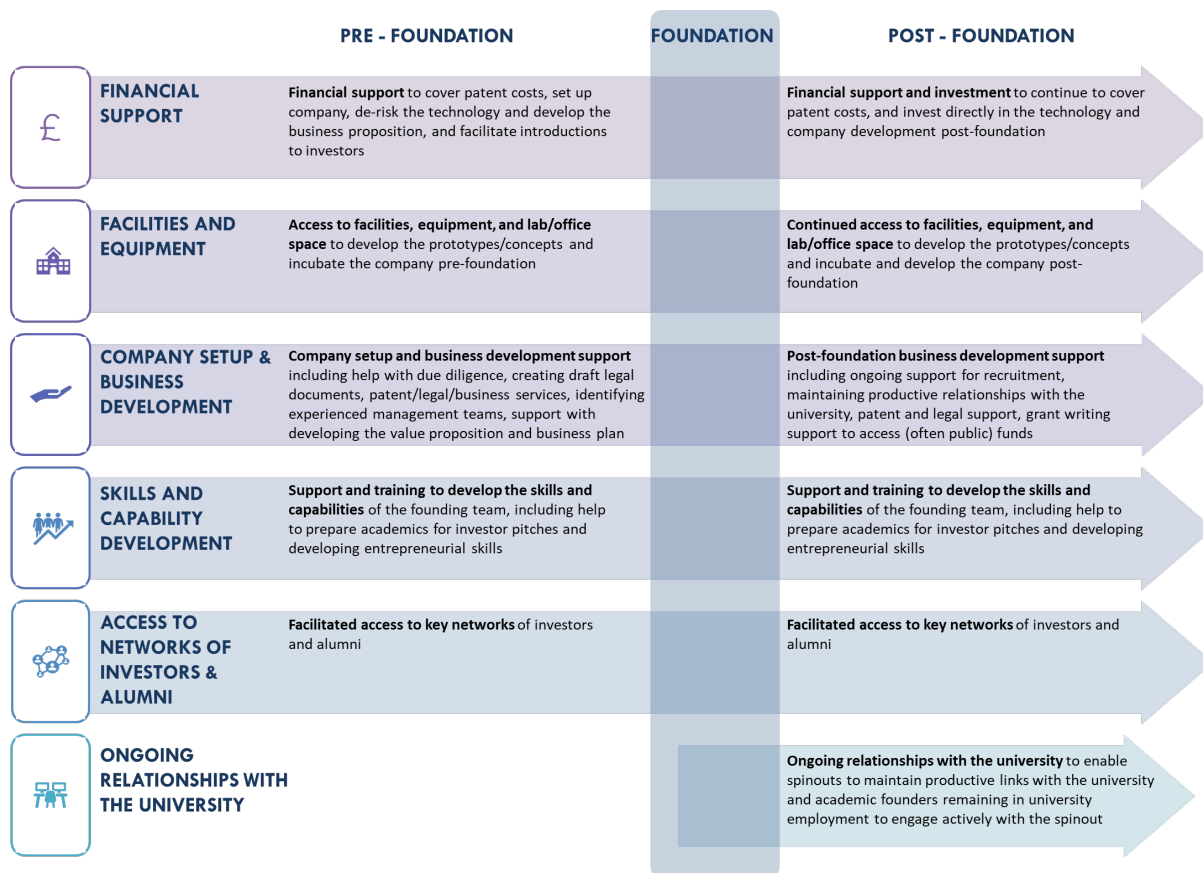


### The nature of university support for spinouts

Increasingly, universities are not passive by-standers in the development of spinouts. Those with some degree of spinout activity have been investing to build a system of support – in some cases direct financial support – to help academic entrepreneurs (particularly first-time entrepreneurs) increase the technology and commercial readiness of their venture pre-foundation, improve their entrepreneurial capabilities, and help them secure investment. Much of this support is provided for free to academics prior to founding the company. This costs money to put in place and sustain. Our study reveals the variety of support available to academic entrepreneurs in some universities (Figure X6). Importantly, university support for spinouts does not typically end with the incorporation of the company. Many continue to provide some level of support post-foundation.

Note that we do not explore the scale and quality of each type of support in different universities.

**Figure X6 Variety of pre- and post-foundation support being put in place across some UK universities**



## Universities are increasingly investing financially in spinouts

Many universities have been increasing the levels of direct financial support available to academic entrepreneurs to invest in the development of their idea into a spinout company (or other commercialisation opportunities). Just over half of the universities responding have put in place funds to support the translation and proof of concept of the IP, and almost 60% have funds in place to support the development of the commercial value proposition, business planning and costs of starting the company. Universities that generate higher numbers of spinouts are more likely to have put in place dedicated internally and/or externally managed investment funds (pre-seed/seed) to co-invest alongside early investors.

## Helping founders become investor ready and secure investment

Universities are also putting in place support to help founders access investors and become ‘investor ready’, through mechanisms such as investment showcases and making ‘warm’ introductions to potential investors, helping founders prepare for investor pitches, facilitating informal feedback from investors on a spinout’s value proposition, and building and maintaining networks of investors locally, nationally, and increasingly, internationally.

### X.3 Moving forward

As policymakers and others look to review how they can act to strengthen the UK's entrepreneurial and innovation systems to accelerate the production of more high-potential spinouts in areas such as artificial intelligence, digital / software, life sciences, fusion energy, it is crucially important they adopt an approach that accounts both for the *lifecycle of the journey* from research-to-innovation and the *systems-nature of this journey*. They must also account for the complexities of deals and the interdependencies between terms rather than focusing solely on equity.

This will allow us to make better judgements at both the system level and individual deal level about how rewards from spinout success should be distributed to compensate organisations and individuals for the risks they bear. It will also allow us to identify appropriate mechanisms for achieving this. If decisions are made that significantly overcompensate one set of stakeholders over another, this may lead to them withdrawing their effort and resource from future commercialisation opportunities and lead to lost economic opportunities over the longer term.

They must also identify and examine the full set of barriers and issues, well beyond equity negotiations, faced by universities and founding teams when setting up and developing spinout companies to commercialise research. This includes the ability to de-risk technologies and the venture sufficiently before incorporating and having to seek investors; the ability to find sufficient talent and expertise in their local economies and access the necessary facilities and equipment to further development; the strength of the investment environment readily accessible to the university and founding teams; and the availability of sufficient resources within universities to meet increasing demand from academics seeking to commercialise research.

Only by taking a lifecycle and systems-wide perspective and broadening our attention beyond equity will we be able to pinpoint where key problems exist and how to alleviate them. This will help to make individual deals happen more effectively while ensuring that the system as a whole is able to come together more effectively for the long term to produce, nurture and scale more high-value spinouts able to unlock value for local, national and global benefit.





# Introduction

# 1 Introduction

This report provides a robust evidence baseline for policymakers, university practitioners, and others on the current state of UK university approaches to taking equity in spinouts and supporting them to commercialise research undertaken at least in part at their institution.

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

Policymakers and others are rightly keen to focus on identifying ways to strengthen the ability of the UK's entrepreneurial and innovation systems to produce more, high potential spinouts that can add value to local and national economies and strategically important sectors. In recent years an intense debate has developed within some quarters regarding whether the level of equity universities take in their spinouts is conducive to spinout success and the ability of companies to raise external financing to drive their development and growth.

The debate, however, is hampered greatly by the lack of robust evidence and understanding on *current* UK university approaches to supporting spinouts, *when they are typically deployed* (for example to commercialise different types of IP), and the *reasoning* behind their approach. Too often, positions are justified based on anecdotes (often about a specific experience with specific universities) with little evidence of whether they represent the *typical* experiences; or on historic examples that may not reflect key developments in the sector in recent years.

The debate is further challenged by an overly simplistic characterisation of the nature of the spinout deal, which too often focuses on one number: the amount of founding equity a university seeks at the beginning of negotiation (pre-money and pre-dilution). The reality is very different. Spinout deals typically involve other important elements which, taken together with the equity, will shape how risks and rewards are shared across the different stakeholders involved. Previous studies of university spinout equity have focused on the published equity holdings of universities up to one-year post-foundation (based on publicly available company shareholdings). Such approaches typically fail to capture important details of what the equity is taken for, how it gets diluted even pre-investment, and how it is balanced against other key terms of the deal.

The debate is also challenged by an oversimplification of the key stakeholders involved in the process. It is often characterised in terms of the academic founders, the university technology transfer office (TTO), and investors. Again, the reality is more complex. The spinout process is shaped – either directly or indirectly, contractually or informally – by a broader range of stakeholders whose interests need to be accounted for. As we look to develop public policies to strengthen the ability of the system to spinout companies to commercialise university research, it is critically important that we recognise the motivations of, and risks incurred by, the full set of stakeholders in investing in the process, and their potential to capture sufficient rewards to incentivise their current and future engagement.

This technical report attempts to address these challenges by seeking evidence directly from universities and their technology transfer offices (TTOs) on the specifics of their approach to supporting spinouts in the following areas:

- The amount of founding equity typically sought by the university in spinouts under different typical circumstances
- How founding equity gets diluted even before money enters the spinout
- How the intellectual property (IP) is transferred into the spinout and under what conditions
- The investment environment available to the university
- The types of the support provided by the university to the spinout
- TTO perceptions of the barriers to spinning out companies to commercialise research
- How both founding and non-founding inventors engage with the spinout and benefit from success
- When, and how often, university spinout policies are reviewed

In assembling this evidence base, we aim to set out what is ‘typical’ in the university sector, rather than identifying extreme cases.

The evidence presented in this report draws from a survey of the Directors of 24 UK universities’ technology transfer offices (TTOs). The sample covers universities that collectively undertook 55% of the research in the UK (based on research income for 2020/21); generated 48% of all spinouts between the 2014/15 and 2020/21; whose active spinouts secured 71% of all external investment over this period (Table 1).

**Table 1** *Sample characteristics*

	Total	Percentage of UK university population
Number of responses	24	15
Total research income 2020/21	£3.6 billion	55
Number of spinouts newly registered between 2014/15 - 2020/21	572	48
Number of active spinout companies 2020/21	1,013	55
Value of external investment into active spinouts 2014/15 - 2020/21	£13.2 billion	71

Sources: Higher Education Statistics Agency Finance Record and Higher Education Business and Community Interaction (HEBCI) surveys

The report is structured as follows:

[Section 2:](#) Sets the equity debate on spinouts into context, with a backdrop of growing spinout activity and significantly increased investment into UK spinouts since 2017.

[Section 3:](#) Sets out the many stakeholders that contribute to, influence, and benefit from the spinout journey.

- [Section 4:](#) Explores what TTO Directors identify as key barriers to spinning out companies to commercialise research, and issues they have to confront as part of the deal.
- [Section 5:](#) Sets the equity component of the spinout deal as part of the wider set of deal terms that have to be negotiated to help understand the interdependencies between decisions on equity and these other terms. It also discusses why UK universities typically seek equity in their spinouts and examines how the structure of the deal can affect the dilution of founders' equity even before any money enters the spinout.
- [Section 6:](#) Presents the amount of founding equity universities *typically* take in their spinouts. It looks at the targeting of approaches to different types of spinouts and the justifications made for their approaches. It identifies key factors that typically lead to higher or lower levels of university founding equity and explores the balancing act between equity and financial terms on the IP license. It also investigates the link between the level of university founding equity in their spinouts and the propensity of the university to generate spinouts, controlling for the scale of its research base.
- [Section 7:](#) Sets out how academic founders and non-founding inventors typically benefit financially from the success of the spinout, and how academics that leave university employment to join the spinout are treated compared with those that choose to remain. It also looks at the key mechanisms for how academics that remain employed by the university engage with the spinout post-foundation.
- [Section 8:](#) Sets out the variety of support now offered by UK universities to the academic founding teams before the spinout is founded, and the support offered post-incorporation. It also looks at who covers the costs of patent management and prosecution pre- and post-spinout foundation, and the types of investment universities are helping their academic access.
- [Section 9:](#) Explores the level of review of UK university IP and spinout policies, identifying when policies were last reviewed and are next planned to be reviewed. It also shows how information on equity policies gathered from the 2010s is likely to be out of date.

It is important also to state what this report *does not* seek to do. First, we do not explore in any depth the relationship between the level of equity taken by universities in their spinouts and the ability of these companies to raise external financing and grow. This is an important question that the University of Cambridge Policy Evidence Unit for University Commercialisation and Innovation (UCI) is investigating and will publish findings in a separate report. Second, due to time constraints, this report does not look at the experiences of US universities in any depth. Given the frequent comparisons being made between the UK and US experiences on spinouts, a better understanding of the US system, how it is developing, and its comparability to the UK, would be incredibly valuable.

Finally, the report intentionally does not seek to make judgements on whether the current approaches of UK universities are the most effective. Rather we aim to provide a robust evidence baseline that captures important complexities of the spinout process and UK university approaches to drive more informed discussions on the topic around how we can build on our strengths, overcome any challenges, and improve outcomes for the overall benefit to the economy and society.



**Putting the equity  
debate into context**

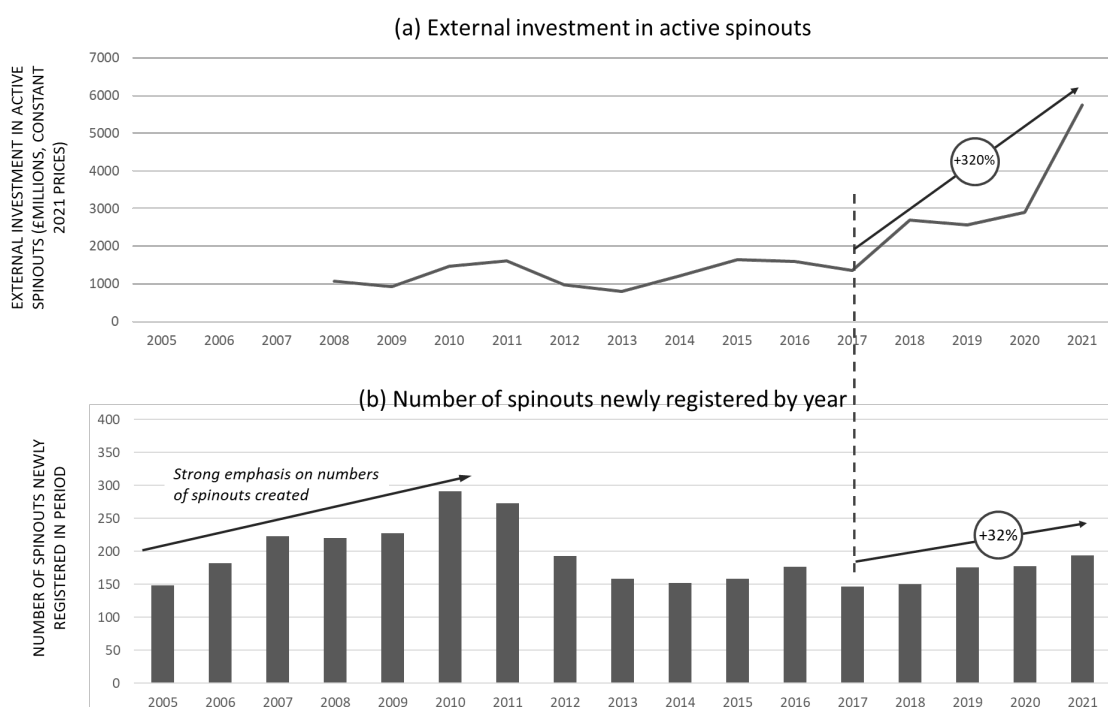
# 2 Putting the equity debate into context

## 2.1 UK university performance in spinning out companies

While the current debate of university spinout equity approaches is important, and we must ensure that the system is continually improving how it supports and enables the process, it is also important to recognise the very positive trends in the UK in terms of spinout development and performance. For example:

- A recent study by Beauhurst (Beauhurst and Royal Academy of Engineering 2022) shows an almost doubling of equity-based spinout deals over the period 2012-2021 (from 209 in 2012 to 389 in 2021), with external investment raised by spinouts rising by an average of 20% per annum over this period (increasing from £405 million in 2012 to £2.54 billion in 2021).
- Of the 1,000 active high-growth companies identified in a report by Beauhurst and Savills on the life sciences sector in the UK, almost half of these high-growth companies were academic spinouts (Beauhurst and Savills 2022).
- Nation-wide data on university spinouts supplied directly by universities suggests the amount of investment raised by their active spinouts rose from about £970 million in 2012 to £2.9 billion in 2020 and more than £5 billion in 2021 (Figure 1), with the significant rise beginning around 2017. This significant rise is accompanied by a steady growth in spinouts being created.

**Figure 1** Long-term trends in spinouts generated by UK universities and external investment in their active spinouts



Source: HESA HEBCI surveys

In addition to the quantitative evidence, an extensive and independent review in 2019 of university-investor links by Mike Rees (formerly Deputy Group CEO of Standard Chartered) for Research England found that the UK system for technology transfer (looking not just at universities but also investors) was not broken, but as with all systems, could be improved. He highlighted a “need for reflection on both sides, retaining strengths, but also acknowledging what needs to be different”; a lack of consistency across the country; that very real structural issues were hampering access to capital; and the lack of scale of initiatives (Rees 2019, p. 3).

Recent years have also seen significant amounts of investment funds being raised by university-linked companies and funds to invest in their spinouts. Most notably this includes:

- In June 2022 Oxford Science Enterprises (OSE) announced a further £250 million raise to invest in spinouts emerging from the University of Oxford bringing the total investment raised by OSE to £850 million since 2015
- In April 2022 Cambridge Innovation Capital (CIC) – linked to the University of Cambridge – raised a further £225 million fund to invest in the Cambridge ecosystem. This builds on £275 million raised since its launch in 2013
- 2022 saw the creation of Northern Gritstone, an investment business focused on investing in university spinouts in the north of England. It announced its first £215 million raise of a £500 million target in May 2022
- In 2020 UCL closed a second £100 million Technology Fund to invest in its spinouts, building on the success of its first £50 million fund from 2016.

## 2.2 Opportunities lost due to equity disagreements

To assess the scale of the problem at the heart of the university founding equity debate, our survey of university TTOs (detailed later in this report) shows that very few deals were completely lost due to disagreements over the structure of the capitalisation (‘cap’) table (which details how equity is split across shareholders). Two thirds of respondents to the survey said they had not lost a deal because of this reason since 2015, while a third claimed they had lost one deal during this time. That is not to say that disagreements did not occur, or that deals are not delayed; rather that the parties involved can often find resolution.

In clarifying their responses, universities noted that:

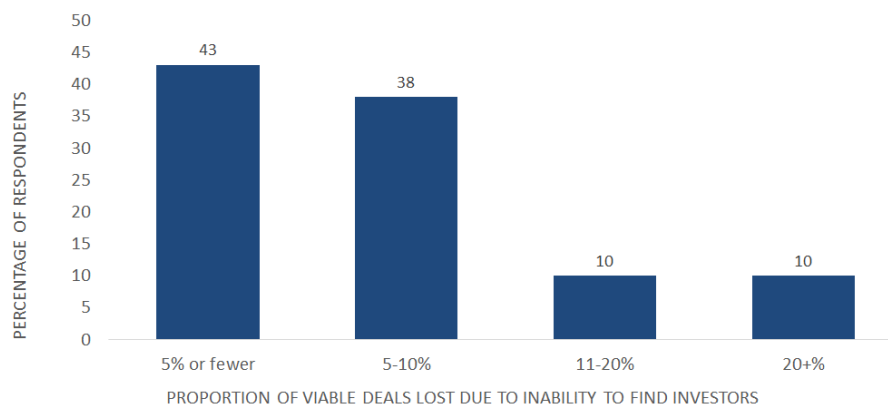
- While the cap table can be a complex and potentially contentious issue, they almost always manage to come to an agreement
- The cap table requires not just the university to agree a split with the ‘founder’, but where there is more than one founder, the founders also need to agree amongst themselves
- Cap table disagreements can also signal that the team is not leadership ready
- Universities with larger spinout portfolios are more able to ‘listen to the market’ to understand what different markets will accept in terms of approaches to equity

It is very important that we understand the causes of delays. These could be due to a variety of reasons, not least due to response times from funders in agreeing to terms (made even more complex when multiple funders are involved); due to complex due diligence and rights clearances particularly in cases where there are multiple academic and non-academic partners and funders

involved; due to a lack of internal resources to support the process and bureaucratic approvals processes; and due to misaligned expectations between investors and universities over terms.


While the cap table itself does not appear to have resulted in failed deals, universities are seeing some viable commercialisation opportunities fail because of an inability to find investors (Figure 2). The majority (43%) of universities reported having lost fewer than 5% of viable deals due to an inability to find investors, while a further 38% reported having lost between 5-10% of deals. Around 20% reported having lost more than 11% of deals for this reason.

**Figure 2** *Percentage of viable deals lost due to an inability to find investors*



Outside the entrepreneurial hotspots of the Golden Triangle a number of universities noted that while few deals had completely failed due to a lack of funding, a larger number of spinouts progressed more slowly because they were under-funded, either due to a limited number of investors available, or due to an inability to raise larger rounds. This was not explicitly explored in the survey and warrants further investigation.





**The spinout  
journey and its  
many stakeholders**

# 3 The spinout journey and its many stakeholders

This section first sets out the many stakeholders involved in the spinout process and the types of contributions they typically make, the risks they might incur, and the rewards they may expect should the venture be successful. It then presents the evidence gathered in the survey on the barriers that university technology transfer offices (TTOs) experience that they argue are hindering the ability to set up new ventures to commercialise research. Finally, it looks at the issues TTOs typically face when negotiating spinout deals.

## 3.1 The spinout journey and its many stakeholders

University spinouts are set up to commercialise a technological invention or business idea emerging out of research, often built on publicly funded research, possibly with contributions (financial and in-kind) from industry or charitable foundations (the latter particularly important for health-related technologies).

### 3.1.1 Key dimensions of the spinout journey

As the spinout develops towards market entry, the technology or idea will typically need to be further developed with a focus on specific commercially viable market applications. It will also need to develop production processes, establish supply chains and value networks, and crucially, its business model. The academic founders will also need to start thinking about building their initial team and network of expertise to take the venture forward. As such, at the point of foundation spinouts typically exhibit very high levels of different types of technology, production, market, financial-related, team-based, and other risks. To succeed, these risks have to be reduced to attract investors and partners, and ultimately secure customers for its products or services.

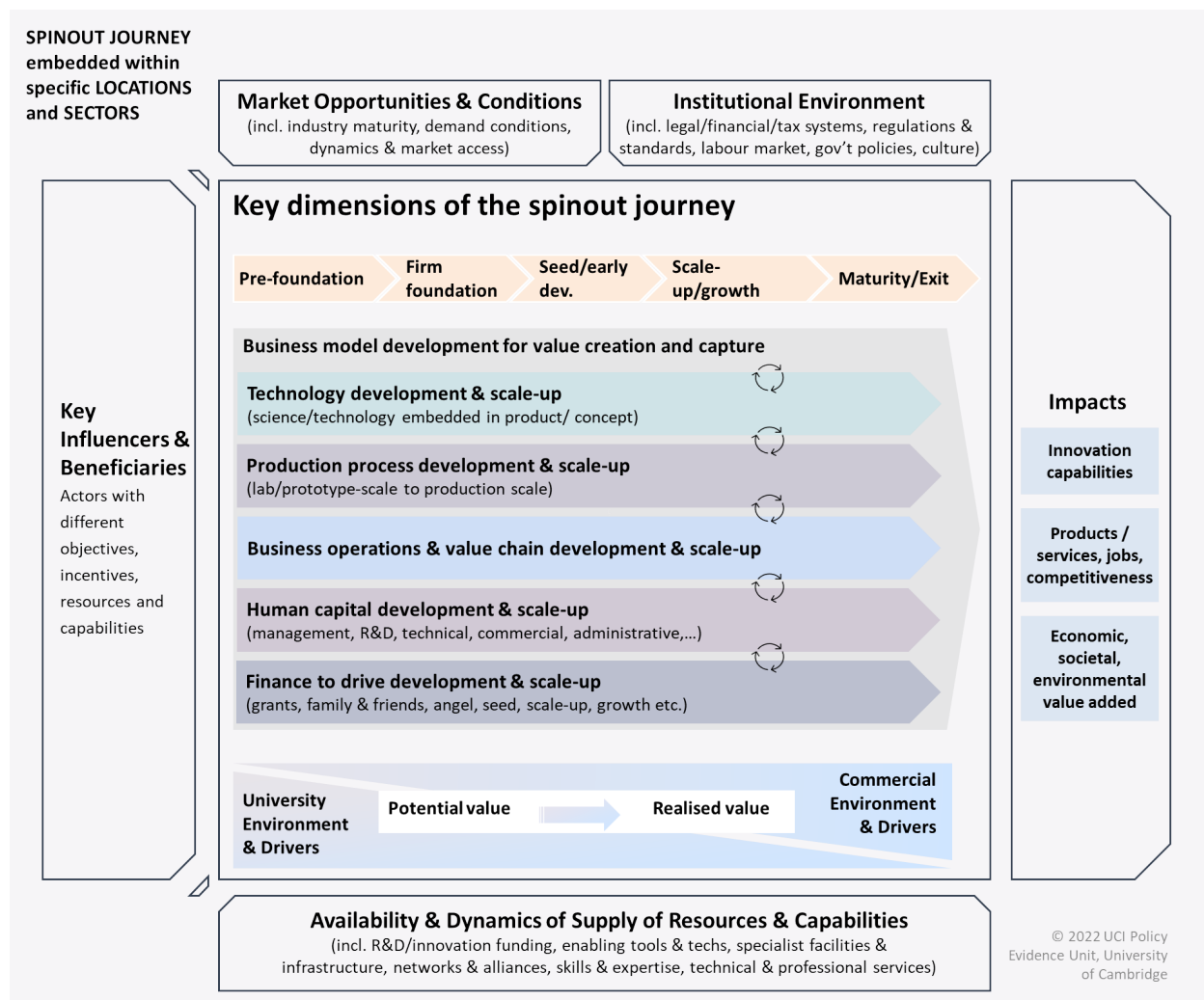
As the spinout enters the market, effort and resource needs to be invested to enable the venture to scale-up, with each of the key elements – technology, production process, operations and supply chains, human capital, and business model) presenting different scale-up obstacles and challenges.

