Emirates' Economic Impact in Europe

A REPORT PREPARED FOR EMIRATES AIRLINE

February 2015

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Tables & Figures

Emirates' Economic Impact in Europe

Executive Summary

Background and context

As of the start of 2014, **Emirates Airline flies to 29 airports in 28 cities in the EU28 – with around 700 flights every week in total in both directions.**[1] Its European operations form a significant part of its route network that connects cities around the world via its hub in Dubai.

Passengers and policy makers often perceive the economic impact of airline operations to be limited to those interactions they can observe: for example, check-in staff, sales agents, cabin crew, etc. In fact, the economic impact of aviation is much wider than this, in terms of the value it provides to companies doing business around the world, the role it plays in supply-chains and logistics, and the opportunity affordable air travel provides for people to travel widely and experience new places and cultures.

It is also a common perception that all airlines have the same type of economic impact. However, these perceptions overlook two important elements of an airline's economic impact:

- the economic value of the unique connections the airline offers; and
- the economic impact along the supply chain as a result of the airline's operations.

What is the project's objective?

Emirates has commissioned Frontier Economics to assess its economic impact in Europe. The objective of this project is to answer the following questions:

- What is Emirates' economic impact in Europe?
- What is the unique contribution that Emirates makes?

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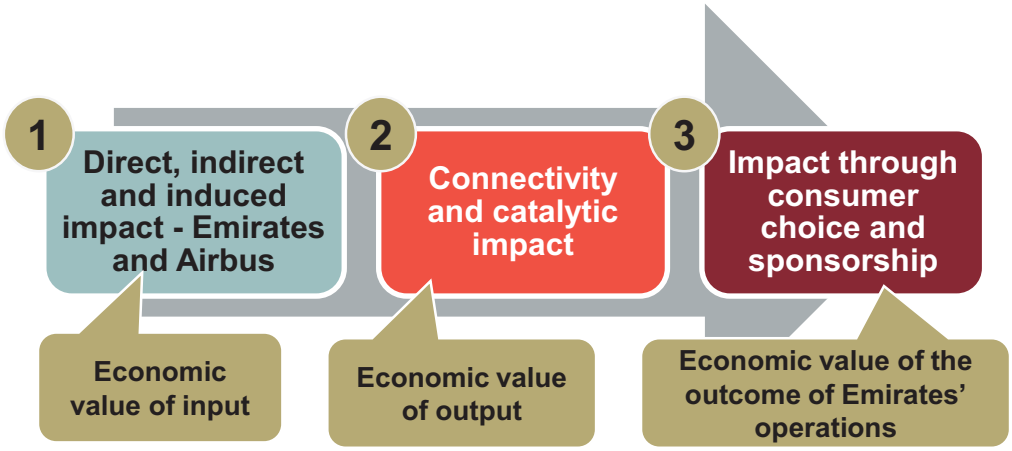
1 For the purpose of this report, we define 'Europe' as the EU28 countries served by Emirates in 2013 either through their passenger services or through its cargo division SkyCargo. This covers 17 countries in total – Austria, Belgium (excluding passenger services started in 2014), Cyprus, Czech Republic, Denmark, France, Germany, Greece, Ireland, Italy, Malta, Netherlands, Poland, Portugal, Spain, Sweden and the United Kingdom. We note that Emirates flies to 29 *airports* in the EU28, of which two – Heathrow and Gatwick – are in the same city. This implies that we do not consider Emirates' impact based on new EU passenger destinations started in 2014 such as Budapest and Brussels.

In addition to the magnitude of Emirates' economic impact, we also consider its role in the context of the European Union's explicit policy goal to strengthen economic cohesion and to reduce disparities between the levels of development[2].

What is the economic impact of Emirates in Europe?

Our analysis quantifies Emirates' economic impact in Europe according to the categories shown in **Figure 1** below.

