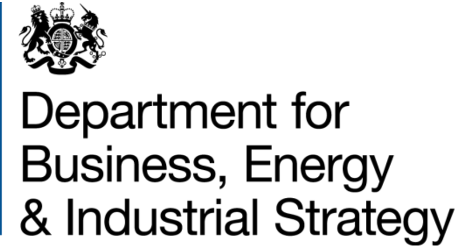

NEW INNOVATION FINANCE PRODUCTS

Qualitative Research

BEIS Research Paper Number 24

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Executive summary

Ipsos MORI was commissioned by the Department for Business, Innovation and Skills in March 2016 to undertake a programme of qualitative research with businesses and financiers (lenders and investors) in order to understand the appetite for different features of publicly financed debt products to support private sector innovation activity. The objective of the study was to inform the development of the business case for the introduction of new instruments by the UK government.

The study team undertook interviews with 40 businesses to gather their detailed views on the topic. These interviews offered an insight into the business model, innovation and funding profile of each business, as well as how various forms of publically-backed debt products might relate to their specific context and support their innovation projects. To focus these discussions on the specific features of a debt product the study team used a set of hypothetical debt innovation finance products. Interviews with 10 financiers provided the study team with a broader perspective on the products and allowed them to explore the likely short and long term market implications of their potential introduction.

The evidence presented in this report sheds light on the potential appetite of innovative firms for new innovation finance products and provides some detail on the potential explanations for variations in this appetite. It does not attempt to offer systematic evidence or a prediction as to how UK firms might react to the introduction of particular products.

- **Overall appetite** – Among the businesses interviewed, there was a strong interest in new innovation finance products. A large number of them indicated that they would be likely to apply for one of hypothetical innovation finance products discussed. The main reason for this large appetite related to companies' inability to obtain debt finance in the current financial landscape, either because of limited assets or lender's perception of risks related to innovation. Financiers confirmed that they anticipated high demand by businesses that are not able to or choose not to access finance for innovation through more conventional debt and equity financing.

- **Loan amounts –** Reflecting the diversity of innovation projects discussed through the research, participants expressed interest in accessing a very broad variety of loan sizes, ranging from £20k to £12.5m. The diversity of projects pursued depended on specific business needs driven by a number of factors such as company size, sector and specific growth strategy, which then impact upon the specification of the next innovation project.

- **Preferences for different features –** Through their stated preferences, and through comparisons of the reported likelihood that they would apply for alternative hypothetical products, business participants identified that:

- Interest rate subsidies may be of relatively little importance in determining the appetite for innovation finance products. Some financiers suggested that this feature is most likely to lead to competition with the private sector provision.

- In contrast, security arrangements and collateral appear to be the key considerations, especially for smaller companies with limited assets. These companies indicated that they faced difficulties when attempting to access debt finance in past.

- Similarly, the grace period was seen as a distinctive feature determining suitability for projects in particular stages of development and sectoral setting. Companies suggested that the grace period would need to be aligned to the specific project, allowing loan repayments to start at the time when the innovation generates revenues. Whether the company was ‘a single innovation firm’ or one pursuing a number of innovation projects did not seem to be a decisive factor.

- There was a high level of acceptance of the idea of loans targeted at part-funding innovation projects for single companies that can demonstrate their innovation is addressing a significant market opportunity. The research purposefully refrained from asking participants to compare grants and loans in order to avoid strategic responses by research participants. As a result, there is no direct evidence suggesting that businesses would be willing to substitute grants with loans for their innovation activities. From the research conducted within this study, it can be indirectly inferred that there would be a high demand for loans for the support of innovation activities in sight of a market, some of which may currently be eligible for grant funding. Most businesses agreed with the necessity of specific checks of eligibility but highlighted that if the products were to be seen as the “funding of last resort” they might not attract the top innovative companies. For both businesses and financiers, the flexibility of the product is a key feature.

- **Appetite may vary for different groups** – Large enterprises contacted during the research identified a smaller appetite for innovation finance products than their smaller counterparts. Companies from fast-moving sectors such as IT and software or app development expressed a preference for shorter grace and repayment periods.

- **Expected market response –** The prevailing view was that products discussed with participants would be distinctive from what is available to businesses currently. When discussing short term market impacts, several market gaps were identified by financiers. These included the development stage moving from proof of concept to early revenue generation, regional deficiencies of regions outside London and sectoral or technological limitations of areas less well catered for by crowd funding advances. Nevertheless, the potential for these products to crowd out existing market offers from some finance providers was identified as a risk, in particular for products that included an interest rate subsidy.

Opinions were divided on how a company’s balance sheet would be viewed by future investors or lenders. Whereas the majority view among businesses and financiers

providing (typically small scale) finance products was that a seemingly complicated item on the list of liabilities may deter some less experienced investors, it was thought that a company's attractiveness depends on many other factors (e.g. quality of the management team and planned growth strategy). Large investors saw this type of liability as much less of an issue, especially if there was flexibility built into its 'early pay-off'.

Interviewees suggested a set of points that could be used to tune communications around the policy. The level of interest in the agenda detected throughout the interviews suggests that there is a real opportunity to engage a large number of firms with the policy. Companies stressed the scale of the communications challenge however, identifying a large number of points that they would look for in the material about any new products, as well as a broad range of potential communication channels. The implication is that the clarity of the message when launching any new innovation finance products will be key – especially regarding the type of company and projects best suited to their use.

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1 Introduction

Ipsos MORI was commissioned by the Department for Business, Innovation and Skills (BIS) to undertake a programme of qualitative research with businesses and financiers in order to understand the appetite for different features of publicly financed debt products to support private sector innovation activity. The objective of the study was to support the development of such instruments by the UK government.

This research was designed to complement other ongoing research on the introduction of these products, including a programme of workshops hosted by Innovate UK with businesses they work with.

The study team undertook in-depth interviews with 40 businesses. These interviews allowed the study team to understand the business model, innovation and funding profile of each business and then discuss how various forms of publically-backed debt products might relate to their specific context and support their innovation projects. Interviews with 10 financiers allowed the study team a broader perspective on the products, and to explore the likely short and long term market implications of the products.

The qualitative interviews focused on the following key research questions:

- What are the characteristics of firms with a higher appetite for this type of product and how does this appetite vary across different types of innovating businesses? How would these firms be likely to respond to the introduction of new products?
- What preferential features of a government-backed debt product matter most for businesses that innovate?
- What impacts will these products have on the market? How might commercial providers of business finance respond to new government-backed innovation finance products? Is there a risk of crowding-out in the short term? And how will holding these assets be viewed in the long term?
- How could these products be best communicated? What channels are likely to reach the target audience? And which features are the key ones to focus the communication material on?

This report represents the final output for the study drawing on research with 40 businesses and 10 financiers, and setting out the key messages from these interviews. The evidence presented in this report sheds light on the potential appetite of innovative firms to alternative innovation finance products and as detailing the potential explanations for variations in this appetite. It does not provide systematic evidence or a prediction as to how UK firms might react to the introduction of particular products. The qualitative research approach allowed the study team to go into some depth on these topics during interviews, and offered the flexibility to focus in greater depth on topics where research

participants have more ideas and evidence to address particular research questions. This is in contrast to a more quantitative design (such as a survey) which would have offered a lower level of engagement with a larger number of businesses. Through this qualitative approach it is possible to identify patterns and explore potential causes of these patterns in depth with participants. It is however important to note the limitations of this research design, and in particular that it is not possible to generalise from a sample of 40 business interviews up to the whole population of active UK innovation active firms.

The report is structured as follows:

- Section 2 summarises the overall methodology for the study and explores the issues addressed within the study design.
- Section 3 presents the findings of the research in terms of the anticipated appetite of firms for new innovation finance products.
- Section 4 focuses on the anticipated ways in which the introduction of these products may impact on existing markets for finance to support innovation.
- Section 5 details findings on the most effective ways in which the introduction of any new innovation finance products could be communicated.
- Section 6 concludes with a set of reflections on the key messages emerging from the research.
- An annex offering more detail on the research design.

2 Research methodology

This section summarises the approach undertaken by the study team. Please note that the Annex contains more detail on the design of the research.

2.1 Research design

2.1.1 Key issues

The approach was designed in collaboration with the project steering group (including representatives of BIS, Innovate UK and the British Business Bank) in order to minimise three key risks associated with the research: the risk of generating evidence that only applies to a narrow sub-set of innovation activities, a the risk of receiving strategic responses from participants who intend to influence the outcomes of the research, and ensuring commercially sensitive discussions were not a deterrent to participants

Handling the breadth of innovation

Innovation is a broad concept covering a diverse range of activities, from a company trying to bring forwards an incremental refinement of an existing technical product, to one which is trying to disrupt a whole market, and believes they can create value by helping to support a broader social change through a combination of process, service and business model innovation. The availability of alternative forms of finance for innovation varies across these activities. The nature and scale of the costs and commercial risks involved can vary substantially across different technology areas, and numerous exit strategies may be available to the innovator (e.g. some may be looking to realise the value of their innovative activity through sale of the intellectual property or associated commercial vehicle to larger investors, while others may aim to directly manufacture or provide the products and services in question). These factors may have an important bearing on the appetite for different financial instruments, and a key challenge here was to ensure a limited number of interviews provided suitable evidence across this diverse landscape.

Projects at a relatively early stage of development may be characterised by a particularly high risk of failure, above that which commercial providers are willing to finance – often termed a ‘valley of death’, but also a higher level of uncertainty about the outcome. This creates a requirement for emphasis in the research. For technological innovations, this would suggest an emphasis on projects that are on proof-of-concept validation, validation in a laboratory or relevant environment, and demonstration in a relevant end-to-end environment. It was seen as important that the research offered intelligence about how these innovation finance products would be received across the economy. This research therefore necessitated coverage of:

- **Sector and size**: There is evidence that the availability of finance for innovative firms varies across sectors and firm sizes. Accordingly, the attitude to new financial products may be very different for a small business services firm investing in a new

model of interaction with its customers, compared to a large company pursuing a technical project.

- **Type of innovation**: The costs associated with the development of different types of innovation, particularly technology-based innovation, can vary widely, impacting on the need for different financing arrangements. For example, the relative costs of digital health technologies, medical devices, and therapeutics can vary by several orders of magnitude.

- **Development**: The need for different types of financial support may vary across innovations at different stages of development. This should reflect various stages of innovation development (feasibility studies, testing, development of a prototype, etc.) and commercial development stages (companies at concept, pre-revenue, profit making etc.).

- **Geography**: It is well documented that barriers to finance for small firms vary at the spatial level[1], and organisations away from financial centres may have a different attitude to innovation finance.

- **Other factors explored**: In addition to the above, the research team explored issues such as innovator experience (serial innovator vs first time innovator), risk class (technology vs commercial risks) and intended exit strategies (long term intentions of the business).

It was recognised from the outset that these different issues were likely to interact with one another. For example, organisational development may mean something very different in the financial services sector compared to web services, impacting on both their funding needs and how they are viewed by investors. It would have been infeasible to provide robust coverage of all of these potential interactions from 50 interviews. However, by exploring organisational contexts with research participants in depth and discussing the full range of barriers that prevent their innovation projects being realised, the study team were able to develop a set of overarching themes that helped to shed more light on these interactions. In practical terms, this required the business interviews to go beyond a discussion of attitudes towards alternative financial products and explore how these would sit within their broad organisational context. Where possible (e.g. sector, size, geography) the study team were able to stratify parts of the sample to ensure good coverage across these different groups. In other areas, the analysis framework covered these issues.

Strategic responses

Research on policy options such as these carries carry the risk that participants may modify their responses in an attempt to influence policy in their favour (i.e. lobbying). When research participants identify themselves as future applicants to government innovation

[1] See for example Lee and Brown (2015) Thin Markets and Innovative SMEs: the Demand and Supply of Bank Funding in UK Peripheral Regions

support programmes there was a risk that they felt that it would be in their interests to respond in a way so as to suggest financial arrangements which would be disproportionately favourable for their companies. We anticipated that this would be a particular issue for the business interviews, however we recognised that investors might look to escalate minor issues with schemes when they fear that these public schemes might crowd them out of the market, or in some way favour their competitors rather than engage on how they might respond to businesses that use these forms of funding.

Our primary approach to minimising the risk of strategic responses was to use a broad and robust approach to sampling. A key priority was to develop a sample that allowed the research to look beyond 'the usual suspects'. In addition, the interviews were structured in a way to minimise the risk of strategic responses. This included the use of a suite of hypothetical innovation finance products. From this it was possible to ask applicants to compare these, mitigating the risk of drawing comparisons with previous innovation support they may have benefited from. Additionally, interviewees looked to contextualise any information provided by the research participants as far as possible. By starting the business interviews with a discussion of the innovations they are pursuing, and understanding their business model, the interviewers were able to discuss their attitudes towards new innovation financial products in that specific context.

Ensuring commercially sensitive discussions are not a deterrent to participation
It was recognised from the outset that to deliver against the objectives detailed above interviews needed to explore a number of highly sensitive areas of business activity and operation. These included their overall business model and discussion of current innovation projects, their history of applications for funding, their competitive position and intellectual property rights management strategy. We anticipated that companies might understandably be reluctant to reveal much of this information if they feel it could be released publically.

We took care from the outset of recruitment to explain our approach to data security and to anonymising the information we received. Using such processes, the study team found that participants were in general highly open when discussing these potentially sensitive aspects of their organisations. As a research organisation with more than 40 years' history and a global reputation for integrity in handling sensitive commercial or personal data Ipsos MORI is well placed to allay such concerns amongst research participants.

2.1.2 Developing a set of hypothetical innovation finance products to support discussion

The study team worked in partnership with specialists from BIS, Innovate UK and the British Business Bank to develop and define a set of four hypothetical products to support the discussions. The intention was that by precisely defining a set of potential terms, it would help participants to consider how these products might practically work for their organisation.

A core product A was first defined against the following features:

- **Sum** – Funding for a loan of up to 60% of the cost of a project. This sum would be expected to be paid back along with interest.
- **Interest rate** – This product would offer a 3% interest rate subsidy to firms who are finding it difficult to access finance. The interest rate is the amount charged, expressed as a percentage of principal, by a lender to a borrower for the use of assets.
- **Grace period** – There would be an initial grace period of 2 years over which no payments would be expected. The grace period is the time from the date of drawing down funds to the first repayment, i.e. period of time in which loan repayments are not required.
- **Repayment period** – The sum (plus interest) would then be repaid over a period of 8 years – The repayment period is the period from the first to last repayment.
- **Security** – Collateral required may be less than the size of the loan. Security is an asset (e.g. a machine or property) as collateral for the loan which then becomes a secured debt owed to the creditor who gives the loan, and the loan would be secured over relevant available collateral.
- **Practicalities** – A loan available to a single company only (i.e. not a consortium), and investments would only be available to companies that can demonstrate that their innovation meets a set of criteria, including the potential size of the market opportunity, and that the project will not likely receive funding otherwise.

Three variations were developed from this core product in order to support discussions. Each of the three variations included an element that might represent an improvement over the core product (e.g. a longer grace period), and also a negative change (e.g. a smaller interest rate subsidy). The scale of the changes were developed based on a calculation of what a hypothetical business might consider to be an equivalent set of products from a net present value (NPV) perspective[2]. The key differentiating features of each of these products are set out in Table 2.3 below.

[2] The study team also explored the potential to develop a set of products that would represent an equivalent level of subsidy based on EU state aid grant equivalence calculations. However, this approach was not compatible with the development of a set of products that businesses might be expected to consider to be equivalent.

Table 2.3: Summary of Innovation Finance Products

Product	Interest Rate	Grace Period	Repayment Terms	Security
A – core product	Government subsidy of 3% with min. threshold of 0.1%	2 years	8 years	May be less than the size of the loan
B - a longer grace period, but a smaller interest rate subsidy	Government subsidy of 2% with min. threshold of 0.1%	5 years	5 years	May be less than the size of the loan
C - a longer grace period, but a higher security requirement	Government subsidy of 3% with min. threshold of 0.1%	5 years	5 years	Equal to the size of the loan
D - repayment dependent on the success of this project, but no interest rate subsidy	No government subsidy	2 years	8 years, but contingent on project success	May be less than the size of the loan

Throughout the interviews it was made clear to participants that these products had been developed specifically by the study team for the purposes of the supporting a broad discussion of the implications of alternative features of innovation finance products, and were not products that the government was necessarily considering or looking to formally consult on. Full detail of business interview design is presented in the annex.

2.2 Sample development

2.2.1 Development of business sample

The project team acknowledged the need for the research to focus on potential customers for government-backed innovation finance products, i.e. firms which were likely to be looking for finance (or had recently undertaken search activities) to pursue radical innovation projects. This meant there was a need for an innovative research design to go beyond 'the usual suspects' in the form of highly vocal business and grant applicants. The study team therefore developed a sample for the research with businesses from the following sources:

- Applicants to Innovate UK programmes in last three years - given the volume of applications it was possible to stratify this sample based on the size of firms, by geography, and by the broad area of their focus.

- Businesses currently being supported by the British Business Bank through Enterprise Capital Funds (ECF)[3]. These are businesses who funded their innovation activities through a government supported equity scheme and may be in a position to contrast their existing funding to hypothetical debt products.

- Businesses contacting the Business Support Helpline and enquiring about finance of innovation projects.

- Other innovative firms - the study team developed an additional sample of firms that were likely to be pursuing radical innovations from patent database (PATSTAT) and participation in accelerator and incubator programmes.

- The research team also considered but did not use the lists of businesses on from the following sources: Gateway to Research platform (which duplicated Innovate UK applicants), Design Rights database (due to insufficient detail of businesses and their 'radical innovator' status) and the British Business Bank repository of EGF funded businesses (it was not possible to contact these businesses because they had recently participated in another research project, creating a risk of 'research fatigue').

- The final sample of businesses to be targeted through the research developed by the study team is summarised below in Table 2.1.

Table 2.1: Summary of final sample of businesses

Source	Sample Size	Number of interview completed
Recent applicants to Innovate UK programmes	300	24
Businesses currently being supported by the British Business Bank	6	5
Business Support Helpline	4	1
Other firms	100	10

2.2.2 Development of financier sample

A more purposive approach was used to develop a sample of financiers. This involved close liaison between the study team, the British Business Bank and Innovate UK to develop a sample of 70 organisations representing 13 different types of financiers (including two industry associations that represent a number of individual investors). This list is presented below in Table 2.2. A prioritisation was then applied to the list based on an

[3] Enterprise Finance Guarantee (EFG) loans recipient companies were also considered to form a subset of the sample however recent research with these companies prevented use of this source in final sampling design

assessment of the extent to which they were concerned with the financing of private sector innovation projects, and therefore would be more likely to be well placed to inform the research.

