ECONOMICS

dti

DTI ECONOMICS PAPER NO.18

International Trade and Investment – the Economic Rationale for Government Support

JULY 2006

dti

DTI ECONOMICS PAPER NO.18

International Trade and Investment – the Economic Rationale for Government Support

JULY 2006

Contents

List of Figures and Tables ii

Foreword iv

Executive Summary v

1. Introduction 1

2. Trends in UK Participation in International Trade and Investment 3

Trends in Trade and Investment 3

UK Business Participation in International Trade and Investment 11

3. Benefits of International Trade and Investment 17

Introduction 17

Contributions to Aggregate Productivity Growth 17

Contributions to Dynamic Competition Effects 22

Contributions to Productivity Growth Within Firms 28

Conclusions 32

4. Barriers to International Trade and Investment and Market Failure 37

Introduction 37

Market Failure 37

Market Failure Affecting Costs of Overseas Market Entry 39

Market Failure Affecting Expected Benefits of Overseas Market Entry 44

Evidence on Market Failure Barriers to Trade and Investment 49

Conclusions 64

5. Cost Effectiveness of Government Support for Trade and Investment 66

Introduction 66

Issues for Cost-Benefit Analysis 66

Evaluation Evidence 74

Conclusions 85

6. Conclusions 89

References 93

DTI Economics Papers 99

List of Figures and Tables

Figure 2.1:	Exports of goods and services as % of GDP	4
Figure 2.2:	Trends in UK exports	4
Figure 2.3:	Top 10 exporting sectors 1963-2003	5
Figure 2.4:	Top 10 UK export markets	6
Figure 2.5:	Imports and exports as % of GDP	8
Figure 2.6:	Stock of UK outward FDI	9
Figure 2.7:	Stock of inward FDI in UK	9
Figure 2.8:	Proportion of UK R&D and turnover accounted for by foreign and UK-owned establishments	10
Table 2.1:	Size distribution of UK exporters and percentage of UK businesses that export by size band	12
Table 2.2:	Size distribution of businesses using UK Trade & Investment services by overseas market and export experience	13
Table 2.3:	Distribution of UK establishments by whether exported and/or undertook R&D (manufacturing only)	14
Table 3.1:	Motivations for trading overseas – survey evidence	34
Table 3.2:	Motivations for investing overseas – survey evidence	35
Table 3.3:	Use of external expertise as a result of export activity – by SME R&D activity and innovation	36
Table 4.1:	Barriers to investment – survey evidence	60
Table 4.2:	Barriers to overseas trade – survey evidence	61

Table 5.1:	Categories of additionality	73
Table 5.2:	Learning benefits and behaviour change resulting from UK Trade & Investment support	81
Table 5.3:	Spillovers – net of non-additionality – summary results	84
Table 5.4:	Previous evaluation evidence on cost effectiveness	85
Table 5.5	Summary of cost effectiveness measures	87

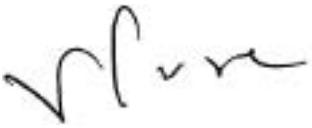
Foreword

Increasing integration of the international economy presents challenges and opportunities for all UK businesses. The perceived scale of the challenge has led to a considerable amount of analysis across Whitehall on the drivers and impacts of globalisation on the UK economy. We plan to publish soon a range of papers on these issues, and on the role of policy in responding to these changes.

The primary role for government is to set the framework conditions within which businesses themselves can respond creatively to the challenges and opportunities of a changing global environment. However, when the conditions under which free markets lead to optimal outcomes are not met, there can be a need for government action. A key policy challenge is then to ensure that government also provides the right kinds of support to the business community, which maximises UK prosperity.

To do this government needs access to the best possible sources of evidence to inform policy development. This paper reviews the evidence on the economic rationale for government support for trade and investment. It highlights the potential benefits from international trade and investment, and considers the evidence on market failure and the cost effectiveness of government intervention.

The challenge now is to build on the evidence, much of which is new – firstly, by ensuring that it is used in future policy development and secondly, by filling the evidence gaps that this paper identifies.



Vicky Pryce
Chief Economic Adviser and Director General, Economics
Department of Trade and Industry

Executive summary

0.1. Increasing integration of the international economy presents challenges and opportunities to the business community which affect firms of all sizes. The potential impact of globalisation on UK prosperity will depend critically on business response, both in terms of the choices businesses make about locating their activities in the UK, and in terms of UK businesses successfully identifying and meeting the changing needs of customers overseas.

0.2. UK Government policy has long recognised the potential benefits of openness to international trade and investment, both through active participation in international policy fora and through pursuing a supportive policy environment within the UK, at both macroeconomic and microeconomic levels. The economic analysis underpinning these policies has been set out in previous DTI Economics Papers. The key policy challenge which is the focus of this paper is to ensure that government also provides the right kinds of support to the business community, where it is needed to maximise UK prosperity.

0.3. The power of market forces and entrepreneurial business dynamism as the primary driver of rising levels of prosperity and productivity is widely acknowledged. The primary role for government is therefore to set the framework conditions within which businesses themselves can respond creatively to the challenges and opportunities of a changing global environment. However, when the conditions under which free markets lead to optimal outcomes are not met, there can be a need for government action. The rationale for government support thus rests on three essential pillars:

- evidence of potential benefits to UK prosperity from increased international trade and investment;
- evidence of barriers to international trade and investment arising from market failures which, if not addressed, would prevent these benefits from being fully realised;
- evidence that government can intervene cost effectively to address these market failures, enabling business to generate sufficient additional benefit to justify the cost of intervention and increase national prosperity.

0.4. This paper builds on the previous analytical papers by reviewing the evidence relating to each of these three pillars, and considering the implications for the types of support to the business community which are likely to make the most difference to UK prosperity.

Benefits from trade and investment

0.5. The evidence reviewed makes clear that benefits to UK prosperity from increased international trade and investment are potentially large. These benefits come through a number of different channels:

- **direct and indirect productivity effects on UK firms:** This is partly because exporters and multinationals tend to have higher than average productivity, so when they expand their share in UK output average UK productivity rises. Increased access to new ideas and technologies, and exposure to superior organisational skills, either through direct exposure to overseas markets or inward investors, or indirectly, through knowledge spillovers, can also have significant effects on the productivity of UK firms;
- **competition effects:** Competition is stimulated by the opportunity for foreign firms to compete with domestic ones, both for resources, including labour and business assets, and in markets for products and services, where imports alone would not compete as effectively or would not be feasible. Competition is also stimulated by the opportunity for young innovative and high-productivity firms to sell overseas, as this enables them to meet growth aims, reduce their dependence on a limited range of customers, and strengthen their financial performance, hence allowing them to present a stronger competitive challenge to domestic incumbents;
- **innovation effects:** The opportunity to sell overseas promotes incentives for firms to innovate because the rewards from successful innovation will be proportionately greater when they are able to sell into larger markets. R&D intensity is strongly linked to business internationalisation both through selling overseas and through foreign direct investment. Multinationals tend to have the highest R&D intensity, but only in their home country. The level of R&D investment in the host country is likely to be influenced by the ability of inward investors to gain access to key knowledge networks.

Barriers and market failure

0.6. Market failures which create barriers to entering new markets overseas, or to attracting inward investment, become particularly important in an international context of change in the global distribution of relative purchasing power, because they hinder the economy's ability to respond to change. If countries lack the flexibility to change the geographical and sectoral pattern of trade and investment sufficiently quickly to keep abreast of new ideas and take early advantage of emerging opportunities in centres of economic growth, they may suffer welfare losses. The evidence suggests that:

- there are significant barriers to international trade and investment, both at firm level and at a collective bilateral level, which are attributable to market and institutional failures;
- left unaddressed, these barriers would significantly reduce the ability of the UK to achieve full potential benefits from international trade and investment liberalisation, or to respond creatively to changes in the global economy by being quick to seize new opportunities;

- the UK economy's response to opportunities in the fastest-growing emerging markets and sectors will depend crucially on the strength of social networks underpinning bilateral trade and investment relationships with those markets. Equally, it will depend on the ability of innovative UK businesses to gain timely access to these networks;
- high-productivity and knowledge-intensive overseas firms will not fulfill their potential contribution to competition, innovation and R&D in the UK if they find it too difficult to overcome market-entry barriers and gain access to the right networks within the UK;
- young innovative and high-growth potential companies will not be able to fulfill their potential without the capabilities, and access to networks, which are necessary for successful internationalisation;
- since there is clear evidence that it is the most innovative, growing and high-productivity businesses which engage in international trade and investment, market-entry barriers will affect this group disproportionately, with adverse consequences for UK competitive dynamism and economic performance.

Cost effectiveness

0.7. The analysis suggests that some of the most important roles for government in this area would be expected to generate types of benefits which either accrue to businesses collectively, or accrue mainly to businesses not directly involved in the support, such as knowledge spillovers, intensified competition, reputation effects and effects on social networks. Although these effects are not quantifiable, thus making a comprehensive quantified assessment of cost effectiveness very difficult, the analysis suggests that they are likely to be substantial. Nevertheless, there is a substantial body of evaluation evidence covering some types of benefit, allowing some clear conclusions to be drawn:

- working with the grain of the market, and focusing on addressing market failure, government support for international trade and investment generates high levels of additional benefit relative to the costs involved, thus giving an excellent return to the tax payer;
- for trade development support, evaluation evidence provides quantified estimates of the costs and benefits, based on established techniques which take account of additionality. These suggest that net additional benefits in the region of £17m have been generated per £1m total UK Trade & Investment costs across a range of services. The evidence also shows substantial qualitative benefits, accruing to over half of the supported businesses, in terms of increased skills and changes in behaviour to upgrade products or practices, suggesting increased capabilities and absorptive capacity, particularly for innovative firms;

- for inward investment support, quantified estimates of benefits are not available because the main types of impact identified in the rationale for support are knowledge spillovers and competition effects. Nevertheless, evaluation evidence does allow unit output costs to be estimated. These suggest that per £1m UK Trade & Investment cost, between 7-12 projects have been successfully influenced, either in terms of the decision to locate in the UK, or in terms of changes to new or established investment projects which are likely to increase their potential to generate beneficial knowledge spillovers. Evidence of substantial variation across projects in the characteristics likely to generate spillover benefits suggests that a small number of projects generating large benefits could be sufficient to achieve an excellent cost-benefit ratio, and that overall cost effectiveness depends crucially on targeting.

Key roles for government support

0.8. The evidence reviewed suggests that all three criteria are met, and that there is a strong economic rationale for support to business for both trade and investment. The analysis suggests that government support is best focused on:

- Strengthening the social networks which underpin international trade and investment flows, and helping individual businesses to gain access to key contact networks, by serving as a trusted intermediary. Support to help knowledge-intensive inward investors gain access to key networks in the UK, and to help innovative UK businesses gain access to key networks overseas, is likely to be particularly important;
- Strengthening the internationalisation capabilities of innovative and high-growth businesses, who would not be able to fulfill their potential without being able to exploit overseas opportunities effectively;
- Providing access to information and advice which the private sector alone would not or could not provide, both to inward investors and to UK businesses seeking to exploit opportunities overseas;
- Facilitating beneficial co-operation among businesses, enabling them to work together to overcome barriers and develop potential trade and investment opportunities, for example through international co-operation on R&D, or showcasing UK capabilities in emerging markets overseas.

0.9. The role of government in supporting both inward investment and support for UK firms overseas cannot be seen as solely, or even primarily, a policy of interest to large firms. Over 90 per cent of exporters, and a substantial proportion of investors, both in the UK and in other countries, are SMEs. The evidence suggests that, for both UK firms and inward investors, support should especially seek to target innovative and knowledge-intensive firms, as this group has a particularly important role in the UK economy's ability to respond dynamically to changing patterns of opportunity and challenge in the international economy.

CHAPTER ONE

Introduction

1.1. Increasing integration of the international economy presents challenges and opportunities to the business community which affect firms of all sizes. The potential impact of globalisation on UK prosperity will depend critically on business response, both in terms of the choices businesses make about locating their activities in the UK, and in terms of UK businesses successfully identifying and meeting the changing needs of customers overseas.

1.2. UK Government policy has long recognised the potential benefits of openness to international trade and investment, both through active participation in international policy fora and through pursuing a supportive policy environment within the UK, at both macroeconomic and microeconomic levels. The economic analysis underpinning these policies has been set out in a previous DTI Economics Paper,[1] and in recent analysis published by HM Treasury.[2] The key policy challenge which is the focus of this paper is to ensure that government also provides the right kinds of support to the business community, where it is needed to maximise UK prosperity.

1.3. The power of market forces and entrepreneurial business dynamism to generate rising levels of prosperity and productivity is widely acknowledged. There is a similarly wide consensus that the primary role of government is to set the framework conditions within which businesses themselves can respond creatively to the challenges and opportunities of a changing global environment. The economic case for government roles in helping businesses pursue international trade and investment opportunities therefore rests on three pillars:

- evidence of potential benefits to UK prosperity from increased international trade and investment;
- evidence of market failures which create barriers to trade and investment, and which would otherwise prevent the business community from fully realising these potential benefits;
- evidence that there are cost-effective actions which government can take to address these failures, enabling business to generate sufficient additional benefit to justify the cost of the intervention and increase national prosperity.

1. DTI Economics Paper No. 10, *Liberalisation and Globalisation: Maximising the Benefits of International Trade and Investment* (2004).
2 HM Treasury (2006) *Productivity in the UK 6: Progress and New Evidence, and HM Treasury (2004) Trade and the Global Economy*.

1.4. This paper builds on previous DTI and HM Treasury analytical papers by reviewing the economic case for government support for international trade and investment, looking at the evidence relating to each of these three pillars in turn. The paper draws on research recently carried out for UK Trade & Investment,[3] and is organised as follows: Chapter 2 provides a summary overview of recent trends in UK participation in international trade and investment, including some new evidence on the extent to which small and medium-sized UK businesses are participating in these trends. Chapters 3-5 review in turn the evidence on each of the three pillars of the case for active government support for international trade and investment. Chapter 6 concludes.

3 Some of this research was initially reported in UKTI (2006).

CHAPTER TWO

Trends in UK Participation in International Trade and Investment

2.1. This chapter provides a summary overview of recent trends in UK participation in international trade and investment, including some new evidence on the extent to which small and medium-sized UK businesses are participating in these trends.

2.2. The charts below provide a broad picture of trends in UK participation in international trade and investment, and illustrate the UK's long-term openness to both. They also illustrate both change and historical continuity in the geographical and sectoral pattern of international trade and investment. The evidence is consistent with the idea that there is a degree of historical path dependency in these patterns, in which the persistence of firm competencies, their social networks and national institutions, and cultural ties, play a significant role. Evidence on the significance of these factors, and on the extent to which they may present barriers which could hinder optimal response to changing patterns of international opportunities, is considered in more depth in Chapter 4.

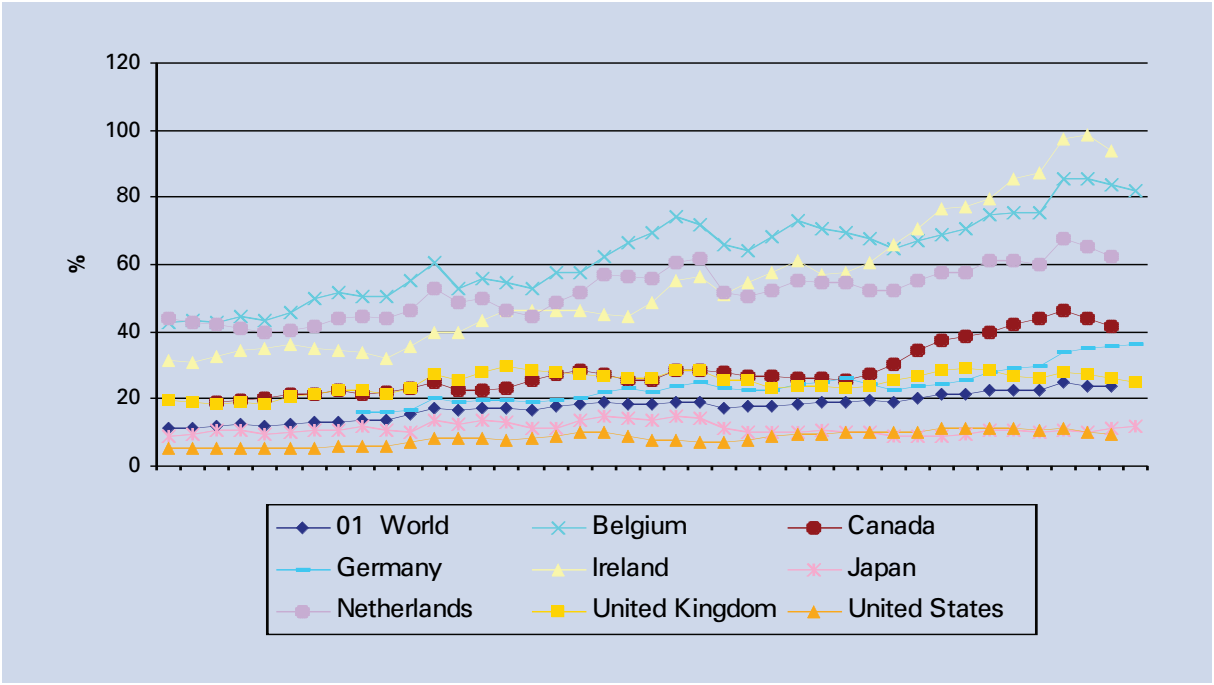
Trends in UK Trade and Investment

2.3. Focusing first on trade, **Figure 2.1** shows that the UK has been exporting around a quarter of its Gross Domestic Product since the 1970s, up from around 20 per cent in 1963 to a peak of 29 per cent in 1996, subsequently declining again to 25 per cent in 2004. This means that in recent years UK exports have been growing less rapidly than UK GDP. Since 1996 UK exports have also grown less rapidly than world trade, resulting in a declining share of world exports from 5.2 per cent in 1996 to 4.6 per cent in 2004. Comparing the UK with some of its major competitors, the chart shows that the US is far less dependent on exports. By contrast, a number of the smaller EU partner countries, such as the Netherlands, are far more dependent on exports than the UK, and have also experienced greater increases in their exports as a percentage of GDP.

2.4. Overall, growth in exports has been erratic, however, with an average growth rate of 3 per cent between 1996-2004 masking a range which varies from stagnation in some years to a double-digit increase in 2000 as shown in **Figure 2.2**. Most of this variation occurred in exports of goods, while growth in exports of services remained far more stable, and was also generally much faster. The faster growth in exports of services reflects a structural shift in the UK economy, and a more marked shift towards increased services exports than has occurred in most other G7 countries.

2.5. Change over time is a key feature of international trade, both in terms of its sectoral structure of trade and in terms of its geographic pattern, although there is also clear evidence of historical continuity. As well as the broad sectoral shift towards greater services exports, away from exports of goods, the UK has seen both continuity and sharp changes in the sectoral pattern of its goods exports.

Figure 2.1:
Export of goods and services as % of GDP



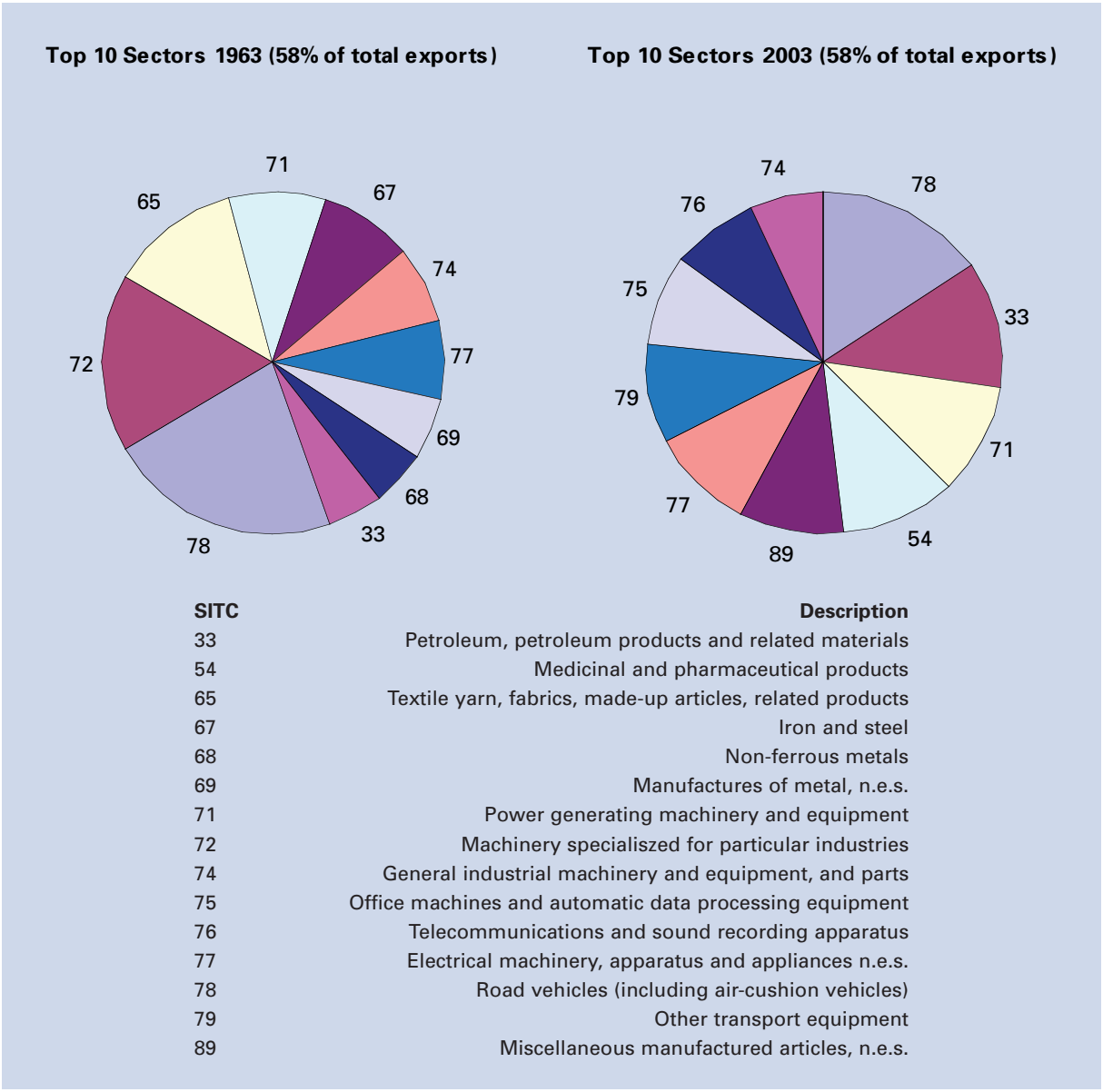
Source: World Bank

Figure 2.2:
Trends in UK exports

Source OECD

2.6. Figure 2.3 compares the top 10 UK goods export sectors in 1963 with those of 2003, showing that only two sectors (road vehicles and power generating machinery and equipment) have maintained their place in the top five, and that five sectors, including textiles, iron and steel and metal manufacture, have dropped out of the top 10. In addition, the relative importance of sectors which have retained a place in the top 10 has shifted. Overall, however, the chart shows no evidence of change in the broad level of sectoral concentration of UK goods exports, with the top 10 sectors accounting for 58 per cent of total goods exports in both years.

Figure 2.3:
Top 10 exporting sectors 1963 – 2003



SITC	Description
33	Petroleum, petroleum products and related materials
54	Medicinal and pharmaceutical products
65	Textile yarn, fabrics, made-up articles, related products
67	Iron and steel
68	Non-ferrous metals
69	Manufactures of metal, n.e.s.
71	Power generating machinery and equipment
72	Machinery specialiszed for particular industries
74	General industrial machinery and equipment, and parts
75	Office machines and automatic data processing equipment
76	Telecommunications and sound recording apparatus
77	Electrical machinery, apparatus and appliances n.e.s.
78	Road vehicles (including air-cushion vehicles)
79	Other transport equipment
89	Miscellaneous manufactured articles, n.e.s.

Source: OECD – International Trade by Commodity Statistics

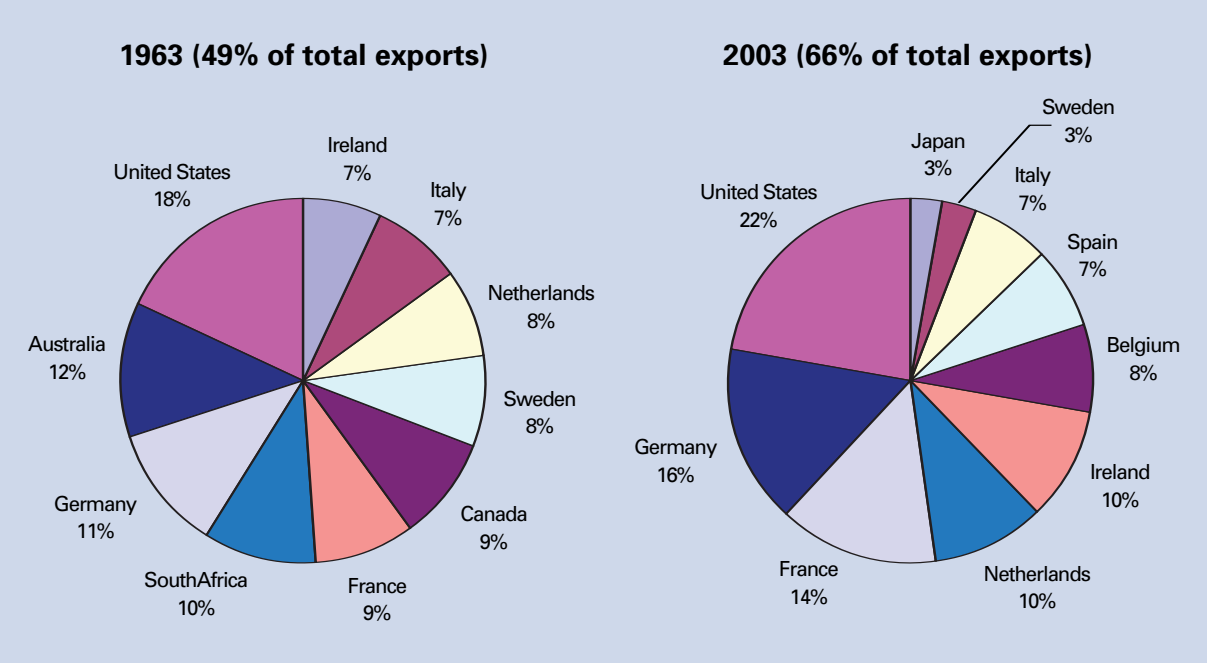
2.7. Comparison with other major developed countries shows that the US has experienced a similar degree of continuity and change in its top 10 goods export sectors, while their share has increased slightly over the period, from 50 to 57

per cent. By contrast, Germany, France and especially Japan have shown greater change, with only three of Japan's top 10 sectors in 1963 still there in 2003. The concentration of Japan's goods exports also fell over the period, from 69 to 60 per cent, while that of Germany remained unchanged, and that of France rose from 50 to 53 per cent.

2.8. The evidence reviewed in Chapter 3 suggests that sectoral export diversity brings significant economic benefits, both in terms of productivity and in terms of welfare. Hence the evidence that concentration in UK goods exports at broad sectoral level has not increased over the past 40 years may tentatively be seen as favourable. However, more detailed analysis of trade patterns would be needed to draw firm conclusions on this aspect of the UK's trade performance, and is beyond the scope of this paper.

2.9. By contrast, **Figure 2.4** shows that over the past 40 years the UK has increased its dependency on its top 10 overseas markets for goods exports, with the percentage of these exports purchased by the UK's top 10 markets rising from 49 per cent in 1963 to some 66 per cent in 2003. Over this period the share of UK exports going to Commonwealth countries has fallen substantially, with two of these – Australia and South Africa – going from the second and fourth-largest buyers respectively to disappearing from the top 10 altogether. Nevertheless, seven of the top 10 UK export destinations in 1963 remained so in 2003, illustrating historical continuity.

Figure 2.4:
Top 10 UK export markets



Source: OECD – International Trade by commodity Statistics

2.10. The changes illustrated in **Figure 2.4** are broadly consistent with the economic theory of customs unions, which predicts that participation in such unions will lead to increased trade with other members, and that this increase will partly be at the expense of trade with partners which are not in the union. The fact that the three new countries in the top 10 are all EU partners, while the three countries which disappeared from the top 10 are all non-EU members, is consistent with these predictions, although it could also reflect underlying trends which were in any case tending in this direction.[4] However, the chart also shows that expansion of trade with EU partners has not displaced the US from its position as the top market for UK goods exports.