Figure 1. Quantifying Emirates' economic impact in Europe



We consider three categories of economic impact:

- **Direct, indirect and induced (DII) economic benefits** - In order to provide its services, Emirates directly employs many people in Europe, and in addition spends significant amounts on goods and services. This activity has a multiplier effect through the economies in which the airline is operating, thereby creating direct, indirect and induced employment. One key category of spending is on new aircrafts. **50% of Airbus' deliveries of A380s in 2013 were for Emirates.** We also quantify the economic impact of Emirates' aircraft purchases.

- **Connectivity and catalytic benefits**[3] - Emirates plays an important role in connecting Europe's regional centres to the rest of the world, with a pattern of serving regional centres that differs significantly from most European-

2 Based on Article 174 of the Treaty on the Functioning of the European Union.

3 The financial data used in the DII analysis relates to financial year 2013/14. Data on flight schedules used in the connectivity analysis relates to calendar year 2013.

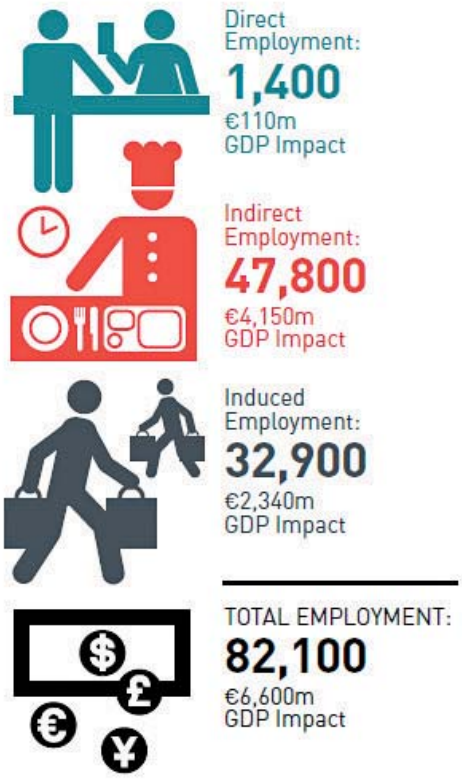
based network carriers. We estimate the number of unique direct and one-stop connections Emirates provides and the associated catalytic benefits from more trade, FDI and tourism spending.

- **Consumer choice** - By providing alternative connections, Emirates increases choice for European consumers as they have access to a wider range of airlines with different services.

Direct, indirect and induced (DII) economic benefits

We have assessed the direct, indirect and induced economic impact of Emirates' operations (without aircraft purchases). These impacts are incurred on an annual basis. We find that **Emirates' operations facilitated 82,100 jobs in 2013**. This represented **€6.6 billion of GDP** and constituted **0.05% of the EU28 GDP**. **Figure 2** summarises our results.