The spinout journey does not take place in a vacuum. The spinout is influenced by, and interacts with, the wider innovation system. Breaking this down, this includes first and foremost, **the market** it is targeting. The maturity of the market, industrial structure, demand conditions and dynamics, access routes and barriers all shape the opportunity potential for the venture. Second, the actions of the spinout and the choices it can make regarding development will be shaped by the **institutional environment** – for example the legal and IP system, regulations and standards, labour market policies, R&D and innovation policies, and the financial system. Collectively these institutions set the ‘rules of the game’ that shape the behaviours and choices of the participants in the innovation system. Finally, the development of the spinout will be conditioned by the **availability, dynamics and ability to access to the supply-side** of the innovation system. This includes, for example, the ability to:

- Recruit or access skilled labour and expertise (not just technical but also managerial, commercial, entrepreneurial, etc.)
- Acquire and absorb complementary knowledge, insights and technologies to drive the development of its core technology
- Access enabling tools, facilities, and infrastructure for example to further test and demonstrate the commercial viability of its prototype product or service
- Form the necessary networks and alliances to allow it to access key expertise and assets
- Access the necessary professional, technical and business services to facilitate the company's development
- Access the necessary finance to invest in development and scale-up of the venture. This may include both public funds for additional R&D and innovation as well as private sources of finance.

We have attempted to capture key dimensions of the spinout journey in Figure 3.

**Figure 3** Key dimensions and factors influencing the spinout development and scale-up journey



Source: developed by the authors and informed by insights from Phaal et al. (2011), O'Sullivan and Lopez-Gomez (2017), Maine and Garnsey (2006), Edquist (1997), Miozzo and DiVito (2016), Vohora et al. (2004), Hayter (2016), Hayter et al. (2018) and others

One of the key challenges facing any nascent spinout is to identify viable market opportunities that match their value proposition (Maine and Garnsey 2006) subject to the conditions and potential of the supply system and institutional environment. Crucially, spinouts may face key ‘windows of opportunity’ which they need to hit to gain market traction. Too early and customers may not be ready or able to absorb, integrate, and deploy their product or service; too late and the product or service may be obsolete (this is a particular challenge in sectors driven by fast moving technologies such as digital/AI at the moment).

### **3.1.2 Key stakeholders influencing and benefiting from the spinout process**

We also know that different individuals and organisations are involved in the research-technology-product/service-business development journey of the spinout (see e.g. Hayter 2016; Rasmussen and Wright 2015). These stakeholders face different incentives and current and future risks and rewards for contributing to the journey. Figure 4, while not exhaustive, highlights some of the key stakeholders involved. It is helpful to distinguish between those providing funding, those directly involved in developing the research commercialisation activity (from technology development through to commercial and business development), and those more indirectly influencing the process.

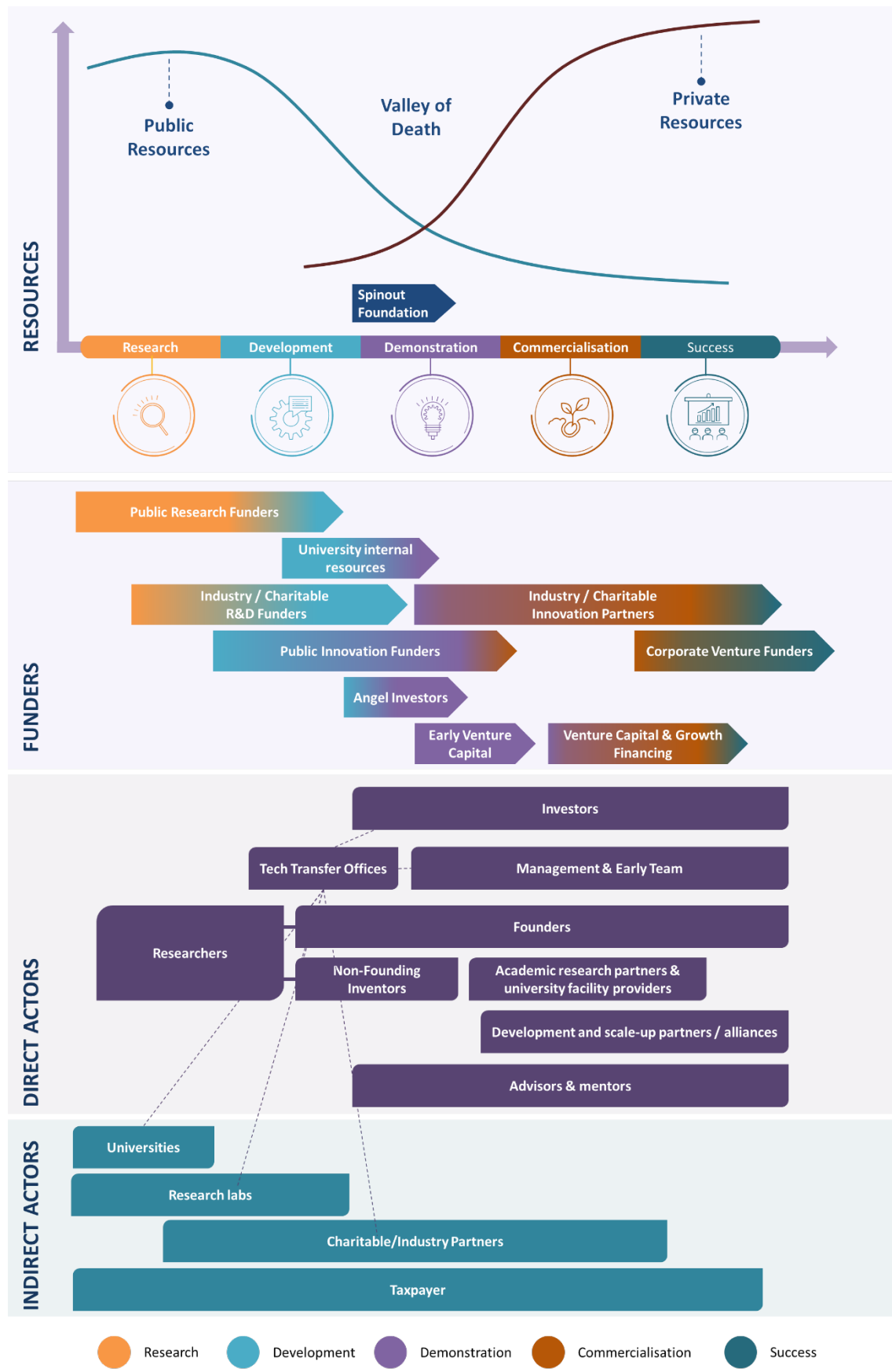
*Pre-foundation*, funders will likely include public research funders, in some cases charitable funders (particularly for medical innovations including therapeutics), and industry partners providing R&D funding to enable the research and early development of the technology. In addition, as we show in section 8.4, as the spinout approaches foundation, many universities themselves begin investing resources (often in-kind, but increasingly financial) to help the founding team increase the commercial and investor readiness of the spinout and raise its chances of securing investment.

*Post-foundation*, funders will typically transition from public to private sources, as spinouts seek private sector investors and partners to develop their businesses. While universities, angel investors and public innovation funders will support spinouts during their development and early demonstration phases, venture capitalists often begin investing once the technology has been sufficiently de-risked and its market potential is more certain.

The *individuals and organisations involved directly* pre-foundation will include the core set of researchers (in academia and potentially in the private, public and charitable sectors), some of which will become the founders of the spinout while others central to the invention or business idea will become *non-founding* inventors. Our evidence also shows that some of the academic founders will remain employed by the university while others choose to join the spinout. Different founders may therefore face different types and levels of personal risk. Nearing the point of spinout foundation, the range of stakeholders involved directly will likely start to expand, for example to include the university’s TTO, mentors, and advisers (formal and informal).

As the spinout is formally incorporated and begins to seek private financing, investors and others (accelerators, development partners etc.) become directly involved, not just providing funding but often providing significant advice, expertise and access to their networks to support the spinout’s development. We also know that many spinouts continue their relationships with their parent university whether to continue working with the founders’ research lab or access specific facilities and equipment to support the company’s development and growth.

**Figure 4** Key stakeholders involved in the research-to-innovation journey of a spinout



Beyond the funders and direct actors, it is also very important to recognise those organisations and institutions that are not directly involved in the spinout journey but may nevertheless play an important role in shaping behaviours and choices. For example, an organisation’s policies governing what employees can do or how it can invest its financial resources, and their culture towards entrepreneurial activity and risk, will inevitably shape the behaviours and choices of the founders. These indirect stakeholders will include, among others, the university as an organisation, the academics’ research labs/groups, and any charitable and industrial partners.

It is also important to recognise the role of the taxpayer in the spinout journey. It is their taxes that ultimately funded the research that unlocked the technologies that are at the heart of the spinout, and in some cases supported the very early development of venture when the technical, market, financial and other risks were too high to attract private sector investors.

### 3.2 Stakeholders involved in spinout negotiations

The foundation of a spinout company happens within a specific point in time in the journey of an idea from ‘lab-to-market’, often as the technology is in the demonstration phase of its development, after a period of high risks, but when rewards are not yet to be seen. Spinout **negotiations typically involve those actors directly involved at the point of foundation**, namely the academic founders, their university’s TTO, and potential investors. As will be discussed later in this report, negotiations will determine terms that shape the balance of risks and rewards associated with getting the venture off the ground towards generating commercial value.

The very different objectives and capabilities of the stakeholders involved in the spinout process, coupled with contractual obligations (e.g. to specific research funders) can complicate the negotiations to found the spinout and create boundaries on negotiating positions. Key differences among the main stakeholders are captured in Table 2. Understanding these differences will help negotiations proceed more smoothly and effectively.

**Table 2** *Key areas of difference between stakeholders that may affect their negotiating approach*

Factor	Description
<b>Incentives &amp; risks</b>	Stakeholders face varying levels of risk for investing their effort and resource into the spinout process. A range of incentives affect stakeholders in different ways, with a potential mismatch between the incentives to engage and the level risk accepted.
<b>Motivations &amp; objectives</b>	Stakeholders have very different motivations and objectives for engaging in the foundation and development of spinouts. These may shape the scale and type of value (financial and non-financial) they seek to capture from the spinout at different points over its lifecycle.
<b>Policies &amp; approaches</b>	Stakeholders have specific policies and approaches in place that guide how they seek to contribute to the spinout and the type and level of risks they are willing (and able) to incur. That might be a fixed policies regarding equity, or specific investment criteria.

<b>Contractual obligations</b>	There may be contractual obligations (e.g. between a university and charitable or industrial research funders) that set expectations regarding deal terms and can limit room for negotiation on some terms.
<b>Culture</b>	Culture (e.g. for entrepreneurship, collaboration, supporting riskier technologies) is also important both within specific organisations (including both universities and investors) and the wider innovation system in which the spinout develops.
<b>Support infrastructure</b>	Some stakeholders have put in place a wide range of support infrastructure, such as incubators and accelerators, laboratories, technology development & demonstration facilities etc.
<b>Resources &amp; capabilities</b>	Each stakeholder has its own set of resources and capabilities it is able and willing to commit to the spinout. This includes e.g. financial resources to support translational R&D/ commercialisation, networks, skills (managerial, entrepreneurial, technical), and facilities etc.
<b>Prior experience</b>	Each stakeholder is shaped by its previous experiences in engaging and supporting spinouts and innovation more broadly. This can have important effects on how they contribute.

### 3.3 Risks and rewards along the spinout’s research-to-innovation journey

A key challenge during spinout negotiations is constructing a deal that is fair and balanced, rewarding the stakeholders for the risks they take and the contributions they make to the spinout’s journey to market. If the risk-reward balance is out of kilter, then key stakeholders that need to be involved pre- and post-foundation to both help generate the spinout and develop it into a successful company may not engage as fully as required. At a system level, a risk-reward imbalance inhibits government’s ability to ‘shape’ markets so that incentives and rewards are aligned with long-term growth objectives.

To analyse the risk-reward balance it is critically important, therefore, to take a lifecycle (i.e. looking at the full research-to-innovation journey) and system-wide (i.e. stakeholders beyond those directly involved in spinout negotiations) approach. We must recognise the different types of contributions the full set of stakeholders – from individuals to organisations – make to the value creation process (including financial, knowledge, human, physical, social/network capital etc.). To deliver these contributions they invest their own resources (whether time or money) without any guaranteed returns (including not just financial but also career, reputational, social or otherwise). In return for investing these resources ‘at risk’, stakeholders expect some levels of reward.

Examples of the risks and rewards faced by different key stakeholders are provided in Table 3.

**Table 3 Example risks and potential rewards for different key spinout stakeholders**

Stakeholder	Example risks	Example rewards
<b>Founders and non-founding inventors</b>	<p>Engaging with the spinout may erode their standing as academics (<b>identity risk</b>) and may reduce their academic outputs for a period which may hamper their academic careers (<b>career risk</b>) (Lam 2011).</p> <p><b>Academic founders that leave their university position</b> to work in the spinout face further <b>financial risk</b> due to increased wage uncertainty, leading to a spike in their risk as they take up their role in the spinout. Founders that invest their own cash (or that of friends and family) will face additional financial risks as investors in the company.</p> <p>Founders directly involved in the leadership and management of the spinout will also face many of the risks associated with investors.</p>	<p>Most founders (including those that join the spinout and those that remain in university employment) stand to benefit <b>financially</b> from the successful development of the spinout.</p> <p>They may also benefit from <b>reputational and career rewards</b> due to the impact realised from their research as academic incentives (at least in the UK universities and funders increasingly recognise research impact alongside excellence). There may also be <b>intrinsic satisfaction</b> gained through having an impact on solving real-world challenges and making a positive societal difference (Lam 2011).</p> <p>For some academic founders, establishing a company may be part of a <b>natural career progression</b> (Hayter 2011).</p> <p>Non-founding inventors may also benefit in these kinds of ways, although may benefit less (or not at all) financially depending on the terms of the spinout deal.</p>
<b>Investors</b>	<p>Investors will be accepting a degree of <b>technology risk</b> that a technology may not work as expected; <b>production risk</b> that the product cannot be produced reliably at full volume; <b>market risk</b> that an innovative product may struggle to break into existing markets or create new markets and deliver commercial success; <b>agency risk</b> that issues may arise due to imbalances in the information held by the investor and the spinout team; <b>strategic risks</b> that bad strategic choices lead to negative outcomes; <b>human capital risks</b> that the spinout is unable to recruit and retain the necessary skills; <b>regulatory risks</b> particularly for spinouts entering highly regulated markets; and of course <b>financial risk</b> that the spinout does not achieve revenue targets and deliver sufficient return to their investment (Proksch et al. 2018; Wright et al. 2006).</p>	<p>Venture capital providers will expect to generate financial returns, within a specific time period while angel investors may be less exit oriented and more long-term focused (Wright et al. 2006). Note that a key challenge often raised in the financing of spinouts is the short-term, exit-focus of investors and the lack of long-term, ‘patient’ capital.</p>
<b>Universities / TTOs</b>	<p>Universities (often through their TTOs) also face risks, not least a <b>financial risk</b> from any direct investments or in-kind (e.g. staff time, free or discounted access to facilities etc.) investments in the spinout (pre- and/or post-foundation), as well as from their decisions to invest in the development of a supporting infrastructure for spinouts rather than in other knowledge transfer mechanisms.</p> <p>They also face <b>reputational risks</b> that spinouts may act in inappropriate ways, which could have</p>	<p>The past few decades have seen universities dramatically increase the value placed on the <b>socio-economic impact of their research</b>, with spinouts seen as a mechanism for delivering this. They are under significant and growing pressures from governments and the public in general to demonstrate research impact and ensure accountability in the use of public funding (Rasmussen and Wright 2015).</p> <p>Potential returns on direct (financial or in-kind) investments in spinouts portfolios are also</p>

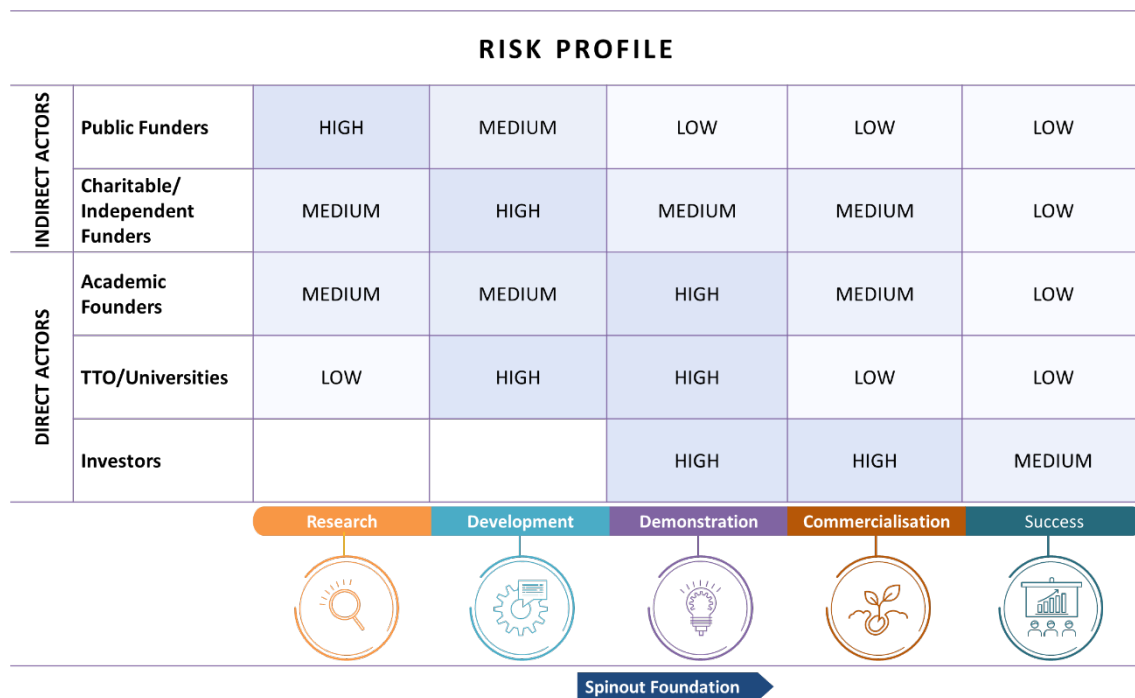


	<p>significant detrimental implications for its wider sets of partnerships and activities in research, teaching, and knowledge exchange (Shane 2004 pp. 288-290).</p>	<p>important for enabling universities to <b>reduce the burden on taxpayers and allow for funds from success to be reinvested to support future research commercialisation efforts</b>. With many spinouts naturally likely to fail due to the high uncertainties involved in the innovation process, there is an expectation that financially successful spinouts help to cover the sunk costs of the public investment in both the research and commercialisation effort that underpinned their early development.</p>
<b>Wider system</b>	<p>If the lifecycle risk-reward profile is unbalanced across the full set of stakeholders, with the role of certain actors (particularly those that control access to financial resources) over-compensated, and the system/policymakers fail to construct incentives to ensure a fair balance, this can lead to key stakeholders necessary for spinout generation and/or future development being less likely to engage and commit the necessary effort and resource. This can lead to significant <b>'division of innovative labour' risks</b> as highlighted in Lazonick &amp; Mazzucato (2013), which inhibits government's ability to 'shape' markets so that incentives and rewards are aligned with long-term growth objectives.</p> <p>There is also a <b>productivity risk</b> should policies designed to encourage spinout growth lead to less productive spinouts being supported to commercialise technologies at the expense of supporting established firms where they have a higher likelihood of success (Sandström et al. 2018)</p>	<p>If successful, spinouts can <b>unlock new wealth creating opportunities</b> and <b>high-value jobs</b> in the economy. They can help to <b>seed new industries</b> (not least through helping to commercialise foundational and enabling technology platforms) and regional clusters that can have spillover benefits and, along with other measures, help to attract additional investment into an area or industry. They can help to <b>make local economies more dynamic</b> and entrepreneurial, which can lead to improvements in economic growth prospects both locally and nationally.</p> <p>Spinouts can also unlock significant long-term <b>societal impact</b>, particularly where they focus on tackling major societal challenge such as climate change (e.g. providing technologies to reduce carbon emissions), ageing populations and health, and poverty.</p>

Figure 5 shows a potential typical risk profile for some of the key stakeholders that influence the generation and development of the spinout. The labels 'low', 'medium' and 'high' represent the risk *relative to* each actor at each stage of the spinout journey. In this stylised example, we assume that the spinout is founded during the period of technology-product demonstration.

Following our arguments above, we suggest that research funders and the founders/non-founding inventors will have accepted much of the risk during the research phase, with the TTO taking on high risk as they begin to work with the founding team to support the development and foundation of the spinout. As the spinout is established and seeks investment, investors that choose to invest take on high risks. Academic founders that choose to leave their university employment will also now face high risk as discussed earlier, which will reduce over time if the spinout succeeds.

