



Time to act: The economic consequences of failing to expand airport capacity

Why connectivity matters for trade and investment

Dr Rebecca Driver, Analytically Driven Ltd
June 2015



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Foreword from the ITC Project Chairman

The Airports Commission is expected to announce shortly its recommendations for airport expansion. The challenge then falls to Government: to balance local worries with broader national needs – including jobs, trade, investment and productivity. The ITC has therefore commissioned this report, in advance of the Airports Commission's final report, to explore why better air connectivity matters so much to the UK economy.

The UK's prosperity has been forged historically through exceptionally strong global connectivity. Britain was until recently home to the world's most important sea and air ports but both came under threat. British seaports, and port cities like Liverpool, suffered from years of indecision and failure to act on issues such as investment in large container docks - allowing rivals such as Rotterdam to dominate. In aviation we face a similar challenge as London's global pre-eminence is already being overtaken by rivals in Europe and elsewhere.

This report reminds us how vital air connectivity is to the UK. Some of the reasons are straightforward: although much trade will continue with traditional partners, emerging markets are increasingly important. Easy access to global markets - with direct and frequent flights - is critical to boosting growth and creating jobs; yet we are already at a disadvantage with fewer flights than rivals to the fastest growing global economies. This problem affects goods as well as passengers, since over a third of UK imports and exports by value are carried by air, largely in the "belly hold" of passenger flights. For investors - who increasingly operate on a global basis - direct, easy access is also essential. The report suggests that a 10 per cent increase in intercontinental flights typically leads to a 4 per cent increase in the number of head offices.

But the need goes deeper. Productivity ultimately drives living standards and the UK has for years suffered from poorer productivity than rivals. The report highlights that good connectivity is key to productivity, since the most productive firms and sectors are typically those which operate internationally. So better global connectivity is a key enabler if we are to meet the challenge of raising productivity and living standards.

Nor is this just an issue for London and the South-East. Air links with the more distant regions and cities of the UK have been squeezed under current capacity constraints. Tackling this is important for the UK as a whole and it will be important to weigh the benefits for the many against the challenges to the few.

The debate has run for many years (and the ITC, as an independent body, has made several contributions). But the overwhelming need now is to take a decision in the interest of the nation. We commend this report to the Government and call for action.

Dr Stephen Hickey
Chairman of the Aviation working group
Independent Transport Commission







Time to Act: The economic consequences of failing to expand airport capacity

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Executive Summary

1. Good air connectivity is not just about the ability to get a flight to your preferred holiday destination, although that helps. Good air connectivity is about the ability of businesses to make and maintain the right connections to allow their businesses to thrive and to ensure that their goods, and any key inputs, are in the right place at the right time.
2. The Airports Commission was set up in November 2012 to advise government on how to maintain the UK's status as Europe's most important aviation hub and has identified that one of the key constraints facing the UK is the lack of airport capacity in London and the South-East. However, whatever the Airports Commission recommends will be controversial. This report has been therefore commissioned by the Independent Transport Commission to examine the impact of failing to increase airport capacity, by assessing the implications from the perspective of trade and international investment.

Table 1: Key facts about airports in London (and the world)

1	The London airport system (including Heathrow, Gatwick, Luton, Stansted, City, and Southend airports) is the largest air travel market in the world, when measured in terms of the number of passengers who start or end their journey in London.
2	Heathrow is already effectively operating at full capacity and Gatwick is expected to reach full capacity by 2020 at the latest and is already full at peak times. The London airport system as a whole will be under substantial pressure by 2030 and full by 2050.
3	The Airports Commission estimates that the benefits of increasing capacity at either Heathrow or Gatwick range from £42 billion to £214 billion (on a 60 year appraisal basis), depending on the option chosen and how demand for air travel evolves. Under the options considered, by 2050 GDP is expected to be between 0.2% and 1% higher than it would be if there is no increase in airport capacity.
4	Around 40% of UK trade by value travels by air – with roughly 70% travelling as belly hold on passenger services. In total over 75% of UK air freight by volume goes via a London airport.
5	Heathrow handles around 75% of air freight in London, of which around 15% travels at night, with 93% of the cargo moving at night being belly hold, of which 98% is long-haul.
6	The UK ranks behind key EU rivals such as France, Germany and the Netherlands in air connectivity terms.
7	By concentrating demand, hub airports are able to introduce new routes earlier than if they need to rely solely on local demand. An airline operating from a hub airport where only half the passengers are local (with the rest being transfer passengers) can introduce a new long-haul service 14 years earlier than if they needed to rely just on local demand.
8	The impact of capacity constraints and demand pressures mean Heathrow operates on fewer routes than all its rival hubs, with only 7 domestic routes served from Heathrow, and the number of routes served has been declining. Heathrow therefore serves fewer destinations in Brazil, China, India, Mexico, Russia and Turkey than Frankfurt Airport. However, the frequency of flights to each destination is higher from Heathrow.



- 3.** The aim of the report is to act as a reminder for why the UK needs good air connectivity in the run up to the publication of the Airports Commission's recommendations on airport expansion in London and the South-East. In doing so it highlights the fact that not all businesses are equal, and the most productive and innovative firms in any economy are those that are involved in international trade and investment. Therefore these firms play a vital role in the UK's economic success - between 1996 and 2004 exporting companies contributed 60% of the UK's productivity growth.¹ Any failure to take account of the needs of these firms when deciding on the need for airport capacity therefore risks harming the UK economy.
- 4.** The costs of crossing a border, either to trade or to invest, are significant, meaning only the most productive firms are able to do so. Estimates suggest that the impact of a border on trade is equivalent to an ad valorem tax of 74% for goods trade, with transport costs playing a significant part in these costs, and the barriers to trade in services are significantly higher.² It is therefore not surprising that there is a growing body of research that highlights the importance of air connectivity for trade and investment. For example, evidence suggests that:
- The impact of having direct flights between any two cities on average compensates for around 10% of the negative effects associated with the average international border.³
 - The impact on demand for each day a good spends in transit is equivalent to an ad-valorem tariff of 0.6 to 2.3 percent and that the most time-sensitive trade flows are those involving the parts and components trade, meaning air connectivity plays an important role in global supply chains.⁴
 - A 10% increase in the number of intercontinental flights leads to a 4% increase in the number of headquarters located in the corresponding urban area.⁵
 - The introduction of a new airline route between two Metropolitan Statistical Areas (MSA) leads to a 4.6% increase in total venture capital investments, a 2.5% increase in the likelihood of venture capital activity between the two MSAs, and a significant improvement in the likelihood that an investment will be successful.⁶
- 5.** In other words good air connectivity is associated with significant benefits for investment flows and for the firms engaged in international activity, and will therefore have a positive impact on productivity and growth through its impact on allocative efficiency. Reducing barriers to growth for highly productive firms means the economy as a whole benefits, because more resources are being used by firms that will make better use of them. However, it is not just the firms engaged directly in international activity that will benefit. Even for firms that do not trade directly, good air connectivity will help by making it more likely that they will benefit from being part of global supply chains.

1 See the discussion in Harris and Li (2007) and Driver (2014).

2 See Anderson and van Wincoop (2004) and Anderson, Milot and Yotov (2012). These estimates are based on the change in price that would be necessary to explain the sharp decrease in economic activity that takes place once a border is involved. As such they capture much more than just official trade barriers.

3 See the analysis in Yilmazkuday and Yilmazkuday (2014).

4 See the estimates in Hummels and Schaur (2013).

5 See Bel and Fageda (2008).

6 See the discussion in Bernstein, Giroud and Townsend (2014) on the impact of flights on venture capital funding in the US.

6. The issue of how to expand airport capacity in London and the South-East is both complex and controversial and implementing any recommendation will be difficult. However, whichever option is chosen, the economic benefits are likely to be substantial. Therefore it is important that people do not lose sight of the benefits of air connectivity in any debate on the pros and cons of the specific option for airport expansion the Airports Commission recommends. This is particularly true because the impact of any decision (or lack of decision) will be felt much more widely than just in the vicinity of the airport itself. For that reason this report concentrates on the wider impact of air connectivity, rather than the specifics of how to achieve it.⁷
7. Given the evidence on emerging capacity constraints at the airports serving London and the South-East, and the long lead times associated with major infrastructure projects, it will be important that the government does not let controversy get in the way of decision-making. The option value of waiting only holds where competitors will not act, but this is not the case here, as can be seen by Turkey's decision to create a six-runway airport in Istanbul.⁸ Indecision would risk undermining London's status as a major international hub and all the economic benefits that stem from that. Therefore, it is in the interests of the growth and prosperity of the UK as a whole that the government acts to implement the Airport Commission's recommendations on improving airport capacity in London and the South-East when they are published.

7 It therefore complements earlier work published by the Independent Transport Commission on how to improve air connectivity in London and the South-East, see, for example, Independent Transport Commission (2013) and Hind (2014).