Table 2.2: Summary of final sample of financiers

Broad Type	Detailed Classification	Number in Sample	Number of Interviews completed
Association	Association	2	1
Investor	Crowdfunding/Peer-to-Peer	4	0
	Corporate Venture Capital (CVC)	4	0
	ECF (Enterprise Capital Funds)	25	3
	Hybrid Funds	2	0
	Other funds	5	1
	Venture Capita Catalyst	5	1
	UK IIF (UK Innovation Investment Fund)	2	0
Investor/Grant provider	Charity	1	0
Lender	Asset Finance/Other Speciality	7	1
	Challenger Bank	2	1
	Debt Fund	6	1
	High-Street Bank	5	1
	Total	**70**	**10**

2.3 Recruitment

2.3.1 Recruitment of business

For each group of businesses, the following recruitment approach was used:

- Innovate UK applicants – An opt-out email from Innovate UK was followed up by an invitation email from Ipsos MORI with an attachment of a letter of support from BIS.

- British Business Bank (BBB) – Here we made use of an opt-in procedure managed by the BBB, followed by joint-branded communication from the British Business Bank, BIS and Innovate UK.

- Business Support Helpline – Call processes were amended to offer suitable firms the opportunity to opt-in over the phone, and were then followed up using a joint Ipsos MORI / BIS branded first communication.

- Other identified contacts – A broader group of contacts was developed from publically available sources. Contacts from this group were sent a joint Ipsos MORI / BIS branded first communication.

During the recruitment phase, all potentially participating businesses were asked a single screening question to check their suitability:

> S1: Are you developing, or have you recently brought to market a significantly new product, service, process or organisational change? [if organisational change. Can I just check, is that organisational change around a particular innovation?]
>
> Yes / No

Once agreement to participate had been secured, businesses were asked if they would mind if a representative from BIS or its partner organisations also attended the interview as an observer. 19 interviewees explicitly indicated that they would not mind if a representative from BIS or its partner organisations observed the interview. Dates of interviews were communicated to BIS and an observer from one of the organisations attended three of the 40 business interviews.

2.3.2 Recruitment of financiers

Ipsos MORI directly approached the financiers identified within the sample development process. No screening questions were required for these interviews. Representatives from BIS and its partner organisations did not observe these interviews.

2.4 Research delivery

This sub-section provides a descriptive account of the final structure of interviewed businesses according to predefined firm/innovator characteristics outlined earlier in the methodology section. Each business interview was conducted with senior staff involved in decisions for financing innovation. This included directors and founders of micro size companies, Chief Finance Officers of small and medium size companies and senior management at large enterprises.

Table 2.3: Summary of final sample of businesses by firm characteristics

Firm characteristic		Class	Frequency
Size		Micro (0-9 employees)	17
		Small and medium (10-49 employees)	15
		Large (49+ employees)	8
Stage of development of the business		Startup (Trading for <=2years)	1
		Early stage (Trading for 2-5 years)	18
		Later stage (Trading for >5years)	21
Sector	**Innovate UK categorisation**	Manufacturing & materials	12
		Health and life sciences	13
		Emerging and enabling technologies	6
		Infrastructure systems	8
		Other-Games developer	1
	Broad SIC code	A - Agriculture, Forestry and Fishing	2
		C - Manufacturing	14
		E - Water supply, sewerage, waste management and remediation activities	2
		J – Information and Communication	6
		M - Professional, scientific and technical activities	15
		Unassigned	1
Market reach (target market for the innovation)		National	16
		International	24

Table 2.4: Summary of final sample of businesses by innovation type

Innovator type		Class	Frequency
Type of innovation	**I Product/ Service/ Process/ Business model**	Product	28
		Service	7
		Process	4
		Business model	1
	II Radical/ Incremental	Radical	26
		Incremental	5
		Both	9
Evidence of particular challenges accessing finance to support innovation		Yes	22
		No	18
Collaboration		Innovating on their own	14
		Undertaking innovation activities in collaboration	26

Table 2.5: Summary of final sample of businesses by geographical location

Lender/Investor/Investor association	Frequency
Greater South East	8
London	8
Midlands	5
North	6
Scotland & NI	4
South West	6
Wales	3

Table 2.6: Summary of final sample of financiers by type

Lender/Investor/Investor association	Frequency
Lender	4
Investor / Investor association	6

2.5 Analysis of information collected through qualitative interviews

In order to systematically analyse all the information collected through the qualitative interviews, the study team had developed an analytical framework aligned in alignment with the interview topic guides with businesses and financiers. All data, including all transcripts of interviews were then inputted into NVivo qualitative analysis software and coded against this framework by the individual interviewers. This analysis included Likert scale type input of interviewees' likelihood of applying to each of the hypothetical debt products which offered an opportunity for a discrete choice experiment. Subsequently all interviewers held a day-long interactive analysis session for the interpretation of early findings. This was followed by further thematic analysis of data to draw out key findings, qualitative segmentation of respondents according to characteristics and identification of the most appropriate quotes to exemplify a general sentiment towards some of the findings. Findings were then summarised in a presentation and validated in a workshop with a subset of business and financier participants on 22nd June 2016.

3 Appetite for innovation finance products

This section presents findings from qualitative business and financier interviews. As noted in Section 2, the discussions were with innovative businesses which have been or are pursuing an innovation with a potential to disrupt existing markets. Similarly, the interviews with financiers related questions to specific portfolios of innovative firms which the financier supported. Discussions in these interviews therefore revolved around specific business needs in relation to pursuit of individual innovation / growth strategy. The needs of innovative businesses differ from company to company and change over time. This diversity in the pool of innovative businesses is reflected throughout this section, and in particular in the specific sums of debt finance that companies indicated that they might be likely to pursue. Section 3.1 provides the overall assessment of appetite for new innovation finance products, 3.2 outlines the importance of different product features, 3.3 explores differences by the type of innovator and 3.4 looks at how different types of firm viewed the products.

3.1 Overall appetite for innovation finance products

Overall, there was appetite for new innovation finance products amongst the businesses interviewed. A majority of the interviewed companies indicated that they were likely, very likely or certain to apply for at least one of the hypothetical products discussed. Individual responses of businesses and their overall appetite for products is summarised in Table 3.1 below.

Table 3.1: Summary of the overall appetite for hypothetical innovation finance products

Reaction	Number of businesses indicating
Certain to apply for at least one product	11
At least very likely to apply for at least one product	28
At least likely to apply for at least one product	33
At best unlikely to apply for any product	7
At best very unlikely to apply for any products	5
Certain not to apply for any products	4

Initial individual reactions to the innovation finance products from businesses varied. Some businesses found the products appealing and reacted positively from the outset, commenting on that the products were as a new offering with distinctive advantages over the current available finance for innovation activities. The key appeal identified by participants was that these products might allow them to access finance when they could not currently. A small number of business participants suggested that the appeal of the products related to the fact that they might offer preferable terms to what they were

currently exploring as financing options. There were three major limitations to the generally high levels of potential appetite by the consulted businesses:

- **Debt finance for innovation is of less interest for large enterprises**: These companies often have alternative sources of funding available to them. Such alternative sources include loans from parent companies or from banks with whom they have close relationships. Large enterprises also often possess assets and links to other parts of the business which allow them to cross-subsidise R&D activities. Complex internal arrangements within these organisations as well as their internal governance structures (often international) complicate the processes for applying for new innovation finance products. Lastly, funding an innovation project through debt financing within a large enterprise may pose an internal communication challenge as it may be difficult to explain and justify benefits of this financing model over internal financing. This point is explained in Section 3.4.

- **Debt products and uncertainty may prove difficult to reconcile:** Some businesses showed more negative initial reactions, and drew comparisons between these products and previous non-repayable innovation support. The research design was developed to minimise the extent to which these comparisons led to strategic responses. Nevertheless, participants did still identify concerns that, compared to grants, these products would be less favourable for them.

  Negative reactions to the debt finance products for innovation revolved mainly around the suggestion that debt is not compatible with early stage innovation (referred to by some interviewees as speculative R&D) (this is discussed in greater depth in Section 3.3 below).

  " We would not entertain that idea…, why would you take a loan to do this for speculative R&D? … I would never get this through my shareholders". Business Interview

  Interviewees commonly asked for clarification of what was the adopted definition of innovation in this context as some businesses only consider innovation projects to be early stage 'speculative' R&D. Once participants obtained clarification that innovation for this study meant the broad process of invention and commercialisation of new products, services, processes and business models, some of them changed their attitude from initial negative reaction to stating they would be likely to pursue these financial products.

  Therefore, these businesses indicated that debt finance would be most suitable for a specific range of projects. These would be activities which are not characterised by uncertainty, which relate to products or services in later stages of technology readiness levels (TRLs) which hold some risk but with most technological risks are mitigated.

The financiers who felt they were well placed to comment on the appetite for these products in general, suggested that an innovation debt product along the lines of the hypothetical product would experience demand, in part because the features described were preferable to existing offers, and because they identified a finance gap where some businesses are unable to access finance for innovation on any terms (this second aspect is covered in greater depth in Section 4).

"There will be demand for cheap finance, especially by companies that cannot get loans from banks normally." Investor interview

Financiers however explained that there are a number of factors that will determine the attitude by of firms. The factors listed included practicalities of provision of such products, for example how easy is the process and how quick is the decision and what reporting obligations there will be, but also how the firms get to hear about it and who distributes the product. Financiers also described at length the types of firms/innovators who would be most likely to have a positive attitude towards the hypothetical products. Quotes below exemplify some of these views but specific firm/innovator features are elaborated upon in Sections 3.3 and 3.4.

"Demand will be only from a small group of firms which can plausibly service debt… No firms with technology risks will fall into this category, but that instead these firms could raise equity finance." Financier Interview

"Debt would only be viable for companies with realistic expectation of generating revenue there." Financier Interview

"So clearly if you're going to take on this kind of money it's because you haven't been able to access equity or other form of finance." Financier Interview

"So something like this where there is a proper long term debt finance available would definitely be of interest (to companies) […] they are often averse to taking on equity because they view it as diluting their ownership in the company and that's a very difficult barrier to get over so something like this, would be very attractive (to them)." Financier Interview

- **Balance sheet complications may deter some applicants:** There were concerns from both a subset of companies and financiers about how holding these products might be viewed by future investors. Investors mentioned practical reasons such as that debt providers would normally expect to have an early call on assets in the event of a liquidation, that debt might be a distraction for management away from growth or even that servicing this debt might hold back growth of the company. Companies stated that holding a product such as this may be viewed by investors as an unfamiliar item on the balance sheet which may deter them from looking into investing in their company. This view was however not unanimous – in particular the larger investors stated that if the company presented a coherent story in which

preferable debt financing of innovation was part of, they would not be deterred from further investigation in that specific investment opportunity.

3.2 The importance of different product features

3.2.1 Overview of features

This section outlines findings from research with businesses and financiers testing their views towards specific features of a hypothetical products designed by Ipsos MORI. Table 3.2 below provides an overall summary of importance identified for each feature by participants drawing together the key messages presented throughout this section. A quote by one of the financiers summarises the general sentiment about the set of features that were consulted on:

"Low security for innovation loans would be the real differentiator of such product, companies would find that amazing, the other features just make it a cheaper loan."
Financier Interview

Table 3.2: Summary of importance levels of individual innovation finance product features

Feature	Level of importance	Summary
Sum (60% of the project and total requested)	Low	Generally, participants did not feel strongly about this feature. A small number identified this as an attractive feature and a small number suggested that it was unattractive. A very broad range of amounts was required.
Interest rate	Low	Generally, participants did not feel strongly but some wanted higher subsidy to make it more attractive, others indicated that even market rate was acceptable.
Grace period	Medium-High	Sector specific driver (IT prefer shorter, MedTech and aerospace longer)
Repayment period	Medium-High	Sector specific driver (IT prefer shorter, MedTech longer)
Security	High	Very contentious issue and viewed negatively by micro/some SMEs. Strong views on using IP as collateral.
Practicalities	Medium	Generally, participants accepted that there will be a set of terms that companies will have to comply with when accessing the hypothetical products. Some identified issues in implementation (especially around contingent loans).

Table 3.3 below illustrates the preferences for the alternative hypothetical innovation finance products detailed in Section 2.

Table 3.3: Overall appetite for different innovation finance products expressed by business participants

Indicative likelihood of application	A – core product	B – a longer grace period, but a small irate subsidy	C- a longer grace period, but a higher security requirement	D – repayment dependent on the success of this project, but no interest rate subsidy
Certainly	2	0	0	9
Very Likely	13	7	3	13
Likely	5	12	1	7
Unlikely	8	12	14	4
Very likely	5	2	7	1
Certain not to	7	7	15	6
Total	**40**	**40**	**40**	**40**

Table 3.4 below presents a comparison of the likelihood expressed by participants that they would apply for each product – the count relates to the number of participants who indicated that they would be as (or more) likely to apply for this product as any of the others.

Table 3.4: Number of business participants identifying that they would be equally or more likely to apply for this product compared to the others

Product	Number of Business Participants Indicating Relative Preference for Product
A – core product	19
B – a longer grace period, but a smaller interest rate subsidy	13
C – a longer grace period, but a higher security requirement	8
D – repayment dependent on the success of this project, but no interest rate subsidy	31

3.2.2 Sum

The research gathered perspectives on two aspects of sum as the feature of a new innovation finance product: the absolute sum of debt product likely to be pursued by businesses and the relative size of the loan compared to the total size of the innovation project (60% for all four product variants). This section covers both attributes in turn.

Anticipated scale of requests

Twenty-four of the businesses interviewed were able to identify the potential scale of funding that they might look to access from the hypothetical products consulted on. It is worth noting that these hypothetical projects which the companies may pursue were in some cases relating to the current situation of the company and in other instances businesses referred to a point in future, when their current innovation project might be, in their opinion, suitable for debt finance. This anticipated sum for the debt product varied greatly among business participants. When considering loan requests to cover 60 percent of the cost of the project the smallest to largest amounts mentioned ranged from £20k to £12m. The mean sum identified was £1.1m, the median and the mode were both £300k (three businesses indicated that this is the scale of what they were looking for)[4].

This broad spread of amounts reflected the diversity of innovation projects that business participants were interested in financing, which is a feature of the sampling strategy to capture views of companies of different sizes, geographical spread and sectors.

[4] Note that these calculations have been made based on taking mid-points where participants suggested a range of values in their responses.

When business participants were asked to specify what activities this product would be used to finance, a range of responses were received. Sum requests revolved around projects covering two key areas: late stage R&D (accelerating progression of an innovation in late stages of technology readiness levels) and commercialisation strategies. Namely, at a time where the majority of technology risk is minimal, and the firm is expecting to reach market without reasonable doubt or issue.

Requests for sums less than £100k were frequently made by micro enterprises and focused on a number of activities including commercial business development, late stage R&D where there was a focus on the development of already technically validated technologies, funding business operations to conduct R&D or funding to develop software and (in the case of one business), the development of a consultancy arm to generate a revenue stream. One business suggested that micro firms might request debt to fund capital expenditure proportionally more than salaries. The reason being that micro-entrepreneurs were cited to supply a high amount of discounted labour to their business in any case and would have a preference to finance other aspects of the business.

Sum amounts between £100 and £500k were largely made by micro firms and had a similar focus to smaller projects; to conduct late stage R&D where technology risks have passed and commercial business development. Development activities mentioned by these participants however included the purchase of working capital such as the installation of new pilot production lines, engaging with academics in pursuit of commercial collaborations or conducting tests in a medical environment. Commercial business development was also mentioned frequently with participants looking to fund growth. Key activities highlighted were the hire of sales and marketing talent, new market entry and supporting the transition from a research business into a commercial entity.

Participants looking for between £500k and under £1m were largely small (but not micro) and medium sized companies who wanted to fund late stage R&D activity with a focus on design and prototyping with a view to developing the processes required to manufacturing product innovations at scale. Request of £1m or more were in a minority and looked to support the construction of a new production plant, the development of novel machinery and a long term commercialisation and growth strategy for a novel product range.

Anticipated temporal nature of requests

When businesses described the various activities they might wish to undertake as a result of taking on one of the hypothetical products, a small number also provided an indication of the type of expenditure. In some cases, the loan would be used for capital expenditure where the amount would be needed in full up front, in other cases it would be designated to cover working capital or other types of expenditure in which loan instalments could be staggered.

One business specifically commented that introducing the payments in instalments based around milestones may incentivise increased efforts in ensuring the innovation activity was a success. It was stressed that issuing large sums of money doesn't support effective

project management. A number of firms indicated their knowledge of how existing Innovate UK and other grant funder organisations deliver their funds, namely in a staggered format. It may be the case that businesses inferred that the products discussed will follow a similar structure.

Acceptability of co-financing with these innovation finance products

There was a general acceptance amongst participants that if these innovation finance products required an element of matched funding, it would not appear to materially impact on appetite. The sentiment among businesses as well as financiers consulted within this research that the sum of 60% of project costs would be appropriate/attractive or did not warrant the need to comment.

Business participants stated that covering 60% of the project cost was especially attractive because it was higher than what they were able to secure from existing funding, with some businesses indicating that securing match funding at 50% had proved difficult in the past.

"I think in principal it would be very attractive as long as I am eligible for it… more than 50% with a very cheap loan will always be attractive to investors. And I am pretty sure that in most cases that's more emotional thing than mathematical thing." Business Interview

Many of the businesses interviewed were experienced in accessing existing funding arrangements to support innovation projects. These participants indicated that this model of co-funding is the norm. Those not familiar with existing funding schemes also did not identify this as an issue. A small number of businesses and one of the financiers however stated that the co-funding model may cause an issue either to them or another group of businesses, making the hypothetical products less appealing. The main issue mentioned was whether the businesses would be able to find the remaining 40%, especially considering the small businesses without revenue streams.

"Raising 40% of funding would be a key stumbling block for many businesses." Business Interview

Another issue with the co-funding requirement identified by one of the businesses was a sentiment that while they saw co-funding a grant as an acceptable approach to share risk with the government, they were concerned that these debt products would not offer this form of risk sharing.