2.11. Evidence of both substantial change and long-term historical continuity is also found in geographical patterns of trade within sectors.

2.12. The evidence of long-term historical continuity in bilateral trading relationships suggests that there might be some significant initial barriers or costs to establishing such relationships, and is consistent with the view that social networks and institutions play an important role in trade, which take time to mature. Recent research has shed some new light on these issues, and on the extent to which these and other factors may present barriers which influence patterns to trade. Chapter 4 reviews the evidence on these issues, looking at barriers both at the level of individual businesses and at the collective level of establishing new bilateral trading relationships, or increasing the sectoral variety of goods and services exports within existing bilateral trade relationships.

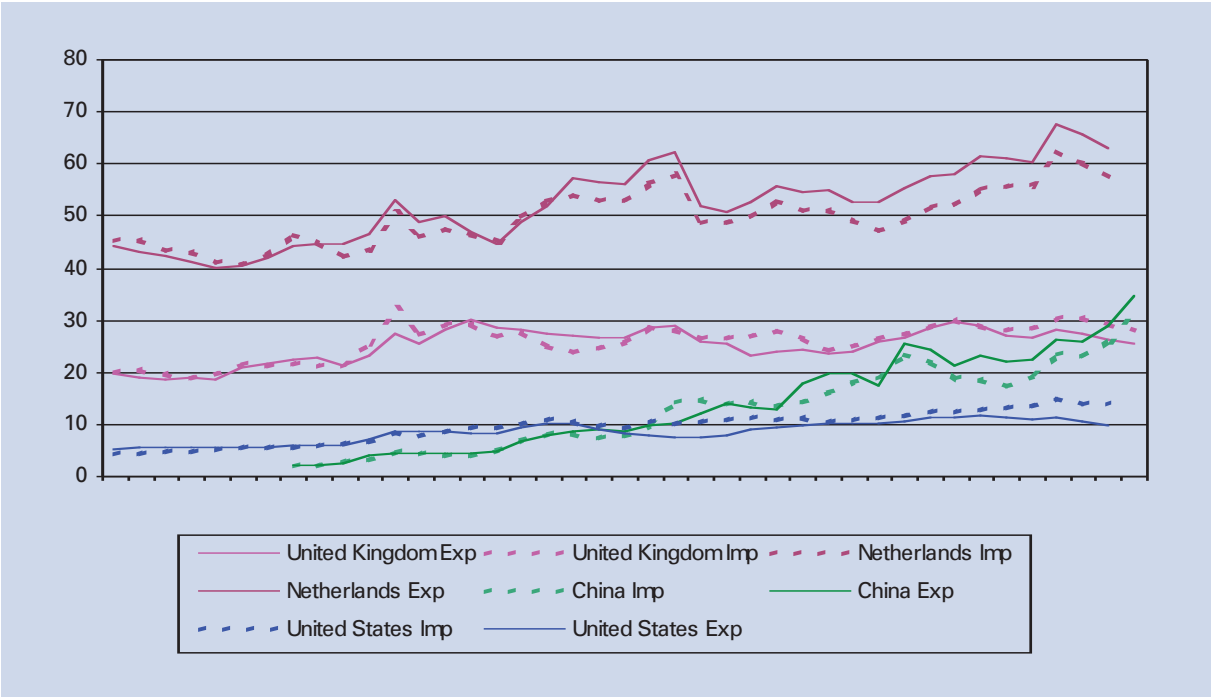
2.13. The extent to which historical ties may influence trade and investment patterns, and may create barriers to establishing or deepening new bilateral trading relationships, becomes particularly important in an international context of change in the global distribution of relative purchasing power. If countries lack the flexibility to change the geographical and sectoral pattern of trade and investment sufficiently quickly to take advantage of growing opportunities in emerging centres of economic growth, they may suffer welfare losses. Recent projections suggest that the pattern of global output shares will change significantly over the period 2005-2015, with the G7 share falling from 42 to 36 per cent, the combined share of China and India increasing, from 22 to 27 per cent and Brazil and Russia just maintaining their position.

2.14. Evidence about roles of government which can help increase the ability of the business community to respond flexibly to changing patterns of opportunities in the international economy, by overcoming barriers to trade and investment, is discussed in Chapter 5.

4 Recent research on the determinants of bilateral trade patterns has found that while trade liberalisation does have significant effects, other factors are predominant, including idiosyncratic national and industry factors. Debaere et al (2005).

2.15. From a national perspective, although not generally from that of individual businesses, the ability to pay for imports is one of the primary benefits of exporting. Accordingly, long-term trends in growth of exports tend to mirror those of growth in imports. **Figure 2.5** illustrates this point, showing that imports of goods and services into the UK have closely mirrored exports, as is also true of other developed economies.

Figure 2.5:
Imports and exports as % of GDP

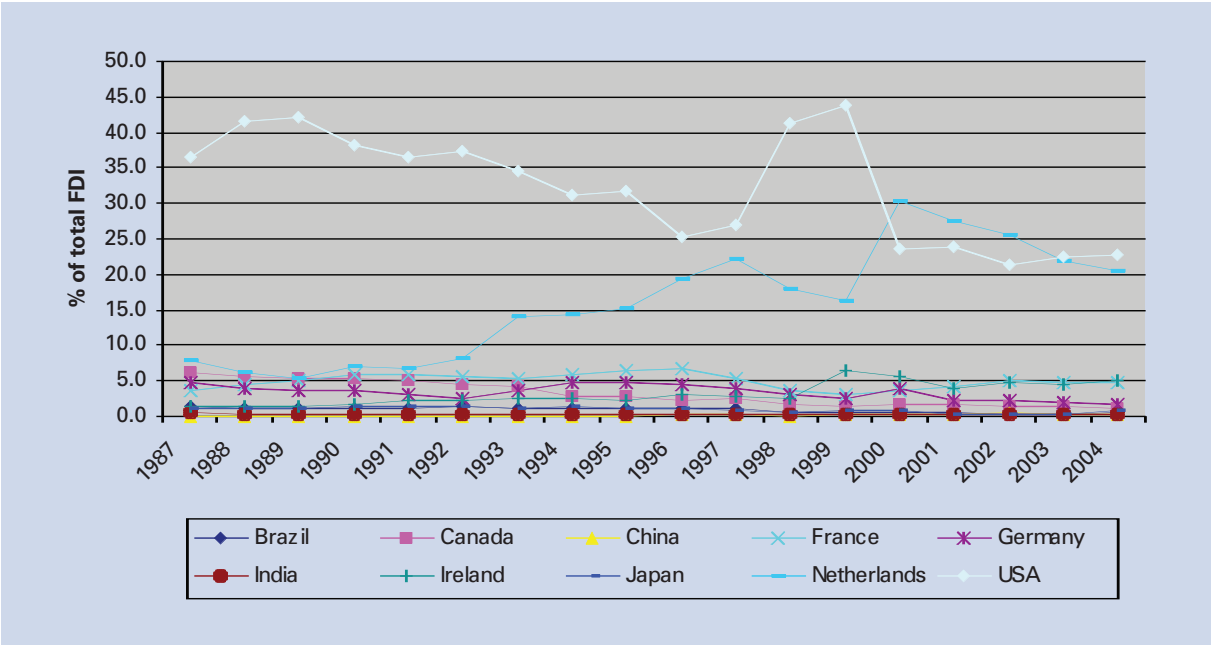


Source: World Bank

2.16. Turning to international investment, **Figures 2.6** and **2.7** show recent trends in the stock of UK direct investment overseas and in that of inward direct investment in the UK, by destination country and country of origin respectively. As of 2004, the total book value of direct investment in the UK by foreign companies was some £366.5bn, while the value of UK firms' total investments overseas was far higher, at around £656.8bn.[5] The US remains by far the most important investment partner for the UK, both as a source and destination for investment, although its share of inward investment has fallen over the past 10 years. The EU25 and US account for £166.6bn and £121.4bn respectively, of the 2004 £366.5bn total UK outward investment stock.

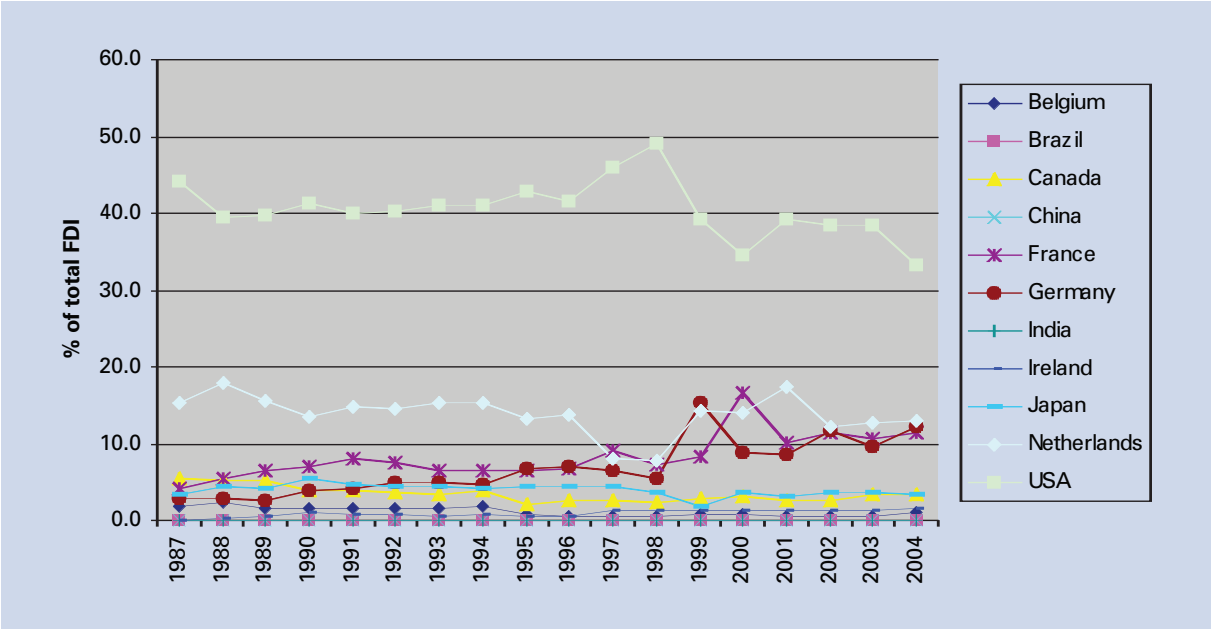
5 ONS (2005) Foreign Direct Investment 2004, First release. Breakdowns of outward FDI by location are sometimes difficult to interpret. Large changes to country shares are possible following company restructurings. For example, the large increase in UK investment in the Netherlands between 1999 and 2000 was related to a series of takeovers by a UK-owned firm. The investment has been attributed to the Netherlands because the UK-owned business operated a holding company there even though the acquired companies reside elsewhere. UK Trade & Investment recently reported the UK's inward investment figures for 2005/06, with 1,220 foreign companies choosing to invest or expand in the UK. Overall, this is the best ever recorded number of foreign investments, with particularly strong increases in research and development projects, which are up by 62% to 164 projects.

Figure 2.6:
Stock of UK outward FDI



Source: ONS National Statistics UK Foreign Direct Investment

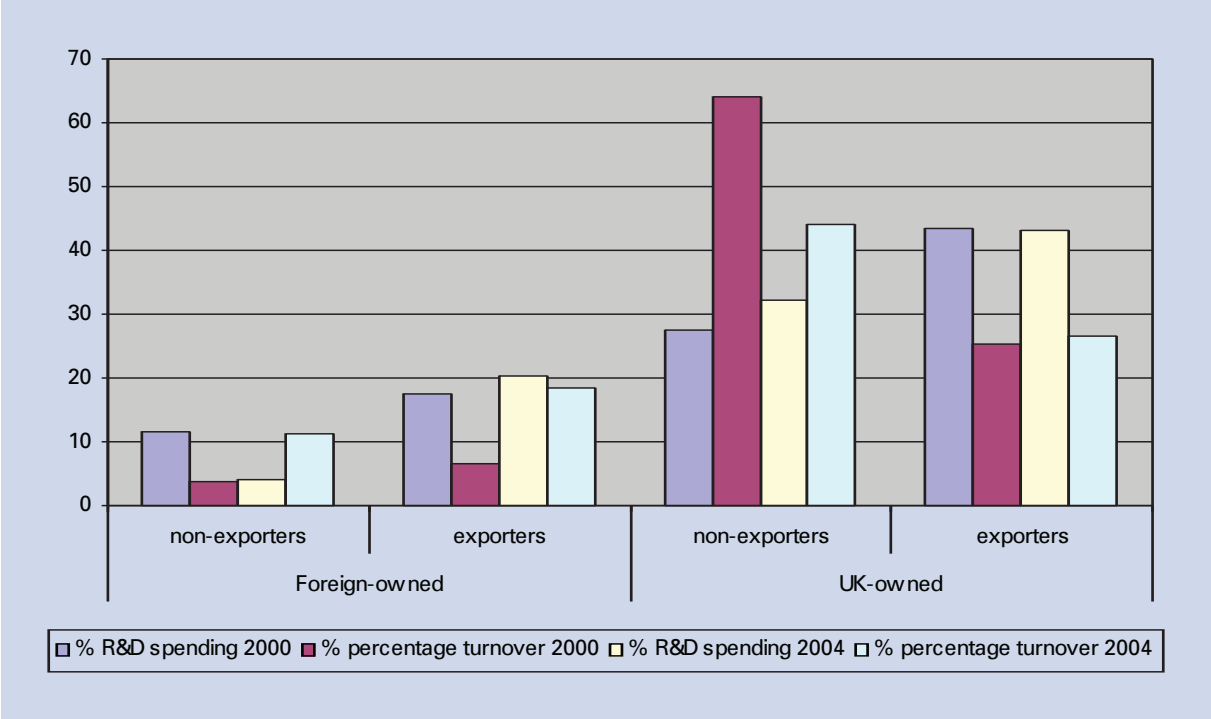
Figure 2.7:
Stock of inward FDI in UK



Source: ONS National Statistics UK Foreign Direct Investment

2.17. Foreign-owned businesses account for around 20 per cent of UK jobs in production sectors, and 9 per cent of service sector jobs (excluding financial services), but account for a rather larger proportion of UK value added, estimated at around 24 per cent over the period 1990 to 1997.[6] Foreign-owned businesses in the UK also account for a substantial proportion of business R&D undertaken in the UK, estimated at 40 per cent in 2004.[7] **Figure 2.8** below[8] shows the respective contributions of UK-owned and foreign-owned firms to UK R&D spending and to total UK turnover, broken down by whether or not the company in question exports. Foreign-owned firms that do not export show a decrease in their contribution to UK R&D spending over this period.

Figure 2.8:
Proportion of UK R&D and turnover accounted for by foreign and UK-owned establishments



Source: Harris and Li (2006b)

2.18. It should be noted that Figure 2.8[9] does not distinguish between UK businesses which are themselves foreign direct investors, and those which have no overseas investment. It therefore provides something of a false comparison with inward investors, as these are, by definition, multinational enterprises.[10] Unfortunately, data on the incidence of outward investment among UK firms are far less complete than for inward investment, hindering research and analysis in this area.

6 Pain N (2001)

7 ONS (2006) Research and Development in UK Businesses during 2004, MA 14

8 Source: Harris and Li (2006b)

9 The data sources underpinning the analysis reported in Chart 2.8 do not include information on whether the firm had any overseas assets.

10 For selected R&D intensive sectors, Griffith et al (2004) find that UK-owned multinationals are substantially more R&D intensive in their UK-based establishments. See discussion in Chapter 3 below.

2.19. The relatively higher shares of foreign-owned firms in UK R&D spend and value added, as compared with their UK employment share suggest that they tend to have higher than average labour productivity and R&D intensity. However, research shows that these differences largely disappear when other factors are controlled for, such as size, sector and multinational status of the UK firms. Evidence on these issues, and on the respective contributions of inward and outward investment to productivity and prosperity, and to the drivers of these, including innovation, is reviewed in Chapter 3.

2.20. Evidence on the factors which may hinder optimal UK participation in trade and inward investment flows is discussed in Chapter 4.

UK Business Participation in International Trade and Investment

2.21. The ability of the UK economy to respond flexibly to changing patterns in the growth of international opportunities depends critically on that of businesses, individually and collectively, to identify and respond to these opportunities. This section presents new evidence on the number and profile of businesses which engage in international trade and investment, and on their motives for doing so.

2.22. Data sources for the UK on export and outward investment activity at the level of individual businesses are limited,[11] and these limitations are significant hindrance to research in this area. The total number of UK exporters is not known with any certainty, with estimates varying widely,[12] from around 43,000, based on grossing up from the proportion of respondents to the UK Community Innovation Survey which reports export activity, to many times that number based on grossing up from responses to the SBS 2004 Annual Small Business Survey.[13] Evidence on the size distribution of exporters, and on the percentage of UK businesses that export, is much clearer, and is presented in **Table 2.1** below, based on new analysis recently carried out for UK Trade & Investment.[14]

11 The biggest data gap is due to the fact that the UK's Annual Business Inquiry does not capture information about exports, so there is no export data in the Annual Respondents' Database. This gap continues to be a major barrier to research on the links between export activity and productivity.

12 Since customs procedures associated with goods exports are commonly handled by intermediaries, customs data are an imperfect source of data about the export activities of firms. In any case these data cannot be made available to researchers for confidentiality reasons.

13 Driffield, et al (2006) and DTI estimates based on CIS3.

14 Based on analysis of CIS3 data reported in Harris and Li (2006b).

Table 2.1: Size distribution of UK exporters and percentage of UK businesses that export by size band

Size band (employees)	%UK exporters[15]	% of all UK establishments in this size band that export	% of R&D active UK establishments that export (manufacturing only)
0-9	68%	16.5	61.1
10-49		22.9	65.4
50-249	26%	37.0	79.9
250+	6%	42.1	83.4
All	100%	25.7	72.5

Source: Harris and Li (2006b)

2.23. Table 2.1 shows that small and medium-sized enterprises [SMEs] comprise the great majority of UK exporters, with large firms[16] accounting for only around 6 per cent. In terms of export value, the contribution of large firms is much greater, accounting for some 63 per cent of total exports.[17] Data for the US show a similar pattern, as do data for other countries.[18] The SME share of the value of exports is thus substantially less that their share in GDP for both countries, a pattern which has also been found typical of other countries.[19]

2.24. Table 2.2 compares the size profile of businesses seeking to enter established developed country markets with those looking to enter emerging markets.[20] In both cases these are businesses which have sought, and received, some form of help from UK Trade & Investment with respect to the market in question. The table shows that the size profile of the two groups is very similar, with the proportion of larger firms only slightly greater for emerging markets.

2.25. The similarity of size profile illustrated in Table 2.2 reflects the fact that, contrary to common assumption, the size distribution of experienced exporters is not significantly different from that of inexperienced exporters. Table 2.2 illustrates this point, using export intensity as the indicator of export experience.[21] When number of years exporting is used as the indicator of export experience there is a slight increase in the proportion of larger firms, but even among those exporting for 20+ years the broad picture remains the same – that SMEs overwhelmingly dominate the population.

15 UK Trade & Investment estimates based on Harris and Li (2006b). Excludes firms with fewer than 10 employees, for whom comparable data are not available. Hence the share of very small firms in the total population of UK exporters is likely to be significantly higher than shown.

16 Large firms are here defined as those with 250 or more employees.

17 Based on Harris and Li (2006b).

18 OECD (2006)

19 OECD (2006) op cit.

20 Source: OMB Research (2006b). The four emerging markets are: China, Brazil, India and Russia.

21 Export intensity, measured as the percentage of turnover accounted for by exports, is the established basis for defining export experience for purposes of measuring progress against UK Trade & Investment's Public Service Agreement Targets. Number of years exporting is a useful alternative measure. Neither measure entirely captures the concept of experience in terms of knowledge and know how, since businesses sometimes have a high export percentage turnover while still being very new to export activity, and also very young. Conversely, many other businesses have been exporting a small percentage of their turnover for a great many years, without ever developing an active overseas business strategy, or undertaking any action to investigate any new overseas markets. UK Trade & Investment monitoring evidence on the extent to which businesses see themselves as 'experienced' exporters reflects this variety of experience.

Table 2.2: Size distribution of businesses using UK Trade & Investment services by overseas market and export experience

Size band – number of employees	Businesses using UKTI trade services by overseas market[22]		Businesses using UKTI trade services by export experience[23]	
	Established markets	Emerging markets	Inexperienced	Experienced
0-9	49%	41%	46%	36%
10-49	33%	34%	32%	33%
50-249	14%	18%	16%	22%
250+	3%	7%	6%	8%

Source: OMB Research (2006b) and UKTI (2006)

2.26. The probability of exporting is not strongly influenced by business age, as shown in **Table 2.3**,[24] with the percentage of firms under five years old which export almost identical to that of the 11+ year-old group, within the sub-group of firms which are in the manufacturing sector and undertake R&D (73 per cent and 74 per cent respectively).

2.27. The fact that the SME share of exports is markedly lower than their share in GDP reflects the fact that the percentage of SMEs which export is lower than for large firms, as shown for the UK in **Table 2.1** above. However, the table also demonstrates that size differences in the propensity to export are much less significant within the sub-group of businesses which are in manufacturing sectors and are also active in R&D. This is presumably also true for other forms of business internationalisation, including foreign direct investment, although the data do not allow this to be confirmed. Evidence on links between innovation activity and business internationalisation is reviewed in Chapter 3.

Table 2.3:
Distribution of UK establishments by whether exported and/or undertook R&D (manufacturing only)

Age group	Export status	No R&D	Undertake R&D	Total
0-5yrs	Do not export	1,103	100	1,203
	Export	617	275	892
	All	1,720	375	2,095
6-10 yrs	Do not export	141	16	157
	Export	81	27	108
	All	222	43	265
11+ yrs	Do not export	280	34	314
	Export	223	93	316
	All	503	127	630

Source: Weighted data from CIS3 and ARD reported in Harris and Li (2006b)

22 OMB Research (2006b) Export experience is measured by export intensity; firms exporting up to 15 per cent of their turnover are defined here as inexperienced.

23 UKTI (2006)

24 Based on analysis reported in Harris and Li (2006b).

2.28. The economic importance of SME exporters also needs to be considered in light of their contribution to export diversity, and to the process of dynamic competition, and to the economy's ability to respond quickly to change. While data limitations make this difficult to document rigorously, there are sound reasons for expecting the SME contribution to export diversity to be considerable, and substantially greater than their share in the total value of exports. This is partly due to the fact that it is the strongest and most innovative SMEs who tend to export. Hence their role in contributing to diversity, flexibility and the competitive process in the wider economy is likely to be magnified within the export sector.[25]

2.29. There is less evidence available about the size profile of businesses which engage in foreign direct investment.[26] However, the available evidence does demonstrate that this too is by no means solely a large firm activity. UK Trade & Investment monitoring survey data show[27] that the size profile of businesses which have sought the organisation's help with respect to an outward investment project, or other non-export form of internationalisation, is actually very similar to that of businesses seeking export help. Similarly, UK Trade & Investment and its counterparts are finding that many of the companies they are helping with inward investment decisions are now SMEs.

2.31. The fact that the great majority of exporters, and a substantial proportion of investors, both in the UK and in other countries, are SMEs, irrespective of destination, and that this group accounts for a substantial proportion of the value of exports, means that the role of government in supporting international trade and investment cannot be seen as solely, or even primarily, a policy of interest to large firms. To the extent that young innovative SMEs may be competing with larger UK incumbents, either at home or overseas or both,[28] trade development support for SMEs may also have implications for the dynamics of the competitive process.

2.32. Evidence on the profile of businesses which engage in international trade and foreign direct investment demonstrates that this group is by no means representative of the wider business population, but has a number of important distinguishing features, including:

25 HMT (2006) provides a recent summary analysis of the contributions which SMEs, and entrepreneurship more generally, make to the competitive process and to aggregate productivity, highlighting their roles in product diversity and the flexibility of the economy in responding to change. Since the sub-group of the SME population which exports contains a disproportionate number of strong and innovative firms, these points are likely to hold even more strongly within the export sector.

26 The main sources of statistical data on multinational enterprises do not have representative coverage of firms in all size bands, but tend rather to disproportionate coverage of large firms. In the absence of a question about outward direct investment activity in one of the representative surveys, such as the Annual Business Inquiry, this bias is difficult to avoid.

27 OMB Research (2006c) forthcoming.

28 Greenaway et al (2006) find evidence that firms can gain increased financial strength through successful exporting, which would increase the ability of young businesses to compete with incumbents in the domestic market as well as overseas.

- **productivity:** There is evidence of a productivity hierarchy, with exporters tending to have higher productivity than non-exporters, and multinationals having higher productivity than non-multinationals;[29]
- **R&D intensity:** There is evidence of a similar R&D intensity hierarchy, as partially illustrated in Figure 2.8 above, with exporters in the middle and multinationals at the top. However, unlike the productivity hierarchy, the R&D intensity of foreign multinationals only tends to be higher than that of domestic non-multinationals, reflecting home-country bias in location of R&D within multinationals;[30]
- **growth trajectory:** For SMEs, there is evidence that export activity is associated with stronger revenue growth, and with higher growth objectives.[31] The need to sell overseas in order to meet growth objectives is one of the primary motivations for exporting cited by SMEs.[32]

2.33. Irrespective of causality,[33] these features suggest that this sub-group of businesses is likely to be of particular importance to the economy, and to its ability to respond dynamically to changing international patterns of opportunity. By the same token, any barriers to international trade and investment will impinge disproportionately on the sub-group of businesses which is most productive, most R&D intensive and most growth oriented, and thus potentially has the strongest contribution to make to the economy's dynamism.

SUMMARY

2.34. The ability of the UK economy to respond to the opportunities and challenges presented by increasing global integration depends critically on the response of the business community. The evidence presented in this chapter has shown that:

- geographical and sectoral patterns of international trade and investment show evidence of historical path dependency. While this could simply reflect long-term continuity in patterns of comparative advantage, it is also consistent with the idea that social networks, institutions and cultural ties are a significant influence on these patterns, and that there are significant barriers to developing new bilateral relationships. Further research is needed in this area;

29 Criscuolo and Martin (2003)

30 DTI Economics Paper No. 11 (2005); Harris and Li (2006a) and (2006b); Griffiths et al (2004)

31 Driffield et al (2006)

32 UKTI (2006a) and (2006b)

33 Evidence on the extent to which these features may be cause or consequence of internationalisation, or both, is considered in Chapter 3 below.

- over 90 per cent of the businesses engaged in international trade and investment are small and medium-sized, although large firms account for over 60 per cent of the value of exports, both for the UK and in other countries. It is likely that SME exporters contribute substantially more to the diversity and flexibility of exports than to their value, but further research would be needed to confirm this;
- the businesses which engage in international trade and investment are not typical of the wider business population, but tend to be more productive, more innovative and more growth oriented. These features give them a particularly important role in the economy's ability to respond dynamically to changing patterns of opportunity and challenge in the international economy;
- barriers to trade and investment will impinge disproportionately on businesses which have the highest productivity, innovation and growth objectives, because it is this sub-group which is most likely to be engaged in international trade and investment, and to generate the greatest economic benefits by so doing. Accordingly, such barriers are likely to have adverse effects on the economy's ability to respond to change.

CHAPTER THREE

Benefits of International Trade and Investment

Introduction

3.1. The previous chapter outlined recent trends in the UK's participation in international trade and investment, both at aggregate and firm level. It noted that the businesses which engage in international trade and investment tend to be more productive and innovative, and that these features give them a particularly important role in the economy's ability to respond creatively to changes in the international economy. This chapter looks in more depth at the evidence on the benefits of international trade and investment, focusing particularly on the role of the business community in generating them.

3.2. The economic analysis underpinning the UK's open international trade and investment policies has been set out in previous DTI Economics Papers, and in recent analysis published by HM Treasury.[34] The evidence presented suggests that international trade and investment lead to increased productivity both directly, and indirectly by supporting the drivers of productivity growth. This chapter builds on previous analysis, drawing on new evidence from research recently carried out for UK Trade & Investment.[35]

3.3. The chapter begins with a discussion of the evidence on the direct and indirect productivity effects of international trade and investment at the aggregate economy level, including effects on innovation and competition. It then reviews the evidence on the effects of trade and investment on productivity within firms, both direct and through knowledge spillovers.