8 The new airport in Istanbul will be capable of handling 150 million passengers, making it the busiest airport in the world.



I. Introduction

- 1.1** Failure to address the need for airport expansion in London and the South-East will have important implications for the future of the UK economy. The purpose of this report is to highlight what some of those implications will be, from the perspective of trade and international investment. Its aim is to act as a reminder for why the UK needs good air connectivity in the run up to the publication of the Airports Commission's recommendations on airport expansion in London.
- 1.2** The issue of how to expand airport capacity in London and the South-East is both complex and controversial. Indeed the Airports Commission's recent consultation on its three shortlisted options generated over 63,000 responses.⁹ Controversy on that scale can increase the incentives to postpone decisions. However, given the evidence on emerging capacity constraints at the airports serving London and the South-East, and the long lead times associated with major infrastructure projects, it will be important that the government does not let controversy get in the way of decision-making. The option value of waiting only holds where competitors will not act, but this is not the case here, as can be seen by Turkey's decision to create a six-runway airport in Istanbul.¹⁰ Indecision would risk undermining London's status as a major international hub and all the economic benefits that stem from that.
- 1.3** In its own right the aviation sector is a major contributor to the UK economy. Estimates suggest that the aviation sector as a whole contributes £52 billion (or 3.4%) towards UK GDP. This contribution takes the form of not just the direct output of the sector itself, but also the output of its supply chain, as well as the output of sectors that are supported by the spending of employees in the aviation sector and its supply chains.¹¹
- 1.4** However, over and above the contribution made by the aviation sector to economic output, good air connectivity will benefit growth and investment in the economy more widely. This is because it helps support firms that trade, and firms that trade play a vital role in any economy - in the case of the UK, between 1996 and 2004 exporting firms contributed 60% of the UK's productivity growth. Good air connectivity helps these firms by allowing them to make and maintain the right connections to allow their businesses to succeed and by ensuring that their goods, and any key inputs, are in the right place at the right time. Even for firms that do not trade directly, good air connectivity will help by making it more likely that they will benefit from being part of global supply chains. It also allows firms to monitor investments in locations other than their head office more effectively and therefore encourages investment flows.

9 The three options being considered are a second runway at Gatwick airport; an extended northern runway at Heathrow airport; and a third (north-west) runway at Heathrow airport. See Airports Commission (2014a) for details of the shortlisted options.

10 The new airport in Istanbul will be capable of handling 150 million passengers, making it the busiest airport in the world.

11 See Oxford Economics (2014).

12 See the discussion in Harris and Li (2007) and Driver (2014).

1.5 The Airports Commission was set up in November 2012 to advise government on how to maintain the UK's status as Europe's most important aviation hub and has identified that one of the key constraints facing the UK is the lack of airport capacity in London and the South-East.¹³ This report has been commissioned by the Independent Transport Commission to assess the evidence on the impact of air connectivity on the wider economy, and particularly on trade and investment, as well as to inform the debate on airport expansion in London when the Airports Commission publishes its findings. It makes use of analysis in both the academic and policy literature to highlight what the benefits of good air connectivity are likely to be, as well as drawing on the experiences of other countries.

1.6 There is a risk that people will lose sight of the benefits of air connectivity in any debate on the pros and cons of the specific recommended option for airport expansion. However, it is important that these benefits are understood, because the impact of any decision (or lack of decision) will be felt much more widely than just in the vicinity of the airport itself. For that reason this report concentrates on the wider impact of air connectivity, rather than the specifics of how to achieve it. What is clear from the analysis is that whichever option is recommended the benefits will be significant. Governments around the world worry about how to boost productivity and growth – improving airport capacity in London and the South-East represents an important opportunity for the UK government to do just that.¹⁴

1.7 The analysis is structured as follows:

- Section 2 discusses what good air connectivity means and why both air freight and hub airports play an important role in creating this connectivity. The section also considers the evidence on the existing capacity constraints of airports in London and the South-East.
- Section 3 considers the benefits of trade and reviews why trade barriers, including transport costs, mean that only the most productive firms trade. It examines the evidence on the impact of air connectivity on trade flows.
- Section 4 looks at supply chains and how reductions in the cost of air freight have facilitated the emergence of global supply chains.
- Section 5 discusses the impact of air connectivity on investment flows, showing that the availability of flights can have an important impact on the likelihood of investment taking place, as well as how investment is structured and its likely success.
- Section 6 assesses the Airports Commission's estimates of the cost of capacity constraints in the airports serving London and the South-East in the light of the evidence of air connectivity on trade and investment.
- Finally, Section 7 concludes.

13 See Airports Commission (2014a).

14 This is one reason why the CBI has called for the UK government to act on airports capacity in its first 100 days, see CBI (2015).



2. The Need for Airport Expansion in London and the South-East

2.0.1 From an economic perspective connectivity is important. Without it businesses struggle both to make and maintain the right connections to allow their businesses to succeed; to ensure that their goods are in the right place at the right time; and to benefit from being part of global supply chains. Similarly without good connectivity people find it harder to keep in touch with friends and family and to indulge in the joys of travel for pleasure. This is why it is important that London and South-East England, as well as the UK as a whole, have both the right amount and right type of airport capacity to ensure that they thrive.

2.1 What does good air connectivity mean?

- 2.1.0.1** Good air connectivity is about more than simply the capacity of an airport. From a customer perspective good air connectivity depends on:
- **The range of destinations available.** Having more destinations on offer, particularly with direct flights, improves access to different markets;
 - **The frequency of flights to each destination.** Having more frequent flights to a destination improves flexibility by allowing people to choose when they travel and by giving freight companies (particularly express couriers) more options to meet their deadlines;
 - **The cost of flights in terms of both time and money.** If flights are expensive then, even if the routes exist, fewer people will be able to take advantage of them. Similarly the longer it takes to reach a destination, the less likely it is that people will choose to travel there. Good connectivity therefore depends on keeping costs down;
 - **The range of flight options available.** Not everyone wants to fly on a no frills airline, or can afford to indulge in first class travel. Therefore the ability of an airport to cater to a range of different tastes and budgets will increase the likelihood that people will use it.
 - **The timing of flights to each destination.** For business travellers and freight operators the timing of flights has important business implications – flights at the wrong times will not allow travellers to make meetings without staying overnight, or ensure that packages can meet their overnight delivery targets;
 - **The reliability of flights.** If flights are unreliable then it will have a negative impact on business travellers and freight operators. So for good connectivity a system needs to have sufficient capacity to be resilient;

- **The quality of the airport experience.** How an airport is run, including the speed of the check-in process and security checks at an airport and the range of duty-free shops on offer, all have an impact on people's perceptions of how easy it is to travel, and therefore the likelihood that they will do so. Similarly, having high quality freight facilities, which are not only well designed and equipped, but also conveniently positioned for transit and custom checks, is equally important to enable freight companies to operate efficiently; and
- **The accessibility of the airport.** If airports are hard to reach by potential travellers, it discourages people from using them.

2.1.1 The importance of hub airports for air connectivity

2.1.1.1 It goes without saying that the availability of sufficient capacity to deliver desired services is important for connectivity. Serving a large number of destinations and different customer types effectively requires scale. However, for scale to be provided, there also need to be sufficient customers (either from within the local area or through transfers traffic) to allow the airports, airlines and supporting businesses to operate profitably. The key to delivering good air connectivity, therefore, depends not only on supply, but also demand.

2.1.1.2 This is one reason why hub airports play an important role within any airport system. By concentrating demand, hubs are able to profitably serve more unusual routes. For example, estimates suggest that a route will become viable 14 years earlier if the airline only has to depend on local demand to fill half the seats, with the remainder being filled by transfer traffic from elsewhere.¹⁵ Therefore although customers generally prefer to fly direct, for many routes good connectivity will depend not just on the capacity of the local airport, but also the availability and capacity of an effective hub airport.

2.1.2 The importance of air connectivity for freight

2.1.2.1 Good air connectivity is not just about the transfer of people, it is also about the transfer of freight and the two problems are connected. The value of goods that travel by air each year is \$6.4 trillion, which is equivalent to around 35% of the value of world trade.¹⁶ Indeed in the US over 50% of exports (by value) going outside North America travel by air.¹⁷ In the UK, around 40% of exports and imports by value travel by air, with 77% of all air freight handled in the UK travelling via London, mostly through Heathrow.¹⁸

2.1.2.2 Although many freight companies operate their own aircraft, they will also often make use of passenger services to send cargo. It is estimated that around 50% of world air freight travels as belly hold on passenger services and in the UK the proportion is even higher, at around 70%.¹⁹ Therefore it is not just passengers that will benefit from the ability of an effective hub airport to both serve less popular routes and to provide more frequent services on popular routes, with the resulting flexibility that gives to users.

