

**Inclusion Matters:  
Promoting Equality,  
Diversity and  
Inclusion in University  
Spinout Companies -  
A Case for Action**



# **ACADEMIC ENTREPRENEURSHIP:**

Early Career Researchers'  
Perspectives

OXFORD  
**BROOKES**  
UNIVERSITY



Engineering and  
Physical Sciences  
Research Council



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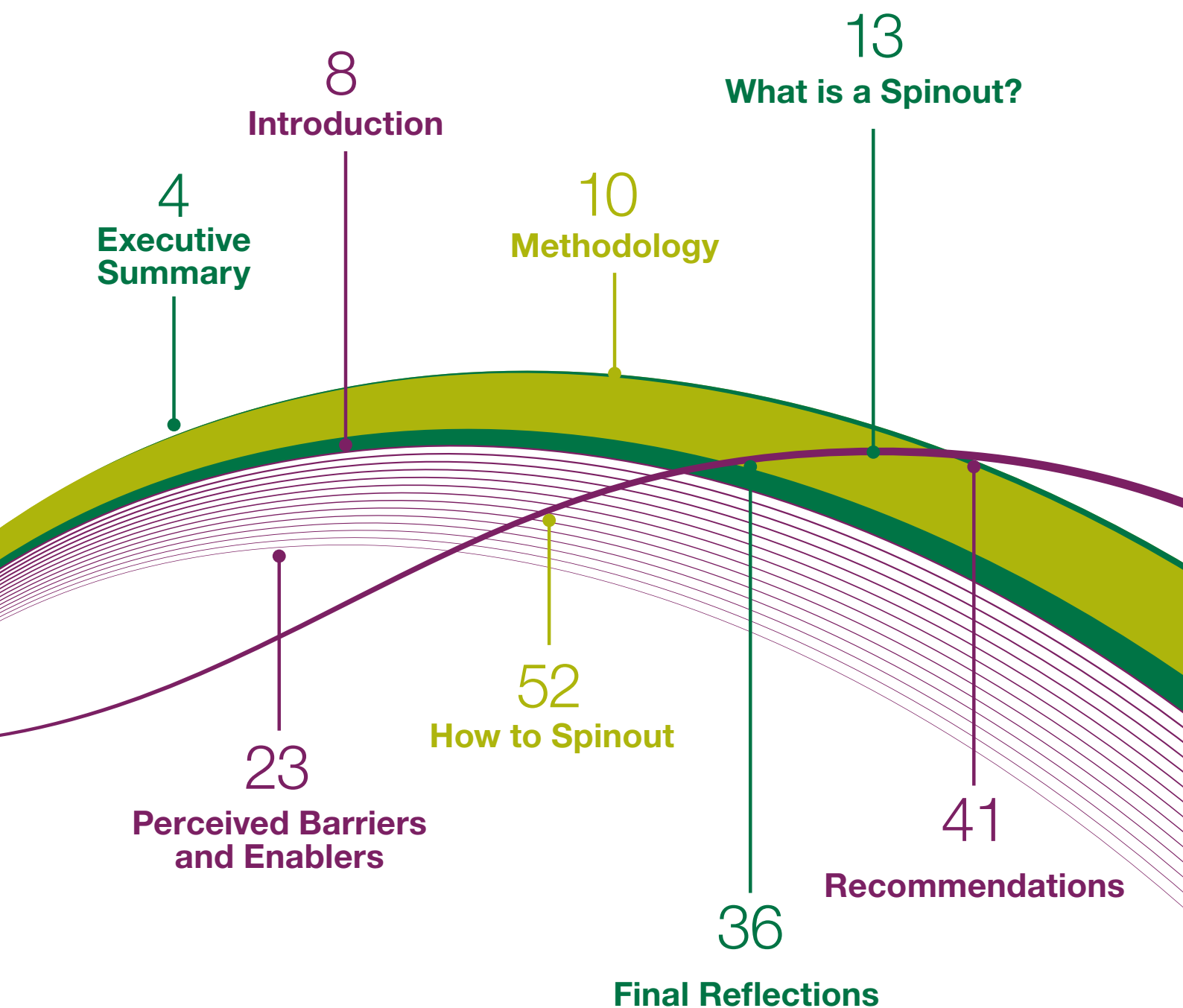
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# Executive Summary

This report explores the preconceptions that early career researchers (ECRs) in STEM hold toward academic entrepreneurship and the commercialisation of research and innovation through spinout companies. It is the third and final report that documents the findings from the *Women and Spinouts: A Case for Action* project, funded by the EPSRC under its Inclusion Matters programme.

The focus on ECRs, including doctoral students, is the result of an unexpected finding from our **previous study**. We found that ECRs play a more significant role in founding university spinouts that is typically understood, with many co-founding companies alongside senior researchers and a few spinning out as sole founders, often leaving academia to become full-time entrepreneurs.

The aim of this final study was threefold. Firstly, to gain an insight into how ECRs understand commercialisation of research through spinout activity. Secondly, to identify any challenges or barriers they perceive to academic entrepreneurship and spinning out as well as potential enablers to overcome them. And finally, to find out what they think could make academic entrepreneurship more inclusive. Data was



**Click here to read the  
Women and Spinouts report**

collected using participatory research methods with focus groups from eight Higher Education Institutions (HEIs) across the UK where three quarters of participants were women ECRs.

We discovered a ‘double mid-zone’ where ECRs considered themselves neither students nor established academics and perceived spinouts to occupy a realm somewhere between academia and industry. By investigating this double mid-zone our findings highlighted the connections between uncertainty and risk, and between knowledge and confidence.

## KEY FINDINGS

The majority of participants lacked awareness about the different forms of academic entrepreneurship but they were all keen to learn more with many signing up to the focus groups that we conducted as a means to doing so.

There was a lack of understanding about how intellectual property (IP) was owned and managed with many ECRs unsure about the differences between start-ups and spinouts.

There was a sense amongst ECRs that information about spinouts and academic entrepreneurship was not readily available, which created uncertainty about how to commercialise IP and whether this was even an option for them.

Fear of failure was one of the biggest barriers to academic entrepreneurship with many women ECRs identifying with the stereotype that they are less confident than men.

A lack of time was seen as a significant challenge by the majority of participants with many unable to visualise how they could add commercialisation to their list of responsibilities and maintain any semblance of work-life balance.

Many ECRs were concerned that pursuing commercialisation would jeopardise their chances of a 'traditional' academic career as they would be unable to produce the volume of publications required at the same time.

The ubiquity of fixed-term research contracts for ECRs increased the sense of the risk associated with pursuing academic entrepreneurship and this was heightened by concerns around visa requirements and financial insecurity.

Exposure to a variety of role models and success/failure stories enabled ECRs to visualise and better understand the risks and rewards of academic entrepreneurship.

It was important for women ECRs to have role models that they could 'relate to'. They knew women academic entrepreneurs were a minority but also perceived commercialisation as something for students or professors.

Of those who were interested in exploring academic entrepreneurship, either now or in the future, there was a lack of knowledge about how founding teams were created with many ECRs feeling they lacked opportunities to interact across faculties and therefore meet potential collaborators.

Many participants were unsure about how spinouts generated funding and lacked credible information about the opportunities available to them. Consequently, knowledge was gathered from media sources, personal research and anecdotal evidence, which only increased awareness amongst women ECRs about the gender gap in fundraising and investment.

The barriers and challenges to academic entrepreneurship that these ECRs perceived were mainly structural issues yet many ECRs internalised these challenges as a result of their own shortcomings:

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**Inaccessible information and rudimentary knowledge was interpreted as a lack of awareness or low self-confidence.**

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**A lack of time and work-life balance was translated as low motivation to succeed and framed as a problem that impacted women more than men.**

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**A heightened sense of risk toward academic entrepreneurship was blamed on 'imposter syndrome' rather than a system that fosters competition and promotes self-development.**

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The barriers to academic entrepreneurship perceived by these ECRs reflect the lived experiences of many successful spinout founders. Similarly, many of the enablers ECRs identified were also discussed by spinout founders as ways to overcome the structurally created challenges they experienced across their spinout journey.

# Recommendations

## FOR HIGHER EDUCATION INSTITUTIONS

### Promote knowledge and understanding of routes into academic entrepreneurship:

HEIs should review how information about commercialisation of research and IP is communicated and signposted to ECRs. Focus groups with ECRs, similar to those undertaken as part of this study, could be helpful to understand their preconceptions about and levels of interest in commercialisation of research and academic entrepreneurship, as well as identifying whether there are knowledge gaps and how best to address these at an institutional, departmental and research group level.

### Training targeted at ECRs:

There are many initiatives targeted at students but ECRs tend to be overlooked. An example of good practice is the RisingWise programme (see case study on pages 32-33) aimed at women ECRs set up jointly by the Universities of Cambridge and Oxford. RisingWise recognises that ECRs often do not have access to the same pastoral care and developmental opportunities as undergraduate and postgraduates. Information and training should also focus on why commercialisation of research is important to individuals, institutions and society as a whole.

### Time and recognition for academic entrepreneurship:

HEIs and society greatly benefit from the application of research that is now captured in the Knowledge Exchange Framework. Therefore, activities related to commercialisation of research ought to be appropriately recognised in academic workload plans, in the same way as teaching and research. Expecting researchers to engage with these activities over and above all their other academic duties is unsustainable and

likely to disproportionately disadvantage women and men with caring responsibilities, as well as those with (visible or invisible) disabilities.

Academic success and excellence need to be re-thought in line with the emphasis placed on research impact and knowledge exchange to benefit society. Research and academic contracts should reflect the importance of these activities, which should be given appropriate time as recommended above. It should be made clear how these activities are being rewarded by HEIs through their promotion criteria.

### Role models and relatable mentors:

It is important to promote greater visibility of inclusive role models and mentors both in terms of diverse representation (e.g. gender, race, age, career stage, and disability) and of different career paths. This is to inspire confidence in ECRs, challenge assumptions and norms around academic entrepreneurship, and help individuals establish whether academic entrepreneurship is something they wish to engage with in their career. HEIs should also create opportunities for networking and mentoring to enable ECRs to explore their ideas with successful women founders and business leaders. These may involve a series of invited talks or events such as a speed mentoring session. It is also important to explore with founders how they might deal with 'failure' and build resilience.

### Engaging with the investors' community:

There is growing awareness in the investor community about the need to increase their diversity and perceived gender bias. Several initiatives have been taken including the [\*\*Investing in Women Code\*\*](#). Many investors have signed up to this Code and HEIs should seek out these investors who are committed to diversity and facilitate networking opportunities for ECRs to engage with them.





## FOR THE HE SECTOR AS A WHOLE

### Facilitate access to alternative academic career paths in research and innovation (R&I):

Fixed-term contracts, job precariousness and VISA restrictions can be significant barriers for ECRs to engage with academic entrepreneurship. However, as acknowledged by the Concordat to Support the Career Development of Researchers, there may not be enough opportunities for permanent employment within HEIs. It is important to develop, from an EDI perspective, a better understanding of academic careers within the R&I landscape focusing on opportunities for alternative career paths and for working across sectors (e.g. industry, NGOs, policy departments). ECRs provide a pipeline of future scientists and founders of spinouts and start-ups. Evidence from our research suggests that they can play a leading role in the creation of spinouts. Therefore, it is important to think creatively about career opportunities to retain talent in STEM.