"If you've had a grant, the grant may be 50% funded and you've paid 50%. End of it, if the whole thing fails you've paid your share but there's no ongoing consequence. On a loan if the project works then fantastic everybody's happy, but on the loan and particularly a part loan, then you've put your money in, the Government's put the money in, the project failed, you've spent your money and you've got to spend some more now. So having loans for innovation does mitigate against actually addressing any level of risk." Business Interview

Rules about the source of funding for the 40% were often questioned by businesses and financiers indicating that the practical implementation of the financial product would have to be clear about this requirement and potentially provide guidance for applicants. These points are further addressed in Section 5.

"What would be the rules on where would the 40% come from? Equity? Could that be partially grant funded?" Business Interview

3.2.3 Interest rate subsidy

The presence of level of interest rate subsidies appeared to be an issue of low importance relative to other features for the businesses interviewed, and had a generally smaller influence on appetite for innovation finance products than other features. One of the features of the core hypothetical finance product presented to the research participants was an interest rate subsidy of 3%. The majority of businesses who felt they could comment welcomed this as attractive or acceptable.

"3%, people would accept it. It's, interest rate never worries people, unless it's stupid." Business Interview

"I think we could get a loan for 6%, if it was 6% and then a company like ours were getting it at 3%, that would be very good." Business Interview

The notion of a relatively modest importance or focus on the interest rate by business was supported by the discrete choice experiment element of the interviews. By asking business participants to indicate their likelihood of applying for various hypothetical variants of the product it has been possible to gain further insights into the preferences of these organisations (See text Box 3.1 below).

Box 3.1 Interest rate subsidy evidence from the discrete choice experiment

- Product variant with no interest rate subsidy (D) was the most likely to be selected with the majority of businesses stating to be at least likely to apply for it. This product was largely appealing because of the repayment contingency but in discussing this product no participants identified were concerned about not accessing the subsidy as a result of the trade-off between other products.

- Comparisons between the attitudes to product variants B & C offers insight on the relative importance of an interest rate subsidy (product C) and favourable security arrangement (product B). Over half of businesses indicated a higher likelihood for applying for the product with the favourable security arrangements over the one with the interest rate discount. Only two businesses were more likely to do the opposite while just under half were equally likely or unlikely to apply for both products.

- It is important to note however that there were a significant subset of businesses that indicated that they would be more likely to apply for the product with higher interest rate subsidy (A) than the product with a longer grace period (B). While product A and product B had received similar level of positive reception the differentiating factor for selecting one over the other tended to be the need for a shorter/longer grace period rather than the interest rate subsidy. A small number of businesses were more likely to select product B over A and around half were equally likely or unlikely to apply for either product.

The following quote illustrates this point further, typifying how many respondents viewed the interest rate subsidy.

> *"Product B: the five year grace period obviously would be attractive… lower interest rate subsidy wouldn't be a complete deal breaker." Business Interview*

There was a sense from many of the participants that they were not concerned with the interest rate because they were facing a rationing of the overall amount of available funding, rather than challenges associated with its cost.

Financiers supported the general sense that the interest rate may be a low priority feature in determining the overall appetite for innovation finance products for many businesses.

Financiers commented on the level of subsidy with scepticism, questioning whether this feature was necessary, also citing the difficulty of identifying a 'market rate of interest on individual basis' against which to consider this aspect.

Some businesses stated that they would be prepared to pay a higher level of interest if the project resulted in high growth of the company. These firms would therefore not only be prepared to differentiate between success and failure but the level of success achieved.

> *"Maybe the interest rate would be an area where there could be some flexibility because, if the project is successful one would expect the company valuation to dramatically increase and the company's revenue to dramatically increase." Business Interview*

A second explanation for this limited interest in the interest rate subsidy related to their expectations of what market rates might be. Some of the businesses commenting positively on interest rate subsidy provided an explanation that this content with interest rates was due to the current climate of low interest rates overall.

> *"3% in terms of the interest rate, that could be quite attractive at the moment while interest rates are actually relatively low. Obviously if they were to go up and spike in the future then that may become less attractive." Business Interview*

> *"I think to be honest given the current economic climate the interest rate isn't, isn't the major issue, because the interest rates are quite, well very low at the moment." Business Interview*

Two business participants expressed a different position however, identifying issues with the levels of interest rate subsidy discussed. One stated that the subsidy would need to be significantly higher to make a difference in their decision-making and the other suggested it was appropriate for the government to charge interest on innovation projects.

Participants in a number of cases asked for explanation of what the benchmark rate would be with a view that this would determine their attitude towards these products. The volume

of questions on this aspect suggests that participants may not have fully appreciated the likely shape of the product, or what the final interest rate they would face might have been.

"(The interest rate subsidy is) very good but obviously depends on who you are comparing against. If you tell me that the 3% rebate is against Wonga, that's probably not so good." Business Interview

In other cases, the businesses were clear what interest rate they would be able to secure. This was specified by a small number of business participants identifying rates of 6%, 8%, 12% and one in the region of 20%.

Some participants questioned the practicality of the delivery of a product with this feature and one financier voiced concern that if a private lender was to administer this product, they may 'absorb' some of the subsidy as part of the final product.

3.2.4 Grace period

The grace period was almost unanimously identified as a very important feature – a key element that differentiates these products and is missing in the current market – indicating that this feature might materially influence the appeal of these products.

"The capital holiday is good and necessary [to attract businesses]" Financier Interview

The views of businesses participants appeared to strongly depend on the extent to which they felt that alternative grace period would align with their ability to complete their particular innovation project and bring the innovation to market. This market horizon aspect is discussed in greater depth in Section 3.3.3.

A minority of participants identified that the grace period was of limited interest to them. One stated that it would put higher pressure on cash flow later and while another said that the timeframes were too short so they did not make much difference to them.

"Although I like the idea of the grace period, as a small business my cashflow projection runs for a few years…so, the grace period is probably something that I'd be less bothered about." Business Interview

Some businesses that commented on the length of the grace period suggested two years would be sufficient for their projects to start generating revenues to service the debt.

"That two-year grace period should be able to get over the issues I've got with finding the market for it. So, yeah, it all looks, it all looks very good to me." Business Interview

"I'd say two years is realistic for my projects." Business Interview

Others that commented in detail on this feature indicated that the length of the grace period needs to be longer than two years.

Two years is not a long time really if you're in a small, high risk activity to start to pay money back… MedTech companies tend to take five to ten years. Business Interview

A number of business participants who commented in particular on the length of the grace period stated that two years may be too long.

"I think the two years grace period is already really generous, and moving up to five years, if anything that would make things harder to raise investment, because you've always got this overhanging for the second, third and fourth rounds, over a five year period. So it'll always be looked at as a debt eventually that's got to be repaid, why can't you repay it now to clean it up?" Business interview

One business stipulated that an ideal grace period would end at the breakeven point, though in reality the issues implementing this were accepted and using the expected breakeven point was offered as an alternative. This point further heightens the appetite for tailored loan products for this group of firms.

The evidence from the discrete choice experiment component of the interview indicates that some business participants were satisfied with a two-year grace period. This was particularly the case where if they are confident that the project will result in revenue generation within that timeframe. (See text box overleaf).

Box 3.2 Grace period evidence from the discrete choice experiment

- Products with a two-year grace period (A and D) were the most favoured in general with approximately half and a majority of businesses stating they would be (at least) likely to apply for these products respectively. This indicates some satisfaction with this level of grace period.
- Products with a five-year grace period (B and C) were less favoured in general with a small number of businesses stating they would be (at least) likely to apply respectively. This indicates that the extended grace period is not sufficient to compensate for the other changes associated with these products (in particular the higher security requirements of product C).
- When considering the relative interest in the product with a longer grace period (B) and the product with a larger interest rate subsidy (A), a minority of businesses indicated that they would be more likely to apply for product B. A small number of businesses indicated the contrary reverse was the case. This confirms majority view to apply for the product with two-year grace period and obtain a higher interest rate subsidy.

3.2.5 Repayment period

Total length of repayment periods

The overall timeframe for the loan was not included as a variable for the discrete choice experiment[5], so the research has been able to identify less comparative data on the relative extent to which this aspect is likely to influence the appetite for innovation finance products. However, the ten-year period described within all hypothetical innovation finance products was viewed by participants as very generous. Some businesses who commented on the length of the repayment period found the eight-year period 'reasonable' or 'appealing' as the length of repayment period is directly linked to the financial amount of individual repayments.

Other interviewees found the eight-year repayment period too long, stating that they could handle it and some even preferring a much shorter repayment period. One SME explained that companies of similar size often face uncertainty in timescales of eight years and companies do not want to keep debt on their balance sheet if they do not need to.

> *"Extremely generous, it almost feels too generous, because how many start-ups last eight to ten years? They all get acquired or some other exit events occurs, yeah? Ten years is a huge timescale". Business Interview (IT)*

Both businesses and financiers expressed a particular interest in the flexibility of the repayment period; the option to repay early if they secured other funding, and scope to re-negotiate the terms of the loan. This aspect is explored in depth in Section 4.

Repayment contingent on success

As noted in Section 3.1, the repayment period being contingent on success tended to be the most preferred option by businesses. The evidence from the discrete choice experiment is used to substantiate these findings (See text box below).

Box 3.4 Repayment contingency evidence from the discrete choice experiment

- A large majority of businesses consulted identified that they would be (at least) likely to apply for a product with a contingent repayment feature (D).
- A large proportion of businesses identified that they would be either most likely or equally as likely to apply for the product with the contingent repayment feature (D) as the alternatives.
- A small number of businesses stated they would be certain to apply for this product (D).

This feature appealed strongly to business participants because it offered them the

[5] The discrete choice experiment did vary the proportion of the time that would represent the repayment period. However, because the overall timeframe for the repayment of the loan did not vary between options here, other effects are likely to have dominated here.

prospect of sharing the risks involved with their projects with the government. Some participants stressed that this was appropriate because of the wider benefits from their innovations that they would not capture (tax revenues and some user benefits in particular).

Those who could see practical application of product variant D (with the repayment as contingent on success of the project) expanded on the possible success criteria which could be used to determine the requirement for loan repayment. Ideas for success terms (in order of frequency mentioned) include:

- Commercial success – Break even or profit generation based on projected sales
- Product/Service brought to market and achieving a specific level of sales
- Entering a new market
- Technological and regulatory hurdles overcome – E.g. achieving CE approval and meeting regulatory requirements
- Technology proven at a specific performance
- Individual project by project basis – Success terms cannot be generalised
- Demonstrated efforts to succeed in innovation project

Some participants voiced strong scepticism of the practical delivery of innovation finance products with a contingent repayment feature. Concerns were raised about how feasible it would be for a managing authority to track metrics such as those identified above – it was suggested that the private sector is highly innovative in finding ways to avoid such constraints. Further still, in the event of failure, the ability for governments to clawback funds or bankrupt firms without a significant public backlash was questioned.

An additional set of concerns were raised by participants about the potential for this feature to influence the incentives faced by the business. There was a suggestion that this type of product might materially alter the attitude towards risk of a business; removing the penalties for failure might encourage a business to engage in riskier behaviours. The fear held by multiple participants was that this could impact on behaviours by creating an ‘incentive to take unnecessary risks’ or remove any commitment to the success of innovation activity financed.

3.2.6 Limited security requirements

The security requirement was seen by many businesses and financiers as the key differentiator for the scheme and a highly important feature that might determine the appeal of the products from their perspective. Micro sized companies stressed that lower security requirements makes a difference, as otherwise they are not able to secure a loan.

The need to provide security to cover the full sum of a loan seemed to be a substantial deterrent for a large share of businesses interviewed. The evidence from the discrete choice experiment is used to substantiate this finding (See text box below).

Box 3.5 Security requirement evidence from the discrete choice experiment

- A very small minority of businesses indicated that they would be (at least) likely to apply for a product where the security requirement was equal to the sum borrowed (C).
- Just over half of businesses indicated that they would be more likely to apply for a product characterised by a lower security requirement (B) than one characterised by a greater interest rate subsidy (C). Two businesses stated the reverse, in that would be more likely to apply for C over B. Just under half of businesses equally likely to apply for products characterised by either of these features.

Some participants offered views on how much collateral and of what kind of assets they could and would be willing to offer. This ranged from nothing to the full amount, in one case a participant indicated that the collateral should be higher than the size of the loan. In some cases, the extent to which a firm was able to silo activities to safeguard other aspects of the business in the event of failure.

Sections below explore the full spectra of collateral offered. These views varied based on the extent to which businesses identified that they were in a position to offer collateral, and is therefore analysed from this perspective below.

Strong appeal for products with a reduced security requirement from businesses for which collateral was a current barrier to accessing finance

A key driver for interest in this feature amongst business participants was the potential that it would allow those that could not offer any or could offer only very little collateral a way to access finance for their innovation projects. These tended to be micro size companies as they indicated they had very little beyond some equipment and intellectual property that could be seen as tradeable assets. One business referenced that the issues surrounding collateral requirement were in some ways related to the innovation activity that is to be funded; the construction of a building or piece of machinery enables the end result to be used as collateral whereas financing a sales force does not product a form of security that is as obvious.

The potential use of shareholder and director personal guarantees was discussed by several business participants but significant concerns were expressed. A number of other businesses indicated that this feature would appeal even though they had assets that could be used for security. Some business participants expressed that all of their potential assets were already fully leveraged, either through charges on assets or broader guarantees. One business interviewee explained that already having personal guarantees tied up in the company prevented further offering of collateral.

Larger companies identified an issue with obtaining permission from shareholders for collateral for any form of security.

“The one concern I would have with this concept is for, particularly for an entity like us, that if we’re taking on a liability, creating a liability, we would need to get that permission to do that from our owners, and I suspect that could take quite a long time, particularly if this was a sizeable amount.” Business Interview (Large enterprise)

Interest in the idea of using Intellectual Property (IP) as collateral

Of the companies with intangible assets, some had a positive view about using them as collateral, identifying this possibility as an opportunity.

“If we fail, not having the IP makes no difference… but investors are very picky and there’s no way, I would say, they would be able to invest knowing that 60% is secured by means of the IP.” Business Interview

Other businesses in this category (businesses possessing IP) identified issues with using IP as collateral for these hypothetical debt products. The issues identified were both short and long term:

- That their IP is difficult to value for use as collateral – valuations of intellectual property are not straightforward and easily performed without a special skillset, or expensive business support services.

  “In order for IP to be [used as] collateral […] it needs to have a value […] and valued independently […] but, if you had IP which has a value, a…, you’re not going to run into problems with funding anyway.” Business Interview (Micro size company)

- Despite interest in the idea of using IP as collateral to access finding, there was concern that existing investors would be reluctant to let a new financier take a charge on the IP. They explained that existing IP may have been a costly and lengthy process and that using it as a security for what may be viewed as a relatively small investment in the business would not be desirable.

  “I think that there’s no way that we would [use IP as collateral], and our shareholders would agree, to put the IP forward at risk to a relatively small loan given the rest of the investment’s coming.” Business Interview (Micro size company)

- There was apprehension about how the government might manage the assets, how it could exploit their IP in the event of a default, and a belief from one participant in particular that government should not be interfering with companies’ IP.

  “If the Government is lending money and then we all go belly up and I go right, there you go, there's the intellectual property that's valueless to them. They don’t have a mechanism for dealing with it.” Business Interview (Micro size company)

"Using IP or even a proportion of IP is unacceptable. Anything that touches the flexibility of the company to grow and to attain investment means that any investor will just go, oh it's too complicated and I don't want to go there. So companies require 100% ownership of their IP in a clear cut way otherwise they just don't have anything. If you share IP, you might as well just not have it." Business Interview (Micro size company)

- Concern was expressed that the requirement for any substantial collateral would result in exclusion of all companies that wish to use their IP to attract investors at later stage. Some of the companies that shared this view explained that the companies who value their IP and would not be willing to use it as security are those with high growth potential and that the instrument would be therefore used by 'second rate innovators'.

The idea of a reduced security requirement was not of interest to all firms

A small number of businesses stated that they would be willing to put up collateral in full and would expect government to require this from any business to protect taxpayer's money.

"Now one of the things in terms of, this is looking at it from another point of view, because I guess this is going to be taxpayers' money you're going into there, you want the security to be at least equal to the size of the loan otherwise it becomes very risky." Business Interview (Large enterprise)

3.2.7 Practicalities

Participants in general understood and agreed that practicalities proposed for the hypothetical products were appropriate given the context of support and would not materially influence their appetite. These included the idea that the loan could be made to only a single company, the need to demonstrate the potential value of their innovation project and that the project would not likely receive funding otherwise. They also voiced confidence that appropriate applicants could easily demonstrate these. For example, the description of the market potential of their innovation projects is a requirement that many of them had to meet when applying for Innovate UK funding. Most noted that they would not find it problematic to evidence barriers to accessing alternative finance for innovation projects, however some noted that not being able to fund some projects is a choice of not gaining more equity funding.

"I think proving that you can't get finance is fine. I always worry, and it's something that I come across quite often." Business Interview

Participants generally identified few issues with the idea of the loan being for single company projects. It was suggested by participants that this was because the focus on a single company fitted with other features of the hypothetical product. The two or five-year

window before repayments would commence was seen as steering towards projects that had a clear path to market, and were driven by a single firm rather than early stage R&D where collaborative projects are more common. Some participants however, particularly those from smaller companies, indicated that they would find the product more attractive if it could be shared with other companies, particularly those who were part of the same supply chain. This aspect was discussed further at the findings validation workshop, where it was suggested that businesses that were looking to collaborate who wanted to access these products might be able to form a joint venture or cascade contract requirements to apply, rather than necessarily submit a joint application.

Businesses and financiers in general understood and agreed that there need to be checks in place to ensure that the debt products are provided to the 'right companies' who would use the finance for supporting innovation activities.

In contrast, some participants suggested that the favourable terms of the products discussed in comparison to private products would attract applicants that are able to gain finance elsewhere. The products discussed were frequently described as 'cheap debt' and participants said it would be difficult in practice to identify which companies the product should be provided to, to induce additionality.

Additionally, one financier stated the importance of conducting a thorough market assessment in light of the introduction of new goods or services. Ensuring that the value of the opportunity is reasonably well understood was suggested to minimise funding projects that accrue small or unsustainable economic benefits.

3.3 Differing levels of appetite between types of innovation

This sub-section looks to assess participant appetite for new innovation finance products based on a set of innovation characteristics. This explores whether appetite for innovation finance products varies with these characteristics and if so, for whom, and why.

3.3.1 Type of innovation

From the interviews conducted, there appears to be little pattern in the extent to which businesses pursuing either a new product, service, process or business model innovation reported that they would be likely to apply for these hypothetical products in general.