15 See the discussion in Hind (2014). The estimates are based on a market size of 125,000 passengers, which is equivalent to a single daily long-haul service operating with a load factor of 80%. With zero transfer traffic it would take 14 years of passenger growth at 5% p.a. to increase the number of potential local passengers from 62,500 to 125,000 in order to make the route viable.

16 See the discussion in the Airports Commission (2013a).

17 In 2004 52.8% of the value of exports going outside north America and 31.5% of imports travelled by air. See the discussion in Hummels (2007).

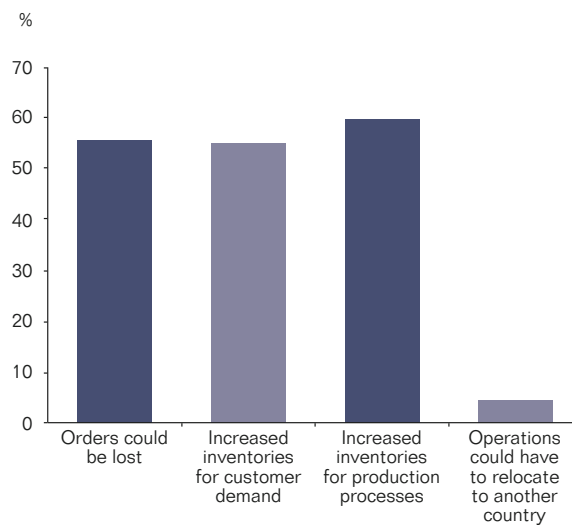
18 See York Aviation (2015). In total around 75% of the air freight handled by London airports goes through Heathrow.

19 See the discussion of the use of belly hold for world trade in Arvis and Shepherd (2011) and the estimates of the importance of belly hold for UK trade in York Aviation (2015).



2.1.2.3 The key to air freight is time sensitivity. Without prompt deliveries the firms using express carriers recognise that they will lose orders and will need to hold more inventory in order to operate (with the associated increase in costs), see Figure 1. Therefore, although the proximity of Europe means that it is feasible to use road or rail shipments in many cases, for time sensitive packages air freight remains important. Indeed shipments by air to other EU countries accounted for over half the shipments overseas sent by the UK express industry in 2010, accounting for 30 million shipments compared to 29 million shipments to non-EU countries. This pattern is similar to the pattern of UK trade, with around 50% of UK goods trade being with the EU.²⁰

Figure 1 The impact on customers of losing next-day express delivery



Note: Based on a survey of firms by NMS for Oxford Economics.

Source: Oxford Economics (2011).

2.1.2.4 However, belly hold cargo is not just important for the customers of express carriers, it is also important for the commercial success of the airline industry itself. Not all carriers take belly hold cargo. For example, the low cost airlines will typically not take belly hold cargo because their business model relies on a quick turn-around at each destination, meaning they want to simplify baggage handling. However, for many commercial airlines, particularly those operating at key hubs, belly hold cargo is important for profitability. The operation of an effective hub airport therefore creates a symbiotic relationship – better connectivity means that commercial airlines can offer express carriers a more attractive service, which in turn means express carriers are more likely to use belly hold cargo options, increasing the profitability of the airlines concerned and the range of routes they can offer. In Heathrow, for example, 93% of all flown cargo moving at night is belly hold cargo, of which 98% is long haul, including significant transfer traffic.²¹ Time sensitivity means these long haul flights from key destinations such as the US and Far East play an important role in the UK's trade connectivity, meaning the night flight regime is important.

²⁰ See the discussion of UK trade patterns in Driver (2014).

²¹ See AICES (2013). Night flown cargo accounts for 15% of the total cargo handled at Heathrow.

2.1.3 How does the UK compare in the connectivity stakes?

2.1.3.1 Providing a robust and consistent measure of connectivity to allow countries, or airports, to be compared is challenging. Research by The World Bank, which aims to quantify the impact of the range of destinations, frequency and cost on air connectivity from a trade perspective, suggests that the UK ranks eighth in the world (out of 211 countries). However, although the UK does well, several key European competitors are ranked higher, particularly Germany, the Netherlands and France, see Table 2.

Table 2: Air Connectivity Index: Top 10 countries

Rank	Country	Air Connectivity Index
1	US	22.78%
2	Canada	13.44%
3	Germany	12.11%
4	Belgium	12.03%
5	Luxembourg	11.74%
6	Netherlands	11.73%
7	France	11.64%
8	UK	11.55%
9	Switzerland	10.76%
10	Czech Republic	9.87%

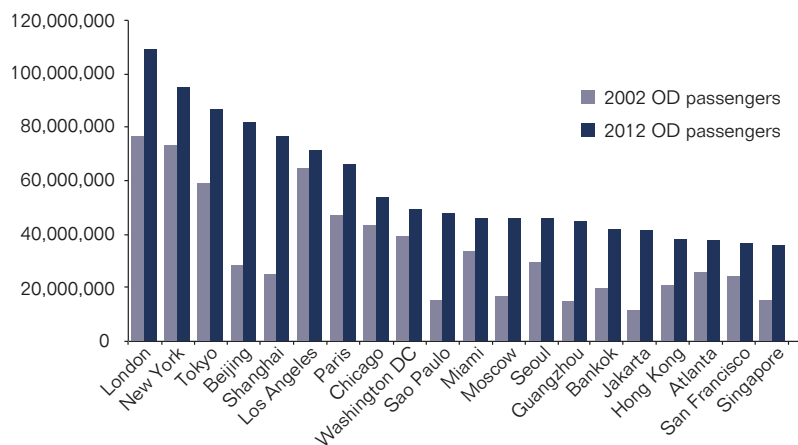
Note: The Air Connectivity Index is based on data for 2007 for 211 countries and measures how well connected countries are using data for both passenger and freight flights. The index is based on a consistent estimation strategy that captures not only how many links a country has, but also, for example, how well used those links are and how costly they are.

Source: Arvis and Shepherd (2011)

2.2 Why is airport expansion needed in London and the South-East?

2.2.1 London has the largest market for air travel in the world, when measured in terms of the number of passengers who either start or end their journey at a London airport and this market dominance has increased in recent years, see Figure 2.

Figure 2 Twenty largest origin and destination markets in the world, 2012



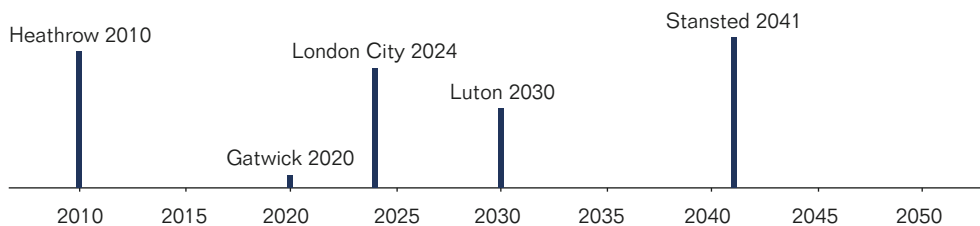
Note: Figure 3.4. OD stands for origin and destination. Results for 2012 compared to 2002.

Source: Airports Commission (2013a)

2.2.2

However, the growth in demand for air travel means that the London airport system will be under very substantial pressure by 2030 and demand will have significantly outstripped capacity by 2050. This is true under all the scenarios the Airports Commission has considered, even the scenario where aviation emissions are constrained to 2005 levels. Indeed, Heathrow airport is already effectively operating at full capacity and Gatwick is operating at 85% of its capacity, is completely full at peak times and, given increasing demand, is expected to be operating at full capacity by 2020, see Figure 3.²²

Figure 3 Timeline showing when London airports reach full capacity



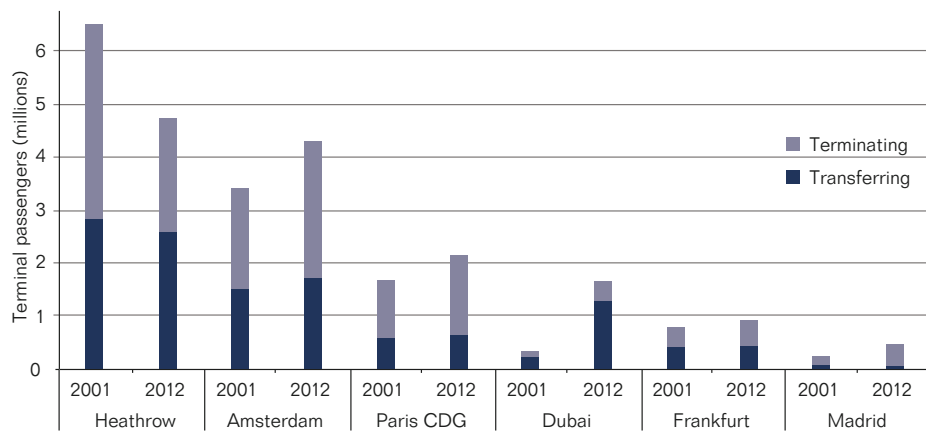
Note: Based on the carbon capped, capacity constrained forecast. See Chart 2 in the Interim Report.

