

SME INNOVATION, EXPORTING AND GROWTH

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**SME innovation, exporting
and Growth:
A review of existing evidence**

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Executive Summary

SMEs which have a track record of innovation are more likely to export, more likely to export successfully, and more likely to generate growth from exporting than non-innovating firms. Both internal and eco-system factors are important in shaping SME innovation and exporting. For SMEs specifically, however, the evidence base remains limited in some areas.

Internal enablers - there is strong evidence for the importance of skills, R&D, capital investment and liquidity in shaping SME innovation and exports. The evidence base is weaker - particularly for SMEs – in terms of the value of design, intellectual property management, people management, employee engagement, workforce diversity and other firm characteristics such as family ownership.

External enablers – ‘openness’ - purposive links formed between SMEs and their partners – play a positive role in innovation and export growth, particularly in strong eco-systems. Targeted supply-side and demand-side policies have also proven effective in promoting SME innovation and exporting. Less is known about which eco-system characteristics are most important in influencing SMEs’ innovation and export success.

For firms of all sizes there is a strong positive association between innovation, exporting and productivity and/or growth. Innovation and exporting work jointly to improve business performance. Evidence on the inter-relation between innovation and exporting in SMEs specifically, however, is limited.

Evidence on the internal drivers of innovation and exporting reinforces the importance of a number of key UK policy initiatives. Measures such as the recently extended Employer Ownership Pilot, Innovation Vouchers, Smart Awards, Knowledge Transfer Partnerships, and the Design Leadership Programme are all likely to have significant performance benefits.

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Many aspects of the UK business eco-system are also strong. Key issues remain about access to finance and strengthening the demand-side. The Business Bank proposals and suggestions for expanding Small Business Research Initiative (SBRI) are therefore welcome. Local initiatives – perhaps through the City Deals – may also help SMEs build productive partnerships with other firms and organisations such as universities.

Synergies between SME innovation and exporting suggest the value of co-ordinated support mechanisms. Responsibility for supporting exporting and innovation are, however, divided between UKTI and TSB. Close collaboration is necessary to ensure SMEs are provided with timely and accessible support for innovation and exporting.

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SME innovation, exporting and growth – A review of existing evidence

1. Introduction

The increasing globalisation of markets and strengthening of global value chains both emphasise the importance of firms' export competitiveness¹. For SMEs, however, there is a strong positive relationship between exporting and growth and between exporting and innovation activity². Indeed, the evidence considered in more detail later in this paper suggests that SMEs which have prior innovation are more likely to export, more likely to export successfully, and more likely to generate growth from exporting than non-innovating firms. European SMEs that export grow more than twice as fast as those that do not, while 'internationally active' SMEs are three times more likely to introduce products or services that are new to their sector than those which are entirely domestic in orientation³.

The evidence also suggests that exposure to export markets is important in realising the potential of innovative and high growth firms in the UK⁴. The joint effects of innovation and exporting lead to economy-wide productivity benefits through a dynamic competition in which innovating and exporting firms gain market share at the expense of others. Productive resources then flow towards these firms which can use them most profitably. As a result, exporters and innovators tend to grow faster than non-exporters and non-innovators.

Because exporters and innovative firms also tend to have higher productivity growth, the process of exporting and innovating which reinforces the growth of these firms also drives up productivity growth in the UK economy as a whole (the 'batting average' effect⁵). There is therefore a potential rationale for policy interest in exporting and innovation at the firm level.

This matters in the context of SMEs. There is evidence that high growth SMEs also tend to have higher productivity than other firms of similar size⁶.

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Since such firms also tend to innovate and/or export, there is good reason to be concerned with the innovation and exporting performance of SMEs.

In this White Paper we summarize the current state of knowledge of the enablers of SME innovation and exporting, identifying those areas of general agreement and areas where the evidence remains more contentious. We also consider evidence on the interaction of SME innovation and exporting and the policy implications arising from this. Our perspective is inevitably rather broad, focussing on the generalities of SME exporting and innovation. We recognise that patterns of innovation and export behaviour – and their determinants - may differ significantly between different sub-groups within the general population of SMEs, and where sub-group evidence exists we refer to it. Often, however, even the broad brush evidence for SMEs is rather limited. Somewhat similar caveats apply to our main themes of innovation and exporting. We do not systematically differentiate between radical and incremental innovation, product or service innovation, but where evidence for SMEs is available this is highlighted. We also focus on exporting and recognise that this is only one dimension of firms' internationalisation activity.

Our joint focus on innovation and exporting reflects the strong link which exists between the two activities and their combined link to performance. Both are important as data from the 2008 Community Innovation Survey⁷ suggests that UK SMEs are not particularly innovative in comparison with the rest of Europe. In terms of the proportion of SMEs introducing at least one product or process innovation the UK ranked 25th of 33 countries⁸; 25 per cent of UK SMEs were product or process innovative against an EU average of 34 per cent. In terms of organisational or marketing innovations⁹, UK SMEs did a little better, ranking 19th out of 32 countries.

In terms of exporting there is also considerable scope for improving the performance of UK SMEs. A survey of internationalisation among 9,480 SMEs in 33 European countries in 2009, for example, places UK SMEs 19th out of the EU27 in terms of the proportion of SMEs engaging in

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exporting activity (21 per cent against an EU average of 25 per cent). To some extent this reflects a market size effect – the proportion of exporting SMEs in the UK is comparable with other larger countries such as Germany and France – but still the figures suggest the potential for improvement¹⁰. Exporting is more common among UK mid-market companies, but even here the evidence suggests that UK firms are losing market share to their EU competitors¹¹. Prospects for slow UK market growth over the next few years and the persistent UK trade deficit also emphasise the importance of strengthening export competitiveness in the UK to take advantage of international market opportunities.

The EU internationalisation survey referred to above suggests that, for the sample as a whole, approximately half of the ‘internationally active’ SMEs also innovated. Since around one quarter of the sample exported, this suggests that the vast majority of SMEs neither export nor innovate¹², and very few do both, a fact that should be borne in mind in the review of the evidence undertaken below.

Before reviewing the evidence on the enablers of SME innovation and exporting it is worth clarifying what we mean by ‘innovation’. Our perspective here is deliberately broad, embracing both the technological and non-technological dimensions of firms’ innovative activity as well as the potential for both radical and incremental change¹³. An intuitive - and suitably broad – innovation definition is suggested by the US Advisory Committee on Measuring Innovation which defines innovation as:

‘The design, invention, development and/or implementation of new or altered products, services, processes, systems, organisational structures or business models for the purpose of creating new value for customers and financial returns for the firm’¹⁴.

The term ‘exporting’ we use here in its normal sense of outward international trade in goods and/or services, conducted either directly or through a third party (such as a sales agent). Apart from being important in

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its own right, exporting is often the initial stage in the internationalization process for SMEs¹⁵.

We divide our discussion of the evidence base on the enablers of SME innovation and exports into three main sections. Section 2 focuses on the internal enablers, i.e. those capabilities of individual SMEs which have been linked most strongly to innovation and export success. Section 3 focuses on the external enablers, those elements of firms' operating environment which may either enable or hinder innovation and export performance. The importance of such external influences has been emphasised in recent discussion of open innovation and global value chains. Section 4 focuses on the rather complex and dynamic links between innovation, exporting and business growth. Section 5 then considers some of the strategic and policy implications.