When considering the differences between incremental and radical innovators, the majority of participants who identified as currently conducting incremental innovation expressed that they would be less likely to apply for any of the innovation finance products discussed. However, all but one of the businesses who were engaged in incremental innovation were also large firms, which tended to show a low preference overall.

3.3.2 Innovation intensity

A comparison of participants that conduct innovation projects at a low or high intensity reveals that there is appetite for at least one of the products discussed from both groups,

with the repayment contingency feature attracting the most positive responses and a high security requirement equal to the size of the loan as the least appealing feature.

However, high intensity innovators showed that they were less likely to apply for products without a contingency feature or that offered an interest subsidy; it also shows to some extent an ambivalence towards a grace period of any length. That said, it should be reiterated that there were only a small number of participants that associated with being a low intensity innovator and they do not follow any specific pattern in any of their traits. As such, these comparisons should be taken with caution.

Furthermore, interviews with serial innovators indicated that pursuing development of several products or services or just one innovation did not have a direct link to appetite for the debt product. Those who felt they were well placed to comment stated that the appetite would entirely revolve around the stage of development of an innovation – be it the only one or one of the many in R&D pipeline.

3.3.3 Market horizons

A discussion of products in the context of the closeness of innovations to market revealed that there was appetite from business for the innovation finance products across all stages of innovation development including those with innovations that were some way from market. However, firms that had innovations in an early stage expressed a specific interest in a repayment contingency feature. These companies explained that their projects are surrounded by a high level of uncertainty and therefore they had a higher preference for hypothetical products, including repayment contingent on project success.

"I think [a product with repayment contingency] could be very attractive but only early on. The critical thing for us would be how early it would become available to us. If it's available at the R&D and early commercialisation phase, it would be extremely helpful." Business interview

In a similar way to the repayment contingency, several businesses identified that a longer grace period would need to be aligned with the market horizon – the further away from the market the technology is, the longer the grace period needs to be. That said, there was a consensus that debt is not compatible with uncertainty and therefore not viable for financing research and development associated with early Technology Readiness Levels (TRLs). This notion was further stipulated by some financiers consulted within this project who indicated that when the technological uncertainty and risks are present, it would be unlikely that a business could predict when it will be able to generate revenue from the product.

"I think [the company] would have to be revenue generating because […] the credit losses involved would be significant so I think it's got to be companies that have shown that they can sell." Financer interview

"If I was an entrepreneur I would only take on the sum, a debt that I had to repay when I was absolutely sure I didn't have another choice because the point about equity OK you're giving away your company but you don't repay the loan, there's no repayment you never if it fails, it fails we bear the risks of that." Financier interview

Most business participants however felt that there was a niche in the innovation process to be filled by debt products. This niche was defined as financing innovation for accelerating late TRL development and scaling up production once the business is confident about commercialisation and potential market success. As discussed in detail in Section 3.2, it is important to note that some of the businesses that indicated that they would be likely to apply for a particular hypothetical innovation finance product indicated that their project would need to develop to some extent further before this could happen. Only one participant had an opposing view, identifying this kind of instrument for early stage research where commercial debt sources are not available:

"So yeah scaling up is fine, […] without some element of technical risk, but the main risk is the commercial risk and have I got a product that I can manufacture at a competitive price and sell. And then that would sit quite nicely."
Business interview

"We're struggling to line up debt financing for our [early stage R&D] projects because we haven't found debt providers that are really interested in taking any sort of development risk. […] If this product were available right now, we'd be all over it. […] I think there's certainly a gap there that something like [this product] would fill."
Business interview

The financiers interviewed were generally less positive about the use of the various debt products discussed than business participants. Several believed strongly that debt products could only be useful when the innovation has been validated and proven and commercialisation is starting to occur, referencing a TRL of six or higher, with some of the view that debt would be appropriate for capital investments in equipment. This point was reiterated strongly at the funding validation workshop, with participants suggesting that it was also important that these products didn't appear to be encouraging businesses to take on debt when their products are too far from market, or a high level of uncertainty persists.

"One of our old portfolio companies […] whenever it undertook a new project, there was significant amounts of capital expenditure involved in it, something like [a debt based product] would be ideal for them." Financier interview

During the validation workshop several financiers reflected on what innovations might be most suitable for the hypothetical products discussed. It was suggested that innovations that had already received Innovate UK grants and had successfully invested these to develop their innovation might be particularly suitable as they might be closer to market than other innovations. One participant at the validation workshop also noted that whether

a company had single or multiple innovations in the pipeline did not affect appetite for this type of finance – what matters is the stage of development of these individual innovations.

3.3.4 Previous challenges with access to finance to support innovation

This subsection looks to distinguish between participants that expressed that they have faced particular issues with accessing or sustaining innovation project finance and those that have not. There were many commonalities between these groups. Both show little appetite for products with a high security requirement equal to the size of the loan and a high grace period and a large appetite for a product with a repayment contingency feature.

However, all participants for whom we identified evidence that they had faced particular barriers to accessing finance indicated a high likelihood to apply for at least one of the products when compared with those that have not faced difficulty in gaining finance. Further still, while both groups displayed an interest in a repayment contingency appetite is much stronger for companies that have had trouble gaining access to innovation finance. It should be noted that companies that did not display evidence that they had experienced challenges assessing finance include almost all large firms (which as discussed above had a limited appetite for the hypothetical products). Further still, over half of the participants that have not experienced issues were sourced from accelerator or VC alumni or PATSTAT sources; these companies expressed no difficulty in using private markets to access innovation finance.

3.3.5 Collaboration

The interviews explored the importance of collaboration in innovation for each business interviewed[6]. Overall, there was little difference between the expression of appetite for the innovation finance products between innovators that were being developed in a collaborative and non-collaborative fashion.

3.4 Firm Features

Complementing the focus on innovations in Section 3.3 this sub-section explores the characteristics of the firms interviewed, and whether differences in these characteristics were frequently accompanied by differing levels of appetite for innovation finance products.

3.4.1 Size

When analysing participant responses by firm size it was apparent that large companies exhibited a very modest appetite for any of the products discussed. Only two of the seven large businesses interviewed indicated some preferences towards a product (this product

[6] In this context a company is deemed collaborative if it predominately completed innovation projects with an external commercial or academic partner; the majority of participants work collaboratively on current innovation project work.

included a repayment contingency). One interviewee suggested this was because of the firm's ability to share risk with the government.

"The government is giving you this loan but you're both sharing the risk and that if it doesn't' work […] it's not the end of the business that's [… appealing]." Business interview (Large enterprise)

Participants from large firms suggested that there was little need for this type of finance product because of alternative sources of funding available to them: loans from parent companies, good, existing relationships with banks, assets in other parts of the business and the ability to cross-subsidise innovation from other parts of the business.

"Any profit we make as a company is given to the Trust and then they redistribute it and some of that goes into research programmes." Business Interview (Large enterprise)

The complex internal arrangements of larger firm's internal governance structures (often international) complicate the processes that would be involved in seeking these types of product.

"Any requests for approval would go all the way back through our business unit management, which is in Germany, through to our corporate management which is in the US and anything where there is a loan followed by repayments, I can imagine just being very, very difficult to get any support for."
Business Interview (Large enterprise)

Finally, it was suggested that it is often difficult to communicate and justify the use of a debt product such as those discussed with executives of financial managers:

"We don't have the authority or we're not empowered to go and undertake our own loans, everything's done centrally through the treasury function." Business Interview (Large enterprise)

However, there was a strong appetite for at least one of the products discussed among a majority of participants from both micro (businesses with fewer than ten employees) as well as small and medium sized enterprises (business with fewer than 250 employees). Though many of these firms identified that even at later stages of development, debt is rarely available to them for innovation projects.

Some small firms felt that debt innovation finance products might be more suited to slightly larger firms with existing products or services and cash flow who they thought would utilise this product as cheap debt:

"[A] product like this is going to appeal to reasonably large companies, so companies with good balance sheets, a good cash flow and actually what you have just described is […] cheap debt. So they'd probably jump at it." Business Interview (Small enterprise)

3.4.2 Stage of development

Businesses that were in early stages of development, defined as years in operation in this instance, suggested that the products appeared to have been well tailored to their needs:

"Loans simply were not an option for us. […] Nobody would look at a brand new company in a high tech area […] where there is no market data because it's a brand new innovation. […] No bank manager is going to […] offer a loan to a company like ours." Business Interview (Early stage enterprise)

However, overall, the stage of development of a business was unlikely to influence the likelihood of participants choosing to apply for one of the products discussed[7]. Although, several participants from late stage firms showed a strong appetite for a debt product with a longer grace period (at the cost of a lower interest rate subsidy) when compared with early stage firm responses. These companies were more likely to have multiple products with revenues and therefore may be less sensitive to taking on additional risk and uncertainty because of an ability to cross subsidise between products (i.e. they would be likely to apply for finance products without the contingency of repayment based on success).

"But if [interest rates] start to rise that could be a bit of a problem, but the present condition, it's probably not too bad." Business Interview (Later stage enterprise)

"A five-year grace does give you much more time to make sure you get market potential from [the innovation]." Business Interview (Later stage enterprise)

That said, a small number felt that innovation projects were designed and financed independently from other commercial offerings of a business and the outcomes of these were less relevant to the means in which new innovation is financed.

3.4.3 Sector

An analysis of participant appetite by sector category defined by Innovate UK and by broad SIC code category was completed.

Innovate UK Sectors

Participants that identified with being part of the manufacturing and materials sector expressed the smallest of appetite for all features of the products discussed. Of the participants representing this sector in the interviews, a large majority are large firms. Almost all emerging and enabling market participants expressed a strong inclination to apply for products with varying grace periods and at least some level of interest rate subsidy. Infrastructure systems participants were shown to be slightly more likely to apply

[7] It is important to note that only one pre-startup participant took part in the interviews. See Section 2 for a full breakdown.

for a product with a repayments contingency at the cost of an interest rate subsidy when compared with other sectors.

Secondly, businesses in the hardware and product innovation sector responded particularly positively to the option of having the option of flexible repayment terms, especially if funding operational risk.

"Having a loan that is potentially repayable over eight years initially is very helpful […] but I think we would hope to be in a position where […] we'd potentially look to pay it back over four years. But that's not to say that it's not a problem, but it's something that we'd want to have a look at and we'd like to be able to negotiate down, […] saving us money in the long run." Business Interview (Manufacturing & materials enterprise)

SIC Code Sectors

Overall all sectors showed broadly comparable attitudes towards the hypothetical products and features with some subtle differences. Information and communication firms expressed a strong appetite for short grace periods and larger interest rate subsidies; all of these participants represented firms that are primarily involved in the development of software products. These companies also indicated that a shorter repayment period would also suit the shorter development cycles experienced in software.

"I would say the repayment is too long. I would have thought you'd say a repayment of under two years." Business Interview (Information and communication enterprise)

Health and life sciences enterprises (specifically medtech and biotech industries), built environment and aerospace businesses unanimously preferred a longer grace period, some of these businesses suggested a 3-4 years grace period even prior to introduction of product variants with a 5 year grace period by the interviewer. It was suggested that this may reflect the longer development cycles cited to be as standard in these sectors.

"In healthcare you expect, if you've got a good product you expect peak sales at Year 5, and I think there's an awful lot of other companies with peak sales and not at Year 5 […] so a grace period of five years would be good in healthcare" Business Interview (Medtech enterprise)

"So we are looking at plan periods of two to three years before we start to earn any revenue from a new product that we've got to invest and so a grace period would enable us to cross that bridge more effectively. You know, three months isn't going to make a difference. You have got to be getting into two, three, four years to really make a significant difference." Business Interview (Automotive

3.4.4 Market reach

Of the participants that already have customers or clients at the international level, a large majority exhibited a stronger likelihood to apply for a product with a longer grace period at the cost of a smaller interest rate subsidy.

3.4.5 Firm location

An analysis of appetite by location of the businesses reveals that by and large appetite for product features follows the trends identified in the overall appetite of firms. However, a number of interesting nuances do arise. First there was zero appetite among participants for a product with a longer grace period at the expense of a higher security collateral from businesses located in London, the Midlands, Scotland or Northern Ireland. This indicates that business participants from these regions are collateral constrained. Additionally, the majority of Northern companies were very positive about a product with a longer grace period at the expense of a smaller interest rate subsidy; the majority of these are micro businesses that trade internationally and conduct R&D frequently.

The investors that were interviewed tended to indicate that London and the South East were reasonably well equipped regions to provide private finance. This contrasts to some extent with at least some appetite for the products discussed from these regions, suggesting that there are other barriers to private finance in these areas; this point is built upon further in Section 4.

3.4.6 Firm's previous innovation finance profile

The majority of innovative businesses consulted within this research had no previous experience with of using debt financing. Reasons for this were numerous:

- Companies did not feel the necessity, as their financing needs were fulfilled by internal financing, equity financing or grants (or a combination of these)
- Companies were in touch with banks but their projects were perceived to be too risky by banks.
- Companies thought it was inappropriate or not possible to secure debt financing at this early stage of development

About a quarter of companies we spoke to had some experience of using debt financing, however, a half of them stated that the commercial loans were for capital expenditure or financing of buildings. The remaining examples of companies with loans included:

- A company that took out a loan for running expenses of the business, secured over personal guarantees.
- A company that secured a loan from its directors and convinced a bank manager to provide them with a loan (regional bank)
- A company that secured 1/3 of its funding from loans from investors
- A company benefiting from the Enterprise Finance Guarantee scheme
- A company with debt funding from a debt funding platform

- A company that took a loan from a university offered to students, with the intention of getting businesses off the ground

All companies with previous debt funding experience were likely to apply for at least one of the hypothetical debt innovation finance products.

4 Potential market impacts

Participants offered a range of perspectives on the potential market impact that they believe would be associated with the introduction of the hypothetical innovation finance products discussed through the interview. These fell broadly into two groups: short term effects relating to the potential for these new products to crowd out existing finance for innovation, and longer term effects relating to the extent to which the products would either help to leverage in or deter further investment in individual business.

4.1 Potential implications for recipient firms, in the short-term

A number of research participants identified a risk that, even though they believed there were significant market gaps in the provision of finance for innovation, there is scope for the products being discussed through the interviews to compete with existing innovation finance options.

4.1.1 Significant finance gaps identified by participants

All financiers interviewed indicated that they were aware of a significant group of economically viable innovative projects that the market is not currently providing finance for. The following specific gaps were identified by participants in the innovation finance landscape:

- **Valley of death finance** – Several participants suggested that a particular innovation finance gap for businesses existed post proof-of-concept stage, but before revenue generation. This is often described in other research as a ‘valley of death’ issue. Participants suggested that this gap was characterised by high risk projects and nascent and highly uncertain technology; many felt that debt products were not a viable solution at such an early stage in the innovation process, as discussed in Section 3.3.

  “[The gap in finance is at] the level where you’ve got a bright idea, you can demonstrate to a certain degree why it might be a major money spinner but it is at the stage where it’s really, really uncertain […], so risky that big business, banks aren’t going to offer their money. So […] that’s the gap that we’ve felt.” Business Interview

- One participant in particular felt that there was a reluctance amongst early stage investors, and business angels in particular, to invest in radically disruptive innovations:

  “Too much of the early stage is left to angel investment and I think it has gravitated towards businesses which aren’t so disruptive and aren’t such hard technology.” Financier Interview

- **A gap between business angel investment and venture capital** – Several financiers perceived that there are significant amounts of small scale funding available from angel investors to start a company, typically in amounts from £40k to £100k, (but potentially as small as £10k) and up to £500k. This is however inconsistent with the broad range of project sizes that the innovative businesses interviewed stated that they would be prepared to apply for debt finance. Financiers further stressed that venture capital funding is available for strong projects looking for amounts in excess of £1.5m. However, because of the fixed costs per investment faced by venture capitalists (consisting in particular of research effort from VC staff), there is a perceived gap between the small sums that angel investors can offer, and the large sums available from venture capitalists.

- While financiers believed equity finance of this magnitude to be in reasonable supply some businesses stated that they struggled to gain finance to fund innovation projects in this region. This difference in beliefs about the existing finance landscape may reflect a number of factors including the existence of asymmetric information about the funding opportunities available or the disinterest in taking on equity by firms because of a desire to maintain firm control or not to further dilute existing investor shares.

- Several financiers ventured the view that companies within this category have difficulty securing funding, or at least securing the full amount they require, from risk-averse commercial banks in the post-Basel environment. It was suggested that, at the very least, any debt that is available from this source will need to be heavily collateralised:

  - *"What we're seeing is that when they go to their high street bank, to ask for that finance the response is, even if they've got a well worked project or an idea, the response is generally yeah, but we're not going to lend you the amount that you want, you came to us asking for £7M we'll lend you £3M. You wanted £15M we'll lend you £5M, and that £3M or £5M needs to be collateralised because as a bank we've only got a limited appetite for lending to companies of your size and we want it to be secure." Financier Interview*

- **Geographic gaps** – Several financiers indicated that while there was a good availability of funding for innovation in the South East of England and London, the landscape in other parts of the country was more challenging.

  "The challenge is the majority of angel and early stage investment money is still down here in London and the South East and therefore across the country it's still much more challenging to find" Financier Interview

  It is important to note that the majority of financiers interviewed were located either in London or in southern regions of the UK. As such, this may have skewed responses to reflect this point.

- **Gaps in particular sectors** – Several participants suggested that the availability of finance for innovation varied significantly between different sectors. Some

suggested that while new funding opportunities and crowdfunding in particular had helped to plug innovation finance gaps in some consumer market facing sectors (often mobile apps but also more traditional catering and food businesses), gaps remained in what were less 'sexy' sectors (technologies less likely to attract financing though crowdfunding platforms, for example a new innovation in agriculture). This point was supported by businesses interviews. Businesses that undertook innovation activity that wasn't consumer centric or not openly in the public domain cited that the finance products discussed would be of interest given their relative inability to access the aforementioned funding tools. However, one participant in particular stressed that some of the crowdfunding platforms that they have experience with mitigate this issue by placing a greater emphasis on the quality of the business that is seeking finance, rather than their products.

- **Missing networks** – One participant identified a concern that in their sector there was an abundance of funding for firms that were well-networked to one of the key universities with venture funds to support the commercialisation of innovations. However, firms without any connections to these institutions were struggling to access finance.

- **Return expectations** – An alternative type of barrier was identified by one participant in particular, that many entrepreneurs had unrealistically high expectations about the returns from their innovation projects. This was seen as presenting a barrier to raising finance, because it would be difficult for parties to agree.