Source: Airports Commission (2013a)

2.2.3 Capacity constraints at Heathrow

2.2.3.1 The lack of capacity at Heathrow is already being felt, as competition for slots means that less profitable options are being squeezed out. Therefore, for example, the number of domestic routes being flown from Heathrow has been dropping, with just 7 domestic routes served from Heathrow in 2013.²³ Although domestic routes are well served from other London airports, the lack of connectivity from Heathrow will make it harder for many international travellers. This has meant that the number of transfer passengers from UK-based non-London airports using Heathrow has been dropping, at the same time as they have been rising at rival hubs outside the UK, see Figure 4.

Figure 4 Use of hubs by passengers from non-London UK airports, 2001 and 2012

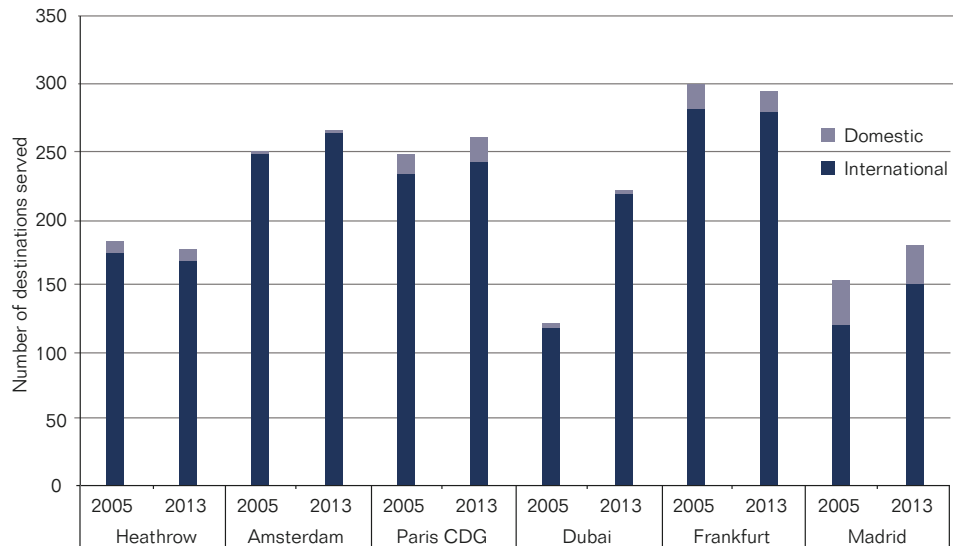


Note: Figure 1.4. Based on Department for Transport data for passengers either terminating or transferring (millions).

Source: Airports Commission (2014c)

2.2.3.2 Similarly Heathrow only offers 169 international destinations, while key rivals offer significantly more. Indeed, it is not just the number of domestic routes served by Heathrow that has been declining, see Figure 5. Frankfurt is the only other top 25 world airport where the number of destinations served has dropped in recent years.²⁴

Figure 5 Change in the number of routes offered by key hubs



Note: Based on data in Figure 17 in Hind (2014).

Source: Analytically Driven Ltd

2.2.3.3 This does not mean that Heathrow has fewer departures. As Table 3 demonstrates, Heathrow scores well on the number of departures and the number of seats. What is happening is that flights from Heathrow serve fewer destinations, but do so more frequently. A higher frequency of service suggests that these routes are more profitable and also goes hand in hand with benefits to passengers and freight carriers, who will have more options to reach popular destinations.



Table 3 Key metrics for Heathrow compared to other major hub airports serving the UK

	Number of departures	Seats (million)	Number of destinations	Average daily frequency	Number of runways
Heathrow	236,357	95.6	176	3.7	2
Amsterdam	196,232	61.7	265	2.0	5
Paris CDG	216,133	77.1	259	2.3	4
Dubai	168,185	87.7	220	2.1	2
Frankfurt	221,594	77.2	294	2.1	4
Madrid	158,375	52.1	180	2.4	4

Note: Data from Figure 30, ITC report, 'The optimal size of a hub airport' (2014)

Source: Hind (2014).

However, the constraints on the number of slots available at Heathrow do potentially damage connectivity with key emerging markets. For example, Frankfurt, Amsterdam and Paris CDG all serve more destinations in China than Heathrow, and Frankfurt serves more destinations in Brazil, Russia, India, China, Mexico, and Turkey than Heathrow does.²⁵

25

See the discussion in Hind (2014). Regional hubs in emerging markets may help partially substitute for capacity in London, providing the routes that are offered are sufficiently thick to allow frequent flights. However, such capacity will be second best compared to a direct link, particularly if rivals elsewhere in Europe are able to offer one.

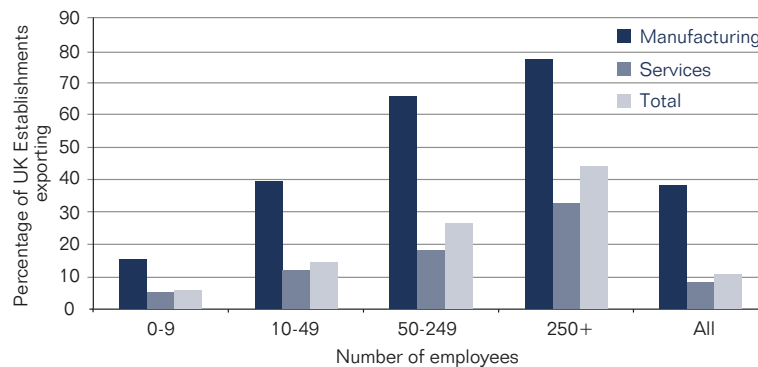
3. The Importance of Connectivity for UK Trade

3.0.1 Trade brings significant benefits, including:

- Access to goods and materials that are not available at home because of geography or climate;
- Increase in the number of varieties available, improving consumer outcomes and reducing costs;
- Increases in growth and the amount an economy can consume through improved allocative efficiency, which is generated both by the impact of comparative advantage (which influences which country produces a particular type of good or service) and by reallocating resources domestically in favour of more productive firms;
- Improved incentives to innovate created by increased market size in the event of trade cost reduction, boosting productivity, particularly amongst mid-level productive firms; and
- Improved ability for firms to spread risks across different markets.²⁶

3.0.2 Despite these benefits, relatively few firms trade. In the UK, only 11% of firms export, although there are considerable differences between the manufacturing and services industry, with 38.7% of manufacturing firms exporting, but only 8.7% of service sector firms, see Figure 6.²⁷ Experience elsewhere is similar, with only 18% of manufacturing firms in the US exporting, 20% in Japan and 17.4% in France.²⁸

Figure 6 Percentage of UK establishments exporting, by sector and employment size, 2004



Note: Weighted data from FAME database, Table 2.14.

Source: Harris and Li (2007).

²⁶ See, for example, the discussion in Driver (2014), European Commission (2013), Helpman (2011) and Melitz and Trefler (2012).

²⁷ Harris and Li (2007). Estimates for 2004 based on the FAME database, see Table 2.14.

²⁸ WTO (2008), Section II.C, Table 5.

- 3.0.3** The reason that relatively few firms trade is that operating beyond national borders is costly. Therefore only very productive firms can afford to trade. There is strong evidence to suggest that the ones that do trade are the most productive firms. In the case of the UK, it is estimated that 60% of UK productivity growth over the period 1996-2004 was generated by exporting firms, with exporters experiencing average productivity growth of 1.27% p.a., compared to 0.8% p.a. for non-exporters.²⁹
- 3.0.4** Firms that trade are also the most innovative firms. The extent to which a firm is engaged in international markets is the key predictor of how innovative it is. Firms that engage in foreign direct investment, outsourcing or exporting are typically more innovative than their domestically-focused rivals. Indeed, the more complex these international relationships are the more innovative and productive the firm itself is.³⁰
- 3.0.5** The high costs associated with crossing borders mean firms that do trade typically prioritise the countries they trade with, preferring countries that are large, geographically close, with strong institutions and a sophisticated financial system. However, it is clear that improved market access, either through the reduction of official trade barriers or improvements in connectivity, leads to an increase in trade flows, which in turn drives productivity improvements by allowing more productive firms to expand.
- 3.0.6** Of course, not all firms need to cross a border themselves in order to trade. In some cases, such as tourism, the customers come to them.³¹ However, for all forms of trade relationship, regardless of who or what is crossing the border, the central point is that good connectivity will be important for fostering trade relationships.