### Signposting to entrepreneurial fellowships and other opportunities:

There are several Entrepreneurship Fellowships schemes, as well as Innovate UK's ICURe programme, that provide dedicated time and opportunity to engage with commercialisation of research. These have been found to be very helpful by those who have used them to explore the viability of spinouts. It is important to raise awareness about these opportunities and the establishment of a sector-wide 'one-stop-shop' or information bank could make it easier for HEIs and researchers access to information about these initiatives. HEIs may also consider establishing their own entrepreneurial fellowships or other forms of dedicated support for ECRs – and mid or senior career academics – to explore commercialisation of research.



**Click to see the Women and Spinouts resources**



Click to visit the Women and Spinouts website

# Introduction

The purpose of this study was to explore, through a series of focus groups, the attitudes of early career researchers (ECRs) in STEM disciplines towards academic entrepreneurship and the commercialisation of research and innovation through spinout companies.

The purpose of this study was to explore, through a series of focus groups, the attitudes of early career researchers (ECRs) in STEM disciplines towards academic entrepreneurship and the commercialisation of research and innovation through spinout companies. This is the third in a series of research reports that form part of the *Inclusion Matters: Promoting Equality, Diversity and Inclusion in University Spinout Companies - A Case for Action project*, funded by the EPSRC under its Inclusion Matters programme. The first report, *Gender and University Spinouts in the UK*, provides an overview of the UK spinouts landscape from a gender perspective. The second report, *The Spinout Journey: Barriers and Enablers to Gender Inclusive Innovation*, offers an insight into the diverse experiences of women and men researchers who have successfully founded a university spinout company. The findings from this third report are intended to complement those presented in the previous reports and contribute to the overall aim of this project, which is to support institutions to achieve 'a step change' in their capabilities to increase the participation of women researchers in spinout leadership and achieve a more

inclusive innovation ecosystem. The knowledge produced will inform and support institutions, and those across the wider innovation ecosystem, to develop inclusive interventions as part of entrepreneurial career progression programmes and services. As such, the materials and resources developed as part of this project will be freely available through the project website<sup>1</sup>.

The discussion groups focused on ECRs, including postdoctoral research assistants and research fellows, but also attracted several doctoral students and included a few senior researchers. The focus on ECRs and doctoral students is the result of an unexpected finding from our previous qualitative study, which showed that ECRs have a greater involvement in spinouts than is often perceived. Many are co-founding companies with senior researchers and a few have founded spinouts alone without senior support, often leaving academia to work full-time on their businesses.

Furthermore, UKRI (2020)<sup>2</sup> diversity data, relating to funding applications across all Research Councils, show that women have a higher award rate for fellowships compared to men, which suggests that there is a growing pipeline of women

<sup>1/</sup> All project outputs and reports can be accessed via this link: [www.brookes.ac.uk/women-and-spinouts](http://www.brookes.ac.uk/women-and-spinouts)

<sup>2/</sup> UKRI (2020) *Diversity Results for UKRI Funding Data: 2014-15 to 2018-19*



researchers in the academic community that could become more aware of, and engaged with, academic entrepreneurship. ECRs are the future generation of scientists with potential to contribute toward enhancing spinout activity and changing mindsets about academic entrepreneurship and how this is seen within institutional contexts.

In this last part of the project we aimed to gain an insight into ECRs' understanding of commercialisation of research through spinout activity, any perceived barriers, and what could make academic entrepreneurship more inclusive. The fieldwork for this study soon made apparent that before we could articulate whether and how spinouts are or can be inclusive, we had to cover basic ground regarding how spinouts are perceived by various academic groups with a focus on ECRs.

Spinouts were seen as *'this funny little mid-zone between academia and industry'*, as one of our participants characterised them. At the same time, ECRs perceive themselves as being in a mid-zone between students and permanent academic staff in academic institutions, with implications around access to information and support for academic entrepreneurship. Thus, we found ourselves exploring the 'double mid-zone'. Investigating the intersection of these intermediate zones led to the following dominant themes: uncertainty and risk, knowledge and confidence. These themes emerge strongly in this report, focusing on the 'discourse' of spinouts through the eyes of ECRs in various Higher Education Institutions (HEIs). This discourse is then positioned and contextualised within the wider ecosystem (mainly academia but also its interaction with industry) and in some cases within specific institutions where appropriate.

The overall focus of this project has been on university spinouts, but through the course of the research it has become clear that there is an appetite amongst researchers to learn more about all forms of commercialisation and

entrepreneurship. For this reason we refer to both spinouts and academic entrepreneurship throughout this report to denote whether a discussion was specific to spinouts or applicable to commercialisation of research more broadly. The concept of academic entrepreneurship has been chosen because it is considered more appealing to academics than the idea of commercialisation as it speaks more to researcher's motivations to create positive change in society. The notion of academic entrepreneurship creates continuity with a more traditional academic career whilst also framing it as a recognised career path. Furthermore, we feel this concept is more translatable to audiences outside the academy and a 'catch all' term for use within the wider innovation ecosystem both in the UK and internationally.

After providing an overview of the research methods and sample, the report is structured to reflect the evolution of discussions within the focus groups themselves. The findings section begins with an assessment of participants' knowledge of spinouts and academic entrepreneurship, in particular how they understand intellectual property (IP) ownership and possible routes to academic entrepreneurship. This is followed by the most substantial section, which lays out the barriers and enablers to spinning out as identified by focus group participants. The final section of the findings considers the spinout process in more detail and the main areas of uncertainty amongst participants who are considering academic entrepreneurship as part of their career progression. To conclude the report, we discuss how institutions can use these findings to embed inclusivity into their own innovation and entrepreneurship policies and practices and offer practical recommendations on how to do so.



3/ [Griffiths, H., Still, A., Manfredi, S., Tzanakou, C., \(2020\) The Spinout Journey: Barriers and Enablers to Gender Inclusive Innovation, Oxford Brookes University.](#)

# Methodology

## DATA COLLECTION AND ANALYSIS

Our focus groups were designed to pursue a 'dual agenda' of data collection and raising awareness of spinouts and academic entrepreneurship. Data was gathered using an experiential technique that originated from process design and was adapted by consultancy company **Yellow Window**<sup>4</sup> for the purposes of organisational change.

This methodology allowed us to run the focus groups as a workshop with participants actively engaging in group activities. The aim was to generate data on the following topics:

knowledge and understanding of spinouts and academic entrepreneurship;

perceived barriers to pursuing spinouts and academic entrepreneurship;

ideas for enablers to pursue spinouts and academic entrepreneurship.



**Figure 1: Image of the issues raised during the main focus group exercise**

**4/ Yellow Window** are a product, service and policy designer consultancy located in Belgium and France. One of their key areas of expertise is **gender equality**. They have developed toolkits, and capacity building programmes on Gender Equality in Research and Academia, Gender Based Violence and Gender Mainstreaming.



Figure 2: Example of the activity used to brainstorm barriers and enablers

To do this, participants were asked to engage in three activities:

**A brief group discussion about what they already know about spinouts and academic entrepreneurship;**

**A short warm up exercise which encouraged reflection on the experience of being an ECR;**

**A longer, more in-depth activity, which asked participants to consider the barriers and enablers to spinning out (see Figure 2).**

This report is mostly based on the data gathered during this final exercise but draws on narratives from all activities where appropriate. This exercise generated discussion by asking participants to focus on issues that felt pertinent to them (see Figure 1 for overview of these) and consider the underlying reasons why that issue might be a barrier to academic entrepreneurship. All discussions were captured using audio recorders and each recording was transcribed before being thematically coded by three researchers on the project. After all the transcripts had been analysed the coding framework was agreed by the wider research team and this framework was then used to revisit the data to validate and refine the categories and emerging narratives.

## SAMPLE

In total we conducted 12 focus groups across eight UK universities between October 2019 and March 2020. Eleven focus groups were conducted in person at the host institutions with the final one carried out online using the Zoom platform. Whilst this decision was partially enforced by the Covid-19 restrictions in place at the time, it was also a pragmatic choice as participants in this group originated from several different institutions across the country. It was important to include perspectives from ECRs at a variety of institutions as our previous report<sup>5</sup> showed that there is a polarisation in spinout activity between Russell Group universities and universities from other mission groups.

The eight universities were selected on the basis of prominent spinout activity, connections to 'gatekeepers' at particular institutions – such as staff developers and knowledge exchange professionals – plus a willingness to be involved in the project. Often, we recruited from pre-existing groups within an institution such as Women in Science groups and PhD student cohorts.

Each focus group lasted approximately two hours and in total, there were 63 focus group participants from a range of departments, disciplinary backgrounds and research interests with individuals having different levels of knowledge and engagement with commercialisation.

## DISCIPLINARY BACKGROUND

Of the 63 focus group participants, 59 provided information about their department and disciplinary background. The academic field with the highest representation was Physics with 21 of the participants working in this discipline. This was followed by Engineering & Design (n=13), Biosciences and related fields (n=8), Chemistry (n=6),

Technology (n=4), Environmental, Plant and Earth Sciences (n=3), and Maths (n=2). There were also two professional services participants from university enterprise or innovation departments.

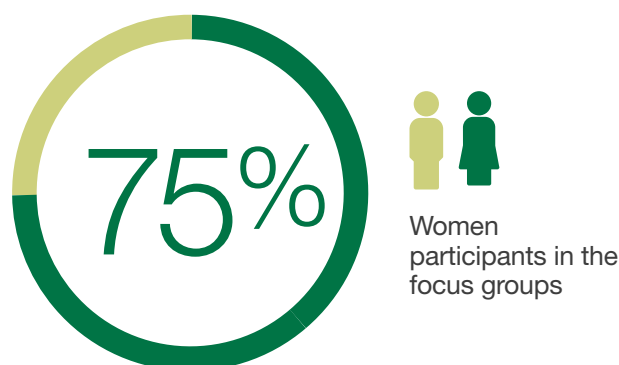
## AGE, GENDER AND JOB TITLE

The majority of participants were women who made up 74.6% (n=47) of the focus group cohort compared to 25.4% (n=16) that were men.

The majority of the focus group participants were PhD students, postdoctoral researchers or Research Fellows. We were also able to gain some insights, from a small number of mid-senior level academics and some professional services staff who worked in staff development and/or innovation, into their own university wider context with regard to commercialisation of research.

## AWARENESS AND EXPERIENCE OF SPINOUTS

Participants were asked some initial questions when registering for the focus groups around their willingness and tendency to engage with business and/or commercialisation. Of those participants who shared whether they had any experience of commercialising their research/university intellectual property, the vast majority of those who responded to the question stated they did not (n=37) whilst only 10 said they had some experience in this area. To gauge participants' aspirations around academic entrepreneurship, they were also asked if they had ever thought about starting their own company, of which 35 said they had.



5/ [Griffiths, H. & Humbert, AL., \(2019\) Gender and university spinouts in the UK: Geography, Governance and Growth, Oxford Brookes University.](#)



## What is a Spinout?

One of the main aims of the focus groups was to gauge levels of awareness and understanding about spinouts and academic entrepreneurship amongst the ECR participants.

### ‘I hear about spinouts but I hardly know about them!’

Focus group 10, woman

In this section we highlight the most common knowledge gaps and areas of uncertainty, namely what differentiates a spinout from a start-up and the basics of intellectual property (IP) ownership. We found that there were varying degrees of knowledge and understanding about academic entrepreneurship both across and within institutions but one unifying factor was an eagerness to learn more.

The majority of participants had heard of spinouts and other forms of academic entrepreneurship but knew very little about the topic and had attended the focus group to find out more. In the majority of focus groups there were at least one or two participants who had rudimentary understanding of spinouts, usually because they had already explored academic entrepreneurship in some form.