2. Internal enablers of innovation and exporting

The dynamic contribution of SMEs to innovation and technological development is often emphasised, with examples such as Silicon Valley often cited as hotbeds of small business innovation¹⁶. The strengths and weaknesses of SMEs in terms of innovation and exporting have also been widely discussed: typically smaller firms are said to have advantages in terms of quick decision making, willingness to take risk and flexibility in responding to new market opportunities; while larger firms have advantages linked to scale and the availability of specialist resources. This suggests that 'the relative strengths of large business are predominantly material (economies of scale and scope, financial and technological resources etc.), while those of small firms are mostly behavioral (entrepreneurial dynamism, flexibility, efficiency, proximity to the market, motivation)¹⁷.

In this section we review the evidence on the internal enablers of SME innovation and exporting – skills, finance, R&D etc. A key theme which emerges is the resource constrained nature of many small firms and

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therefore their dependence on the broader eco-system in which they are located. The availability and accessibility of these external resources is the focus of Section 3.

2.1 Skills, leadership and people management

The research literature provides considerable evidence of the direct contribution of workforce, managerial and marketing skills to innovation and exporting, although the literature on SMEs specifically is relatively limited¹⁸. In the research literatures on national competitiveness there is also broad agreement that firms require distinctly different skill sets to pursue different market strategies – key elements of which are innovation and exporting. ‘While employees with general or multi-tasking skills are ... needed for radical product innovation, workers with firm specific or occupational specialisation skills presumably facilitate incremental product innovation. Low qualified and hence, inexpensive labour is claimed to be required for low cost production based on product imitation¹⁹. Different skill needs are also evident for firms adopting different exporting strategies, with one recent study finding that firms exporting to more competitive, high-income countries had more skilled workers²⁰.

The skills needed for innovation and exporting also differ at different stages of the value chain. For example, technical staff or creative staff may play a key role in the early, developmental, stages of an innovation project but marketing staff are likely to be more important in terms of commercialisation²¹. There is also evidence that the set of managerial skills needed for entering export markets is different from that required for succeeding in export markets. Commercial and managerial experience help firms become exporters, but once over the exporting hurdle it is the level of managerial education, rather than experience, that has a substantially positive effect²².

Varying skill needs are also reflected in the need for ‘ambidextrous leadership’ which moves from transformational leadership towards more

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focussed transactional leadership as innovation projects move closer to market²³. Business leaders also have a crucial role in ensuring effective employee engagement in innovation and exporting. There is suggestive evidence that effective people management and team development and management can play a significant part in ensuring the success of both innovation and exporting projects and so contribute positively to SMEs' success²⁴.

Globalising markets and increasingly open models of innovation therefore pose significant skills and people management challenges for smaller firms. This in turn emphasises the importance for SME innovation of the national 'skills ecosystem' and related legal, vocational education and industrial relations systems²⁵. Partnering or collaborative working for innovation or exporting, however, also offer SMEs potential route for accessing external skills and so overcoming internal skill constraints. This may occur in B2B partnerships, or supply chain relationships or through support measures such as Knowledge Transfer Partnerships (KTPs). One study for example, highlights a KTP case in which a graduate placed with a manufacturing company instituted ten new innovation routines of which seven were related to new information gathering or absorption²⁶. Maintaining and developing collaborative relationships also has significant skills and people management implications, however, and one recent study of technology transfer centres in Italy identifies the importance of the combination of technical skills and networking competences as well as relevant relational capital²⁷.

2.2 Diversity

Robust evidence on the relationship between diversity, innovation and exporting is recent, often involving matching data from innovation and employee surveys. Perhaps the best study relates to Danish SMEs and suggests a positive relationship between innovation and workforce educational and gender diversity, a negative effect of age diversity, and no significant ethnicity effect²⁸. A recent UK study also identifies a positive link

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between diversity and process innovation²⁹, while a positive gender diversity effect is also evident in a recent study of the influence of company boards on innovation in France³⁰. Other studies have also suggested that cultural diversity too may also relate positively to innovative outcomes, with the benefits of cultural diversity greatest in the early formative stages of innovation projects³¹. There is less direct evidence on the impact of cultural diversity on exporting. It has been suggested, however, that firms managing culturally diverse workforces may develop managerial skills which are also helpful when exporting, and that this learning effect may suggest a positive – albeit indirect - relationship between exporting and workforce diversity. More direct exporting effects may be evident from diversity within firms' leadership teams. These are discussed below.

2.3 Research and Development

In-house research and development (R&D) plays a crucial role in firms' ability to generate new knowledge which may provide the basis for proprietary intellectual property and innovation. In broadly based studies of the determinants of innovation, firms' R&D capability is almost always strongly and positively linked to innovation outputs, a relationship which is stronger in research-intensive industries³². Even in low-tech manufacturing and service sectors, where R&D might be thought to be less important, the evidence suggests positive R&D-innovation relationships. Two main mechanisms are thought to be important in this relationship: first, R&D may create new knowledge which provides the basis for innovation; second, skilled R&D staff may increase firms' absorptive capacity, i.e. their ability to assess, access and absorb external knowledge³³. One recent Korean study of innovation in service sector SMEs, for example, emphasises the importance of both internal R&D and externally sourced knowledge for innovation as well as the complementarity of the two knowledge sources.

In larger firms, R&D may be formally organised in an R&D department or unit. In the majority of smaller firms, reflecting the nature of innovation activity itself, R&D activity where it takes place is more often informal, ad

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hoc and opportunistic. R&D in SMEs is also less likely to be a specialist function than in larger firms, with development work often being undertaken by skilled employees or senior management. One implication – strongly supported by the empirical evidence – is that innovation in smaller firms is less dependent on internal R&D than that in larger firms and more dependent on external knowledge obtained either through partnerships or spillovers³⁴. One recent study of Irish SMEs suggested that around 40 per cent of the innovative output of small manufacturing firms (with less than 50 employees) was attributable to external knowledge compared to 25 per cent of that of larger firms³⁵.

Evidence on the direct relationship between R&D and exporting is less clear, and ‘a number of studies have found an insignificant relationship between R&D investment and export intensity. This leads to the suggestion that what really matters for exporting is innovation (both product and process) rather than R&D, because the ability to compete in international markets is ultimately influenced by the firm’s capacity to compete internationally, rather than its investment in research activity. This may be especially true for SMEs, where formal R&D measures markedly under-report their research activity and degree of innovativeness³⁶.

Nevertheless, other work on UK firms does suggest that R&D, innovation and exporting are mutually reinforcing³⁷.

2.4 Capital investment and equipment

Recent macro-economic evidence suggests a positive link between nations’ fixed capital investment and export market performance³⁸. At the level of the individual enterprise notions of embodied technical change, through which firms update their technologies through fixed capital investment have a long history. Indeed, such purchases may be another way in which innovative SMEs overcome internal resource limitations. One study of young Italian innovative SMEs, for example, found that purchases of machinery and equipment were the ‘crucial’ driver of innovative outputs.