3.1 The barriers to trade

- 3.1.1** Crossing a border is expensive. It requires an upfront investment of time and effort, not to mention in most cases money, in order to acquire new clients overseas. There are typically travel costs; language costs; regulatory costs (where regulations at home and abroad differ); and search costs involved in crossing a border. These costs are usually sunk costs – they cannot be recovered if the venture does not work.
- 3.1.2** To explain the reduction in trade that occurs once firms need to cross a border, estimates suggest that for trade between industrialised countries the impact of the border on trade in manufactured goods is equivalent to a 74% ad valorem tax.³² Furthermore, the impact of a border is even starker in the case of trade in services. Services account for around 75% of world GDP, but only around 20% of total trade.³³ Therefore, if services were traded to the same extent as goods, trade in services would be higher by a factor of twelve. In the case of trade between Canada and the US, for example, barriers for trade in services are estimated to be up to seven times higher than the barriers for trade in manufactured goods.³⁴

29 Harris and Li (2007).

30 See, for example, the discussion in Driver (2014), Harris and Li (2007) and Altomonte et al (2013).

31 The UK has a tourism trade deficit. Whether this widens or narrows as a result of improved airport capacity will depend on factors such as which routes benefit from the increased capacity and the relative price elasticities of demand at home and abroad. However, regardless of whether the trade deficit improves, many of the UK firms that will benefit from an increase in the number of visitors to the UK will be small firms, reflecting the profile of the food services and accommodation sector in the UK.

32 Anderson and van Wincoop (2004).

33 Mion (2012).

34 Anderson, Milot and Yotov (2012).

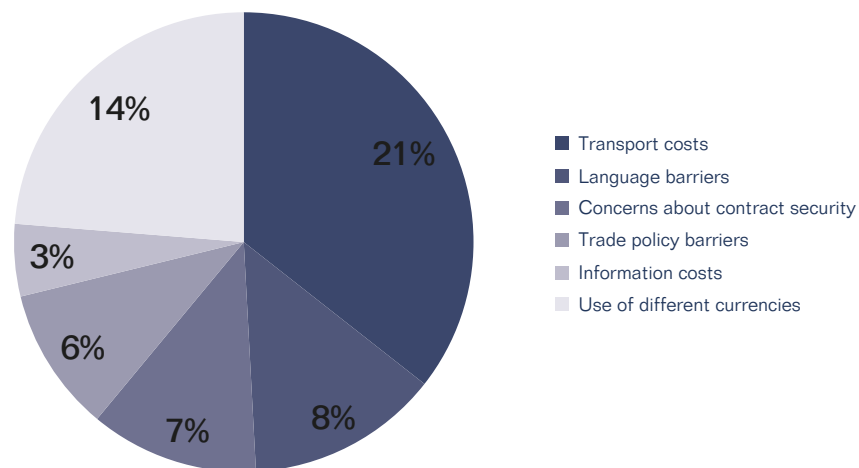
3.1.3 One of the things that stand out from the trade literature is the positive impact of reducing trade barriers. A key example is the 1989 US-Canadian Free Trade Agreement³⁵ - by reducing trade barriers for the manufacturing sector, and so boosting market size and competition, it led to a 13.8% increase in Canadian manufacturing productivity caused by:

- improved allocative efficiency (8.4%);
- improved incentives to innovate, again the result of market size and competition (4.9%); and
- better access to imported inputs (0.5%).³⁶

3.1.4 Reducing barriers to trade therefore improves productivity within a country by causing more productive firms to expand and less productive firms to exit. Therefore, the economy becomes more efficient overall, by shifting labour and capital away from low-productivity firms towards high-productivity firms.

3.1.5 The Canadian-US Free Trade Agreement is a powerful example of the benefits of reducing trade barriers. However, formal trade barriers are an increasingly small part of the costs associated with crossing a border. In 2004, for example, firms exporting to the US paid \$9 in transportation costs for every \$1 of tariff costs.³⁷ Indeed, transport costs are significantly higher than trade policy costs. As such transport costs make up the largest segment of trade costs, equivalent to an ad valorem tax of 21%, see Figure 7.³⁸

Figure 7 Breakdown of costs associated with trade in manufactured goods



Note: Average total cost of international trade for industrialised countries is equivalent to a 74% ad valorem tax, with the breakdown into different components given by pie chart. The percentage figure given in each segment is the relevant ad valorem tax equivalent for that factor.

Source: Anderson and van Wincoop (2004).

35 This trade agreement is particularly useful for researchers investigating the impact of trade barriers, both because it did not include any of the macroeconomic measures that are often included in trade deals and because it was largely unanticipated, meaning firms would not have changed their behaviour in advance. See the discussion in Melitz and Trefler (2012). It also helps that there is high quality, plant level data available on the performance of Canadian firms, both in the run up to the deal and in subsequent years.

36 See the discussion in Lileeva and Trefler (2010), and Melitz and Trefler (2012), as well as Driver (2014) and Helpman (2011).

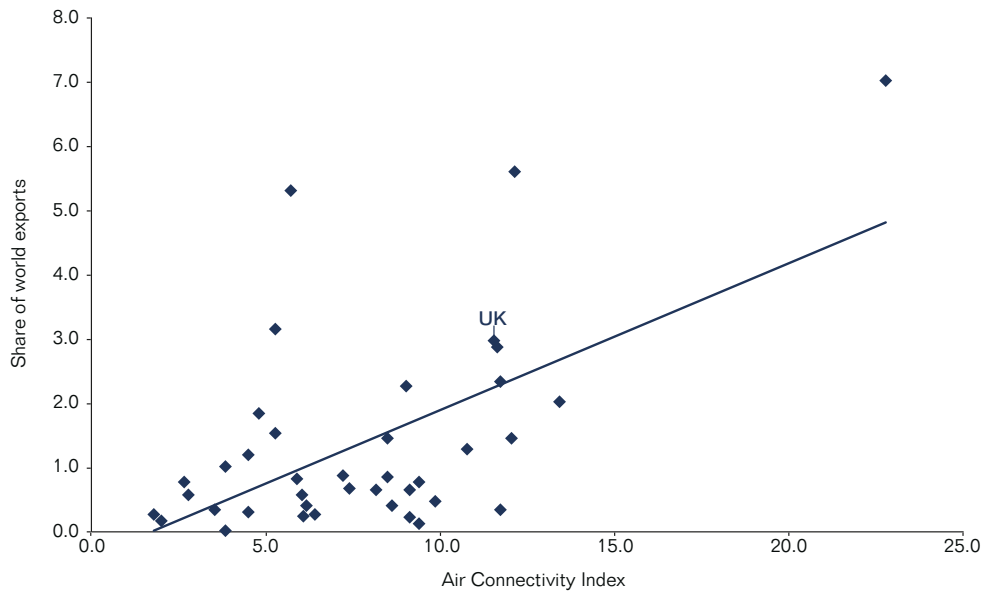
37 See the discussion in Hummels (2007).

38 Anderson and van Wincoop (2004).

3.2 Air connectivity and trade

3.2.1 There is a strong positive correlation between the estimated level of air connectivity a country enjoys and its share of world trade, see Figure 8. This relationship is not necessarily causal – strong air connectivity could as easily be the result of success in trade as vice versa. However, it does indicate that the two are intertwined. This impression is reinforced by the behaviour of trade in parts and components, an aspect of trade that is heavily reliant on international transport networks. The correlation between the share of parts and components in a country’s exports and its Air Connectivity Index score is 0.54 and highly significant, which suggests that good air connectivity benefits trade and allows firms to play an active role in global supply chains.³⁹

Figure 8 Correlation between the share of world exports and Air Connectivity



Note: Data for 33 OECD countries plus Brazil, China, India, Indonesia, Russia and South Africa. Data for the Air Connectivity Index is for 2007, from Arvis and Shepherd (2011). Data for share of world exports is the average for 2002 to 2013 of the ratio of the value of exports of goods and services to world exports in US dollars from the OECD Economic Outlook, No 96, November 2014.

Source: Analytically Driven Ltd



- 3.2.2** The impression that air connectivity is good for trade is reinforced by analysis of the role of direct flights in trade costs. Research suggests that the impact of having direct flights between any two cities on average compensates for around 10% of the negative effects associated with the average international border. Even a single one-way flight can compensate for about 2% of the negative effects of an average international border.⁴⁰
- 3.2.3** The benefits of connectivity for trade are also evident in the impact of business class travel on export flows, with the benefits being particularly strong in more complex industries, for example those with a high proportion of R&D spending. In the case of the US, for example, a 1% rise in total exports raises demand for business class travel by 0.24%, suggesting that business travel is an input in export performance. This impact is even stronger in the case of differentiated goods.⁴¹
- 3.2.4** Therefore the likelihood that capacity constraints at Heathrow, and also Gatwick, are limiting the number of direct flights between the UK and less popular destinations implies that these constraints will be having a direct impact on the UK's trade performance.