Contributions to Aggregate Productivity Growth

3.4. Aggregate productivity growth is not synonymous with the sum of productivity growth within firms. Recent research, using establishment-level data, has demonstrated that productivity growth at aggregate national level does not depend solely on productivity growth within established firms, but also depends on trends in the relative output share of high and low- productivity companies. These *'batting average effects'* result from the forces of dynamic competition and innovation, as establishments with new products or better ways of doing things, and higher than average productivity, enter the market or

34 DTI (2004); HM Treasury (2006) and (2004)

35 This chapter and the following chapter draw on analysis in UKTI (2006), for which some of the research was commissioned. UK Trade & Investment has an ongoing programme of economic and evaluation research, as well as performance monitoring surveys; reports on all of these are available on the UK Trade & Investment web site, under the heading for the UKTI Economics and Evaluation Team.

increase their market shares, and lagging establishments with lower productivity shrink or exit. (See Box 3.1.)

3.5. The discussion below therefore considers evidence relating to the contributions of trade and investment to aggregate productivity growth in three steps, addressing the following topics in turn:

- **relative importance of 'within firm' vs 'dynamic competition' effects on aggregate productivity:** How large are the respective contributions to aggregate UK productivity growth of 'within firm' productivity changes, as opposed to the 'dynamic competition' effects of changing market shares and entry and exit? Does the balance between them matter, either for the level of aggregate productivity or for its growth? Evidence on these issues provides a basis for evaluating the evidence about the contributions of trade and investment to each of these potential determinants of aggregate productivity growth;
- **contributions to 'dynamic competition' effects on aggregate productivity:** Given the evidence that 'dynamic competition' effects may contribute at least as much to aggregate productivity growth as 'within firm' productivity effects, there is a need to consider evidence relating to the respective contributions of exports and inward investment to this productivity driver. Evidence on the role of inward investment as a spur to competition is considered in this context, as is the role of business internationalisation in the entry, growth and development of high-performing firms;
- **contributions to 'within firm' productivity growth:** Given the evidence that 'within firm' productivity growth is a major contributor to aggregate productivity growth, evidence on this issue is considered next. The discussion covers 'spillover' effects on productivity within other firms, as well as the evidence on direct productivity effects of exposure to international markets and foreign firms.

RELATIVE IMPORTANCE OF 'WITHIN FIRM' VS 'DYNAMIC COMPETITION' EFFECTS

3.6. Research using official sources of longitudinal data at firm and establishment level, has provided a major new source of evidence on this issue, as outlined in **Box 3.1**. Key findings are:

- both *'within firm'* productivity growth and *'dynamic competition'* effects are major contributors to aggregate productivity growth. There is some evidence for the UK that within-firm productivity growth has accounted for only a modest proportion of aggregate productivity growth during the past two decades.[36] There is no evidence that the balance between these effects is linked either to the level of aggregate productivity or to its growth;

36 Harris (2004) reports that over the 1990-98 period, growth in manufacturing total factor productivity was almost entirely accounted for by the productive churn effects of entry and exit. It should be stressed that 'entrants' in this context include all firms entering over the period studied, so could be up to 8 years old in the study of 1990-98. In addition, firms which start up after 1990 and disappear before 1998 would not be included, so the positive contribution of entrants reflects disproportionately those entrants who survived beyond their first two years.

- entry and exit are both important productivity drivers. The ability of innovative and technology-based firms to enter, grow and develop is particularly important in this context. The evidence suggests that internationalisation is important for growth and development of innovative and high-productivity firms, particularly in hightechnology sectors, where the domestic market alone is inadequate, either in terms of size, or in terms of providing the right types of customer;[37]
- surviving new entrants show evidence of productivity growth through learning, but only a small proportion mature into significant competitors for incumbents. Learning effects on productivity appear to be important for surviving entrants.[38]

3.7. Overall, the findings suggest that all of these sources of productivity growth are important. The determinants of the observed patterns need further research. For example, how should we interpret the finding that high-productivity firms in the UK have not expanded enough relative to lower-productivity firms to make any substantial contribution to productivity growth through 'batting average' effects? Does this indicate weaknesses in the entrepreneurial and marketing capabilities which are necessary to be able to identify and exploit opportunities – including overseas – and achieve such expansion? Evidence of the extent to which weaknesses in these areas may be constraining the growth of high-productivity firms would be needed to address this question. Similarly, the evidence of weak 'within firm' contribution to productivity growth might suggest weaknesses in factors driving within-firm process innovation and improvement.

Box 3.1: Evidence from studies of productivity growth using longitudinal data at establishment level:

Recent research on the dynamics of market competition has made clear that, while productivity growth at national or regional level depends critically on the strength and vitality of private-sector business enterprise,[39] this does not mean that productivity growth ***within firms*** is the only way of improving national productivity growth. On the contrary, at aggregate level, ***'productive churn'*** effects of entry and exit, and ***'batting average effects'*** of changing market shares across companies, are also major contributors to aggregate productivity growth. Research on these issues, using official sources of longitudinal data at firm and establishment level,[40] has begun to be available relatively recently, and has provided a major new source of evidence to inform business support policy. Key findings include:

37 Harris and Li (2005a); OMB Research (2005); Hughes (2004).

38 Baldwin (2001)

39 Aggregate productivity growth at national level reflects the combined productivity growth of the public and private sector, together with their respective shares in total UK GDP (Gross Domestic Product, i.e. real income generated domestically).

40 A key source of longitudinal micro data for the UK is the "Annual Respondents' Database" (ARD), which contains a wealth of detailed performance data, tracking individual businesses over time, based on the Annual Business Inquiry. Similar sources are available in a number of other OECD countries, notably the (LRD) for the USA, and a wealth of relevant evidence is available in recent research using these sources of longitudinal micro data.

- productivity improvements within surviving firms are a major contributor to aggregate productivity growth, but not the only source. Recent cross-country analysis for the OECD[41] also found that this was true for all the countries studied (including the UK), and that within-firm patterns largely drive aggregate fluctuations in productivity;
- changes in market shares among establishments at different productivity levels, both across surviving firms and as a result of business births and deaths, are also important factors affecting aggregate productivity growth, through the 'batting average' effects of this 'productive churn'.[42] However, the net effect of these dynamics is not invariably positive, as gains in market shares are not always predominantly achieved by the higher productivity establishments. International trade contributes to aggregate productivity growth in part by allowing high-productivity firms to expand their market output share through exports;[43]
- the relative contributions of productive churn and within-firm productivity growth to aggregate productivity growth appears to vary considerably across countries and regions and over time.[44] There is no evidence that any particular level of churn might be optimal, or that differences in the relative importance of these components of productivity growth are linked to trends in aggregate productivity growth, either across countries, regions or over time;
- individual firms, and plants within firms, move up and down the productivity distribution over time, with business births and deaths occurring at all levels of the productivity distribution;
- entry and exit rates are closely linked, with much of the churn activity taking place within the bottom end of the productivity distribution, showing that most new entrants have relatively little impact on market shares of incumbents. The probability of business death is significantly higher for businesses and plants within the lowest productivity group, but the net effect of exit on average productivity is not infallibly positive;

41 OECD: DSTI/EAS/IND/SWP/AH(2001)21

42 'Dynamic competition effects include both 'productive churn' effects of entry and exit and 'batting average effects of changing market shares across companies. Estimates of the exact contributions vary. See for example OECD (2001); Scarpetta, Hemmings, Tressel and Woo (2002); Harris and Robinson (2001).

43 Bernard et al (2002)

44 See Scarpetta et al (2002), and Rigby and Essletzbichler (1999). This latter study provides a breakdown of results by US state, demonstrating a wide range of differences in the relative contributions of the different sources of productivity growth. The discussion relates these differences to regional historical context, for example distinguishing patterns observed for the old manufacturing states, such as Pennsylvania, from states in which there had been substantial recent new developments in high-technology sectors.

- surviving new entrants show evidence of productivity growth through learning, but only a small proportion mature into significant competitors for incumbents. The probability of survival increases with age, with around 50 per cent of start-ups not lasting more than two years.[45] Learning effects appear to be important for surviving entrants;[46]
- there is a wide and persistent spread of productivity across firms and plants, even within narrowly defined sectors, but the existence of this spread per se cannot help to explain the UK's productivity performance, since it is also a feature of other countries. Moreover, there is no evidence that the extent of spread is linked to the level or growth rate of overall productivity.[47]

A key lesson from this research is thus that links between firm-level productivity growth and aggregate national-level productivity growth are not straightforward, because of the important role of productive churn and other features of market dynamics. Therefore, when seeking to evaluate the impact of business support programmes, this wider dynamic context must be taken into account, and the various potential channels of impact on aggregate productivity carefully considered.

3.8. The recent flowering of research using longitudinal micro data has highlighted the need for theoretical work which can help to build a clearer understanding of the forces which underlie the observed heterogeneity and shifting productivity performance across populations of firms. This need has stimulated renewed interest in evolutionary models of productivity growth and in the Schumpeterian idea of 'creative destruction'. It has also prompted some useful academic literature reviews seeking to draw together relevant strands from the evolutionary models, industrial organisation theory and other areas.[48] Bartelsman and Doms (2000) offer the following stylised story as the picture which seems to be emerging from combining the complementary approaches identified in their review:

- "First, innovative activity generates technology needed for production. A process of diffusion and adoption of technology determines productivity at each firm or establishment, generating a cross-sectional distribution of productivity.
- "Next, interactions between producers in the market determine market shares. Aggregate productivity can be computed as the share-weighted average of individual productivity….

45 See for example Harris and Hassaszdeh (2002)

46 Baldwin (2001)

47 See for example OECD (2001); Haskel and Martin (2002)

48 E.g. Harris and Robinson (2001); Bartelsman and Doms (2000). Harris and Li (2005a) also draw on this literature.

- "The next part of the story … is the impact that changes in certain factors have on the processes….. For example …. trade liberalization may speed up diffusion of technology and increase volatility of market shares……Changes in antitrust enforcement or deregulation of markets change interactions in the market……."

3.9. There are also some new strands of theoretical work inspired by these empirical findings, including a new round of general equilibrium trade theory in which heterogeneity of productivity across firms within the same industry has a central role.[49] These models shed new light on the role of international trade and investment to dynamic competition effects on aggregate productivity growth, and to this we now turn.

Contributions to 'Dynamic Competition' Effects:

3.10. One of these new theoretical models is particularly useful for the present review of evidence relating to roles for government in addressing barriers to international trade and investment. Bernard et al (2005) use a two country general equilibrium model to examine how country, industry and firm characteristics interact to determine nations' responses to trade liberalisation, portrayed in the model as falling costs of overseas market entry. Since the model is symmetrical, and 'overseas market entry' can be generalised to encompass a spectrum of international market-entry modes including both exporting and direct investment, it can help to shed light on the contributions of both. The analysis of the effects of falling costs of overseas market entry is particularly helpful for this study because, for both trade development and inward investment, roles of government in reducing barriers to trade and investment can reasonably be portrayed as having precisely this effect.[50] In brief the analysis shows that:

> *"…When firms possess heterogeneous productivity…. falling trade costs induce reallocations of resources both within and across industries and countries. These reallocations generate substantial job turnover in all sectors, spur relatively more creative destruction in comparative advantage industries than in comparative disadvantage industries, and magnify ex ante comparative advantage to create additional welfare gains from trade. The relative ascendance of high-productivity firms within industries boosts aggregate productivity and drives down consumer prices. In contrast with the neo-classical model, these price declines dampen and can even reverse the real wage losses of scarce factors as countries liberalise…"*

49 Bernard, et al (2005); Bernard et al (2002a); Melitz (2002).

50 The model uses a simplifying assumption that trade barriers can usefully be portrayed theoretically as cost barriers. Similarly portraying roles for government in reducing such barriers as helping to lower the costs of overseas market entry should not be interpreted as implying that access to markets is simply a matter of cost, since not all market-entry barriers can necessarily be overcome through financial payments. See discussion in Chapter 4 below.

3.11. The model demonstrates that reduction in market-entry costs induces increased aggregate productivity growth in all industries, even in the absence of any 'within-firm' productivity growth. This as a result of three factors:

- increased relative growth of high-productivity firms;
- increased potential returns to business investment in new market entry. 'Market entry' is portrayed in the model as the establishment of a new business, as a simplifying assumption, but can equally be interpreted as investment in research and development in order to develop new products or processes, as the implications for potential returns to investment would be identical for these;
- exit of lower-productivity firms as a result of the intensified competition resulting from reduced barriers to trade and increased competitive challenge from higher-productivity firms, both at home and overseas.

3.12. In other words, enhanced access to overseas markets increases the potential returns to business investment in innovation and new market entry, and thereby increases business incentives for undertaking more such activity. These theoretical perspectives are consistent with survey evidence[51] on business motivations for internationalisation, some results of which are summarised in **Tables 3.1** and **3.2**, covering both trade and investment. These show that:

- the opportunity to sell to a wider and larger customer base through selling into overseas markets is the predominant motivation. This is both because firms see selling overseas as the only way they can achieve their growth aims, or fully utilise existing capacity, and because it allows them to reduce their dependency on a limited range of customers. The opportunity to secure higher profit margins is also cited by a significant minority;
- access to knowledge and ideas, and keeping abreast of developments, are also reported as very important motivations, both for trade and investment overseas. 'To be close to centres of research' in the UK was cited as a key motive by 29 per cent of head offices of businesses considering investment in the UK, although 'to reduce costs' was more often cited by established inward investors, particularly those who had not used UK Trade & Investment services.[52]

3.13. These findings highlight the importance of access to international markets to the ability of these businesses to meet their performance goals. Since firms which internationalise tend to have relatively high productivity, and also to be the most innovative, their ability to meet their growth objectives, and keep abreast of new ideas, has particular importance to the economy. By the same token, the ability to attract the best firms, both as suppliers of high-quality

51 UKTI (2006) and OMB Research (2005). Further evidence on motivations for selling overseas is reported in OMB Research (2006), based on a larger sample of exporters who had used UK Trade & Investment services, and confirms the findings reported here.

52 The non-user group sample was drawn from the general population of inward investors in the UK, and respondents had generally been established in the UK substantially longer than the UKTI user sample.

imports and inward investors, is key to the benefits which the receiving country can achieve from these flows.[53] The available academic evidence also supports the theory outlined above:

- evidence for Canada[54] suggests that entry and expansion of inward investors and of exporters can both contribute substantially to aggregate productivity growth through these dynamic competition or 'batting average' effects, because both tend to have higher than average productivity. A similar productivity hierarchy has been demonstrated for the UK, with multinationals having higher average productivity than non-multinationals.[55] Hence the dynamic competition effects found for Canada are likely to be important also for the UK but have not yet been researched directly;[56]
- research on the aggregate productivity effects of trade, using detailed data on the product composition of trade, shows that the productivity effects of trade depend partly on the diversity of a country's exports, with greater product variety having significant positive effects on productivity level and growth.[57] One cross-country study estimated that export variety accounted for 2 per cent of the variation in the level of productivity differences across countries, and 13 per cent of within-country productivity growth.[58] The available evidence suggests that such increases in export diversity are associated with entry of new firms into exporting, or established firms entering into new overseas markets, rather than reflecting increases in the variety sold by established exporters to a given set of markets;[59]
- research using micro panel data suggests that foreign entry into the UK has led to faster productivity growth within domestic firms,[60] and that the average rate of productivity growth across manufacturing sectors is positively related to five measures of international openness, including trade and foreign investment;[61]

53 The theoretical framework is symmetrical, as noted above. Market-entry decisions can be seen equally from the perspective of the overseas firm or that of the domestic one. Benefits to the economy derive from flows in both directions, and market-entry barriers have symmetrical implications for both, in addition to any other factors affecting decisions concerning location of business activity.

54 Baldwin and Gu (2003) and (2004);

55 Controlling for other factors, US multinationals have been found to have a slight productivity lead over UK multinationals, while other foreign multinationals have a comparable productivity advantage as UK ones with respect to UK plants that are not part of a multinational. One study finds that the US lead is solely due to its ability to cherry pick the best plants when entering the UK via acquisitions. Criscuolo and Martin (2003)

56 Canadian and US studies on the role of exporters in dynamic competition effects on productivity growth cannot be replicated for the UK because of lack of suitable data on exports.

57 Harris and Li (2006a)

58 Feenstra and Kee (2004) cited in Harris and Li (2006a). Their model predicted that a 10 per cent increase in export varieties of all industries would lead to a 1.3 per cent increase in productivity across the countries they studied, while a 10 per cent increase in US tariffs would lead to a 2 per cent fall in exporting countries' productivity.

59 Harris and Li (2006a)

60 Aghion et al (2004)

61 Cameron et al (1999)

- Harris and Li (2005a) review a number of studies which point to the critical role of R&D investment and training that firms undertake in order to absorb, assimilate and manage foreign technologies to which they are exposed through entering overseas markets. For Canada, Baldwin and Gu (2004) find evidence of positive effects of internationalisation on investment in R&D, with R&D 10 per cent higher (after controlling for other relevant variables such as size) for exporters, but no significant differential in favour of exporters prior to their internationalisation;
- new evidence for the UK using data from the Community Innovation Survey is consistent with the evidence for Canada, confirming strong links between internationalisation and investment in innovation. The study found that sales to international markets were a strong influence on whether or not R&D is undertaken, and vice versa.[62] Strong links were also found between sales to international markets and R&D intensity. The findings were suggestive of causality running in both directions, as suggested by economic theory,[63] but since the analysis is based on cross-sectional data strong conclusions on causality are still not possible for the UK;
- also consistent with the idea that internationalisation is associated with greater investment in knowledge acquisition, Harris and Li (2006b) find that international co-operation on innovation is markedly higher among exporters. UK Trade & Investment monitoring survey data[64] also show that most firms report some form of investment in capability building as a result of their export activity. Consistent with Harris and Li (2005a), firms that report innovation activity are also more likely to report that export activity has increased their use of external expertise. Interestingly, as shown in **Table 3.3**, the difference between SMEs and large firms in using external expertise largely disappears when the firm's innovation activity is taken into account, although large firms are still more likely to take on new staff as a means of building capability;
- internationalisation is particularly important to innovative and high- tech firms who have knowledge assets on which they would not be able to earn an adequate return without access to overseas markets, and also to high-growth businesses who would otherwise similarly be unable to achieve their potential. Recent survey results[65] support findings from the literature reported in Harris and Li (2005a) and (2005b) on these issues;

62 Harris and Li (2005b). Business spending on R&D is dominated by the manufacturing sector, within which some 70 per cent of firms who are engaged in R&D also export. For manufacturing as a whole the proportion was only 43 per cent, and for all firms covered by the CIS it was only 26.1 per cent.

63 See Bernard et al (2005) and also Lachenmaier and Wossman (2005).

64 OMB Research (2006a)

65 Driffield (2006) secondary analysis of data from the SBS Annual Small Business Survey 2004, and OMB Research (2005). Multivariate analysis of the factors influencing reported benefits from trade development found that high-growth objectives and innovation activity were significant predictors of benefits, as was previous experience. Previous export experience can be viewed as an indicator of absorptive capacity for further benefits from internationalisation.

- a recent study for the UK using firm-level data finds strong evidence that successful exporting improves the financial health of businesses, which is seen as likely to reduce the financial constraints faced by firms, and consequently also likely indirectly to enhance their investment spending and productivity.[66] These findings are consistent with evidence from the SBS Annual Small Business Survey that revenue growth tends to be faster for exporters, relative to employment growth,[67] and with the survey evidence on business motivations for internationalisation, cited above.

COMPETITION EFFECTS

3.14. The ability of young innovative firms to exploit overseas markets successfully may have important implications for their ability to present a significant competitive challenge to domestic incumbents. By enabling them to strengthen their financial performance, reduce their dependence on a limited range of customers and meet growth objectives, successful exporting is likely to enable young innovative firms to present a stronger competitive challenge, both in domestic markets and overseas, where they may also compete with established UK exporters.

3.15. Inward investment may be expected to stimulate positive effects on productivity and innovation through intensified competition in domestic markets for products and services, where these markets either cannot be served as effectively through imports alone, or imports are not a feasible option. However, it can also have the opposite effect:

- Entry which intensifies competition in domestic markets, or the threat of such entry, can be a spur to innovation in incumbent firms to fend off the competition. Analysis suggests that foreign entry into the UK has led to faster productivity growth in domestic incumbents,[68] although the effect appears to be greatest where technologically advanced entrants spur innovation in incumbent firms who are close to the best practice frontier;[69]
- Inward investment can have both positive and negative effects on competition, as measured by impact on price-cost margins. One study for the UK found that the effect depends on the type of investment. While *greenfield* investment lowers price-cost margins by increasing productive capacity within the industry, *acquisition* by inward investors has the opposite effect, because it reduces the number of producers competing and thus the industry becomes more concentrated.[70]

66 Greenaway et al (2006)
67 Driffield (2006)
68 Aghion et al (2004)
69 Aghion et al (2006)
70 Maioli et al (2003)

R&D INTENSITY IN MULTINATIONALS

3.16. There is evidence that multinationals tend to be more R&D intensive than non-multinationals, and that some kinds of direct investment are motivated specifically by technology sourcing.[71] However, since foreign multinationals tend to keep R&D close to their headquarters overseas, their investment in R&D in the UK as a percentage of their value added or sales is relatively low.[72] Foreign multinationals in the UK have a higher R&D intensity than non-multinational UK-owned firms in high-tech sectors, but UK-owned multinationals have the highest R&D in these sectors.[73] Hence if the inward investor replaces a non-multinational UK firm with lower R&D intensity, this would have a positive 'batting average' effect on average UK R&D intensity.

3.17. The extent to which inward investors contribute to UK R&D depends partly on the purpose of the investment. Where the primary motive is technology sourcing, for example through locating close to high-quality UK research departments, they may contribute substantially to UK R&D, and to the knowledge base on which UK firms also draw, potentially also generating important knowledge spillovers.[74] Alternatively, inward investment could have a depressing effect on domestic R&D if it replaces a UK multinational, and the parent company draws on its resources at its home base rather than using technologies developed by its UK subsidiary. A number of factors are likely to influence decisions regarding the future of R&D facilities in the UK:[75]

- the costs of gaining access to, and sustaining, formal and informal local networks, and in particular the costs of knowing who to include in their network;
- whether local technological opportunities are of a quality which provides sufficient benefit to justify the costs incurred in gaining access to them;
- the organisational abilities of the investor, and their ability to transmit knowledge relatively easily to their overseas businesses.

3.18. Thus with respect to both innovation and competition effects, the impact of inward investment is likely to depend crucially on the nature and motivations for the investment. The evidence reviewed above suggests that greenfield investments which are motivated particularly by access to knowledge in the UK are likely to bring substantially greater benefits to the economy in both areas.

71 This literature is reviewed in Harris and Li (2006a).

72 See discussion in DTI (2005).

73 Griffith et al (2004)

74 Griffith et al (2004)

75 Crisculo P, R Narula and B Verspagen (2002)

3.19. In summary, exporting and inward investment both contribute directly to aggregate productivity growth through 'dynamic competition' effects, with their respective contributions to batting average effects depending arithmetically on a combination of their share in total output and their respective productivity levels. Measuring these effects directly is not yet possible for the UK because of data limitations.

3.20. However, the factors which drive these dynamic competition outcomes also need to be considered. From this perspective, links between UK innovation performance and international trade and investment, and the role of internationalisation in the growth and development of young innovative and high-productivity firms, are undoubtedly of particular importance. These factors are central to the competitive dynamism of the economy, and to its ability to respond flexibly to change.

Contributions to Productivity Growth Within Firms

3.21. There is evidence that both inward and outward trade and investment may contribute significantly to productivity growth within firms through flows of knowledge, ideas and technology, although the mechanisms through which these effects occur, and the relative importance of the different channels, are less clear.[76] Acquisition of new ideas leading to improvements in productivity within the receiving firms can occur both through the firm's direct involvement in trade and investment, and through indirect effects, as a result of knowledge transfer from other firms engaged in these activities. As noted above, there is evidence that access to ideas is a significant motive for both exporting and foreign direct investment, both inward and outward.[77] Evidence suggests that:

- inward investment can lead directly to within-firm productivity growth as a result of takeover by a foreign-owned firm with superior technology or management techniques. There is some evidence that the productivity of takeover targets improves within three years after takeover, but these effects are not greater when the takeover is by an inward investor rather than by another UK firm. This suggests that the change in ownership matters more than the change in nationality of ownership.[78] There is also some evidence that the higher level of productivity of foreign multinationals in the UK is in part due to cherry picking of more highly productive establishments as takeover targets;[79]

76 Harris and Li (2006a) review the evidence on innovation and technology transfer effects which may occur through imports, exports and both inward and outward investment.

77 Survey evidence on motives for exporting and inward investment is presented in Tables 3.1 and 3.2 above, based on OMB Research (2005). See also DTI (2005), which includes a discussion of evidence that domestic R&D and innovation capability is one of the factors attracting inward FDI.

78 Griffith et al (2004)

79 Griffith et al op cit; Criscuolo and Martin (2003) also find a cherry-picking effect which explains part of the observed productivity lead in UK establishments owned by US multinationals as compared with those owned by UK multinationals.

- the management literature on exporting and business development suggests that exporting is likely to have significant positive effects on within-firm productivity growth through learning, and also through positive effects on investment of firms in R&D and knowledge acquisition.[80] Quantitative evidence for Canada supports this,[81] but only weak evidence of direct productivity effects from exporting has been found for the UK, and no such effects have been found for the US. These conflicting findings could result from data problems, or simply reflect differences in circumstances across countries.[82] The evidence for the US seems less likely to be relevant than that for Canada, as former is a much larger market, and at the technology frontier in so many areas. However, the evidence is insufficiently clear to allow firm conclusions, and further research is clearly needed for the UK;
- a recent review of this literature by Greenaway and Kneller (2005) cites seven studies claiming evidence for learning, and four that fail to find such effects. The studies relate to a wide variety of countries and use a range of methodologies, focusing on the evidence of learning as manifested in productivity effects. Some of the studies posit a "learning ***to*** export" hypothesis – the idea that firms may make investments in technologies or capabilities prior to exporting, but as a result of the decision to export – as an alternative explanation for the observed pre-export surge in productivity. Harris and Li (2005a) present a similar perspective in reporting on the management literature, as noted above;
- survey research carried out for UK Trade & Investment does find clear evidence of businesses learning from exposure to overseas markets, with nearly a third of its trade development service users reporting improvements to products or services as a result of their export activity.[83] Furthermore, two thirds or more report, improvements to some aspect of behaviour – products, processes, or strategy – as a result of their export experience and associated learning.[84] Evidence from qualitative follow-up interviews demonstrate that these changes can occur as a result of a learning process which takes place during the pre-export marketing research and exploration phase. In some cases, firms report that they have made changes to their products and ways of doing business in all markets as a result of learning in the context of seeking to enter a new export market, even though they had been exporting to other countries for many years.[85] These effects would obviously not be picked up in studies of export-learning effects which focus on periods following market entry, but are consistent with the 'learning to export' hypothesis – the idea that learning or investments in capabilities may take place as part of preparation for export;

80 Harris and Li (2005a)

81 Baldwin and Gu (2003) and (2004)

82 Harris and Li (2005) provides a discussion of these issues.

83 UKTI (2006)

84 See Chapter 5 below. The results reported relate to firms which have received some form of help from UK Trade & Investment, which often includes information and advice, so the learning effects are attributable at least in part to this help. In other cases learning effects occur indirectly as a result of UK Trade & Investment help, as when a firm takes part in a supported delegation to an overseas trade fair or mission, and beneficial learning occurs as a result of exposure to other businesses and new ideas in that context.

85 See UKTI (2006), Box 4.1, and OMB Research (2005).

- the idea that the ability of firms to absorb and benefit from new ideas depends importantly on capacity gained through learning from previous experience, stressed in Harris and Li (2005a), might provide a reason for expecting such learning effects to increase with experience. The academic evidence does not directly shed light on this issue.[86] Surveys carried out for UK Trade & Investment have found no significant differences between experienced and inexperienced exporters[87] with respect to the incidence of significant learning effects. However, consistent with Harris and Li, they do find that innovative firms are significantly more likely to report such effects;[88]
- Driffield et al (2006) find evidence suggestive of labour productivity growth, based on data from a recent UK survey of SMEs.[89] The evidence shows that revenue growth was faster in exporting SMEs, but that this was not the case for employment growth in the sample surveyed, implying that the exporter group experienced rising labour productivity as a result.

3.22. In summary, there is evidence that both exporting and inward investment may contribute directly to within-firm productivity growth, and recent surveys have provided some useful new evidence on the mechanisms through which these effects occur.