- **Equity and debt funding gaps identified –** In discussing these gaps financiers tended to agree that there would be scope for both debt and equity finance products targeting innovation to contribute to plugging these innovation funding gaps, of which a number were identified. For example, early stage institutional equity finance was cited to be lacking by one financier who suggested that this space was left largely to angels who don't have sufficient time or expertise to operate in this space independently. Adding to this, another financier also identified that some promising small innovative enterprises struggle to gain access to equity because of the large size of existing funds that have an expectation to generate a considerable return. SMEs with proven innovations looking for debt to finance growth in the region of £5-10m were also cited to as struggling with accessing debt; a stage approximately before VC equity and after rounds of angel investment.

These perceptions identified by research participants are broadly in line with existing research which has identified a set of similar innovation finance gaps[8]. The presence of these gaps offers scope for the introduction of new innovation finance products without crowding out existing provision.

[8] Bravo Biosca et al. (2014) Financing Business Innovation - A Review of External Sources of Funding for Innovative Businesses and Public Policies to Support Them

4.1.2 Differentiation between existing provision and the hypothetical offers

Both businesses and financier research participants indicated that the potentially lower than grant value security requirement and the long term nature of lending were key factors that made these products unlike existing products available on the market. Participants also identified a number of differentiating factors that together imply that the products being consulted on might not be expected to directly compete with existing offers:

- Many suggestions that there are limited other available debt options available to them. Several suggested that in particular their own banks would not offer them debt for innovation projects.

“Companies involved in innovation are frequently startups. They’re frequently looking to expand and spend money before they have any revenue or before they have any profit, so they have negative cash flow. They need to put money out before they get any money in, if that makes sense…the risk for many innovation companies, for a bank, is too high because there’s no predictability of repayments”. Financier Interview

“There is no real market in mezzanine debt for smaller technology companies” Financier Interview

- Some early-stage equity investors consulted through the research suggested that the focus on debt finance of the hypothetical products would help to differentiate these products from what they offer and could ensure that they do not compete. It was suggested that since debt products would only be suitable for businesses which were approaching the market (see discussion above in Section 3) and had a reasonable expectation to soon be able to generate revenues, this would represent a different market to that targeted by early stage equity investors. In contrast these investors are typically targeting business with high levels of technological risk and uncertainty.

4.1.3 Fears of crowding out existing private sector finance for innovation

Despite these differentiating factors, several participants identified particular concerns that the products being discussed through the interviews may to some extent compete with the finance they offer to support innovation finance, as well as that from other providers.

“My biggest concern would be crowding out. By the government doing that it crowds out private sector equity providers, I guess like ourselves, we do, we’d view that as competitive, a competitive threat and is it the government’s role to be taking stakes in companies?” Financier Interview

“Whether you’ve got that actual company, or a sole trader, or a small partnership or whatever, folks who’ve got plans, aspirations and are trying to get the next step up but just, they’ve maxed out their own credit card, they can’t re-mortgage the house any further, how will I be able to do this thing that I want to do…. I think there’s

absolutely a role for Government to play there and I think it would be hugely constructive. The danger is, the Government sets up a scheme and the people who run the scheme say Christ this is a bit like hard work, tell you what let's go into that bit where the commercial boys are, we can use the fact that this stuff's debt cheap to grab market share there, it's an easier game for us to play, a lot less work involved, we'll put money to work so the ministers have, are superficially happy, and away we go." Financier Interview

Two areas in particular were identified where there was a risk of direct competition:

- **Venture debt** – Some financier interviewees suggested that the products being discussed would directly compete with the venture debt that they offer. A particular concern for these participants was that, if this funding was offered at a preferential interest rate, it would under-cut and therefore compromise their lending. Participants identified Silicon Valley Bank as a particular example of an organisation which provides lending in the UK that might be expected to directly compete. The financiers felt that providing a product with a discounted interest subsidy would contribute to the crowding out of some venture debt activity.
    - *"Well, yeah, OK if you want to destroy the private sector offering in that space altogether then that's a good way of doing it, it would make no real sense." Financier Interview*
- **Crowdfunding –** Was identified by several financiers (though not a representative of a crowd-funding platform) as providing an offer that they felt most closely represented the hypothetical innovation finance products being discussed, in that they particularly catered for businesses pursuing innovation. The implication was that these might therefore be directly crowded out by any new government finance products in this space. This was seen as especially the case especially for consumer products, and to a lesser extent for other forms of peer-to-peer finance. When discussing this aspect, participants identified specific examples of equity-only, debt-only and mixed model crowdfunding platforms that might compete from this perspective.
    - *"If you're looking to raise say £1,500,000 you're not going to get the interest of large venture capital investors but it's too big for individual investors and so I think that's an issue. One thing that is helping is crowdfunding, I think that's had a very positive benefit and if you have something which you regard as almost a sort of sexy technology, something that sounds good, then there is a very open market now for crowdfunding." Financier Interview*
    - *"We've seen a lot of … there's Crowdcube and CrowdBnk and Seedrs able to raise significant sums for companies that are still at a very early revenue stage." Financier Interview*

As identified above there was a sense amongst research participants that many forms of equity investments are less likely to compete directly with these products. Nevertheless, several participants suggested, in hypothetical terms, that if these products allowed businesses to access debt finance, it might reduce the extent to which they would look for equity investment.

"it's a positive thing [when taking about a debt product such as those discussed], because you're not diluting [through taking on equity investment], and that they think you're more maybe of a sophisticated company that you have that." Business Interview

4.1.4 Limited mitigation strategies identified

When prompted to identify potential mitigation strategies, financiers identified the following potential strategies:

- One participant suggested that not including an interest rate subsidy as part of the products would help to mitigate the risk of crowding out.

  - *"I think there is a real demand, thousands and thousands of small businesses that would like this kind of product in that lump sum, that size lump £100,000 to £500,000 but you don't need to make it cheap, you just need to make it available and reasonably easy for them to get access to." Financier Interview*

  - *"3% discount to market pricing sounds good, but please remember market pricing just now, base rate is at 0.5%, banks are charging in the margin of 3% or 4%, there isn't a single business out there right now that's saying to its bank, you're charging me too much. So having a 3% discount on a very low margin, low interest rate environment is hardly worth having right now." Financier Interview*

4.2 Potential implications for recipient firms, in the long-term

Both business and financier participants offered a range of options on the long-term impact that holding any of the innovation finance products discussed through the interview might have on the potential for follow-on private-sector investment. This section presents the three core narratives identified: that securing this funding might help to attract further investment by offering some validation of the company; that holding government backed debt products might deter some investors; and, a neutral perspective that the implications of holding these products would depend on their specific features as well as the specific business and innovation context.

4.2.1 Leverage opportunity

There is potential for a 'halo effect' to support leverage and additional investment into the business. Research participants suggested that successfully completing the assessment process would offer a 'stamp of approval' on their innovation. Similarly, there was a suggestion that completing the due diligence processes required to access the loan might also help to offer some further validation of their corporate structures that could help them

to market themselves to investors. This was seen as a potential advantage for businesses which were still looking to secure match funding for their innovation project, and for follow-on investment in the future. This point was confirmed by both business and financier interviews:

> *"If you'd gone through a review or process and you'd had a strategic review […] those could be good things that people look at and say, well this has been critiqued by this process and they've funded it, so those could be some positive signals. I think that quite often is the case when you do get grant funding, that investors see that as a positive sign and depending on how this works then those could be plusses." Business Interview*

One business participant did express a note of caution here, a concern that the 'stamp of approval' associated with being awarded government support might be undermined if there was a large security commitment associated with the support, as this would represent a less unambiguously positive commitment from government.

> *"If you had [a product] that basically said, if it fails you're safe, then it becomes a stamp of approval that your project is innovative but not going to kill the company. […] A project by definition is innovative and, therefore, may fail. If it's going to drag the whole company and all of my investment down in the drain with it, I'm not going to invest in the company. So, it can't become a shackle to the company, if it does become [one] then I can't see any startup […] ever going for it." Business Interview*

4.2.2 Potential complications for businesses holding debt products

In contrast to this positive view, a majority (of the ten) financiers identified potential issues for businesses which would take up these innovation finance products. With the exception of product D (where repayment would only be contingent on project success) these products would feature as a liability on a business' balance sheet, and therefore would reduce any valuation of the business concerned. A large number of research participants however identified a set of further potential issues and reasons why companies which hold products such as those being discussed might deter investors in the future. These included issues which were both specific to the scheme, and general to the use of debt to finance innovation:

- **Calls on assets –** Several financiers stressed what they saw as a very significant issue for the proposed products, that if debt owners had the first call on a company's assets in the event of a liquidation, this would be seen as a potential deterrent for future debt and equity investors.

> *"Because as equity holders, we just don't like anybody having security over the assets of the company." Financier Interview*

> *"Investors generally don't take security but they don't like other people doing it. Yeah, if later stage investors came in and they saw that someone had a*

charge over some of the assets it might make them think twice" Financier Interview

"Where there's a technology risk you're very unlikely to be able to predict your ability to service debt. You could always service debt by raising more equity finance to service it but the trouble is you can't predict your ability to raise that equity finance either. And my fear is that debt puts off future equity investors because they are coming in behind, there's another liability on the company and they're putting their money in behind that liability, so it drives down value." Financier Interview

- It is important to note however, that if the policy is designed to target firms with limited assets (including tradeable intangible assets) then the liquidation value of such companies may be expected to be low. That would potentially mitigate the significance of this issue.

- **Complexity and unfamiliarity** – One financier suggested that the presence of anything unusual or unfamiliar on the balance sheet can unsettle and deter investors. In this way a lack of familiarity with any new government-backed finance product might potentially deter investors. It was suggested that financiers operate in a sellers' market, so can pick and choose to invest in companies which do not offer this complexity:

"As long as the strings attached aren't too Governmenty and grant [like] and it doesn't look weird on the balance sheet or […] just that it doesn't do something odd that I haven't thought of yet. So yeah I could imagine a deal flow from that side." Financier Interview

- This was a particular perception identified by financiers associated with small Venture Capital funds, and it is possible that this concern may not be shared by more sophisticated funds, managing a larger number of investments.

- **Conflicting interests –** Several participants expressed concern that if these debt products came with any control over the business there would be the potential for conflicts of interest to arise between debt and equity holders. For example, it was suggested that there might be disagreement between debt and equity holders on how to value a firm in the event of a sale. It is however, important to note that typically, debt holders do not have controlling interests in companies.

- **Ability of the business to service debt –** There was concern that, unless there is a very clear plan for how the debt will be repaid, investors might be nervous about the ability of a business to service a debt. A further point was stressed by participants at the validation workshop that the burden of servicing these innovation finance products might act as a deterrent to future debt investors in particular.

"If I'm an angel, I do not invest against a company that has debt unless I know that debt can be repaid, otherwise my money goes straight to pay the debts, so I don't invest… angels don't invest alongside debt unless they know that that can be easily

maintained and serviced because they do not want the money they're giving for growth to repay loans." Financier Interview

- **Debt burden –** Even in cases where it appears that the business can service the debt, several participants suggested that the debt may be viewed as an impediment to growth, and a deterrent to investment.

"if the loan is on the books they might see themselves as being, as coming in to pay off the loan rather than to add value and develop the business further." Business Interview

"It's not just simply the company's worth 3 million and there's a £200,000 loan, therefore it's valued at 2.8 million, that's not the case. We're putting in money, we're expecting that to grow the company by a particular, X percentage, or times X in the next two years or something. So that, the value of that loan, it's not a £200,000 impact on a 3 million valuation, but it might be, it might reduce the valuation" Business Interview

- A related concern identified by participants was that servicing debt may act as a drain on the resources available for the growth of a business. Financiers suggested that it was common practice for investors to specify what their funds can and can't be used for, and in this way might view any request to use their funding to repay debt in a highly negative way.

"OK, I support you but if you can pay for that, fine or granny's paying for that, fine but my money wouldn't go to that so it's all about the angels being sure that their money is going towards the growth and the development needs of the company and not the financial servicing of debt and so on." Financier Interview

"What they're worried about is a pre-existing debt where they think it's a millstone to the company" Financier Interview

- **Debt and management distraction** – Several participants identified reasons why accessing debt finance products such as these could create a distraction for innovative SMEs which could in turn deter future investment. Participants identified a concern that holding debt assets might push management to focus too heavily on revenue growth, rather than the long term development of the business.

4.2.3 Product and context specific perspectives

Several participants suggested that they could see the potential for using the debt products discussed through the interview to have a range of different effects on the ability of the businesses supported to raise further funding, and that the outcome would depend on the specifics context of the innovation project supported, the business receiving investment and the arrangements put in place to manage these products. The following

factors were identified as potentially influencing how holding an innovation finance product might be viewed by future investors:

- **Relative size and management of investments –** Keeping the investments small as a percentage of balance sheets was identified by a small number of businesses and investors as a potentially highly effective strategy for minimising the extent to which they deter follow on finance:

  - *"If it's a large loan I think it would be difficult to sell to an established company that has a large amount of VC backing." Business Interview*

    "It would depend on the balance between how much risk debt was and how much money I was raising. If I'm raising £15m and I owe £100,000 it wouldn't make any difference. If I'm trying to raise half a million and I've got a debt of £100,000 it would make a big difference." Business Interview

  Proving that debt products were correctly accounted for in firm's business plans and financial accounting was also cited as a useful means to ensure future investors are not deterred:

    "Investors want to try and get their money back within five years so they may well want to give you [a longer grace] so that they'll never be responsible for repaying that loan because they'll be passing it onto somebody else. […] Now, if that's reasonable then there shouldn't be an issue because the person shouldn't even consider it just part of their total accounting, they would write that off or probably repay the lump sum, which can be really attractive for the whole process." Business Interview

"It's both more attractive and less attractive. If we have lent money to a business and we've got 50 grand in there, and, or £100,000 or whatever, and then they get one of these loans because we can't lend them anymore, and they then change the way that they run their business to become highly risk driven in order to get high success because they are limiting their loss then maybe they start doing things we don't like. Financier Interview

However, the flip side is, if they run their business sensibly and some money like this goes in, and remember I've said to you that this isn't really a loan, this is equity dressed up as a loan… if we as a business, as a bank, come across a customer who has got one of these loans then that makes it in some ways easier for us to give more money because the existing loans don't have any stress to be repaid quickly and the customer can use any free cash flow that's generated to repay other loans." Financier Interview

- **The suitability of the innovation finance product to the project –** Several participants suggested it is difficult to generalise and that future investors would look to assess how well the debt funding available through these products fitted with the context of the innovation and business before committing to invest in them further.

In this sense, a business which could explain how debt funding had been used alongside other sources of finance to support a project with a clear route to market might be viewed very differently to one which had used a debt-based innovation product to support early-stage technological development.

"I think that if this was being used in a constructive way to say: this is what, this is what the funding's for, this is what we're doing with it, this is what has, a part of our business plan, and there was a structure to that, I can't see anything negative about it." Business Interview

"I don't think [it would be an issue to have debt on the company balance sheet]. I would be less inclined to consider a loan if I thought we needed another big finance round though, because obviously it's better not to have a loan on the balance sheet than to have one. […] We'll probably […] have quite some momentum commercially at that point, so […] we're going to be in the low risk category, i.e. an attractive proposition to invest in even if there's a loan on the books." Financier Interview

"No, so [having debt as a financing tool] will be fine, […] you've got all sorts of different funders in you, some are going for grants, you've got your R&D tax credits, you've got your angel funds, you've got your VCs in there and you've got your debt funding which, normally, wasn't on offer but now is because of you guys. So, add it to the mix, add it and, that's the story, it's part of the mix." Financier Interview

One financier associated the products discussed to equity more than traditional debt instruments. This is because of the long grace and payback periods, relative to debt. As such, these products may not have the same negative connotations that future investors may link to a company having existing liabilities on their balance sheet.

In addition to these context factors, several financiers identified that flexible management of the innovation finance products could help to mitigate the risks associated with holding these products. It was suggested that some form of active management of the investment portfolio would be a very important feature for success. Two distinct types of flexibility were identified as appealing. Firstly, it would be attractive if firms holding these products could negotiate new terms with future investors who are not likely to want to service existing debt commitments. It was strongly suggested that this was common practice for significant debt investments, as incoming investors are typically very reluctant to see their investment spent paying off debt. Secondly, it was also stressed that offering a flexible approach to the management of debt products with firms based on their ability to service debt would also be an important feature. It was suggested that this would be required to allow the products to evolve as the innovations develop, and to offer the potential to re-shape commitments when new investors join the business. It was suggested that these are common features of existing venture debt, and equity investment, and would form an important part of any innovation finance product:

"Some things work out well and some things don't and you need to go back and change conditions and repayment periods and that's hugely difficult to administer but it's what happens to equity investors all the time." Financier Interview

"What we might say is, we're only going to invest in this business if you talk to your debt providers and they push their repayments out a bit further. So it could be an impediment to raising further money unless there was a sensible conversation to be with the debt provider to be more flexible." Financier Interview

"If you maximise the flexibility in the terms, accepting the fact that if you dial up one, something else gets dialled down, to make it economically equivalent then I guess it makes [the product] more interesting." Financer Interview

"I think definitely, I think the whole thing is too, too linear and too black and white to reflect at the moment the wide range of R&D and innovation and the different phases and time frame that R&D takes. I think therefore if you look at it from an investor's point of view, we are building in a lot of uncertainties here about…how far this is going to be able to hold back the acceleration of the commercialisation, the acceleration of the growth, how far this is going to hold them back going to market." Financier Interview

Eight-year repayment period is very long which is potentially very helpful. We would expect actually to want to pay it off a lot more quickly than that and we'd want, it would be nice to see some sort of flexibility on actually being able to negotiate that down. Business Interview (Clean Tech)

It is important to note that some of these financiers expressed concern that this flexibility might be difficult for a large provider to manage. It was noted that this would be an important aspect to communicate clearly when offering any innovation finance products.

5 Communication and awareness

The interviews with both businesses and financiers included a set of questions that were designed to offer insight into how any new innovation finance products could be best communicated to potential applicants. This section provides evidence on the key elements of the hypothetical products discussed during the interviews. These were the points that businesses believed were the most compelling, and should inform any communication materials for new products. The section also identifies the priority points of clarification that participants felt that potential applicants would need when deciding whether to apply, and the priority communication channels suggested.