40 See the analysis in Yilmazkuday and Yilmazkuday (2014).

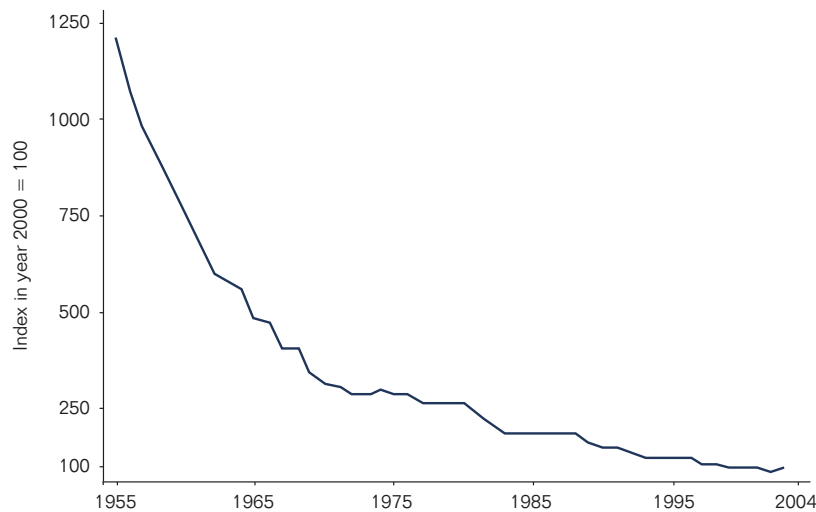
41 See the discussion of business class travel from US states to export markets in Cristea (2011).

4. The Importance of Connectivity for Supply Chains

4.1

In recent years supply chains have become increasingly complex and one factor underpinning this trend is the improvements in connectivity linked to the growing importance of air freight. Significant reductions in the cost of air freight (see Figure 9), as well as air fares, have made it easier for companies to take advantage of suppliers in other markets, because the risk of running out of inventory, with long lags waiting for a replacement, are significantly reduced in a world of cheap overnight delivery.⁴² Air connectivity matters, because delays are costly and, for example, ocean-borne cargo from European ports takes an average of 20 days to reach the US and 30 days to reach Japan. Estimates suggest that each day in transit is equivalent to an ad-valorem tariff of 0.6 to 2.3 percent and that the most time-sensitive trade flows are those involving parts and components trade.⁴³

Figure 9 Worldwide air revenue per ton-kilometre



Note: Calculated from International Air Transport Association, World Air Transport Statistics

Source: Hummels (2007).

42 See the discussion in Hummels (2007).

43 See the estimates in Hummels and Schaur (2013).

**4.2**

All firms need to decide which of their activities they want to do “in-house” and how many they will “outsource”. The obvious questions that arise around outsourcing often concern noncore activities, which for most firms would include, for example, whether they want to run their own payroll, do their own bookkeeping, hedge their own foreign exchange risk, or produce their own website. However, increasingly firms are also deciding whether they want to outsource what would originally have been core activities, such as producing their own inputs. In parallel to their decisions on outsourcing, firms also need to decide where they want production of the different elements to be located: at home, or abroad. This decision is needed regardless of whether the process has been outsourced or not. Firms that decide to locate production in more than one country, while retaining ownership of the production process, are referred to as multinational enterprises.

4.3

In practice, firms typically pursue a range of different strategies simultaneously. For example, evidence for Spain suggests that for large firms: 34% produce their own inputs in Spain; 91% purchase inputs from unaffiliated Spanish suppliers; 28% import inputs from their foreign subsidiaries; and 66% import inputs from unaffiliated foreign firms, with most pursuing a mixed strategy. In total only 22.3% of large Spanish firms employ a single strategy for obtaining the inputs needed to produce their output.⁴⁴

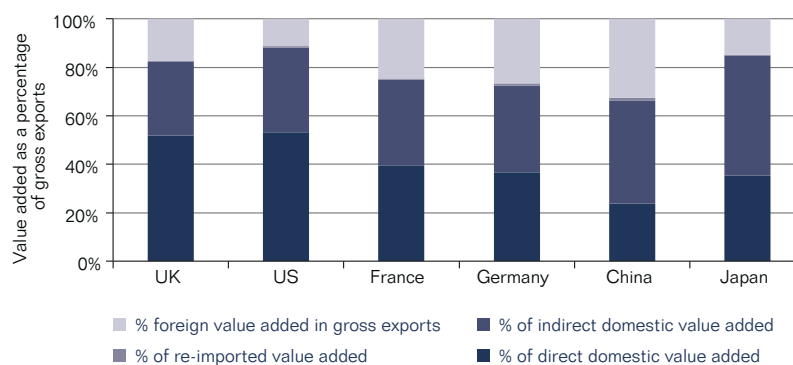
4.4

This use of multiple strategies makes measuring the value added of a country’s exports complex, particularly as the value added can involve not only foreign-bought inputs, but also domestically generated value added that has been re-imported, because domestic goods and services have been used in the production of foreign inputs. Figure 10 shows a decomposition of the different components of value-added for exports from selected countries. In the case of the UK for example, only 52% of the value added of UK exports is generated by the exporting firm.

44

Data for 2007 for Spanish firms with more than 200 employees. The numbers add up to more than 100% because most firms employ multiple strategies. Only 1.5% of firms produce their inputs exclusively in-house in Spain; only 17.7% of firms exclusively outsource their inputs in Spain; only 0.5% of firms rely exclusively on foreign subsidiaries; and only 2.6% rely exclusively on foreign unaffiliated firms. Kohler and Smolka (2009).

Figure 10 Decomposition of the components of value added for gross exports of selected countries, 2009



Note: Author calculations based on OECD-WTO Trade in Value Added data for 2009, see OECD-WTO (2013) for a description of the data.

Source: Analytically Driven Ltd.

4.5 However, the growing complexity of supply chains also means that it is not just firms that trade directly that can benefit from global supply chains and improvements in connectivity. For example, many exporting firms not only export the products that they have produced, but also products produced by others – so-called Carry-Along Trade (CAT). In the case of Belgium, 89% of exporters are also CAT exporters, with CAT products accounting for 48% of the value of exports for these firms. In addition, the more productive the firm, the more important CAT trade is to it. There appear to be two explanations for this: firstly, it is likely that highly productive firms, which produce more products, are likely to have more efficient distribution networks; and secondly there appears to be a demand complementarity, whereby demand rises with the number of products firms are able to offer.⁴⁵

4.6 In addition, global value chains do not just depend on goods. Services are also playing an increasingly important role in the process. This in part reflects the so-called servicification of value chains, whereby manufacturing firms increasingly bundle services together with their products: buying, producing, selling and exporting services as an integrated or accompanying part of their primary offering.⁴⁶ In the case of the UK, value added from services account for almost 60% of the value added of UK gross exports.⁴⁷

45 Data for 2005, see Bernard et al (2012).

46 See the discussion in Kommerskollegium (2013), for example.

47 See the discussion in Driver (2014).



5. The Importance of Connectivity for Investment Flows

- 5.0.1** Firms that trade are amongst the most productive and innovative in any economy. However, firms that are part of a multinational enterprise, either as a parent or a subsidiary, are even more productive and innovative than firms that simply export.⁴⁸ This means that there are significant benefits from being able to attract and retain international investment.
- 5.0.2** Although only a small proportion of firms in each country are multinationals, they tend to have a disproportionate impact on outcomes for both trade and employment. In the US in 2000, for example, only 1.1% of firms were multinationals, but they accounted for 27.4% of non-governmental employment (up from 26.7% in 1993), and over 90% of US imports and exports, with around half of US imports being intra-firm and just under one third of exports being intra-firm.⁴⁹ Similarly the average labour productivity of US firms that export is almost 40% higher than firms that only serve the domestic market, while firms that also engage in foreign direct investment have average labour productivity levels that are more than 15% higher than firms that only export.⁵⁰
- 5.0.3** Furthermore, the positive impact of foreign direct investment on the productivity of the host country is not purely a developing economy phenomenon. In the case of the US, for example, productivity spillovers from inward foreign direct investment accounted for around 14% of US productivity growth between 1987 and 1996, with the biggest impact being in high-tech sectors and for small firms with low productivity. In contrast, competition from imports had a much weaker impact on US productivity growth.⁵¹
- 5.0.4** The UK is the third biggest recipient of foreign direct investment inflows after the US and France, with Germany close behind. However, Germany is the main recipient of investment inflows from countries such as Japan and China. In geographic terms, the EU and the US are by far the most important source of foreign direct investment in the UK, as well as the most important destination for UK foreign direct investment, see Figure 11A and B respectively. Overall, OECD countries account for 87.1% of the stock of foreign direct investment in UK companies and 76.9% of foreign direct investment by UK companies. Financial services is by far the most important sector for both inward and outward foreign direct investment, see Figure 11C and D respectively.