3.23. Indirect effects of trade and investment on transfer of knowledge leading to productivity growth within firms can occur either through market transactions, as when a firm which has acquired new technology overseas sells new or improved products and services incorporating the new technology to other firms. New ideas can also be transferred unintentionally, through demonstration effects, or movement of personnel, or other 'spillover' effects for which the firm does not receive compensation. The evidence on technology transfer through knowledge spillovers is mixed and incomplete, and the mechanisms through which spillovers occur are not clear. Distinguishing true knowledge spillovers from knowledge transfer which occurs through market transactions is extremely difficult in quantitative research, and suggests a need for more research using a wider range of methods.[90] The available evidence suggests:

86 While some of the academic studies have sought to look at differences in learning effects between exporters which have recently begun to export and those which have been exporting for longer, this distinction does not correspond closely to the definitions of experienced and inexperienced exporters, based on export percentage of turnover (sometimes referred to as 'export intensity'), which have been used for this study. Export percentage of turnover is not necessarily correlated with duration of export experience, as some businesses increase their export intensity early and rapidly, while others may continue to export a small percentage of turnover for a great many years. The OMB survey captured information about both variables.

87 This finding is based on the established definition of export 'experience' which is used to measure UK Trade & Investment's performance against its Public Service Agreement Targets. Alternative definitions of experience could also be tested.

88 UK Trade & Investment monitoring survey data analysis by OMB Research, reported in Chapter 5 below.

89 Driffield et al (2006). The analysis was carried out for UK Trade & Investment, using data from the Annual Small Business Survey of UK SMEs, 2004. It should be noted that the population for this survey appears to have had some bias towards older firms, reflecting the difficulties in obtaining a sampling frame which is fully representative of the age distribution of the wider population. A similar bias was reported in UKTI (2006), with respect to the sample used for surveying exporters and investors who had not used UK Trade & Investment services.

90 UKTI (2006) highlights some of these issues and the need for further research.

- that knowledge spillover effects from inward investment can occur, and can contribute significantly to productivity growth within UK domestic firms, but only in circumstances where the necessary absorptive capacity and context are present.[91] For this reason, knowledge spillovers are most likely to occur when inward investment takes place in close proximity to domestic firms which have the necessary absorptive capacity, such as in knowledge-intensive clusters;[92]
- the extent to which knowledge spillovers from inward investment occur is also likely to depend on the extent to which these firms are embedded in networks within the UK through which knowledge may be shared. There is evidence that foreign subsidiaries are less likely to engage in such knowledge transfer than internationally connected UK firms.[93] Griffith et al (2004) suggest that investment by foreign multinationals in R&D in the UK may be a potentially important source of knowledge spillovers;
- Griffith et al (2006) find evidence of knowledge spillovers to UK domestic manufacturing firms resulting from outward investment in R&D facilities in the US by other UK firms, associated with technology sourcing. They find that recent growth in the US R&D stock disproportionately benefited UK firms which have US-based inventors, and estimate that total factor productivity in UK manufacturing would have been about 5 per cent lower (£14bn) had it not been for this effect;[94]
- almost no evidence is available on productivity spillovers from exporting. The one existing study (for Chile) identified by literature reviews for UK Trade & Investment found positive effects, and surveys for the organisation also find evidence of such effects.[95] One recent study[96] tested for contemporaneous spillover effects on non-exporters and found no such effects.[97] The report highlights the need for further work, in particular to take account of time lags and of absorptive capacity in potential spillover recipients, which their econometric tests did not address. Since studies of spillovers from inward FDI have shown that exporting was a significant indicator of such absorptive capacity, it is perhaps not surprising that a test for spillover effects on non-exporters did not find such effects.[98]

91 Recent reviews of evidence on technology transfer through spillovers are in Gorg et al (2006) and Harris and Li (2006a), with the former generally taking a more positive view of the balance of evidence than the latter.

92 Harris and Li (2006a). Driffield et al (2005) suggest that investment projects which generate employment in relatively lagging areas are unlikely to generate knowledge spillovers, while those types of projects most likely to generate knowledge spillovers are unlikely to increase jobs for unskilled workers. This is partly because of the nature of the projects and partly because of the different levels of absorptive capacity among domestic firms in different locations. See also Driffield (2004).

93 Harris and Li (2006a)

94 Griffith et al (2006).

95 UKTI (2006) and OMB Research (2005)

96 Girma, Gorg, and Pisu (2005)

97 Girma, Gorg, and Pisu (2006), reported in UKTI (2006)

98 Knowledge spillovers from exporting would also depend on acquisition of new ideas having previously occurred as a result of exporting. As noted above, the evidence on direct learning from exporting is mixed.

3.24. In summary, there is evidence that some types of inward investment project can be an important source of knowledge spillovers, but that the extent to which these are realised is likely to depend crucially on the right absorptive capacity within UK firms, and the extent to which knowledge-intensive inward investors are embedded within domestic UK networks. There has been very little research on knowledge spillovers from exporting.

Conclusions

3.25. This chapter has reviewed evidence on the potential benefits to the UK from international trade and investment, focusing particularly on the role of the business community in generating them. The evidence suggests that there are substantial potential benefits from trade and investment, both inward and outward, highlighting the following:

- international trade and investment raise aggregate productivity directly by increasing the relative GDP shares of high-productivity firms. This is because exporters and multinationals tend to have higher than average productivity, so as they expand their market shares the average rises;
- the productivity effects of international trade depend partly on export diversity, with greater product variety having significant positive effects on productivity level and growth. The available evidence suggests that such increases in export diversity are associated with the entry of new firms into exporting, or established firms entering into new overseas markets, rather than reflecting increases in variety sold by established exporters to a given set of markets;
- there is evidence of a 'learning to export' productivity effect on firms, associated with capability building in preparation for selling overseas. Individual firms may also increase their productivity as a result of exporting, either due to revenues rising faster than inputs or as a result of learning effects manifested in changes to products or processes, although the evidence on the aggregate significance of these is mixed. Being taken over by an inward investor can also lead to within-firm productivity improvements, although takeover by a domestic firm can have similar effect;
- competition is stimulated by the opportunity for young innovative and high-productivity firms to sell overseas, as this enables them to meet growth aims, reduce their dependence on a limited range of customers, and strengthen their financial performance, hence allowing them to present a stronger competitive challenge to domestic incumbents.
- competition is also stimulated by the opportunity for foreign firms to compete with domestic firms, both for resources, including purchase of business assets or whole firms, and in markets for products and services, where imports alone would not compete as effectively or be feasible;

- competition from inward investors for UK-based labour and other resources may increase the their value, and hence lead both to increased investment in these resources, and to higher returns to their owners. This is particularly likely when inward investors bring new technologies, or superior organistional skills, enabling them to use the resources more productively;
- innovation and business internationalisation[99] are closely linked, with some evidence that causality runs in both directions, as selling into overseas markets raises the returns to successful innovation and thus increases the incentives for more investment this area. By strengthening the financial performance of firms, exporting also increases the resources for such investment;[100]
- the strong links between innovation and business internationalisation hold both for the propensity to innovate and to undertake R&D, and for R&D intensity.[101] Sales to international markets are a strong positive predictor of R&D intensity, and are also correlated very strongly with international co-operation on R&D. Multinationals tend to have the highest R&D intensity, but only in their home country, reflecting home-country bias in R&D location with these firms. Nevertheless, inward investors contribute disproportionately to aggregate R&D in the UK, relative to their employment and output share;
- international trade and investment are strong conduits for the transfer of ideas and knowledge, although the mechanisms through which this occurs are less clear. Imports appear to be a particularly strong conduit for inward technology transfer. There is some evidence of positive knowledge and productivity spillovers from inward investment, and also evidence of such effects from outward investment in R&D;
- from the perspective of individual firms, the benefits of trade and investment derive from the opportunity to increase returns on investment, achieve growth and revenue objectives, reduce dependence on a limited customer range, keep abreast of the competition, and gain increased access to knowledge, ideas and technologies.

3.26. Evidence that there are potential benefits to UK productivity and prosperity from trade and investment is the first pillar of the economic rationale for government support in this area, but is not sufficient. The next chapter looks at the extent to which there may be barriers arising from market failure which would prevent businesses themselves from fully achieving these benefits in the absence of government action.

99 The term 'internationalisation' is used in this paper to refer to any form of selling goods or services or intellectual property overseas, or engaging in foreign direct investment. The term is sometimes widened to include importing, but this is not covered in the present paper.

100 Greenaway et al (2006)

101 Harris and Li (2006b)

Table 3.1:
Motivations for trading overseas – survey evidence[102]

Firms involved in overseas trade were read a list of reasons that other firms had given for trading overseas and asked to indicate how important each was in their particular case. They were asked to respond using a 5-point scale, where 5 means extremely important and 1 means not at all important.

These results are summarised in the following table, with the proportion of all firms motivated 'to a significant extent' by each of the factors tested shown (i.e. the proportion of firms giving a score of either '4' or '5' on the 5-point scale) as well as the percentage of them motivated by any of the given factors. The results are provided by experience level for SMEs only, with data pertaining to larger firms shown separately. Please note the small base sizes when interpreting results for these larger firms.

The results show that inexperienced non-users of UK Trade & Investment services are less likely to report strong motivations for exporting. This could simply mean that these businesses are able to meet their goals within the UK market, as non-users were also less likely than users to be growth oriented. However, it could also indicate less awareness of the potential benefits from fuller exploitation of overseas market opportunities.

	UKTI Users			Non-Users		
Proportion motivated 'to a significant extent' by…	***SMEs Inexper-ienced***	***Exper-ienced***	***Large Firms (250+)***	***SMEs Inexper-ienced***	***SMEs Exper-ienced***	***Large Firms (250+)***
Only way to achieve growth aims	41%	54%	50%	29%	43%	52%
To allow use of existing capacity	37%	49%	45%	35%	48%	52%
Able to secure higher margins	23%	17%	36%	23%	17%	23%
Reduced dependency on a few customers	59%	60%	64%	32%	44%	58%
To keep abreast of developments	48%	38%	27%	23%	21%	35%
At least one significant motivation (% reporting ratings of 4 or 5 for any motivation)	79%	71%	77%	58%	64%	77%
Base	*115*	*174*	*22*	*31*	*84*	*31*

102 Data reported in Tables 3.2. derive from a survey carried out for UK Trade & Investment during 2005, as described more fully in UKTI (2006) and OMB Research (2005).

Table 3.2:
Motivations for investing – survey evidence[103]

Inward investors were read a list of reasons that other firms have given for establishing themselves in the UK/Ireland and asked to indicate how important each was in their particular case. Firms were asked to respond using a 5-point scale, where 5 means extremely important and 1 means not at all important. The results are summarised in the following table, with the proportion of all firms motivated 'to a significant extent' by each of the factors tested shown (i.e. the percentage of firms giving a score of either '4' or '5' on the 5-point scale).

Whilst a proactive desire to serve both the immediate local market and other European markets are clearly key motivators, there are also more 'reactive' pressures, such as a need to keep up with competitors.

	Users		Non-Users	Ireland
Proportion motivated 'to a significant extent' by…	***Head Office (Invested)***	***UK Office***	***UK Office***	***Irish Office (All)***
To serve the local market	80%	65%	85%	21%
To serve Europe	60%	65%	36%	69%
To serve others in group	37%	35%	15%	52%
To be close to customers	57%	50%	49%	25%
To establish 'English' base	66%	46%	38%	60%
To launch a new product	23%	19%	23%	32%
To reduce costs	14%	31%	30%	35%
To keep up with competitors	63%	54%	34%	32%
To be close to centres of research	29%	27%	9%	20%
Base	*35*	*26*	*47*	*100*

Notes to Table 3.2: "Head Office – Invested" refers to head offices of inward investors who were helped by UK Trade & Investment and subsequently decided to invest in the UK. "UK Office" refers to UK offices of inward investors; "Irish Office" refers to Irish offices of inward investors in Ireland.

103 Data from UKTI (2006) and OMB Research (2005). Sample sizes need to be taken into account when interpreting these results. It should also be noted that response rates for inward investors were relatively low, except for investors in Ireland.

Table 3.3:
Use of external expertise as a result of export activity – by SME R&D activity and innovation[104]

	R&D Employees		'Innovative' (Wider Definition)		Large Firms (250+)
	Yes	No	Yes	No	
Base	652	175	731	96	41
Introducing or increasing training	49%	36%	48%	33%	52%
Creating new marketing or management posts	50%	31%	47%	29%	59%
Employing a marketing or export specialist	33%	18%	31%	18%	39%
...Someone in-house	*19%*	*9%*	*18%*	*7%*	*35%*
...An external person	*17%*	*12%*	*16%*	*12%*	*14%*
Taken other actions to improve marketing/export skills	63%	51%	61%	54%	56%
None of these	15%	27%	17%	22%	14%
Don't know	2%	6%	2%	11%	3%
Signposted only	1%	0%	1%	0%	3%

104 Source: OMB Research (2006a)

CHAPTER 4

Barriers to International Trade and Investment and Market Failure

Introduction

4.1. The preceding chapter considered the evidence on the benefits from international trade and investment, and found that both have substantial potential to contribute to productivity growth and prosperity. This chapter considers the evidence that there are market failures which create barriers to trade and investment, and might prevent the private-sector business community unaided from fully realising these potential benefits. Government policy barriers to international trade and investment are not addressed in this chapter; the analysis underpinning UK Government policy in this area has been set out in previous papers, cited above.

4.2. The chapter begins by briefly reviewing some theoretical reasons why market failures might create significant barriers to trade and investment, using the theoretical framework set out in Chapter 3. The evidence on non-policy barriers[105] to international trade and investment, both at firm level and at a collective bilateral level, is then considered, taking account of the likely implications for aggregate productivity and innovation performance.

4.3. The evidence reviewed in this chapter addresses the second pillar of the economic rationale for government support. However, it is also necessary to consider whether there are feasible actions which government can take to address the barriers identified, such that the overall benefits justify the costs. Chapter 5 considers the evidence on this crucial third pillar of the rationale for government action.

Market failure

4.4. The term 'market failure' has both a narrow theoretical interpretation – in terms of deviations from conditions for perfect markets – and a more general policy-oriented usage, which refers simply to circumstances in which there are significant potential economic benefits which the private sector would be unable, or unlikely, to achieve unaided. This report uses the term in the latter sense, as is usual in a policy evaluation context.

105 The term 'non-policy barriers' is used here to distinguish between formal trade and investment policy barriers, such as tariffs, quotas, restrictions on the ability of foreign firms to purchase domestic assets, etc., which are the subject of trade and investment policy negotiations. The boundary between formal and informal barriers is not always precise, as, for example, when issues relating to practical implementation of trade and investment policy arise on the ground.

4.5. There is little or no established consensus about what types of evidence should be used to measure market failure, despite the importance of these issues to policy evaluation. Different perspectives on what constitutes a well-functioning market lead to different views about what kinds of evidence are relevant, and to different interpretations of any given body of evidence.[106]

4.6. The theoretical model set out in Bernard et al (2005) and outlined above[107] provides a useful analytical framework in this context, since it can be used to analyse the effects on productivity growth which would result from market failures which might impact on the model's key parameters. In particular, the problems outlined below can be seen as potentially affecting two key parameters of the model:

- **costs of overseas market entry:** Do these reflect true economic costs, or are the costs sub-optimally high as a consequence of market or institutional failures, such as underprovision of public goods or weak social networks, which might increase the costs of search? If the latter, then sub-optimal levels of international trade and investment will result, just as for other types of barriers to market entry;
- **expected benefits from overseas market entry:** Do firms take into account the full social benefits resulting from their overseas market-entry decisions? If not, for example because of knowledge spillovers or competition benefits not being taken into account, or because businesses under-estimate the potential benefits from exposure to new markets, sub-optimal levels of international trade and investment would again result.

4.7. The model can be used to show that sources of market failure which cause either of these two parameters to be at sub-optimal levels will have adverse effects on welfare and productivity, and that, conversely, (cost- effective) action taken to address such problems has the potential to increase welfare and stimulate increased productivity growth. As discussed in the previous chapter, this theoretical model can also be used to demonstrate that addressing such market failures will also increase the potential returns to investment in innovation.

4.8. Sources of market failure affecting costs and expected benefits of overseas market entry, respectively, are considered in turn below. A note on search theory, and its implications for the costs of overseas market entry through trade and investment is provided in **Box 4.2**. A key lesson from search theory is that when acquisition of information is costly, acquisition of the *optimal* amount of information will still leave decision makers with less than perfect information. Thus the existence of search costs *per se* is not a sign of market failure.

106 For a discussion of ways in which different theoretical paradigms lead to different perspectives on evaluation research and evidence see Lipsey (1998). The paper discusses evaluations from two perspectives: neoclassical economic theory and structuralist-evolutionary theory respectively.

107 Bernard et al (2005). The paper does not explicitly address market failure.

Market Failure Affecting Costs of Overseas Market Entry:

4.9. Literature reviews[108] and evaluation research for UK Trade & Investment[109] have identified a number of theoretical sources of market failure which would be expected to affect the costs of acquiring information necessary to inform international marketing strategies and the costs of overseas market entry. In brief, these are:

- **under provision of public goods:** Private-sector market incentives are generally insufficient to provide optimal quantities of public goods. Much of the general market information provided directly by UK Trade & Investment comes under this heading.[110] If public-sector action is not taken to ensure these gaps are filled, and made available free or at appropriate cost, individual businesses requiring the information would be obliged to produce it for themselves.[111] This would both inflate the costs of acquiring the information they need to inform overseas market- entry strategies, and waste resources from the perspective of society as a whole, by duplicating activity which could more efficiently have been done once for use by all. Accordingly, information-gathering costs of overseas market entry would be sub-optimally high. This conclusion holds equally true for information used by both new and experienced exporters, or for inward investors;
- **network and intermediation failures:** The literature has highlighted the importance of the social networks and intermediaries which underpin international linkages and knowledge flows, and enable businesses to identify and gain access to overseas contacts and opportunities.[112] However, there are a number of reasons why the private sector alone may not be willing or able to develop or maintain these adequately, outlined in **Box 4.1**. Theory also identifies a number of reasons why government is uniquely well placed to fulfill the role of 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. In the absence of action to address network and intermediation failures, the information-gathering costs of overseas market entry would again be sub-optimally high. Intermediation failures would also lead to sub-optimal matching between potential suppliers and customers, hence reducing the benefits from trade and investment.[113] Equally, the need to access key social networks in order to gain access to sources of knowledge and technology could present a barrier to inward investors considering whether to undertake R&D in the UK;

108 Harris and Li (2005a); Reading Business Group (2006)

109 For example see SQW (2006) and Reading Business Group (2006)

110 In many cases, information, once provided, can be used by more than one consumer (non-rival) and others cannot be prevented from using it (non-excludable). A pure public good has both characteristics, while a pure private good has neither; many types of information fall somewhere between the two, with the boundary between what the market will or will not provide not necessarily fixed or easy to assess.

111 In some circumstances a feasible alternative option is to encourage business groups to co-operate in commissioning research relevant to an entire sector, or group of sectors. UK Trade & Investment does this in a number of contexts, working with relevant business organisations.

112 For a summary historical review of literature on this issue see Casson (2006)

113 The quantified benefits to trade development which are discussed in Chapter 5 often stem specifically from UK Trade & Investment's role in overcoming barriers to access to contacts.

- **informal barriers to market access:** Government has a key role in setting the rules of the international trade and investment system. In many circumstances, because of its links with official counterparts overseas, government is also uniquely able to address issues arising in the practical implementation of these rules, or to address other less formal barriers to market access, such as issues relating to technical standards;
- **weaknesses in internationalisation skills:** Market failures affecting the supply of internationalisation skills in the economy may limit their availability, particularly for young businesses. It may be necessary for firms to build up these skills internally to a significant extent, rather than buying them in from the market through the purchase of commercial training or consultancy services, or through hiring new staff.[114] Weaknesses in internationalisation skills are likely to increase the costs of entering overseas markets as a result of pursuing sub-optimal marketing research and market strategies which waste resources. Since longer- established firms might be expected to have developed these skills, such weaknesses may particularly affect the performance of young innovative companies who need to exploit international markets in order to reduce dependence on a limited range of customers, meet growth objectives or maximise returns on a successful innovation. As a consequence, these young innovative firms would also be less able to present a vigorous challenge to incumbents, either in the UK or overseas.[115]

4.10. Weaknesses in the social networks underpinning trade and investment flows could present barriers to developing new bilateral relationships, both at national and sector level. These factors could hinder the economy's ability to respond to changes in the pattern of global opportunities, especially when changes are relatively rapid, and when the largest benefits are likely to accrue to those who first gain access to emerging opportunities.

4.11. If established social networks are difficult for new firms to enter, they could present barriers to individual firms, particularly young ones, and those seeking to enter new markets, either through trade or direct investment. Such barriers could thus also hinder the economy's ability to respond to emerging new opportunities, even in markets where bilateral social networks are well established. Similarly, if individual inward investors find it too difficult to access key knowledge networks in the host country, the level of R&D which they decide to undertake there may be lower than otherwise.[116]

114 Harris and Li (2005a) highlight the distinction between capabilities which can be purchased and those which must be built up internally, partly through experience. Cost-effective acquisition of external expertise through use of consultants in any case requires sufficient complementary capabilities to be an intelligent customer, including design and management of the necessary contracts, while taking on a new staff member can represent a significant fixed cost for a young (and still small) firm, assuming that there is sufficient supply of labour on the market with the right expertise for this to be a feasible option.

115 Young innovative firms in highly internationalised technology intensive sectors may well compete with incumbents both at home and abroad.

116 Their decision on the level of R&D may still be optimal from their own perspective, as an alternative location in which knowledge networks are easier to access may provide higher benefits.

4.12. Evidence on the extent to which these factors may create barriers to trade and investment by causing the costs of market entry to be sub-optimally high is reviewed below, following a discussion of theoretical sources of market failure which might affect the perceived benefits of market entry. In brief, although some of the evidence is difficult to assess, and the most plausible counterfactual is always open to debate, the evidence suggests that:

- network and intermediation barriers do indeed present significant barriers to trade and investment, both at the level of individual firms and at a collective bilateral level. There is also evidence that collective investment in strengthening the social networks underpinning these trade and investment relationships is indeed hindered by co-ordination failure and free-rider issues. However, defining and measuring the *proportion* of the observed network barriers which is due specifically to market failure as opposed to being due simply to the real economic costs of developing and maintaining these social networks is unlikely to be possible;
- weaknesses in internationalisation skills are a significant barrier to exploiting overseas markets for many SMEs, including innovative firms whose structural characteristics, including R&D activity, are not distinguishable from those who do export successfully. The extent to which these skill deficiencies might reflect market failure in the supply of relevant skills, which could perhaps be addressed through policies directed at markets for such skills rather than through policies which work through providing advice directly to firms, is not easy to determine. What is clear, however, is that such skill deficiencies weaken the ability of these young innovative firms to realise their potential, and hence also weakens their ability to present a competitive challenge to incumbents, at home and overseas;
- it is not possible to measure directly the extent to which private-sector underprovision of public-good types of information might inflate the costs of acquiring the information needed for market entry in the absence of public-sector support. The available evidence does not generally identify commercial private sector alternatives to UK Trade & Investment information and advisory services, but instead strongly points to the role of private social networks as by far the most frequently cited alternative.[117]

4.13. Hence the observed network and cost barriers seem likely to reflect both market failure and real economic costs, in proportions which cannot easily be determined. Taken together, however, theory and evidence suggests that search costs of trade and investment would indeed be sub-optimally high in the absence of government action to:

- address market failures in provision of information;
- encourage collective business investment in such information, particularly within sectors which lack strong established networks or strong forward-looking attitudes and leadership;

117 The surveys also find that sources mentioned as alternatives to UK Trade & Investment by respondents – such as trade associations or chambers of commerce – are very often in fact providing services with the organisation's support, although the businesses using the service are not aware of its role.

- strengthen internationalisation skills in young and innovative SMEs;
- strengthen the social networks underpinning trade and investment, and address barriers to access to such networks, particularly as they affect knowledgeintensive and innovative firms seeking to enter the UK, and innovative UK firms of all sizes who are seeking to exploit overseas market opportunities.

Box 4.1: Network and intermediation failures

Recent research[118] has highlighted the role of UK Trade & Investment as a trusted intermediary which brokers relationships internationally between businesses and potential partners or sources of knowledge, through its network of consulates and embassies overseas, and its network of contacts within the UK. The analysis emphasises the unique role of government as inspiring trust, both because it is seen as impartial, and because of its access to information and influence which cannot easily be replicated, if at all, by the private sector.

The analysis points out that when firms and individuals are heterogeneous, and information is limited, markets may not be able to function efficiently without an effective intermediary. For example, in circumstances in which all transactions involve considerable uncertainty,[119] establishing trust between business partners is crucial, but how are firms to know whether they can trust their counterparties? Various options exist in theory. Insurance could be a solution, but it is expensive and not always available. Firms may seek to rely on networks such as local institutions e.g. chambers of commerce. Or they may rely on personal contacts or knowledge – their immediate social network. Alternatively they may have a credible threat of retaliation such as potential damage to the counterparties' reputation or the possible loss of future contracts. In practice firms are likely to use a combination of such measures.

118 Reading Business Group (2005) and Casson et al (2006).

119 See for example Casson (2000).

Whatever combination is adopted, networks are likely to be an important part of this process. They are regarded as providing an important mechanism for the transmission of knowledge.[120] However, firms may lack access to the social networks which underpin business ties and purchasing decisions in overseas markets which are new to them. The factors which govern access to social networks are not necessarily closely related to those which determine a firm's productivity, or its ability to produce high-quality innovative products or services. Networks are likely to be stronger near a firm's home base, or where there are strong family or cultural linkages for historical reasons, for example due to former colonial ties. In geographically and culturally distant markets, firms may lack means of access to business or social networks, or understanding of networks that do exist. The private sector alone may not be able or willing to develop or support networks to redress this lack, particularly in circumstances where there is little or no history of bilateral trade and investment.[121] Networks have some of the characteristics of public goods and so can suffer from free-rider effects. Private sector-run networks might also reflect the interest of incumbents and be used as a barrier to those outside the networks.

Governments may also be advantageously positioned to run networks given their wide range of possible contacts. Government agencies can also have better access to their official counterparts abroad and so may be able to provide access to information that otherwise would not be available and to provide credibility to firms seeking introduction to networks overseas. Where the fixed costs of establishing and maintaining an overseas network of consulates and embassies are incurred in any case for diplomatic purposes, the additional cost of providing commercial services may be relatively modest.[122] These factors could provide a rationale for government intervention.[123] Providing such an intermediation service, bridging gaps in private-sector networks, and enabling businesses to gain access to key contacts overseas, is one of UK Trade & Investment's key roles.

120 See for example DTI (2003).

121 If there is little or no history of bilateral trade and investment with the market in question, there may be little or no existing private-sector capability to supply this role in any case. There may also be little incentive for such capability to develop until a sufficient volume of bilateral trade and investment activity develops to justify the fixed costs of building up such capability, even if feasible in principle.

122 As noted above, the issue of the fixed costs of establishing such a network is likely to be particularly important in circumstances where historical volumes of bilateral trade and investment in relevant sectors are too limited to support investment in private-sector commercial services.

123 As noted above, an economic rationale for government depends on three criteria being met, of which the ability of government to intervene cost effectively is one. Box 4.1 identifies a number of reasons why governments are well placed to meet this criterion. Chapter 5 reviews evidence on cost effectiveness.

Market Failure Affecting Expected Benefits of Overseas Market Entry

4.14. Three main sources of market failure have been identified in the literature which could result in businesses not taking into account the full potential benefits resulting from overseas market entry:

- **beneficial knowledge spillovers:** When actions by one firm generate costs or benefits which affect other firms or entities but are not fully reflected in effects on the firm's own costs, revenues or assets, markets may fail to achieve optimum levels of the relevant activities, and there can be a role for government to address the problems arising. For example, beneficial knowledge spillovers which may arise from inward investments as a result of giving host-country businesses greater exposure to new ideas, technologies and better ways of doing business, are a key part of the economic case for supporting inward investment. Trade may also give rise to such knowledge spillovers. This can occur directly, for example when one firm's decision to enter an overseas market has a demonstration effect on decisions by others – who may not previously have been aware of the opportunities in that particular market. It can also occur indirectly, for example when a firm acquires new ideas or techniques, or develops new products or processes, as a result of learning through its own exposure to overseas markets, and then this knowledge filters through to other firms in its home market. Informal social and business networks may be significant conduits of such knowledge spillovers, for example as individuals share their experiences of overseas markets on their return home;
- **information failures:** Imperfect information may lead to sub-optimal international activity by firms, or to sub-optimal allocation of resources in deciding on internationalisation strategies or choosing which markets to focus effort on. For example, inexperienced exporters may underestimate the uncertain benefits of exporting and so when faced with the costs of entering export markets may decide not to take the risk.[124] Similarly, when considering entry into new markets, even experienced exporters or international investors may be reluctant to venture into markets which are culturally distant, and where they may feel unable to assess risks adequately, particularly if they lack access to social or business networks there;

124 Costs arising from uncertain risks of selling overseas might also be underestimated.

- **network path dependency and collective information failure:** The analysis in Box 4.1. highlights a number of reasons why information flows through social networks can have significant influence on business decisions in international trade and investment. An implication of this analysis is that historical factors affecting the pattern of existing social networks supporting international trade and investment flows could result in business communities collectively failing to keep abreast of significant emerging opportunities overseas, especially in sectors or areas where historical links and bilateral social networks are relatively weak.[125] Even if some individual businesses in a sector are more up-to-date in their awareness of overseas opportunities, these more dynamic elements in the business community may not be sufficient to drive collective action, if the established networks for co-operation are dominated by businesses less motivated to pursue opportunities in new markets.[126] One of UK Trade & Investment's roles is to bridge these gaps in collective knowledge within existing networks, by serving as a conduit for up-to-date information, obtained through its overseas network, to raise awareness of potential opportunities for inward investors and for UK businesses.