**Figure 5** Likely risk profile for different key stakeholders along the spinout journey



### 3.4 Potential effects of the misalignment between lifetime risks and lifetime rewards

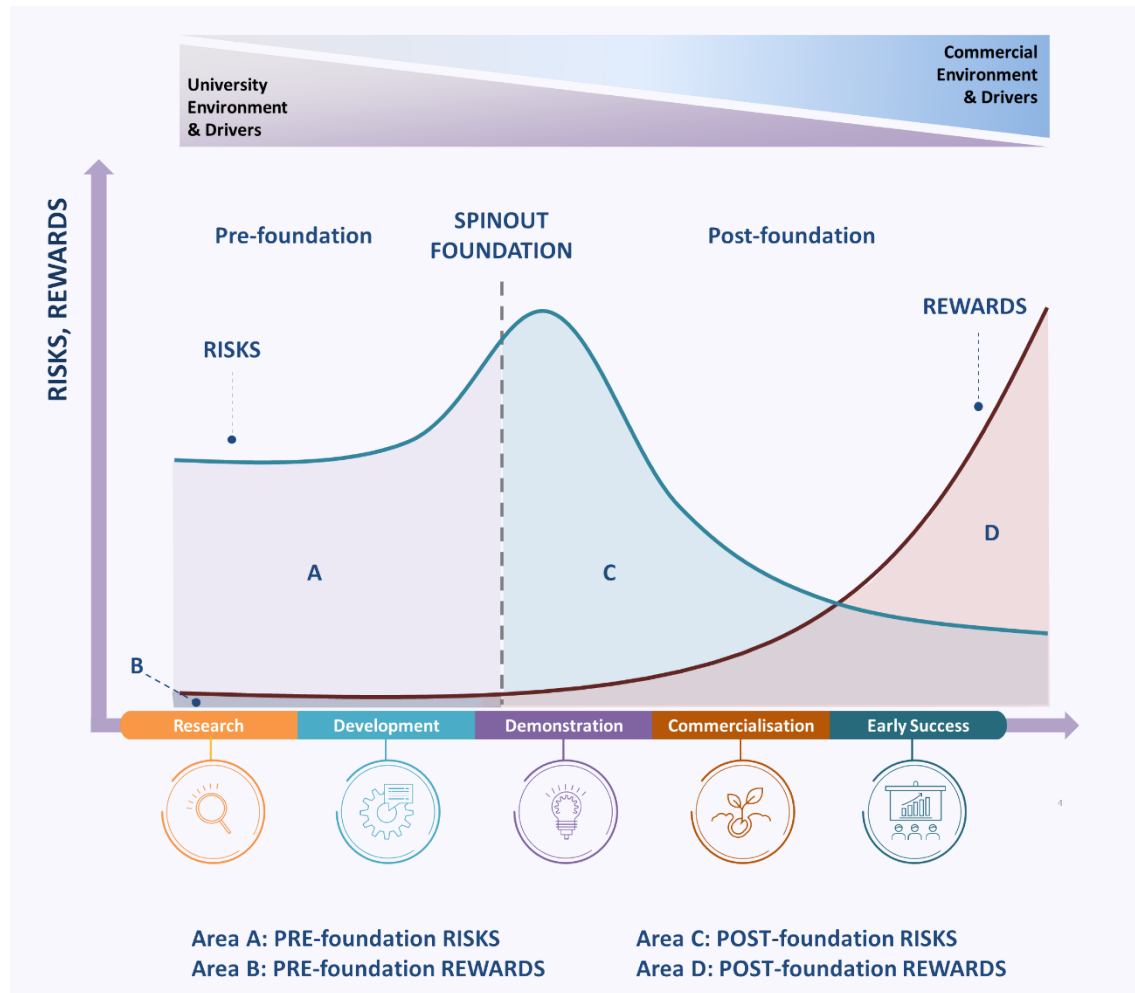
The nature of the research-to-innovation process – particularly for breakthrough transformational technologies – requires the significant investment of resource and risk-taking (including financial, human, physical, knowledge capital) for many years before rewards (financial, economic, social, individual etc.) are realised. Furthermore, the collective nature of the innovation process means that the ability to advance the technology towards the next stage in its journey to delivering rewards will depend on the previous cumulative effort of many individuals and organisations (Lazonick and Mazzucato 2013). This creates the potential for a significant misalignment between the distribution of the total cumulate risks borne in both generating a spinout and developing it into a successful company, and the total cumulative rewards.

Moreover, the cumulative and collective nature of spinout development makes it very difficult to measure the direct and indirect lifetime contributions and risks of each stakeholder and attribute spinout success to particular contributions.

Figure 6 attempts to capture this challenge. It presents potential risk and reward profiles of a technology-based spinout. In this stylised example, the pre-foundation academics are building on years of public investment into research that leads eventually to a new technology with commercial potential. At this point, the public research funders have borne much of the risk of investing in the technology. As it approaches foundation and starts to focus on developing commercially viable applications of the technology, it may start to see risks increase (Tassely 2014) as market, production, financial and other risks begin to crystallise in addition to the core technology risk. At this point, and particularly post-foundation as investors begin to invest in the spinout, efforts become focused on reducing this myriad of risks to attract further investors and secure customers for its products or

services. The figure also presents the reward profile along the spinout journey. We suggest that rewards are limited (but not zero, for example due to reputational rewards the researchers may experience) until the spinout starts to demonstrate signs of commercial potential. At this point the rewards – whether they be financial, economic or social – begin to accumulate.

**Figure 6** Lifecycle risk-reward profile for a technology-based spinout



Source: developed by authors drawing on insights from Tassey (2014), Lazonick and Mazzucato (2013) and others

The figure suggests that, at the point of spinout foundation, should spinout negotiations focus primarily on future incurred risks and the distribution of rewards, they will be balancing area D (future reward) with C (future risks). However, taking a lifecycle perspective would suggest that the total lifetime rewards are  $D + B$  (although A is likely small relative to D), while the lifetime risks are  $C + A$ , where A could be significantly greater than zero and approaching similar scales to C.

**Given that the risks incurred in the future are likely to be borne by very different stakeholders compared to those pre-foundation, this could lead to an unbalanced distribution of rewards during negotiations that determine how value is captured as contributions of some stakeholders are overhyped while others are undervalued. This can act as a disincentive for some stakeholders to engage in future efforts to commercialise research through spinouts.** This issue has led to calls from some scholars such as Lazonick and Mazzucato (2013) to shift from a paradigm of ‘maximising shareholder value’ – in which some stakeholders are able to position themselves to extract more

value than they create while others get much less out than they put in – to a ‘risk-reward-nexus’ approach to encourage entrepreneurial activity aligned with long-term growth objectives. A risk-reward-nexus approach to developing the innovation system (including the incentives, policies, support programmes, norms etc.) would help to distribute the gains from innovation more fairly amongst the full set of stakeholders who have contributed to the process and borne risk and thereby more strongly encourage the wider set of stakeholders to invest their time and money in the process.



**Barriers and issues  
facing universities  
when spinning out  
companies**

# 4 Barriers and issues facing universities when spinning out companies

Spinning out companies from universities to commercialise research can be a challenging process. Much is made in the media of the difficulties in negotiating spinout deal terms. However, the stakeholders involved in the process have to work to overcome a wider range of barriers to set up a company that has the potential to create value in the economy. Moreover, TTOs in negotiating equity terms are confronted with a range of issues and considerations. This section examines these two key topics.

## 4.1 Barriers to spinning out companies: perspectives of TTOs

Our survey of TTO Directors reveals what they see as key barriers to spinning out. These broadly fall within the following categories:

- The **technology and commercial readiness** of the venture to spin out and raise investment or generate revenues
- The **time availability, motivation, and entrepreneurial capabilities** of the founding teams
- The ability to **access to the necessary facilities and technical, managerial and entrepreneurial expertise** for the spinout to develop its commercial value proposition
- The **investment environment** within which the founding team is seeking to launch the spinout
- The **university resources and processes** and wider environment to support the spinout
- Negotiating the **terms of the deal**

Details of the barriers identified within each category are provided in Table 4.

**Table 4** *Barriers to spinning out companies: perspectives of TTO directors*

Category	Barrier details
<b>Technology and commercial readiness</b>	<p>Accessing and investing the time, effort and resources required to undertake development in order to <b>develop the technology and establish evidence of technology readiness</b>, such as proof of concept or functional prototype.</p> <p>Accessing the commercial skills and end-user input necessary to <b>establish evidence of commercial readiness</b>, such as demonstration of product/market fit or development of a viable value proposition able to attract investment.</p> <p>For ‘deep tech’ spinouts – i.e. nascent technologies building on new science, but without a well-defined market (Nanda 2019) – the need to <b>educate customers before they buy or adopt a new technology</b>.</p>

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**Time, motivations & abilities of founding teams**

**Enabling academics to have sufficient time** to spend on spinout activities, in addition to ensuring their other roles as faculty members (such as teaching and research) are carried out.

**Ensuring academics are sufficiently motivated** and have a full understanding of the requirements and commitments necessary to engage in spinout activities.

**Level of entrepreneurial competencies** of the founding teams, or accessible by them, including not least abilities to: identify opportunities emerging from their research and develop them into viable business concepts; to develop and integrate internal and external resources to nurture and develop the spinout; and to convince others to contribute to its development. A lack of these competencies may detrimentally impact the development of the spinout and the ability to attract investors.

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**Deal negotiations**

**Achieving goal alignment** between the university, spinout teams and external stakeholders (including investors) around how to advance the spinout.

**Complexity of equity negotiations**, e.g. due to different calls on the IP such as non-public research funders, non-university partners involved in generating IP, and balancing interests of different founders & non-founding inventors.

**Complexity of, and time required**, to perform due diligence and establishing IP rights, particularly in cases involving IP from research funded by multiple sources, where academics have relocated from one university to another, or where there is shared ownership of IP. This can add the time required to successfully spin out.

**Time required to negotiate deal terms** including equity splits & licensing deal terms. The time taken also be affected by the other barriers experienced, not least the complexity of due diligence and rights clearance, misaligned expectations between investors and universities over terms, and slow response times from funders and partners in seeking their agreement over terms. This is also exacerbated where there is a lack of internal resources available to support the process.

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**University resources, processes, and environment to support the spinout**

Extent to which **processes & systems aimed at supporting spinouts are institutionalised within the university**, and the level of staff familiarity with these processes & systems.

Level of **understanding and experience of commercialisation among university executives**, including those who are involved in approving and shaping university IP and spinouts policies, in approving spinout deals, or in mediating any disagreements.

**Level of school/department support for spinouts**, particularly in the internal allocation of tasks and resources.

**Overall level of TTO resources** available to support spinouts, the relative prioritisation of spinout activities versus other activities (e.g. licensing) in the day-to-day **allocation of TTO resources**.

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	<p><b>TTO capability gaps</b>, with the areas of legal/contracts management and business development highlighted. This was particularly the case for those universities not producing very large numbers of spinouts.</p>
<p><b>Investment environment accessible to the university and founding team</b></p>	<p><b>Availability of, and access to, translational and other funding prior to spinout foundation</b> to sufficiently develop and de-risk the technology.</p> <p><b>Availability of, and access to, pre-seed and seed funding, co-investment funding</b> and high-risk finance to support the development of the spinout once founded.</p> <p><b>Ability to attract/access suitable investors</b> with relevant experience of particular opportunity niches, such as specific technologies and markets, particularly in regions outside the London-Oxford-Cambridge Golden Triangle.</p> <p><b>Lack of diversity of investors</b> willing to invest in the broad range of early-stage spinouts.</p> <p><b>Funder requirements for companies to be formed to access product development funding</b>, which can lead to the spinout being founded too early and before technology has been sufficiently validated / demonstrated.</p> <p><b>Investor requirements for demonstrating commercial traction</b>, e.g. evidence of customer sales/commercial contracts. This can be very challenging and unrealistic for some types of technologies being commercialised (e.g. advanced materials, healthcare technologies).</p>
<p><b>Access to facilities and technical, managerial and entrepreneurial expertise</b></p>	<p><b>Availability of sufficient human capital</b> (suitably experienced, skilled and motivated people) to advance the technological and commercial opportunities through the spinout; particularly chief executive officers, chairs, non-executive directors, other management team members, entrepreneurial mentors, personnel with deep-tech skills.</p> <p><b>Availability of suitable space and appropriate facilities and equipment</b> within the local ecosystem to support early company development.</p> <p>Access to people with <b>expertise in key markets/industry</b> relevant to specific spinouts within the local ecosystem.</p>

Table 5 shows the frequency with which different TTO Directors mentioned each of the barrier types in their open responses to our question. Note that due to the sample being small, it is not possible to determine whether differences between sub-groups are statistically significant. As such we must be cautious when interpreting these differences. Given this caveat, the table shows that helping their spinouts access the necessary facilities and expertise (technical, managerial and entrepreneurial) is the most frequently cited barrier category (74% of respondents). This rises to all of the responses for those universities with significant spinout activity. The second most frequently cited category was around the investment environment within which the university and spinout is based (65% of respondents). Interestingly, most universities that identified this as a barrier had lower levels of spinout activity. The technology and commercial readiness of spinouts was cited very frequently by the most active spinout generating universities in our sample. By contrast, universities with relatively low levels of spinout activity more frequently cited the time availability, motivation and the



entrepreneurial capabilities of founders, and the availability of internal university resources, and its processes and environment to support spinouts as key barriers.

**Table 5** *Frequency of barriers being identified by TTO Directors, for universities with different levels of spinout activity (percentage of responses)*

Barrier area	All responses	University respondents in:		University respondents with:		
		Golden Triangle	Rest of UK	More than 20 spinouts between 2015-21	7 - 20 spinouts between 2015-2021	Fewer than 7 spinouts between 2015-21
Access to facilities and technical, managerial, and entrepreneurial expertise	74	83	71	100	60	71
Investment environment accessible to the university and founding team	65	50	71	33	80	71
Time, motivation & ability of founding team	52	67	47	33	50	71
Technology & commercial readiness	48	67	41	83	50	14
University resources, processes, and environment to support the spinout	39	67	29	33	30	57
Deal negotiations	30	50	24	33	30	29
<i>Number of responses</i>	<i>23</i>	<i>6</i>	<i>17</i>	<i>6</i>	<i>10</i>	<i>7</i>

Table 5 also shows the differences between those universities based in the Golden Triangle (where much venture capital is based) and those based outside it. It reinforces the well-known finding that universities outside the Golden Triangle face a more challenging investment environment. By contrast, universities within the Golden Triangle (a mix of very active and less active universities) highlighted a range of other barriers.

## 4.2 Main issues when negotiating spinout equity distribution

In addition to the barriers faced when spinning out, our survey of TTO Directors also sought information on the issues and concerns they are confronted with and have to resolve specifically when negotiating the equity distribution for the spinout. They identified a range of issues, including:

- Ensuring a **fair distribution of equity, managing expectations**, and **securing buy-in** of the approach amongst key stakeholders
- **Post-spinout equity** considerations
- Agreeing non-equity related terms such as **license terms, ongoing costs, and future access** to university expertise and facilities
- Navigating and applying **university IP policies**
- **Effects of the deal on the wider university community** and entrepreneurial and research culture

Details are provided in Table 6.

**Table 6** *Main issues confronted by TTOs during spinout negotiations*

Category	Negotiation issues
<p><b>Fair distributions of equity, managing expectations, and securing buy-in</b></p>	<p><b>Identifying all inventors, contributors, funders, and collaborators</b> due a revenue share takes time and may delay spinout.</p> <p><b>Ensuring and agreeing a fair distribution of equity</b> between founders, non-founding inventors and contributors, reflecting effort rather than seniority. This can be challenging where founder expectations are unrealistic, or where spinouts have multiple founders that put added pressure on individual equity stakes.</p> <p>Ensuring all stakeholders – including funders, university departments, non-founding inventors, and investors – <b>are aware of the intention to spin out and support the equity split.</b></p> <p><b>Identifying and quantifying the university’s contribution</b> to the development of the spinout, and using this to justify the university’s equity share, while some investors and founders expect a low university equity position, irrespective of prior or future investment.</p> <p>Managing the <b>expectations of other universities</b> in cases of joint IP, particularly in establishing the lead institution and in agreeing equity split.</p> <p>Managing <b>founder expectations</b>, e.g. for a higher proportion of equity, and in questions of equity dilution and benchmarking.</p> <p>Managing <b>non-founding inventors’ expectations</b> for an equity share, which may not be tolerated by investors.</p> <p>Managing <b>funders’ expectations</b>, which can be particularly challenging where multiple funders are involved in contributing to the IP development; agreeing relative contributions and revenue shares; securing consent to commercialise; and maintaining the pace of negotiations.</p> <p>Managing <b>investors’ expectations</b> related to agreement of the equity position &amp; option pool, management team stake incentivisation, non-dilutive terms and warranties.</p> <p><b>Managing weak university negotiating positions</b> where the university has difficulty in attracting investors.</p>
<p><b>Post-spinout equity considerations</b></p>	<p>Calculating the <b>relative value of post-invention technological improvements</b>, and ensuring inventors of these contributions are appropriately rewarded (e.g. through additional equity and/or licensing revenue share).</p> <p>Ensuring <b>leaver provisions</b> are in place so that founders who remain with the business receive additional rewards/incentives beyond those of inventors, contributors and other founders who leave the business.</p>
<p><b>Non-equity terms, ongoing costs and future access to</b></p>	<p>Negotiation of <b>licence fees &amp; terms</b> may be challenging.</p> <p>Issues related to <b>mismatches in the timescale pressures to spin out and the ability to raise funding</b>, e.g. pressures to spinout from funders in</p>

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**university expertise and facilities**

order to access public funds but timescales are very tight to allow match-funding to be secured.

Ensuring the spinout has **fair and controlled access to the IP and know-how** from key academics to drive the technology transfer, and enabling the academic to remain actively involved in the spinout post-foundation.

Appropriately **costing academic consultancy** to include the full economic costs, which can make consultancy an expensive option for spinouts.

Maintaining **fee-based patent management** by the university may be challenged by the spinout.

**Maintaining continuity of co-operation between the university and spinout** through and beyond the equity negotiation period.

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**Navigating and applying university IP policies and legal obligations**

Ensure that any spinout deal **complies with the exempt charitable status** of universities, which limit their ability to use their assets for purposes other than to deliver their mission, and unless the full cost of the use is reimbursed. They have a duty to balance the individual incentives with receiving appropriate returns to commercialising their charitable assets.

Ensure that agreed deal terms comply with national **state-aid** laws

The **use of certain defined terms within university IP policy can invite challenges**, e.g. defining the term 'significant university resources' as 1-2 years TTO support during equity negotiations may encourage founders to emphasise periods where TTO support was not provided.

Any **differences in IP policy between multiple universities can lead to disagreements** in cases of spinouts based on joint IP.

Determining the equity stake & royalty **terms to incentivise and reward founders and inventors while appropriately reflecting the university's full contribution** to the development of the spinout.

**Navigating internal approval processes** for aspects of IP policy can be time and resource intensive.

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**Effects of the deal on the wider university entrepreneurial and research culture**

Ensuring that **any impacts of spinout creation on the departments from which they originated are recognised**, such as academic time spent on spinouts which could have been spent on other faculty roles, such as research and teaching.

Ensuring that spinout **deals do not adversely affect efforts to encourage greater diversity** among inventors/founders.

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**Equity and the wider  
spinout deal**

# 5 Equity and the wider spinout deal

Before diving into the approaches of universities to taking equity in their spinouts, it is very important to recognise that the founding equity split is but one of a wide range of terms that have to be agreed at the point of spinout foundation (Figure 7).

**Figure 7** *Types of terms that typically have to be negotiated as part of a spinout deal*

FINANCIAL TERMS	OTHER TERMS AND CONDITIONS
<ul style="list-style-type: none"><li>• Equity split across founding shareholders</li><li>• Equity for different types of contributions e.g. IP, cash, active support/‘sweat’</li><li>• Equity pools for incoming CEO, employee options, and decisions on how these pools dilute founding shareholders</li><li>• Financial terms on license (royalty-free vs royalty-bearing; upfront fees; milestone-based payments)</li><li>• Patent prosecution costs pre- and post-spinout foundation</li><li>• Conditions on any cash payments (e.g. deferrals based on ability to pay / stage of start-up)</li></ul>	<ul style="list-style-type: none"><li>• How the IP is transferred into company (license or assign IP, license now &amp; assign at trigger point)</li><li>• Rights of the spinout to IP pipelines and improvements</li><li>• How enabled products are to be treated (products enabled by research but not covered by original patents)</li><li>• Fields of use and sublicensing terms</li><li>• Access to valuable and specialist university facilities and services (e.g. high performance computing services, lab space, ongoing support)</li><li>• Ongoing role of academics &amp; relationship with research in university</li><li>• Board seats and voting</li></ul>

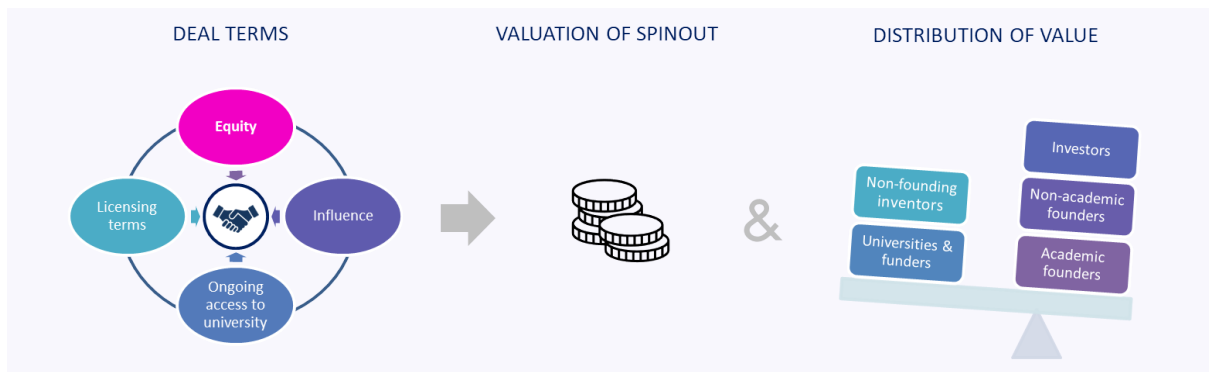
Beyond founding equity splits, deals will often have to cover how the IP is to be transferred into the company (e.g. to license or assign), financial terms of any license and other conditions on the use of the IP, rights to future IP pipelines and improvements, the role of the university as a founding shareholder in company decisions, and ongoing access and affiliation to the university by the company.

Crucially, decisions on one element of the deal – such as the amount of university founding equity – are not made in isolation from decisions on other terms; not least whether there are financial terms to be included in a license to the IP, and the amount of support provided by the university in nurturing the spinout pre-foundation, and ongoing access of the spinout to university facilities and expertise post-foundation (which can be valuable to very early stage companies).

Taken together (Figure 8), the collective set of terms will influence:

- The valuation of the company
- How different stakeholders are incentivised to engage with the spinout moving forward
- How future risks and rewards are distributed across different stakeholders
- The timing of when value is taken out of the company to reward different stakeholders

**Figure 8 Spinout deal terms and the distribution of value between different stakeholders**



One area often underappreciated in the spinout debate is the value to the company of maintaining positive ties to parent universities. As new companies, spinouts often seek to commercialise novel and risky technologies and ideas. Unless successful serial academic entrepreneurs with strong reputations are involved, left alone many less experienced or first-time academic entrepreneurs would likely lack the reputation and visibility to gain serious traction amongst investors. Evidence suggests that spinouts that maintain ties with their parent university benefit from both additional credibility and easier ongoing access to cutting edge science, facilities, human capital, and other resources (Ferretti et al. 2019; Lubik et al. 2013). This can help to increase the value of their venture and improve their chance of attracting early investors.

Another important factor in the equity negotiation is agreeing the valuation of the company. This will shape investor decisions about the scale of their investment and their expected return on investment on exit. Importantly, a company’s initial valuation can quite dramatically affect the extent of dilution of founders’ equity. A higher initial valuation can reduce the degree to which founding equity (including that taken by the university) is diluted as investment enters the spinout, as more investment enters for a given amount of shares. However, valuations need to be realistic as they set expectations for the spinout’s market potential and development. Valuing these very early-stage companies is known to be very difficult.

It is important to note that founders that join the spinout may benefit from employee options (a board-level decision) which can counteract the dilutive effects of new share issues as investment enters the company. Unless other mechanisms are put in place, universities do not benefit in similar ways and are fully diluted.

## 5.1 Why universities typically take equity in spinouts

To understand why universities currently seek to put in place mechanisms to ensure they benefit financially from spinout success – typically in the form of equity or financial terms on a license – it is important to first understand some key defining characteristics of universities as generators of new knowledge in the innovation system. First, unlike in many countries, UK universities are autonomous organisations independent of government, but are largely publicly funded. This, combined with the typical motivation of academics to deliver research that advances our knowledge for societal benefit, their overriding mission is to deliver impacts that benefit society. This may be achieved through commercial or non-commercial means.

Second, UK universities are typically incorporated as exempt charities which places legal obligations and restrictions on what they can do and how they operate. Given their 'exempt' charitable status, if they use their assets for economic purposes other than for delivering their charitable aims, charity law requires they seek financial reimbursement to cover the full cost of that asset. Crucially they are also obliged to use any financial returns to advance the charitable aims of the university. In commercialising intellectual property emerging from research, equity and/or financial terms on a licence provide a mechanism to meet its obligations as an exempt charity. Any financial returns from successful spinouts are typically used by universities to further invest in their core activities, including research, teaching and knowledge exchange (including supporting commercialisation).

#### Box: Quotes from respondents

*"The University's overarching aim for innovation activities is to maximise impact. Financial return is not the primary goal. Nevertheless, the University must be financially sustainable and, as a charity, is obliged to balance individual incentives with receiving an appropriate return for commercialising its charitable assets. Retaining some of the returns from the successful ventures enables the University to provide financial resource to its charitable activities."*

Universities are also employers and are covered by the Patents Act 1977 and Copyright Designs and Patents Act 1988. These laws stipulate that intellectual property generated by employees is owned by the employer if it is generated during the course of their 'normal duties' or 'outside their normal duties but specifically assigned to them' (Hockaday 2020 citing the Patents Act 1977). Reflecting this, UK universities typically claim ownership of IP arising from the research activity (undertaken by their staff). However, arrangements for students (undergraduate and postgraduate, research students and non-research students) can be more complex and less uniform across the sector, with students in some universities owning IP emerging from their work while in others the universities claim ownership in some circumstances (Hockaday 2020; UK IPO 2014). Note also that there are often different arrangements in place for non-patentable IP (e.g. copyrightable IP such as text, images and code) with many offering ownership rights to their researchers.