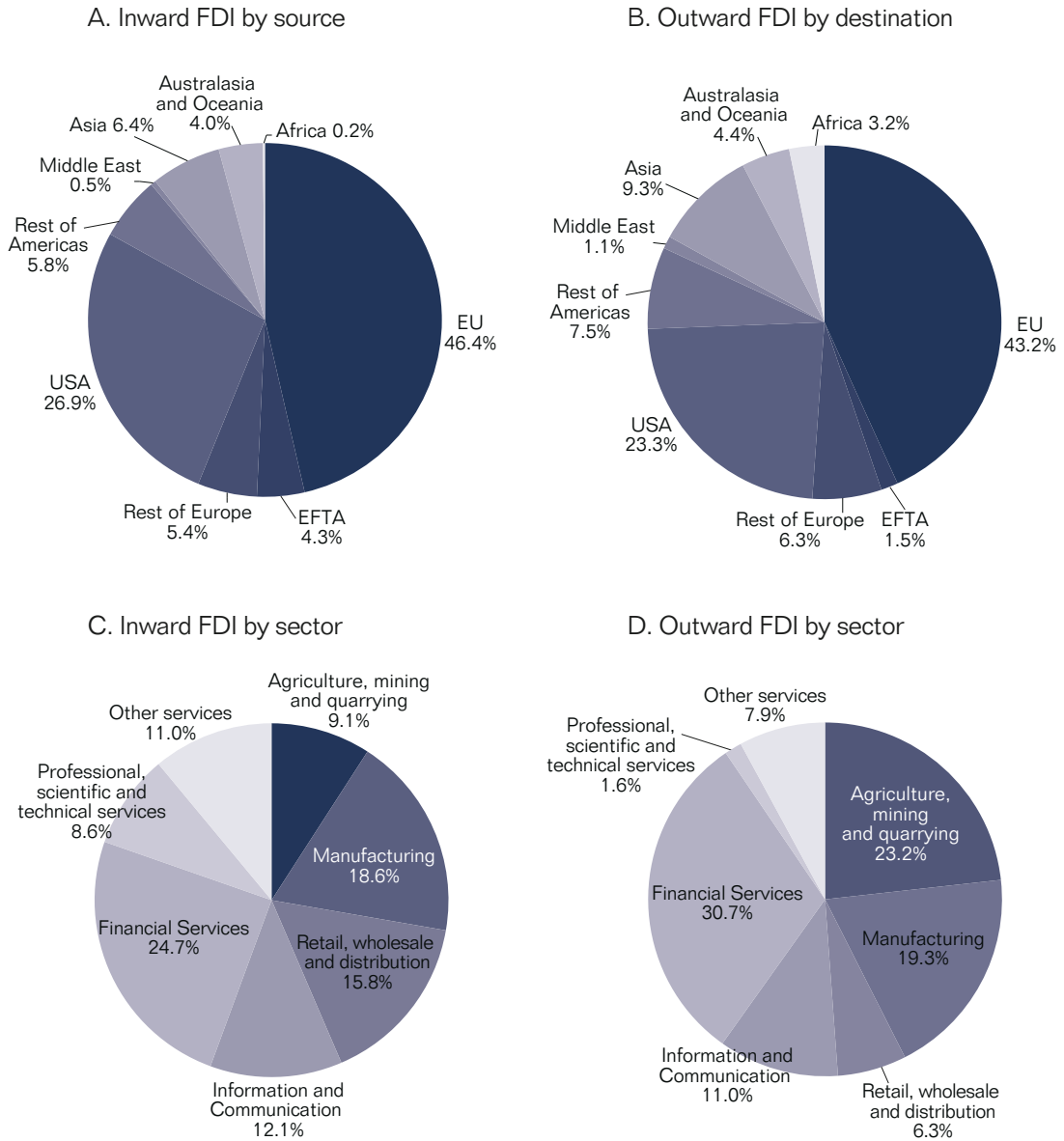
48 See the discussion in Altomonte et al (2013), as well as Driver (2014), Harris and Li (2007).

49 See Bernard, Jensen and Schott (2009) and the discussion in Helpman (2011).

50 Helpman, Melitz and Yeaple (2004).

51 Keller and Yeaple (2009).

Figure 11 Share of inward and outward stock of UK foreign direct investment in 2013, by sector and geography



Note: Calculations based on Office for National Statistics, Outward Foreign Direct Investment (FDI) Involving UK Companies, 2013 (Directional Principle) and Foreign Direct Investment (FDI) Involving UK Companies, 2013 (Directional Principle) Reference tables published on 20 January 2015.

Source: Analytically Driven Ltd.



- 5.0.5** There are two main models of multinationals, horizontal or vertical integration, although in practice many multinationals will be a combination of the two.
- Horizontal integration occurs when firms are made up of a collection of national entities that produce largely the same products. As such, horizontal integration is an alternative to exporting, and is most likely to occur when trade costs are high relative to the sunk cost of investing in a subsidiary or branch. This form of foreign direct investment is therefore particularly important for service sector firms, which often use foreign direct investment as an alternative to exporting.⁵² An additional motivation for horizontal integration is sometimes referred to as export-platform foreign direct investment, whereby a company sets up an offshoot in one country in order to export to other countries in the region, for example taking advantage of reduced transport costs or regional trade agreements.
 - Vertical integration occurs when different stages of production are located in different countries. This can occur for example, where firms move the labour-intensive stages of production to low wage economies.

5.1 Connectivity and foreign direct investment

5.1.1 Air connectivity will have an important impact on where firms undertaking foreign direct investment choose to set up their headquarters, because easy access will be important for managing an enterprise with locations around the world. In practice estimates suggest that a 10% increase in the number of intercontinental flights leads to a 4% increase in the number of headquarters located in the corresponding urban area.⁵³ These effects are particularly strong for firms involved in knowledge-intensive activities.

5.1.2 Connectivity can also affect the type of foreign direct investment that takes place. Analysis of horizontal integration suggests that firms are essentially trading off two opposing costs: the sunk cost associated with setting up a foreign subsidiary, with the cost of serving the market through exports. This suggests that horizontal integration will occur when either trade costs are high or when economies of scale are limited, making foreign direct investment an attractive alternative to exporting directly. The size of the market in the host country will also play a role: the larger the market, then the easier it will be to operate profitably once the sunk costs of setting up a subsidiary are accounted for. Therefore it will be the larger, more productive firms that tend to undertake horizontal foreign direct investment, as they will find it easier to cover the sunk costs of setting up a subsidiary. This intuition is borne out by the data. In the case of US firms, the ratio of exports to foreign direct investment increases in industries with high fixed costs, low freight charges, low foreign tariffs or in countries with smaller markets.⁵⁴

5.1.3 Similarly, the further away host countries are, the more likely it is that multinationals will structure their activities in the form of embodied knowledge transfers (for example by shipping inputs), rather than disembodied knowledge transfers (such as direct communications). This is particularly true in sectors with high levels of R&D, or knowledge intensive goods, because the costs (or difficulties) of providing knowledge will be highest.⁵⁵

52 This form of trade is estimated to account for over 50% of services trade, when measures include it. See Magdeleine and Maurer (2008) and the discussion in Drake-Brockman (2011).

53 See Bel and Fageda (2008).

54 See the discussion in Helpman (2011).

55 Keller and Yeaple (2013).

5.2 The impact of airport connections on venture capital funding

- 5.2.1** It is not just the number of flights that is important for investment decisions – the number of routes also matters. When firms are investing in more than one location, whether overseas or domestically, a key factor in the decision to invest is how well connected the location is compared to their headquarters. In the US, for example, the introduction of a new airline route between two Metropolitan Statistical Areas leads to a 4.6% increase in total venture capital investments as well as a 2.5% increase in the likelihood of venture capital activity between the two Metropolitan Statistical Areas.⁵⁶
- 5.2.2** Furthermore, it is not just the amount of investment that increases following the introduction of new airline routes – the likelihood of success of any investment is also improved. Estimates suggest that the introduction of a new airline route that reduces the travel time between where a venture capitalist is based and a company in its portfolio, so that the venture capitalist will find it less time consuming to monitor that company's activities, leads to a 3.1% increase in the number of patents produced, a 5.8% increase in the number of citations per patent, a 1% increase in the probability of going public and a 2.5% increase in the probability of having a successful exit (by IPO or acquisition) from the venture capitalist's portfolio.⁵⁷

56 See the discussion in Bernstein, Giroud and Townsend (2014).

57 See the discussion in Bernstein, Giroud and Townsend (2014). The analysis assesses the impact of changes to flight routes between venture capital firms and their targets, showing that improved access improves monitoring.