When we asked all participants, ‘What is a spinout?’ answers ranged from vague understandings: *‘It’s just a company that a PI [Principal Investigator] would head and it often stays tied to the university’* [Focus group 11, man] to more comprehensive and informed answers, typically from those who had explored a route to spinning out themselves:

*‘My understanding of a spinout anyway is that it’s when you’ve developed research within a university context, and you want to create a company, and you can sort of do that jointly with the university so that there’s some support from the university potentially to protect the IP and also to start you off on the commercialisation route. So it’s not like you’re starting an independent business with no support. It’s kind of a joint venture.’* [Focus group 10, woman]

Often this initial question would lead to a discussion about the difference between a spinout and a start-up, and about exactly what role the university plays in establishing and supporting businesses that commercialise research. Many participants



Spinouts (or spin-offs) are defined as registered companies set up to exploit Intellectual Property that has originated from within a Higher Education Provider such as a university.

[www.hesa.ac.uk/data-and-analysis/business-community/ip-and-startups](http://www.hesa.ac.uk/data-and-analysis/business-community/ip-and-startups)

expressed confusion about what differentiates spinouts from other forms of research commercialisation, particularly start-ups:

*'I thought spinoffs and start-ups were pretty much the same thing - because they're clearly not.'* [Focus group 3, man]

It was generally felt that there was a 'misunderstanding' of the vocabulary surrounding the different forms of research commercialisation, particularly between spinouts and start-ups<sup>6</sup>. Several participants were able to identify academic colleagues or peers who had commercialised their research but were unsure whether they had done this via the spinout or start-up route. The project researchers were asked more than once by participants whether researchers were able to combine a traditional academic career with running a spinout - whether you could *'still have a foot in the academic world'* [Focus group 3, man] - demonstrating a general lack of understanding about what it means to be an academic entrepreneur.

There was also limited knowledge about other forms of academic entrepreneurship such as licensing or consultancy. Again, this was evidenced in the questions that participants asked the researchers, such as *'Is it only the product that can be [commercialised]? Or can it also be expertise that you serve and sell?'* [Focus group 7, woman] or *'What if IBM comes along and says we love your idea - can you give it to us?'* [Focus group 12, woman].

This overall lack of awareness and understanding about academic entrepreneurship options meant that ECRs felt opportunities for entrepreneurship were scarce if not non-existent. Amongst those participants with some knowledge of academic entrepreneurship, spinouts were perceived as complicated and filled with uncertainty while start-ups were considered a higher personal risk:

*'You have more skin in the game with a start-up, a lot more is on the line, you take it a lot more seriously, you're playing with other people's money - not your money but still you're almost required to have more skin in the game.'* [Focus group 8, man]

Despite this greater perception of risk, several participants indicated that a start-up is a preferable route to spinouts as their perception was that it would give them a higher financial return as there is no shared ownership with the university. As well as achieving a greater profit share, start-ups were also perceived as a simpler, faster route to academic entrepreneurship as they would bypass much of the HEI bureaucracy associated with spinning out. Although the majority of ECR participants had little or no experience of the administrative side of academic entrepreneurship, there was a sense that spinning out university IP would come with *'constraints'* as a result of university policy [Focus group 4, woman]

<sup>6</sup>/ Desk research conducted at a later date has found that some institutions conflate the two concepts with all forms of academic entrepreneurship being referred to as start-ups. Further research should be conducted to understand why this decision has been taken as well as the possible implications across the HEI innovation ecosystem.

and that the process could be much slower than if they were to partner with industry, as these quotes from one institution highlight:

*P1: 'That's an obstacle. I've been in industry, I've seen the difference. What we do in a year [in a university] you could do in two months.'* [Focus group 3, woman]

[...]

*P4: 'If I can do the start-up, I can collaborate with the company, talk to them, borrow their labs, pay them, have fewer issues, do the work faster.'* [Focus group 3, woman]

Having less 'skin in the game' when founding a spinout was considered by some ECRs to be a benefit with the more knowledgeable participants recognising the pros and cons of having the institution involved from the start. As discussions progressed, participants began to understand that in many cases the decision between a spinout and a start-up may be out of their hands as it is dependent on who owns the IP in the first place.

### SENIOR ACADEMIC INSIGHT



*'To get to the spinout it literally took forever to get through all the committees; it kept having to go through at various levels, and it would come back round again to governors and it would come back round again, so it was just very slow, very, very slow.'*

Professor of Life Science, Woman

## 'What if IBM comes along and says we love your idea – can you give it to us?'

Focus group 12, woman

### UNDERSTANDING IP

A particular issue raised within the focus groups was about IP and how it would be handled by the university. Many ECR participants were aware of IP in regard to the need to protect their research with patents prior to publishing their research findings in journal articles. However, few understood how it would subsequently be utilised in the process of research commercialisation and, importantly, who would own what. One participant noted that there was very little information available for researchers about how much of their research findings they would personally own. This was one of the key reasons why they were reluctant to explore spinouts:

*'I think one of the reasons is about IP and what's mine and what's theirs, and trying to find maybe assessment of that'.*  
[Focus group 7, man]

This quote aptly demonstrates the confusion around IP ownership and how it can become conflated with ownership of the business in terms of how much equity the institution retains. Not all institutions disclose how much equity allocation a researcher is likely to achieve, preferring to calculate it on a 'case by case basis' depending on an assessment of the resources required to set up the company. This confusion and accompanying lack of information was identified by many participants across institutions as being a key sticking point and often discouraged ECRs from exploring academic entrepreneurship.

There was also a degree of ‘us versus them’ mentality with several participants citing instances of supervisors or PIs taking the credit for work which had largely been undertaken by less experienced researchers. This lack of information around IP ownership rights and their own contractual obligations was seen as especially off-putting:

*‘One problem is you don’t know who owns what. In terms of I can go for it, but then do I own it, or does my supervisor own it or does the university own it? There’s a lack of information... there are lots of cases where students, they do all the work, there is always a PI that takes half for example, or the patent will be in his name instead of his students, so that’s kind of discouraging in terms of why should I put all that effort in and then someone else gets the credit.’* [Focus group 3, woman]

ECRs were concerned that even if they had the opportunity to commercialise their research they would not get recognition for it, meaning their PI would be considered an academic entrepreneur but they would not. As the participant quoted above identified, their uncertainty around this arose from a lack of information about how academic entrepreneurship could work in practice and the basic rules of IP ownership in academic research.

The problem of not understanding the complexities of IP ownership was exacerbated by participants’ lack of knowledge about the type of research that can be commercialised. Many ECRs felt that their research was not ‘*translatable*’ [Focus group 9, woman] into a business and had no obvious commercial application especially if they conducted research in ‘*fundamental*’ or ‘*pure*’ science subjects [Focus group 12, woman]. On the contrary, research in some scientific disciplines was seen as more ‘*applied*’, conducive to having a ‘*glaringly obvious application*’ [Focus group 12, woman].

There were ECRs that wanted to commercialise their research but many lacked confidence in their ideas or were unsure how to convert an idea into a business venture. The notion of confidence as prerequisite for academic entrepreneurship is discussed later but for many ECRs, lack of confidence was a recurring theme that shaped all aspects of the spinouts process, from knowing if their initial idea was good enough right through to believing they were capable of running a successful business. We cannot draw any conclusions about whether confidence was a gendered experience, but following a discussion with one of the project researchers about a need for more entrepreneurial mentors, one participant challenged the idea that the ability to identify research that can be commercialised was down to a lack of confidence. Rather than individualising the blame, he asserted that researchers need greater institutional support to recognise IP that can be sold and turned into a business:

*‘Confidence is a factor, I guess, but it’s more than that. I think genuinely how do you get yourself into a position where you ... just confidence alone isn’t what you want. You want to know that what you’ve got is something which can produce money.’* [Focus group 1, man]

Under the current model of academia, researchers are not encouraged to recognise whether the research they are working on has commercial potential. Yet rather than recognise this as a structural barrier, many ECRs in this study internalised this as either their own lack of awareness or even more worryingly, a lack of confidence in their ability. For many ECRs, understanding whether they had research that they could commercialise was the first identifiable barrier to becoming an academic entrepreneur. In many cases, this was immediately followed by the realisation that even if they did have an idea they would not know what to do with it.

### SENIOR ACADEMIC INSIGHT



**‘There are such big barriers now in terms of ownership of IP [...] I say to all the young researchers that I have in the school you must collaborate, you must find collaborators, because if you’re going to be successful, you need collaborative partners. But once you collaborate then the IP ownership becomes so messy and murky’**

Professor of Engineering, Woman

# Perceived Barriers and Enablers



Barrier



Enabler

As discussed in the preceding section, ECR participants were keen to expand their knowledge about academic entrepreneurship but felt they did not yet have all the information they needed.

In this section we expand on this idea to show how this lack of knowledge creates barriers to academic entrepreneurship. These barriers are largely structural in origin but had become internalised as individual issues for these ECRs because of this uncertainty about spinning out and commercialising research. This seems to apply to ECRs from all institutions, irrespective of how supportive of academic entrepreneurship the institution appears to be, and whether or not they have already explored routes to academic entrepreneurship. This section begins with the most commonly cited barriers to academic entrepreneurship, followed by participants' thoughts on enabling initiatives to help overcome them.

## FEAR OF FAILURE



One of the biggest barriers for both women and men participants was the fear of failure. For women at one particular institution, this fear was immobilising:

*'All the time I fear failure, I think it's the most indirect cause of a lot of starting any new thing.'* [Focus group 3, woman]

*'Personally, I'm scared of failure, so I don't have the courage to actually do something because I'm too scared to actually not be successful in that something. I know failure is a part of what we do, but I'm too scared of it [...] Yeah, and I think most women have that, because men are more confident.'* [Focus group 3, woman]

Interestingly, many women participants from this institution were international students or from British BAME backgrounds and many were still PhD students. Whilst we cannot draw any conclusions from this, it is a reminder of how these perceived barriers may be amplified for some women because of intersecting systemic inequalities.

There was a sense amongst some of the all-women focus groups that fear of failure was a gendered issue with men perceived as bolder or 'braver' than women when it came to taking risks. Initially, these women conflated fear of failure with a lack of confidence as demonstrated in the following extract. When asked by one researcher how they were getting on with the task a representative from this all-women group responded:

*P1: So I think really it's boiling down to lack of confidence for most things.*

When pressed by the facilitator to explain why this might be:

*P3: Because it might end in failure, and you don't want to be pointed out as somebody that's failed. It's that people don't like failure.*

*P4: I think it's just in ourselves when we fail.*

*P1: I think men are a little bit more ... not extravagant, a bit ... they are braver. They're more likely to take the plunge, and women are a bit more ... they want more information before they set out there. So that might be it as well.*

[Focus group 12, women]

Notably, as one participant in this group articulated, it was the fear of being seen to fail that is perhaps as big a barrier as the risk of failure itself. Yet they had internalised this fear as an issue of self-confidence rather than recognising it could be culturally constructed. As the following two women discuss, academia can be a 'negative environment' where 'imposter syndrome' is prevalent, especially for women:

*P1: 'I definitely notice amongst colleagues – just going back to the gender stuff – the tendency to massively put*

**'Personally, I'm scared of failure, so I don't have the courage to actually do something because I'm too scared to actually not be successful in that something.'**

Focus group 3, woman

*... like, I think it's widespread across PhDs, definitely in maths, people just constantly being, 'My research isn't very good and I'm not very good and ...'*

*P3: 'Imposter syndrome.'*

*P1: 'It's such a negative environment and it's really weird [...] how negative people are about their research.'*

[Focus Group 8, women]

Another group also commented on this negative environment and how this negativity manifests into self-doubt, especially from those early on in their careers, who are seeking advice and reassurance from more senior colleagues:

*'People will say you're not good enough, you're too young, whatever. So there's negative peer pressure that will in the end lead to you lacking self-confidence. Even if you're the brightest you probably feel a lot of peer pressure and decide you're not going to go because that person more senior than me thinks that I shouldn't or I won't be able to do it.'* [Focus Group 12, woman]

The articulation of imposter syndrome or fear of failure as lack of self-confidence seemed to be a more common topic of conversation in all-women focus groups suggesting women have internalised the notion that they have less confidence than men. Fear of failure was ubiquitous across all focus groups and is thereby more symptomatic of a culture that emphasises the importance of reputation and encourages competition from the very earliest stages of an academic career.