Further, the Patents Act 1977 requires that employers compensate their employees for employer-owned inventions of 'outstanding benefit' to the employer. This provision, along with the need to create incentives for academic inventors to drive the commercialisation of their research is at the heart of universities' spinout equity policies and IP revenue sharing policies. Hockaday (2020) notes that one must be very careful in focusing on and interpreting specific provisions without considering with precedent and case-law, as well as provisions in wider legislation (e.g. governing copyright and designs).

According to our survey's responses, universities also take 'sweat' equity in spinouts to compensate for the time, money, resources (including free or discounted access to facilities, financial support to develop prototypes, training for founders, help with finding investors etc.) invested in developing the technology and commercial readiness of the company and founding team. These investments, they argue, help to de-risk the technology and company, and increase its 'readiness' for investors.

Some universities responding to the survey also noted that they may prefer to take equity in a spinout rather than negotiating at arms-length a fully commercial, royalty-bearing license (as

appears to be becoming more typical in the US) in order to help the spinout retain as much of their cash reserves as possible to help with critically important cash flow during their infancy.

University may also have contractual obligations to share rewards with other parties e.g. charitable funders or research collaborators, or may wish to reward non-founding inventors of the IP and others (often through revenue sharing policies) for their contributions – direct and indirect – to the spinout. They may seek equity to cover these obligations.

Some survey respondents also highlighted reasons why they do not take equity in some circumstances. While this varies across universities, they variously highlighted not seeking equity if: when spinouts are based on know-how (including e.g. consultancy companies); when IP is developed within the spinout; when the IP has little commercial potential; and when spinouts are driven by a social mission.

## 5.2 Transferring the IP into the spinout

One decision that must be made as part of the spinout deal is how any protected IP will be transferred into the spinout for it to be developed and commercialised. The main options are to either assign over the ownership of the IP to the spinout, to license the IP to the spinout giving it the rights to use and exploit it for commercial gain, or some combination of the two. Connected with this are sets of terms and conditions that have to be negotiated. These are set out in the sections below.

### 5.2.1 To assign or to license...

Our survey of TTO Directors suggests that most of the responding universities typically license the IP into the spinout initially with assignment agreed at certain trigger points, or with the potential to negotiate assignment at a future date. Trigger points may include:

- Delivering on key investment milestones such as the level of investment achieved or reaching a specified investment stage (e.g. Series A)
- Delivering on key commercial milestones such as reaching a certain revenue position
- Achieving a target royalty income
- Spinout exit such as acquisition, trade-sale or IPO

At this trigger point the assignment of the IP may incur a fee or other obligations.

Under certain circumstances some universities choose to assign the ownership of the IP to the spinout straight away. These include, for example:

- Digital tech companies where the value of IP is strongly tied up with the founders and there would be little residual value in the IP if detached from the founder. One university provided the example of software companies where the code is likely to be largely re-written during the commercialisation process. In this scenario they may choose to assign the IP to the spinout to simplify the start-up process.
- Where the IP has relatively low value and its assignment does not harm the position of the university (e.g. to undertake further research)



A few universities said that they rarely assign the IP to the spinout unless this was deemed necessary for the company to develop further and succeed (for example as part of an acquisition or IPO).

### 5.2.2 Reasons for licensing IP to spinouts at foundation

The TTO Directors responding to the survey referred to a number of key reasons for preferring to license IP to their spinouts, at least in the first instance. These include:

- **Risk management:** it enables the university to recover the IP if the company fails or if it subsequently decides to shelve the commercialisation project (e.g. if the company is acquired or changes strategic direction), and try another route to commercialisation
- **Ongoing spinout support:** it makes it easier to continue to support the spinout with IP protection and IP management costs. If the IP has been assigned to the spinout it would typically become liable for the full IP protection costs which add to the cash-flow burden for these very early-stage start-ups

### 5.2.3 Financial terms

Licensing the IP to a spinout may involve negotiating financial terms. Our survey revealed the types of terms that are typically negotiated by universities in our sample.

<b>Royalty-free in exchange for equity</b>	In eight of our 23 cases, IP is typically licensed royalty free in exchange for equity in the company. The aim is often to conserve cash in the spinout during its infancy and maximise the time available to raise external funds.
<b>Royalty-bearing, and/or milestone payments</b>	In 11 of our 23 cases, licenses can involve royalties, and/or milestone payments (particularly in those sectors where development times are very long such as drug discovery and aerospace).
<b>Upfront fees</b>	In a few cases, universities mentioned upfront fees (e.g. to cover historic IP costs) where this is viable for the spinout.
<b>Exit fees</b>	One university mentioned negotiating exit fees linked to the exit value of the company.

The survey also revealed that universities can approach these payments in different ways:

<b>Payment holidays / deferrals until the spinout is viable</b>	Of the ten universities that mention royalties or milestone payments, eight noted that they will negotiate <b>payment holidays / deferrals until the spinout is viable</b> and able to shoulder the burden of making these cash payments to the university. Once again, the aim is to help the spinout retain as much cash as possible and build initial value to maximise its chance of getting off the ground to secure investment.
<b>Approach varies by type of IP</b>	Some universities also noted that their approach to negotiating any <b>financial terms on the license will vary by the type of IP being commercialised</b> and the norms for the sector which it is targeting.

<b>Discounted financial terms</b>	A small number of universities noted that they apply a discount to the financial terms of the IP license if the academic founders with significant equity holding waive their rights to revenue sharing from payments back to the university (e.g. from fees, royalties and milestones).
<b>Separation of IP license and founding equity negotiations</b>	A few universities noted that they attempted to keep their IP license negotiations separate from equity negotiations. For others, there is more of a trade-off apparent, with low / no equity approaches leading to more fully commercial negotiations on the IP license.

#### 5.2.4 Other terms

Licensing the IP to a spinout may also involve negotiating other terms. The TTO Directors responding to our survey highlighted the following typical terms:

<b>Exclusivity</b>	<p>In many cases, universities will sign exclusive IP licenses with the spinout if they are free to do so (e.g. subject to obligations to research funders). Exclusive access to the IP is often important for investors.</p> <p>In some cases, licenses are fully exclusive with few other restrictions such as fields or geographies of use, rights to sub-license. In others, universities tend to grant partial exclusivity.</p> <p>The choice between full and partial exclusivity can depend on the specifics of the IP being commercialised and the norms for the sector into which the IP is targeted. Some universities noted that the choice may also impact the financial terms of the license reflecting the increased value of the IP being transferred to the spinout.</p>
<b>Rights to improvements</b>	<p>Many universities, although not all, will include negotiated access to improvements to specific patents being licensed, potentially for a limited duration and limited to those made by the same inventor. For some rights to improvements are included for no further payment, while others will seek to negotiate terms as they arise.</p>
<b>Future IP pipelines</b>	<p>Pipeline agreements on IP appear to be less common than improvements and may be constructed as first sight rather than first right to access future IP. Where IP pipeline agreements are negotiated they tend to be limited to work linked to the academic founder and may be time-bound. The ability to negotiate IP pipelines may also be restricted by terms and conditions imposed by research funders.</p> <p>Some universities were explicit in not agreeing to IP pipelines as part of licensing deals.</p>

<b>Sub-licensing (and sub-licensing tiers)</b>	<p>Many universities in our sample allow for sub-licensing as part of the spinout deal. However, there can be limits on this, with a number of universities restricting the sub-licensing of IP to one tier beyond the spinout (i.e. they prevent the sub-licensee from sub-licensing the IP to other companies).</p> <p>When sub-licensing, a number of universities reported requiring they give consent in order to protect the reputation of their institution (e.g. to prevent their IP from being deployed in unethical ways).</p>
<b>Fields and geographies of use</b>	<p>When granting exclusive licenses, some universities may restrict this exclusivity to specific fields of use or geographies, particularly when the IP may have applications in multiple areas. Others may grant global exclusivity. Once again, the ability to grant global exclusivity may be limited by funder obligations.</p>
<b>Rights of university to research and teach</b>	<p>When exclusively licensing or assigning IP, some university respondents emphasised the importance of including a non-exclusive license back to the university for research and teaching purposes. This may seek to include improvements to the licensed IP as well.</p>
<b>Provisions to terminate license</b>	<p>One university mentioned they seek to include explicit provisions to terminate the license if the licensee fails to meet their obligations (e.g. to commercialise the IP).</p>
<b>Reporting obligations</b>	<p>One university also mentioned the inclusion of reporting obligations within the license.</p>

### 5.3 Post-spinout rights for the university

As part of spinout deals, universities may also seek to negotiate certain rights within the spinout post-foundation. The types of rights mentioned by the TTO Directors responding to the survey are captured in Table 7.

**Table 7** *Types of rights universities seek to negotiate in the spinout post-foundation*

Right	Description
<b>Appointing a director</b>	<p>Universities may seek the right to appoint a director or non/executive director to provide governance and support through foundation and investment processes.</p> <p>This right may be lost after a set period of time, or may be lost or converted to observer status depending on the investment round size or once the university's equity reduces below a certain threshold (e.g. 5-10%).</p>
<b>Appointing an observer</b>	<p>Universities may seek the right to appoint an observer to keep abreast of company progress to inform TTO portfolio/investment management, facilitate continuing knowledge exchange with the university, and manage any conflicts of interest arising from academic founders' university and spin-out roles.</p> <p>This right may be relinquished where conflicts of interest are no longer expected to arise, or may be lost after a set period of time or once the university's equity reduces below a certain threshold (e.g. 5-10%).</p>
<b>Shareholder consent rights</b>	<p>Universities may seek to obtain shareholder consent rights, e.g. around dilution and changes to share rights; large equipment purchases; incurring debts; changes to company structure, purpose or activities; or issues that may affect the reputational risk for the university. These may vary on a case-by-case basis and may be agreed or relinquished as new investors come onboard.</p>
<b>Information rights</b>	<p>Universities may seek information rights, for example, an annual IP development report. This right may be lost below a certain equity threshold (e.g. 5%).</p>
<b>Pre-emption and drag/tag along rights</b>	<p>Universities may seek to obtain pre-emption and drag/tag along rights to enable it to participate in future investment rounds should it be able and interested in doing so.</p>

## 5.4 Timing of university equity being taken spinouts

In discussing and comparing the ‘founding equity’ taken by universities in their spinouts, it is critically important that we are clear about the point at which the equity is taken, not least whether it is *pre-money* or *post-money*, and whether it is *before* or *after any initial pots of equity reserved for specific purposes* (e.g. to incentivise incoming CEOs or for employee share option pools) are taken into account. As we show in this section, this can have dramatic effects of the level of equity reported, leading to poor representations of the realities of the process and negotiations. It can also lead to significant consequences for any analyses of the relationship between founding equity taken and measures of spinout performance, with results likely to be biased downwards, i.e. suggesting that lower equity leads to higher performance when this may not be true.

Typically, universities in our sample take equity in spinouts pre-money at the point of company foundation. This reflects that many universities help the academics set up the company as the vehicle for commercialising the IP. At this point the primary stakeholders involved in the process are the university and the founders and inventors. Note that some universities take a different approach, with the founders themselves setting up the company (at which point the university will have no shares in the company) and then approaching the university for the IP at which point the negotiations over equity and other terms begin.

There are some other variations within the sector:

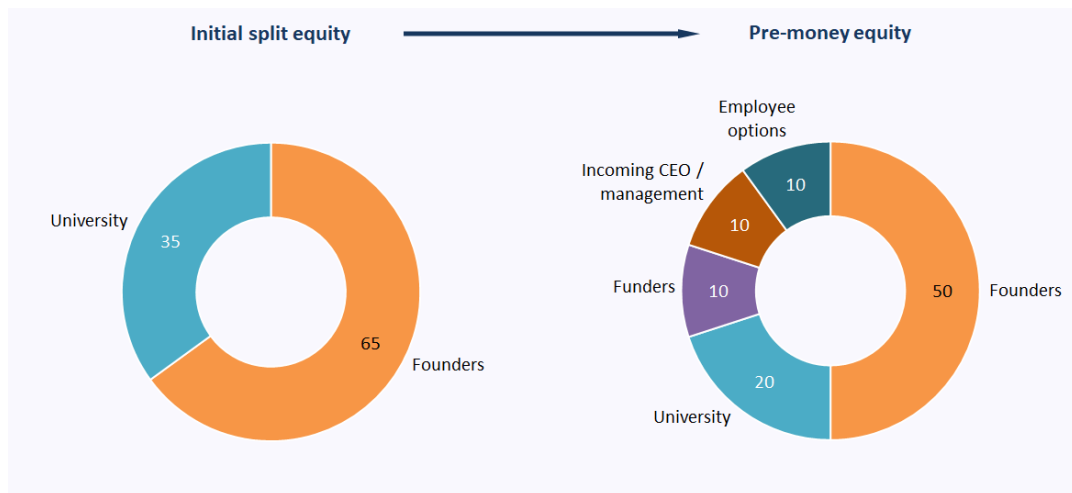
- Three universities in our sample mention taking equity post-money
- Two universities noted that they may take their equity at the point of the first investment
- Three universities highlighted that they receive equity when IP (or any further IP) is licensed from the university into the spinout

## 5.5 Dilution of founding equity prior to investment

The reported university founding equity position in spinouts often refers to the *initial* split of the 100% equity pool during a negotiation between the university (often through their TTO) and the academic founder(s) before any money or other external party has entered the negotiation.

During these negotiations, pools of equity may be agreed to be reserved for other purposes, often to incentivise an incoming Chief Executive Officer (CEO) and to create option pools to incentivise employees as the company develops. *These reserved pools of equity immediately, and potentially significantly, dilute the equity positions of the founding shareholders* (the university and the academic founders). This effect is demonstrated in the synthetic example provided in Figure 9, based on values obtained through our survey of TTO Directors.

**Figure 9 Synthetic example of pre-money dilution of founding equity for different shareholders**



As we show later in this section, which shareholders get diluted can vary both across universities and between different approaches to taking founding equity. This complexity can make comparisons of university founding equity positions – even pre-money – even more difficult as the reserved pools of equity are typically confidential.

### 5.5.1 Equity as incentives for other parties

Most university spinouts are founded by one or more academics and typically lack cash at their foundation. To attract and retain much needed management and other talent during these early days of the spinout development, the founding teams may decide to reserve a proportion of the spinout’s equity to give to an incoming CEO as an incentive, and to create an equity option pool to incentivise employees as the company develops.

Our survey of TTO Directors shows that the amounts of equity reserved to incentivise income CEOs and management varies from 0% to 30% with most typical value 10% (median value). The equity may be offered instead of a salary.

Similarly, as the spinout can typically only offer limited salaries to incoming employees initially, they may choose to create an equity option pool to incentivise employees. Our survey suggests that typically 10% of shares (median value) are reserved for this purpose (Figure 10). The size of the option pool depends on the expectations about how many key employees and what type of expertise are needed. Employee option pools can be used to compensate academic founders that join the company as employees as their founding equity gets diluted as investments enters the spinout.

#### Box: Quotes from respondents

*“Typically, the CEO would expect to be non-salaried initially, with shares to vest upon completion of mutually agreed milestones”*

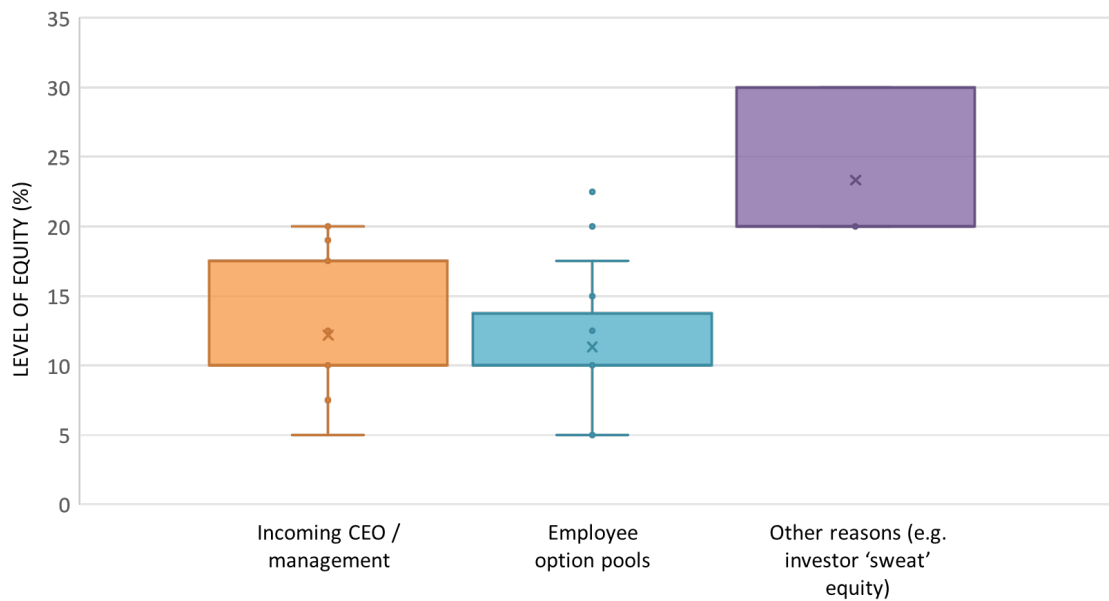
*“Management shares vary and are usually instead of salary”*

#### Box: Quotes from respondents

*“Option pools are set to incentivise the development of the technology by non-founding research staff. Equity is also granted from the pool to partner institute.”*

*“Founders shares will be diluted equally but academic founder may be on management team or an employee so gain additional share options as such”*

**Figure 10** Equity pools reserved at foundation for different purposes



Equity can also be allocated pre-money for other purposes, for example to compensate early investors or third parties that support the development of the spinout pre-foundation (sometimes referred to as 'sweat equity'). The amount of equity depends on the individual situation of the spinout, on the level of investment or the interest of other investors that would strengthen an institution's negotiating position. In our sample, sweat equity ranges from 20% to 30%.

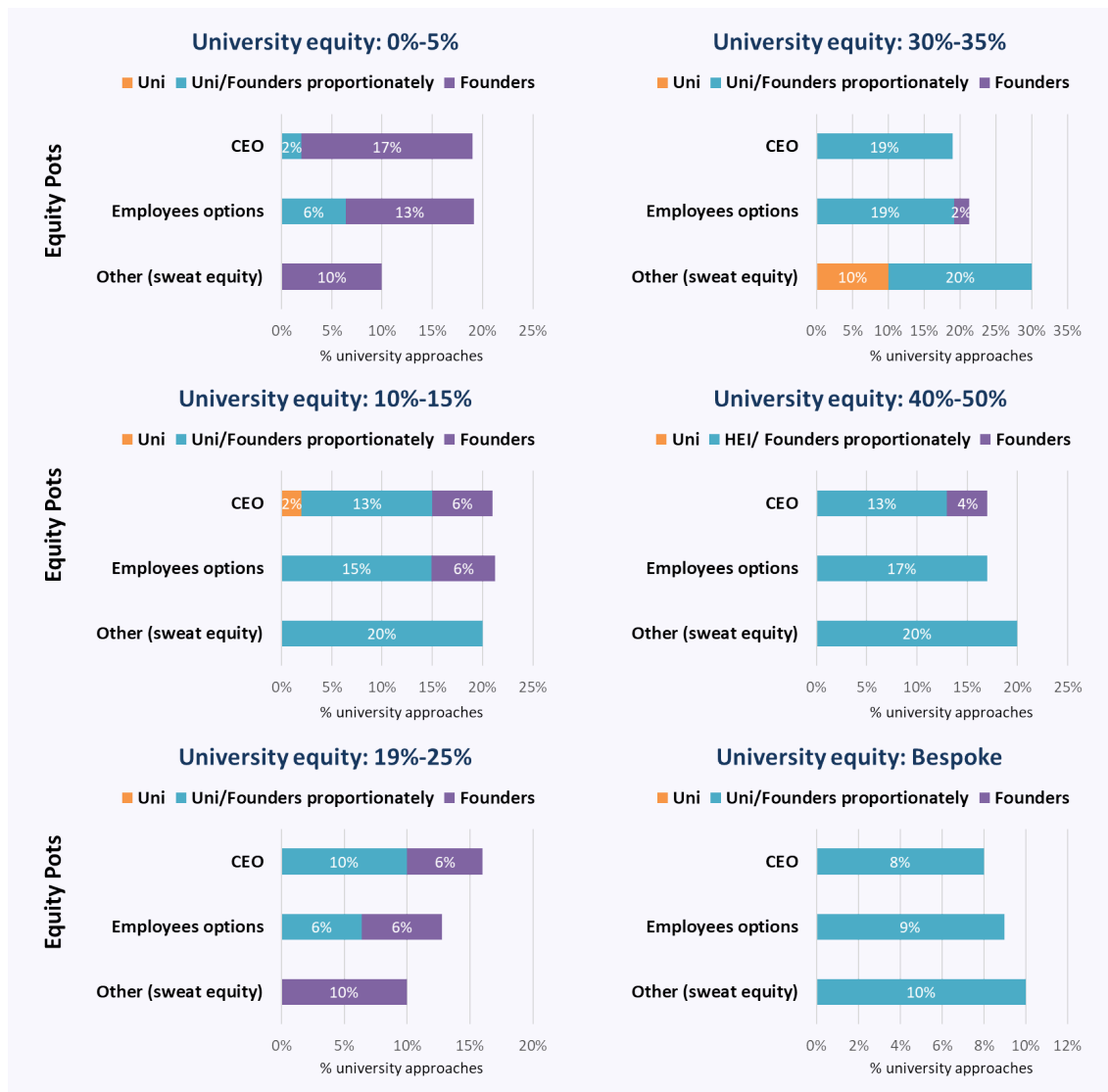
**Table 8** Pre-money equity dilution and who gets diluted

Equity reserved for:	Who gets diluted (% approaches reported):			Number of university approaches
	University and Founders proportionately	University	Founders	
Equity for CEO/ management	65	2	33	48
Employees shares options	72	0	28	47
Other equity (sweat equity)	70	10	20	10

Note that the percentages do not add up to 100% as the respondents use more than one approach

In allocating equity to other purposes pre-money, decisions have to be made about how the equity stakes of different founding stakeholders get diluted. Shares could come out of the university's founding stake, the founders' stake, or some combination of the two. Our survey shows that, in the majority of cases, equity for the incoming CEO, for employee share options, and for sweat equity, typically dilutes both the university and founders shares proportionately (Table 8).

**Figure 11 Equity pools and who gets diluted, for university approaches taking different levels of founding equity**



Diving into the detail for different types of equity approaches (Figure 11) shows that university approaches that seek low amounts of equity in their spinouts are much more likely to require these additional equity pools to dilute the founder’s share only, rather than the university’s. As the university takes more equity in the spinout, universities typically move to an approach that sees both their share and that of their founders dilute proportionately.

### 5.5.2 Equity for funders

When a spinout’s research is funded by non-public sources such as medical charities, equity may be taken to ensure the non-public research funder benefits from the successful commercialisation of the IP it helped to fund. This may be required as part of contractual obligations signed as part of the research agreement, possibly many years before the spinout is created.

We found that the amount of equity to compensate funders is, in most cases, negotiated and agreed by the TTO with the funders (95% of responses) (Table 9). For some (30%) it is determined through



an agreed formula which may have been specified in the research funding contract or other inter-institutional agreement.

Frequently, funders benefit through a revenue sharing agreement put in place with the university which sets out how any income resulting from the commercialisation of IP it has (part) funded (e.g. through sale of equity or licenses) will be shared back to the funder. Obligations to compensate funders as part of research agreements have to be accommodated as part of the spinout equity and wider deal negotiations.

Unlike equity reserved for incoming CEOs or employee options, equity to compensate funders typically dilutes the university only (75% of university responses) (Table 9). In a further third of universities responding, it dilutes both the university and the founder proportionately, while in just 5% of responses does it only dilute the founders' shares.