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The authors conclude that young innovative SMEs ‘appear to be entrepreneurial entities which need to acquire external knowledge in order to foster their own innovation activity and are therefore crucially dependent on the external environment’³⁹. Acquiring such capital does, of course, depend on the accessibility of investment finance which may be a particular issue for young innovative SMEs, particularly where these firms are also seeking to export. In Canada, for example, there is some evidence that SMEs which were growth oriented and which were seeking to export had a particularly high turndown rate when seeking external finance, perhaps due to perceived risk⁴⁰.

2.5 Internal financing

Small firms often face particular problems in accessing external finance for innovation and export development as the standard issues of viability and legitimacy associated with smaller firms are exacerbated by the commercial and technical risk associated with their innovation and/or export project. In the early stages of development – exploration of market potential, product or service development – this mix of uncertainty and risk may make it particularly difficult for firms to present a robust case to potential finance providers, leading to significant turn-down rates⁴¹. Developing a robust business case may become more feasible, however, once the initial risks are overcome and the focus moves to the establishment of firms’ operations, market introduction etc. Even here, however, commercial risks are likely to be significant, particularly in situations where a firm’s export operations or innovation is unprotected either by strategic or legal frameworks. This is likely to place increased emphasis on the internal financing of such projects.

A number of studies have considered the role of internal financing on expenditure on R&D, generally identifying positive relationships between cash-flow, liquidity and R&D investment. Studies for smaller firms also suggest that internal funding was more important for innovation in smaller firms than for larger companies – perhaps reflecting stronger external

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market constraints on smaller firms⁴². Essentially similar findings are evident for exporting: financial constraints can act as a barrier to smaller firms engaging in exporting⁴³. Where there is evidence of market failure, this suggests the potential value of public intervention to help potential SME exporters and innovators overcome initial (sunk) entry/R&D costs and expand their range of products, services and markets. Potential interventions are discussed later in this paper.

2.6 Design

The importance of design as a contributor to innovation success has been emphasised due to the increasing ‘design intensity’ of a wide range of products⁴⁴, and the ability of designers to enhance products’ functional, emotional and symbolic value⁴⁵. Design-driven or design-led new product development processes may also contribute to the development of more radical innovations. Evidence from innovation surveys also suggests a positive linkage between design investment and innovation outputs in a range of contexts⁴⁶. Less comprehensive evidence exists on the links between design and export outcomes. There is, however, some evidence that export results are stronger where firms orient their product design explicitly towards the needs of international customers⁴⁷. Indicative evidence also suggests that in supplier dominated industries investments in design and productive efficiency may have a stronger influence on export success than investments in internal R&D or external knowledge gathering⁴⁸.

It has been suggested that SMEs may face particular behavioural, cultural and resource issues which may reduce their ability or willingness to engage with design as part of their innovation activity. In SMEs,

‘design is often perceived to be costly, time-consuming, and unnecessary, because products are assumed to be sold mainly based on technical characteristics and small firm owners may have a narrow view on design, limited to styling only. Design is seen as

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just another activity in the front end of the product development process, while other activities, such as attending to short-term customer or retailer demands, are prioritised⁴⁹.

SMEs may, for example, fail to understand the potential value of design for innovation success⁵⁰. Alternatively, communication difficulties may mean that SMEs find it difficult to relate to designers and establish common objectives and aspirations⁵¹. Smaller firms may also be less likely to have internal design resources than larger firms and may therefore be more dependent on external design providers. 'External designers' skills in creation and design management appeared to be complementary to the manufacturing capabilities and customer knowledge available in small manufacturing firms. Yet, only those small firms that worked with external designers before involved them in an integrated role, suggesting that small firms first need to experience collaboration with external designers to fully appreciate their potential contribution⁵². Again this emphasises the potential importance of SMEs operating environment for innovation, the availability of external design resources and the potential value of support measures which help SMEs to embed design practices⁵³.

2.7 Intellectual property management

The role of patents, protected designs and copyright in innovation and exporting have been much discussed and it is often suggested that SMEs may be disadvantaged in intellectual property (IP) regimes due to the costs of IP registration and protection⁵⁴. It has also been suggested that as individual SMEs typically have fewer patents etc. they may be less able to adopt a technology swapping mechanism to defend their IP rights than larger companies which may have a wider patent portfolio⁵⁵. There is some evidence that larger patent holdings may also be more conducive to open innovation⁵⁶. Recent UK empirical (post-2005) evidence, however, suggests a rather different and surprising picture with SMEs and micro firms accounting for more UK patents than larger companies, and the absolute number of trade mark applications by SMEs and micro firms

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exceeding that for larger UK firms. It remains the case, however, that only around 2.1-2.4 per cent of all UK SMEs are 'IP active', with IP active SMEs tending to be older than average. Levels of IP activity among SMEs also vary strongly between regions and sectors⁵⁷, however, there is little consistent evidence of any clear association between IP activity and either SME growth or survival⁵⁸. The authors of one UK study conclude:

'These findings support the view that SMEs see value in registering their innovations to acquire IP protection ... the view that SMEs may be so financially disadvantaged, or lacking in information about IP assets, that they do not widely use these systems of protection is rejected by this study'.⁵⁹

SMEs' IP protection strategies do, however, differ from those of larger firms focussing more often on speed to market or secrecy rather than patenting. One exception appears to be firms working with universities – typically R&D intensive or science-based small firms for which patents remain an important mechanism for appropriating the returns from innovation⁶⁰. For these firms patents also provide an important signalling mechanism, attracting customers and enticing venture capital investments⁶¹.

2.8 Leadership and strategy

While there has been considerable discussion about innovation strategy in the research literature the current state of knowledge is characterised by 'conflicting theoretical predictions, persisting knowledge gaps and theoretical inconsistencies'⁶². Relatively few studies also focus specifically on innovation strategy in SMEs suggesting few areas of agreement in terms of the 'best' innovation strategies. For example, while there is much discussion of 'born global' firms⁶³, there is evidence that for many SMEs exporting is an opportunistic and sporadic activity, rather than a strategic priority. Recent analysis suggests that firms often engage in relatively intermittent exporting for extended periods⁶⁴, and that sporadic exporting is commonplace among UK SMEs without either entry or exit from export

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markets being a coherent strategy⁶⁵. Similar results have been found for Italian SMEs, with repeated, serial entry and exit to and from export markets being relatively commonplace, and firms taking time to build up the experience and internal assets necessary to make export market entry a clear strategic decision⁶⁶. In addition, there is evidence that highly innovative UK SMEs have an approach to export markets which is not particularly strategic. Instead, these relatively small and nimble enterprises may be responding to the opportunities afforded by orders coming from overseas and are prepared to dip into and out of export markets as the opportunity presents itself⁶⁷.

One area of strategy in which there is growing consensus, however, is the choice between ‘closed’ and ‘open’ innovation and the extent of SMEs’ external knowledge search. Here, the evidence points strongly towards the superiority of open models of innovation – particularly for SMEs – and in particular to innovation partnering along firms’ supply-chains. Such partnerships may help both to increase levels of innovation in the short-term but also to help SMEs sustain their innovation success⁶⁸. The evidence also suggests that co-operative strategies may also help SMEs to enhance their knowledge about export markets and improve export performance⁶⁹. Other strategic factors linked to export success among SMEs have been: an explicit exporting strategy, systematic planning and organising for exporting and strength in marketing and product/service quality⁷⁰.