## LACK OF TIME



The amount of time required to run a spinout company was discussed by almost all groups with many being unable to comprehend how they could become academic entrepreneurs and manage all their other professional and personal responsibilities. The notes that one group made during the activity summarises the feelings of many participants simply by listing the responsibilities they already have:

*'Too busy – teaching, conferences, writing papers, kids/home life. Pressure to get grants, student expectations, performance metrics.'* [Focus group 12, women]

As far as the majority of participants were concerned, creating and running a spinout would mean additional work over and above their current paid and unpaid roles, both in the workplace and at home. This concern was shared by ECRs at different stages of their careers, and several PhD students from one institution [Focus group 3] said they felt overwhelmed by *'the stress of the PhD'* and had little *'time to have a spinout as well on top of it'*. There was a perception in this group that it might be easier at postdoctoral stage when research became *'more of a job'* with structured working time [Focus group 3, women and men]. Postdocs from other institutions dispelled this misconception saying they felt *'overload[ed] with duties'* and that *'work-life balance is hard enough already as a postdoc'* [Focus group 6, women].

The notion of achieving work-life balance was important to many participants and there was a sense that it was something they were striving to achieve, if not now, then in the future (see also 'Barrier and enabler: family and background' on page 23). The following extract, taken from a discussion in one women-only focus group, shows how work-life balance is about more than just a

lack of time. They discuss how it can be a significant barrier to spinning out as it can affect motivation and confidence, but also how it is contextually shaped depending on personal circumstances:

P1: *I think you need to have a lot of drive, a lot of confidence to do it.*

P4: *But you need to want to do it.*

P3: *You need to want to do it and if you're already academic you've got a hugely big workload, and it's something else that you'd have to do on top of that so if you have a lot of other commitments like a family ... then you may not want to do it.*

P1: *I think that's for men as well. If their wife also works or if you're a wife and your husband also works, and you've got a family, then by taking on yet an extra thing that's going to be time consuming it might put people off.*

[Focus group 12, women]

This group discussed how work-life balance is often framed as a woman's issue but impacts men's decision making as well. For some it also included managing family commitments, as discussed earlier. However, one participant made a connection between work-life balance, motivation and confidence, showing how these perceived barriers can add up and may affect women's decisions more than men's.

There was an assumption amongst almost all participants that starting a spinout would inevitably mean an additional workload and few could conceive how this could happen without sacrificing time from other important areas, such as teaching, researching and writing. This lack of time and wanting a work-life balance was a frustration felt across all focus groups but the structural conditions of this were never challenged. Rather it was generally accepted that the role of an academic researcher was a busy one and time to pursue other interests is scarce, if there at all.

**'Too busy – teaching, conferences, writing papers, kids/home life. Pressure to get grants, student expectations, performance metrics.'**

Focus group 3, woman

## JEOPARDISING AN ACADEMIC CAREER



As discussed earlier, there was uncertainty amongst ECRs about whether spinouts and other forms of academic entrepreneurship meant sacrificing their academic careers. Participants from all institutions identified the tensions between commercialising research and academic success and felt that the two were incompatible on many levels. For many ECR participants, spinouts were seen as mutually exclusive to a traditional academic career pathway, especially at an early career stage. Thus, the prospect of jeopardising their academic careers before they had even begun only served to increase the perception of risk associated with academic entrepreneurship.

These ECRs were well versed in the ‘publish or perish’ discourse and many were concerned how they could produce the quality and volume of publications required whilst also exploring options for academic entrepreneurship. Some felt they simply did not have time to do both, because whilst *‘you’re devoted fulltime to a spinout, you’re not writing papers, you’re not going up the academic ladder [...] you haven’t been getting the publications and things to build up your academic career, so you end up in a nowhere land.’* [Focus group 12, woman]. There was also a more general sense that having an academic career required *‘doing all those jumps [...] like papers and REFs and fellowships’* and not adhering to this traditional route would become a *‘baptism of fire’* [Focus group 11, woman]. This fear of ending up in *‘nowhere land’* can be seen as especially potent with younger academics who have not established themselves in their field enough to be able to return to their previous roles if they ‘fail’ at being academic entrepreneurs.

For participants who had already begun to explore academic entrepreneurship and had a more comprehensive understanding of IP, there was uncertainty about how to maintain the publishing record needed for an academic career if the IP generated from the research would ultimately be patented for commercialisation. One group discussed what they described as the *‘secrecy of patents’* which *‘might mean that you would have to delay publishing whilst the patent was going through’* when there is *‘so much pressure to get your next publication out’* [Focus group 12, woman].

The following conversation took place during the online focus group using the ‘chat’ function and shows the uncertainty these participants had about balancing the need to *‘protect IP’* with the *‘pressure for publication’*. This extract shows how one ECR experienced this issue herself as she began to explore academic entrepreneurship, suggesting that this perceived barrier may be an all too real problem for some:

[P2]: *What about pressure for publication, how can we protect our IP at the same time?*

[P3]: *I’ve had that problem, [P2], and it’s been a massive struggle for my career progression.*

[P7]: *Related to [P2]’s comments - at early stage [career] it feels like focusing on publishing is better for career progression.*

[Focus group 10, women]

The pressure these ECRs felt to publish is indicative of wider sectoral issues around job competition and precarious working conditions, something which all participants were highly aware of. Pursuing academic entrepreneurship before their academic career had been established was risky; if the business failed they would not have a CV full of publications to fall back on.

## SENIOR ACADEMIC INSIGHT



‘You’ve also got people wanting to play the research game and the REF game and can we publish and might we publish partial results from this that might then be commercialised. It’s very difficult [...] there are bits of it where [our industrial partner] want to be completely open and they want to publish everything [...] but one of the software developers that we are working with, they do not want anything published [...] it’s a very, very difficult balance.’

Professor of Engineering, woman

## MID-CAREER ACADEMIC INSIGHT



‘Is that going to help my academic career at all? Because it isn’t going to result in papers and funding necessarily, but it may well result in patents and income. Will that help me in my academic career or actually is this going to be taking me down a completely different path that doesn’t help my academic career but might actually help me setting up a business?’

Senior Lecturer in Engineering, man

## PRECARIOUS CAREERS



The overwhelming majority of ECR participants were employed on fixed-term research contracts, which they felt heightened the risk of pursuing academic entrepreneurship. This perceived risk was amplified for those who are relying upon regular employment for their visas as this extract shows:

*‘Because we’re on only short-term contracts, as postdoctoral researchers, it’s [not] really like an open-ended or a permanent contract, so you’re always looking for the next job. Especially if you are on a visa as well, you actually really need to have a specific contract for a certain period of time, so you can’t feel that you can be a bit adventurous.’* [Focus group 8, woman]

Recently, government legislation has attempted to make it easier for international graduates to stay in the UK if they want to pursue entrepreneurial career routes, but this may be of little comfort to

ECRs who have spent their postdoctoral years pursuing an academic career but now want to explore alternative options. The complexity of the immigration system in the UK, and how it is tied to work and financial security, adds yet another layer of uncertainty for these ECRs. As this participant puts it, it is yet *‘another risk – can I stay in the country?’* [Focus group 9, man]

It was not only international ECRs feeling the insecurity of successive temporary research contracts. Many focus groups discussed the feelings of financial insecurity that accompanied their temporary positions, which they considered a significant barrier to embarking on academic entrepreneurship:

*‘So how many people have permanent contracts? So you have to be on a permanent contract to do that with financial security. So [there is a] lack of financial security for fixed contract researchers.’* [Focus group 12, woman]

Yet even those ECRs on more secure, open-ended contracts felt the financial risk would be too much:

**‘Because we’re on only short-term contracts, you’re always looking for the next job. Especially if you are on a visa as well, you actually really need to have a specific contract for a certain period of time, so you can’t feel that you can be a bit adventurous.’**

Focus group 8, woman

*‘For me it’s the financial risk, plainly, so if I got paid the same at least, then I would go for it. As long as it’s not like a six-month thing because I’m on an open contract right now, which means as long as my project is funded, I have a position, so if I move on to something like six months to a year, then I just can’t take that risk either.’* [Focus group 6, woman]

As well as demonstrating that the financial risk of academic entrepreneurship can still be acutely felt by those with relative contractual and financial stability, it also highlights the perception that academic entrepreneurship is mutually exclusive from the more traditional academic career path. Yet, perhaps understandably, this participant felt that giving up a coveted secure academic job for the uncertainty of starting a spinout was too great a risk to take.

Another common misconception regarding spinouts is that they are the domain of senior academics as they are in a more secure position to take a risk. As well as having greater job security (on the whole) and higher salaries, senior academics were also deemed to have a strong publishing record and established career to fall back on if their venture was unsuccessful. As this participant articulated, there was a sense that senior academics in permanent roles were ‘safe and sorted’ thus minimising any risk:

*‘It’s much easier for people who are already PIs or already permanent professors or whatever, in positions where [their academic] side of things is pretty much safe and sorted [...] a lot of the people that I’ve experienced who have spinouts are already professors, already in an academic role that’s permanent.’* [Focus group 11, woman]

As our previous research has shown, many researchers go on to found spinouts as ECRs, often in collaboration with more established and senior colleagues. Yet many participants in these focus groups seemed unaware of this or were under the impression that they would be ‘going it alone’, despite the overwhelming majority of spinouts being developed by a team of two or more founders. This lack of knowledge, combined with insecure employment contracts and visa restrictions, only served to heighten the uncertainty and risk around the prospect of academic entrepreneurship.

Having identified and discussed these potential barriers to academic entrepreneurship, participants were asked to consider what may help them overcome these barriers. Their responses centred around the idea of reducing uncertainty of what it means to spin out their research and better understand the process but perhaps most importantly, to understand the risks.



## FAMILY AND BACKGROUND

The notion of the family acting as a barrier to entrepreneurship was cited across a range of institutions. Typically, this was associated with financial risk where there was responsibility for the welfare of family members. For a few participants this meant a traditional family unit with children but because of the average age of ECR participants, most had a broader understanding of what family meant to them, as this participant explains:

*'So the reasons [for not starting a spinout], my biggest one is risk. I've got a family, so ... I say family, me and my partner, I can't afford to not have income.'* [Focus group 2, man]

As well as the financial risk there was also an awareness of the 'time-consuming' nature of academic entrepreneurship which could *'put people off'* [Focus group 12, woman] and many participants felt this combination was incompatible with family commitments, if not now then potentially in the very near future.

As well as family commitments, family background was also cited as a possible barrier to spinning out but was also recognised as an enabler depending on the circumstances. As touched upon in our previous report, the benefit of having an entrepreneurial family member can mitigate perceptions of risk and provide a trusted mentor, something also cited by focus group participants. Yet, what was interesting about the focus group discussions was that participants extended the idea of having an entrepreneurial background to recognising the enabling or disabling factors of culture and social status.