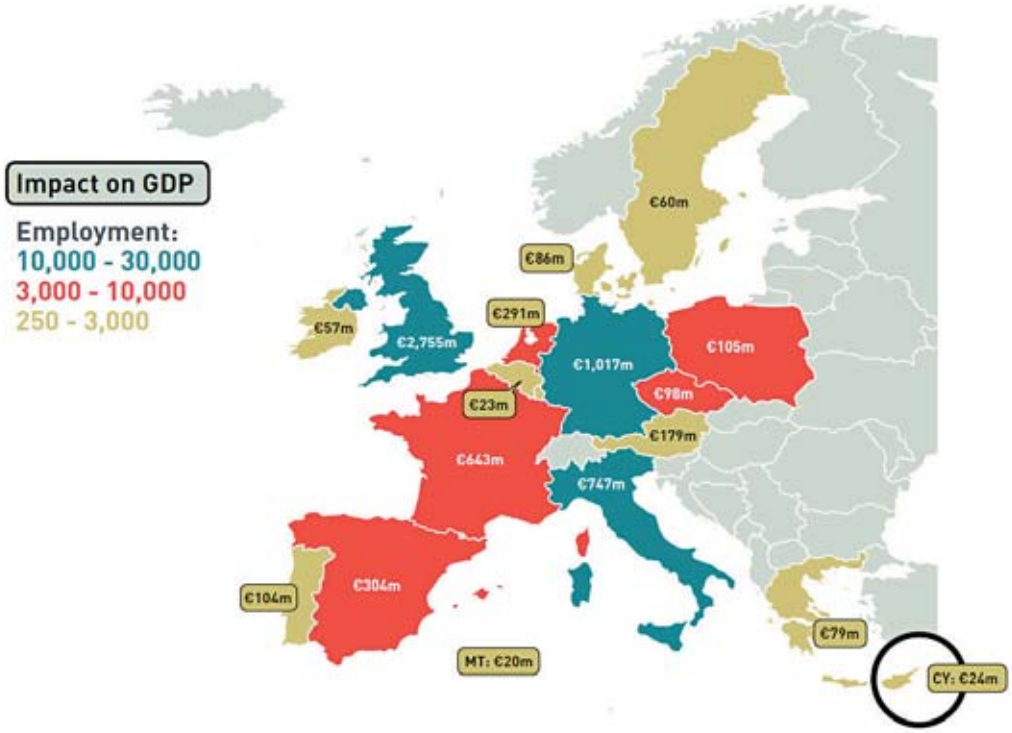
Figure 2. DII impact in Europe from Emirates' operations



Source: Frontier Economics estimates based on 2013/14 financial data. The total GDP impact is based on the EU28.

Figure 3 provides an overview of the DII impact from Emirates' operations across the EU28 countries.

Figure 3. DII impact from Emirates' operations



Source: Frontier Economics estimates. Please refer to Annex 1 for a table summarising the results by country.

In addition, we also considered the DII impact of Emirates aircraft purchases. The expenditure incurred during the production of the aircrafts generates a DII impact in each year deliveries are made. Airbus estimates Emirates' A380 orders supported 41,000 direct, indirect and induced jobs in 2013. **Figure 4** illustrates the country-wise breakdown of these jobs in 2013 and our estimate of the GDP impact they represent.

Figure 4. DII impact of Emirates' A380 deliveries in 2013

Source: Airbus and Frontier Economics estimates. Please refer to Annex 1 for a table summarising the results by country.