4.15. There are different theoretical perspectives on the extent to which information failure, individual or collective, is seen as a source of 'genuine' market failure, stemming from fundamentally different perspectives on how markets function, and what constitutes a well-functioning market.[127] As noted above, limited information is a predicted outcome of optimal search behaviour in circumstances where information is costly. From a policy perspective, however, a key issue is whether, in practice, the observed information failures are likely to cause unaided markets to fail to achieve significant potential benefits, and, if so, whether the government can take action cost effectively to address the problem.

4.16. The extent to which path dependency might give rise to a rationale for government intervention would also depend on the relative costs and benefits of shifting the economy from one equilibrium to another. Costs and benefits need to be considered from a dynamic as well as a comparative static perspective, however, taking account of benefits arising from the economy's ability to respond to change. Networks which were established in a context of less-rapid change may lack the capabilities, such as analytical capacity, or mechanisms for co-operating on research into new opportunities, to respond to change. When the pace of change in the international economy has accelerated, capacity for response to change which was optimal in the past may no longer be adequate, and investment in building the capabilities to increase flexibility may be warranted. The benefits of increased flexibility, arising from improving the ability of established networks to respond to change, or from increasing access

125 This could be one of the factors picked up in the research by Rose (2005) and Rauch (1999), cited above, who both find that variables relating to cultural ties have significant influence on bilateral trade patterns.

126 Casson et al (2006) and SQW (2006) highlight the issue of path dependency of social networks in this context.

127 A discussion of this issue is provided in Harris and Li (2005), who conclude that 'It is a moot point whether this is a market failure per se, but anyway there would appear to be a robust case for government intervention because it has a potential advantage in the provision of information that can boost transactions in the market resulting in a net gain to all those involved...' (Para 4.8, p. 73).

of new entrants to such networks, are not easy to assess from the perspective of the wider economy.[128]

4.17. Evidence on the extent to which trade and investment generate knowledge spillovers was reviewed in the previous chapter, and suggests that these do occur, particularly for knowledge-intensive inward and outward investment. The extent to which they occur was also found to depend on proximity to domestic firms with sufficient absorptive capacity to be able to benefit from such potential sources of knowledge. The evidence on knowledge spillovers from exporting was weak, although little research has been identified on this issue. The policy implications of spillovers from inward and outward investment are not identical, since it is only those knowledge spillovers which benefit UK domestic firms which are relevant to the rationale for government intervention.[129]

4.18. Evidence about the incidence of information failure both at firm level, and at a collective level, is discussed below. There is both quantitative and qualitative evidence suggesting that management attitudes can present a significant barrier to internationalisation in SMEs whose pre-export structural characteristics cannot be distinguished from those who go on to become successful exporters. The quantitative evidence shows that social networks do have a significant influence on bilateral trade patterns, but sheds little light on the mechanisms through which this occurs. Qualitative evidence suggests that collective information failure is an issue particularly affecting young sectors which have not yet developed strong networks, and long- established sectors, in which the leadership of established networks suffers from path dependency resulting in a sluggish response to emerging new opportunities.

4.19. In summary, theory and evidence suggest that market failure is likely to lead to sub-optimal outcomes affecting business perceptions of the potential benefits of trade and investment in the absence of government action to:

- encourage increased beneficial knowledge spillovers from inward investment, by making it easier for such firms to locate in the UK and to access the key knowledge networks which are likely to affect both the level of their R&D investment in the UK, and the links with UK domestic firms which are the necessary conduits for substantial knowledge spillovers to result from such investment;
- strengthen the capacity of existing networks to respond to change, both through increased analytical capacity, and through bridging access to key networks, collectively and individually;
- strengthen management capabilities needed for successful internationalisation, particularly among young and innovative SMEs.

128 Benefits to individual firms from gaining access to networks are easier to assess, and evidence on this issue is reviewed in Chapter 5 below.

129 There is some evidence that knowledge spillovers from outward investment in R&D benefit other firms in the home country, as well as those in the host country.

RATIONALE FOR SERVICE PROVISION VS RATIONALE FOR SUBSIDY

4.20. It should be noted that the issues which underpin the economic rationale for government action ***to provide services*** of the type offered by UK Trade & Investment and its overseas counterparts are distinct from those which underpin the case for government ***subsidy*** in provision of these services. In general, the case for government providing the service directly rests on evidence that it is better placed to do so than potential alternative providers, either because government has a cost advantage or because it has some unique ability to provide a quality of service which the private sector could not replicate. The rationale for subsidy, on the other hand, generally rests either on one or more of the following arguments:

- **benefits not fully internalised by the firms using the services:** Knowledge spillover benefits are one example. Provision of subsidised advisory services to business start-ups, and to an extent to other SMEs, may also be justified in terms of a wider economic benefit from the competitive spur which new entry can provide to incumbents;
- **information failure:** Smaller businesses may underestimate the potential benefits of external advice, or may feel unable to assess the potential costs and benefits adequately, or to manage the risks that consultants may not provide good value for money.[130] These factors may lead to sub-optimal use of such advice;
- **public goods:** While in some cases it may be possible to overcome potential underprovision of public goods by facilitating co-operation among private-sector groups who would benefit from such goods, in other circumstances the potential beneficiaries may be too disperse or difficult to co-ordinate for this to be feasible. Subsidised provision may be justified where the benefits from doing so sufficiently exceed the costs;
- **trust and impartiality:** Casson (2006) argues that some types of government services, such as political and diplomatic support, cannot reasonably be charged for without undermining their credibility, and therefore must be fully subsidised. This idea is discussed further below, in the context of the role of the public sector as a trusted intermediary.

4.21. Irrespective of whether the policy involves subsidy or direct provision, or both, the economic rationale for government intervention will depend crucially on the ability of government to do so cost effectively. Cost effectiveness is addressed in Chapter 5. The remainder of this chapter considers the evidence on barriers to trade and investment, and the extent to which they may reflect market failure.

130 As noted above, there are different views on the extent to which this is seen as a cause of market failure, and this argument for subsidy is also made on the basis that the benefits of increasing firms' capabilities through such advice are expected to be greater than the costs of subsidy. See discussion in Harris and Li (2005). The argument may also imply the idea that there is a wider economic benefit from increasing the capabilities of certain groups of SMEs, particularly innovative young firms.

Box 4.2: Search theory and cost barriers to trade and investment

Search theory can provide a useful framework for analysis of decision making in circumstances where there is uncertainty about the potential costs and benefits of alternative actions, and in which acquisition of further information through 'search' behaviour can reduce uncertainty and improve decision making. Business decisions about overseas market prioritisation and market-entry strategy can usefully be analysed in terms of search models, as can the process of matching individual buyers and sellers.

A useful insight from search theory is that when information, and its acquisition, are costly, acquisition of the optimal amount will generally still leave elements of uncertainty in decision processes. The *optimal* amount of information to acquire in this context can be defined in terms of equating the marginal costs and benefits of acquiring further information. Accordingly, decision makers can be expected to continue to lack perfect information, and to make some poorly informed decisions, while nevertheless having acquired the economically efficient level of information. The costs of failure resulting from poorly informed decisions may still be lower than the real resource costs of acquiring additional information.

By the same token, search theory predicts that an increase in search costs, other things equal, leads to a reduction in the *optimum* level of information acquisition for any given investment decision, and, accordingly, results in an increase in the optimum proportion of failures. A decline in the costs of search has the reverse effect.

The process of search can be simultaneous or sequential. For instance, market prioritisation can be seen as a simultaneous search process: the business considers a range of markets simultaneously, and must decide how to prioritise among them. The larger the range of markets considered, and the better the information relating to each, the greater the likelihood of selecting the most profitable potential opportunity as the top priority.

In practice, evidence suggests that businesses often consider only a very limited range of markets, both in terms of export destinations and overseas investment locations. Survey evidence has found that firms often have serendipitous reasons for selecting the market they were seeking to enter, and that no market prioritisation assessment had been conducted before they began to invest resources in attempting to enter the market. After a time, if the market-entry venture does not seem to be going well, they may decide to cut their losses and move on to somewhere else.[131] Thus market-entry decisions may often be sequential.

131 OMB Research (2006).

The analysis in Reading Business Group (2005) and Casson et al (2006) suggests that reputation effects can have a significant influence on the initial decisions of which options to investigate. Social networks are seen as having a key role in conditioning the search process, partly by the reputation effects they confer on network members. The analysis relates both to the ability of an individual business to attract interest in what it has to offer, and to the probability that a business will select any given overseas market as the location in which to develop new business, either through selling or direct investment. Thus UK reputation effects are likely to matter both for attracting inward investment and for UK firms seeking to do business overseas.

Analysis in Rauch (1999) similarly stresses the role of social networks in conditioning search, linking search theory to the determinants of trade patterns. The analysis distinguishes between homogenous and differentiated products on the grounds that the search costs of trade are likely to be higher for the latter, and leads to a hypothesis that historical cultural ties and common language are likely to have a stronger influence on trading patterns in differentiated goods.

A key issue for policy analysis is whether the search costs associated with international trade and investment are sub-optimally high due to market failure, or whether they simply reflect the real resource costs of acquiring knowledge. The analysis in Casson *et al* (2006) suggests that market failures affecting the social networks which condition search processes in international trade and investment are likely to be significant. See also **Box 4.1**.

Evidence on Market Failure Barriers to Trade and Investment

4.22. As policy barriers to trade and investment have been progressively decreasing, other types of barriers have begun to attract more attention from researchers in recent years. This section reviews the evidence on the kinds of barrier which are the main focus of government policies which provide support to businesses seeking to enter overseas markets or looking to enter the UK market as inward investors. The discussion considers both the evidence that such barriers exist, and the evidence that they may be caused by market failure.

4.23. The main sources of evidence identified are:

- **Quantitative research on the factors which determine export entry by individual firms.**[132] This literature has interpreted evidence of hysterisis[133] in the participation of firms in export activity, and evidence that larger and higher-productivity firms are more likely to enter export markets, as indirect evidence of fixed-cost barriers to exporting. Studies of this type do not shed any direct light on the nature of these barriers, nor on the extent to which they may be associated with market failure;
- **Quantitative research on the factors which determine detailed patterns of bilateral trade.** This literature has sought to assess the influence of social networks on trade patterns, and finds strong evidence that historical cultural ties and language do have significant influence on these patterns. The findings are consistent with the idea that social networks and institutions play an important role in trade, and take time to develop, thus causing an element of historical path dependency in bilateral trading relationships, and presenting a barrier to developing new bilateral trading links at sectoral or national level;
- **Survey research on barriers to trade and investment as perceived by firms themselves.** The OECD has interpreted the evidence that the SME share in the total value of trade is markedly lower than their share in GDP as prima facie evidence that there are barriers to SME participation in international trade. Ithas therefore commissioned research to help understand the nature and incidence of these barriers, and to help identify appropriate policy responses. This research includes a cross-country survey of SMEs, seeking to capture direct evidence on the nature and relative significance of such barriers. It has also drawn together evidence from previous surveys, and from the management literature on internationalisation. Surveys and qualitative research carried out recently for UK Trade & Investment provide another source of evidence on the barriers perceived by firms, covering both inward investors and UK firms doing business overseas.

4.24. These sources do not provide a complete picture of the nature and magnitude of the barriers to market entry faced by firms individually or collectively. It is also difficult to determine precisely what proportion of the observed barriers should be attributed to market failure, and what proportion may simply reflect the real economic costs of entering new markets, including those of developing and maintaining the social networks which underpin trade and investment flows. Nevertheless, the quantitative and qualitative evidence are consistent in yielding some clear messages.

132 The decision to export can be interpreted more generally as one step in a spectrum of internationalisation options. This strand of literature focuses on exporting, in the general sense of selling overseas. In reality, businesses may undertake a range of different types of revenue-generating activity in overseas markets, which could also include licensing arrangements or direct investment. The data sources used for this literature generally do not allow a wider range of activities to be distinguished.

133 The term 'hysterisis' is used by scientists to refer to circumstances in which the equilibrium of a system depends on the history of that system. (Macmillan 1992) In an economic context it has similar use, referring to circumstances in which firms or individuals continue an activity in the face of changes in external circumstances which would generally be expected to cause them to reduce or discontinue the activity. The term is thus similar to the concept of 'path dependency'.

EVIDENCE ON DETERMINANTS OF FIRM-LEVEL EXPORT BEHAVIOUR

4.25. As noted in the previous chapter, development of the theoretical literature underpinning recent empirical research on firm-level determinants of exporting was stimulated by evidence that, even in narrowly defined sectors, firms are heterogeneous,[134] and not all firms in exporting sectors are engaged in international markets. The theory demonstrates that the existence of sunk entry costs and firm heterogeneity can, in principle, help to explain these observed empirical patterns.[135] Thus this literature has interpreted evidence of hysterisis in the participation for firms in export activity, and evidence that larger and higher-productivity firms are more likely to enter export markets, as indirect evidence of fixed-cost barriers to exporting.

4.26. Using the same analytical framework, theory has also shown that liquidity constraints can have an impact on a firm's decision to export, controlling for productivity and size. This theoretical conclusion is seen as being consistent with evidence from an extensive empirical literature which suggests that financial constraints impact on firm investment, employment and R&D decisions. Thus this theoretical analysis lends support to the idea that the existence of fixed costs of entry into exporting could provide an adequate explanation of the observed patterns. As noted above, the existence of such costs does not per se imply market failure, but could simply reflect the real costs of activities such as acquiring information.

4.27. The idea that there are fixed-cost barriers to entry into exporting finds some support from recent econometric research on the determinants of exporting.[136] This research finds evidence that size and productivity do influence the propensity to export, but also finds that sector effects are even more important, and that innovation activity and 'absorptive capacity' also play an important role, particularly in determining export intensity.[137] Assuming that these factors are important determinants of the expected potential benefits from entering export markets, the findings seem consistent with the idea that there are fixed-cost barriers to exporting which can be overcome if the expected benefits from doing so are sufficiently large.

4.28. On the other hand, having the right observable characteristics is not an absolute guarantee that the firm will indeed export, suggesting that unobserved factors also play a role. Roper et al (2005) find that structural factors, including R&D, explain almost all of the difference in export propensity among larger plants in Northern Ireland and Ireland, but only explain around a third of the

134 Much of the literature has focused on heterogeneity in terms of firms' productivity levels. However, the literature has widened to study other dimensions of heterogeneity, including entrepreneurial ability, wage levels, financial health, different types of workers hired, and differences in technologies. See references in Greenaway et al (2006).

135 For example see Greenaway et al (2006), Bernard et al (2005), and Melitz (2003).

136 Harris and Li (2005b) and (2006b), based on data from the Community Innovation Survey linked to data from the ARD. The analysis of determinants of export behaviour relates only to manufacturing.

137 Size was found to have a positive influence on the propensity to export, but a negative influence on export intensity, as measured by the export percentage turnover. Continuous R&D had a strong positive effect on export intensity, and also a positive, but less strong, effect on the propensity to export.

difference observed among smaller plants. Unobserved factors, such as management attitudes and business goals are also seen as important factors, consistent with emerging findings from the OECD study of barriers to SME internationalisation.

4.29. If barriers to exporting were due solely or even primarily to cost factors, one might expect that a firm's pre-export financial health would be a significant determinant of the decision to export.[138] However, recent empirical research for the UK has looked at the links between financial performance and the probability of exporting, and finds no evidence that firms with better financial health are more likely to export. This finding suggests that cost barriers are not the whole story, and seems consistent with the findings in Roper et al (2005) that unobserved factors also play a substantial role.

4.30. One source of evidence on what some of these other factors might be is provided by findings from recent research carried out for the OECD.[139] Emerging results highlight the importance of internal barriers associated with resource constraints and weaknesses in internationalisation capabilities, including management skills and attitudes. These findings are consistent with the management literature on internationalisation, which also stresses that a firm's ability to take advantage of new knowledge and opportunities depends crucially on its self-awareness and absorptive capacity.[140]

4.31. A background report for this OECD project[141] also draws on findings from an earlier survey of some 1,200 SMEs in the east of England, which found strong evidence that internal capabilities and management attitudes were important influences on internationalisation behaviour.[142] Key findings include:

- inactivity in overseas markets is often due to lack of perceived international market opportunities (no pull factor) and generally benign domestic conditions (no push factor);
- successful internationalisation is demanding in its requirements for efficient management and expertise, the need for which is often not fully recognised by businesses initially embarking on the process. Capabilities are commonly built up over time through practical experience;
- business receptiveness to using relevant external sources of knowledge and expertise in the internationalisation process depends on their having gained sufficient experience and awareness to be able to analyse internal limitations and assess skill and knowledge gaps.

138 Greenaway et al (2006) As noted in the previous chapter, the study instead finds that improved financial health is an outcome of successful exporting, but not a determinant of such activity. Girma, Gorg and Pisu (2006) similarly find little evidence that financial variables influence the probability of exporting.

139 OECD (2006).

140 Harris and Li (2005a); Bessant et al (2005).

141 OECD (2006).

142 OECD (2006).

4.32. The idea that sufficient self-awareness to recognise that internal capability gaps exist is a prerequisite to addressing them is similarly emphasised in a recent Cranfield study[143] of the role of external knowledge and expertise at key stages of business growth and development. The study suggests that awareness that they lack capabilities is a foundation step in building absorptive capacity. Qualitative research for UK Trade & Investment on the internationalisation capabilities of innovative SMEs[144] also supports this idea.

4.33. A recent review of literature on business internationalisation[145] found that a strong and consistent theme was 'the role and importance of firm specific assets (complementary resources and capabilities and hence absorptive capacity) and knowledge accumulation'. There is particular emphasis on the essential role of tacit knowledge and acquisition both within firms and from the firm's external environment. The literature also suggests that the development of absorptive capacity is history or path dependent, because the ability to assimilate new knowledge depends on the level of accumulated prior knowledge. This would also imply that willingness to invest in exploring new opportunities – such as the possibility of selling into new markets overseas – is likely to be influenced by previous experience.

4.34. The idea that there is likely to be path dependency in response of firms to new opportunities, linked to past investment in absorptive capacity, is supported by the evidence that some galvanising 'push factor' or 'pull factor' is often needed to prompt initial SME internationalisation.[146] The Cranfield study[147] stresses the importance of transition points in business development, which are often prompted by changes in the firm's external or internal environment. If traversed successfully, by increasing the firm's absorptive capacity in response to the new environment, these transitions can become 'tipping points' in its performance trajectory. Acquisition of the right types of external knowledge or expertise during these transitions can thus have a disproportionately large impact on performance trajectories. However, awareness of the need for investment in new knowledge is an essential first step, and the impact of such investment is likely to be very difficult to predict in advance. New market entry is identified as one such potential 'tipping point'.

4.35. New survey research carried out for UK Trade & Investment[148] provides another source of evidence on the nature and incidence of barriers to selling into overseas markets, as perceived by UK businesses of all sizes, and also barriers to inward investment into the UK and Ireland, as perceived by overseas businesses who were considering or had made such investment. Findings are summarised in **Tables 4.1** and **4.2**. Further quantitative analysis of the data

143 Bessant et al (2005).

144 OMB Research (2006a).

145 Harris and Li (2005a).

146 This is also a theme from qualitative studies for UK Trade & Investment. See OMB Research (2006b).

147 Bessant et al (2005) op cit.

148 UKTI (2006), OMB Research (2006b) and (2005).

relating to barriers to trade from this same survey is reported in Kneller et al (2006), using an alternative definition of export experience based on the number of years a firm had been exporting.

4.36. The survey evidence confirms that firms do perceive resource constraints as important, but also highlights the importance of social-network barriers, and, to a lesser extent, framework issues such as legal and regulatory barriers. Key findings are:

- fixed-cost barriers are the most frequently cited barrier to selling overseas, but are not linked to firm size;
- social-network barriers are the next most frequently cited barrier, again affecting all sizes of firm.[149] These relate to both to identifying initial contacts and establishing a dialogue, and to building relationships once initial contact had been established;
- overall, the number of barriers reported is not linked to the size of firm, but is significantly lower for firms which have been exporting for 10 years or more. The incidence of barriers is not linked to export experience as measured by export intensity;
- barriers to inward investment were less frequently reported as significant than barriers to selling overseas, but were nevertheless critical to a significant minority. Understanding legal requirements, recruiting staff, obtaining visas for overseas staff and finding suitable local suppliers were all reported as having presented barriers of critical importance to some investors.

4.37. The evidence for trade, but not for investment, shows that those businesses which had not received help from UK Trade & Investment were less likely to have reported any significant barriers. Some of this difference may, however, be attributable to differences in the extent to which businesses had attempted to enter any new markets within the period which the respondent could readily recall. This is because the non-user sample was drawn from a population of exporters about whose market-entry behaviour nothing was known in advance. By contrast, the user sample was selected on the basis that they had used UK Trade & Investment services within the preceding two years, thus implying that they had been actively pursuing overseas market entry at that time.[150] Qualitative follow-up research suggests that firms only see something as a barrier if they are not able to overcome it straight away, and that the main initial focus of attention during interview tends to be on immediate or recent experience.[151]

4.38. A recent qualitative study for UK Trade & Investment[152] on barriers to doing business in four emerging markets found that these were similar to those

149 As Table 4.2 shows, large firms which have used UK Trade & Investment services are less likely to report social network barriers. However, among non-users, the reported incidence of these barriers is actually slightly higher for large firms than for the SMEs.

150 Details of the sample structure are in OMB Research (2005).

151 OMB Research (2006c).

152 OMB Research (2006c) The study covered 20 SMEs doing business in Russia, Brazil, China and India.

identified for overseas business more generally, and include: culture, language, contacts and relationships, product/service suitability, cost barriers in terms of the investment required and/or the need for local presence. Framework conditions and government policy issues were also identified. They were less concerned with other potential barriers, including dispute settlement and intellectual property rights issues, sometimes rather optimistically assuming these would not be a problem, or taking the view that there was little or nothing that could be done about them if they arose, and there was no point in worrying.

4.39. The survey evidence reviewed above sheds some direct light on the nature of barriers to doing business overseas, thus complementing the evidence from quantitative academic studies. The findings highlight the importance of internal capabilities, and also strongly support the idea that social networks, and differential access to these, present important barriers for individual firms. The importance of cost barriers to overseas market entry decisions, from the perspective of firms, was also confirmed by this survey.

THE ROLE OF SOCIAL NETWORKS

4.40. Another strand of literature highlights the role of social networks in determining patterns of trade and investment, and draws attention to their role in enabling entrepreneurs to gain access to the kinds of information they need to identify and pursue business opportunities. Social networks are also seen as reducing the search costs associated with trade and investment decisions. This literature also highlights problems of market failure which can result in sub-optimal development of such networks.

4.41. A recent study for UK Trade & Investment[153] includes a brief historical literature review on the economic analysis of social networks, with special reference to entrepreneurship and business-government relations in the context of government support for international trade and investment. The analysis points out that:

> *"… entrepreneurs who establish successful high-growth firms generally make use of knowledge that others do not have. They recognise and exploit opportunities before other people do so… [For this purpose] they need to combine information from different sources, and because they cannot acquire all the information they need at first hand, they need to obtain it second-hand through social networks. Access to networks is crucial for entrepreneurs to pick up the ideas on which their successful business plans are based. Similarly, in order to exploit the business opportunities that they have recognised, entrepreneurs must access networks of bankers and venture capitalists in order to obtain external finance, and must infiltrate networks where they can make contacts with prospective customers (especially when selling customised products on a business to business basis)…*

153 Casson et al (2006).

"…The single most important quality of a network relationship is generally agreed to be the amount of trust involved. In this context, trust signifies an expectation that people will behave as predicted and, in particular, will honour the obligations they have entered into, whether or not these can be enforced in law. From an economic perspective, warranted trust is what is required: unwarranted trust by gullible people is of no economic value, and may even incur a cost as it encourages other people to exploit their gullibility. Without warranted trust, people will not pass on valuable information… Where there is no trust, communication becomes almost pointless. The threat of legal sanctions provides a minimum amount of trust in business dealings, but the costs of using the law to enforce contracts are usually so high that trust in the law is of only limited value where the communication of sensitive information is concerned…

"… social networks can be engineered [but] engineering a network can involve a major investment… since it requires some person – or a group of people – to incur substantial present costs for future benefits… In general, engineering major networks requires entrepreneurship and leadership of a high order."

NETWORKS AND REPUTATION EFFECTS

4.42. The analysis also points out that people tend to prefer to deal with others whose reputation is supported by membership in relevant social networks, and that entire groups of people and businesses can lack access to the key social networks which convey reputation effects and underpin access to particular business opportunities. Because reputation effects influence access to business opportunities for all members of the network with which they are associated, they confer externalities on other members of the same network.

"… For example, in a global trading network, some producers may have too weak an individual brand to gain the attention of prospective buyers. They will need the backing of a national brand – e.g. 'Made in Britain' – if they are to secure access, but this brand itself may be weak… in certain sectors... If the brand is unnecessarily weak – in the sense that true quality is higher than popular perception would suggest – then … [strengthening] the national brand… may be a more effective strategy than strengthening individual producer brands…

"When an entire group of people is barred from a network, overcoming the prejudice against them will benefit them all, but no one individual may be able to afford to incur all the costs of breaking down the prejudice. This creates a market failure….

4.43. Although the discussion just cited is applied to the context of trade, the analysis is general, and equally applicable to investment location decisions, where national reputation effects may influence decisions made by potential inward investors about which countries to consider. Similarly, once they begin

to investigate opportunities in the UK, their ability to gain access to relevant local networks may influence the range of activities which they decide to undertake in the UK, such as R&D

4.44. Casson et al (2006) also points out that networks can be both good and bad, in that the range of knowledge and business opportunities to which they give access can be of varying qualities. Belonging to a social network which is not well connected to up-to-date information sources or to emerging business opportunities can be a hindrance rather than a help, while gaining access to new networks can substantially improve the opportunity set open to a businesses.

THE ROLE OF TRUSTED INTERMEDIARY

4.45. By the same token, new entrants to a network can convey positive or negative effects on the opportunity set of existing members, depending on the knowledge and access to opportunities and contacts which they bring to the network, and the way in which their membership affects its reputation. This gives rise to a role for trusted intermediaries in introducing new members to a network. Casson et al (2006) and Reading Business Group (2005) highlight the role that governments can play as a trusted intermediary with privileged access to elite networks across the globe.

4.46. Casson et al (2006) suggest that governments have some unique advantages which enable them to fulfill a trust-brokering role, which private-sector service providers could not easily replicate. To be credible, a trust broker must be both impartial and have reliable sources of good information about the reputation of those seeking introduction to new networks. Government is uniquely well placed on both counts, because of its privileged access to a very wide range of networks, both at home and overseas, and because it does not operate for profit, and thus has no incentive to sell endorsements. Commercial service providers would not be credible in this role because profit-based incentives to sell endorsement to the highest bidder can present conflicts of interest and compromise their impartiality. They are also less well placed to access elite networks, and to bridge gaps in such networks internationally, particularly where foreign governments are involved.

4.47. The role government can play as trust broker enabling businesses to gain access to key networks is likely to be equally important for trade and investment. For example, inward investors who are considering coming to the UK with a view to keeping abreast of ideas coming out of R&D here and benefiting from better access to the UK's knowledge base, will need to gain access to key knowledge networks in order to fully realise these benefits. If they find it too difficult to gain access to the right networks, their incentives to invest in R&D in the UK is likely to be lower.[154] By the same token, for UK businesses seeking to enter new markets overseas, government's role in brokering access to key networks may make a crucial difference to their ability to gain access to opportunities.