The following extended extract from a conversation among participants captures the above as each participant adds another

interpretation of what 'background' means to them and how it can shape an individual's approach to risk and academic entrepreneurship:

[P3, man]: *'Yeah, I know people from certain backgrounds are more likely to take risk in business, and certain backgrounds, they just want a stable job and that's all they are about. So I guess...'*

[P4, man]: *'That could be like a life philosophy also.'*

[P3, man]: *'I think maybe it can be like the background they are from, because a particular ethnic group where I am from, they are like all into business. Another [thing] is they just want a stable job, that's it. What's a simple word [for this]?'*

[P1, woman]: *'I think like your background, because even if you come from parents that have founded their own company you would have a much greater understanding of how you would go about it. Almost family expectations as well.'*

[P3, man]: *'Yeah, exactly, it can also be, within background, it could be experience, as you said, or it could also be ... I mean if you were from a privileged background, you can just invest money in whatever you want.'*

[P1, woman]: *'And you can afford to fail.'*

[P3, man]: *'Yeah, you can afford to fail, exactly.'*

[Focus group 8, woman and men]

For these participants, family background – which included culture, ethnic groups, socioeconomic status and professional history – was considered a barrier or enabler to academic entrepreneurship. These multiple understandings of family backgrounds demonstrate how these participants think about risk but also how these conditions have the potential to create intersectional inequalities (or privilege) that construct an individual's attitude toward risk.





## VISUALISING OUTCOMES



For many participants, seeing evidence of successful academic entrepreneurship was a key part of enabling them to visualise their own futures. They felt that a lack of ‘examples of success’ or ‘case studies’ had contributed to their negative perceptions of spinouts and had caused them to have ‘*difficulty visualising [the] rewards*’ of academic entrepreneurship [Focus group 3]. This idea of not being able to ‘visualise’ what founding a spinout looks like was consistently discussed and reflects how spinout engagement was seen as moving into the unknown. As one ECR commented, being able to see others succeed in spinning out enables visualising and relating to that success:

*‘It’s almost like exposure to it, so if you know anyone who’s gone and set up spinouts then you are more on board with the idea of doing it yourself because you’ve seen it’s possible.’* [Focus group 11, woman]

Evidently, the promotion of these role models with flourishing spinouts can therefore be a confidence building exercise for those academics earlier along in the pipeline and consequently have a snowball effect, with success breeding success and enabling others to get ‘on board with the idea’ of spinning out.

Learning about the journey of the spinout in terms of recovery from failures was equally important to be explored and allowed ECRs to gain an understanding of the risks involved:

*‘I think just having a fully transparent view of what motivates more people to do it, because sometimes you hear people who’ve had amazing journeys and they’ve done a start-up and it’s all gone well and you’re like OK, well that happened for them but why would that happen for me? And it wouldn’t necessarily all go well, and hearing the concerns and having people that maybe they tried one but it failed, and then what did they do next? To kind of go OK, well it’s not a disaster if something fails, is also just as useful.’* [Focus group 9, woman]

Access to success and failure stories of spinouts was not only deemed important to mediate uncertainty and risk of spinouts but also enabled ECRs to become aware of the possibility of failure and the potential knock-on effects that failure could have to an academic career path:

*'We need to see what a winning spinoff looks like. As well as what a failure looks like. Because I wouldn't want to take the plunge in being a spinoff if my career from academia was cut off from that point forwards.'* [Focus group 3, man]

Many participants suggested that more information about the potential risks and rewards of spinning out would be hugely beneficial in enabling them to assess academic entrepreneurship as part of their career planning. Irrespective of gender, an individual's attitude toward risk was considered to be a *'personality type'* [Focus groups 1, 8 & 9] rather than a structural barrier to academic entrepreneurship. Therefore, more information about the potential outcomes of academic entrepreneurship would enhance ECRs knowledge and relieve some of their uncertainty. One group in particular, from a university with a few spinouts but a track record of industry collaboration, discussed the need to be clear on *'risk/reward'* as they noted that *'if you can't see the reward then the risk's never going to be worth it'*. Specifically, they discussed how feelings of risk aversion were detrimental to taking the leap into academic entrepreneurship:

*'It all goes back to your own internal risk/rewards. So, I'm quite a risk-averse person, which is the biggest factor I've got to fight if I want to do a spinout. It's because there's a lot of uncertainty, so I won't make a move unless I know all the implications of that move, and therefore, because there's so much that I don't know about creating a spinout, partly because of training and partly because of my own newness to it all... that the risk just isn't worth the reward.'* [Focus group 3, man]

The desire to *'know all the implications'* of a move into spinouts is an understandable consequence of a lack of knowledge regarding the spinouts process itself. Without this clear information, many younger researchers had a hard time visualising

what a successful – or unsuccessful – spinout looked like and they were unsure whether spinouts were *'worth it'* since they felt it could negatively impact their academic career prospects.

**'It's almost like exposure to it, so if you know anyone who's gone and set up spinouts then you are more on board with the idea of doing it yourself because you've seen it's possible.'**

Focus group 11, woman

### SENIOR ACADEMIC INSIGHT



*'I think for women, those barriers are probably a bit harder really because they don't have - particularly in STEM subjects - they don't have many role models of how to do things differently [...] My experience is that there are plenty of women who have good ideas and the energy, the enthusiasm to make these things happen.'*

Professor of Engineering, woman

By showcasing examples of spinouts with varying levels of success as well as at varying stages in their development, academics would be able to expand their views of what they can achieve within the confines of an academic career. Being able to learn from failures and still persevere with academic entrepreneurship was acknowledged by a few ECRs within our focus groups, in alignment with the emphasis on 'resilience' as a key quality of a spinout founder, as highlighted in our previous report<sup>7</sup>. There is a need therefore to be, as suggested by one participant, 'fully transparent' [Focus group 9, woman] in the realities of academic entrepreneurship by having role models who represent a wide range of spinout journeys and are open and honest about frustrations, defeats and overcoming adversity.

## VISUALISING INCLUSIVE SPINOUTS



A few women participants also discussed the value of having women role models as they were deemed an even rarer form of academic entrepreneur. This ECR did not feel she was the 'kind of person' to become an academic entrepreneur but felt that her preconceptions could change if she saw someone she could 'relate to' already doing it:

*'I think it's just that whole thing of I'm just not that kind of person. But then I guess the thing is I've never met a woman that has done it, so I've never met someone I could relate to and go maybe I am that person.'* [Focus group 12, woman]

As well as the potential to inspire confidence, seeing more women in academic entrepreneurship was also considered to create a critical mass effect whereby women would feel more inclined to take the entrepreneurial path if more women were seen to be doing so.

*'The thing is we look for women and we like to work with women. I don't know why, maybe it's a social thing but I guess also, if you see a company or start-up with women leaders, more women are going to apply.'* [Focus group 5, woman]

As touched upon earlier, career seniority was also considered a prerequisite for academic entrepreneurship. A few groups reported that they do not see ECRs (particularly postdocs) in academic entrepreneurship and that it tends to be the preserve of more senior academics. Even participants working at universities that support innovation and have high numbers of academic entrepreneurs, highlighted the dearth of 'people like them' founding spinouts:

*'I've never seen a PhD student or a postdoc that has opened a spinout or a start-up. I have seen professors, I have seen students, but never in between.'* [Focus group 6, woman]

As we identified in our previous research, there is a significant number of both women and men who have founded spinouts across the UK just after their PhD, or from a postdoctoral position. Nevertheless, evidently these founders are not visible enough within their own institutions or nationwide, leading to the pervasive idea of the need for seniority and job stability as a precursor to spinning out.

We also found that women spinout founders were keen to have more relatable role models and mentors, prior to and throughout their spinout journeys. We discussed how women faced a 'double bind' of being the minority in both STEM research and the wider business and innovation ecosystem. For ECRs this marginality is amplified as they are very unlikely to see women academic entrepreneurs who are also in the early stages of their academic careers. Yet our research shows they do exist and calls for more visibility of women role models and mentors to inspire confidence in ECRs and show them it is something they too are capable of aspiring to in the future or even right now.

**'I've never seen a PhD student or a postdoc that has opened a spinout or a start-up. I have seen professors, I have seen students, but never in between.'**

Focus group 11, woman

7/ Griffiths, H. & Humbert, AL., (2019) *Gender and university spinouts in the UK: Geography, Governance and Growth*, Oxford Brookes University.

# How to Spinout

We began this report by exploring ECR participants' awareness and understanding around spinouts and academic entrepreneurship, and their eagerness to have more information to fill in the knowledge gaps.

In the second section we showed how the lack of knowledge can create barriers that discourage ECRs from pursuing academic entrepreneurship. This final section represents the evolution of the focus group discussions where ECRs were keen to learn more about the process of spinning out or becoming an academic entrepreneur. The issues explored here are where ECRs felt most uncertain and highlight some of the main areas for institutional level interventions.

## ACCESSING INFORMATION

There was evidence across institutions that lack of knowledge surrounding the processes and opportunities for spinning out was 'a bigger barrier than we realise' [Focus group 6, woman] stifling university innovation. There was a general sense that HEIs were responsible for providing this information but as many participants were not yet ready to consider academic entrepreneurship, few had engaged with their institutions' innovation webpages or Technology Transfer Offices (TTOs).

Several ECRs said that even if the information was readily available it was unlikely that it would have been on their radar. For many, this was because they felt consumed by their research, especially early on in their career when they

are conducting doctoral research or working on a demanding postdoctoral project. As this PhD researcher pointed out, early career academics are often so focused on their research that they do not necessarily engage with other aspects of the university ecosystem:

*'I think so many PhD students in particular just stay in their labs and don't do anything outside, and so unless the information finds them they're not necessarily going to go looking for it, and they're probably maybe not the people that want to do spinouts, but it's hard to know whether they're the people that would choose not to do spinouts or start-ups, or whether they just wouldn't do it because they don't know about it.'* [Focus group 9, woman]

A demonstration of this 'chicken-and-egg' scenario played out in another workshop where we were fortunate to have a representative from a postdoctoral innovation team in attendance. As the room of ECRs were quick to cite poor university communication as a barrier to academic entrepreneurship, this representative repeatedly reminded participants that the information they need can be accessed from their postdoctoral homepage and that newsletter contents regularly include details of innovation events they can attend. Yet despite this, ECRs at this university still felt ill-informed and uncertain about where



**‘I work in a team of two, we are both women. I’m the engineering part. And the reason why we haven’t spun out is just the lack of understanding of how that works. We don’t understand how that transition is meant to be made.’**

Focus group 10, woman

to turn, not helped by the fact the innovation department was going through a rebranding - something mentioned by participants in at least one other HEI in the sample.

This lack of understanding around the process of spinning out translated into uncertainties around a complex process and what happens next if you do manage to develop viable IP. One ECR who was in this position described the hesitancy within the team to embark on an academic entrepreneurial route due to its perceived complexity:

*‘I work in a team of two, we are both women. We’re both... Well, she’s a clinical part. I’m the engineering part. And the reason why we haven’t spun out is just the lack of understanding of how that works. We don’t understand how that transition is meant to be made. And the more we try to find answers, the more questions we have. Yeah, so mainly for me, it’s lack of understanding.’ [Focus group 10, woman]*

The idea that spinning out is a ‘transition’ away from pure academic research was a prevalent myth amongst the participants, and therefore the process was often viewed as ‘being out of the comfort zone’ for many. The participant quoted above was ready to embark on academic entrepreneurship but still lacked the necessary information to make it a reality.