6. The Cost of Airport Capacity Constraints in London and the South East

6.0.1 Of London's major airports, Heathrow is already suffering from capacity constraints and Gatwick is not far behind. This lack of capacity has significant implications for the UK economy, because it limits potential connections. Those limits will be felt not just within London and the South-East, but also elsewhere, as many UK regional airports rely on London airports to provide connections to a wider range of destinations than can be profitably covered by direct flights.

6.0.2 As the discussion in the previous sections demonstrates, capacity constraints will potentially damage the UK economy because of their impact on trade, supply chains and investment, which are particularly important for productivity growth within the UK economy. These impacts will be over and above any impact on the local economy in the immediate vicinity of the airports affected, in terms of output foregone, as well as the potential impact on tourism flows.

6.1 The Airports Commission's estimates of the impact of capacity constraints

6.1.1 Using seat capacity as a proxy for aviation connectivity analysis for the Airports Commission found that a 10% increase in seat capacity is associated with:

- a 1.7% increase in UK goods imports and a 3.3% increase in UK goods exports;
- a 6.6% increase in UK imports of services and a 2.5% increase in UK exports of services; and
- a 4.7% increase in UK FDI inflows and a 1.9% increase in UK FDI outflows.⁵⁸

6.1.2 In total the Airports Commission has estimated that the cost of constraints on the capacity of London airports will be equivalent to a cut in GDP of between 0.03% and 0.05% by 2030 and between 0.04% and 0.09% by 2050. Therefore the cost of failing to increase airport capacity in London over the period 2021 to 2080 would be equivalent to between £30 billion and £45 billion, even without considering the impact on productivity.⁵⁹ Incorporating the impact of airport constraints on productivity suggests that the cut in GDP could be as high as 0.17% by 2050.⁶⁰

58 See the discussion in the Airports Commission (2013b). They also found that a 10% increase in seat capacity led to a 4% increase in tourist arrivals in the UK and around a 3% increase in UK tourists abroad. Estimates of the impact of seat capacity on cross-border migration were not statistically significant.

59 The costs are calculated as a net present value.

60 See the discussion in the Airports Commission (2013a). These estimates look at the overall impact of adding additional seat capacity. The Airports Commission has also done detailed work assessing the impacts of individual options by assessing the interaction of connectivity gains and lower fares (through increase competition and lower economic rents) on the outcomes for passengers, airlines and airports, as well as the likely environmental impacts, for example through noise and pollution. See International Transport Forum (2014) and the Airports Commission (2014a) and Airports Commission (2014b) for more details. However, for this analysis we are interested in the overall impact of the changes and particularly the impacts on trade and investment flows, rather than how those gains and losses are allocated across the different stakeholders.

6.1.3 However, improving airport capacity will bring benefits that are over and above simply reversing the costs associated with capacity constraints.⁶¹ The Airports Commission has shortlisted three options for improving airport capacity in London and the South-East.⁶² These options have different pros and cons and will each attract controversy if they are recommended. However, what they have in common is that, even in a worst case scenario, they will bring significant benefits to the UK economy. The Airports Commission estimates that the benefits of increasing capacity at either Heathrow or Gatwick range from £42 billion to £214 billion (on a 60 year appraisal basis), depending on the option chosen and how demand for air travel evolves. Under the options considered, by 2050 GDP is expected to be between 0.2% and 1% higher than it would be if there is no increase in airport capacity and it is expected that the chosen scheme will have created between 50,000 to 180,000 new jobs, mostly outside the chosen airport itself.⁶³

6.2 How do these estimates compare?

6.2.1 In evidence presented to the Independent Transport Commission as part of its 2012 Call for Evidence, estimates from different sources suggested that the cost of lost connectivity as a result of capacity constraints could be:

- Up to £1.4bn a year in lost trade;
- £100bn over the next twenty years;
- Costs for UK businesses of as much as £1.2 billion a year; and
- The loss of 141,000 jobs.⁶⁴

6.2.2 Compared to these estimates, therefore, the estimates presented by the Airports Commission of the costs associated with failing to improve airport capacity look conservative. This may well reflect the fact that the modelling framework used will not differentiate between different types of firm, so will miss the allocative impacts on productivity growth of shifting resources between exporters and non-exporters.⁶⁵ Indeed estimates suggest that the fall in the UK's gross value added purely as a result of the impact of airport capacity constraints on air freight usage could be around £1bn per annum by 2050.⁶⁶ However, regardless of the methodology used, or the chosen option, it is clear that the benefits of improving airport capacity are significant.

61 This is partly because in the short term capacity elsewhere in the system can be used to substitute for the constraints, even though this capacity may be suboptimal from the point of view of maximising the benefits of connectivity.

62 The three options being considered are a second runway at Gatwick airport; an extended northern runway at Heathrow airport; and a third (north-west) runway at Heathrow airport. See Airports Commission (2014a) for details of the shortlisted options.

63 See the discussion in the Airports Commission (2014a) and PwC (2014) for details of the benefits associated with the shortlisted options.

64 See the discussion in Independent Transport Commission (2013).

65 This is common to most modelling frameworks, as allowing for heterogeneous firms is extremely complex.

66 York Aviation (2015).



- 6.2.3** Evidence from elsewhere also suggests that improving air connectivity can bring significant economic benefits. For example, analysis of the impact on US Metropolitan Statistical Areas of the 1978 Airline Deregulation Act suggests that a 50% increase in an average city's air traffic growth rate generates an additional income stream over a 20-year period equal to 7.4% of real GDP, with increases observed in both employment and income growth, as well as population growth.⁶⁷ A lot has changed since that time, and air connectivity has improved significantly, meaning the incremental benefits of further improvements may not be as strong. However, it is not implausible to suspect that improved connectivity will bring benefits on the scale envisaged by the Airports Commission, particularly as London on its own accounts for 23% of UK Gross Value Added and London and the South-East combined account for 37.8%.
- 6.2.4** The eventual impact will depend on how the increased capacity is used – whether it is used to add new routes, or to add more capacity on existing routes. Given that Heathrow, for example, offers a higher frequency of service, but fewer routes than rival hub airports, the biggest benefits may be found if new routes are added, including routes that improve domestic connectivity for transfer passengers.
- 6.2.5** The CBI has calculated that adding one daily flight to each of the eight largest high-growth markets would increase UK trade by as much as £1bn a year.⁶⁸ To put this in context, estimates suggest that a single return flight between two cities can compensate for about 4% of the negative effects of an average international border.⁶⁹ Given the average international border is thought to be equivalent to an ad valorem tax of 74%,⁷⁰ this would be equivalent to the impact of a 3% price cut for trade with those destinations. This would not only benefit existing exporters, but also make it easier for more firms to enter those markets. Furthermore, the biggest benefits would be felt by the UK's most competitive firms, leading to a positive impact on UK productivity growth through improved allocative efficiency.
- 6.2.6** The impacts on investment flows could also be significant. It is calculated that a 10% increase in the number of intercontinental flights offered leads to a 4% increase in the number of headquarters in the surrounding urban area.⁷¹ Even the introduction of direct flights within a country can lead to better investment flows and better outcomes.⁷²

67 See Blonigen and Cristea (2015). The deregulation associated with the 1978 Airline Deregulation Act led to rapid change in the US airline industry, as previous distortions were quickly unwound. A 50% change in the growth rate of air traffic was therefore relatively small following the changes introduced in 1978.

68 See the discussion in Independent Transport Commission (2013).

69 See the analysis in Yilmazkuday and Yilmazkuday (2014). This calculation uses the estimates based on the number of individual one-way flights.

70 Anderson and van Wincoop (2004).

71 See Bel and Fageda (2008).

72 See the discussion in Bernstein, Giroud and Townsend (2014).

7. Conclusions

7.1 The CBI (Confederation of British Industry) has called on the new government to implement the Airports Commission's recommendations on improving airport capacity in London and the South-East in its first 100 days.⁷³ This report, commissioned by the Independent Transport Commission, demonstrates why the business community has prioritised airport capacity in its recommendations to government. Airport capacity is important for growth, because it benefits both trade and investment in the economy as a whole.

7.2 The Airports Commission's three shortlisted options each have different pros and cons and will each attract controversy if they are recommended.⁷⁴ However, what they have in common is that, even in a worst case scenario, they will bring significant benefits to the UK economy. Controversy can increase the incentives to postpone decisions and UK governments have a history of shelving reports on improving airport capacity because of this. However, two of the major airports serving London and the South-East already have capacity constraints and the system as a whole will be at full capacity by 2050 at the latest. Therefore, given the long lead times associated with major infrastructure projects, it will be important that the government does not let controversy get in the way of decision-making. Unless it grasps this nettle, growth and prosperity in the UK will suffer.

73 See CBI (2015).

74 The three options being considered are a second runway at Gatwick airport; an extended northern runway at Heathrow airport; and a third (north-west) runway at Heathrow airport. See Airports Commission (2014a) for details of the shortlisted options.



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