5.1 Main features of interest to potential applicants

The following features were identified by businesses as being of particular interest, and should therefore be at the centre of attempts to raise awareness about any new innovation finance products:

5.1.1 Security requirements

Security was a key point of discussion for a majority of participants, especially those holding minimal assets. Many suggested that where products offered security that was lower than the sum of the loan, this represented the key differentiating feature for the products and should therefore be at the heart of any communications efforts. Many thought it was essential that any communication activity highlighted the likely collateral requirements associated with the scheme, especially if they are more flexible than existing commercial arrangements.

"[Advertising] low collateral that would be worthwhile, because it just takes the burden off the business and precisely says to your existing investors and new investors, if it fails then it's not the be all and end all." Business Interview

A number of participants expressed concern at their inability to provide collateral, or to assess whether they could provide sufficient collateral to access these products, confirming the importance of clear communication here.

"I think the vague message is in, around about the security that's being offered and that will be something that would ring alarm bells for entrepreneurs like myself." Business interview

5.1.2 Favourable grace and repayment period

A large number of participants believed advertising the existence of a grace period and favourable repayment terms would be a key selling point of a debt based innovation finance product.

"I'd say the grace period [is important to highlight], so you'd say it's zero repayment loans from the UK Government backing innovation, that would grab my attention."
Business interview

5.1.3 Contingent repayment

As discussed in Section 3, there was a very high level of interest in the idea of an innovation finance product where repayment was contingent on the success of the product. Several participants felt advertising this factor would support awareness of the product to those conducting innovation projects with technology risks:

"It would be very important to put [the contingency feature as a key selling point] if, [the innovation project] doesn't succeed you don't owe us a penny, because that turns a potentially quite threatening debt situation into a safe one." Business Interview

"You only pay it back if it's successful, that would be the big selling point as far as I am concerned" Business interview

5.1.4 Government-backed loan to support innovation

A number of participants expressed a keen interest in the context of the product. Highlighting that the product was being championed by the government and designed to support innovation activity in UK was thought to be a key factor to that could be used to raise awareness.

"It's almost like being endorsed that you have a good project that's then backed by a business loan from the government. I think that would be quite an important message because it not only sort of, because it gives a perception of value for the product itself but also for the people that are associated with it, so I think that would be quite useful." Business Interview

In addition to this point, several participants questioned the suitability of debt products to support innovation activity. Upon further discussion, when innovation was deemed to encompass development right through to commercialisation, participants were more clear on where they thought a product such as this could fit in.

5.1.5 Other views

As well as these key factors, other participants thought it would be useful to communicate how flexible product features are and what the worst case scenario would be for firms who were unable to adhere to the legal obligations of such a product.

"It depends on the needs of the person who's looking for finance […] and they [need to be] tailored to […] work out which one fits your needs best. […] Nobody wants to be tied down to a one size fits all, because it just doesn't happen in reality." Business interview

"I think it'd be important to understand up front what happens in the worst case scenario. […] I think there would be a lot of entrepreneurs that maybe don't come from a financial background […] would […] see it's backed by the government and

maybe miss associate it with some qualities that a grant might have. […] I think being abundantly clear that this is a debt asset that sits on your balance sheet would be something that people would need to be educated about." Business Interview

5.2 Key messages to be conveyed in communication

Participants stressed that communication of the products should be simple, clear and brief. The volume of clarification points sought during the interviews underlines the complexity of the communications challenge here covering pre-application requirements, the process of accessing funding, and the management of products after they have been agreed. The following points were identified by participants as priorities:

5.2.1 Sum

Participants were keen to understand the minimum and maximum amounts that the product would be able to provide debt for. As identified above, when asked this as an open question, participants identified a very wide range of sums that would be needed to finance their innovation projects. Participants expressed particular interest in understanding in detail what rules would govern how the total project costs would be defined and measured.

"The size, the amount of funding available because [you] would be able to see quickly [and identify if] that [is] a meaningful amount for you or not." Business interview

5.2.2 Security requirement

Identifying detailed information on the process involved in determining the collateral requirement of any debt product. Having a clear sense of what the collateral requirement was for different types of company would greatly support companies decide if this product would be of use to them.

"The very first question is what's the security? Because […] without knowing what kind of security they want, it almost precludes any start-up because there aren't many assets in a start-up." Business interview

5.2.3 Grace and repayment periods

Clarity with regards to the grace and repayment periods was thought to be key when explaining the main feature of new innovation finance products to potential consumers. In particular, information on the when these periods start and end and whether payment can be non-linear.

"Two years seems reasonable [when referring to the grace period] but it all depends on where that period starts. Now, is it from the time of signing on the dotted line? Is it from the last take down or, […] of the first drawdown of funds? […] If we secure a

loan or secure the investment and it takes 6-12 months to get the system fully running and operational then you've got about a year for it to be generating income" Business interview

"So would [the product] […] be at the same rate or would there be a staggered rate of interest, so could it allow the fact that your product was only going to develop more slowly in those initial years, and so could you maybe stagger those payments? […] I think if that was able to be flexed in that way, that would possibly be more helpful" Business interview

5.2.4 Contingency definition

Finally, while participants indicated an appetite for a product whereby repayment was contingent on success, the exact details of how project success would be defined, and how regularly this would be reviewed should be specified in attempts to raise product awareness.

"I guess you've got to be careful haven't you because it might be easy to make it look like a product wasn't successful so that you just didn't have to payback" Business interview

5.2.5 Application process

Many participants stressed the importance of explaining the application process clearly, making certain to define:

- All the steps required in the process and their respective time frames
- A description of how each step operates, from application, assessment, interview, due diligence and contracting
- The scientific, economic and legal content requirements from businesses applying

5.2.6 Interactions with other arrangements

Some participants wanted to be made aware of whether taking on one of the discussed products would have resulting implications for any other funding arrangements their firms might have, such as R&D tax credits or innovation vouchers.

"We'd certainly look at accessing [one of the products]. It doesn't necessarily put us off that it's not a grant. If it was a loan with the right circumstances, we would definitely look at accessing it. […] How does this affect tax credits because, is it just treated like a normal loan? […] we can currently […] offset tax by doing research and development. It's not why anyone would do it but we can, […] we exclude obviously the money that's been grant funded which we split […] when we do a tax return with our auditors. But, presumably, because this is a loan and all the risk is

with the company and it's not a grant, presumably that would affect that?" Business interview

5.2.7 Legal structure of the product

Participants queried how the product would look legally. This was typically framed in the context of pursuing additional funding from investors.

Investors […] seem to be predicated on having a clean structure to the company that is understandable swiftly to their legal teams" Business interview

5.2.8 Additional support arrangements

Several participants were keen to understand whether any further support would be provided by the government that was complementary to the products. Types of support that were discussed were mainly business centric and mainly reflected the commercial aims of businesses as opposed to technical or scientific support. Much of this discussion was framed in the context of the repayment contingency condition, where many felt that it was intuitive to offer a package of intangible support of this nature to ensure the practical implementation of the product.

"I'd want to understand whether I had any other additional support within that, in the same way [Innovate UK] national officers are […] there to monitor the progress of the project, but nevertheless the templates and the structure they provide do give that additional support" Business Interview

"It's not really the money you're looking for; you're actually looking for the support of the investor. […] The benefit of this model will come down to how well you can promote and construct the value of the intangibles" Business interview

5.3 Channels for communicating new innovation finance products

Participants identified a range of channels that they felt would be effective for raising awareness about any future new innovation finance products:

5.3.1 Online

The majority of participants were generally happy with the use of the internet to convey new information regarding the discussed products. A number of sources were given, with the two most frequently identified being:

- **Web portals** – An online portal that provides information on all products in one location was suggested to be useful. Several participants highlighted that locating information on funding is difficult when information is provided in a number of disparate locations. Participants suggested a streamlined service that is easy to navigate with clear sign posting would be of great use.

- **Email communications** – Many participants currently receive and review email communications from Innovate UK email communications and suggested that further communication on new innovation finance products could effectively use this channel.

"The emails I get from Innovate UK are absolutely fantastic. They're a bit frequent but they're clear and it's easy to look at their lists, […] a nice targeted email and not too many of it would be good" Business interview

5.3.2 Sub-national engagement

Several participants suggested that a local connection would be helpful for raising awareness of any new products, and to tap into and exploit local networks. Many participants felt that it might be easier for firms to engage with product providers at the local or regional level first. Several Interviewees suggested that it may be of use to create a set of sub-national agents that interact with innovative companies around these products given their potential complexity. These agents would be experts in the UK innovation project funding landscape and knowledgeable of the needs and requirements of innovative firms in their region as well as their current R&D activities and agendas.

"[It would be useful to have] ambassadors who go into companies and try and help signpost and guide them"
Business interview

It was suggested that reaching out to companies at local SME or innovative business events or organisations could also be of use:

"It's just engaging the communities, so it's local events but, probably if they can piggy back in on the incubators [too]. […] The number of small innovative companies in a local region [is] small. If you look at the numbers of [innovative] SMEs is much, much smaller than you think. And they tend to go to the same type of events and similar, subscribe to same forums" Business Interview

5.3.3 Sector focused engagement

Many participants highlighted that it might be useful to communicate product information through existing sector specific channels and networks. Targeting businesses through relevant industry events, trade associations or publications may enable much more focused delivery of messages.

"This probably needs to get a group of stakeholders together in some sort of forum […] who presumably, people who would support it, because if it's, as I say my feeling is that there's a certain kind of profile band of companies that would go for this and maybe kind of target that" Business Interview

5.3.4 Exploiting other networks

Several participants felt that investors were in a prime position to provide support and information on new funding opportunities available to innovation active firms and were cited as having an in-depth knowledge of their sector(s) and the existing funding landscape.

"The most attractive way [to raise awareness] would be pitching to the investor community, […] rather than companies themselves […] I think a lot of our investors are very active in this area and they do go along to the Innovate UK events and get this stuff so I think that's probably the place to go" Business interview

5.3.5 Other channels

A number of other opinions on how channels should be used to raise awareness of new innovation finance products were expressed by participants:

- **Informal news outlets** – One participant suggested the use of technology or sector specific blogs to raise awareness of products.
- **Nationwide workshops** - A succession of workshops at locations around the country was described to be a useful form of engagement by one participant.
- **Information hotline** – The time pressures facing innovative companies were mentioned by one participant who suggested a point of call for product related queries may be useful.

"I don't […] necessarily want to do face to face events but they can be useful. […] […] I suppose it would be good to physically speak to [on] Skype or something like that, I wouldn't necessarily need to feel that they needed to trail out to see me in person, but I'd need to have some sort of contact with somebody who cared about my business and wanted to treat me as a valued customer" Business interview

5.3.6 Applications support

Several applicants suggested that attention should be paid to the quality of follow up communications in addition to those that raise awareness of any new products. They identified that this process should not be cumbersome or difficult to understand, with some identifying that the learning curve for applying for other funding opportunities was often steep initially. A number of ideas were provided by participants to ensure that applying for this product is clear and straightforward:

- **Application case studies** – While there was little interest from the businesses consulted in case studies that describe the innovation activity being supported by funding, it was suggested that it would be useful and important to provide information on the opportunity for potential product users to learn about other firm's experiences in applying for any new innovation finance products. It was clear that participants were interested in hearing from those who had used the funding tool to uncover what the cost of applying had been and the costs associated with managing the product once awarded.

- **Example application forms** – It was also suggested by one participant that example successful application forms could be provided to guide firms in writing efficient and funding proposals and support firms in understanding what information is required and how it should be presented.

An additional challenge for communications identified through the research was the seniority of staff that might need to be targeted. Several interviewees stressed that only a small number of very senior individuals in their business would be able to assess the suitability of innovation finance products. Because of the commitments associated with the products, it was suggested that communication will need to target a much smaller group of staff than is the case for existing innovation support.

6 Reflections

Interviews with 40 innovation active businesses and 10 financiers identified a strong interest in the potential introduction of new government supported innovation finance products:

- **Overall appetite** – Among the businesses interviewed, there was a strong interest in new innovation finance products. A majority indicated that they would be likely to apply for some form of innovation finance product. Financiers confirmed that they saw significant gaps in the innovation funding landscape and anticipated there to be demand from businesses. Three key limitations to this demand were however identified in that, for research participants, the hypothetical debt products discussed may be:
    - Of less interest for large businesses.
    - Challenging to reconcile with the inherent uncertainty associated with some, particularly early-stage, innovation projects.
    - Associated with a risk of complicating the balance sheet and deterring future investment in some circumstances.
- **Intended uses –** While potential requests were broad, firms anticipated that they would tend to support late-stage R&D and commercialisation work. Specifically, development-oriented activities including refining prototypes, the introduction of new pilot lines or production processes, and validation of new innovation through academic and industry collaboration. Key commercialisation activities included the hire of sales and marketing talent, new market entry and supporting the transition from a research business into a commercial entity.
- **Loan amounts –** Perhaps reflecting the diversity of innovation projects discussed through the research, participants expressed interest in accessing a very broad range of loan sizes. This included loan sums as low as £20,000 and as high as £12m:
    - Small sums were often associated with funding business operations, late stage product development, as well as software and service innovation.
    - A second set of businesses indicated that they would be likely to use these products to pursue a more intensive set of late stage development activities, such as moving from a prototype to a production at scale, or developing a new product variant.
    - Finally, a number of larger potential sums were identified by businesses as being potentially required to support projects in energy, aeronautical engineering, and the introduction of new product ranges where large capital investments were required.
- Through their stated preferences, and through comparisons of the reported likelihood that they would apply for alternative hypothetical products, business

participants identified that the following messages about alternative potential product features:

- Interest rate subsidies may be of relatively little importance in determining the appetite for innovation finance products. Further still financiers identified that providing a subsidy in the form of interest rates might most directly lead to competition with the private sector innovation finance offerings.

- In contrast, security arrangements and collateral appear to be the key considerations, especially for smaller companies with limited assets.

- Similarly, the grace period was seen as a distinctive feature in determining suitability for projects, in particular the stages of development and sectoral setting.

- There was a high acceptance of the idea of loans targeted at single companies that can demonstrate their innovation is targeting a significant market opportunity, and that the project will not likely receive funding otherwise. But for many the flexibility of the product is a key feature. Some form of active portfolio management might improve the appeal of any innovation finance products. This may be especially relevant for businesses that are nervous about how the product might be viewed by potential future investors. In practical terms this might involve a willingness to negotiate changes in products to meet the needs of follow on investors, or to respond to a business's ability to service debt.

- There was some suggestion that different parts of the economy may value different features amongst their innovation finance products. For example, the appeal of a two-year grace period might vary significantly between a firm pursuing a software innovation and a MedTech business based on their different innovation cycle lengths. Large firms contacted as part of this research appeared to have a very different appetite to smaller organisations. This may create a case for designing different products when targeting different objectives.

- **Expected market response –** The prevailing view was that products of this type discussed with participants would be distinctive from the current market offering. Several market gaps were identified by financiers as potential areas that these products might target:

    - Development stage – Post proof of concept up to early revenues

    - Regional – Firms located outside of London or the South East

    - Sectoral / technological attractiveness - Firms that operate in a capacity where resulting good and services are not consumer centric nor feature the public domain i.e. supply chain processes)

- **Communication of policy –** Interviewees have suggested a set of points that could be used to tune communications around the policy. The level of interest in the

agenda detected throughout the interviews suggests that there is a real opportunity to engage a large number of firms with the policy.

This research sheds light on the potential drivers of the appetite for new innovation finance products, and in this way has generated a set of potential messages for the design of any future innovation finance products. However, it is important to note that while the qualitative research methodology employed here allows these detailed insights, the limited sample size means that there are real limitations in the extent to which it is possible to generalise from these results to the full pool of potential applicants for new innovation finance products.

Notwithstanding the strong interest in these products, the study also collected evidence that suggests that many of the innovation finance products discussed may suit a much smaller group of firms than existing innovation support. It was suggested that loan finance for innovation activities are only appropriate when the company has reasonable confidence in forecast about generation of revenues from the innovation project in question. There was a suggestion that this is rarely the case for early stage (low TRL) development activities where technological risks pervade. The implications of this may be following:

- Broader calls for applications may be required for innovation finance products than grants – as a potentially more niche innovation support product than grants in terms of suitability. To achieve sufficient suitable and high quality applicants it will be necessary to target a larger pool of potential applicants than grant programmes. For example, this would imply a call for applications for MedTech rather than digital MedTech.

- Additional assessment of suitability – The suitability for the specific form of financial support at this point in the development of the innovation and business represents an additional consideration which is not of such relevance for grant funding models. These might serve two purposes: due diligence/ensuring returns, but also to ensure that these plans and strategies are in place to ensure that these products do not deter future investors. Businesses and financiers familiar with Innovate UK grants indicated a practical solution to this requirement by offering the debt product to companies who have successfully completed a grant-funded project and are in the appropriate stage of development.

Findings from this qualitative research about specific product features indicate that there is no one-size-fits-all approach to the implementation of these products. Innovative businesses are a diverse subset of the business population and their requirements for debt finance for innovation activities tend to be specific to them and their current innovation strategy. Therefore, the loan amounts, length of grace and repayment periods, will have to be well aligned to the ideal recipient firm or innovation project. The research however stressed the scale of the communications challenge identifying a large number of points that they would look to see in material about any new products as well as a broad range of potential communication channels. The implication is that the clarity of the message when

launching any new innovation finance products will key – especially about the type of company and projects best suited to their use. There may be some tension between the need to accommodate diversity and flexibility at the same time as providing clear and consistent communications.

Annex: Research design

A : Overview of approach

This annex sets out the approach for business and investor / lender consultations undertaken as part of Ipsos MORI's *'New Innovation Finance Products: Qualitative Research'* project. It includes a description of the research objectives, sampling approach, recruitment process (including a proposed invitation email text) and topic guides for both business and investor / lender interviews. The topic guides included in this note present an intended set of initial questions and prompts for the interviews, but in practice these were semi-structured interviews. At the end of the document there is a copy of the hypothetical finance product developed by Ipsos MORI presented to interviewees.

Following the inception meeting, the Department for Business Innovation and Skills defined the basic features of a debt product to be researched; these characteristics are set out in the text box below.

Box 1: Product features to be researched through qualitative interviews

- Loans offered to businesses who can meet the liability and appropriate credit checks.
- Contract is with one legal entity – the business.

Key features:

- Below market rate of interest: (market rate minus ~3%) with a minimal threshold of 0.1%.
- Grace period: 2-3 years depending on time taken to get to market.
- Repayment period: max ~10 years including grace period.
- Security: secured against relevant collateral.
- Organisations working together encouraged through use of subcontracting.
- Repayment not contingent on achieving commercial success (different contingent arrangements to be explored).