The team had made enquiries but still felt they lacked information about the spinout process and appeared uncertain about their options for combining entrepreneurship with an academic career.

## FINDING CO-FOUNDERS

Echoing the responses of founder interviewees in our previous report (Griffiths et al.2020), many focus group participants identified the need to establish a good founding team, even during the early stages of spinning out. The difference was, however, that they were uncertain how to go about finding this team. As this group from a Russell Group university discussed:

P1: *‘I mean if you only have an academic background, how do you know what to get into or the right people to hire?’*

P2: *‘Like, how do you talk to the business people, how do you talk to the market?’*

[Focus group 11, woman and man]

When pushed to explain why they considered this a barrier to spinning out, the group felt that it was predominantly a lack of knowledge, experience and role models. These types of questions came up across all institutions with many participants unaware of the type of support available through their institution’s TTOs.

When groups were encouraged to explain why a good team was important, the discussions tended to focus on the capability and compatibility of the team members, as this extract typifies:

P2: *‘And I think [the] team is really, really important because what if the project is a good project, the people, also the lab, but then you realise the people that you really don’t want to work with this person or group of people, you just get some personalities you just don’t get along.’*

P1: *‘And there’s a lot of things saying people invest in teams rather than ideas, and a good team will come up with more ideas, but if you’re only reliant on the idea, the team could fall apart and the idea, however good it is, is not going to make it unless the team can work through the whole project.’*

[Focus group 9, woman and man]



**‘We don’t have interaction...we are from engineering, we don’t have interaction with the business, a natural kind of partner and perhaps advisor, and we don’t really have this interaction.’**

Focus group 2, man

This idea of finding people or ‘personalities’ you can work with was important across institutions and a similar sentiment was shared by spinout founders we previously interviewed. The notion of finding a ‘like-minded partner’ [Focus group 12, woman] was important; as was having the right skills and knowledge, even more so than academic qualifications in some instances: ‘OK, they did the PhD and everything but they might not be a good manager or a good boss’ [Focus group 3, woman]. Interestingly, no participants thought to critique the notion of finding ‘like-minded’ people with the ‘right’ knowledge and skills, despite many having an awareness of equality issues. As discussed in our previous report, unconscious bias can mean that trying to find the ‘right people’ could result in finding more ‘people like us’ at the expense of diverse backgrounds and experiences.

Several groups cited a lack of cross-departmental contact or collaboration as one explanation for why they felt uncertain about how to establish a founding team as they felt that they should be able to find the knowledge they needed within their own institutions. For some, this was about finding collaborators and advisors across other STEM subjects but they were critical of the departments’ tendencies to work in silos:

*‘Each department, they don’t want to work with each other. Nobody wants to build that bridge because everyone’s really concentrating on their research areas.’* [Focus group 3, woman]

Others felt that the most efficient way to get assistance on the business side of any venture would be to work with members from their institution’s business schools but they felt that there was no mechanism in place that enabled them to do so:

*‘We don’t have interaction...we are from engineering, we don’t have interaction with the business, a natural kind of partner and perhaps advisor, and we don’t really have this interaction.’* [Focus group 2, man]

*‘There’s this initial ... reclusiveness that you don’t feel like you can go and talk to someone in the Business School.’* [Focus group 8, man]

Understandably, participants said they would be reluctant to approach business school staff directly but felt it was the obvious place to turn for advice on many aspects of academic entrepreneurship and business management. In some institutions there was also a ‘proximity’ issue where business schools were based in other locations or on different campuses. This meant that there were no organic networking encounters or awareness of activities that may be of mutual interest:

*‘Because the business school is over there and our department is over here, it doesn’t happen. So [where I studied] for my Masters, the business school is with the mechanical engineering building and so then you have a lot of these collaborations going on because they have lunch together and everything, and you have your friends. Whereas here it’s completely separate, especially the business school, it’s like far away...we don’t have this many conversations.’* [Focus group 8, man]

One participant referred to this as ‘the proximity advantage’ [Focus group 8] in some institutions where cross-disciplinary collaboration is more instinctive because different disciplines share the same space within the institution. Yet irrespective of location, these ECRs felt that the most natural solution to the problem of finding the right team would be to network with colleagues from other disciplines who had complementary skills to their own – but they rarely had the opportunity to do so.

## SEEKING FUNDING

As we have already alluded to, many participants discussed the financial insecurity as a barrier to academic entrepreneurship. A related area of uncertainty was not knowing how to go about securing funding if they had an idea they wanted to commercialise. As one ECR explained, they had considered academic entrepreneurship but a lack of understanding about how funding worked was a barrier:

*'I didn't do the entrepreneurial thing, when I finished my PhD, because I really could not see a way to get funding. I couldn't actually understand how to do that.'* [Focus group 1, man]

One group described it as a 'chicken-and-egg question' as each funding option has a different set of requirements. They said, for example:

*'It's harder to get seed-stage funding because they won't ... you talk to them, they're like OK, come back to us in a year when you have a product. We're like, 'Well we need the money to build the project!'* [Focus group 9, man]

Confusion around IP ownership also meant participants were unsure whether they would have to commit to any personal investment. There was a general assumption that any business venture requires the founder to make an initial investment and many participants were surprised to learn that this is not the case when founding a spinout.

Interestingly, the topic of funding and investment was one of the few areas where groups discussed issues of gender bias and inequality. Some participants appeared very knowledgeable about gender inequality in entrepreneurship and investment, which may be because the focus group appealed to women interested in gender issues. Nevertheless, this consciousness of gender bias in investment was framed as a barrier by a significant number of participants.

Often, knowledge of gender inequality and bias was a mixture of statistical evidence and anecdotal or biographical observations that extended beyond the investment space and into wider issues of feminist economics and social inequality, as this extract demonstrates:

*'Only like 1% of start-up capital goes to women founders ... it's called the investment gap, but it also links into previous experiences I've had of reduced pay, based on being a woman, and reduced recognition of my contributions and achievements in my career.'* [Focus group 3, woman]

Although very few women participants cited their own experiences of gender bias, several touched upon the ways in which they felt a wider culture of gender bias in funding and investment was impacting on their decisions and opportunities:

*'So I think sometimes there is always like assumptions that x person can't do anything, or that x person is too ambitious, and that comes via bias [...] I think as we grow further in the career, that bias is there, it's also in the funding bodies. Whenever you want to go ... say if you want to go for getting money for your spinout, you have an idea, everything is good, everyone likes it, but then your funding council for example, has all men, they may not be interested in funding you. So that's unconscious bias.'* [Focus group 12, woman]

*'I think the VC, the [all male] panel thing was interesting [...] For fellowship interviews, the most recent one I looked at that had been gender divided was the [Anonymous Researcher Fellowship<sup>8</sup>] and if you got to the interview stage, if you were a man you had 50% success and if you were a woman you had 30%, which is an insane difference. So half-half chance if you're a man, and ... and that's either because women are terrible at presenting or because the panel's not that ... maybe they're unconsciously biased, or they're getting more women of a lower standard to make the numbers equal in interviews.'* [Focus 6, woman]

<sup>8</sup>/ Name of fellowship anonymised for confidentiality.



These women felt the odds were stacked against them when they applied for large research funding grants and were aware that this gender bias was typical within funding and investment circles more widely. It is interesting to note how this second participant also tried to rationalise and make sense of these statistics by referring to a classic critique of affirmative action aimed at women in STEM.

Although the sample was fairly diverse, only one group mentioned the intersectional inequalities that some women experience when seeking funding and investment. Like many examples offered by the ECRs during the focus groups, this was not a first-hand account but nonetheless provides evidence of how gender bias intersects with other structural inequalities, in this case race and ethnicity:

*'I know a woman who's done various start-ups, she is British but of Pakistani origin, and she's had so much trouble just getting funding because people look at her and see a brown woman and they don't want to give money... She's found that she has more success if she will bring a man along who doesn't really know anything but they just say a few things and then she gets the money.'* [Focus group 8, woman]

This quote resonates with the findings in our previous report that shows that the gender stereotypes that still operate within STEM and across the innovation ecosystem are intensified for women of colour. This creates an additional structural barrier that these women must overcome, alongside all the other feelings of uncertainty we have described so far in this report.

**‘Only like 1% of start-up capital goes to women founders ... it's called the investment gap, but it also links into previous experiences I've had of reduced pay, based on being a woman.'**

Focus group 3, woman





## RisingWISE

An enterprise course by and for women

**‘If we want to change the system, we need some fresh thinking’**, say Dr Anne Miller and Dr Shima Barakat, joint founders of RisingWISE, a programme which aims to combat some of the disparities between men and women in achieving leadership roles and pursuing entrepreneurship opportunities in STEM subjects.

It is specifically developed to bring together women early career researchers from the universities of Oxford and Cambridge to meet with women working in industry and commerce, who face similar challenges. We have developed an innovative, collaborative programme between the two institutions, including working closely with industry to build mutual understanding and relationships, which aim to benefit STEM researcher women from both institutions, and all involved.

Women early career researchers at the Universities do not have access to the same pastoral care or development opportunities as undergraduate or postgraduate students. They have often

moved from another country and culture, and research they are conducting and supporting is crucial for progress towards solving global problems and to the continued success of both Universities’ Innovation Strategies. These women are often juggling parental responsibilities with short-term, unstable contracts and yet continue to strive for excellence in their fields. With a background fully rooted in academia, most of the women participants on RisingWISE have either never thought about creating a spinout or start-up of their own, or have deemed it too risky to pursue. In addition, they do not have the opportunity to meet women working in similar fields to them in industry and therefore can feel



as if they have limited options for pursuing careers in STEM, especially when these subject areas are still so male-dominated.

The RisingWISE programme aims to help women researchers thrive in their academic community by enhancing their leadership and negotiation skills, and building their networks for support and collaboration, thereby increasing their confidence and self-efficacy. The programme has been developed with this specific, large group of women postdocs in mind, to enable engagement with and support for women who could otherwise be 'invisible', despite their vital contribution to research and future innovation. RisingWISE is carefully designed to ensure women leave feeling equipped to self-actualise through practical workshops and facilitated small group working. They also become more connected to other researchers and to industry through knowledge exchange, with a growing network at their disposal to help each participant reach their full potential in male dominated STEM subjects.

The overall aim is to facilitate culture change in both academia and industry, by growing a diverse network of visible, self-actualising women leaders and mentors, providing inspirational role models. This is achieved not only through participating in the immersive core RisingWISE programme, but also by offering them platforms and support to continue to develop their innovative leadership skills and opportunities to share their learning more widely through a growing programme of satellite activities. Following in the footsteps of Gandhi, we are being the change we want to see.

**‘The RisingWISE programme was very good for having role models and knowing that other people are doing that kind of thing and particularly seeing females in those roles. It’s one thing seeing those people and reading something on a website, going OK, there are people doing it, to actually meeting them and actually knowing people on a personal level that have been through that journey.’**

Focus group 9, woman





## Profile of an Entrepreneurial Fellow

Entrepreneurial or enterprise fellowships are now offered by a number of public and privately funded organisations and several participants across this wider study had coveted this prestigious title. These fellowships offer researchers, typically in early to mid-career, the opportunity and funding to develop research into a viable commercial business, often within a particular field or specialism.