One recent study – based on Spanish data – captures a number of these factors and examines the complementarity between innovation and exporting as drivers of SME growth. Their evidence provides strong support for the reinforcing impacts of innovation and exporting on SME growth and the potential for a ‘virtuous circle’ in which innovation drives exports, and the external knowledge gained from export markets drives further innovation and growth⁷¹.

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A number of studies also suggest the importance of leadership in shaping firms' innovation outcomes, and emphasise differences between the appropriate leadership styles for innovation in larger and smaller firms. In larger firms, there is positive evidence of the relationship between transformational leadership and organisational innovation⁷², however, such effects appear strongly moderated by organisational size. This suggests that innovation in smaller firms may benefit more from transactional leadership styles as SME leaders are able to monitor and reward employees more effectively⁷³. In terms of exporting the evidence also emphasises the role of management and leadership in success reflecting: (a) favourable and supportive attitudes (including perceptions, motivations, and commitment) to exporting; and, (b) the quality of managerial resources, including management education/background⁷⁴.

2.9 Family firms

There is little consistent evidence on how family ownership influences innovation and exporting behaviours and success in SMEs. Family firms are often said to differ from non-family firms, however, in terms of their objectives, strategies, corporate governance and entrepreneurial behaviour. In particular, family owned firms are often characterised as risk averse, perhaps suggesting a bias towards more incremental rather than radical innovation. Some recent empirical evidence, however, casts doubt on this rather negative view of innovation in family owned firms⁷⁵. One recent German study, for example, links family ownership positively to firms' ability to sense innovation opportunities and organisational innovation⁷⁶. Family firms may, however, be less 'open' than their non-family counterparts having fewer external partnerships than non-family firms. However, such effects are strongly conditioned by the experience and educational attributes of the CEO and management team⁷⁷. Evidence on the link between family ownership and export performance is sparse but some studies have suggested a negative relationship between family ownership and export outcomes linked primarily to resource constraints⁷⁸.

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2.10 Internal enablers – summary

Considerable progress has been made over the last decade in our understanding of the internal enablers of innovation and exporting, although the evidence base for SMEs remains limited in some areas. There are perhaps four main areas in which there is broadly based and consistent evidence. First, in terms of skills it is clear that high quality skills really matter for innovation and exporting, although different innovation/export strategies require very different skill sets. The importance of technical skills is also increasingly matched by the value of networking and team-working skills. Second, there is strong and consistent evidence of the positive relationship between R&D and innovation across all firm size bands and industries. This undoubtedly reflects both the knowledge creation and absorptive capacity effects of R&D. Thirdly, although there are relatively few studies, there emerges a consistent and positive linkage between firms' capital investments and innovation and export success. Finally, a similarly positive relationship exists between innovation and export activity and strong cash-flow and liquidity.

In a number of other areas the evidence base – particularly for SMEs – remains either inconsistent or limited. In terms of the internal enablers of innovation and exporting there are, at least, five areas in which the evidence remains limited. First, while the relationship between different skills indicators and firm level performance outcomes is well understood, the role of people management and employee engagement is much less well evidenced, particularly in SMEs. Second, while there is strong suggestive evidence of the value of design for innovation and exporting in general there has been little rigorous analysis for SMEs. Very much the same could be said for the relationship between R&D and exporting in SMEs. Third, while there is some rather surprising macro evidence on IP management in SMEs the micro evidence both on the extent of IP management and its performance benefits remains limited. Fourth, the links between workforce diversity and firms' innovation capacity remains little explored, and there is almost no evidence on any link between

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diversity and exporting. Similar considerations apply to other firm characteristics such as family ownership. Finally, relatively little is known about the relationship between business strategy and planning and innovation and exporting success in SMEs.

3. External enablers of innovation and exporting

Earlier sections of this paper have emphasised the significant extent to which the innovation and exporting activities of SMEs depend on external resources. This reflects changes in the nature of the processes underpinning innovation as firms seek to adopt leaner, more rapid and more effective innovation strategies. This has led to consideration of open, partnered or networked innovation where knowledge resources are pooled and innovation risks can be shared. Open innovation itself has been defined as

‘... the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology’⁷⁹.

For SME’s open innovation provides a way of overcoming internal resource constraints which may limit the scope of their innovation activities. Open innovation may also help smaller firms share innovation risk and match innovation resources flexibly to match opportunistic or intermittent episodes of innovation activity. The potentials for open innovation in SMEs are greatest however, where SMEs are operating in ‘strong’ industrial and innovation eco-systems where potential innovation partners are plentiful and easily accessible⁸⁰. In the research literature this is reflected in discussions of regional innovation systems, innovative milieu and notions such as the triple helix⁸¹.

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In this section we briefly review the evidence on the key external enablers of SME innovation and exporting. Two main categories of external enablers are considered: external factors or linkages which may enhance or augment the knowledge base of the SME and provide the basis for innovative or export development; and, resource enhancing or augmenting factors which may help SMEs to overcome internal resource constraints. This is followed by a brief review of demand-side drivers of SME innovation and exporting.

3.1 Knowledge enhancing or augmenting factors

Spatially specific drivers of innovation and exporting have been much discussed in the research literature in terms of industrial districts, industry clusters, innovative milieu and innovation systems. Recent literature, however, distinguishes three main channels through which firms may obtain external knowledge which may contribute to their innovation and exporting activity:

- ‘Being there’ in which firms benefit from un-priced, and perhaps unanticipated, flows of local knowledge or information mediated through social contacts or labour market linkages. Such effects – agglomeration economies - are likely to be more significant the ‘stronger’ and better connected the local industrial eco-system and may be reinforced by local competition and selection effects⁸².
- ‘Openness’ - partnering in which firms engage in deliberate relationships with other organisations in order to gather either technical knowledge or market understanding. Such relationships may vary widely in nature, be formal or informal, collaborative or contractual.
- ‘Learning by exporting’ in which firms gain market – and also potentially innovation-related – knowledge through their exporting activities. Such learning is more likely to be more influential where exports go to knowledge-intensive or to highly competitive markets

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Knowledge gains from ‘being there’ reflect the character of knowledge as a semi-public good with properties of non-rivalry, i.e. that knowledge is:

‘Spatially bounded, and access to which requires nothing more than cluster membership ... local knowledge exchange is prompt or spontaneous because local firms are assumed to be more willing to share knowledge and exchange ideas with other local actors as a result of shared norms, values, and other formal and informal institutions that hold down misunderstanding and opportunism’⁸³.

For SMEs alternative locations therefore offer different ranges of local knowledge. Evidence from Australia, for example, suggests that more urban locations may allow SMEs easier access to export related infrastructure and networks and so contribute positively to export outcomes⁸⁴ while another study concluded that export performance ‘is strongly influenced by background variables from the local business environment’⁸⁵ However, it is clear that ‘the mere presence, or absence, of key institutional elements of the local or regional innovation system also affects their innovative capacity and their potential to serve as nodes for cluster development. Many clusters enjoy the knowledge assets and research infrastructure that are necessary for the development of an innovation-based development strategy, but they differ dramatically in their capacity to mobilize these assets in the pursuit of such a strategy’⁸⁶.