**Table 9** *How funders equity is negotiated and who gets diluted*

How funders equity is negotiated	Percentage of respondents	Who gets diluted by the funder's equity stake	Percentage of respondents
Agreed/ negotiated by TTO	95	University only	75
Determined by formula	30	University / Founders proportionately	35
		Founders/ Inventors only	5

*Note that the percentages do not add up to 100% as the respondents use more than one approach*

### 5.5.3 Comparing equity positions across universities

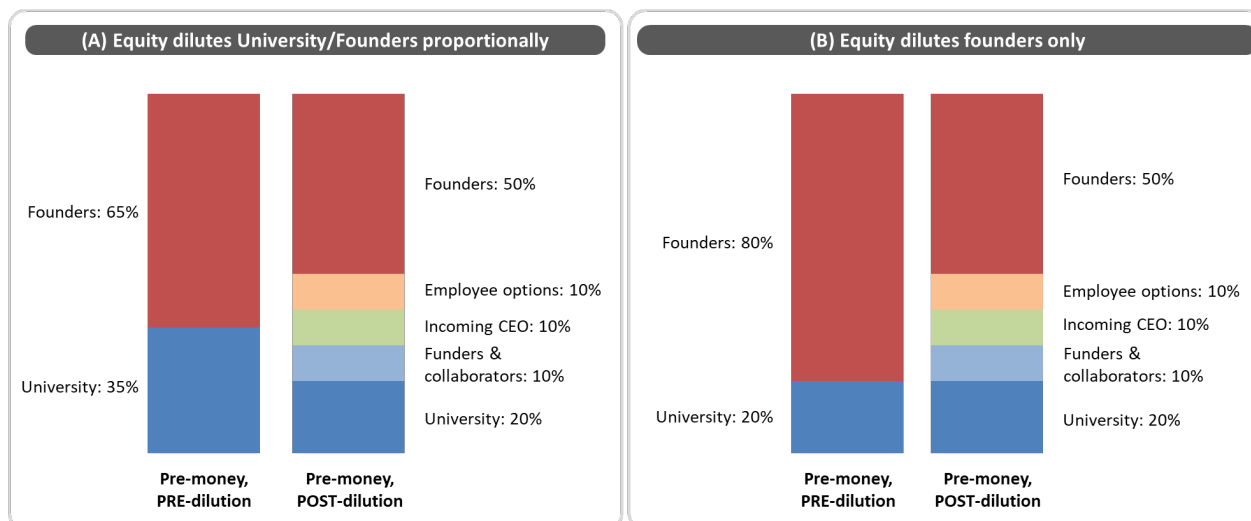
The choices made during spinout negotiations regarding the creation of different pools of equity (e.g. to incentive CEOs and employees and compensate funders), and how these new pools dilute initial shareholders, can complicate comparisons of university founding equity positions across universities. Below we construct two synthetic examples based on real world data from our survey to show how two universities that take quite different founding equity stakes in their spinouts but make different choices on how these equity pools get diluted, can end up having very similar amounts of founding equity in the spinout pre-money.

In scenario A, the university and the founders agree a 35%:65% split in the spinout's equity at foundation. They also agree to allocate 10% to attract an incoming CEO and 10% for an employee option pool. As a result of a research agreement they must also take 10% equity to compensate the research funder. They agree that these various equity pools dilute both the university and the founders proportionately. As a result, the university's equity post-initial dilution but still pre-money reduces from 35% to 20%, while the founders' shares reduce from 65% to 50%.

In scenario B, the university and the founders agree to an 20%:80% split in equity at foundation. As in scenario A, they also agree to allocate 10% to an incoming CEO and a similar amount for employee share options. They also require 10% equity to compensate research funders. However, unlike scenario A, their policy requires that these equity pools dilute the founders only. As a result, the university's equity stake stays the same at 20%, while the founders' shares reduce from 80% to 50% pre-money.

While these examples are stylised, they show how the final pre-money equity positions of the university and the founders can be the same despite different starting points because of the choices made about who gets diluted through the creation of various pools of equity. As such, when comparing university spinout equity policies it is not enough to just know the initial founding equity they seek, but also their positions on these other terms.

**Figure 12 Scenarios of pre-money equity dilution**



## 5.6 Tranching equity

Another nuance to the equity negotiations is ‘tranching’. This sees shareholders effectively divide their equity into different pools or ‘tranches’ – potentially with different conditions attached – as part of the same transaction. This may see the university take different tranches of equity at different points in the spinout’s development.

**Table 10 Tranching equity by universities**

Do you tranche equity?	Number of respondents	% of respondents
No	14	61
No, but maybe in future	2	9
Not typically	4	17
Sometimes	1	4
Yes	2	9
Total	23	100

### Box: Quotes from respondents on whether they tranche equity

**Not typically...** because “we are diluted fairly quickly...” but “we apply leaver provisions for Founders (internal and external) so equity can be recovered if a Founder leaves the company early.”

**Sometimes...** “related to the specifics of a deal”

**Yes...** “to ensure the company doesn’t fall under financial reporting as part of our group / impact SME status etc.”

Most universities responding to our survey (70%) do not currently tranche their equity, although some of these institutions may look at this in the future (Table 10). A further 17% of our sample said they do not typically tranche equity but do so on occasion. Just 13% of the sample said they typically or sometimes tranche equity.

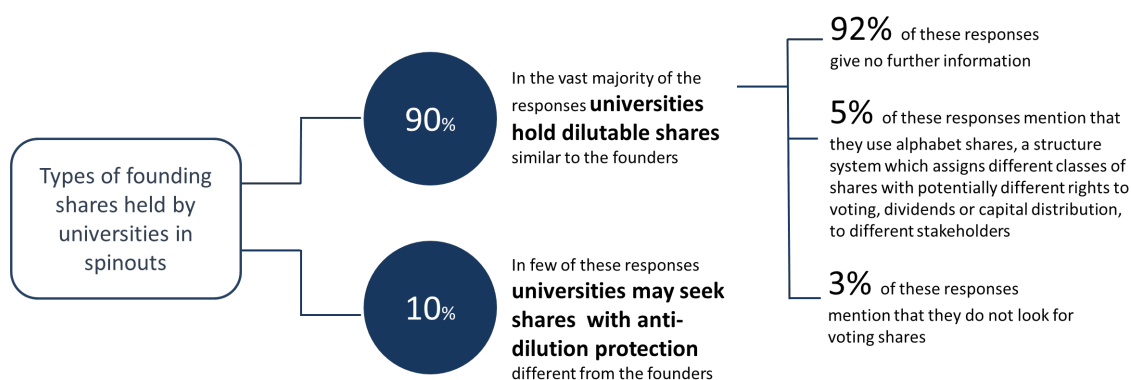
A few universities tranche equity for financial purposes, for example to keep their equity stake in the spinout at any given time to less than 25%. Where universities tranche equity, some use warrants to do this, while others use subscription options which provide an automatic entitlement for the shares to be allocated as new investment funding comes in.

## 5.7 Types of shares held by universities in spinouts

Shareholders can hold different types of shares in the spinout company, which allocate different rights and benefits. For example, some shares carry voting rights, while others do not; some give rights to dividends determining to whom dividends are distributed, with what priority and how much; the right to capital distribution in the event of the company being dissolved; and any equity dilution protection as new shares are issued.

For most of the universities responding to our survey the university typically takes ordinary shares in their spinouts that dilute in the same way as those held by other founding shareholders (Figure 13). A few university respondents noted that they will seek shares with anti-dilution protection in some situations.

**Figure 13** *Types of founding shares held by universities in spinouts*



Investors entering the spinout in subsequent investment rounds often seek preference shares. These types of shares come with preferential rights – legal priority over ordinary shares – to, for example, dividends and capital distribution in the case the company winds up. These types of preferential rights help to lower the risk to investors. Investors also benefit from Seed Enterprise Investment Schemes (SEIS) and the Enterprise Investment Schemes (EIS), which encourage investors to buy shares in small or medium sized companies by offering tax relief. Some investors may also seek further protections by requiring IP to be assigned to “fire-sales” if a company fails, where the company sells its goods or assets below their intrinsic value.

## 5.8 Equity dilution as investment enters a spinout

The debate on university founding equity focuses on the distribution of equity universities negotiate with spinout’s founders’ pre-money and before the dilution effects of any pools of equity reserved for specific purposes. As investment enters the spinout, new shares are typically issued to incoming investors. As this happens, founding shareholders (such as the university, academic founders, and initial investors) will see their equity diluted, unless they are willing and able to invest their own

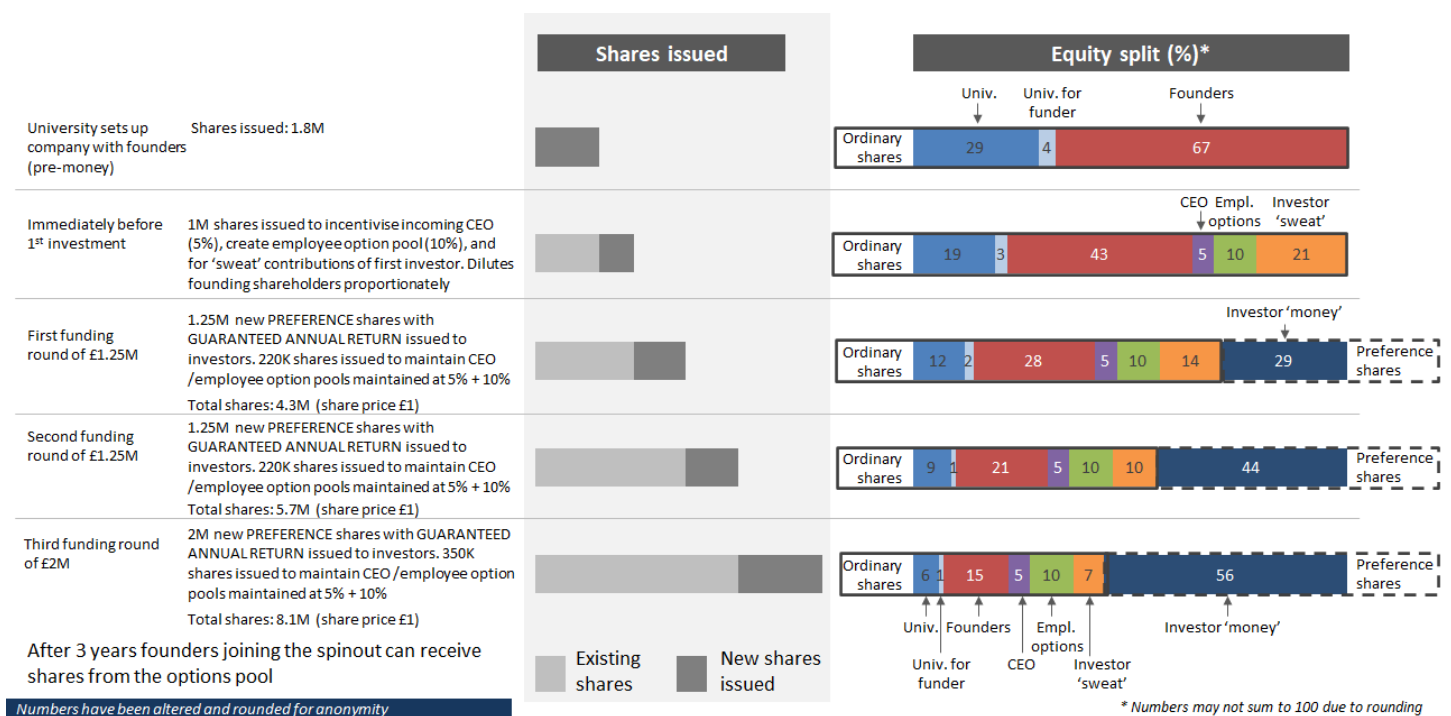
capital in the spinout alongside other investors, or are issued new shares to compensate for example in line with anti-dilution conditions or, for founders that join the company, through employee option pools.

To illustrate the significant dilution effects on founding equity as new money enters a spinout to support its development and scale-up, we have constructed two ‘synthetic’ cases based on real-world examples.

### Illustrative ‘synthetic’ case 1

The first case highlights the dilution effects of pre-investment dilution due to management shares/employee option pools as well as investor taking ‘sweat equity’ for the support they provided to the spinout during the foundation process. It then showcases the dilution effects on initial shareholders as investors enter with cash.

**Figure 14 Equity dilution as investment enters a spinout: synthetic example 1**



The case evolves as follows:

#### University set up company with founders (pre-money)

An initial equity split of 33%: 67% (university: founders) was agreed at company foundation. As a result of research agreements with funders, the university held 4% in equity for funders. Ordinary shares were issued at this stage.

#### Immediately before first investment

As the company negotiated its first external investment round, pre-money it created a pot of shares to incentivise an incoming CEO (5%) and a 10% employee option pool. The first investor also negotiated ‘sweat’ equity for its support for the foundation of the company. The allocation of these new shares diluted the university and founders proportionately. It was agreed

that the CEO shares and employee option pool would be maintained at 5% and 10% respectively as new shares are issued. Even before money entered the spinout, the university's founding share had reduced from 29% to 15%.

**First funding round**

As investors entered with cash investment, new shares were issued as preference shares with a guaranteed % annual dividend return that accrues until a liquidity event.

**Subsequent funding rounds**

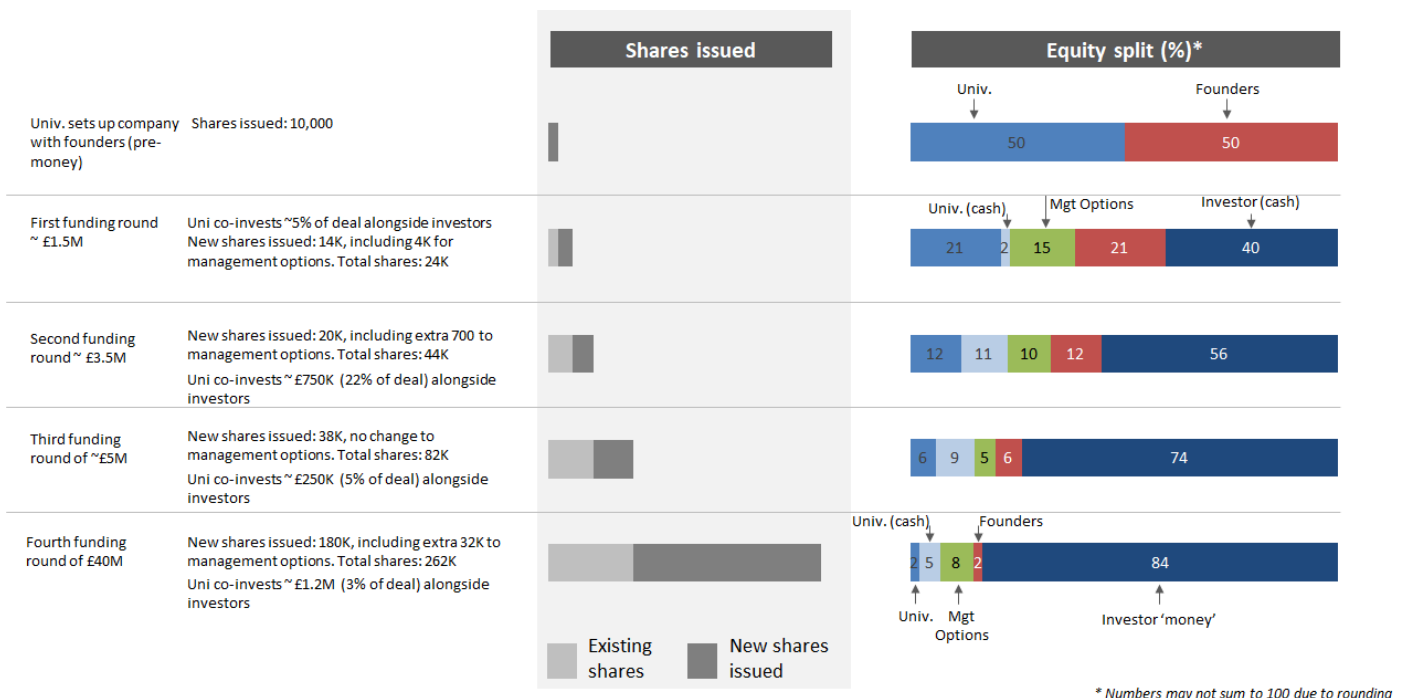
Following 3 funding rounds, the university's founding equity stake had reduced from 29% to 4%. After year 3, founders can start receiving additional share options from the employee option pool that is being maintained at 10% equity.

Overall, this case highlights how the university's initial shareholding of 33% reduces immediately to 15% after we account for share pools for the incoming CEO, employee options, and sweat equity to the initial investor. This is before any money has entered the company. As money enters to help grow the company, with the university unable to co-invest in the growth of the company, its stake reduces to 4% within four rounds of funding.

**Illustrative 'synthetic' case 2**

The second case builds on the first, highlighting what happens when a university is able to co-invest alongside investors as the spinout emerges, develops and scales. In this case, the university negotiates a 50%:50% equity split with the founders.

**Figure 15 Equity dilution as investment enters a spinout: synthetic example 2**



The case evolves as follows (Figure 15):

<b>University set up company with founders (pre-money)</b>	An initial equity split of 50%: 50% is negotiated between the university and founders.
<b>First funding round</b>	At the first funding round, the university invests cash on the same terms as investors (~5% of the value of the deal) and receives 2% equity stake. As part of the deal 15% of equity was allocated to a management options pool, diluting the university and founders proportionately. Post-money, the university's original equity stake for the IP and support it provided has been diluted to 21%.
<b>Second funding round</b>	In the second funding round, the university invests a significant amount alongside investors, boosting their equity held for cash investment to 11%. Its founding equity for the IP and support reduces to 12%.
<b>Subsequent funding rounds</b>	The university continues to invest in subsequent funding rounds, including the ingest of significant scale-up funds of £40 million in the fourth round. Following this last round, the university's founding equity for IP and support had reduced 2% and its equity stake for cash stood at 5%.

This case shows the significant dilution effects of funding as it enters the spinout, with their core equity stake reducing from 50% to just 2% as the company secures significant scale-up funding. However, the ability of the university to co-invest as the spinout develops and scales, means that it maintains a 7% in the company following its scale-up funding round.



**Amount of founding  
equity taken by UK  
universities in their  
spinouts**

## 6 Amount of founding equity taken by UK universities in their spinouts

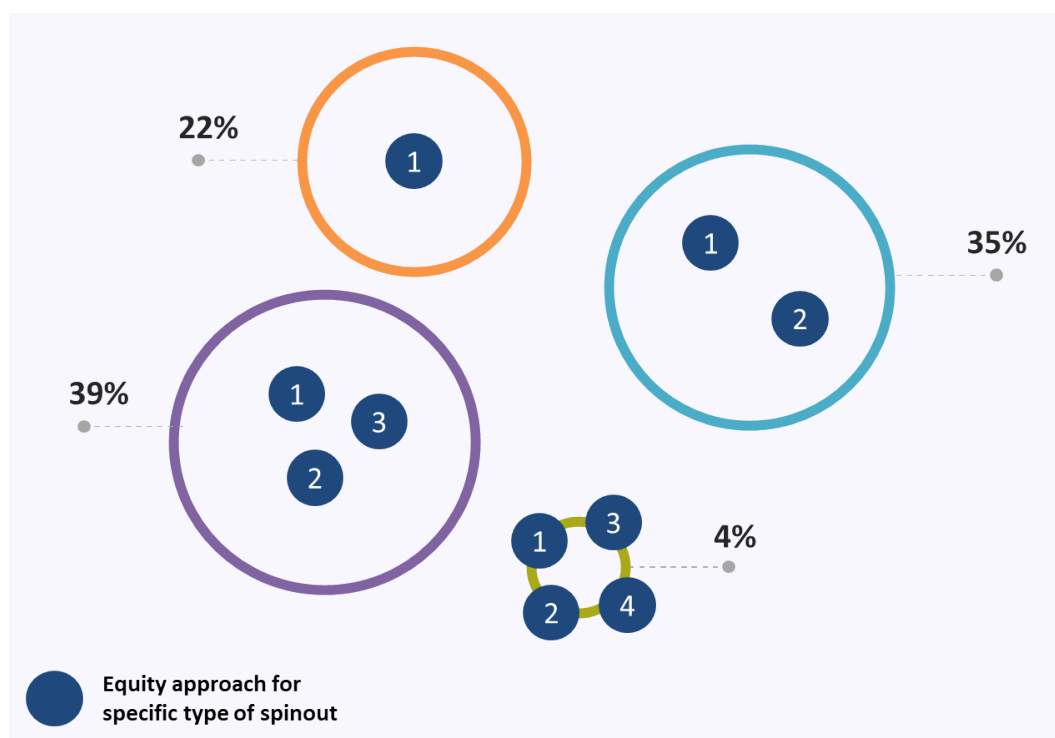
This section presents the amount of equity that universities typically take in the spinouts at foundation *pre-money*. Crucially, our survey asked universities to provide different ‘typical’ approaches under which different levels of equity are sought, and explain their justifications for their approach.

### 6.1 The variety of university approaches to taking equity

A crucially important finding from our survey is that many of the UK universities responding to our survey have multiple approaches to taking equity in spinouts. In total we found 52 different typical approaches from the 23 universities studied. Each approach reflected the needs of a different type of spinout and / or commercialisation circumstance.

Over three-quarters have more than one typical approach, with almost a third have three or four different approaches (Figure 16). Almost 90% of the spinouts generated by the universities in our sample originated from universities with multiple approaches.

**Figure 16** *Percentage of university respondents with each number of typical approaches to taking equity under different spinout circumstances*





**Figure 17 The spectrum of current UK university equity approaches**

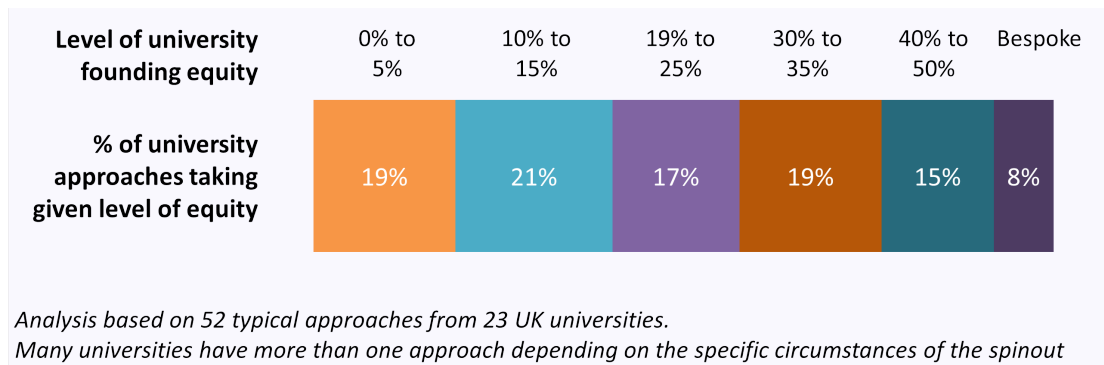


Figure 17 shows the frequency of different typical equity approaches being utilised by UK universities, covering the spectrum of different types of spinouts being supported. In 19% of approaches our university respondents took between 0-5% equity in the spinout (pre-money and pre-dilution). In a further 21% of approaches they took between 10-15%, while in 17% they took between 19 and 25%. In almost a fifth of approaches our university respondent took between 30-35% while in just 15% of them did they take 40-50%. Eight percent of the approaches were bespoke, where universities adopted a case-by-case approach to spinout negotiations, typically focused on those spinouts which didn't fit into their other more typical approaches.