One focus-group participant – whom we refer to here as ‘A’ – had been awarded such a fellowship where the objective was to co-found a spinout with her Principal Investigator (PI). As ‘A’ explains, she had always been keen to work in a new business venture and this was the ideal way to do so as an academic researcher:

*‘Before working in academia, I wanted to work in a spinout or start-up, but then I had an opportunity to do a PhD and it went from there. When I started working with my PI we both clicked and I really like that my PI is tackling a real life problem with his research.’*

‘A’ says she was inspired to take this entrepreneurial pathway as a result of training she attended after completing her PhD:

*‘I took part in a mini-accelerator organised by the university. It was their very first programme aimed for postdocs who are considering entrepreneurship. A three-month programme where 9 other participants and I were able to look into the commercial potential of our research was an excellent opportunity to dip our toes into entrepreneurship.’*

Although she recognises her fellowship is a wonderful opportunity, some elements have been much harder than she anticipated. At the time of interviewing, the participant and her co-founder were in the very early stages of spinning out and ‘A’ commented about this experience:

*'I'm trying to tap into all the support I can get, but it's so scattered. I have access to two mentors, who are extremely helpful and supportive but there is a limit on how much of their time you get a month. I am grateful for the financial support from the fellowship so I can step away from a lab bench, educate myself, talk to people, expand my network – all to help me build a business case and get the company up and running.'*

'A' has a network of friends and acquaintances outside of her institution. She explains that living in London gives her access to a wide and diverse network of entrepreneurs and businesses who can offer advice and support she may not find elsewhere:

*'One reason I have courage to actually go ahead and pursue this path is because of the environment I am in. I live in London, which is really diverse and actually my personal circles include friends who are entrepreneurs at different levels. For me, contact with them and exposure to persons who are on this career path, I think it's quite important. You also have access to various events – different associations, business clubs and "tech parliaments" etc. – where you can network and mix between academia and business.'*

As she explains above, the financial support from the fellowship provides time and space to dedicate to the spinout business. She also recognises that the fellowship is still an academic position. Whilst this comes with some constraints, the benefit is that, unlike in more traditional academic roles, commercialisation is recognised as a legitimate and valuable research output:

*'While I'm on an entrepreneurial fellowship, I'm still expected to be an academic and generate academic output. In our case, instead of publishing a peer-reviewed article we filed a patent application so even though you do not write papers it doesn't mean you don't do science. Also, many academics would not pursue their project beyond this point. The next stage is commercialisation, starting with market research and validation, and may require extensive industrial research*

*before actual implementation is reached. Choosing a commercialisation route means you embark on a totally new journey.'*

However, 'A' feels there is a risk that if the spinout is unsuccessful or she decides she would rather pursue a more traditional academic career path that these outputs will not be recognised and she will not have research publications to fall back on:

*'Being involved in commercial activities and conversations takes me away from the traditional academic career course, which is something to bear in mind. If you are an early career researcher who has decided to pursue an academic pathway, being involved in a risky activity like a spinout may not be valued if you apply for a lectureship. Mainly because you don't generate papers and you're primarily judged by the number of publications at this stage of your career in academia. This will also affect your grant applications.'*

Whilst some of these tensions are still to be resolved, she thinks that fellowships such as hers may encourage more academics to consider commercialising their research as it funds a dedicated early career researcher to manage the day-to-day activities:

*'Some academic colleagues say, 'I would love to have a student or a postdoc in your role because I do not have time to set up a business by myself.' They don't have the capacity to do it. At our university, the most successful spinouts were the ones where there was a postdoc in the research group to carry forward commercialisation of the research done with a PI. Often they would leave academia and proceed on to run successful businesses.'*

When asked how she feels about being in such a unique research position, 'A' concludes:

*'Being an entrepreneur is a difficult journey, you kind of accept that. On the other hand, as academics, we work with challenges on a daily basis, right?'*

# Final Reflections

This report provides insights into ECR perceptions around academic entrepreneurship, with a focus on spinouts.

It has highlighted a number of perceived barriers, most notably a lack of information and knowledge leading to a limited understanding about intellectual property ownership and routes to academic entrepreneurship. As seen earlier, in the words of one focus group participant, this is ‘*a bigger barrier than we realise*’ [Focus group 6, woman]. Another significant barrier is the lack of time to balance entrepreneurial activities with other demands arising from their job while maintaining a work-life balance.

Fear of failure was also prevalent, which can be linked to academic entrepreneurship being seen as incompatible with and mutually exclusive to academic careers, especially at the ECR stage where individuals are trying to establish their academic profile. In the case of business failure, they would not have a CV full of publications to fall back on. The focus group discussions reinforced the discourse of an academic career being Plan A and careers beyond academia, for example in industry, being considered as Plan B. Participants perceived spinouts as sitting more comfortably within the industrial sector with a potentially detrimental effect on academic careers due to the lack of formal recognition within the career structure of universities. Therefore, academic entrepreneurship and spinouts were considered as diverting valuable time and effort away from publishing papers. Moreover, there was much uncertainty as to whether a successful spinout venture would count for much on a traditional academic CV.

The barriers outlined above are mainly structural issues and yet many ECRs in this study appear to have internalised them as their own problems. For example, lack of information and knowledge about routes into academic entrepreneurship was often seen as their own lack of awareness or even more worryingly, a lack of confidence in their abilities. Similarly, lack of time and work-life balance in academia was framed as an individual issue – and often a woman’s issue – rather than a structural problem. Participants felt that aspiring to a work-life balance was a personal preference which was translated as not being motivated enough to become an academic entrepreneur. Furthermore, ECRs reported barriers such as lack of confidence and imposter syndrome as considerations in pursuing a risky endeavour such as academic entrepreneurship. These issues are often blamed on the individuals, with institutional training – when it exists – to help them ‘fix themselves’. What is largely ignored is that these are structural issues, generated in part or exacerbated by the competitive performativity of academia<sup>9</sup> and the deep structural inequalities of higher education in relation to gender, race and class. This affects not only access and progression to careers, but also understanding of academic authority and credibility<sup>10</sup>. What makes this explanation particularly compelling is that the focus groups also highlighted how HEIs differed in the prioritisation, communication and support of academic entrepreneurship and that in some cases institutional provisions seemed to focus on students and graduates while ECRs are overlooked.

9/ Ball SJ. (2003) ‘The teacher’s soul and the terrors of performativity’ *Journal of Education Policy* 18: 215-228.

10/ Gabriel, D., & Tate, S. A. (2017) *Inside the Ivory Tower: Narratives of women of colour surviving and thriving in British academia* London: UCL IOE Press; Taylor, Y., & Breeze, M. (2020, July). ‘All imposters in the university? Striking (out) claims on academic Twitter’ *Women’s Studies International Forum* (Vol. 81, p. 102367) Pergamon.

## ECR'S PRECONCEPTIONS: MYTH OR REALITY?

We compared the key findings from the focus groups with the lived experiences of successful spinout founders that were explored in our previous report, to determine to what extent ECRs' preconceptions are myths or actual reality. The table below shows that ECRs' main preconceptions about barriers are fully

reflected by the founders' experiences as actual challenges that they had to overcome and that these are of a structural nature. HEIs need to take action to remove these barriers and adopt enabling initiatives if they wish to incentivise inclusive academic entrepreneurship and increase the number of woman founders.

	FOCUS GROUP KEY FINDINGS	SPINOUT FOUNDERS' EXPERIENCES
<b>Lack of knowledge</b>	<p><i>'I hear about spinouts but I hardly know about them!'</i> [Focus group 10, woman]</p> <p>ECRs appear to have limited or no knowledge and understanding about spinouts and, more generally, about commercialisation of research and rules and practices around IP. There is eagerness to learn more about it.</p>	<p><i>'It was a bit like doing things in the dark when we were founding it [the spinout], we didn't have any sort of idea how this process happens'.</i> [Woman founder]</p> <p>Most founders had very little or no knowledge about the process of spinning out and as one man founder said his experience of spinning out was a <i>'steep learning curve'</i>. They all agreed that it would be most helpful to learn about commercialising research at the beginning of a research career to make researchers aware that this could be an option as they progressed with their research.</p>
<b>Lack of time</b>	<p><i>'[We are ] overload[ed] with duties' and that 'work-life balance is hard enough already as a postdoc.'</i> [Focus group 6, women]</p> <p>Many ECRs felt that it would be very difficult for them to engage with academic entrepreneurship and manage all their other professional and personal responsibilities.</p>	<p>Many founders said that managing their time was one of the biggest challenges that they faced in their spinout journey. Men spoke about the help they received from their partners as being crucial to their success: <i>'I had a wife who was terribly understanding...she brought up the kids'</i>. While for women with children it was much more of a challenge: <i>'You have to make it work which is not helpful and people ask me and I wish I could give a better answer as to how one does it'</i> [Woman founder].</p>

	FINDING	EXPERIENCE
<b>Jeopardising an academic career</b>	<p><i>'What about pressure for publication, how can we protect our IP at the same time'?</i></p> <p><i>'I've had that problem, and it's been a massive struggle for my career progression.'</i></p> <p>[Focus group 10, women]</p> <p>Many ECRs saw commercialisation of research and spinouts as mutually exclusive to a traditional academic career pathway, especially at an early career stage. As highlighted by the quotes above there is a perceived tension between commercialisation of research and academic success.</p>	<p><i>'A lot more people would do this if it was better recognised in promotions.'</i> [Woman founder]</p> <p>There was a sense amongst some founders that their colleagues did not perceive getting involved in spinouts as a legitimate academic activity and that it was not properly recognised and rewarded by institutions. One man founder in a senior academic role highlighted the need for institutions to <i>'empower people'</i>, celebrate <i>'commercialisation'</i>.</p>
<b>Fear of failure and precarious careers</b>	<p><i>'All the time I fear failure, I think it's the most indirect result of starting any new thing.'</i></p> <p>[Focus group 3, woman]</p> <p><i>'Because we're on only short-term contracts, as postdoctoral researchers, it's [not] really like an open-ended or a permanent contract, so you're always looking for the next job. Especially if you are on a visa as well, you actually really need to have a specific contract for a certain period of time, so you can't feel that you can be a bit adventurous.'</i></p> <p>[Focus group 8, woman]</p> <p>Fear of failure combined with ECRs being on fixed-term contracts and, in some cases with the added uncertainty relating to VISA arrangements, can act as major barriers for ECRs to develop their full potential as future academic entrepreneurs.</p>	<p><i>'You're going to be told no a lot! And often it won't be your fault or anything to do with the quality of what you are doing. So resilience and persistence [are important].'</i> [Woman Founder]</p> <p>Determination and resilience were mentioned, especially by women founders, as important attributes as important attributes to found a spinout company.</p> <p><i>'In a sense being an academic is the safest form of entrepreneurship that you can undertake, because you are paid a salary...you do not have to give up a job.'</i> [Man Founder]</p> <p>Being in a permanent academic job was certainly seen as an advantage. Although at the other end of the spectrum those who found their spinout at the end of their PhD also felt that they did not have anything to lose, since they have not embarked yet on a proper academic career.</p>