Knowledge gains from ‘being there’ may be augmented by SMEs’ purposive development of linkages to outside sources of knowledge⁸⁷. Indeed, recent empirical evidence suggests the prevalence of open innovation among SMEs has increased in recent years⁸⁸. (However, it remains the case that small firms adopt open innovation practices significantly less than medium-sized firms⁸⁹).

An SME’s degree of openness is not the only influence on innovation performance: the nature of that openness may also matter. Specifically, there is clear evidence that some external linkages have a greater impact

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on a firm's innovation than others. The first naturally occurring innovation linkages typically form with firms' clients and suppliers. For example, a recent study of c.1500 European SMEs finds that customers are often an attractive source of innovation inputs⁹⁰. Some types of innovation linkages - for example, with universities and research centres - may, however, require greater expertise and absorptive capacity from the firm: small firms are more likely to lack these resources. Linkages with universities and researchers are also fraught with risks due to the uncertainty of any commercial applicability of research outcomes and larger firms may be better equipped for leveraging these risks. Again, evidence is limited here, but does suggest that supply-chain linkages (i.e. with customers and suppliers) are not only the most common forms of innovation linkage for small firms, but also have the largest positive effect on innovation performance⁹¹.

Evidence also suggests the value of diversity in terms of firms' portfolio of external alliances, and that small firms benefit more from openness than larger firms⁹². The evidence also points to strong sectoral and regional contrasts⁹³. For example, there is some evidence that the benefits of openness may be weaker in services where some firms may not have developed the managerial routines to take advantage of external knowledge sources⁹⁴. There is also some recent evidence which points to marked - and somewhat surprising - contrasts in the extent to which firms in different UK regions ally internal R&D capabilities with external linkages:

'UK regions such as the Midlands and, even more, Northern England, show the greatest evidence of utilizing a richer variety of collaborative linkages at the firm level to restructure their regional systems of innovation and enhance their technological capabilities. On the contrary, the highly internationalized metropolitan region of London displays a weak association between cooperative patterns and the technological status of firms located there⁹⁵.

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Purposive links may also help SMEs to overcome the information and set-up costs they face in entering foreign markets. This may be particularly important for SMEs which have limited internal knowledge and financial resources. Evidence suggests that exporters tend to be substantially better networked externally than non-exporters. Importantly too, external collaboration is positively associated with exporting, but the nature of this effect differs with firm size; specifically, for large and medium-sized firms it is the existence of joint business operations that boosts exports, while for small firms it is business and trade association membership that matters, perhaps suggesting that information on foreign markets is a key issue for small enterprises⁹⁶. Studies from other countries find similar results. For example, a study of South African manufacturing SMEs⁹⁷ finds that greater access to information on export markets both encourages exports and is associated with increased export intensity, while having external business linkages encourages exporting. Another multi-country, firm-level study finds that foreign networks (financial, ownership and joint-venture) and having strong linkages with domestic chambers of commerce are both positively linked to being an exporter⁹⁸.

There is, however, little agreement on exactly which type of commercial linkages are most likely to produce knowledge that is useful to export performance, with some studies suggesting that supply-chain linkages (especially with suppliers) are most associated with improved export performance⁹⁹, while others suggest that non-supply-chain linkages are associated with an increased likelihood of exporting¹⁰⁰.

3.2 Resource enhancing or augmenting factors

Collaborative arrangements such as those discussed earlier may play an important role in releasing the resource constraints faced by smaller firms. Globally, however, governments have responded to the resource issue of smaller firms by providing targeted support for individual SMEs' innovation projects often in the form of public sector grants or loans. There is considerable evidence of the positive additionality of public grant support

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for private R&D activity and subsequent positive effects on business¹⁰¹. This effect can operate through a number of different organisational mechanisms, however, including: reducing the cost and risk of R&D to firms; contributing to developments in firms' human resources; improving absorptive capacity; generating reputational or 'halo' effects; and, creating cost savings through collaborative R&D and the sharing of research results¹⁰². It is worth noting, however, the historical bias in support for innovation towards technological or technical innovation. Non-technological innovation – important in both manufacturing and services – has been only weakly supported in the past although there are some international examples of effective policy in this area¹⁰³.

Specifically with regard to SMEs in the UK, there is some evidence that public support for innovation is both effective and efficient. A recent study using a large sample of c10,000 SMEs and employing propensity score matching as a counterfactual found that SMEs with public support for innovation were significantly more likely to innovate, and that innovators grew faster than non-innovators¹⁰⁴. The same study also finds that SME tax credits were relatively expensive compared with earlier support instruments (e.g. SMART and SPUR).

In terms of exports, public support typically aims to help firms overcome information asymmetries or the costs of entering export markets. Here, one of the key roles for government can be in acting as a 'trusted intermediary, bridging gaps in private-sector networks in ways that could not be done as effectively, if at all, by a commercial service provider'¹⁰⁵. Evidence for the UK suggests that export services provide by UK Trade and Investment (UKTI) do have a positive effect on overcoming these barriers. Specifically, three principal benefits of UKTI support have been supported by evaluation evidence. First it has substantial positive impact on the profit and medium-term performance of supported firms, linked to stronger business growth¹⁰⁶. Second – and linking back to the connection between exporting and innovation – public support has a substantial positive impact on business R&D and innovation, suggesting lasting

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positive effects on business competitiveness in both domestic and overseas markets¹⁰⁷. Third, public support can have a direct and substantial positive impact on business skills and export know how¹⁰⁸, helping to relieve the internal resource constraints experienced by SMEs. It should be noted that these evaluations of UKTI support are based on (largely) econometric studies carried out on behalf of UKTI rather than on papers in peer-reviewed academic journals.

3.3 Demand-side effects on innovation and exporting

The external knowledge-enhancing and resource-enhancing effects considered above operate primarily through the supply-side. The demand-side – whether from consumers, intermediate demand from other companies or the public sector – also plays an important role in shaping innovation and export performance¹⁰⁹. Two elements of the demand for innovations in any market have been emphasised: the speed at which firms, consumers and the public sector adopt new innovations; and, the lead role of customers in articulating a demand for innovations¹¹⁰. The demand-side influences on export growth have also been widely discussed with an emphasis on market growth, average incomes in importing countries, logistics and exchange rate stability¹¹¹.

There is a large research literature on the adoption of new innovations which consistently stresses the effects of both informational and strategic factors on adoption. Adoption studies tend to be industry or technology specific, however, and therefore have limited generalizability. A different approach is to ask consumers whether they are likely to purchase newly introduced products in the future. One such study – relating to data for 2008 – suggests that the demand for innovative products in the UK ranked 7th out of the 13 advanced economies included¹¹². Broadly similar assessments have been made for the absorptive capacity of UK firms and the sophistication of UK demand for innovations. Other studies based on Community Innovation Survey data have also suggested that UK firms are again in the centre of the distribution of countries in terms of the share of

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firms collaborating with customers as part of their innovation activity. In 2009, one UK study concluded as a result that while 'It is difficult to assess the influence of sophisticated consumers given the limitations of the data. Broadly the UK ranks in the lower orders in terms of consumer and firm adoption of new technology, implying poor demand conditions'¹¹³. Fortunately, perhaps, there is also some evidence that export demand has a stronger influence on innovation expenditures than do domestic sales¹¹⁴.