154 Crisculo P, R Narula and B Verspagen (2002).

NETWORKS AND SEARCH COSTS

4.48. The role of social networks in governing access to knowledge, and enabling businesses to screen potential sources by relying on reputation effects of network membership to select which sources to investigate further, can be seen in terms of theoretical models of search behaviour. **Box 4.2** reviews some of the insights from search theory as applied to international trade and investment decisions.

EVIDENCE ON THE ROLE OF SOCIAL NETWORKS IN BILATERAL PATTERNS OF TRADE

4.49. Rauch (1999) applies search theory to his analysis of the determinants of bilateral trade patterns. In common with Casson et al (2006),[155] Rauch highlights the importance of social networks as a means of reducing search barriers to trade, enabling buyers and sellers to achieve a better match with lower search costs. He argues that the search process is strongly conditioned by social networks associated with proximity, common language and colonial ties, and stresses the importance of personal contacts and relationship building in determining the geographic distribution of economic activity.

4.50. Using a gravity model, Rauch (1999)[156] seeks to test for evidence of the role of cultural ties and common language in determining patterns of bilateral trade at a detailed sectoral level. The analysis suggests that search barriers to trade will be higher for differentiated goods and services than for homogenous products. He reports evidence highlighting the importance of common language and colonial ties in determining trading patterns, and supporting the view that these ties are more important for differentiated products than for those traded on organised exchanges in matching international buyers and sellers. The findings are also seen as supporting the idea that search barriers to trade are higher for differentiated than for homogeneous products.

4.51. In a similar vein, Gould (1994)[157] finds that immigration to the US increases bilateral trade between the US and the immigrant's country of origin, and that the effect on US exports is stronger, and exhausts itself for a much smaller number of immigrants, than the effect on imports. Rauch (1999) interprets these findings as further support for the hypothesis that social networks are a significant factor in determining trade patterns.

4.52. Also using a gravity model, Rose (2005) provides further evidence on the role of social networks in determining trade patterns, by looking at the influence of national networks of overseas consulates and embassies on bilateral trade flows. Consistent with Rauch (1999), he finds strong evidence that historical colonial ties and common language influence trade patterns, and also finds that

155 See Reading Business Group (2005) and Casson et al (2006).

156 Rauch, James E. (1999).

157 Gould (1994) cited in Rauch (1999).

embassies and consulates play a significant role. The study concludes that bilateral exports rise by approximately 6-10 per cent for each additional consulate abroad, and that consulates have smaller effects than the creation of an embassy. The strength of the effect also varies by exporter country.[158]

4.53. There is a small, but recently growing body of research on determinants of trade at the extensive margin,[159] which seeks to understand why countries start trading new goods and stop trading others. Trade policy liberalisation was found to have a significant but only limited role, while idiosyncratic country and industry factors were found to be far more important in explaining these patterns. This literature does not seem to have taken explicit account of the potential role of social networks, but highlights the need for further research to identify what these idiosyncratic factors might be.[160]

4.54. In summary, recent academic literature has found indirect evidence that there are significant fixed-cost barriers to entering new markets, and has also shown that bilateral trade patterns are significantly influenced by historical ties and common language, suggesting that social network barriers are also important. There is evidence that pre-export financial performance is not a significant influence on the probability of exporting, which seems to cast doubt on the primacy of cost barriers. Social-network barriers could affect individual firms, especially young firms or those entering new markets, even where established bilateral networks exist. Much of the empirical evidence was limited to the factors influencing trade patterns, although the theoretical material was equally applicable to overseas investment.

4.55. The evidence that historical ties and social networks matter for patterns of international business has important implications for the ability of economies to respond to rapidly changing international conditions. If the fastest-growing emerging markets, or sectors of growing overseas demand, are those with which historical ties and established social networks are relatively weak, or if young innovative firms and new market entrants find it difficult to access established networks, the economy's response to the changing spectrum of international opportunities may be weak or sluggish, with adverse implications for prosperity growth.

4.56. The next section looks in more detail at recent evidence on the extent to which some of the barriers identified may be associated with other sources of market failure highlighted above.

158 Rose (2005). Since the study is based on cross-section data, inferences relating to causality must be treated with care.

159 Harris and Li (2006a) The term 'extensive margin' is used in this literature both to refer to increasing product variety and to increasing numbers of bilateral trading partners, either in terms of more firms or more countries or both.

160 Harris and Li (2006a) infer that innovation must be an important factor, particularly with reference to export product variety. The literature on trade at the extensive margin also did not seem to have developed the link with research on the role of innovation, but this link is highlighted by Harris and Li as an area for future research.

Tables 4.1 and 4.2

Notes to Tables 4.1 and 4.2: Qualitative pilot interviews were used to identify the types of issues which had presented barriers to inward investors and exporters. The issues identified were then formulated as closed questions to allow collection of quantitative data. Respondents were first asked whether each of the issues had been something they had had to deal with, without reference to the idea that it might have presented a barrier. If they said 'yes' to this question, they were asked whether it had presented a significant difficulty to their business, using a 1 to 5 rating scale, where 1 was no significant difficulty and 5 was a critical difficulty. The results shown below report the proportion of respondents who gave ratings of 4 or 5, indicating that the issue had presented significant or critical difficulties.

Table 4.1: Barriers To Investment[161]

	Users		Non-Users	Ireland
Proportion encountering 'significant' difficulties with…	***Head Office (Invested)***	***UK Office***	***UK Office***	***Irish Office (All)***
Base	*35*	*26*	*47*	*100*
Proportion experiencing at least one barrier to a significant extent	43%	23%	28%	32%
Framework barriers	20%	12&	9%	12%
– Understanding legal requirements	20%	4%	2%	11%
Local linkage barriers:	23%	19%	26%	25%
– Recruiting staff	11%	12%	15%	14%
– Finding local suppliers	9%	8%	6%	6%
Visa barriers (obtaining visas for overseas staff)	9%	12%	4%	6%

161 UKTI (2006), based on survey data reported in OMB Research (2005). Small sample sizes should be noted when interpreting these findings. Response rates were also relatively low for inward investors except for Ireland. Non-users had generally been established in the UK and Ireland for longer than investors who had used UK Trade & Investment services, which could possibly result in downward bias to responses on barriers, particularly if the individuals who were interviewed had not been directly involved in the early phases of establishing the UK operations.

Table 4.2:
Barriers To Overseas Trade[162]

The table below provides the results for barriers to overseas trade by experience level for small and medium-sized enterprises (SMEs) only.[163] Data pertaining to larger firms (with 250 employees or more) is shown separately. Please note the small base sizes when interpreting results for these larger firms.

	UKTI Users			Non-Users		
Proportion encountering 'significant' difficulties with…	***SMEs Inexper-ienced***	***Exper-ienced***	***Large Firms (250+)***	***SMEs Inexper-ienced***	***SMEs Exper-ienced***	***Large Firms (250+)***
Base	*115*	*174*	*22*	*31*	*84*	*31*
Proportion experiencing at least one barrier to a significant extent	80%	81%	91%	48%	50%	55%
Legal and regulatory barriers	21%	25%	27%	6%	14%	19%
Contacts barriers	55%	49%	36%	16%	24%	29%
– Identifying initial contacts	40%	37%	27%	16%	14%	19%
– Establishing initial dialogue	26%	26%	14%	10%	10%	10%
– Building relationships	28%	21%	14%	6%	14%	19%
Information barriers (obtaining information)	11%	14%	14%	13%	2%	3%
Fixed-costs barriers	58%	60%	64%	29%	36%	39%
– Marketing costs	36%	40%	27%	19%	13%	6%
– Foreign exchange	20%	29%	27%	10%	23%	13%
– No overseas office	29%	17%	23%	0%	4%	19%
– Logistics	17%	16%	9%	6%	12%	10%
Language and culture barriers	30%	21%	23%	13%	10%	23%
Bias barriers (overseas buyers biased towards sourcing from domestic firms)	30%	23%	18%	10%	15%	16%

MANAGEMENT ATTITUDES, CAPABILITIES AND INFORMATION FAILURE

4.57. Evidence on the extent to which individual businesses, particularly SMEs, may underestimate the potential benefits of internationalisation comes from both qualitative and quantitative sources:

- for SMEs, quantitative evidence that structural factors (including R&D) explain the decision to internationalise only to a limited degree indicates that other factors are also important. The evidence from surveys and qualitative studies indicates that attitudes and awareness play a significant role;

162 UKTI (2006), based on survey data reported in OMB Research (2005).

163 Please note that, for the purposes of this analysis, firms not providing details of numbers of employees are assumed to be SMEs.

- survey research on the motivations for business internationalisation find that inexperienced SME exporters who had not received support or advice from UK Trade & Investment, tended to have lower assessments of the potential benefits of selling overseas, with only 58 per cent citing a strong motivation of any kind.[164] By contrast some 79 per cent of inexperienced SME exporters who had used UK Trade & Investment services had at least one such strong motivation for selling overseas, almost identical to the results for large firms. This difference between non-user and users of UK Trade & Investment services could indicate that businesses with strong motivations for internationalisation are more likely to seek out such services;[165]
- there is evidence from evaluation research and UK Trade & Investment monitoring surveys that businesses often make significant changes to their internationalisation behaviour as a result of information and advice provided, in ways that lead to increased overseas business and real performance improvements.[166] These changes in behaviour can occur as a result of acquiring new information, such as increased knowledge about the competitive environment in overseas markets, or as a result of capacity building, such as increased understanding of how to do overseas marketing research, or how to do business in a particular overseas market. The evidence shows that these learning effects occur for firms of all sizes, and are not influenced by export intensity, but do tend to be greater for businesses who report innovation activity. The link between these learning effects and innovation activity is consistent with the evidence from academic research that the ability to benefit from new knowledge is linked to existing absorptive capacity.

4.58. Taken together, the evidence on information failure and management attitudes suggests that it would be unwise to make complacent assumptions about the extent to which market forces, unaided, can be expected to result in optimal levels of internationalisation activity among innovative and potentially high-growth SMEs. The evidence does not suggest that those who may have achieved successful innovations, and would thus be most likely to benefit from exploiting overseas markets, will necessarily have the requisite complementary management capabilities to do so effectively. In the absence of action to help strengthen these capabilities, therefore, many such businesses would be unlikely to realise their full potential. Weaknesses in internationalisation capabilities among innovative SMEs are of particular concern because of the key role such businesses play in the economy, both through presenting a competitive challenge to incumbents, and in the ability of the economy to respond creatively and quickly to changes in the international economy.

164 See Table 3.1 above.

165 Some of the businesses which have used UK Trade & Investment services may of course also have increased their awareness of the potential benefits of internationalisation to some extent as a result of advice received. However, the reverse can also occur, as when trade advisers counsel against exporting in circumstances where a business seems to lack the requisite capabilities.

166 UKTI (2006). SQW (2005) provides a review of evaluation evidence on trade development services, including information and advice. For UK Trade & Investment monitoring survey data see OMB Research (2006a).

UNDERPROVISION OF PUBLIC GOODS

4.59. The extent to which underinvestment by the private sector in the provision of public goods may be a factor affecting the fixed costs of overseas market entry is difficult to assess. The main sources of evidence on this issue are evaluation and monitoring research, which captures evidence on the extent to which private-sector sources are available, or businesses themselves would find ways of co-operating on investment in collective provision of information and research into emerging overseas opportunities which could potentially benefit them all. Although the most plausible counterfactual is always open to debate, the evidence suggests that:

- weaknesses in the social networks supporting trade at the level of individual sectors does lead to underinvestment in sector public goods such as collective investment in research on changing trends in emerging markets and in the international economy. These problems are likely to be particularly acute in sectors which are either too young to have established strong trade associations, or in those which have established trade associations but do not have the attitudes or capabililities to provide strong leadership in collective activity to invest in keeping abreast of emerging overseas opportunities;[167]
- evidence from surveys carried out for UK Trade & Investment do not generally identify commercial private sector alternatives to the organisation's information and advisory services, but instead strongly points to the role of private social networks as by far the most frequently cited alternative.[168] The findings also highlight an important difference between UK businesses and inward investors in this respect, as the latter generally did not identify private networks as an alternative source, presumably reflecting the fact that they were relatively new to the UK and had not yet built up their contact networks here.

4.60. This evidence suggests that search costs of trade and investment would indeed be sub-optimally high in the absence of government action to address market failures in the provision of information, and to encourage collective business investment in such information, particularly within sectors which lack strong established networks or strong forward-looking attitudes and leadership.

167 Qualitative evidence on this issue is reported in Reading Business Group (2006).

168 The surveys also find that sources mentioned as alternatives to UK Trade & Investment by respondents – such as trade associations or chambers of commerce- are very often providing services with the organisation's support, although the businesses using the service are not aware of its role.

Conclusions

4.61. In summary, the discussion above has reviewed a number of different types of evidence on barriers to overseas market entry, affecting both trade and investment, some of which identify evidence on barriers only indirectly. Nevertheless, the qualitative and quantitative evidence yield a broadly consistent picture. The evidence suggests that:

- informal barriers to doing business overseas are real and significant for individual firms. The incidence of these barriers across firms is not explained by firm size, but does fall when firms have been doing business overseas for many years;
- social-network barriers, associated with historical cultural ties and common language, play a significant role in determining bilateral trade patterns, and present barriers both for individual firms of all sizes and at a collective level. Difficulties in gaining access to key knowledge networks can also lead to lower levels of investment in R&D by inward investors than would otherwise occur;
- fixed-cost barriers to selling overseas are highly important from the perspective of individual firms, but their incidence is not linked to firm size. Quantitative evidence for the UK finds that firm size and innovation activity are significant influences on the probability of beginning to export, while pre-export financial health is not.
- limited internalisation capabilities and management attitudes are important barriers to SME internationalisation. These can be a stronger influence on the decision to export than structural factors, including R&D;
- barriers to inward investment in the UK are less frequently experienced as significant than barriers to selling overseas, but are nevertheless critical to a significant minority of inward investors. Understanding legal requirements, recruiting staff, obtaining visas for overseas staff, and finding suitable local suppliers are all reported as having presented barriers of critical importance to some investors.

4.62. These findings have important implications for the ability of the UK economy to respond to the opportunities and challenges arising from changes in the international economy, especially when changes are rapid:

- barriers to trade and investment will impinge disproportionately on businesses which have the highest productivity, innovation and growth potential, because it is this sub-group which is the most likely to be active in international trade and investment;
- young innovative and high-growth potential companies will not be able to fulfill their potential without the capabilities and access to networks which are necessary for successful internationalisation;

- high-productivity and knowledge-intensive overseas firms will not fulfill their potential contribution to innovation and R&D in the UK, both directly and through knowledge spillovers, if they find it too difficult to access the right networks within the UK;
- the UK business community's response to opportunities in the fastest-growing emerging markets, and sectors of growing overseas demand, will depend crucially on the strength of social networks underpinning bilateral trade and investment relationships with those markets, and on the ability of innovative UK businesses to gain access to these networks. If these networks are weak, or relatively closed to new companies, the UK economy's ability to respond to these opportunities may be weak or sluggish, with adverse effects on prosperity.

4.63. In summary, theory and evidence on barriers to trade and investment arising from market failure suggest the need for government action in the following areas:

- to encourage spillover generating activity, by attracting knowledge intensive and high-productivity inward investors to the UK and making it easier for them to establish links with networks which are likely to be conduits for such spillovers;
- to provide access to information and advice, where the market could not or would not do so unaided;
- to strengthen the social networks and institutions which underpin international trade and investment flows, both by encouraging collective investment in such networks and by serving as a trusted intermediary, bridging links between networks where they are weak;
- to help individual businesses to gain access to key contact networks, by serving as a trusted intermediary;
- to strengthen the internationalisation capabilities of innovative and high-growth businesses, who would not be able to fulfill their potential without being able to exploit overseas opportunities effectively;
- to facilitate beneficial co-operation among businesses, enabling them to work together to overcome barriers and develop potential trade and investment opportunities, for example through collective investment in research into emerging overseas opportunities, international co-operation on R&D, or showcasing UK capabilities in emerging markets overseas.

4.64. Evidence on the extent to which government is able to take cost-effective action in these areas is reviewed in Chapter 5 below.

CHAPTER FIVE

Cost Effectiveness of Government Support for Trade and Investment

Introduction

5.1. This chapter reviews the evidence on the third crucial pillar of the rationale for government support for trade and investment: Are there feasible and cost-effective actions government can take to address the market or institutional failures identified, enabling business to generate sufficient additional benefit to justify the costs of the intervention and increase national prosperity?

5.2. The chapter begins by reviewing the issues which would need to be addressed to allow a full assessment of the costs and benefits resulting from such government action, and then considers the available evidence on these issues.

Issues for cost-benefit analysis

5.3. Principles for evaluation of costs and benefits of public expenditure are set out in HM Treasury (2003) and (2001).[169] The NAO guidance sets out three key aspects of assessing value for money:

- economy, which focuses on minimising the cost of resources per unit of input;
- efficiency, which focuses on the relationship between inputs and outputs;
- effectiveness, which focuses on the relationship between outputs and outcomes, in terms of the benefits which the policy is expected to achieve.

5.4. A key prerequisite for assessing value for money is thus to determine the specific types of inputs, outputs and outcomes on which the evaluation will need to gather evidence. In policy evaluation this is commonly done within the framework of a policy intervention logic model, illustrated in **Box 5.1**. Often the policy influence on final outcomes – such as increased UK productivity and prosperity – cannot be assessed directly, because the causal mechanisms at this high level cannot be observed. In this case, the focus of evaluation research must instead be on intermediate outcomes, where direct causal influence of the policy can be clearly identified and assessed.

169 HM Treasury et al (2001).

5.5. Defining the expected relationships between inputs, outputs and outcomes in a policy logic model is not a simple task, however, and depends on the existence of clear models of the mechanisms through which these relationships are expected to generate their expected outcomes. Since the mechanisms which generate productivity growth and prosperity are complex and imperfectly understood, a range of alternative models is likely to be necessary, drawing on theory and evidence from wider research. A number of different types of intermediate impact will often need to be considered, to reflect the complexity of these impact mechanisms.

5.6. Evidence about the different elements of the logic model can be drawn from a wide range of sources, using diverse research techniques, with the most relevant sources of evidence differing across the elements of the model. As indicated in **Box 5.1**, management data and monitoring evidence are generally the primary sources of evidence on inputs, activities and outputs for business-support policies, while wider academic research on the determinants of aggregate productivity and prosperity are the primary sources of evidence on the links between intermediate outcomes and high-level policy outcomes. In order to address all three of the elements of value-for-money assessment identified above, therefore, evaluation research must draw on all of these sources, as well as gathering evidence on intermediate impacts.

5.7. Recent evaluation research for UK Trade & Investment[170] has developed policy intervention logic models relating to both trade development support and inward investment support, the elements of which are summarised below. Logic models for trade and investment support are not separated out, because they share a number of common elements, reflecting common elements in the market and institutional failure, which they seek to address. Activities can often serve both objectives simultaneously, as, for example, when commercial officers overseas fulfill a trust-brokering role for an overseas company who may be interested in the UK both as a source of supply and as a location for direct investment or for a collaborative R&D project. Thus from the perspective of the overseas business, UK Trade & Investment can be providing inward investment support, while from the perspective of UK businesses, it is providing trade development support, representing the two sides of the same trust-brokering role.

ELEMENTS OF A LOGIC MODEL FOR UK TRADE & INVESTMENT TRADE AND INVESTMENT SUPPORT

5.8. Inputs: Inputs provide resources for activities. As well as inputs of public funds, which cover the costs of UK Trade & Investment staff time and help to pay for activities carried out by others,[171] inputs include resources contributed by private-sector bodies, including individual businesses, who may bear some of the costs of

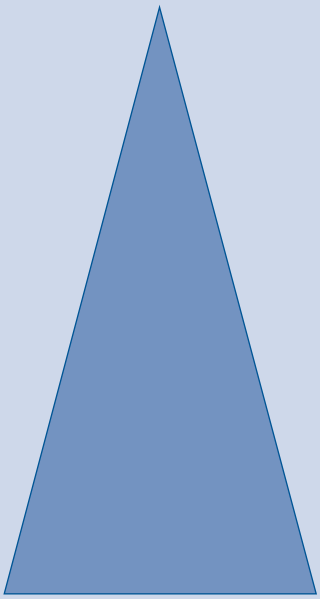
170 UKTI (2006) and SQW (2006b). The policy logic models outlined in these reports are at different levels of aggregation, with the former focusing on UK Trade & Investment activities as a whole, and the latter concentrating specifically on UK Trade & Investment support for trade at a sector level.

171 Public funds to help pay for activities which are supported partly by UK Trade & Investment may also come through other organisations, including the Regional Development Agencies.

activities supported by UK Trade & Investment, either in cash or in kind. Examples include events or working groups or research projects which are organised by UK Trade & Investment in collaboration with private sector partners. The organisation's role in provision of inputs varies from being mainly a co-ordinator of private-sector inputs, at one end of the spectrum, as part of its role in strengthening networks, to being the provider of funds for subsidised activities, at the other.

Box 5.1:
Elements of a Policy Logic Model for UK Trade & Investment

LOGIC MODEL – CHANNELS OF UKTI IMPACT



OUTCOMES	**Effects on high level policy aims** e.g. UK productivity + prosperity: **Wider research programme**
INTERMEDIATE LEVEL	**Directly attributable effects on intermediate level objectives** e.g. No. firms improving performance or increasing UK R&D; knowledge spilovers, **Monitoring surveys + evaluation research**
OUTPUTS	**Measuring of outputs** e.g. No. of businesses changing behaviour as result of support (e.g. upgrading overseas strategy; locating in UK): **Monitoring surveys + evaluation research**
ACTIVITIES	**Activity measures** e.g. No. of businesses reached; quality and relevance of services and information provided (necessary) but not sufficient conditions for achieving impact) **Monitoring surveys + administrative data**
INPUTS	**Input measures** e.g. £ cash; £ in kind; UKTI + partner + any other

5.9. Activities: Activities are intended to achieve outputs. The types of activities supported reflect the sources of market and institutional failure which the policy seeks to address.[172] The main types of UK Trade & Investment activities are:

- **providing access to information and advice which the private sector alone would not or could not provide.** At one end of the spectrum this includes providing general information to both UK and overseas firms. At the other end, it includes providing tailored advice to individual inward investors and UK businesses, for which the business may be charged. The role of UK Trade & Investment in these activities ranges from direct provision of the information or advice, for example through commercial officers in the overseas network, to providing support for services delivered through a third party such as a trade association.[173] UK Trade & Investment's role also includes activities to gather information, through both formal and informal means, including commissioning research or providing support for private-sector groups to do so collaboratively;

172 UKTI (2006) describes the main UK Trade & Investment activities and their objectives in more detail, and also provides summary information about the resources allocated to each broad objective.

173 In the latter circumstance, the business using the service may not be aware that UK Trade & Investment has provided support for the service.

- **organising groups and events, and brokering access to contacts and networks:** These activities are key both to UK Trade & Investment's role in strengthening the social networks and institutions which underpin trade and investment flows, and to its role in facilitating beneficial co-operation among businesses. Examples include organising events to showcase UK capabilities overseas, supporting inward and outward missions and industry-led delegations to overseas trade fairs, and organising networking events to bring UK and foreign businesses together under the auspices of the consulate or embassy overseas. UK Trade & Investment also brokers access to contacts and networks for individual firms, both UK companies and inward investors, drawing on its range of contacts and privileged access to networks both domestically and overseas;
- **providing political and diplomatic support:** UK Trade & Investment officials both in the overseas network and in the UK provide political and diplomatic support for the commercial interests of UK firms in markets abroad. Activities include providing advice and support for lobbies on regulatory or procurement policy issues, or other problems associated with practical aspects of market access and implementation of trade policy on the ground. For inward investors, UK Trade & Investment officials provide a channel for dialogue with the UK Government on any issues which may be of concern to them relating to the policy environment.

5.10. Outputs: Achieving the right activity outputs is a necessary but not sufficient condition for achieving intended policy outcomes. Outputs of UK Trade & Investment activities include collective goods, such as reputation effects resulting from showcasing UK capabilities overseas or contacts successfully brokered between networks, and private goods, such as better-informed decisions made by individual businesses. Many outputs have both collective and private-good elements, such as when contacts are successfully brokered which benefit the individual businesses directly involved, but then also lead to new knowledge or contacts being gained by other businesses within the networks to which they already belong.

5.11. Evaluation techniques for measuring outputs of collective goods are less well developed than those for measuring those relating to effects on individual businesses.[174] Output measures relating to the latter include: the percentage of businesses improving skills, changing behaviour or overcoming barriers to market access as a result of the supported activities. These can be used in conjunction with data on inputs to create measures of efficiency, such as the number of businesses changing behaviour per £1m of UK Trade & Investment spend.

174 SQW (2006) stresses the challenges of measuring collective outputs and outcomes, citing the conclusions of an experts' meeting on assessment of the outcomes of policies intended to build trade capacity. This found that difficulties in defining such collective activities and outputs are a major obstacle to assessing their outcomes and effectiveness.

5.12. Intermediate outcomes – firm level: For trade development, the primary intermediate outcome at firm level is improved performance, which can be measured in terms of effects on profits, or in terms of other performance outcomes such as improved productivity, reduced costs or increased employment. Evidence of the impact on the performance of the supported firm itself can sometimes be obtained, at least in principle, through econometric impact studies using data on firm-level performance variables for both supported firms and a suitable control group of non-supported ones. Where conditions for using this type of study can be met,[175] this is generally considered to be the most robust source of impact evidence. Data limitations present one obstacle to reliable results, since it is necessary to have good-quality data on the main control variables which are likely to have a significant influence on results.[176] Hence the primary feasible source of evaluation evidence about firm-level impacts is usually from surveys carried out specifically for the purpose, often including both user and non-user businesses. These rely on the respondent firm's own assessment of the extent to which the support received may have influenced their business performance, and have a number of strengths and weaknesses,

5.13. Intermediate outcomes – effects on other firms: ***Knowledge spillover effects*** are expected to be one of the primary intermediate outcomes of support for inward investment, leading to effects on the wider economy through effects on other firms. ***Reputation effects*** are another key intermediate outcome for both trade and investment support, leading to benefits by influencing overseas decisions on doing business with the UK, either as inward investors or as overseas purchasers or suppliers, or through collaboration on R&D or other business activity. A third important intermediate outcome, for both trade and investment, is ***competition effects*** on other firms. For example, incumbent firms may be stimulated to greater innovation effort by the competitive challenge presented by inward investors, or by young innovative domestic firms who may present a stronger competitive challenge as a result of successfully entering overseas markets. Innovative new entrants may compete with incumbent UK firms directly in overseas markets, or may compete more strongly in the domestic market because of stronger financial performance achieved through successful exporting. Quantified measurement of all of these intermediate effects remains an unresolved challenge.

175 One of these conditions is that effects on the control group of firms must be independent of effects on the 'treated' firm. This would clearly not be the case if spillover benefits to other firms were significant, for example as a result of reputation effects, or knowledge sharing, affecting firms in the control group.

176 Identifying what these variables should be obviously implies a prior need for clear theoretical analysis and modeling of the causal mechanisms of support which can provide a basis for deciding what variables are likely to be significant.

5.14. Intermediate outcomes – networks and institutions: Positive effects on the networks and institutions which underpin bilateral trade and investment linkages are a key intermediate outcome of UK Trade & Investment support for both trade and investment. Evaluation of these effects presents considerable challenges, which have still to be resolved. However, innovative techniques for gathering evidence on these types of effects have been developed, using a combination of modeling and surveys of relevant groups representing different perspectives and roles in the network or system under study. Casson (2006) developed and piloted a case study approach to evaluating the effects of UK Trade & Investment activities to strengthen networks in two sectors.[177]

5.15. Outcomes – aggregate economy level: Intermediate outcomes are expected to lead to aggregate economy benefits both as a result of increased trade and investment, and as a result of better outcomes from the UK perspective in terms of the quality of inward investment projects and the value generated by both trade and investment. Reputation effects, and better matching between the needs and capabilities of UK and foreign businesses and buyers, would both tend to improve these outcomes.[178] In addition, competition effects, and the opportunity for innovative firms to sell into wider markets, are both expected to increase innovation, and thus to strengthen the economy's ability to respond creatively to changes in the international economy.

EVALUATING CAUSALITY, ADDITIONALITY AND DISPLACEMENT

5.16. Ideally, an evaluation of the economic impact of a programme would gather robust consistent and comparable forms of evidence about all of the elements of the policy logic model. There is also a need for evidence to allow the ***causal links*** between the different elements of the model to be tested, and to allow assessment to be made of the extent to which the observed outcomes are actually ***"additional"*** to those which would have occurred in the absence of the policy action. A summary note on concepts of additionality is provided in **Table 5.1** below, linked to elements of the logic model.