	FINDING	EXPERIENCE
<p><b>Seeking funding and perceptions of gender bias</b></p>	<p><i>'Only like 1% of start-up capital goes to women founders ... it's called the investment gap, but it also links into previous experiences I've had of reduced pay, based on being a woman, and reduced recognition of my contributions and achievements in my career.'</i> [Focus group 3, woman]</p> <p><i>'I know a woman who's done various start-ups, she is British but [of] Pakistani origin, and she's had so much trouble just getting funding because people look at her and see a brown woman and they don't want to give money... She's found that she has more success if she brings a man along who doesn't really know anything but they just say a few things and then she gets the money.'</i> [Focus group 8, woman]</p> <p>A lack of understanding about how funding works when one is interested in commercialising research combined with perceptions of gender bias and inequality acted as a major barrier to engage with academic entrepreneurship and spinouts. There was also a suggestion that this may be further complicated by the intersection of gender with ethnicity.</p>	<p><i>'[The investment community was like [entering] a very male, biased world [of] predominantly men pitching to men.'</i> [Woman founder]</p> <p><i>'...I had my confidence knocked by how dismissive they were when I came into the room and their first question was why you are even here?'</i> [Woman founder]</p> <p>Women founders reported that although as scientists they were used to being in the minority in their working environment the absence of women in the investor community was stark nonetheless. There was also a perception that contributed to generate gender bias in this community.</p>
<p><b>Visualising spinout success and role models</b></p>	<p><i>'It's almost like exposure to it, so if you know anyone who's gone and set up spinouts then you are more on board with the idea of doing it yourself because you've seen it's possible.'</i> [Focus group 11, woman]</p> <p><i>'...I'm just not that kind of person. But then I guess the thing is I've never met a woman that has done it, so I've never met someone I could relate to and go maybe I am that person.'</i> [Focus group 12, woman]</p> <p>Evidence of successful academic entrepreneurship is a key for ECRs to imagine their own future as potential spinout founders. They felt that the lack of 'examples of success' and role models made it difficult for them to think about this as a viable career path.</p>	<p><i>'Visibility and making role models more visible for other women can be important.'</i> [Woman founder]</p> <p><i>'I think that what probably needs to be done is to get as many female entrepreneurs to act as mentors, may be even coming to give a talk.'</i> [Woman founder]</p> <p>The concept of relatable role models, in other words women who have gone through the experience of spinning out or setting up a start-up, run across many interviews as the theme, as women founders saw it as being important. The idea of giving greater visibility to women role models to inspire the next generation of women founders was seen as equally important.</p>

## FINDING

## EXPERIENCE

### Dedicated fellowships for ECR academic entrepreneurs

#### Entrepreneurial Fellowships

*‘Some academic colleagues say, ‘I would love to have a student or a postdoc in your role because I do not have time to set up a business by myself.’ They don’t have the capacity to do it. At our university, the most successful spinouts were the ones where there was a postdoc in the research group to take everything over. Often they left academia afterwards but went on to run really successful businesses.’ [Entrepreneurial fellow, woman]*

Entrepreneurial fellowships plays an important role is supporting ECRs to engage with commercialisation of research and help achieve a balance in their research group between those who focus on the actual research and other academic activities, and those who drive the application of the research through commercialisation. Entrepreneurial fellowships can also help to transition into alternative career pathways as not all ECRs will either wish for or have the opportunity to move into a permanent full academic role.

Several founders benefitted from entrepreneurial Fellowship and other forms of support such as ICURe programme from Innovate UK to ‘get out of the lab’ and validate ideas in the market place. These were important to provide the mental space and time to focus on commercialising their research and ultimately creating a spinout.



## RESOURCES AVAILABLE

Before we conclude, it is important to be mindful that not all ECRs will wish to engage with the commercialisation and spinout aspects of an academic career and, even if they did, not all research lends itself to commercialisation and spinouts. However, it is important to ensure that ECRs can find out more about these activities in order to make informed career choices and be given the opportunity to acquire entrepreneurial skills that can be usefully deployed in other aspects of their work. Below we have set out a number of recommendations aimed at HEIs and the wider HE sector. To support the recommendations, we have developed a **set of resources** designed to achieve a step change in institutional capabilities and encourage more women into academic entrepreneurship.



**Click to see the Women and Spinouts resources**

# Recommendations

## FOR HIGHER EDUCATION INSTITUTIONS

### Promote knowledge and understanding of routes into academic entrepreneurship:

HEIs should review how information about commercialisation of research and IP is communicated and signposted to ECRs. Focus groups with ECRs, similar to those undertaken as part of this study, could be helpful to understand their preconceptions about and levels of interest in commercialisation of research and academic entrepreneurship, as well as identifying whether there are knowledge gaps and how best to address these at an institutional, departmental and research group level.

### Training targeted at ECRs:

There are many initiatives targeted at students but ECRs tend to be overlooked. An example of good practice is the RisingWise programme (see case study on pages 32-33) aimed at women ECRs set up jointly by the Universities of Cambridge and Oxford. RisingWise recognises that ECRs often do not have access to the same pastoral care and developmental opportunities as undergraduate and postgraduates. Information and training should also focus on why commercialisation of research is important to individuals, institutions and society as a whole.

### Time and recognition for academic entrepreneurship:

HEIs and society greatly benefit from the application of research that is now captured in the Knowledge Exchange Framework. Therefore, activities related to commercialisation of research ought to be appropriately recognised in academic workload plans, in the same way as teaching and research. Expecting researchers to engage with these activities over and above all their other academic duties is unsustainable and

likely to disproportionately disadvantage women and men with caring responsibilities, as well as those with (visible or invisible) disabilities.

Academic success and excellence need to be re-thought in line with the emphasis placed on research impact and knowledge exchange to benefit society. Research and academic contracts should reflect the importance of these activities, which should be given appropriate time as recommended above. It should be made clear how these activities are being rewarded by HEIs through their promotion criteria.

### Role models and relatable mentors:

It is important to promote greater visibility of inclusive role models and mentors both in terms of diverse representation (e.g. gender, race, age, career stage, and disability) and of different career paths. This is to inspire confidence in ECRs, challenge assumptions and norms around academic entrepreneurship, and help individuals establish whether academic entrepreneurship is something they wish to engage with in their career. HEIs should also create opportunities for networking and mentoring to enable ECRs to explore their ideas with successful women founders and business leaders. These may involve a series of invited talks or events such as a speed mentoring session. It is also important to explore with founders how they might deal with 'failure' and build resilience.

### Engaging with the investors' community:

There is growing awareness in the investor community about the need to increase their diversity and perceived gender bias. Several initiatives have been taken including the [Investing in Women Code](#). Many investors have signed up to this Code and HEIs should seek out these investors who are committed to diversity and facilitate networking opportunities for ECRs to engage with them.

## FOR THE HE SECTOR AS A WHOLE

### Facilitate access to alternative academic career paths in research and innovation (R&I):

Fixed-term contracts, job precariousness and VISA restrictions can be significant barriers for ECRs to engage with academic entrepreneurship. However, as acknowledged by the Concordat to Support the Career Development of Researchers, there may not be enough opportunities for permanent employment within HEIs. It is important to develop, from an EDI perspective, a better understanding of academic careers within the R&I landscape focusing on opportunities for alternative career paths and for working across sectors (e.g. industry, NGOs, policy departments). ECRs provide a pipeline of future scientists and founders of spinouts and start-ups. Evidence from our research suggests that they can play a leading role

in the creation of spinouts. Therefore, it is important to think creatively about career opportunities to retain talent in STEM.

### Signposting to entrepreneurial fellowships and other opportunities:

There are several Entrepreneurship Fellowships schemes, as well as Innovate UK's ICURe programme, that provide dedicated time and opportunity to engage with commercialisation of research. These have been found to be very helpful by those who have used them to explore the viability of spinouts. It is important to raise awareness about these opportunities and the establishment of a sector-wide 'one-stop-shop' or information bank could make it easier for HEIs and researchers access to information about these initiatives. HEIs may also consider establishing their own entrepreneurial fellowships or other forms of dedicated support for ECRs – and mid or senior career academics – to explore commercialisation of research.

## Resources

Please visit the [www.brookes.ac.uk/women-and-spinouts](http://www.brookes.ac.uk/women-and-spinouts) to view and download a suite of materials to support women in their spinout journey.

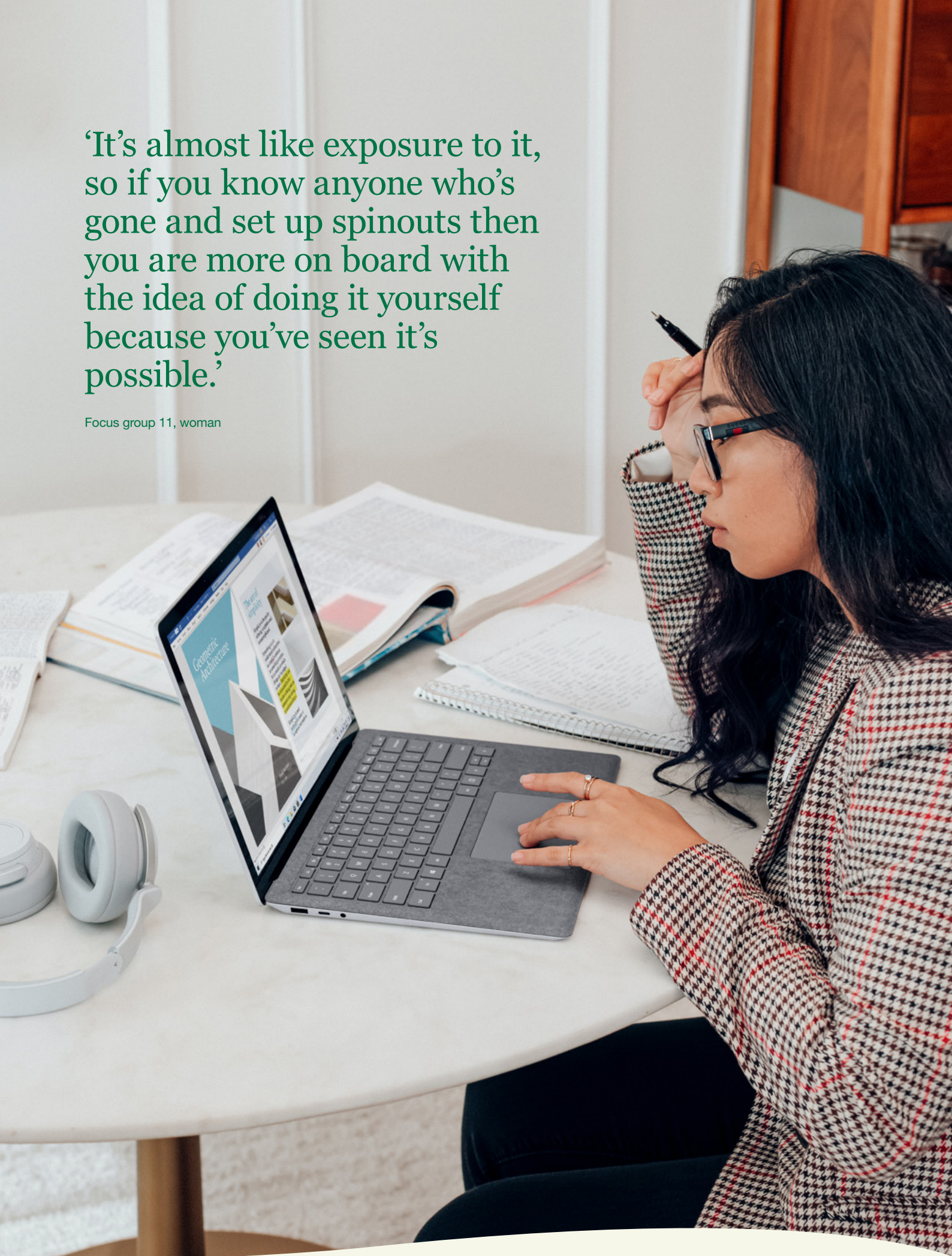


Click to see the Women and Spinouts resources



‘It’s almost like exposure to it, so if you know anyone who’s gone and set up spinouts then you are more on board with the idea of doing it yourself because you’ve seen it’s possible.’

Focus group 11, woman





**For further information**

[www.brookes.ac.uk/women-and-spinouts](http://www.brookes.ac.uk/women-and-spinouts)

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