3.4 External enablers – summary

As with the internal drivers of innovation and exports significant progress has been made in recent years in our understanding of the external drivers of innovation and exporting. Strategic debates about open innovation and partnering have focussed attention on firms' innovation and knowledge gathering strategies while more policy-oriented discussions have explored the potential impact of changes in framework conditions and business ecosystems. All told, the evidence suggests that external factors can have a significant effect on the innovative and export success of SMEs. The scale and size of these effects depends crucially, however, on SMEs' ambition and capability to take advantage of the available external resources.

There are perhaps five main areas in which the evidence is consistent. First, purposive links formed between SMEs and their development partners – openness – can play a positive role in innovation and export growth. Second, such links are likely to be more positive in 'stronger' ecosystems and where SMEs have greater absorptive capacity. Third, there is considerable evidence that targeted public support for innovation and exporting can yield significant additionality. Fourth, demand-side factors can provide an important stimulus to both innovation and exporting, although some studies have raised questions about the scale and sophistication of demand for innovative products from UK firms, consumers and government. Finally, the evidence emphasises the positive role of consumer or user-led innovation, and the potential catalytic role of public procurement, in stimulating SME development.

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These 'knowns' are balanced by a series of less well understood elements of the external drivers of innovation and exporting. First, while it is clear that 'place' matters for both innovation and exporting relatively little is known about the mechanisms through which the gains from 'being there' operate particularly for SMEs. Second, it remains unclear which eco-system characteristics are more important in influencing SMEs' innovation and export success. In part, both of these issues relate to a problem of measurement, and the difficulties associated with characterising the 'strength' of the eco-systems within which firms are operating. Third, it is unclear which types of purposive linkages have the greatest benefits for SMEs, particularly in terms of supporting export development. Fourth, there is some uncertainty about the importance of learning by exporting for SMEs, particularly where exporting is an irregular rather than sustained activity.

4. Innovation, exporting and SME performance

This section summarises the key points of an enormous literature, highlighting those econometric studies which are most relevant with regard to SMEs, and in which the evidence seems strongest. It does not aim to be a comprehensive summary of the literature on innovation, exporting and performance: more detailed and general literature reviews are highlighted in the text where appropriate.

4.1 Innovation and performance

Innovation has long been recognized as a key element of competition and dynamic efficiency of markets. Innovators (product, process and organizational) should take market share from non-innovators and grow at their expense, until such time as their market position is undermined first by imitations of new products and processes, and ultimately by yet newer products. In the long run, therefore, innovators will grow faster, be more efficient, and ultimately be more profitable than non-innovators.

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There is a wealth of evidence indicating a positive relationship between innovation and firm performance in both manufacturing and services. Many of these studies use some form of ‘production function’ approach relating innovation (inputs or outputs) to some aspect of performance, generally productivity¹¹⁵. Some studies find clear evidence of a positive relationship between both product and process innovation and productivity¹¹⁶, while others find a positive association between innovation and growth (in employment and/or sales)¹¹⁷.

Evidence specifically for SMEs is more patchy, and often characterized by small sample sizes and by relatively simplistic econometric analysis. For example, SME analyses typically fail to address issues such as the simultaneous relationship between innovation and performance or issues of self-selection (e.g. better performing firms choose to innovate, rather than innovation improving performance). The failure of much of the SME literature to allow for the interdependence of innovation and firm performance is likely to be significant. A study of Italian firms¹¹⁸ strongly suggests a two-way relationship: innovative firms outperform non-innovators, but better performing firms are also more likely to innovate, and to devote more of their resources to innovation.

4.2 Exporting and Performance

There are good reasons to expect exporters to be more productive than non-exporters. This may arise because highly productive firms are more likely to become exporters (i.e. self-selection), and/or because exporting makes firms more productive. These two scenarios are not mutually exclusive, but from a public policy perspective it is important to know whether either or both hold in practice.

Recent economics research on exporting starts from the recognition that there are fixed costs involved in entering export markets, and therefore market entry is easier for more productive firms¹¹⁹. The rationale is that firms contemplating entry to foreign markets have to engage in market

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research, set up new distribution networks, negotiate with potential new partners, and may have to modify their product range, all of which incur costs. Only those with sufficiently low marginal costs have the profits large enough to cover these fixed costs of entry. Thus exporters are more productive than non-exporters not specifically because of benefits derived from exporting, but because they are more productive firms to begin with, and can therefore overcome the fixed costs of entering foreign markets. This is the self-selection hypothesis, which is strongly supported by the empirical evidence¹²⁰.

The second possibility is that firms' productivity improves as a result of their exporting activity. The channels for this are threefold. First, the stronger competition in foreign markets forces firms to improve both products and processes and thus remain competitive. Second, there is the possibility of 'learning by exporting', principally involving being exposed to superior foreign knowledge and technology which also helps to boost the productivity of exporting firms. Finally, scale effect may be important. Exporting extends the market over which margins may be earned, and since many costs, such as R&D, are largely fixed, such investments may be recouped over a larger sales volume.

Evidence for all firms on the productivity benefits from exporting is somewhat mixed, with some studies finding evidence that entry into exporting results in productivity benefits, while others fail to find any effects¹²¹. Interestingly, recent evidence from the Taiwanese electronics industry, suggests that exporting significantly boosts productivity, especially if accompanied by investment in R&D and/or labour training¹²².

Evidence specifically on SMEs is again rather patchy, and uses a number of measures of performance. A study of 164 Japanese SMEs¹²³ (i.e. less than 500 employees) finds a positive association between exporting and (lagged) sales and asset growth, but a U-shaped relationship between exporting and productivity. Perhaps the most sophisticated research is on 14,000 manufacturing SMEs from Sweden over the period 1997 to 2006¹²⁴.

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Using propensity score matching, this study finds evidence that: i) small firms self-select into export markets on the basis of productivity; ii) export-entrants increase productivity relative to other firms shortly before entry, possibly via higher investment in physical capital; and, iii) the productivity gap between export-entrants and non-exporters does not continue to grow after market entry. In other words, small firms learn *to* export, but do not exhibit learning *by* exporting. However, evidence from Spanish SMEs suggests there may be another benefit arising from exporting; survival-by-exporting¹²⁵. Specifically, exporting SMEs have a significantly lower likelihood of failure than non-exporters. This effect remains significant even after controlling for variables capturing some of the benefits commonly attributed to learning-by-exporting, such as firm productivity and innovative outcomes.

4.3 Innovation and Exporting

Traditionally, economic approaches to export performance have viewed firms' competitive advantage as being based on factor endowments or the quality of firms' products or services. In both of these approaches the implied (positive) link runs from R&D/innovation to exporting. By contrast, endogenous growth models¹²⁶ recognise the possibility of the effect running from exporting to innovation. The channels for this are similar to those summarised in the last section: competition from foreign sources, learning-by-exporting, and scale effects.