A.1 Aim of the interviews

The aim of the qualitative interviews with innovative businesses and investors / lenders was to understand the **appetite** for different features of publicly financed debt products for innovation projects and the potential **response** of the market to the introduction of new publicly funded instruments. It was set to explore how to best **communicate the value** of such products for innovative firms facing barriers to innovation finance.

The context of the research was to understand the extent to which the new type of product would support innovation in businesses by unlocking access to finance for firms that could not otherwise fund these activities. Key questions that the interviews were to provide

evidence for are identified below. The study team aimed to use these categorisations as an initial analysis framework for the research.

1. What are the characteristics of firms with higher and lower appetites for this type of product and how does this appetite vary across different types of firm, with respect to:
   - firm size (micro, small, medium);
   - stage of development (pre-turnover or pre-start, start-up <=2years, early stage 2-5 years, later stage >5 years);
   - sector (broad SIC and Emerging & Enabling Technologies, Health & Life Sciences, Infrastructure Systems, Manufacturing & Materials);
   - market reach (local, regional, national, international);
   - funding profile – current structure, and whether the company has any difficulties accessing finance generally, and what activities have they undertaken; and
   - their innovation activities:
     - Context of how the company engages in innovation activities and its innovation project portfolio - innovation intensity (frequency of R&D, none, occasional, permanent), innovation type I (product/service, process, both), innovation type II (new to firm=incremental, new to market=radical), current funding profile (no external finance, debt, VC, private equity, public, personal funds).
     - Risk profile – technology risk, business model risk, execution/competition risk etc.
   - Ability to access innovation finance (track record).
   - Their collaboration activities – joint ventures and other forms of partnering.
2. How would these different types of firms respond to the potential availability of new innovation finance products and what are the reasons for their positive or negative response?
3. What are the most important characteristics for a future innovation debt instrument?
4. Would some variations of the hypothetical model be preferable? (e.g. lower security and higher interest rate).
5. What impact would this have on the market?

   In short term
   - Risk of crowding-out any private sector financial products and what would reduce this risk?
   - Possibility of crowding-in of additional funding for innovation activities from private sources.

   In long term
   - How might holding these loans be viewed by investors / lenders in the future?
     - Would they be viewed negatively or even preventative for receipt of future investment?
     - Would they act to help crowd-in investors by signalling quality?
6. What is the most effective content and channel of communication to raise awareness of availability of a new innovation finance product?

B : Sampling approach

This section outlines the study team's approach to building a sample for the interviews. It describes the type of organisations targeted and the different sources used.

B.1 Sampling approach for innovative businesses (potential customers)

B.1.1 Target companies

Potential customers of the products for the purpose of the study were defined as: "companies with a need for funding to invest in innovation activity". They are companies with innovations that are at any level, but in particular those looking to pursue activities which have a potential to result in high growth through development of new products, services, organisational and business models. These companies may have had difficulty in raising private or commercial finance and it was expected that a large proportion of this group of companies will be serial innovators that have made efforts to access funding for these activities in the past. This assumption drove decisions behind our sampling strategy in which the primary subset of businesses that we approached were those who had recently applied for funding for innovation from Innovate UK.

The sample drew heavily on businesses who had previously sought to access public funding from either Innovate UK or the British Business Bank because there was likely to be an overlap and commonalities between such firms and those who may be suitable for the new financial products. However, it was also important to expand the sample to include a set of firms who had not sought public funding to date to ensure that the sample was as close as possible to representing the population of target firms described earlier, especially those that may not suit existing financial products in light of their innovative activities. As outlined in the main report, the study team therefore developed a sample for the research with businesses from the following sources:

- Applicants to Innovate UK programmes in last three years.
- Businesses currently being supported by the British Business Bank through Enterprise Capital Funds (ECF)[9].
- Businesses contacting the Business Support Helpline and enquiring about finance of innovation projects.
- Other innovative firms - the study team developed an additional sample of firms that were likely to be pursuing radical innovations from patent database (PATSTAT) and participation in accelerator and incubator programmes.

B.1.2 Innovate UK Applicants

[9] EFG loans recipient companies were considered to form a subset of the sample however recent research with these companies prevented use of this source in final sampling design.

Ipsos MORI requested a sample of 300 leads from Innovate UK to achieve 24 interviews. The sample consisted of a random selection of individuals involved in making financing decisions for innovation projects within companies who applied (successfully or unsuccessfully) for Innovate UK funding and met the following characteristics:

Single and collaborative R&D projects within Innovate UK programmes (excluding Innovation Voucher recipients who do not feature in any other category of Innovate funding recipients).

- Submitted quality proposals.
- In the last 3 years.
- Not being approached for another survey in the time period April-June 2016.
- Covering all priority areas of Innovate UK.
- Covering different size companies.
- Covering a range of business sector / industry.
- Covering a range of business location / geography.

B.1.3 British Business Bank – portfolio

Enterprise Capital Funds portfolio companies were approached through an 'opt-in' model, working with individual fund managers and communicating to them the main study research question. This opt-in was a requirement given the data protection arrangements. While this approach was less neutral in terms of responses than an opt-out, this group represents a sufficiently important portion of the sample to justify this method.

B.1.4 Non applicants / other sources

Business Support Help Line – Business Support Helpline supplied a small sample of individuals who enquired about access to finance for an innovation project. Details were shared with the study team via the department on a weekly basis.

PATSTAT - Computerised patent records are available at a global level through PATSTAT, a database containing a number of relational tables providing information on patenting activity, including bibliographic data, citations and technology codes. An analysis of company and inventor names and addresses of patents filed in the UK in the past five years provided a useful snapshot of innovative firms, defined in this instance through the registration of IP.

A query of patent applications filed in the UK in the last five years, where the companies or individuals filing applications are also based in the UK produced 11,166 unique patent applications, of which 1,455 unique companies had filed for more than one patent. A random sample of these companies was taken and a manual search for contact details resulted in 31 companies with contact details to feed into the final sample. The contact provided in each case was for either the managing director or the most appropriate R&D lead in each instance. When this information was not clearly attainable from company websites, Companies House was consulted; the service provides the names of all registered company officers, their current position and country of residence.

Accelerator and Incubator programmes – A large number of accelerator and incubator programmes exist in the UK that support technology start-ups and SMEs primarily through equity-based funding, physical infrastructure and provision of business support and mentoring services. This source provided an opportunity to develop a sample through a systematic review of accelerator and incubator alumni lists. These lists are in some cases displayed on programme websites to identify companies that were supported through the programme in previous rounds. Given the selective nature of such programmes a proportion of these companies are likely to be defined as innovative companies with a potential interest in new innovation finance products. However, the high failure rate commonly associated with startups meant that a substantial number of these firms had pivoted, and in doing so altered their branding or company name or ceased operations entirely. A number of online sources have also compiled lists of programmes, including those outside London, at varying levels of completeness. For example:

- Entrepreneur Handbook10 – 27 accelerators, 10 outside London
- Seed DB11 - 14 seed accelerators in the UK, 6 outside London
- Corporate accelerators DB12 - 71 corporate programmes worldwide

A selection of 12 programmes with online alumni pages containing information of companies that went through programmes was selected by the study team. From the collated alumni lists a random sample of 25 companies were added to the proposed final sample.

Design Rights Database – A database that records all Design rights allocated to individuals in the UK, used to prevent others from copying the owner's design for 10 years after it was first sold or 15 years after it was created - whichever earliest. As well as providing a design number and classification, relevant application and registration dates it also provides information on the proprietor company and issuer. It is thought that companies who are registering for design rights are doing so because they have reason to protect a competitive advantage create through their design.

Following initial exploration, we recommend not making use of this source because of two drawbacks. Firstly, the consideration of a design right alone may not be an ample signal of disruptive innovation. Secondly, the search functionality of the database is limited; the engine provided by the Intellectual Patents Office does not provide the ability to filter by the year designs are registered. The search engine provided by World Intellectual Property

[10] http://entrepreneurhandbook.co.uk/business-accelerators/

[11] http://www.seed-db.com/accelerators

[12] https://www.corporate-accelerators.net/database/index.html

Organisation (WIPO), DesignView, enables querying at a global level and provides filters for registration office and year but this engine is cumbersome and often results in no entries being returned. Therefore, we did not make use of this source.

B.2 2.2 Stratification of sample by firm size and geography

B.2.1 Firm size

Sample stratification proposals by size were based on input from steering group members who agreed that the study should underrepresent large enterprises and over-represent micro and small SMEs. The Community Innovation Survey findings on highly innovative firms and growth[13] also states that Highly Innovative Firms tend to be SMEs with the median around 55-60 employees, but that it is difficult to identify such innovative firms from traditional firm demographics. Therefore we aimed for the following firm profile.

Table 1.2: Sample stratification by firm size

Firm size	Number of business interviews	Share
Micro	11 to 17	27.5% to 42.5%
SMEs	13 to 19	32.5% to 47.5%
Large Enterprises	5 to 10	12.5% to 25%
Total	40	100%

B.2.2 Regional distribution:

The Community Innovation Survey findings on highly innovative firms and growth (Coad et al, 2014) provide the following regional distribution of Highly Innovative Firms and informed our sampling, as set out in Table 1.3 below.

Table 1.3: Sample stratification by region

Region	Number of business interviews aimed for	Share
Greater South East	~8	~20%

[13]Coad et al, 2014 Innovative Firms and Growth accessed April 2016, available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/289234/bis-14-643-uk-innovation-survey-highly-innovative-firms-and-growth.pdf

London	~8	~20%
Midlands	~6	~15%
North	~8	~20%
Scotland & NI	~5	~13%
South West	~4	~10%
Wales	~1	~3%
Total	40	20%

B.3 Sampling approach for financiers

On inception a full list of different types of financiers was developed and discussed with the steering group. It was agreed that the variety here was too great for the study team to realistically systematically cover this diversity within the planned ten interviews. Instead, it was agreed that the study team would develop a more strategic approach.

We developed the proposed sample for the investor/lender interviews in collaboration with the British Business Bank and Innovate UK. Initial research efforts and lists of investors/lenders provided by the steering group resulted in a list of 70 organisations, ranging across 13 different finance provider types (investors/lenders) including two associations representing a number of investors. The study team mapped out all proposed finance providers and prioritised them based on their relevance to financing innovative activities of firms. For example, within the category of high street banks there are nine entries and we prioritised two, because of their programmes backed by the EIF InnovFin SME Guarantee Scheme. A table summarising this selection is presented in table 1.5.

Table 1.5: Sample development for finance providers

Investor/lender	Finance provider type	Number of providers in the sample	Prioritised sample for initial approach	Reserve list	Number of financier interviews aimed for
Association	**Association**	2	2	0	~1
Investor	**Crowdfunding/Peer-to-Peer**	4	1	1	
	Corporate Venture Capital (CVC)	4	1	2	~1

	Enterprise Capital Funds	25	21	10	~1
	Hybrid Funds	2	1	1	~1
	Other funds	5	5	0	
	Venture Capital Catalyst	5	1	3	
	UK IIF (UK Innovation Investment Fund)	2	2	0	~1
Investor/grant provider	**Charity**	1	1	0	~1
	Asset Finance/Other Speciality	7	1	3	~1
	Challenger Bank	2	1	1	~1
	Debt Fund	6	3	1	~1
Lender	**High-Street Bank**	5	2	2	~1
Total	**Total**	70	42	24	10

:

C : Recruitment process for businesses

The recruitment process was designed to maximise response rates while being robust and compatible with data protection considerations and screen out any unsuitable companies. These recruitment processes necessarily varied between the different sources of business leads:

- Innovate UK applicants – an opt out email was sent from Innovate UK followed by an invitation email from Ipsos MORI with an attachment of a letter of support from BIS.
- British Business Bank – an opt-in procedure was adopted, followed by joint branded communication from the British Business Bank, BIS and Innovate UK.
- Business Support Helpline – these individuals opted-in over the phone, and were then sent a joint Ipsos MORI / BIS branded first communication.
- Other identified contacts – each of these have been developed from publically available sources and we made clear the source of these contacts when making contact to ensure transparency. The study team sent this group a joint Ipsos MORI / BIS branded first communication.

C.1 Email invite for businesses

Recruitment email for businesses
Dear … The government is planning to introduce a set of new financial products, including government backed loans to complement existing Innovate UK grant support for innovation projects. Ipsos MORI, an independent research company, has been commissioned by the Department for Business, Innovation and Skills to consult with a number of innovators as part of the process of developing these products. We would like to speak with you to understand how these products might work for you to feed into the process of developing these tools. The overall aim of the project is to help the government better understand the appetite for different types of finance product for innovation and the potential response to the introduction of new publicly funded instruments. The interviewers will also explore what would be the best channels for communication of availability of such products. As part of this research a number of individuals, such as yourself, have been identified as innovative businesses who could be a potential future consumer group of such products. Your company was identified by: Innovate UK as an innovative company who has previously applied for grant funding and therefore may have an interest in such products The British Business bank as an innovative company which has applied for one of its

schemes in order to fund R&D

Searching the patent database as an innovative company active in the UK

Searching the Research Gateway database as an innovative company active in the UK and collaborating with academic partners on a project funded by a one of the UK's Research Councils

Searching the alumni networks of the accelerators and business incubators.

To this end, I would be grateful if you could suggest a convenient time over the next couple of weeks, for myself or one of my colleagues to come to interview you at your premises, at our office in London or over the phone.

If you have any questions about the study, please do not hesitate to get in touch with us.

Kind regards,

C.2 Screening questions for businesses

Our recruitment team used the following screening questions to ensure that we spoke with the right organisations. It was important that in the early stages of recruitment we monitored reactions to these questions, in order to ensure balance between identifying companies that are as close as possible to potential customers of the proposed products, and ensuring the delivery of the research within the target window.

S1: Are you developing, or have you recently brought to market a significantly new product, service, process or organisational change? [if organisational change. Can I just check, is that organisational change around a particular innovation?].

Yes / No

Note on innovation:

A product innovation is the market introduction of a new or significantly improved good or service with respect to its capabilities, user friendliness, components or sub-systems. Product innovations (new or improved) must be new to your enterprise, but they do not need to be new to your market. Product innovations could have been originally developed by your enterprise or by other enterprises or institutions.

A service innovation: New or significantly improved services.

A process Innovation: New or significantly improved methods of manufacturing or producing goods or services, new or significantly improved logistics, delivery or distribution methods for your inputs, goods or services, new or significantly improved supporting activities for your processes, such as maintenance systems or operations for purchasing,

accounting, or computing.

An organisational innovation is a new organisational method in your enterprise's business practices (including knowledge management), workplace organisation or external relations that has not been previously used by your enterprise. It must be the result of strategic decisions taken by management. Exclude mergers or acquisitions, even if for the first time.

A radical innovation is an innovation that has a potential to disrupt the market.

S2. Would you be happy to participate in an interview to help UK government better understand your funding needs?

S3. We can treat any information that you share with us confidentially, and report some or all of the interview in an aggregate form if you feel that is appropriate. Or alternatively, would you mind if a representative from BIS or its partner organisations also attended the interview as an observer?

D : Interview topic guide – businesses

Prior to attending the interview, the interviewer sent a confirmation email and some brief notes detailing what we would like to discuss, including a hypothetical illustration of the type of subsidised financial product that might be offered to firms that cannot access finance. We noted that this was purely an illustration to support discussion.

Note to Interviewers: this is a relatively long topic guide and it is important to ensure detailed coverage of the two main areas (their profile and discussion of the hypothetical products), and would expect the following broad timings:

- Introduction (4.1) – 5min
- Innovation profile of the company and their history of finance and what about these products might work for them (4.2 – 4.4) – 15min
- The discussion about the products (4.5 – 4.7) – 30min
- Communication (4.8) – 5min
- Wrap up (4.9) – 5min

D.1 Interview introduction

Ipsos MORI, an independent research company, has been commissioned by the Department for Business Innovation and Skills to research the appetite for different features of publicly financed debt products for innovation projects and the potential response of the market to the introduction of new publicly funded instruments. This study will support the potential development of such instruments by the UK government.

This interview is conducted in confidence and we will give you an option to decide whether the information you provided should be fully anonymised and reported on only in an aggregate form or the level of anonymity required.

Would you be happy for us to record this interview to help us during the analysis?

First of all we have a few questions about your company and its innovation activities.

Note on innovation:

A product innovation is the market introduction of a new or significantly improved good or service with respect to its capabilities, user friendliness, components or sub-systems. Product innovations (new or improved) must be new to your enterprise, but they do not need to be new to your market. Product innovations could have been originally developed by your enterprise or by other enterprises or institutions.

A service innovation: New or significantly improved services.

A process Innovation: New or significantly improved methods of manufacturing or producing goods or services, new or significantly improved logistics, delivery or distribution methods for your inputs, goods or services, new or significantly improved

supporting activities for your processes, such as maintenance systems or operations for purchasing, accounting, or computing.

An organisational innovation is a new organisational method in your enterprise's business practices (including knowledge management), workplace organisation or external relations that has not been previously used by your enterprise. It must be the result of strategic decisions taken by management. Exclude mergers or acquisitions, even if for the first time.

A radical innovation is an innovation that has a potential to disrupt the market.

D.2 Overview of company

1. Can you first tell me a little bit about your company? (to understand for which types of businesses the finance products are more relevant):
   - Size (micro, small, medium)
   - Stage of development (pre-turnover or pre-start/start-up <=2years, early stage 2-5 years, later stage >5 years)
   - Sector (Broad SIC and Emerging & enabling technologies, Health & Life Sciences, Infrastructure Systems, Manufacturing & Materials.)
   - Market reach (local, regional, national, international)
   - Funding profile – current structure, and whether the company has any difficulties accessing finance generally, and what activities have they undertaken to secure funding

D.3 Overview of interviewee's innovation profile

2. Please tell me in brief about all of your innovation projects [NOTE TO INTERVIEWER - To gauge innovation intensity (frequency of R&D, none, occasional, permanent)]
3. What type/stage of innovation are these mainly?
   - Innovation type I (product/service, process, or business model such as a new payment model or becoming 'the Uber of…')
   - Innovation type II (new to firm=incremental, new to market=radical)
   - Innovation stage (feasibility study, proof of concept, proof of market, prototyping, etc.)
4. How do you develop these?
   - On your own?
   - In collaboration with companies, higher education institutions (HEIs), other research organisations?