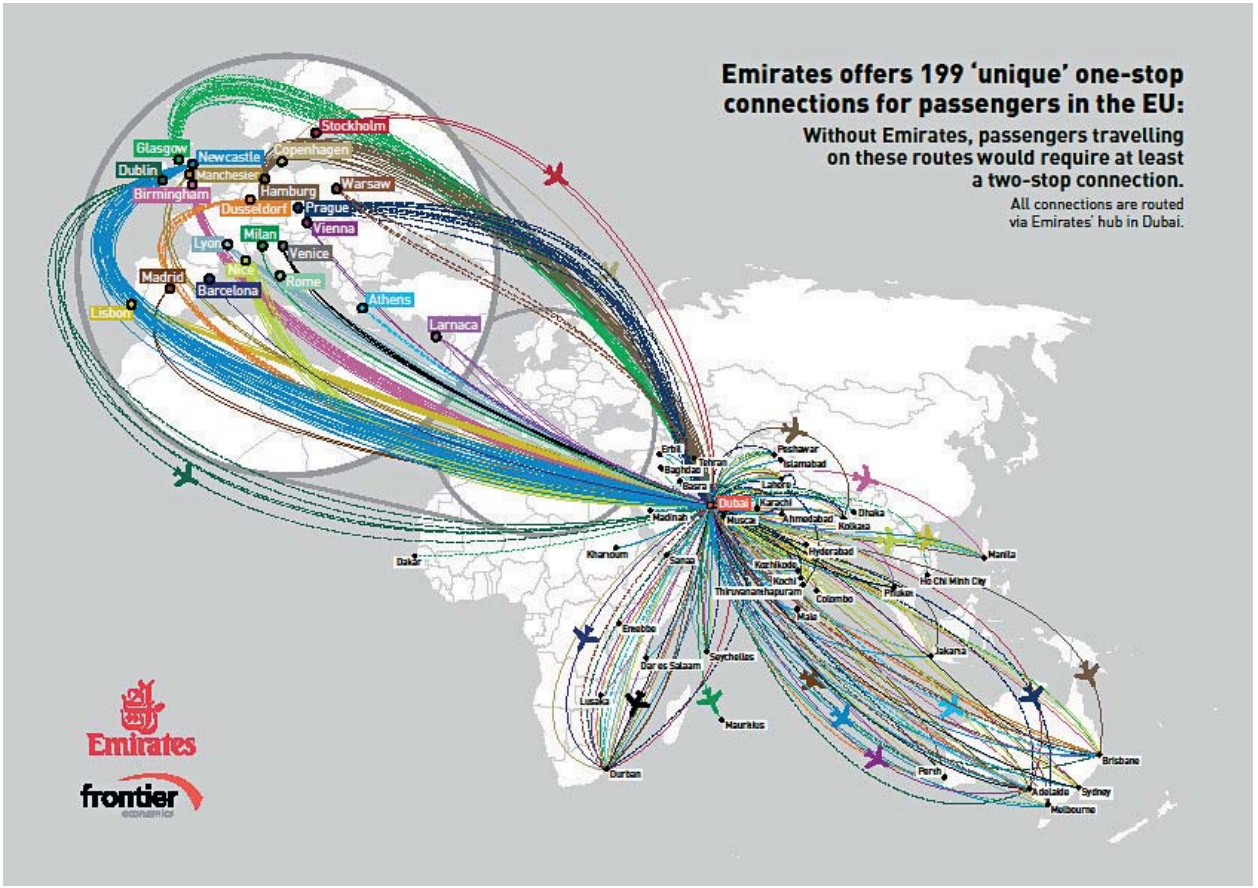
Connectivity and catalytic benefits

International connections between Europe and the rest of the world have traditionally been mostly routed via one of the network carrier hubs, so journeys from regional centres within these countries such as Hamburg, Newcastle or Lyon required at least one intermediate stop at one of these hubs. While this model makes many new destinations viable, passengers travelling from these regional centres may experience longer travel times. This creates a connectivity gap which may affect the growth potential of these regional centres.

Emirates flies to many regional centres in Europe and therefore helps to close the connectivity gap. Our analysis has identified that **Emirates offers 220 routes that are unique to Emirates** as they are either unique direct connections to Dubai (21 routes) or unique one-stop connections via Dubai (199 routes), implying that no other airline or alliance offers these connections. **Figure 5** provides an overview of the unique one-stop connections that Emirates provides.