There is an enormous empirical literature suggesting a positive link between innovation and exporting, and a rather smaller literature suggesting the reverse effect (i.e. exporting fosters innovation)¹²⁷. In terms of SMEs, a survey of 9,480 SMEs in 33 European countries in 2009 found a strong positive association between 'internationalisation' (including exporting) and innovation, but did not analyse the nature of this relationship¹²⁸. Possibly the most relevant research is on 1400 Spanish SMEs over a 10-year period, which specifically seeks to assess whether innovation and exporting are complementary for sales growth¹²⁹. This

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study suggests that complementarity does indeed exist – indeed, only SMEs that both innovate and export generate significantly greater sales growth than firms that do neither: simply doing either exporting or innovation is not enough. Research from the same Spanish dataset concludes that the strong positive association between exporting and productivity is largely moderated through (product) innovation; in other words, once previous innovation performance is allowed for, the positive association between exporting and productivity is weakened, but is still present¹³⁰. A similar conclusion regarding the complementarity of exporting and innovation arises from a study of service-sector firms in Northern Ireland¹³¹.

4.4 Innovation, exporting and performance – summary

There is a very substantial body of economic evidence on the links between innovation, exporting and performance at the firm level. Specifically, there is general agreement on three key findings. First, there is a strong positive association between innovation, exporting and performance in terms of productivity and/or growth. This is consistent across countries and time periods. Second, innovation and exporting appear to work jointly to improve performance. Innovation without access to foreign markets does not seem to provide substantial performance benefits. Third, there is also a substantial element of interdependence and self-selection in this process. Productive, well-run firms tend to both innovate and export, but even when the self-selection is allowed for, there are performance benefits from innovation and exporting.

There are, nevertheless, important areas in which our knowledge is incomplete. Perhaps most importantly, evidence on SMEs is fairly patchy – specifically, the extent to which the innovation-exporting-performance relationship involves self-selection is unclear for SMEs. SMEs tend to innovate and export less than other firms, but it is unclear whether the mutually reinforcing relationship between them is stronger or weaker for SMEs than larger firms. In addition, Information on different types of

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innovation and their effects is limited; specifically we know relatively little about the effects of organizational innovation, for example. And, given that some SMEs are intermittent exporters, more information is required on whether persistence in exporting has performance implications for smaller firms, as well as the differential performance implications of ‘born globals’. Finally, there is the issue of what the key performance measure resulting from innovation and exporting ought to be. Following the theoretical literature productivity is the key issue in most econometric studies, but (sales) growth may also be important in the SME context.

5. Policy Implications

Based on the evidence reviewed earlier a summary of the main areas of agreement and contention in terms of SME innovation and exporting is provided in Table 1. Evidence on the internal drivers of innovation and exporting reinforces the importance of a number of key UK policy agendas around skills upgrading and support for firms’ investment in R&D, design and capital equipment. In terms of skills, for example, evidence of the value of high level skills for SME innovation and exporting emphasises the importance of measures such as the recently extended Employer Ownership Pilot which supports the development of tailored apprenticeship programmes which can help with firms’ specific innovation and export strategy. Similarly measures such as the Innovation Vouchers, Smart Awards and Knowledge Transfer Partnerships, and the Design Leadership Programme have proven effective in supporting SME innovation. Export support provided by UKTI also has demonstrable positive effects on SME performance and capabilities.

Measures to promote access to finance also have an important part to play by increasing SMEs liquidity and cash flow leaving more scope for investment in innovation and export development. Such measures are likely to be most valuable, however, when improved access to finance is accompanied by specialist advice or mentoring related to innovation or export development. Measures such as the Growth Accelerator already

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adopt this approach combining mentoring with support for management and leadership development. Proposals that the Business Bank should provide 'intelligent finance' supporting lending with related business advice are also welcome here, increasing the potential leverage of lending to SME and providing easier access for SMEs to publicly supported business advice¹³².

Strong evidence also exists on the value of skills development and R&D for SME innovation and exporting. There is more limited evidence for SMEs – and therefore a less robust evidence base on which to base policy – for some aspects of intangible investment (design, IP management), and some aspects of people management and engagement. Further research is also needed to clarify the effects of SMEs' ownership characteristics, strategy and diversity on innovation and export success.

Alongside the internal enablers of innovation and exporting our review also emphasises the potential importance of the external enablers of SME innovation and exports, emphasising the importance of the eco-system within which SMEs are operating. Such eco-systems, including both private and public institutions, may either be enabling or hindering in the resources they offer to SMEs at different points in their strategic development. Market failures may be important here, however, system failures related to interaction or connectivity deficits may also be important constraints on SME performance providing a potential rationale for policy intervention. It has been argued, for example, that governments should intervene to 'construct advantage'¹³³, i.e. to:

'address systemic failures that block the functioning of innovation systems or hinder the flow of knowledge and technology ... Such systemic failures can emerge from mismatches between the different components of an innovation system, such as conflicting incentives for market and non-market institutions (e.g. enterprises and the public research sector), or from institutional rigidities based on narrow specialisations or asymmetric information'¹³⁴.

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Essentially similar arguments are evident in terms of the recent discussion of the 'penalty for bottlenecks' approach to systemic policy development. This reflects the notion that systems are only as strong as their weakest component, and that improvements to the weakest component of a system can generate disproportionate disadvantages.

Table 1: Overview of areas of agreement and contention

	Internal Enablers	External Enablers	Innovation, Exporting and Growth
Areas of Agreement	High quality skills contribute positively to innovation and exporting success. The importance of technical skills is also increasingly matched by the value of networking and team-working skills. There is strong positive relationship between R&D and innovation across all firm size bands and industries. Innovation and export success are positive related to firms' physical capital investments A positive relationship exists between innovation and export activity and strong cash-flow and liquidity.	Purposive links formed by between SMEs can play a positive role in innovation and export growth. SME links are likely to be more positive in 'stronger' eco-systems and where SMEs have greater absorptive capacity. Targeted public support for innovation and exporting yield significant additionality. Demand-side factors can provide an important stimulus to both innovation and exporting. The evidence emphasises the positive role of consumer or user-led innovation and public procurement in stimulating SME development.	There is a strong positive association between innovation, exporting and performance in terms of productivity and/or growth. Innovation and exporting appear to work jointly to improve performance. There is a substantial element of interdependence between innovation and exporting, and self-selection is common.
Areas of contention	Robust evidence on the role of people management and employee engagement in shaping firms' innovation and exports is limited, particularly in SMEs. There has been little rigorous analysis of the returns to design in SMEs. The innovation and export benefits of IP management in SMEs remain poorly understood. The links between workforce diversity, and other firm characteristics such as family ownership, and firms' innovation and export success remain little explored. What should the key measure be? Productivity is the key issue in many studies, following the theoretical literature, but should (sales) growth be the key performance measure? Relatively little is known about the relationship between business strategy and planning and innovation and exporting success in SMEs.	Relatively little is known about the mechanisms through which the gains from 'being there' operate, particularly for SMEs. It is unclear which eco-system characteristics are influential for SMEs' innovation and export success. Third, it is unclear which types of purposive linkages have the greatest benefits for SMEs, particularly in terms of supporting export development. There is some uncertainty about the importance of learning by exporting for SMEs.	Evidence on SMEs is fairly patchy - specifically, we know little about how much the innovation-exporting-performance relationship involves self-selection for SMEs. Information on different types of innovation and their effects on SME performance is limited. Evidence on the performance implications of intermittent exporting by SMEs is limited.