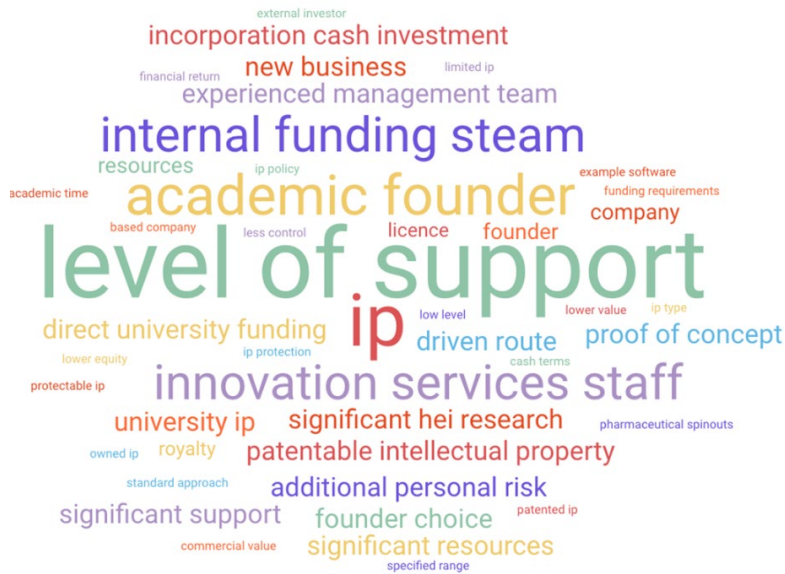
We also found that where universities have multiple approaches which includes a high equity approach, most typically use their high equity approach much less frequently than their lower equity positions. For these universities we found that high equity approaches (more than 40%) were used in approximately 18% of their spinout cases (based the median). By contrast, the most frequently used approaches, which for most was lower than their highest equity position, was used in 60% of their spinout cases (based on the median). **This has significant implications for how the stated spinout policies of universities are interpreted, as policies will typically identify the highest option not the typical case.**

## 6.2 Factors influencing the level of university founding equity

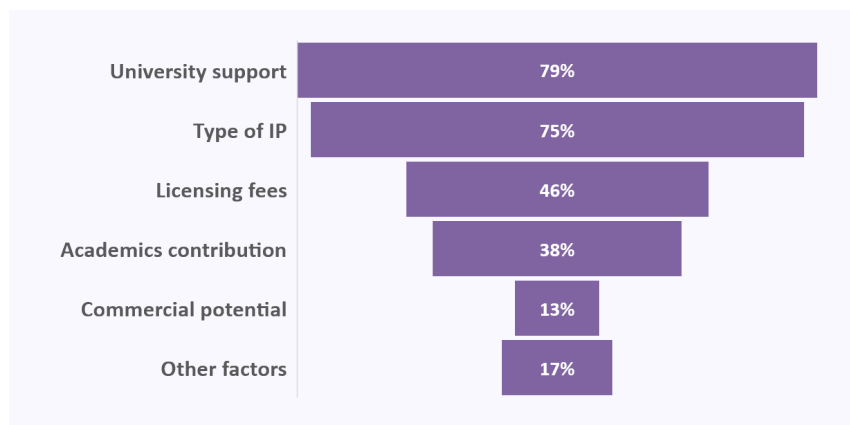
The TTO Directors of the universities in our sample set out key reasons for justifying their different approaches they have put in place on spinout equity. These are captured visually in the word cloud in Figure 18 and are codified in Figure 19. Central amongst them is the level of support they provide to the spinout pre-foundation, including the time and effort of TTO staff, and in some cases the investment of internal university funds into developing the IP and the company. Also, crucially important in determining the equity approach is the *type* and *amount* of IP that underpins the spinout and the extent to which the university has invested its own research, translation, and other funds to support the development of the IP towards a commercial application.

Further details on each of the key factors shaping the equity approaches are provided in Table 11. How these different factors pull universities in our sample towards higher or lower equity approaches is brought together in Figure 20.

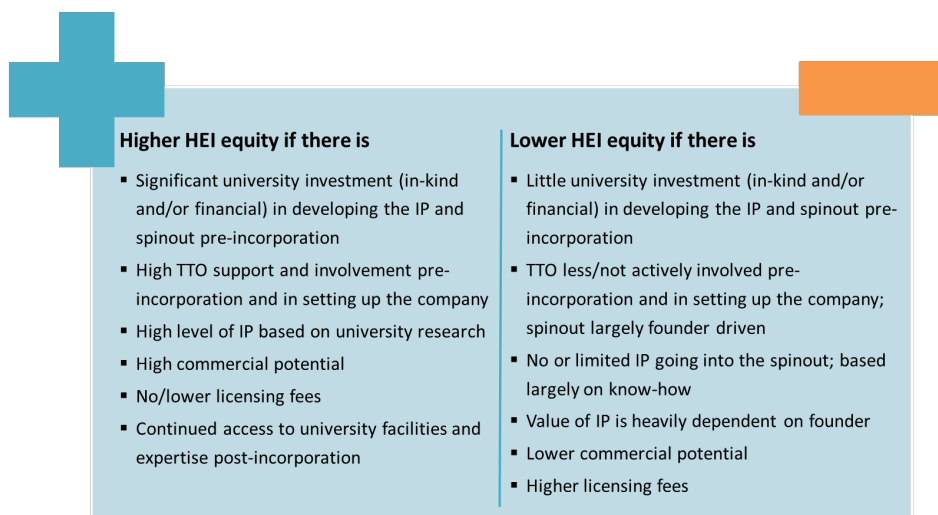
**Figure 18** Word cloud based on answers of the respondents explaining their equity approach



**Figure 19** Factors mentioned in the survey that decide the level of the university equity approach (% of university approaches)



**Figure 20** Factors driving higher and lower equity positions for individual spin-out cases



**Table 11 Factors that influence the university-founder distribution of equity**

Factor	Description
<p><b>University support</b></p>	<p>The level of support from the university to the spinout is the most frequently cited factor influencing the level of the university’s pre-money equity share.</p> <p>A detailed list of pre- and post-incorporation support is provided in section 8, and includes:</p> <ul style="list-style-type: none"> <li>• Financial support from universities to protect IP, invest in the development of the IP (e.g. proof-of-concept), develop the business case and value proposition, set-up the company, and in some cases support to cover CEO salaries initially</li> <li>• Access to facilities and infrastructure pre-incorporation to support the development of the IP and the company, as well as continued access to these infrastructures post-incorporation</li> <li>• Active support from TTO to help the spinout become ‘investor ready’, facilitate access to investors, incubators, mentors, and to develop the business case and investor pitch-decks</li> </ul> <p>It is also more likely that universities will seek higher equity stake if the spinout is based on cumulative research built up over many years and involving researchers well beyond the founding team.</p>
<p><b>Type of IP</b></p>	<p>The level of university founding equity often depends on the type of IP being commercialised through the spinout. Universities typically seek higher equity where there is significant amounts of protectable university-owned IP, where the university-owned IP is at the core of the company’s value proposition, and where the IP at higher ‘technology readiness levels’.</p> <p>By contrast, they tend to seek lower (or no) equity) when the spinout is based largely on know-how, where the value of the IP is intrinsically tied up with the founder (e.g. for digital tech), where the IP is hard to protect.</p>
<p><b>Licensing terms</b></p>	<p>The wider deal terms, not least the financial terms of the license often influence the pre-money university-founders equity split. Many mentioned trade-offs between the level of equity taken and the license’s financial terms. A few universities highlighted that taking higher equity in exchange for a royalty-free license helps to preserve cash in the spinout when it likely struggles with cash-flow, while still providing a mechanisms to allow the university and non-founding inventors and funders to benefit from the spinout if it is successful in the long term.</p>
<p><b>Academics contribution</b></p>	<p>Some universities will also consider the level of contribution academics and founders are making to the spinout’s development, for example whether they plan to leave university employment, lead the drive to</p>

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	secure external investment, and build the spinout without much support from the TTO/university.
<b>Commercial potential</b>	A few universities mention the commercial potential of the spinout as a contributing factor to the amount of equity they receive. Spinouts that have a strong commercial case, significant potential to grow, a high likelihood to secure funding, and have a significant exit opportunity for the university that can result in a financial return to the university are elements that possibly increase the amount of equity university negotiates. This in part reflects their duty as charitable institutions to ensure they generate returns to their charitable assets to reinvest in their core missions.
<b>Other factors</b>	<p><b>Types of spinouts:</b> The universities in our sample typically did not take equity in social enterprises or consultancy companies.</p> <p><b>Tax purposes:</b> Another factor that shapes the amount of equity is the tax purposes, universities cap the equity at less than 25% to avoid additional tax or implications of SME status.</p>

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### 6.3 University founding equity for different types of spinouts

Using the factors provided by TTO Directors influencing different types of ‘typical’ spinouts situations, we coded each approach into one of three categories (lower, medium, and higher) based on the level of university ‘contribution’ to the spinout. The categories are driven largely by the amount and type of IP being transferred into the spinout, and the level of university support for the development of the company and/or IP, although the other factors listed in the previous section also influenced our categorisation.

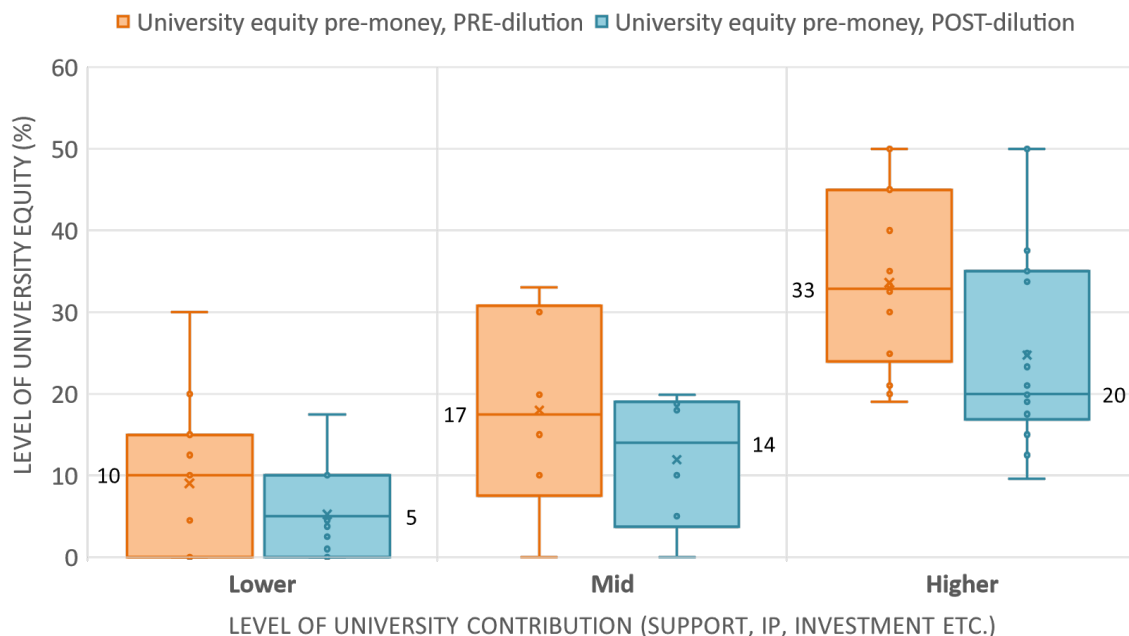
Figure 21 shows that the median equity taken by universities in their spinouts pre-money increases as the level of university contribution to the spinout increases. For spinouts with lower university contribution we see a median university equity of 10% (with many approaches ranging from 0% to 15%. Post-dilution but still before any investment enters the company, the median equity for this type of spinout falls to 5% (ranging from 0% to 10% for most approaches).

By contrast, where universities make a higher level of contribution to the spinout, they take a median of 33% (with most ranging from 24% to 45%), reducing to 20% post-dilution but pre-money (ranging from 17% to 35%). If we limit the sample to universities generating more than 5 spinouts over the period 2014/15 – 2020/21 the median equity for spinouts with higher university contributions reduces to 31% with a smaller spread with the majority ranging from 22% - 39% equity.

**Note that these results do not provide evidence to inform decisions regarding whether a ‘founders choice model’** – similar to that being implemented by Imperial College London – would be beneficial. It was not possible from our analysis to robustly compare the levels of equity being taken by universities in cases where university-owned IP enters the spinout but receive low versus high levels of support; the decision that typically confronts academics in a Founders Choice model. It would also

be important to then explore whether such models deliver superior outcomes to alternatives. This is beyond the scope of this report.

**Figure 21** *Level of university founding equity pre-money, pre- and post-dilution equity, for different levels of university contributions to the spinout*

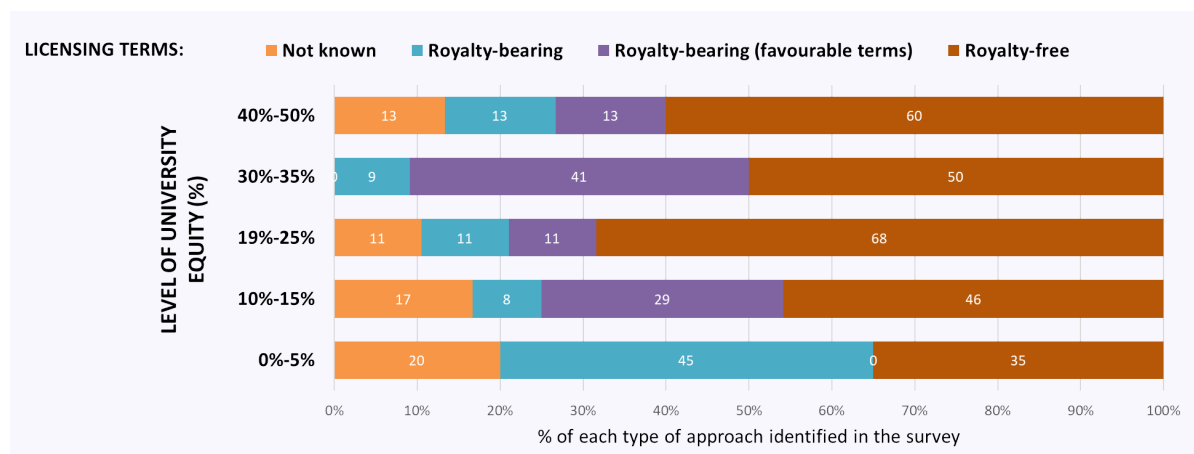


Note: the horizontal line within each 'box' represents the median university equity share across that category of university approaches

### 6.3.1 The equity-license terms balancing act

We also analysed the balance between equity and licensing terms in the different typical university approaches reported to our survey. It shows that approaches that take higher amounts of equity are typically accompanied by licenses that are either royalty-free or have more favourable terms such as deferred payments until the spinout is viable or lower royalty rates and fees than would be the case if the negotiations were fully arms-length. By contrast, approaches that take little equity are much more likely than others to have royalty-bearing licenses.

**Figure 22** *Licensing terms as part of the equity deal in UK universities*



\*Bespoke approaches are excluded

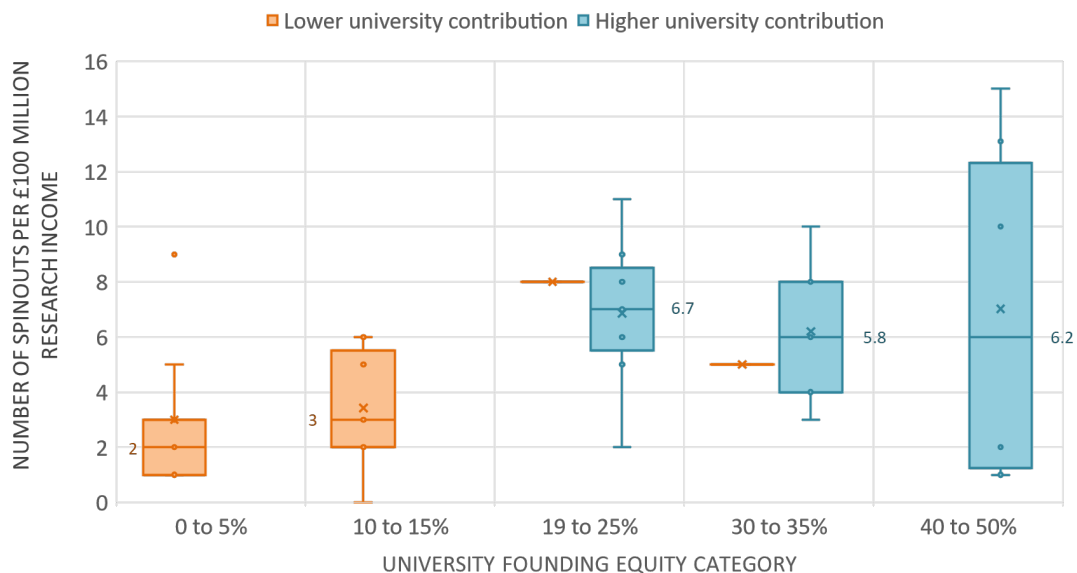
One argument made by TTO Directors is that this helps to balance the need to preserve cash in the spinout during its infancy with a mechanism that allows the university and other key stakeholders involved in generating the IP and supporting the spinout pre-incorporation (e.g. non-founding inventors and funders) to benefit from spinout success.

## 6.4 Equity and university performance in generating spinouts

The report up to this point has focused on presenting the reality of the typical levels of equity UK universities take equity in different types of spinouts. A key question raised in the current intense debate on university equity in spinouts is whether the level of equity taken in the company is having a detrimental effect on (a) the production of valuable spinouts; and (b) the ability of the spinouts to raise external investment to develop and grow.

While this survey was not set up to directly examine these key questions, it can provide some tentative insights. Figure 23 looks at the number of spinouts generated by universities – normalised by the scale of their research base – associated with different approaches. Crucially, unlike other studies on this topic to-date, we distinguish between those spinouts in which the university has contributed relatively less (in particular in terms of IP, support and/or funding), with those where the spinout benefits from significant levels of university contribution (IP, support, funding).

**Figure 23** *Distributions of spinouts generated per £100 million research income associated with different university equity approaches, for spinouts with low university contribution (left-hand orange boxes) and high university contribution (right-hand blue boxes)*



*Note: analysis limited to universities generating at least 5 spinouts between 2015 – 2021*

For those spinouts where the university has made significant contributions, there is relatively little difference in the median number of spinouts generated per £100 million research spend for the universities in our sample. Those with equity approaches between 19-25% generated 6.7 spinouts per £100 million research income, compared with 5.8 for those with approaches seeking 30-35% (with similar ranges). Strikingly, however, universities with approaches taking 40-50% equity, while the median level of spinouts generated is similar, show a very large spread of experiences. Some

with this approach manage to generate a large number of spinouts (controlling for the size of their research base) while others generate many fewer.

For spinouts where universities contribute much less to the spinout, the median number of spinouts generated per £100 million research income is somewhat less for the 0-5% equity approach compared to the 10-15% approach (2 compared with 3.5 spinouts per £100 million research income).

To further explore whether the amount of equity taken by universities affects the level of spinout activity of universities we look at the long-term trends in spinout generation at two of the world's leading research universities: Oxford and Cambridge. Historically Oxford and Cambridge have adopted very different approaches to equity in spinouts. At Oxford, it is the university, along with the founders that set up the company into which the IP is licensed or assigned. Oxford, until 2021, also had a relatively fixed policy of taking 50% equity for IP-rich spinouts and for the support they provide to academics in developing the spinout. By contrast, at Cambridge, the spinout company was typically incorporated by the academic (and other founders) who then approach the University to license or assign the IP, and for investment. At Cambridge, equity consideration for the IP licence is negotiated on a case-by-case basis, in addition Cambridge takes additional equity for cash investment at a market rate. Both universities have large, well-established TTOs.

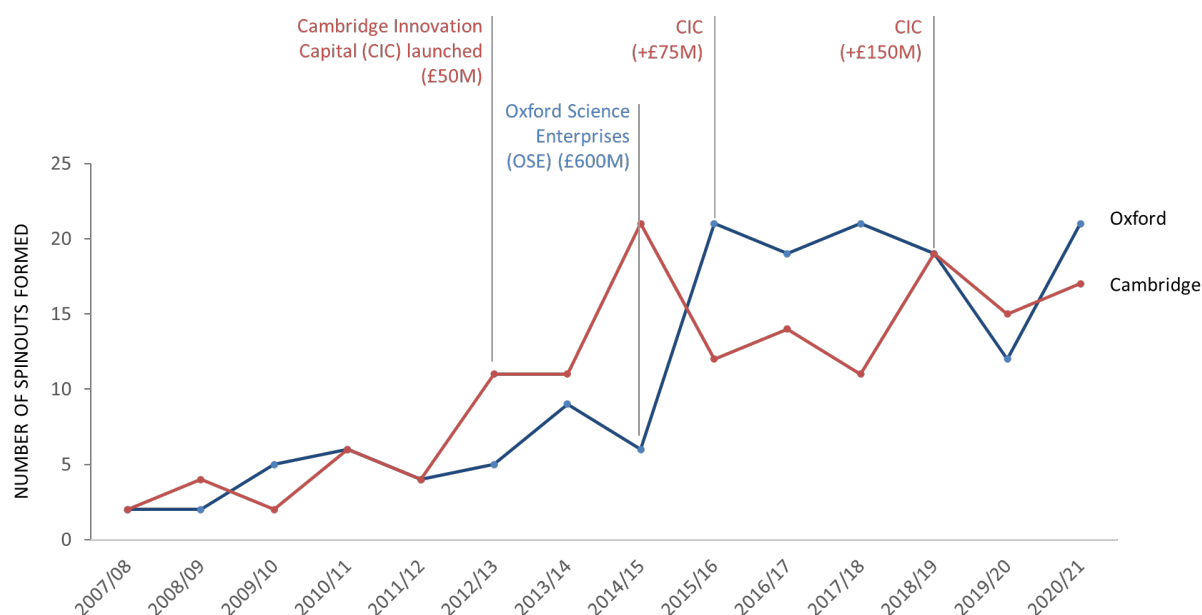
Both Oxford and Cambridge have been successful over the past decade in establishing major investment vehicles dedicated to investing in their spinouts. At Cambridge this saw the launch of Cambridge Innovation Capital (CIC) in 2013 – a partnership between the University and private investors – with a £50 million fund to invest. It was founded to improve the success rate of businesses originating from the University and the wider Cambridge ecosystem, and to encourage more academics and entrepreneurs from the area to build businesses. CIC subsequently raised a further £75 million in 2016, £150 million in 2019, and £225 million 2022.

In 2015 the University of Oxford, working with major investors, launched the investment company Oxford Science Enterprises (OSE) with an initial £600 million to invest in their spinouts. OSE aims to bring together world leading scientists with leading commercial expertise to create and build world-changing businesses capable of solving society's biggest challenges. They aim to provide not just long-term investment capital and business-building expertise, but also access to a global network of entrepreneurs and advisors, and state-of-the art lab and start-up space to help their companies develop and thrive. In 2022 OSE raised a further £250 million to support Oxford spinouts and start-ups.

Figure 24 shows the evolution of the number of spinouts emerging from the Universities of Oxford and Cambridge over the period 2007/08 to 2020/21. It positions the development of both CIC and OSE on the chart. Table 12 shows the average number of spinouts generated for Oxford and Cambridge and level of external investment secured in their spinouts for the beginning of the period (2007/08 – 2011/12) and the end of the period (2017/18 – 2020/21).

Both universities generated similar, and relatively low, numbers of spinouts per year over a decade ago, over the period 2007/08 – 2011/12, despite operating very different approaches to spinout equity. Both universities have seen a huge growth in both the number of spinouts now being generated, and the external investment going into their spinouts (Table 12).

**Figure 24 Evolution of the number of spinouts formed by the universities of Oxford and Cambridge along with key investment events**




**Table 12 Comparison of the number of spinouts formed, and external investment into active spinouts pre- and post-launch of a major spinout investment company or fund in selected universities**

University	Major spinout investment company	Investment company launch year	Details	Number of spinouts		External investment raised by active spinouts (£000s)	
				Average 2007/08 - 11/12	Average 2017/18 - 20/21	Average 2007/08 - 11/12	Average 2017/18 - 20/21
University of Oxford	Oxford Science Enterprises	2015	OSE raised £600M in 2015 and £250M in 2022	4	18	69,000	734,700
University of Cambridge	Cambridge Innovation Capital	2013	CIC Fund I raised £50M in 2013, £75M in 2016, £150M in 2019. Launched £225M Fund II in 2022	4	16	160,600	796,300

What Figure 24 shows is that, in both cases, the significant growth in spinouts being generated follows the arrival of an investment company with significant funds dedicated to investing in their spinouts. Through these and other internal seed and innovation funds dedicated to investing in their spinouts, both universities were able to create investment environments that were not only strongly aligned to the specifics of their internal policies and priorities and dedicated to investing in the commercialisation of academics’ ideas, but also crucially focused on building up the experience, understanding, and trust of how to work with often inexperienced academics to enable and nurture opportunities.





**How academic  
founders and  
inventors benefit  
from spinouts**

# 7 How academic founders and inventors benefit from spinouts

It is likely that the intellectual property upon which a university spinout is based is invented by a number of academics, researchers and others (e.g. technicians). They may be based in a single university or across multiple universities and may also involve contributions from researchers in companies and other organisations.

Some of the academics involved in generating the IP will become the academic founders of the spinout. It is also likely that there will be other inventors who, for different reasons, are not part of the founding team. Furthermore, of the academic founders, some may choose to leave their university employment, while others may decide to remain and engage with the spinout in other ways. This adds potential complexity when negotiating spinout deals, in particular when deciding on how each type of contributor to the invention being commercialised is rewarded, and how.