177 An example of a similar type of study is the SQW evaluation in 2004 of the Knowledge Transfer funding schemes for Higher Education and Public Sector institutions, for which the research technique was a series of interviews and case studies. The published reports are on the OST website at http://www.ost.gov.uk/enterprise/knowledge/evaluation_final.pdf.

178 Specifically, better matching allows welfare benefits through increased gains from exchange, while positive reputation effects would be expected to influence brand value, and hence terms of trade.

5.17. As part of assessing impact, evaluators must also take account of ***'displacement'*** effects which might result from the supported activity. For example:

- **internal displacement:** Additional sales overseas prompted by opportunities made available by UK Trade & Investment support might take the place of, or 'displace', sales to existing UK customers, leaving total sales unchanged. There could still be net additional benefits to the business, however, if profit margins were higher on the overseas sales, or if the overseas sales allowed the firm to reduce dependency on a narrow customer base.[179] Previous evaluations of trade development support commonly focused on measuring impact in terms of additional exports, rather than in terms of impact on overall business performance. Impact measures based on overall performance, such as profit, are preferable because they take account of internal displacement;[180]
- **external displacement:** Competition for both customers and resources means that the expansion of one firm is likely to be at least partly offset by contraction in others, so that the overall net effect on the economy will be less than it might appear to be when looking only at the expanding firms. For both trade and inward investment, the general expectation is that such displacement will have positive effects on average productivity, based on evidence that exporters and inward investors tend to have higher than average productivity levels. Evaluation techniques for measuring external displacement in this context are not yet well developed, although some attempts have been made.[181]

179 Both of these factors are cited by survey respondents as important benefits from exporting, as noted above. See OMB Research (2005).

180 Many respondents report positive impact of trade development support on domestic sales as well as on international sales, occurring either because of learning benefits which lead to increased competitiveness in all their markets, or because new contacts made in an export context led to new contacts in the UK market as well, or for both reasons.

181 See Harris and Robinson (2005a). For trade development, there is the additional possibility that supported exporters may be competing with other UK exporters either in the UK or in overseas markets. There is a well-established survey technique for capturing evidence on external displacement in circumstances where the assisted business is not expected to be higher productivity, which is commonly used in evaluating policies intended to generate jobs in disadvantaged areas. See HM Treasury (2003), and DTI Guidance Note on Additionality, Deadweight and Displacement http://www.dti.gov.uk/about/evaluation.

Table 5.1:
Categories of additionality[182]

Input additionality: In the absence of the intervention, what proportion of these resources would have been used for similar purposes anyway?
Activity additionality (or "project additionality"): In the absence of the intervention, what proportion of the supported activities, or project, would have been carried out anyway? Where similar activities would probably have been carried out in any case, are there significant differences in the nature of the activities as a result of the intervention which may lead to differences in outputs, outcomes, or behaviour?
Output additionality: In the absence of the intervention, what proportion of the outputs would have been produced anyway?. Did the intervention cause any significant differences in the nature or quality of the outputs, which may lead to differences in outcomes or behaviour?
Intermediate outcome additionality ('behavioural additionality'): In the absence of the intervention, to what extent would these changes in behaviour have occurred anyway? Did the intervention cause any significant difference in behaviour, which may lead to different outcomes, either for individual organisations or for the performance of the wider economic system?
Outcome additionality: In the absence of the intervention, how would the outcomes which are the focus of the high-level aims of the intervention have been different? How would other relevant outcomes have been different?

EVALUATING UNQUANTIFIABLE BENEFITS

5.18. Evaluation of the costs and benefits of government policies requires identification and careful assessment of both quantifiable and non-quantifiable costs and benefits. 'Green Book'[183] guidance stresses that: "Costs and benefits that have not been valued should also be appraised; they should not be ignored simply because they cannot easily be valued. All costs and benefits must therefore be clearly described in an appraisal, and should be quantified where this is possible and meaningful... Research may need to be undertaken to determine the best unit of measurement. Alternative non-monetary measures might be considered most appropriate..."

5.19. As noted above, many of the intermediate outcomes of UK Trade & Investment activities are very difficult to quantify. This is particularly true for benefits which are collective, such as network and reputation effects, and benefits which accrue mainly or entirely to businesses or other bodies who are not directly involved in the supported activities, such as competition effects and knowledge spillovers. Judgments therefore need to be made about the likely magnitude of unquantifiable benefits, and different judgments can lead to wide variation in cost-benefit assessments. This is particularly difficult in circumstances where the evidence from wider literature is unclear or conflicting, as in the case of spillover effects.

182 Note: Under each of the headings below variations can be defined in terms of scale, scope and timing, all of which are commonly referred to as 'partial additionality'.

183 HM Treasury (2003), paragraphs 5.76-5.77.

Evaluation evidence

5.20. A major study to evaluate the economic impact of UK Trade & Investment support for trade and investment was carried out for the organisation during 2004-2005, with the specific aim of assessing the relative economic benefits of these two areas of activity. The project, referred to below as the ***'UKTI Economic Study'***, used a range of research techniques, and involved four separate external research teams. Full details are set out in UKTI (2006). A brief description of the approach which was used to value the different types of benefits identified is provided below, followed by a comparison with results from other evaluation studies.

THE UKTI ECONOMIC STUDY[184]

5.21. The primary sources of evidence for the cost-effectiveness measures used in this study were data from a survey[185] of businesses who had used UK Trade & Investment services, both trade and investment, and cost data. These sources were used both in a social cost-benefit analysis carried out for the study by the Reading Business Group, and also in some alternative measures of cost effectiveness based on measures used by the DTI to monitor performance of its business support products.[186] Caveats relating to both of the data sources should be borne in mind:

- the study required cost data in a form which was not available from existing systems, and therefore had to be estimated. The estimates necessarily included judgments about allocation of staff time at a level of detail not normally required, and hence reflect an element of uncertainty;
- techniques for comparative evaluation of the economic impact of business-support policies are still at an early stage of development, and any results should accordingly be interpreted with caution. Strengths and weaknesses of survey techniques, and possible alternatives, in this context still require further investigation. Even where measures have been designed and implemented in a rigorously consistent form, interpretation of results needs to take account of differences in context across policies which may significantly affect their meaning.

5.22. The discussion below first outlines the approach used by Reading Business Group, and then provides a discussion of measurement issues and of results using the alternative measures.

184 UKTI (2006)

185 The survey was carried out by OMB Research, and full results are reported in OMB Research (2005)

186 Business Support Monitoring Survey reports http://www.dti.gov.uk/about/evaluation.

5.23. Reading Business Group developed an analytical framework for undertaking a comparative economic cost-benefit analysis which sought to take account of potential benefits from knowledge spillovers and other sources of wider benefits, as well as capturing benefits accruing directly to businesses using UK Trade & Investment services.[187] The analysis identifies four categories of potential economic benefit to the UK, using their estimated contribution to gross national product[188] as the definition of benefit, and makes two key distinctions:

- **internal and external benefits:** "Internal" benefits are those which accrue to the firm itself, while "external" ones accrue to the wider economy. The former include profit, and anything which increases the value of the firm, such as increases in firm-specific capabilities which will boost its revenue and profit-generating potential over the longer term. The latter include benefits to employees, suppliers and customers, and also cover any knowledge spillovers or other wider benefits, such as network externalities, which accrue to other firms, or to the wider community;
- **static and dynamic benefits:**[189] Static benefits include both internal benefits, such as profit, and external benefits, such as increased wages or payments for inputs which accrue to suppliers, or tax revenues. Dynamic benefits are essentially learning benefits, whether knowledge or organisational learning resulting from the firm's own activities directly, or knowledge transfer from some other organisation, for example through demonstration effect, or labour mobility.

5.24. These two distinctions give rise to four categories of benefit on which the survey was designed to capture evidence:

- **Static internal benefit:** Profit data were captured for trade development, but no equivalent data were collected for inward investment because profits on inward investment projects accrue to their foreign owners rather than UK residents.[190] In principle, tax revenue on profits made by inward investors would constitute a benefit to the UK under this heading. However, these were not captured by the study;[191]

187 Full details are set out in Reading Business Group (2005).

188 Gross national product was used rather than gross domestic product because the purpose of social cost-benefit analysis is to inform understanding of national welfare effects of the policies under study. Strictly in accordance with guidance in the 'Green Book' (HM Treasury 2003) social cost-benefit analysis should also incorporate, where reasonably possible, suitable adjustments to take account of the expectation that marginal benefits from increases to income are likely to be greater for lower income groups. However, evidence of the distributional impacts of the policies under study would be required to define these adjustments, and this analysis was beyond the scope of this study.

189 The term 'static benefits' is used in the analysis to refer to types of benefit captured by standard economic models, which use comparative static analysis, as contrasted with dynamic models which focus on theories of change and productivity growth, such as the dynamic evolutionary models of the firm. See Chapter 4, above, references relating to evolutionary models of productivity growth and the Schumpeterian idea of 'creative destruction'.

190 As noted above, the definition of national income used in this analysis is Gross National Product, rather than Gross Domestic Product.

191 Another issue, which was beyond the scope of the research carried out for this study, is that in practice UK residents may hold shares in foreign-owned companies. To the extent that this is the case, some of the profits generated by inward investors would accrue to UK residents.

- **Static external benefit:** Ideally this would capture data on any wage premia, or additional supplier profit, or increases in property values or rents, which may have been earned as a result of the supported exporters or inward investors being able to pay more for these inputs than the same resources would have earned in their next best alternative use. The survey of beneficiaries could not capture evidence on these values directly, so it sought instead to capture indirect evidence, by asking questions which could establish whether the conditions were present which would be necessary[192] for these benefits to accrue. For example, inward investors were asked about their use of UK suppliers of services and inputs. Exporters were asked whether they had increased employment levels as a result of their export activity, and whether they would encounter a shortage of suitably skilled labour or higher rentals if they should seek to expand.[193] The logic of all of these questions is that economic analysis suggests that in order to bid these resources away from their next best alternative use, exporters and inward investors will need to pay more for them. The additional profit which they are able to earn on these resources gives them both the incentive and the ability to pay more for them;
- **Dynamic internal benefit:** For trade development, the survey captured evidence about organisational learning resulting from export activity, and resulting changes in behaviour such as improved products and processes. Survey results on these are shown in **Table 5.2**. For inward investment, this category of benefit was ignored in the cost-benefit analysis on the same grounds as for static internal benefits, namely that the benefits would accrue to the foreign owners rather than to UK residents;
- **Dynamic external benefit:** Evidence was captured through the survey for both trade development and inward investment about the incidence of observed spillover effects on the behaviour of other firms, as reported in **Table 5.3**. For exporters, these questions were only asked if the respondent had previously stated that their firm had made significant improvements to products or processes as a result of their export experience. For inward investors, the survey also captured information about whether conditions were present, such as links with UK universities or research and technology organisations, or participation in collaborative research projects, which might be expected to lead to knowledge spillovers.[194]

192 These should be seen as necessary, but not sufficient, conditions for wage or rental premia to occur, because the questions only capture evidence of a demand effect, whereas actual impact on market prices will depend on both demand and supply effects. Assuming no offsetting effects on demand from any other source, any increased demand for factor inputs from exporters or inward investors will push up prices for these only to the extent that (a) there is inelasticity of supply and (b) prices are flexible and tend to rise in response to market forces.

193 The first draft of the questionnaire provided also for asking inward investors a similar set of questions about what conditions they thought they would experience should they attempt to expand. These were later dropped because of space constraints, with higher priority in the questionnaire being given to spillover-related questions.

194 The analysis in Reading Business Group (2005) also distinguishes carefully between benefits which are transferred through market transactions, such as knowledge which is purchased for a fee, and benefits which are not fully captured in market transactions, such as technical externalities, or 'knowledge spillovers' accruing through demonstration effects or other unpriced mechanisms. However, this distinction is not used directly in the cost-benefit analysis itself. Evidence of linkages which might provide the conditions for knowledge spillovers is treated as evidence that net positive benefits from knowledge spillovers are in fact occurring. In practice, it is possible that research collaborations might give rise to knowledge spillovers in both directions, some of which may be reflected in the contractual terms for the collaboration, with the net benefit from such spillovers not necessarily clear. See DTI (2004).

5.25. Profit is the only type of benefit on which quantitative data were directly gathered through the survey. However, in order to undertake a cost- benefit analysis, it was necessary to attach values to the other types of benefit as well. This is not straightforward, and simplifying assumptions were needed in the absence of good data. Reading Business Group sought to tackle this problem by devising a simple scoring technique, which used a points system to link the valuations directly to the evidence gathered from the survey about the incidence of these and about the presence of conditions for potential benefits. Values per point were then awarded, with alternative levels of value and methods of awarding points used in sensitivity analysis. The valuations were adjusted for non-additionality. Thus, for example, where spillover effects were reported, but deemed non-additional, they are not included as a benefit attributable to UK Trade & Investment support.[195]

5.26. The main conclusion of the Reading Business Group analysis – that trade development services generate high levels of economic benefit relative to their cost – is consistent with findings from other studies.[196] For inward investment, however, there are no comparable sources of evidence from other studies, and the level of values which should be attributed to spillover benefits from projects successfully influenced by UK Trade & Investment is clearly subject to a high degree of uncertainty.

5.27. As noted above, the survey gathered evidence about the incidence of spillovers, and conditions for potential spillovers, but was not able to capture direct evidence about their value. Accordingly, as acknowledged in the Reading Business Group report, the choice of valuation awarded per point is rather arbitrary. Two main findings from the survey lie behind the disappointing cost-benefit results reported by Reading Business Group for inward investment support:

- Additionality of inward investment decisions was relatively low. Only around 10 per cent of the inward investors interviewed said that UK Trade & Investment had influenced their decision to locate in the UK, and a majority had not considered an alternative location. Taking into account UK Trade & Investment influence on other aspects of their investment decision, such as the scale of investment, or extent of research and development activity in the UK, the proportion of investments successfully influenced in some way by UK Trade & Investment rises to 46 per cent for head offices overseas, but was still only 12 per cent for UK offices receiving aftercare support;
- Evidence of supported inward investment projects *either* generating knowledge spillovers *or* having characteristics suggesting the potential for generating such spillovers was not as strong in the survey results as had been expected. There was considerable variation across supported inward investment projects in the extent to which characteristics likely to result in significant spillover benefits were present.

195 Taking account of additionality makes more of a difference to the estimated spillovers from inward investment than it does for trade, because additionality is higher for trade. See UKTI (2006).

196 See Table 5.3 below. The most comprehensive previous study is NAO (2006).

5.28. The finding that there was substantial variation across projects in the extent to which they had spillover generating potential is consistent with evidence reviewed in Chapter 3. This suggested that the extent to which knowledge spillovers occur is likely to depend crucially both on the type of project,[197] and on links with UK businesses with the absorptive capacity necessary to receive such benefits. The survey findings on additionality may indicate that the greatest potential to influence inward investment decisions successfully is with respect to the scope of the project – such as the extent to which R&D is carried out in the UK – rather than the initial location decision. The evidence that inward investors' decisions about the level of R&D investment can be influenced by the degree of difficulty they encounter in gaining access to key knowledge networks in the UK[198] may point to particular benefits from focusing support in this area.

5.29. Substantial uncertainties about these estimates must be recognised, taking account of the data limitations relating to spillovers, and the judgmental assumptions which must be made in order to derive quantified estimates of benefits from qualitative evidence about their occurrence. The remainder of this section reviews some measurement issues, and sets out some alternative types of measures.

MEASUREMENT ISSUES

5.30. The problem of defining and valuing different types of costs and benefits resulting from business-support policies is long standing. Since measurement of policy impact must take account of causality and evidence on additionality, research techniques need to be able to distinguish between benefits which result from the policy, and those which would have occurred in its absence. As discussed above, techniques have been developed for measuring some types of policy impact, and were incorporated into this study, but no existing methodological model was identified which could capture all of the types of benefit identified by the Reading Business Group analysis. Valuing spillover effects resulting from policy is particularly difficult, because of the difficulties in identifying and tracking down for interview the potential recipients of such benefits. A number of issues can be identified:

- a strength of the valuation system is that it is based directly on evidence of a causal link between the support provided and benefits generated, thus allowing adjustment for additionality. On the other hand, the fact that points are allocated on the basis of evidence which does not directly provide any information on the scale or value of spillover effects creates a source of potential measurement error which cannot easily be assessed. Sensitivity analysis can address this problem to some extent, but uncertainty remains. Two alternative possible approaches are outlined below, but neither would remove the problem of measurement uncertainty;

197 See for example Driffield et al (2005) and Driffield (2004).

198 Criculo et al (2002). See discussion in Chapter 3 above.

- direct measurement of wage premia and other static external benefits was not possible for either trade or investment support. This is a source of potentially significant measurement error which cannot easily be assessed.

5.31. One possible alternative approach to measuring the value of spillovers might be to use econometric estimates of the value of spillovers at aggregate economy level, and assume that all inward investment projects generate on average the same value of spillovers. A similar approach could in principle be taken to measuring wage premia effects of both trade development and inward investment, since there is econometric evidence available on this issue also. This approach would need to be used in conjunction with survey evidence in order to take account of additionality and causality, for example by using a rule which allocated benefit only for those respondents indicating through the survey that conditions of additionality and causality were met.[199]

5.32. A second, much simpler, alternative approach is outlined below, using measures based on those used in the DTI's business support monitoring system, and the results are shown in Table 5.5 below. This approach captures only a limited range of benefits, and makes use of measures of outputs as well as intermediate outcomes, to create the following simple summary measures of cost effectiveness:

- **number of businesses changing behaviour per £1m of UK Trade & Investment spend**. This measure of output efficiency is shown for both trade and investment, but uses data derived from slightly different survey questions, reflecting the expected differences in intermediate outcomes between the two areas. Thus for inward investment, the focus was on changes in behaviour which are likely to increase knowledge spillovers and other external benefits, while for trade the focus was on changes to upgrade products or practices, reflecting increases in the firm's capabilities;
- **£ additional profit generated per £1m of UK Trade & Investment spend**. This measure relates to trade development only, as noted above. The technique used for calculating this measure follows established practice, and includes a number of adjustments to take account of non-additionality, and to transform annual profits into estimated net present value. Further information about these adjustments is provided in notes to Table 5.4 below, and in OMB Research (2005).

5.33. The results show that costs per unit of output, as measured by the number of businesses successfully influenced to change behaviour per £1m, are relatively high for inward investment. However, costs per unit of output cannot be translated into measures of cost effectiveness without quantified estimates of the value of outcomes. The evidence from business support monitoring surveys consistently shows a high degree of skewness in benefits, with a relatively small proportion of projects generating the vast majority of benefits, thus

199 For example, benefits for spillovers could be allocated only when evidence from the surveys demonstrated both additionality and conditions for potential spillovers.

demonstrating that achieving ***average*** high cost-benefit ratios does not require large ***proportions*** of projects to achieve positive results. This suggests that to generate high cost-benefit ratios, it could be sufficient for a small number of high-quality projects to be influenced in such a way that large additional spillover benefits were generated.

POSSIBLE SOURCES OF BIAS IN MEASURES OF SPILLOVERS

5.34. In view of the importance of the survey evidence on spillovers to the Reading Business Group cost-benefit analysis, it is worth giving consideration here to whether there could be any biases in these which might be sufficiently large to warrant modification of the conclusions. Two main issues may be significant:

- underreporting of spillover effects could have occurred because the survey could only capture effects of which the respondents happened to be directly aware, and those which had occurred within the period covered by the survey. Time constraints also limited the number of spillover-related questions that could be dealt with in an interview without compromising response rates. These factors would certainly be expected to result in underestimates of spillover effects which could be substantial, affecting both trade and inward investment;
- overestimating spillover effects because of assuming positive effects on the basis that there was evidence of characteristics being present – such as staff involvement in research and development – which could potentially lead to spillover effects occurring, even though there was no way of knowing whether they might actually materialise. There was also no account taken of whether the circumstances of inward investment projects were such that UK firms would have sufficient absorptive capacity to take advantage of potential knowledge spillovers.

Table 5.2:
Learning benefits and behaviour change resulting from UK Trade & Investment support

Trade Development exporters		
	Inexperienced exporters	**Experienced exporters**
Measure A81 – Increased skills	60%	54%
Measure A 83 – Changed behaviour	61%	55%

Trade Development – by firm size			
	SMEs		**Large firms**
	inexperienced	**experienced**	
Measure A81 – Increased skills	61%	55%	45%
Measure A 83 – Changed behaviour	62%	55%	50%

Inward Investors			
	Head Office (located in UK)	**HQ – did not locate in UK**	**UK office**
Measure A 83 – Changed behaviour	46%	56%	12%

Notes on Table 5.2:

1. Measures are based on DTI Business Support impact measures of the same name and number,[200] and are calculated net of 'non-additionality', i.e. relate to effects directly attributable to UK Trade & Investment. Definitions and method of calculation for both measures were designed to be consistent with DTI measures.
2. **Measure A81:** Firms are counted against this measure if they feel that they have 'to a significant extent' (i.e. scored '4' or '5' on a five-point scale, for)…
   - Increased their ability to compare themselves with competition from abroad as a result of their export activity
   - *Or,* gained the confidence to either explore a new market or expand in an existing one, but not actually done so, as a result of the support they have received
   - *Or,* improved their knowledge of the competitive environment in an overseas market as a result of the support they have received
   - *Or,* improved their marketing research skills as a result of the support they have received
   - *Or,* improved their understanding of how to do business in an overseas market as a result of the support they have received
3. **Measure A83 trade development:** Firms are counted against this measure if they feel that they have 'to a significant extent' (i.e. scored '4' or '5' for)…
   - Made improvements to their products or services as a result of their export activity
   - *Or,* made improvements to their process efficiency as a result of their export activity
   - *Or,* gained the confidence to either explore a new market or expand in an existing one, and actually done so, as a result of the support they have received
   - *Or,* improved the way they do business in an overseas market as a result of the support received
   - *Or,* improved their overseas marketing strategy as a result of the support they have received

200 See DTI BSMS reports at http://www.dti.gov.uk/about/evaluation.

4. **Measure A83 inward investment:** Firms are counted against this measure if they feel that they have 'to a significant extent' (i.e. scored '4' or '5' for)…
   - Gained information about how to do business in the UK as a result of the support they have received
   - *Or,* developed links with UK universities or Research and Technology Organisations as a result of the support they have received
   - *Or,* been influenced to increase the amount of R&D activity they do in the UK
   - *Or,* been influenced to increase their involvement in collaborative R&D activity
   - *Or,* been influenced to increase their use of UK-based suppliers
   - *Or,* been influenced to change the composition of their workforce in terms of the number of locallybased workers employed
   - *Or,* been influenced to increase the level of investment of equipment, premises or other capital expenditure
   - *Or,* been influenced to outsource at least one business function to UK suppliers
   - *Or,* would probably or definitely not have invested without the support.

OTHER POTENTIAL SOURCES OF MEASUREMENT BIAS:

5.35. A number of possible sources of bias have also been identified which relate to survey-based techniques for gathering evidence about benefits internal to the firm. Surveys are the primary source of evidence for most business support impact evaluations, and there is a body of established techniques for making adjustments to the raw survey evidence to take account of the various sources of potential bias which have been identified. These are summarised in the notes to Table 5.5. Estimates of additional profit based on the survey data incorporate downward adjustments to take account of the following issues:

- might businesses have incentives to ***overstate*** benefits in order to send signals to government to continue the support? If true, this would introduce an upward bias in the results. One technique for taking account of this possibility is to introduce consistency checks into calculations of financial benefits, using responses to questions which are not expected to be subject to the same bias, or might indeed be subject to opposite bias. The measures of quantified benefits shown in Table 5.5. therefore include a downward adjustment, revising to zero any benefits reported by firms who have not ***also*** reported significant learning effects reflected in changed behaviour, or reported having overcome significant non-cost barriers to market access as a result of support. Both parts of this consistency check are based on questions which might be expected to have downward bias, if any, on the grounds that it is human nature to underplay these types of benefits;[201]

201 Discussions of evaluation methodology have identified this 'heroic entrepreneur' tendency to report learning benefits with downward bias, owing to the implied need for humility in order to acknowledge that one had need of any learning. Put another way, once learning has taken place, the new awarenesses or lessons learned can often seem so obvious that it may be difficult to think that one would not have been able to achieve the same benefit without help.

- might benefits be overstated because businesses fail to take account of alternative sources of support? The assumption that this is likely lies behind the adjustment which reduces estimated benefits by 50 per cent if businesses said they could have obtained part of the support from an alternative source, and reduces estimated benefits to ***zero*** if they said they could have obtained similar support from another source. These adjustments are somewhat arbitrary, but follow long-established evaluation practice, so have the merit of allowing consistency and comparability with other studies.

COMPARISON WITH OTHER STUDIES

5.36. Table 5.4 below provides a summary of previous evaluation evidence on cost effectiveness, for comparison with the results shown in Table 5.5, drawing on SQW (2005). The measures of quantified benefit are not strictly consistent, as most of the earlier studies had focused on estimating the value of additional exports generated by support, rather than additional profit. Quantified estimates of impact are not available for inward investment. The most comprehensive of earlier studies was the NAO (1996) impact study of Overseas Trade Services. While an exact comparison cannot be made, the results shown suggest that the evidence from the NAO study indicate an average cost-benefit ratio broadly similar to that found in UKTI (2006) for trade development.

5.37. SQW (2005) also reviews the evidence on intermediate outcomes from support for trade development, and finds a similar pattern of impact on learning and behaviour, suggesting capacity-building effects. The main focus of the body of evaluation evidence reviewed was on benefits to the individual firms receiving support. On the basis of evaluations of trade promotion schemes over the previous 15 years, the review concluded that the three different main categories of support – information provision, advisory services and in-country support – were complementary, and not necessarily better or worse in terms of effectiveness and cost effectiveness.

Table 5.3:
Spillovers – Net Of Non Additionality – Summary Results

Notes to Table 5.3: The table shows the percentage of respondents reporting incidence of spillover effects, net of non-additionality. 'Net of non-additionality' means that effects are only counted when there is evidence that they can be directly attributed to UK Trade & Investment's support because the support made a difference to some aspect of the business behaviour which led to the knowledge spillover.

Inward Investment – spillovers		
	UKTI Users Head Office (Invested)	**UK Office**
Evidence of knowledge or productivity impacts on suppliers or competitors, net of non-additionality	14%	27%
Evidence of knowledge sharing, net of non-additionality	20%	35%
Trade Development – spillovers		
	UKTI Users Inexperienced	**Experienced**
Evidence of actual impact on suppliers or competitors, net of non-additionality	10%	17%
Evidence of knowledge sharing, net of non-additionality	33%	51%

5.38. Monitoring surveys carried out for UK Trade & Investment during 2005-6 have captured further evidence on a number of the measures used for the UKTI Economic Study, covering a much larger sample of businesses, and a wider range of services. The results consistently show that innovative businesses are more likely to report benefits in terms of intermediate outcomes relating to learning and capacity building, including increased skills and changed behaviour.

5.39. Evaluation of activities intended to generate collective impacts had received little or no researcher attention at the time of the SQW (2005) review. However, some emerging evidence is available from a pilot study carried out to inform development of a research design for an economic impact evaluation of the trade development activities of UK Trade & Investment sector teams.[202] The project involved two case studies, and concluded that:

- case studies are particularly useful for probing the social networks which are used to co-ordinate trade development activities in a sector, and for assessing the role of government in strengthening such networks and therefore helping the economy to realise greater gains from trade;

202 Casson et al (2006).

- collective benefits in terms of reputation effects can be an important intermediate outcome of support to improve social networks in a sector. The case study in the design sector found that UK Trade & Investment intervention had made it possible to organise events in Japan which had strengthened the reputation of UK design in that country. The results are consistent with the view that improving such networking can improve the access of UK firms to global markets by raising the reputation of the UK as a supplier in that sector. Broadly similar conclusions were drawn for the other case study, in the emissions trading sector, where the role of UK Trade & Investment had included helping to set up a new trade association to promote the UK's capability in this area.

Table 5.4:
Previous evaluation evidence on cost effectiveness

Notes to Table 5.4: The 1996 NAO study of OTS covered seven separate OTS programmes operating in SE Asia, and derived the benefit estimates on the basis of 800 interviews with users of the services, and 200 non-users.

Figures on gross attributable impact from past evaluations relate to *additional exports*.