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In terms of SME innovation and exporting, however, our understanding of the impact of different eco-system components remains incomplete. One recent review, focussed on the UK eco-system for innovation, identified five ‘relatively strong’ aspects – the public research base, competition and entrepreneurial activity, human capital and infrastructure and services¹³⁵.

Two other aspects of the environment provided more concern. First, on the basis of data from the WEF Global Competitiveness Report, the availability of finance in the UK was described as ‘moderate to poor’ by international standards. There is also some more specific evidence from Canada which suggests that SMEs which are seeking to innovate and/or export are likely to experience higher turn-down rates when applying for loan finance than other SMEs¹³⁶. Evidence on this point is limited in the UK. The international evidence suggests, however, that general measures to promote liquidity in SMEs remain important for innovation and exporting, and also that more specifically targeted initiatives to de-risk these activities through loan or credit guarantees such as those offered by UK Export Finance are also likely to be important in improving access to finance for innovative and export-oriented SMEs. The expectation would be that resulting innovation and exporting would help to establish the type of virtuous circle described earlier allowing firms to generate export earnings, overcome capital constraints and increase capital investment¹³⁷

Second – and despite their importance - demand conditions in the UK are said to be only ‘moderately favourable’ to innovation with both consumer and business demand for innovative products lagging other advanced economies. For SMEs this means that the UK market stimulus for innovation is relatively weak compared to that of export markets, reinforcing the importance of exporting as a driver for UK innovation. For the UK government this suggests the potential value of continuing to strengthen demand for innovative products from SMEs through mechanisms such as public procurement and schemes such as the Small Business Research Initiative (SBRI)¹³⁸.

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The penalty for bottlenecks approach suggests that a focus on ‘de-bottlenecking’ the access to finance and demand-side aspects of the UK eco-system may create significant benefits by bringing other currently under-utilised system resources into use.

Creating a conducive eco-system is a necessary but not sufficient condition to promote innovation and exporting success among SMEs¹³⁹. The eco-system becomes most valuable, when SMEs take full advantage of the resources it offers. In part this reflects firms’ internal absorptive capacity – itself strongly dependent on firms’ skills and R&D investments – but it may also depend on SMEs’ ability or willingness to develop innovation and export partnerships. In policy terms, this recalls the recommendation made in the Wilson report (Recommendation 14) which suggested that:

‘TSB should work with universities, research funders and business to establish a boundary-scanning capability with intelligent brokering to facilitate innovation’¹⁴⁰.

In other words, this suggests that there may be a role for public agencies in helping SMEs to overcome informational barriers and identify innovation and export partners. Initiatives such as ‘Collaboration Nation’ aim to address this issue at a national level but it may also be feasible at more local level to facilitate local partnerships as part of place-based initiatives such as the ‘City Deals’.

The evidence discussed above also indicates clear synergies between innovation and exporting, and the importance of considering them jointly when attempting to maximise the performance benefits of either. This, in turn, suggests the value of coordinated policy support to SMEs. The current policy framework, however, results in separate organisations taking a lead responsibility for innovation and exporting support – TSB for innovation and UKTI for exporting. This organisational divide raises potential issues in terms of providing SMEs with co-ordinated and timely support for innovation and exporting. Clearly, however, TSB and UKTI do

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not operate in isolation: TSB refers businesses to UKTI where appropriate; and UKTI's strategy lays out four pathways to balanced growth, the first of which clearly links innovation and exporting by targeting services at innovative and high-growth SMEs¹⁴¹. Joint initiatives such as Web Mission 2013 and the Innovate UK event are also welcome and suggest the potential for co-ordination. Equally important, however, is ensuring that the day-to-day support offered to individual SMEs seeking to develop their innovation and exporting performance is as seamless and locally accessible as possible¹⁴². It is welcome that this theme was emphasized strongly in the recent Strategy Update on the Business Bank¹⁴³.

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NOTES

¹ OECD (2010) 'OECD Economic Globalisation Indicators', Paris.

² Golovko, E. and G. Valentini (2011). 'Exploring the complementarity between innovation and export for SMEs' growth', Journal of International Business Studies, 42, 3, p. 362-380.

³ European Commission (2010) 'Internationalisation of European SMEs', Directorate-General for Enterprise and Industry, Brussels. , http://ec.europa.eu/enterprise/policies/sme/market-access/files/internationalisation_of_european_smes_final_en.pdf.

⁴ BIS (2010) 'Internationalisation of Innovative and High Growth Firms', Economics Paper No 5.

⁵ BIS (2011) 'International Trade and Investment – the Economic Rational for Government Support', Economics Paper No 13.

⁶ BERR (2008) 'High Growth Firms in the UK: Lessons from an Analysis of Comparative UK Performance', BERR Economics Paper No. 3.

⁷ European Union (2012) 'Innovation Union Scoreboard 2011'.

⁸ EU27 Member States plus Croatia, Former Yugoslav Republic of Macedonia, Norway, Serbia, Switzerland and Turkey. Product innovation here means the market introduction of a new or significantly improved good or service. Process innovation is the use of new or significantly improved methods for the production or supply of goods and services.

⁹ This involves the implementation of major changes in organisational structure, or the implementation of changes in marketing concepts or strategies.

¹⁰ European Commission (2010), op. cit.

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¹¹ Roper, S. and A. Malshe (2012) 'Leading from the middle: the untold story of British Business', London, GE Capital.

¹² The biennial Small Business Survey carried out by BIS has information on both innovation and exporting activities for UK SMEs, but unfortunately provides no cross tabulation on these activities.

¹³ Limitations of space mean that we pay relatively little attention here to the potentially contrasting performance impacts of radical and incremental innovation. For an example of an excellent recent analysis on this theme see Buddelmeyer, H., et al. (2010), 'Innovation and the determinants of company survival', Oxford Economic Papers, 62, 2, 261-285.

¹⁴ Advisory Committee on Measuring Innovation in the 21st Century Economy (2008) 'Innovation Measurement - Tracking the state of innovation in the US economy', A report to the Secretary of Commerce, p. i.

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¹⁷ Vossen, R. W. (1998). 'Relative Strengths and Weaknesses of Small Firms in Innovation', International small business journal, 16, 3, p. 88-95, p. 90.

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255-273. Brambilla, I., et al. (2012). 'Exports, Export Destinations, and Skills' *American Economic Review*, 102, 7, pp. 3406-3438.

¹⁹ Herrmann, A. M. and A. Peine (2011) 'When 'national innovation system' meet 'varieties of capitalism' arguments on labour qualifications: On the skill types and scientific knowledge needed for radical and incremental product innovations', *Research Policy*, 40, 5, pp. 687-701.

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