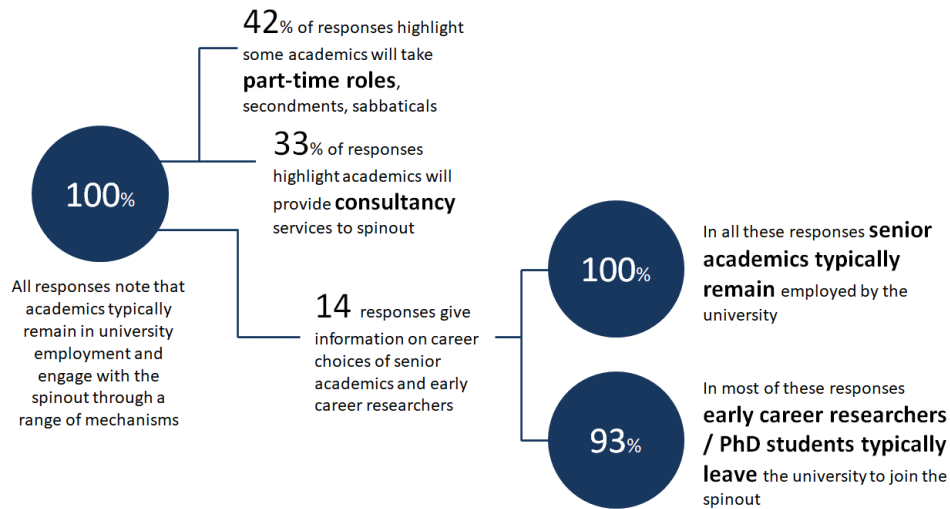
This section presents insights from our survey of TTO Directors on whether academic founders typically leave or remain in university employment to support the spinout; whether academic founders that join the spinout are treated differently in the negotiations compared with those that remain in university employment; how academic founders that remain at the university continue to contribute with the spinout's development; and steps taken by universities to ensure that non-founding inventors benefit from spinout success.

## 7.1 Career choices of academic founders of spinouts

In all the responses to our survey, TTO directors noted that academic founders *typically* stayed in university employment once the spinout has been founded and engaged with it through a range of different mechanisms. Just over four in ten of the responses noted that academics may reduce their hours and go part-time in order to engage with the spinout. A third of responses noted that academics typically continue to engage with the spinout through consultancy arrangements.

Digging into the detailed survey comments, in 14 responses the TTO Directors provided further information on the career choices of different types of academic founders. It is clear that, even in the same spinout, different academic founders may make different career choices, with more senior academics typically remaining employed by the university to continue their research and teaching activities, while others (often early career researchers and those on non-permanent contracts) typically leaving the university to join the spinout and drive its development.

**Figure 25** *Typical experiences of TTO Directors on whether founders typically remain or leave university employment to support the development of the spinout*

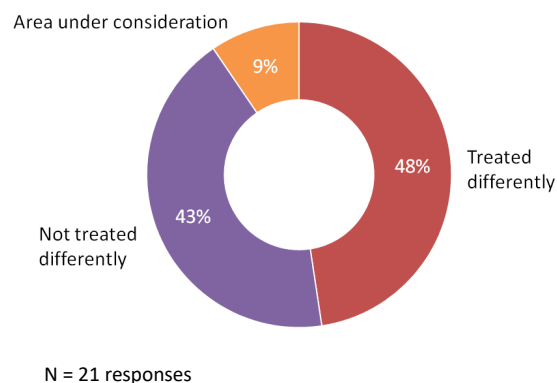


## 7.2 Treatment of founders that leave and remain in university employment

The debate on university spinouts often talks about ‘the academic founder’. However, it is clear from our survey that even within the same spinout different academic founders may make very different career choices. With academic founders that leave their university employment inevitably taking different levels of career risk to those that remain, there are questions around whether this should be acknowledged in negotiations.

Our survey explored this issue and asked TTO Directors whether academic founders that typically leave the university are treated differently during spinout negotiations compared to those that remain in university employment. Of the 21 universities responding to this question, 9 did not treat academic founders differently; 10 did treat them differently; and 2 said it was an area under consideration, but they had not yet developed any guidance.

**Figure 26** *Are founders that leave or remain in university employment post-spinout foundation treated differently during negotiations? Typical experiences of TTO Directors*



Where academic founders were treated differently, it was typically reflected in the way in which equity was distributed, and in how share options were used. Details are provided in Table 13.

**Table 13** *How founders that leave university employment to join the spinout are treated differently from those that remain*

Area	Details
<b>Founder equity split</b>	<p>Seven respondents stated that in their universities, consideration is taken of future, as well as past, founder contributions to the IP and business proposition. This is done both to incentivise founders joining the spinout and to recognise the risks they take leaving university employment.</p> <p>One respondent noted that certain investors now favour founders who leave university employment being given a larger founding share with appropriate clawback/vesting mechanisms as an incentive. Such mechanisms may cause issues where non-active founders retain significantly more equity than active founders.</p>
<b>Share options</b>	<p>Four respondents stated that in their universities, the options pool is used to recognise future contributions of founders joining the spinout, with those leaving university employment receiving a greater allocation of shares than those that choose to remain.</p> <p>Decisions on share options allocation is typically an issue decided between founders, the spinout board, and investors.</p>

### 7.3 Ongoing academic engagement with spinouts

The academic founders that remain in university employment engage with their spinout through a wide range of mechanisms. These are captured in Table 14.

**Table 14** *Mechanisms through which academic founders remaining in university employment engage with their spinout post-foundation*

Mechanism	Details
<b>Contractual time allowance</b>	<p>Seven respondents noted that in their universities, academic contracts allow time to work on personal projects, e.g. 30 days/year or 0.5 days/week. Academic founders have used this time to engage with spinouts for research or impact development.</p>
<b>Research contracts</b>	<p>Five responses highlighted that some of their spinouts put in place sponsored research contracts and collaboration agreements to maintain ongoing research relationships with their parent universities.</p>

<b>Paid consultancy</b>	Academic founders may undertake paid consultancy with the spinout, either through contractual time allowance or, where more time is required, in return for a fee paid to the university. The approval of the Head of School/Department can be required.
<b>Unpaid consultancy</b>	Academic founders may also undertake unpaid consultancy, particularly with early-stage spinouts when funding is limited. In some universities, significant unpaid consultancy can convert to shares (at an agreed day rate) or is considered part of the university's investment in the spinout and used to justify its equity share.
<b>Other unpaid roles</b>	In addition to unpaid consultancy, academics may undertake other unpaid roles with the spinout, such as non-executive directorships, advisory, or observer roles. These may require the agreement of Heads of School and/or may be undertaken in the academic's spare time.
<b>Reduction from full- to part-time or fractional university employment</b>	Some academic founders choose to reduce from full- to part-time or fractional employment with the university. The spinout may pay the founder through, for example, an employment contract.
<b>Secondments and buying-out of academic time/duties</b>	Secondment agreements may be used to enable spinouts to buy out an academic founder's time and duties for a negotiated period. The academic's existing workload within their school/department may impede this mechanism. This may require the agreement of Heads of School and University.
<b>Temporary periods of free access to founder time and facilities</b>	Some universities offer limited periods of free access to academic founder time and facilities (e.g. for up to one year post-foundation).

## 7.4 Mechanisms used to ensure non-founding inventors benefit from spinout success

Much of the debate on university spinouts focuses primarily on the academics and researchers directly involved in founding the company. However, in many cases there may be other individuals – such as other members of the research group – who contributed to the development of the IP being commercialised. These non-founding inventors are often overlooked.

Our survey asked TTO Directors what steps are typically taken to ensure that these non-founding inventors benefit from the success of the spinout. It reveals a variety of mechanisms used across the sector. These are discussed in Table 15.

**Table 15** *Mechanisms used to ensure non-founding inventors benefit from spinout success*

<b>Mechanism</b>	<b>Details</b>
<b>Equity shares</b>	<p>Eleven respondents stated that non-founding inventors typically receive equity shares, often drawn from the initial founders' share. The split may be agreed between founders and non-founding inventors, or may be assessed on a case by case basis as part of a due diligence process.</p> <p>Of these eleven, three respondents noted that a share of equity is also assigned to other contributors not limited to non-founding inventors, e.g. technicians.</p> <p>In one university, non-founding inventors can receive non-voting shares.</p>
<b>Revenue from equity sale</b>	<p>Eight respondents stated that a share of the revenue received from the sale of equity is passed on to non-founding inventors through their IP revenue sharing policies. Three respondents noted that this arrangement is also extended to other contributors in addition to non-founding inventors.</p> <p>One university noted that they may seek additional founding equity to cover this arrangement.</p>
<b>Revenue from royalty and milestone payments</b>	<p>Eleven respondents stated that non-founding inventors share in the royalty revenues and milestone payments linked to licences of the IP to the spinout. In most cases, this is offered in addition to equity, although one respondent noted that it is offered instead of equity.</p> <p>This arrangement is formalised in the IP policy of some universities, and agreed with inventors on a case by case basis in others.</p> <p>Two respondents noted that this is extended to other contributors as well as non-founding inventors.</p>
<b>Revenue from dividends</b>	<p>Two respondents reported that a share of revenue from dividends may be awarded to non-founding inventors. One of these noted that other contributors may also receive a share of this revenue.</p> <p>A respondent from a different university stated that a share of the dividends may be awarded to the academic founder's school.</p>
<b>Indirect benefits derived from ongoing relationship with spinouts</b>	<p>Two respondents pointed to indirect benefits gained by other contributors for their role in the spinout over time, including research contracts, PhD sponsorships and REF impact case studies.</p>



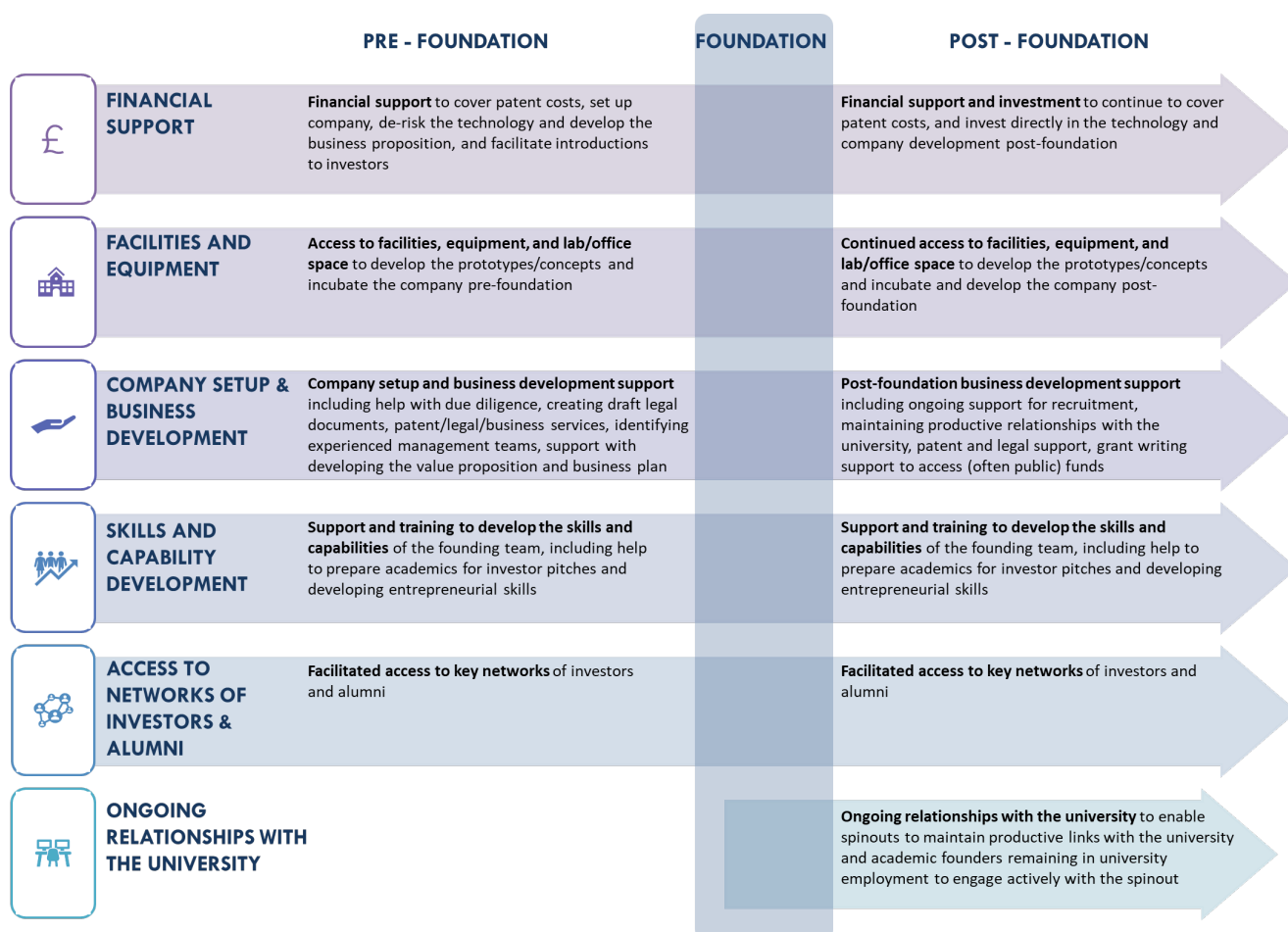
**Types of support  
provided by UK  
universities to their  
spinouts**

# 8 Types of support provided by UK universities to their spinouts

Increasingly, universities are not passive by-standers in the development of spinouts. Rather, those with some degree of spinout activity have been investing actively over the past decade to build a system of support – in some cases direct financial support – to help the academic entrepreneurs to assemble the spinout’s key building blocks pre-foundation, to legally establish the company, and to support its very early development including helping the founders to identify potential investors. **It is very important to recognise that the provision of this support costs money to put in place and sustain, and much of it is provided for free to academics and the spinout pre-foundation.**

This section captures the different types of support in place within UK universities to support the development of spinouts pre- and post-foundation (Figure 27).

**Figure 27** Key types of support provided by universities to spinouts pre- and post-foundation



Note that we present here the variety of support. We are not able to comment either the quantum or the quality of support available within each institution. It is clear, however, that the level of support varies across institutions. What is available internally will also depend in part on what support is available and accessible in the university’s local innovation system.



## 8.1 Pre-foundation

The survey of TTO Directors asked them to summarise the types of support – both financial and other – their universities provide to aid the development of a spinout, both prior to the point at which the spinout is legally created, and after this point. The details of types of *pre-foundation* support are provided in the following tables.



FINANCIAL SUPPORT	
Type	Description
<b>Patent costs</b>	Universities cover patent costs up to certain trigger points, e.g. until PCT stage or patent assignment/licencing.
<b>Proof of concept</b>	Universities provide proof of concept funding to help de-risk technologies (see Section 8.4 for types of funding provided).
<b>Commercial value proposition and business planning</b>	Universities provide funding to support development of the commercial value proposition and enable business planning (see Section 8.4 for types of funding provided).
<b>Start-up costs</b>	Universities provide funding to cover start-up costs, which may include market research; regulatory services; independent legal services; accountancy services; website and IT support (see Section 8.4 for types of funding provided).
<b>Incoming CEO costs pre-foundation</b>	Universities provide financing for CEO designates to enable business planning or fund-raising to be carried out. They also provide advice for CEOs.



ACCESS TO FACILITIES, EQUIPMENT, AND LAB/OFFICE SPACE	
Type	Description
<b>Access to university facilities &amp; equipment</b>	Universities provide access to on-campus equipment and facilities – such as office and laboratory space, and specific technical equipment – that can help research ideas be refined into business concepts before the spinout has to be established. Typically, this is provided free of charge pre-foundation, and may be an ad hoc arrangement at department level.
<b>Development of dedicated facilities</b>	Universities invest in the development of dedicated facilities, such as incubators, accelerators, innovation centres, dedicated office and laboratory space, to further develop the technological and commercial opportunity of the spinout. This includes facilities that may be developed by individual universities or through multi-university consortia, such as the Northern Accelerator and SETsquared. Access is often provided for a fee, though some universities provide free access.



## COMPANY SETUP AND BUSINESS DEVELOPMENT SUPPORT

Type	Description
<b>Help to refine the research into a commercial value proposition</b>	<p>Universities provide a variety of services and support to help refine the research idea into a commercial value proposition, including:</p> <ul style="list-style-type: none"><li>• Support to advance the commercial readiness of the spinout, including help with developing elements of the business model, such as value proposition, commercial strategy, business plan, and investment strategy. Services can include for example market discovery and assessment, opportunity validation, value proposition development and IP landscaping</li><li>• Deep technology de-risking programmes to achieve value inflection</li><li>• Access to accelerators</li></ul> <p>These services may be developed and provided in-house or through developing formal/informal partnerships with external providers, including venture builders to evaluate opportunities and support spinout foundation.</p>
<b>Due diligence and IP rights clearance</b>	<p>Universities carry out due diligence and IP rights clearance to facilitate equity split negotiations. This can be complex and time-consuming, particularly when multiple funders or partners are involved.</p>
<b>Grant writing and administration</b>	<p>Universities can help academic entrepreneurs with grant writing and administration services to access public funding aimed at various stages of technological and commercial maturity.</p>
<b>Executive search and recruitment</b>	<p>Some universities offer <b>executive search and recruitment services</b> for spinouts pre-foundation, including for the roles of chief executive officer, chair, and non-executive director.</p>
<b>Patent and legal</b>	<p>Universities provide patent and legal services, including trademarking and patent filing and protection. They also provide template and first draft legal documents to help set up the company.</p>
<b>Marketing</b>	<p>Universities provide <b>marketing services</b> to spinouts pre-foundation, including branding support, covering costs of the spinout's web page and subscriptions to business development forums.</p>
<b>Setting up and accessing key business services</b>	<p>Universities may help the spinout set up key business services, including banking, insurance, and accountancy. This may be done through introductions to university corporate partners.</p>
<b>Support for laboratory set-up</b>	<p>Universities provide support to the emerging spinout for <b>setting up their laboratory facilities</b>.</p>
<b>Preferred suppliers</b>	<p>Universities may provide access to <b>preferred suppliers</b> to spinouts which can help to reduce costs as the academics develop the company.</p>



## SUPPORT AND TRAINING TO DEVELOP THE SKILLS AND CAPABILITIES

Type	Description
<b>Legitimising commercialisation and support to engage</b>	<p>Universities provide <b>training programmes to help academics see commercialisation as a legitimate activity and to engage</b> in the process. Programmes can be provided directly through the university or indirectly through multi-university consortia.</p> <p>Some universities also establish <b>academic champions</b> to act as a focal point for colleagues thinking about commercialising their work.</p>
<b>Entrepreneurs-in-Residence and mentoring</b>	<p>Universities <b>provide mentors</b> to support academics in accelerating the translation of their research ideas into commercial opportunities. Mentoring can be provided by <b>Entrepreneurs-in-Residence</b> appointed by the university or an external organisation such as the Royal Society; by university technology transfer professionals; or through programmes to access the skills and experience of external entrepreneurs, alumni and professionals with specific sectoral or technological expertise.</p>
<b>Investor readiness and entrepreneurial skills</b>	<p>Universities provide <b>support to prepare founders for investment and to develop entrepreneurial skills</b> among both academics and students. Supports include spinout basecamps, business review panels, investment readiness workshops and entrepreneurial skills training programmes, which may be provided in partnership with external organisations.</p>



## FACILITATED ACCESS TO INVESTOR AND ALUMNI NETWORKS

Type	Description
<b>Alumni and entrepreneur networks</b>	<p>Some universities help their academics to access alumni or entrepreneur networks for both advice and coaching.</p>
<b>Investor networks</b>	<p>Universities provide access to investor networks for spinouts, primarily through establishing and maintaining links between existing investor networks and universities or university consortia.</p> <p>Some provide investor introduction and brokering services and support for spinouts pre-foundation, ranging from one-to-one meetings to investor pitching events, and helping to map the investor landscape.</p>

## 8.2 Post-foundation

University support for spinouts does not typically end with the incorporation of the company. Many continue to provide some level of support post-foundation (although this does vary across universities). The types of support cover similar categories to pre-foundation support, although the focus in many cases shifts to the specific needs of a founding team trying to get a new company off the ground. Details of the variety of support provided in each of the key areas are provided in the following tables.



### POST-FOUNDATION FINANCIAL SUPPORT AND INVESTMENT

Type	Description
<b>Patent costs</b>	Universities may continue to cover patent costs up until certain trigger points, e.g. initial external investment. Costs may be repaid to the university at these points.
<b>Technology and company scale-up</b>	Universities help spinouts access funding and investment to support the de-risking and scale-up of the technology and company.
<b>Investment in spinouts</b>	Some universities have developed internal funds, or raised external funds with partners dedicated to <b>investing in their spinouts post-foundation</b> (see Section 8.4 for more information on the investment environments available to universities).
<b>Establishing regional investment companies</b>	Some universities have <b>established regional investment companies</b> to support spinouts, such as the Northern Gritstone established by the universities of Manchester, Sheffield and Leeds in the North of England.
<b>Incoming CEO costs pre-foundation</b>	Universities may <b>provide financing for CEO designates</b> .



### CONTINUED ACCESS TO FACILITIES, EQUIPMENT, AND LAB/OFFICE SPACE

Type	Description
<b>Access to university facilities &amp; equipment</b>	Universities provide <b>access to on-campus equipment and facilities</b> to further enhance the opportunity post-foundation. This may be provided at no cost until the spinout generates significant investment, at preferential rates for certain time periods, or at market rates.
<b>Development of dedicated facilities</b>	Universities <b>invest in the development of dedicated facilities</b> to further support spinouts post-foundation. As with spinouts pre-foundation, facilities may be provided by individual universities or by multi-university consortia, typically for a fee.
<b>Relocation to other local premises</b>	Universities <b>support the relocation of the spinout</b> to other local premises as the company grows.



## POST-FOUNDATION BUSINESS DEVELOPMENT SUPPORT

Type	Description
<b>Executive search and recruitment</b>	Universities continue to offer <b>executive search and recruitment services</b> for spinouts post-foundation, including for building the commercial team.
<b>Grant writing and administration</b>	Universities provide <b>grant writing and administration support</b> for public funding bids to support spinouts engaged in innovation and university collaborations post-foundation, such as the Small Business Research Initiative, non-dilutive grants, and SME vouchers.
<b>Patent and legal</b>	Universities provide <b>patent and legal support</b> for spinouts post-foundation, including modification of vesting terms, IP protection and patent prosecution, legal services associated with venture set-up, and licencing and collaboration documents. This support may incur a fee.
<b>Advice to CEOs and management teams</b>	Post-foundation, universities may provide <b>advice to CEOs</b> on an ongoing basis at no cost, in areas such as corporate governance and strategy.
<b>Business tools and template documents</b>	Universities provide <b>business planning tools and template documents</b> to spinouts post-foundation, e.g. for business planning, cash flow forecasting, business model generation, and to facilitate investment.
<b>Company scale up</b>	Universities may provide <b>support to enable spinouts to scale up</b> post-foundation, including providing access to collaboration platforms to facilitate business development.



## SUPPORT TO DEVELOP SKILLS AND CAPABILITIES POST-FOUNDATION

Type	Description
<b>Directors' duties</b>	Universities provide <b>directors' duties training</b> for spinout founders.
<b>Entrepreneurs-in-Residence and mentoring</b>	Spinouts may retain access university-based <b>mentors and entrepreneurs in residence</b> post-foundation.
<b>Advisory support</b>	Universities provide <b>advisory support via board observers, directors or non-executive directors from the university</b> in areas such as recruitment, corporate governance and fund-raising. These may be provided at no cost to the spinout for limited periods, e.g. 1-3 years.
<b>Training to support scale up</b>	Universities provide ongoing training opportunities for spinouts, particularly programmes to <b>support business growth</b> . In some cases, this is provided at no cost to the spinout.



## FACILITATED ACCESS TO KEY NETWORKS

Type	Description
<b>Ongoing access to university-investor networks</b>	Spinouts may <b>retain access to investor networks</b> developed and nurtured by the university or multi-university consortia to support spinout foundation and development.



## ONGOING RELATIONSHIPS WITH THE UNIVERSITY

Type	Description
<b>Continued relationship with the university</b>	Universities <b>facilitate on-going relationships between the university and spinouts</b> post-foundation so that additional and complementary knowledge may be accessed. This may include facilitating R&D agreements, access to facilities and wider resources and expertise, and licensing in additional IP.
<b>Flexible working arrangements for academic founders</b>	Universities may facilitate <b>flexible working arrangements for academic founders</b> remaining in university employment who wish to continue engagement with the spinout post-foundation.

### 8.3 Covering patent costs

An area where UK universities invest both effort and resource in their spinouts is in protecting the emerging intellectual property prior to company foundation. For many spinouts, IP protection is critically important for attracting external investors.