For inward investment, there is one previous evaluation (EAG 2000), which included interviews with 96 inward investors (including 26 non-users) but did not estimate quantified benefits. The EAG evaluation highlighted problems with investment monitoring data, and found it difficult to assess impact.

Evaluation estimates of cost effectiveness (as reported in SQW 2005)

Programmes	Annual spend (£m)	Total gross attributable impact (£m)
TradeUK	6.7	168
OTS (NAO 1996)	4.5	345
Export Marketing Research Scheme	0.9	45
Passport	3.3	25
Trade Fairs Support Scheme	14	392
Inward Mission Scheme	0.3	30

Conclusions

5.40. In summary, the available evaluation evidence has a number of gaps, particularly relating to the magnitude of benefits generated from intermediate outcomes which have collective effects, or effects on businesses not directly involved in the support, such as competition effects, knowledge spillovers, reputation effects and effects on the social networks and institutions which underpin bilateral trade and investment flows. Nevertheless, there is a substantial body of evaluation evidence covering some areas, allowing a number of conclusions to be drawn. The review of evidence has shown that:

- government support for trade and investment, working with the grain of the market, and focused on addressing problems of market failure, can generate high levels of additional benefit relative to the costs involved, thus giving an excellent return to the tax payer;

- a fully quantified social cost-benefit analysis of government support for trade and investment is not currently feasible, and raises methodological problems which have yet to be resolved;
- collective benefits from reputation effects, or from improving provision of public goods, or from strengthening networks, and benefits from knowledge spillovers and competition effects, are particularly difficult to measure. Yet analysis of the sources of market failure and potential benefits from supporting trade and investment suggests that these are key issues. Hence the magnitude of these non-quantifiable benefits is likely to be substantial;
- benefits and costs directly accruing to the individual businesses receiving support are the easiest to measure, and there are established techniques for doing so. Nevertheless there is substantial uncertainty about the resulting estimates, both for technical reasons and for the more fundamental reason that all such assessments require assumptions about what would have happened in the absence of government support;
- for trade development support, evaluation evidence provides quantified estimates of the costs and benefits, based on established techniques which take account of additionality. These suggest that net additional benefits in the region of £17m have been generated per £1m of total UK Trade & Investment costs across a range of services. The evidence also shows substantial qualitative benefits, accruing to over half of the supported businesses, in terms of increased skills and changes in behaviour to upgrade products or practices, suggesting increased capabilities and absorptive capacity, particularly for innovative firms;
- for inward investment support, quantified estimates of benefits are not available because the main types of impact identified in the rationale for support are knowledge spillovers and competition effects. Nevertheless, evaluation evidence does allow unit output costs to be estimated. These suggest that per £1m of UK Trade & Investment cost, between 7-12 projects have been successfully influenced, either in terms of the decision to locate in the UK, or in terms of changes to new or established investment projects which are likely to increase its potential to generate beneficial knowledge spillovers. Evidence of substantial variation across projects in the characteristics likely to generate spillover benefits suggests that a small number of projects generating large benefits could be sufficient to achieve an excellent cost-benefit ratio, and that overall cost effectiveness depends crucially on targeting.

Table 5.5:
Summary of Cost Effectiveness Measures

Active category	Scheme	Total cost £'m	Number of businesses supported 2004/5	Cost per customer £'s	Mean additional benefits per business	Number of businesses influenced (changing behaviour) per £m
Trade: Advice and support to build capacity and skills in UK firms	Passport	13.8 (Total benefit = 7,863 x21k = £36,855k	1,755	7,863	£21,000	A83 = 60% businesses change behaviour as result of support = 1,053 total changing behaviour = ca **76 businesses changing behaviour as result of support per £1m**
	EMRS	2.3 [Total benefit = 225 x 672k = 151,200k	225 applications approved	10,222	£672,000	A83 = 63% businesses changed behaviour as result of support = **142 total = ca 62 per £1m**
Trade: Provision of tailored market intelligence and advice	OMIS	21.1 [Total benefit = 2324 x 55.2k = £128,284.8k	2,324 (= 940 online + 1,384 offline)	9,079	£55,200	A 83 = 57% = users changing behaviour **ca 63 per £1m**
Trade: Support for exploring overseas opportunities and promoting UK products and services abroad	Trade Fairs and Outward Missions	27.7 [Total benefit fairs = 5,778x £80.8 = £ 466,862.4k; missions = £2,264 x 155k = £350,920k	5,778 (trade fairs) 2,264 (trade missions)	3,444	£80,800 fairs £155,000 missions	A83 (fairs) = 44% = ca 2,542 total A83 (missions) = 61% = ca 1,381 total users changing behaviour (weighted average) = 48.7% = 3923 = **ca 141 per £1m (fairs and missions = 128 and 177 respectively)**
Trade: Political and diplomatic support		20.5	Estimated at 1,400*	£14,643	£369,000	A83 = 57% = 798 total users changing behaviour = **ca 39 per £1m**
Inward investment (including both attraction of new investment projects and aftercare)		43.9	468 assisted 700 = (~1,397/2) aftercare customers in 2004/5	£37,586	N/a Benefits from profits mainly flow overseas	A83 (Head Office) = 46% = 215 A83 (UK Office) = 12% = 84 Total users (inward investors) changing behaviour = 299 = **ca 7 per £1m**

Notes to Table 5.5:

Estimates of costs and benefits are based on UK Trade & Investment cost data and OMB Research survey data respectively. The measures are based closely on the measures used by the DTI in reporting results for its Business Support Cross-Product Monitoring Surveys.

Estimates of financial benefits are measured in terms of additional profit resulting from UK Trade & Investment support. As well as downward adjustments to take account of the firm's own direct assessment of the proportion of the benefits which would have been achieved in the absence of support, these estimates incorporate further downward adjustments to take account of possible upward bias in respondents' own estimates of benefit, and to ensure that results reported are underpinned by a consistent picture of causality, as follows:

- Reported benefits are *halved* if the firm said they could have obtained part of the support from an alternative source, and reduced to *zero* if it said they could have obtained similar support from another source;
- The resulting estimated benefit value is further revised down to zero for any firms who did not also report a significant intermediate outcome either in terms of change in behaviour as a result of the support (Measure A83 in Table 5.4) or a significant barriers overcome (other than fixed-costs barriers).

Thus the firm's initial assessment of additional profit resulting from the support can be revised downwards in three separate adjustments: (a) by the percentage which the firm itself judged it would have achieved in any case; (b) by a further 50 or 100 per cent if the firm had also suggested that it would have achieved some or all of the intermediate outcomes without support; and (c) by a further 100 per cent if the firm did not report significant impact against one or both of two specific intermediate outcomes, namely changed behaviour or non-cost barriers to market access overcome.

UKTI (2006) reports an estimated summary average total benefit cost ratio of 17:1, calculated on the basis of data reported above, as follows:[203]

"Total costs and benefits Passport + EMRS + OMIS + Trade Fairs and Outward Missions:

Costs = £13.8m + £2.3m + £21.1m + £27.7m = £64.9m
Benefits = £36,855K + £151,200k + £128,284.8k + £466,862.4k + £350,920k = £1,134,122.2k
Gives average total benefit cost ratio of 17:1"

Acronyms:

EMRS: Export Marketing Research Scheme (provides advice about how to carry out or commission reliable research, with part funding available for eligible SMEs)

OMIS: Overseas Market Introduction Service (a range of charged services, including tailored market information reports and contact lists, provided by commercial officers overseas)

203 UKTI (2006), p. 99, Notes to Box 5.A.1.

CHAPTER SIX

Conclusions

6.1. This report has reviewed a range of evidence, some of it new, to address three essential elements of the economic rationale for government intervention to support trade and inward investment:

- Are there potential benefits to UK prosperity from increased international trade and investment?
- Are there barriers to international trade and investment arising from market failures which, if not addressed, would prevent these benefits from being fully realised?
- Can government intervene cost effectively to address these market failures, enabling business to generate sufficient additional benefit to justify the cost of intervention and increase national prosperity?

6.2. The main findings on these three issues are set out in turn below.

BENEFITS FROM TRADE AND INVESTMENT

6.3. The evidence reviewed makes clear that benefits to UK prosperity from increased international trade and investment are potentially large. These benefits come through a number of different channels:

- **direct and indirect productivity effects on UK firms.** This is partly because exporters and multinationals tend to have higher than average productivity, so as they expand their share in UK output average UK productivity rises. Increased access to new ideas and technologies, and exposure to superior organisational skills, either through direct exposure to overseas markets or inward investors, or indirectly, through knowledge spillovers, can also have significant effects on the productivity of UK firms;
- **competition effects:** Competition is stimulated by the opportunity for foreign firms to compete with domestic ones, both for resources, including labour and business assets, and in markets for products and services, where imports alone would not compete as effectively or would not be feasible. Competition is also stimulated by the opportunity for young innovative and high-productivity firms to sell overseas, as this enables them to meet growth aims, reduce their dependence on a limited range of customers and strengthen their financial performance, hence allowing them to present a stronger competitive challenge to domestic incumbents;

- **innovation effects:** The opportunity to sell overseas promotes incentives for firms to innovate because the rewards from successful innovation will be proportionately greater when they are able to sell into larger markets. R&D intensity is strongly linked to business internationalisation both through selling overseas and through foreign direct investment. Multinationals tend to have the highest R&D intensity, but only in their home country. The level of R&D investment in the host country is likely to be influenced by the ability of inward investors to gain access to key knowledge networks.

BARRIERS AND MARKET FAILURE

6.4. The ability of the UK to achieve these benefits will depend critically on business response, both in terms of choices about locating activities in the UK, and in terms of UK businesses successfully exploiting opportunities overseas. The evidence suggests that:

- there is evidence of barriers to international trade and investment, both at firm level and at a collective bilateral level, which are likely to be attributable to market and institutional failures;
- left unaddressed, these barriers would significantly reduce the ability of the UK to achieve full potential benefits from international trade and investment liberalisation, or to respond creatively to changes in the global economy by being quick to seize new opportunities;
- the UK economy's response to opportunities in the fastest-growing emerging markets and sectors will depend crucially on the strength of social networks underpinning bilateral trade and investment relationships with those markets. Equally, it will depend on the ability of innovative UK businesses to gain timely access to these networks;
- high-productivity and knowledge-intensive overseas firms will not fulfill their potential contribution to competition, innovation and R&D in the UK if they find it too difficult to overcome market-entry barriers and gain access to the right networks within the UK;
- young innovative and high-growth potential companies will not be able to fulfill their potential without the capabilities, and access to networks, which are necessary for successful internationalisation;
- since there is clear evidence that it is the most innovative, growing, and high-productivity businesses which engage in international trade and investment, market-entry barriers will affect this group disproportionately, with adverse consequences for UK competitive dynamism and economic performance.

COST EFFECTIVENESS

6.5. The analysis suggests that some of the most important roles for government in this area would be expected to generate types of benefits which accrue to businesses collectively, or which accrue mainly to those not directly involved in the support, such as competition effects, knowledge spillovers, reputation effects and effects on the social networks which underpin bilateral trade and investment flows. Although not quantifiable, the analysis suggests that these are likely to be substantial, thus making a comprehensive quantified assessment of cost effectiveness very difficult. Nevertheless, there is a substantial body of evaluation evidence covering some types of benefit, allowing some clear conclusions to be drawn:

- working with the grain of the market, and focusing on addressing market failure, government support for trade and investment can generate high levels of additional benefit relative to the costs involved, thus giving an excellent return to the tax payer;
- for trade development support, evaluation evidence provides quantified estimates of the costs and benefits, based on established techniques which take account of additionality. These suggest that net additional benefits in the region of £17m have been generated per £1m of total UK Trade & Investment costs across a range of services. The evidence also shows substantial qualitative benefits, accruing to over half of the supported businesses, in terms of increased skills and changes in behaviour to upgrade products or practices, suggesting increased capabilities and absorptive capacity, particularly for innovative firms;
- for inward investment support, quantified estimates of benefits are not available because the main types of impact identified in the rationale for support are knowledge spillovers and competition effects. Nevertheless, evaluation evidence does allow unit output costs to be estimated. These suggest that per £1m of UK Trade & Investment cost, between 7-12 projects have been successfully influenced, either in terms of the decision to locate in the UK, or in terms of changes to new or established investment projects which are likely to increase its potential to generate beneficial knowledge spillovers. Evidence of substantial variation across projects in the characteristics likely to generate spillover benefits suggests that a small number of projects generating large benefits could be sufficient to achieve an excellent cost-benefit ratio, and that overall cost effectiveness depends crucially on targeting.

KEY ROLES FOR GOVERNMENT SUPPORT

6.6. The evidence reviewed suggests that all three criteria are met, and there is a strong economic rationale for support to business for both trade and investment. The analysis suggests that government support is best focused on:

- Strengthening the social networks which underpin international trade and investment flows, and helping individual businesses to gain access to key contact networks, by serving as a trusted intermediary. Support to help knowledge-intensive inward investors gain access to key networks in the UK, and to help innovative UK businesses gain access to key networks overseas is likely to be particularly important;
- Strengthening the internationalisation capabilities of innovative and high-growth businesses, who would not be able to fulfill their potential without being able to exploit overseas opportunities effectively;
- Providing access to information and advice which the private sector alone would not or could not provide, both to inward investors and to UK businesses seeking to exploit opportunities overseas;
- Facilitating beneficial co-operation among businesses, enabling them to work together to overcome barriers and develop potential trade and investment opportunities, for example through international co-operation on R&D, or showcasing UK capabilities in emerging markets overseas.

6.7. The role of government in supporting both inward investment and support for UK firms overseas cannot be seen as solely, or even primarily, a policy of interest to large firms. Over 90 per cent of exporters, and a substantial proportion of investors, both in the UK and in other countries, are SMEs, in both emerging and established overseas markets. The evidence suggests that, for both UK firms and inward investors, support should especially seek to target innovative and knowledge-intensive firms, as this group has a particularly important role in the economy's ability to respond dynamically to changing patterns of opportunity and challenge in the international economy.

References

Aghion P, Blundell, R., Howitt, P., and Pranti, S. (2004), *Entry and Productivity Growth: Evidence from Micro Panel Data*, UCL Discussion paper 04-03.

Aghion P, Blundell, R., Griffith, R., Howitt, P., and Pranti, S. (2006) *The Effects of Entry on Incumbent Innovation and Productivity*, NBER Working Paper 12027

Baldwin, J. & Gu, W. (2004) *Trade Liberalization: Export-market Participation, Productivity Growth, and innovation*, Oxford Review of Economic Policy, Oxford University Press, vol. 20(3), pages 372-392.

Baldwin, J. and Gu, W. (2003) Participation in Export Markets and Productivity Performance in Canadian Manufacturing, Ottawa, *Statistics Canada Economic Analysis Research Series*, Paper 016.

Baldwin, J. & Gu, W. (2001) *Plant Turnover and Productivity Growth in Canadian Manufacturing*, Statistics Canada Working Paper.

Bartelsman, E. & Doms, M. (2000) *Understanding Productivity: Lessons from Longitudinal Microdata'*, Journal of Economic Literature, 38, 3.

Bernard, A., Schott P. & Redding, J. (2005) Andrew B. Bernard & Stephen J. Redding, 2005. *Products and Productivity*, NBER Working Papers, 11575, National Bureau of Economic Research, Inc.

Bernard, A., Bradford J., & Schott, P. (2002a) *Survival of the Best Fit: Competition from Low Wage Countries and the (Uneven) Growth of US Manufacturing Plants*, available from: http://www.nottingham.ac.uk/economics/leverhulme/conferences/Exports_Oct_2002/Exports_Oct_2002_prog.pdf.

Bessant, J., Phelps, B., Adams, R., (2005) *A Review of the Literature Addressing the Role of External Knowledge and Expertise at Key Stages of Business Growth and Development: Final Report*; Cranfield School of Management, Report to the Department of Trade and Industry, August 2005.

Cameron, G., Proudman J., and Redding, S. (1999), *Openness and its association with productivity growth in UK manufacturing industry*, Bank of England working paper.

Casson, M., Burke, S., Pemberton, J., and Strang, M. (2006) *Network Approach to the Design of Case Studies for the Evaluation of Business Support, with Special Reference to the Evaluation of UK Trade & Investment International Sectors Group: Final Report*; Reading Business Group, 1 May 2006.

Casson, M. (2000). *Enterprise and Leadership*, Edward Elgar, UK.

Crisculo P, R Narula and B Verspagen (2002) *The relative importance of home and host innovation systems in the internationalisation of MNE R&D: a patent citation analysis*, Eindhoven Centre for Innovation Studies.

Debaere, P. and Mostashari, S. (2005), *Do Tariffs Matter for the Extensive Margin of International Trade?* An Empirical Analysis; CEPR, DP 5260, September.

Disney, R., Haskel, J., & Heden, Y., (2003) *Restructuring and Productivity Growth in UK Manufacturing*, Economic Journal, vol. 113, no. 489, July, pp. 666-694.

Driffield, N., Love, J. & Taylor, K. (2005) *Productivity and Labour Demand Effects of Inward and Outward FDI on UK Industry*.

Driffield, N., Higon, D. A.(2006) *Secondary Analysis of SBS Annual Small Business Survey 2004: Exporting, Growth, and Innovation: Final Report*. Report to UK Trade & Investment.

Driffield, N. (2004) *Regional Policy and Spillovers from FDI in the UK*, The Annals of Regional Science, 1-16.

DTI (2005) *R&D Intensive Businesses in the UK*, DTI Economics Paper no.11 (http://www.dti.gov.uk/iese)

DTI (2004) *Liberalisation and Globalisation: Maximising the Benefits of International Trade and Investment*; DTI Economics Papers No. 10

DTI (2003) *Competing in the Global Economy – the Innovation Challenge*; DTI Economics Papers No. 7

DTI (2001) *Common Core Impact Indicators*, (http://www.dti.gov.uk/about/evaluation).

DTI *Guidance Note on Additionality, Deadweight, and Displacement* http://www.dti.gov.uk/about/evaluation.

Essletzbichler, J. & Rigby, D. (2005) *Technological Evolution as Creative Destruction of Process Heterogeneity: Evidence from US Plant Level Data*, Economic Systems Research, 17 (1), 25-45.

Georghiou, Luke (2002) *Impact and Additionality of Innovation Policy*, PREST, University of Manchester, (http://www.6cp.net/documents/Luke Georghiou.doc).

Girma, S. & Gong, H. (2004) *Foreign Direct Investment, Spillovers, and Absorptive Capacity: Evidence from Quantile Regressions*, GEP Research Paper, 02/14, University of Nottingham.

Girma, S., Görg, H. & Pisu, M. (2005) *Quantitative Analysis and Linked Micro-data Study of UKTI Services*.

Gorg, H., Greenaway, D., and Kneller, R. (2005) *Globalisation and Productivity Growth: Theory and Evidence*; GEP Leverhulme Centre.

Gould, D.M., (1994) *Immigrant Links to the Home Country: Empirical Implications for U.S. Bilateral Trade Flows*; Review of Economics and Statistics 76, 302-316.

Greenaway, D., Guariglia, A., Kneller, R. (2006) *Financial Factors and Exporting Decisions*; University of Nottingham

Griffith, R., Harrison, R., and van Reenen, J. (2004) *How special is the special relationship? Using the impact of US R&D spillovers on UK firms as a test of technology sourcing*, IFS Working Papers WO4/32.

Griffith, R., Redding, S., and Simpson, H. (2004) *Foreign Ownership and Productivity: New Evidence from the Service Sector and the R&D Lab*, CEP Discussion Paper No 649, September (2004)

Harris, R. & Li, Q Cher (2006a) *Review of the Literature: Causal Links Between Innovation and International Trade and Investment*. Report to UK Trade & Investment, April 2006.

Harris, R. & Li, Q Cher (2006b) *Establishment Level Empirical Study of Links Between Exporting, Innovation, and Productivity – CIS4*; May 2006. Interim Report to UK Trade & Investment.

Harris, R. & Li, Q Cher (2005a) *Review of the Literature: the Role of International Trade and Investment in Business Growth and Development*. Report to UK Trade & Investment.

Harris, R. & Li, Q Cher (2005b) *Establishment Level Empirical Study of Links Between Exporting, Innovation, and Productivity*. Report to UK Trade & Investment.

Harris, R. (2004) DTI Industrial Support Policies: Key Findings from New Micro-data Analysis, in *Raising UK Productivity – Developing the Evidence Base for Policy*, DTI Economics Paper 8, London, 1-30.

Harris, R. & Hassaszadeh, P. (2002) *The Impact of Ownership Changes and Age Effects On Plant Exits in UK Manufacturing*, 1974–1995, Economics Letters, 75(3): 309–317.

Harris, R. and Robinson, C (2001a) *Research Project on DTI Industrial Support Policies., Contract A: An Analysis of Current DTI Industry Support Patterns*, mimeo (http://www.dur.ac.uk/richard.harris/DTI_A.pdf).

Harris, Richard I. D. and C. Robinson (2001b) *Research Project on DTI Industrial Support Policies. Contract B: A critical review of empirical research on hindrances to business development and productivity growth and the relative importance of different constraints on UK business*. (http://www.dur.ac.uk/richard.harris/DTI_B.pdf).

Haskel, Jonathan, and Ralf Martin (2003), *Productivity Spreads Using Conventional Measures*, CeRiBA Discussion Paper, (http://www.ceriba.org.uk/).

Hemmings, P., Scarpetta, S., Tressel, T. & Woo, J. (2002) *The Role of Policy and Institutions for Productivity and Firm Dynamics: Evidence from Micro and Industry Data*, OECD Economics Department Working Papers, 329.

HM Treasury (2006) *Productivity in the UK 6: Progress and New Evidence*

HM Treasury (2004) *Trade and the Global Economy*

HM Treasury (2003) *The Green Book: Appraisal and Evaluation in Central Government*

HM Treasury, Cabinet Office, National Audit Office, Audit Commission, Office for National Statistics (2001), *Choosing the Right Fabric: A Framework for Performance Information*.

Hughes, A. (2004) *Centre for Business Research conference PowerPoint presentation*.

Hummels, D. and Klenow, P.J. (2002), *The Variety and Quality of a Nation's Trade*; NBER Working Paper No. 8712

Kneller, R., Pisu, M. (2006) *Export Market Entry, Exports and Firm Productivity*. Pre-interim report and presentation to UK Trade & Investment.

Lachenmaier, S. and Wossmann, L. (2005) *Does innovation cause exports? Evidence from exogenous innovation impulses and obstacles using German micro data*; Oxford Economic Papers

Lipsey, Richard G. and Carlaw, K. (1998), *A Structuralist Assessment of Technology Policies – Taking Schumpeter Seriously on Policy*; Industry Canada Research Publications Program, Working Paper Number 25, October 1998

Maioli, S., Ferrett, B., Girma, S., and Gorg, H. (2003), *Trade, FDI and plant-level price cost margins in the UK*

Martin, Ralf (2003) *Productivity Level and Growth of Small Firms*, CeRiBA Discussion Paper, (http://www.ceriba.org.uk/).

Melitz, M. (2002) *The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity*, NBER Working Papers 8881, National Bureau of Economic Research, Inc.

National Audit Office (1996) *Overseas Trade Services: Assistance to Exporters*, Report by the Comptroller and Auditor General, HC 293 Session 1995-95.

OECD (2006) *Removing Barriers to SME Access to International Markets: A Joint OECD/APEC Project*, In-progress Draft Background Report

OMB Research (2005) *UKTI Telephone Survey of UK Trade & Investment's Inward Investment & Trade Development Customers and Non-Users*, Final Report.

OMB Research (2006a) *UK Trade & Investment Performance & Impact Monitoring Surveys (PIMS) Pilot – Stage 1, Main Report*, January 2006

OMB Research (2006b) *UKTI Innovative SMEs and their Internationalisation Capabilities*; report to UK Trade & Investment

OMB Research (2006c) *UKTI PIMS Qualitative Follow Up Study of Business Needs in Emerging Markets, Research Report*; report to UK Trade & Investment, June 2006.

Oulton, N. (1998) *A Tale of Two Cycles: Closure, Downsizing and Productivity Growth in UK Manufacturing, 1973-89*, National Institute of Economic and Social Research, Papers 140.

Pain N (2001) *The Impact of Inward Investment on the UK Economy* NIESR

Rauch, James E. (1999) *Networks Versus Markets in International Trade*, Journal of International Economics 48, 7-35

Reading Business Group (RBG) (2005), *Design and Analysis of a Survey of UK Trade & Investment's Trade Development and Inward Investment Activities*, Final Report.

Roper, S., Love, J. H., Higon, D., A. (2005) *The Determinants of Export Performance: Evidence for Manufacturing Plants in Ireland and Northern Ireland*; Economics and Strategy Group, Aston Business School; November 2005

Rose, A. (2005) *The Foreign Service and Foreign Trade: Embassies as Export Promotion*, NBER Working Paper 11111, (http://www.nber.org/papers/w11111).

SQW (2006) *Evaluation of Trade Development Activities of UKTI International Sectors Group: Stage 1, Final Report to UK Trade & Investment*.

SQW (2005), *Review of the evaluation evidence on trade promotion: Final Report to UK Trade & Investment*. http://www.uktradeinvest.gov.uk/ukti

UKTI (2006) *2004-2005 Study of the Relative Economic Benefits of UK Trade & Investment Support for Trade and Inward Investment: Final Synthesis Report*; DTI Evaluation Report Series No.9; March 2006.

Wren, Colin, forthcoming (2006) *Assessing Expected Impacts; in OECD Handbook for Prior Assessment Evaluations of Local Development Strategies*, Chapter IV, Section 4.

DTI Economics Papers

The DTI places analysis at the heart of policy-making. As part of this process the Department has decided to make its analysis and evidence base more publicly available through the publication of a series of DTI Economics Papers that set out the thinking underpinning policy development.

The main series is complemented by two further series:

- Sector Competitiveness Studies. These are comparative studies and analyses of the competitiveness of different productive sectors of the UK economy; and
- A series of shorter Occasional papers including literature reviews, appraisal and evaluation guidance, technical papers and economic essays and think pieces.

Previous titles include:

Main Series

17. **UK Productivity and Competitiveness Indicators 2006**, March 2006
16. **Science, Engineering and Technology Skills in the UK**, March 2006
15. **Creativity, Design and Business Performance**, November 2005
14. **Public Policy: Using Market-Based Approaches**, October 2005
13. **Corporate Governance, Human Resource Management and Firm Performance**, August 2005
12. **The Empirical Economics of Standards**, May 2005
11. **R&D Intensive Businesses in the UK**, March 2005
10. **Liberalisation and Globalisation: Maximising the Benefits of International Trade and Investment**, July 2004
9. **The Benefits from Competition – some Illustrative UK Cases**, Professor Stephen Davies, Heather Coles, Matthew Olczak, Christopher Pike and Christopher Wilson (Centre for Competition Policy, University of East Anglia), July 2004
8. **Raising UK Productivity – Developing the Evidence Base for Policy**, March 2004
7. **Competing in the Global Economy – The Innovation Challenge**, November 2003
6. **UK Productivity and Competitiveness Indicators 2003**, November 2003

Sector Competitiveness Studies

1. **Competitiveness in the UK Electronics Sector**, May 2005

Occasional Papers

6. **Innovation in the UK: Indicators and Insights**, July 2006
5. **Energy efficiency and productivity of UK businesses: Evidence from a new matched database**, April 2006
4. **Making Linked Employer-Employee Data Relevant to Policy**, March 2006
3. **Review of the Literature on the Statistical Properties of Linked Datasets**, February 2006
2. **Evaluating the Impact of England's Regional Development Agencies: Developing a Methodology and Evaluation Framework**, January 2006
1. **Options for a Low Carbon Future: Review of Modelling Activities and an Update**, September 2005

Copies of these papers can be obtained from the DTI publications orderline at http://www.dti.gov.uk/publications/ or telephone 0845 015 0010.

These papers are also available electronically on the DTI Economics website at http://www.dti.gov.uk/about/economics-statistics/economics-directorate/page14632.html

Further information on economic research in the DTI can be found at http://www.dti.gov.uk/about/economics-statistics/economics-directorate/page21921.html. This site includes links to the various specialist research areas within the Department.

Evaluation reports are available on the DTI evaluation website at http://www.dti.gov.uk/about/economics-statistics/economics-directorate/page21979.html.

The views expressed within DTI Economics Papers are those of the authors and should not be treated as Government policy. We welcome feedback on the issues raised by the DTI Economics Papers, and comments should be sent to **dti.economics@dti.gsi.gov.uk**

Printed in the UK on recycled paper with a minimum HMSO score of 75
First published July 2006 Department of Trade and Industry. www.dti.gov.uk