D.4 Access to finance for innovation

5. What activities have they undertaken to raise finance for innovation in the recent past?
   - If none, why have they not tried to raise finance?
6. And what was the success of these activities?
   - If not successful, why?
7. So how do you typically fund these different innovation activities?
   - Retained profits or cross-subsidised across the organisation
   - Or do you use any financial products to finance innovation? Crowd funding?

- Private external funding:
  - Debt – what scale? what types? secured against what? (Core debt products: bank overdraft facility, bank term loan, leasing, hire purchase. Non-core debt products: asset finance, corporate bonds, Peer-to-peer lending, mezzanine)
  - Equity – what scale? What type of investor? How much equity? (informal investment from friends and family, business angel investment, equity based crowd funding, formal Venture Capital)
- Public:
  - Government / public sector finance: - grants – national & European / Public debt funding / Public equity funding
- Personal finance
- Others such as market finance – public equity and bonds

8 If you were successful in securing your preferred source of finance, how easy or difficult have you found it to access the required cash sums you needed to finance your innovative activities? [Test for quantity rationing]

9 What were the most significant obstacles or problems you faced in terms of accessing debt-based finance products? [Explore how sensitive they are to these factors and how potential new debt products could be designed that would address their concerns]
- The cost of debt (e.g. interest rates, fees, penalties, etc.)
- The amount of debt
- The requirement to provide security against debt
- The term structure (length of time you can borrow) of debt
- The repayment structure of debt

10 How would you feel about opening up your ownership in order to secure more investment in innovation projects?

11 Where did you access information on finance sources?
- Local entities such as Growth Hubs or Chambers of Commerce
- Business Support Helpline
- Government websites, including Innovate UK
- Knowledge Transfer Network resources and events (incl. newsletters, websites, sectoral conferences)
- Financial advisory services
- Banks (High street, Challenger banks)
- Accountants
- Investors
- Direct approach of investors
- Other online sources
- Personal contacts (e.g. friends, other innovators, other business owners, word of mouth)
- Other

D.5 Attitudes to new products

To gather your views, we have developed a hypothetical example of some features that a future innovation finance product might have.

Note this is not a product on which the government are looking to consult formally, but is an illustration of the type of arrangement under consideration, presented here to support discussion.

Innovation loan version A characteristics:

- Sum (60% of project cost).
- Below market rate of interest: a 3% interest rate subsidy, made available to firms who cannot access finance, with a minimal threshold of 0.1%.
- Grace period: 2 years not depending on time taken to get to market.
- Repayment period: 8 years after grace period, not contingent on the commercial success of the project.
- Security requirement that is equal to the size of the loan: secured over relevant collateral.
- Practicalities – a loan available to a single company only (i.e. not a consortium), and investments would only be available to companies that can demonstrate that their innovation meets a set of criteria including the potential size of the market opportunity, and that the project will not likely receive funding otherwise.

Note on definitions if interviewee asks to explain any of the terms:

Sum of loan – Sum of loan is the total amount borrowed which is expected to be paid back along with interest.

Interest rate – The interest rate is the amount charged, expressed as a percentage of principal, by a lender to a borrower for the use of assets. Interest rates are typically noted on an annual basis, known as the annual percentage rate (APR).

Grace period – The grace period for principal is the period from the date of signature of the loan or the issue of the financial instrument to the first repayment of principal, i.e. period of time in which loan repayments are not required.

Repayment period – The repayment period is the period from the first to last repayment of principal. Maturity is the sum of both periods: grace plus repayment periods.

Security – Security is an asset (e.g. a car or property) as collateral for the loan which then becomes a secured debt owed to the creditor who gives the loan.

12 What features of this hypothetical product make it appealing for your organisation compared to alternative sources of funding?
- What do you find appealing?
- What do you find less appealing?
- How does this compare to alternative?

Probe on:

- Sum
- Interest rate

- Term
- Security – note to probe around views on IP
- Practicalities

13 In your opinion, how do these products compare with existing provision?
   - Private
   - Public

14 How likely or not would your company be to attempt to access this product?
   - Refine to certain to / very likely / likely / unlikely / very unlikely / certain not to
   - Is this in addition to existing funding?
   - Would you have sought to access this if the (IUK grant / BBB investment) had not been available [interviewer note – clarify that this is not the proposed arrangement, and that it is expected that Innovate UK will continue to offer grants alongside any new products, but we are interested in how they would compare for your organisation]

15 What size loan would you be likely to pursue to fund your innovation activities?

16 Would the following hypothetical changes make the product more or less appealing? / Make your organisation more or less likely to apply for it?
   Note: These hypothetical product examples have been selected to be cost-neutral for a 'typical' firm.
   - **Version B of the hypothetical product: A longer grace period, but a smaller interest rate subsidy**. Grace period to 5 years, but a 2% interest rate subsidy, and repayment over 5 years.
   - **Version C of the hypothetical product: A longer grace period, but a higher security requirement** - a grace period of 5 years, followed by 5 years of repayments, but a requirement for security to match the loan sum.
   - **Version D of the hypothetical product: Repayment dependent on the measured success of this project, but no interest rate subsidy** - 2 year grace period, followed by 8 years of repayment, and no interest rate subsidy. [also prompt for the interviewee's view of success in this instance and whether commercial success in their case could be easily measured and verified].

17 Introduction of the next question: The next question is to allow us to collect quantitative market data collection.
   - Taking each product overall, how likely or not would you be to apply for each? Would you be certain, very likely, likely, unlikely, very unlikely, or certain not to have applied for each of these products? Please explain why

     Note, if 'very unlikely', to depersonalise the question: Do you feel that your firm is unique in this regard? Or would you expect other innovating firms respond similarly?

D.6 Leverage

18 How do you believe that you would be viewed by existing and new investors / lenders if you had one of these innovation finance products? [refer to Version A first]
   - Would it help to attract future or additional investors, or would any obligations be seen as a deterrent?
   - How would the alternative products compare in this regard? (refer to Versions B, C, D).

D.7 Awareness raising

19 What are the key elements or features of the products which you think we should highlight when telling businesses about the new products?

20 What are the key things that you would want to know about the products when looking for finance and deciding if this funding was of interest?

21 How could the government most effectively communicate with firms such as yours further on these products or to raise awareness of any introduction?
- What kind of information would you want to see?
- Examples of how others had used the funding?
- Details of the terms and conditions?
- Lines which highlighting the differences between products?

D.8 Close and thank for participation and ask about anonymity requirement

Thank you for your input into the study. We appreciate your time.

22 Once we have completed our interviews and conducted an initial analysis of the evidence we are considering to hold a workshop with businesses to validate findings. Would you be interested in joining such a session to discuss this this topic further?
- Yes / No

23 In the introduction of the interview we stated that you would have an opportunity to select level of anonymity to share the data with BIS. Would you prefer us to provide them with:
- full non-anonymised transcript,
- full anonymised transcript, or
- only report the data in an aggregated form.

E : Recruitment process for financiers

E.1 Email invite for financiers

Recruitment email for financiers
Dear … The government is planning to introduce a set of new finance products, including government backed loans to complement existing Innovate UK grant support for innovation projects to be completed. Ipsos MORI, an independent research company, has been commissioned by the Department for Business, Innovation and Skills to consult with a number of *representatives of the investment community* such as yourself as part of the process of developing these products. We would like to speak with you to understand your view on the appetite for such products and consequently how companies using these finance products would be viewed by finance providers. Our partners from the British Business Bank, who are on the steering group of the research project, have provided us with your contact details, and suggested that you would be able to offer us a particular insight on these products. To this end, I would be grateful if you could suggest a convenient time over the next couple of weeks, for myself or one of my colleagues to come to interview you at your premises, at our office in London or over the phone. If you have any questions about the study, please do not hesitate to get in touch with us. Kind regards,

There is no requirement to make use of screening questions with this group as the contacts would have been provided by the British Business Bank who ensured that the right individuals within the organisations were contacted. However, we asked the following question when setting up the interview – either over email or phone:

We can treat any information that you share with us confidentially, and report some or all of the interview in an aggregate form if you feel that is appropriate. Or alternatively, would you mind if a representative from BIS or its partner organisations to also attended the interview as an observer?

F : Interview topic guide – financiers

Prior to attending the interview, the interviewer sent a confirmation email and some brief notes detailing what we would like to discuss, including a hypothetical illustration of the type of subsidised financial product that might be offered to firms that cannot access finance. We noted that this was purely an illustration to support discussion.

The interviewer also reviewed publicly available information about the investor / lender and triedy to gauge the proportion of portfolio of investment recipients in highly research intensive companies. We acknowledged that the focus of the interviews would be different for investors vs. lenders. The former would focus more on the impact of loans on firm / innovation value and they could give a perspective on the role of loans within the capital structure of a firm; the latter would be more interested in the potential for crowding-in and -out and we might also get a view on how best to structure the loans (noting the very obvious conflict of interest if they perceive it as duplicating what the private sector can do).

Note to Interviewers: this is a relatively long topic guide and it is important to ensure detailed coverage of the two main areas (anticipated business response and anticipated market response to the introduction of the hypothetical products). For investors the particular priority are questions 11, 12 and 13. would expect the following broad timings:

- Introduction (6.1) – 5min
- Overview of lender / investor and current market for funding innovation activities (6.2-6.3) – 10min
- Business response to new products (6.4) – 15min
- Market response to new products (6.5) – 15min
- Awareness raising and wrap up (6.6 – 6.7) – 15min

F.1 Interview introduction

Ipsos MORI, an independent research company, has been commissioned by the Department for Business Innovation and Skills to undertake a qualitative research exercise about the potential reception of new financing instruments for funding innovation activities in order to support a potential development of such instruments by the UK government.

If you feel that any, or all of, the information you provide to us is commercially sensitive, or should be treated in confidence for any other reasons we can explore ways to use it in an aggregated form only.

Would you be happy for us to record this interview and to help us during the analysis?

First of all we have a few questions about your organisation / portfolio.

Note on innovation:

A product innovation is the market introduction of a new or significantly improved good

or service with respect to its capabilities, user friendliness, components or sub-systems. Product innovations (new or improved) must be new to your enterprise, but they do not need to be new to your market. Product innovations could have been originally developed by your enterprise or by other enterprises or institutions.

A service innovation: New or significantly improved services

A process Innovation: New or significantly improved methods of manufacturing or producing goods or services, new or significantly improved logistics, delivery or distribution methods for your inputs, goods or services, new or significantly improved supporting activities for your processes, such as maintenance systems or operations for purchasing, accounting, or computing.

An organisational innovation is a new organisational method in your enterprise's business practices (including knowledge management), workplace organisation or external relations that has not been previously used by your enterprise. It must be the result of strategic decisions taken by management. Exclude mergers or acquisitions, even if for the first time.

A radical innovation is an innovation that has a potential to disrupt the market.

F.2 Overview of the lender / fund and their attitude to innovative firms

1. What is the nature and scale of your lending/investment in?

- Total funding volume
- Scale of investments provided (average and range)
- Type of funding provided – debt, equity, other
- Typical profile of companies supported:
    - Size (micro, small, medium)
    - Stage of development (pre-turnover or pre-start/start-up <=2years, early stage 2-5 years, later stage >5 years)
    - Sector (knowledge intensive services, high-tech manufacturing, core manufacturing, core services)
    - Market reach (local, regional, national, international)
    - Role of funding for UK businesses to conduct innovation activities within the portfolio – e.g. for R&D investment and innovative projects

2. How would you characterise your organisation's overall appetite for risk, specifically in the context of innovation risk?

- Do you consider the viability of an innovation project when determining financing?
- How do you typically account for and price project risk in financing?

F.3 Current market environment for businesses looking to access finance for innovation

As mentioned earlier, this research is focused on supporting businesses with high growth potential that engage in innovation activities with potential to result in significantly new products and processes (with the potential to disrupt the market).

3. Do you believe that there is a significant group of economically viable innovative projects that the market is not currently providing finance for?

- How would you characterise this group? [criteria above]
- Are there any specific types of innovation project where this is a greater issue?
- What are the most significant problems that such firms face in accessing finance?
    - Difficulties in assessing technological proposal
    - Availability of funding
    - Cost of funding
    - Meeting repayment structures
    - Security
    - Reluctance to release ownership to secure more investment
    - Discouraged innovators

F.4 Anticipated business response

To gather your views on the potential business community potential response we have developed a hypothetical example of some features that a future innovation finance product might have. Note this is not a product on which the government is looking to consult formally, but is an illustration of the type of arrangement under consideration, presented here to support discussion.

Innovation loan version A characteristics:

Sum (60% of project cost).

Below market rate of interest: a 3% interest rate subsidy, made available to firms who cannot access finance, with a minimal threshold of 0.1%.

Grace period: 2 years depending on time taken to get to market.

Repayment period: 8 years after grace period, not contingent on the commercial success of the project.

Security requirement that may be less than the size of the loan: secured over relevant collateral.

Practicalities – a loan available to a single company only (i.e. not a consortium), and investments would only be available to companies that can demonstrate that their innovation meets a set of criteria including the potential size of the market opportunity, and that the project will not likely receive funding otherwise.

4. What response would you anticipate from innovative firms if a product of this nature was introduced?

- Would you expect a high demand for this kind of product?
- Which type of business would respond particularly positively?
- Are you aware of any examples of businesses or types of businesses that would find it difficult to finance their innovation through such an instrument?

5. What features of this hypothetical product make it appealing or unappealing for these companies?
  - What do you think they would find appealing?
  - What do you think they would find less appealing?
  - How does this compare to alternative?

Probe on

- Sum
- Term
- Interest rate
- Security
- Practicalities

6. Do you think any of the following changes would make the product more or less appealing? / Make businesses looking for funding for innovation activities more or less likely to apply for it?
   Note: These hypothetical product examples have been selected to be cost-neutral for a 'typical' firm.
  - Version B of the hypothetical product: A longer grace period, but a smaller irate subsidy. Grace period to 5 years, but a 2% interest rate subsidy, and repayment over 5 years.
  - Version C of the hypothetical product: A longer grace period, but a higher security requirement - a grace period of 5 years, followed by 5 years of repayments, but a requirement for security to match the loan sum.
  - Version D of the hypothetical product: Repayment dependent on the measured success of this project, but no interest rate subsidy - 2 year grace period, followed by 8 years of repayment, and no interest rate subsidy. [also prompt for the interviewer's view of success in this instance and whether commercial success in their case could be easily measured and verified for such firms].

F.5 Anticipated market response / Leverage

7. How do these products compare to those already available on the market?
  - Are there any that are similar?
  - If so what are they and what organisations provide them?
8. What direct implications would the introduction of these products have for your organisation?
  - Would it cause you, (or other financiers) to change the nature of mix of financial products that you offer?
  - Which specific products would it affect?
  - Which types of investors would be most directly affected / might be expected to respond by changing their products?
9. In what ways would these products compete with, existing products offered by private sector debt and equity finance providers?
  - Is there scope for them to increase demand for finance?
10. What effects could there be on firms that are not innovation-active from introduction of this hypothetical product?
  - Prompt around any changes in the market identified above
11. How would firms who have taken up these innovative products be viewed by you or other potential investors / lenders?

- Do you believe that this would help to attract investors / lenders, or would any obligations be seen as a deterrent?
- Would holding such a loan make the potential investee seem more or less valuable?
- Would it make it a not viable investment propositions?

12. How would the alternative products compare in these regards? (refer to Versions of the hypothetical product B, C, D)
13. What scope is there for new government-backed equity products to complement either the current offering, or products such as these?

F.6 Awareness raising

14. Where do you think that these types of innovative companies which we are talking about access information on finance sources?

Note to interviewer: do not read out

- Local entities such as Growth Hubs or Chambers of Commerce
- Business Support Helpline
- Government websites, including Innovate UK
- Knowledge Transfer Network resources and events (incl. newsletters, websites, sectoral conferences)
- Financial advisory services
- Banks (High street, Challenger banks)
- Accountants
- Investors
- Direct approach of investors
- Other online sources
- Personal contacts (e.g. friends, other innovators, other business owners, word of mouth)
- Other

15. How could the government most effectively reach firms such as yours to communicate further on these products or to raise awareness of any introduction?

- Does this differ for companies who actively search for funding and more passive peers?

F.7 Close and thank for participation

16. Once we have completed our interviews and conducted an initial analysis of the evidence we are considering to hold a workshop with businesses, financiers and policymakers. Would you be interested in joining such a session to discuss this topic further?

- Yes / No

G : Innovation Finance – Products Overview

Ipsos MORI, an independent research company, has been commissioned by the Department for Business Innovation and Skills to conduct qualitative research about the appetite for different publicly financed debt products for innovation projects. To support discussion here and to help gather views, we have developed a hypothetical example of an innovation finance product. Please note that this is not a product on which the government are looking to consult formally, but is an illustration of the type of arrangement that are being considered and is presented here to support discussion.

In the interview we would first like to seek your views about **Hypothetical Product A** which has the following features:

Sum – Funding would be available for a loan of up to 60% of the cost of a project. This sum is expected to be paid back along with interest.

Interest rate – This product would offer a 3% interest rate subsidy to firms who are finding it difficult to access finance. The interest rate is the amount charged, expressed as a percentage of principal, by a lender to a borrower for the use of assets.

Grace period – There would be an initial grace period of 2 years over which no payments would be expected. The grace period is the time from the date of drawing down funds to the first repayment, i.e. period of time in which loan repayments are not required.

Repayment period – The sum (plus interest) would then be repaid over a period of 8 years – The repayment period is the period from the first to last repayment.

Security – Collateral required may be less than the size of the loan. Security is an asset (e.g. a machine or property) as collateral for the loan which then becomes a secured debt owed to the creditor who gives the loan, and the loan would be secured over relevant available collateral.

Practicalities – Firms that need public support to access finance to support an innovation project would be eligible Ability to demonstrate that their innovation meets a set of criteria.

We like to discuss what features of this hypothetical product make it appealing for your organisation compared to alternative sources of funding, and whether products with the following alternative features would be preferable:

	Interest rate	Grace Period	Repayment	Security
B - a longer grace period, but a smaller irate subsidy	**Government subsidy of 2% with min. threshold of 0.1%)**	**5 years**	5 years	May be less than the size of the loan
C - a longer grace period, but a higher security requirement	Government subsidy of 3% with min. threshold of 0.1%)	**5 years**	5 years	**Equal to size of the loan**
D - repayment dependent on the success of this project, but no interest rate subsidy	**(No government subsidy)**	2 years	8 years but, ***contingent*** on project success	May be less than the size of the loan

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