The patent application process typically involves engaging patent lawyers. It can be lengthy and complex, involving many iterations between the inventors, TTO staff, and the patent lawyers, and the examiner at the Intellectual Property Office where the patent is filed, especially if there is a lot of prior art in the field of the claimed invention. If these negotiations become protracted, costs can spiral. Moreover, if the company seeks to have patent protection outside the UK – important for many spinouts given the global potential of many technologies emerging from university research – a separate foreign patent application needs to be filed within twelve months from the filing of the initial application.

A key burden for any start-up company is how to cover the costs of the patent application process and patent management prior to the creation of the company and before investment arrives. While the initial process of submitting the application can be relatively cheap – at least in the UK, where it costs a minimum of £310<sup>1</sup> – the overall costs of developing the application to the point where it can be submitted can be much higher, particularly where it involves patent lawyers and professional support. Costs will also increase substantially if protection is sought in multiple jurisdictions.

Our survey of TTO Directors reveals that all universities in our sample cover the patenting costs prior to the foundation of the spinout. Crucially, this removes an important barrier that academic

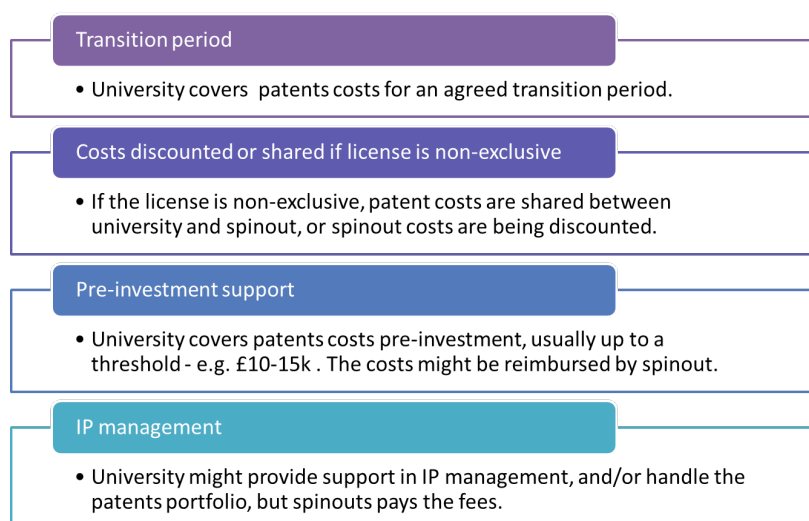
<sup>1</sup> Government pages: Apply for Patent <https://www.gov.uk/patent-your-invention>, accessed in August 2022

inventors face in deciding whether to commercialise their research. Given the high risk of commercialising novel technologies, the costs of patent protection are in many ways ‘sunk costs’ for the university – they are typically necessary to even begin the attempt to find investors and partners to help the spinout develop and commercialise the invention.

Once the spinout has been formed, our survey suggests that the burden of covering the patent costs *transitions* from the university to the company. This transition is often not a fixed point in time, recognising that the spinout may not have raised investment upon foundation; may not have raised sufficient capital to cover these costs in addition to the many and significant start-up costs they face; and in some cases, may lack expertise in IP management. The motivation for having a transition period is to help the spinout retain as much cash as possible within the company during the crucial early phase of development.

Most universities in our sample will usually continue to cover the patent costs post-foundation up to an agreed trigger point. The trigger point may be a fixed period of time (e.g. for two years), or until the spinout raises its first investment round. These costs are usually reimbursed by the spinout after the agreed point is triggered. Spinouts that lack IP management expertise might continue to engage with the university to benefit from the IP management services, with services potentially provided for a fee. How universities seek to reduce the burden of patent costs for nascent spinouts can vary. Examples are highlighted in Figure 28.

**Figure 28 Post-spinout university support for patent costs**



**Box: Quotes from respondents on who covers patent costs post-spinout**

*“HEI until a trigger point. It is also worth noting that the HEI does this at cost, allowing the spin-out to benefit from an IP management service.”*

*“...in some cases, if the company is understood to have limited expertise, we would continue to manage the IP portfolio...”*

*“... The licence is set to ensure the spinout can be assured they do not have to pay the costs of the patents in the first 2 years provided the costs do not exceed £10k and this helps with early cash-flow.”*

## 8.4 Access to investment

Universities – which are fixed in space – are embedded in very different investment environments and face very different challenges in supporting their spinouts to access finance for development and growth.

It well documented that access to financing for high-tech start-ups varies considerably across the regions and nations of the UK, for example with much venture capital finance and growth capital concentrated within the ‘Golden Triangle’ between Oxford, Cambridge, and London (British Business Bank 2021). This report showed that many SMEs outside this area are ‘London-reliant’ in accessing finance for growth. This matters as recent evidence suggests that investors prefer to make deals that are geographically close to where they are based, reflecting that investing in high-risk start-ups is not just about the flow of financial capital, but also about value of the relationships between the founders and the investors (British Business Bank 2021).

Given the very different investment environments universities find themselves embedded within, our survey of TTO Directors explored the types of support being put in place by universities to help their academic founders and their spinouts overcome barriers to accessing finance to fund their early development pre- and post-foundation.

### 8.4.1 Access to financial investment to support spinout development

Table 16 reveals how UK universities are creating different types of financial resources – either internally or with external partners – to help their spinouts become more investable and improve access to external investors. These range from translational and proof of concept funds, to funds to support the development of the commercial value proposition of the spinout, to internal funds to invest alongside others in the early development of the company. Some universities have also been able to create investment funds managed by external partners that are dedicated to investing in their spinouts.

There are then a select few – notably the universities of Oxford and Cambridge, and most recently Sheffield, Manchester and Leeds – who have managed to support the creation of investment companies raising hundreds of millions of pounds to invest in the universities’ spinouts.

**Table 16** *Types of investment and wider spinout development funds highlighted in the survey*

Type of investment	Description
<b>Translational and proof of concept funds</b>	Financed either directly by the university or through funding provided by public funders or other partners, such as the UK Research Councils Impact Acceleration Accounts (IAAs) and the Wellcome Institutional Translational Partnerships. Used to advance and de-risk the technology (e.g. through funding further experiments and studies) and develop functional prototypes pre-foundation. These funds are typically invested without co-investment or matched funding. The amount of support provided to the spinout may be taken into account during equity negotiations as justification for the university’s founding stake.



<b>Funds to support development of commercial value proposition</b>	Financed either directly by the university or through funding provided by public funders or other partners. Used to develop the commercial value proposition (e.g. development of business plans, fund market research, invest in the training of founders, assemble business expertise) and cover costs of patent protection. This investment may be used to justify university founding equity stake and helps to build value in the IP being commercialised.
<b>Resources to cover start-up costs</b>	Financed either directly by the university or through funding provided by public funders or other partners. Used to cover setup costs, including market research; regulatory services; independent legal services; accountancy services; website; IT support. May be provided to the spinout in the form of a convertible loan, which converts to equity at a discount at the first external investment.
<b>University investment funds</b>	<p>Financed by the university or jointly financed through university consortia or partnerships with investors and other organisations. Typically used to leverage co-investment or meet matched funding requirements during the pre-seed/seed stages of the spinout. Investment is typically for equity or made through loans that convert to equity at a certain date.</p> <p>In some cases these funds are established as an evergreen fund with any returns from successes returned to the fund to maintain its evergreen status.</p>
<b>Externally managed investment funds</b>	Externally managed co-investment funds enabling alumni and investors to invest into early-stage spinouts, with some investment from the university also possible. In some cases these funds are used to lead investment rounds.
<b>Large-scale dedicated venture funds / companies</b>	Some universities – alone or in collaboration – are working to attract investors and establish dedicated university venture capital funds for investing in their spinouts. Prominent examples include Oxford Science Enterprises (University of Oxford) and Northern Gritstone (Universities of Leeds, Manchester, and Sheffield)
<b>Investment without dedicated university funds</b>	Even where no dedicated fund exists, the university may invest in a pre-seed/seed stage spinouts on a case-by-case basis. This may be done through re-investment of IP income or other earnings, or through ringfenced public funding. This may be for co-investment, matched funding or via convertible loans.

**Table 17** *Frequency of reference to different types of investment and wider spinout support funds in survey responses, for different types of universities and universities based in different regions (percentage of respondents)*

Investment fund type	All responses	University respondents in:		University respondents with:		
		Golden Triangle	Rest of UK	More than 20 spinouts between 2015-21	7 - 20 spinouts between 2015-2021	Fewer than 7 spinouts between 2015-21
Funds to support development of commercial value proposition, business planning, company start-up	57	33	65	50	70	43
Translational and proof of concept funding to help de-risk technologies	52	50	53	67	50	43
University investment funds	39	50	35	50	50	14
Investment without dedicated university funds	22	17	24	17	30	14
Large-scale venture funds/companies	22	33	18	50	20	0
Externally managed co-investment funds	17	50	6	67	0	0
<i>Number of responses</i>	23	6	17	6	10	7

Table 17 shows how frequently different types of universities, or universities based in different regions, highlighted a particular type of investment fund or spinout development fund in our survey.<sup>2</sup> Most commonly cited were funds established within the university to support the development of the commercial value proposition, business planning and company start-up. This was particularly high for universities based outside the Golden Triangle. Also frequently cited were funds to support the translation and proof of concept of technologies. These were similarly cited amongst universities in different regions. Their incidence increased as the scale of spinout activity of the university increased.

Universities more active in generating spinouts are also more likely to have talked about having in place university investment funds able to co-invest in the spinout in the early phases of its development. The most active spinout generators responding to our survey were also much more likely than others to have established seed funds dedicated to investing in their spinouts and managed by professional investors (concentrated in the Golden Triangle). Some have now managed to create large-scale investment companies that are able to follow-on seed investments and invest further as the spinout develops and scales.

<sup>2</sup> Note that the absence of a reference to this type of support fund does not necessarily mean that the university does not have this type of support in place, not least as coding the open text survey responses required some level of judgement due to the amount of information provided. Note also that comparisons between groups should be taken with great care due to the very small sample size. Differences are therefore tentative rather than conclusive.

#### 8.4.2 Other mechanisms to help spinout teams access financial investment

In addition to the financial support outlined above, universities have put in place other forms of support to help their spinouts both increase their 'investor readiness' and improve access to potential investors. These include:

- **Investment showcases** and other efforts to market investment opportunities to potential investors
- Support for founders to **improve the 'readiness for market'** of their business proposition, including facilitating access to local accelerator programmes, support for developing investor-ready pitches, and the provision of training to help build the entrepreneurial and commercial capabilities of founders prior to company foundation
- Helping to **prepare founders for investor pitches**, for example by holding mock pitch events
- Seeking **informal advice and feedback from known/friendly investors** on the strength of the value proposition prior to inform the development of investor pitches
- Building and nurturing **local, national, and international networks** of investors (particularly angel investors and others interested in investing in pre-seed and seed stages of spinout development)
- Facilitating **'warm' introductions to potential investors**, brokering, and hosting investor pitch events, and responding to approaches from venture capitalists
- Providing **mentors** to academic founders to support them along the entrepreneurial journey



**University reviews  
of spinout policies  
and approaches**

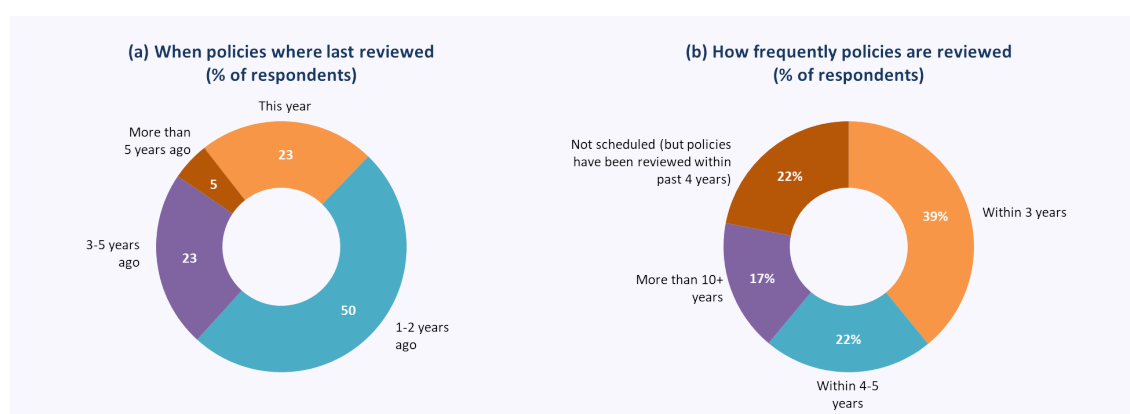
## 9 University reviews of spinout policies and approaches

Despite the growing investment into university spinouts over the past decade, there have long been claims from some investors that universities take too much equity in their spinouts, leading to lost investment opportunities. It is often claimed in these heated discussions that many universities take 50% or more, citing either specific anecdotes or the findings of a paper published in Nature Biotechnology in 2015 that suggested that more than half of the universities studied had policies that sought 50% or more equity (Wong et al. 2015). In section 6 of this report we showed that this is far from the reality in most UK universities today, with many universities on average seeking much less equity than 50%; equity that dilutes alongside other initial shareholders.

There are two likely explanations for this. The first is that the data underpinning the Wong et al. 2015 study was largely drawn from university policy documents. These are typically written to provide a framework covering all (most) potential cases and say little about the ‘typical’ scenario. As we have shown in this study, many universities are differentiating their approaches based on the type of IP, level of support, and decisions on wider deal terms when determining the level of equity.

Furthermore, most of the policy documents from the 30 UK universities reviewed in Wong et al. 2015 study dated from the 2000s. Our survey reveals that most of the universities responding have **recently reviewed their spinout approaches** and related policies, with 73% having done so with the past 2 years (Figure 29). A further 23% last reviewed their approaches between 3-5 years ago. Of these universities, 60% are planning to review them again this year. The university that last reviewed their spinout approach more than five years ago is also planning on reviewing it again this year.

**Figure 29** *Most recent review of university IP policies and how frequently policies are being reviewed*



Our evidence also shows that many universities are reviewing their spinout policies relatively frequently, with 39% doing so within 3 years, and a further 22% doing so within 4-5 years. The fifth of respondents that did not provide a schedule for their next review had reviewed their policies within the past four years.

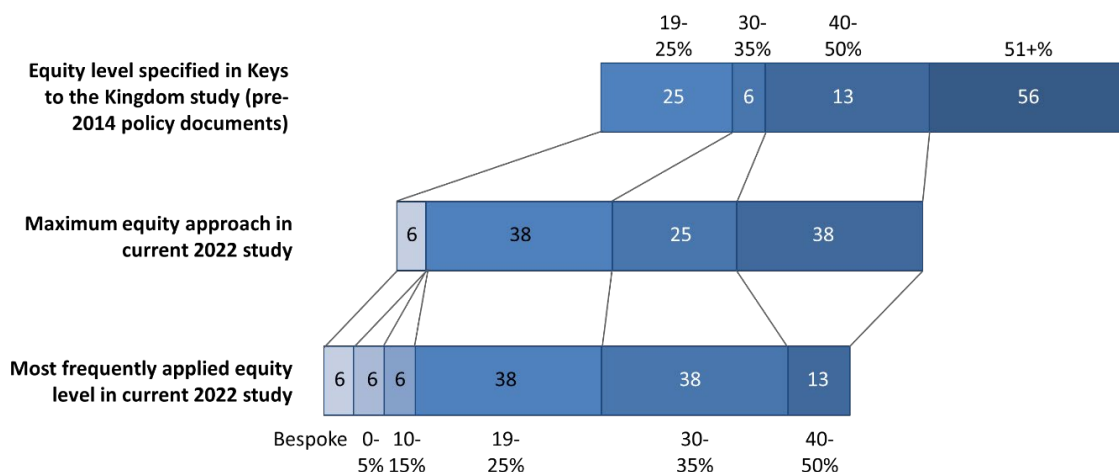
Universities that volunteered information on the nature of the review process described consultative processes, including benchmarking exercises coupled with engaging with internal stakeholders, founders, and investors and other key external partners. A key element reviewed in many cases is whether the amount of equity they seek in their spinouts is appropriate and conducive to success.

Some universities, in responding to the survey also made clear that their formal policies are developed as a guide rather than as rigid rules, with the amount of equity sought in a particular spinout ultimately depending on the specifics of the case.

In a number of cases, universities that previously sought high amounts of equity (~50%) have reduced their guide equity amount following their review. Two profile high and public examples are that of the University of Oxford which moved from a 50% university founding equity policy to a 20% equity position (coupled with changes to how founding equity gets diluted pre-money), and Imperial College London, which moved from a 50% policy and introduced their Founders Choice model, which gave founders a choice between a 5-10% non-dilutable university equity share (up to a certain investment threshold) coupled with minimal university support or a jointly driven route in which the university takes 50% shares that dilute along with other shareholders, but provides much more support.

More systematically, we can examine the degree of change in the sector by comparing the approaches identified in our 2022 sample with the equity positions identified in pre-2015 policies for 30 UK universities studied by Wong et al. in their 2015 Keys to the Kingdom paper published in Nature Biotechnology. Using a matched sample between the two studies shows that 56% of universities had a 51%+ policy pre-2015. By comparison none of our sample adopted such a policy, either as a maximum equity approach or a frequently applied approach. By contrast, the most frequently applied equity approaches in our 2022 sample were those that seek 19-25% equity and 30-35% equity (38% of university respondents in each category).

**Figure 30 Comparison of pre-2014 equity policies and current most frequently used approaches (percentage of universities seeking equity within the given range)**



Notes: pre-2014 policies are based on Wong et al. (2015) Keys to the Kingdom study published in Nature Biotechnology. Current approaches are based on the most frequently used approach as identified in our current 2022 study. Note: The comparison is based on a matched sample between the universities studied in the Keys to the Kingdom study and our current 2022 study.

Overall, our evidence suggests to significant change in policies over the past decade, with many universities adopting lower equity positions than previously. **A crucial implication of this is that anecdotes and claims on university spinout equity from more than approximately 5 years ago are likely to be largely out-of-date.**



**Conclusions and  
moving forward**



# 10 Conclusions and moving forward

This report provides a robust baseline of evidence for policymakers, university practitioners, and others on the *reality* of the current state of UK university approaches to taking equity in spinouts and supporting them to commercialise university research. In doing so our aim is to enable a more constructive and informed debate on how policymakers and others can act to strengthen the UK's entrepreneurial and innovation system to stimulate the production of more, high potential spinouts in a sustainable way that are able to unlock new wealth creating opportunities for the UK economy.

We argue that it is crucially important they policymakers adopt an approach that accounts both for the *lifecycle of the journey* from research-to-innovation and the *systems-nature of this journey*. They must also account for the complexities of deals and the interdependencies between terms and not focus solely on equity.

This will help to ensure that we identify the full set of individuals and organisations that need to come together at different points along the research-to-innovation journey, and understand their motivations, key risks and expectations for rewards that drive their willingness and ability to invest their expertise, effort, and money in the process. This will allow us to make better judgements at both the system-level and individual deal-level about how rewards from spinout success should be distributed to compensate organisations and individuals for the risks they bear. It will also allow us to explore the most appropriate mechanisms for achieving this. If decisions are made that significantly overcompensate one set of stakeholders over another, this may lead to them withdrawing their effort and resource from future commercialisation opportunities and lead to lost economic opportunities over the longer term.

Furthermore, negotiating equity can be challenging, but it is often resolvable. However, setting up spinout companies to commercialise research face many further barriers that should command our attention, not least our ability to de-risk technologies and the business venture sufficiently before having to incorporate and seek investors; the ability of spinouts to find sufficient talent and expertise – entrepreneurial, managerial, commercial, technical – in their local economies, and access the necessary facilities and equipment to further their development; the strength of the investment environment readily accessible to the university and founding teams; and the availability of resources within universities to help the increasing numbers of academics seeking to commercialise their research.

Only by taking a lifecycle and systems-wide perspective, and broadening our attention beyond equity, will we be able to pinpoint where key problems exist and how to alleviate them. This will help to make individual deals happen more effectively while ensuring that the system as a whole is able to come together more effectively for the long term to produce, nurture and scale more high-value spinouts able to unlock value for local, national and global benefit.

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# Appendices

# Appendix A: Survey of university approaches to taking equity in spinouts

To gather information on the university approaches to taking equity in spinouts, we developed a detailed questionnaire capturing information on the following topics:

- University equity positions at foundation (pre-money) in spinouts for different ‘typical’ approaches along with information on when the approach as typically used and the rationale for it
- Effects of dilution due to the pre-allocation of shares to different groups at the outset (e.g. to incentivise the incoming CEO/management team, employee share option pools, ‘sweat’ equity to initial investors)
- When policies were last reviewed and next scheduled for review
- Arrangements for transferring the IP into the spinout and typical terms on the license
- Investment environment available to the university and support to spinouts in attracting investors
- How founding and non-founding inventors engage with the spinout and benefit
- Nature of the support provided by the university to the spinout both prior to, and post foundation
- Key negotiation issues and barriers to spinning out
- Extent to which deals are lost due to disagreements over the cap tables, and the typical university equity position at exit
- New initiatives and approaches

The survey was distributed in April-May 2022 to all UK universities active in generating spinouts, and sent to the person with responsibility for the university’s technology transfer function.

The survey was distributed with the generous and active support of PraxisAuril and the Russell Group.

## Characteristics of the survey sample

The evidence presented in this report draws from a survey of the Directors of 24 UK universities Technology Transfer Offices (TTOs). The sample of universities covers universities that collectively undertook 55% of the research in the UK (based on research income for 2020/21); generated 48% of all spinouts between the 2014/15 and 2020/21; whose active spinouts secured 71% of all external investment over this period (Table 1).

**Table B.1 Sample characteristics**

	Total	Percentage of UK population
Number of responses	24	15
Total research income 2020/21 (£ millions)	3,600	55
Number of spinouts newly registered between 2014/15 - 2020/21	572	48
Number of active spinout companies 2020/21	1,013	55
Value of external investment into active spinouts 2014/15 - 2020/21 (£ millions)	13,200	71

Sources: Higher Education Statistics Agency Finance Record and Higher Education Business and Community Interaction (HEBCI) surveys

Table B.2 presents the distribution of responses across the different ‘KE clusters’. These clusters were developed to identify groups of English universities with broadly similar structural characteristics that are likely to affect how they engage with external partners to develop, exchange and deploy knowledge (Ulrichsen, 2018)<sup>3</sup>. These clusters now underpin the Knowledge Exchange Framework (KEF) for English universities<sup>4</sup>. To support this study, we extended the clusters to incorporate Scottish, Welsh, and Northern Irish universities.

**Table B.2 Distribution of responses across KE clusters**

KE cluster	Number of university responses	Percentage of cluster population of universities	Percent of UK spinouts generated by cluster between 2014/15 – 2020/21	Percent of external investment raised by cluster between 2014/15 – 2020/21
V (Very large and highly research intensive universities with significant world leading research, including in clinical medicine)	13	59	61	88
X (Large, research-intensive universities with significant amounts of excellent research, with less or no clinical medicine)	8	28	17	9
E (Large universities with broad discipline portfolio with strong research performance. Large numbers of part-time students and taught postgraduates)	1	3	10	1
J (Mid-sized universities with a more teaching focus and some research)	0	0	2	0
M (Smaller universities with a largely teaching focus)	0	0	4	0
Specialist institutions in Science, Technology, Engineering and Mathematics (STEM)	2	15	2	2
Specialist institutions in the Arts	0	0	3	0

<sup>3</sup> KE clusters are available at <https://www.ukri.org/publications/knowledge-exchange-framework-clustering-and-narrative-templates/> accessed on 24th February 2022.

<sup>4</sup> Available at [www.kef.ac.uk](http://www.kef.ac.uk)

Our sample is dominated by the large, research-intensive universities in KE cluster V and X (21 of 24 respondents). At a cluster level, we secured responses from 59% of universities within cluster V (which generated 61% of the UK's spinouts between 2014/15 and 2020/21, and whose spinouts secured 88% of external investment over this period), and 28% of universities in cluster X. As such, while our sample is not representative of the UK university population, we are confident it captures the views of universities active in generating spinouts.

Table B.3 provides the distribution of responses across the UK regions and nations. Overall, with the exception of the Midlands, we have responses from at least 10-26% of universities in most regions, and more than one response in all regions except the Midlands, Wales and Northern Ireland.

**Table B.3** *Distribution of responses across UK regions and nations*

Region	Number of university responses	Percentage of regional population of universities
North	5	16
Midlands	1	5
East of England	2	20
London	4	11
South East	5	26
South West	3	20
Scotland	2	11
Wales	1	13
Northern Ireland	1	50



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