Executive Summary

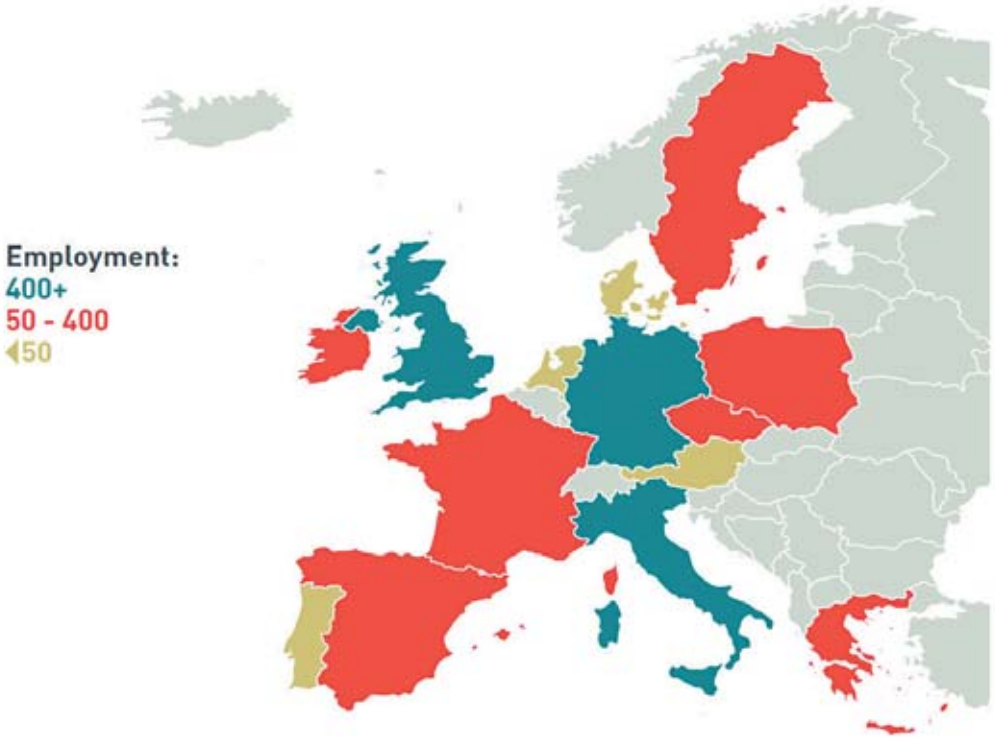
Figure 5. Emirates unique connections to/from Europe



Unique connections provided by Emirates mean that passengers in regional centres are faced with shorter travel times which increase the likelihood of travel. More business passengers lead to an increase in face-to-face meetings. There is a range of literature that identifies the importance of face-to-face meetings in overcoming the barriers to doing business across countries.

Emirates' unique contribution to Europe's connectivity has a consequent catalytic impact. We estimate that **Emirates facilitates around €365m of additional trade and €340m of additional FDI**. The productivity benefit of greater openness as a result of **the unique connections is equivalent to €215m of additional GDP or around 2,900 jobs.**

Figure 6. Catalytic impact of Emirates' connectivity



Source: Frontier Economics. Please refer to Annex 1 to a table with results by country.

In addition to unique connections, we have also analysed routes where Emirates provides higher frequency connections (measured by the number of days of the week that the connection is available) than all other alternative airlines combined.

For example, Emirates provides a one-stop connection between Madrid and Brisbane seven days a week. Other airlines also provide a one-stop connection on this route – but they do so less frequently. In fact, on three days of the week, Emirates is the only airline that provides a one-stop connection between Madrid and Brisbane. Therefore, while the connection is not strictly unique, the frequency that Emirates provides can be considered special.

Our analysis has identified **119 'more frequent' connections** where Emirates provides a one-stop connection on more days of the week than all other airlines combined. And **on 58 of these routes, Emirates' frequency was at least double** the frequency of all other airlines offering the same route combined. To ensure that our results are conservative, we have not estimated any additional catalytic impacts on trade, FDI and tourism from these routes.

Consumer choice and competition

Emirates' operations also increase choice for European consumers - this has a positive impact on competition between airlines which is a benefit to consumers, whether or not they travel with Emirates. Specifically:

- Competition between airlines encourages improvements in service quality and innovation. Emirates' multi-award winning service provides a particularly strong incentive for rival airlines to improve service offerings.

- Emirates' presence in key markets adds to the level of competition between airlines. In principle, increased competition leads to better quality and/or lower fares from which all travellers benefit. This applies to routes where Emirates is competing head-to-head with another carrier as well as routes where Emirates' unique one-stop connections leads competitors with less direct routings to price more competitively in order to compete.

And finally, Emirates also sponsors a number of major sports teams and events around Europe. While relatively small compared to the primary activities of the airline, the sponsorships provide important benefits to the teams, events sponsored, their cities and local economies.

Conclusion

Overall, we conclude that Emirates makes a substantial contribution to the European economy as it supports:

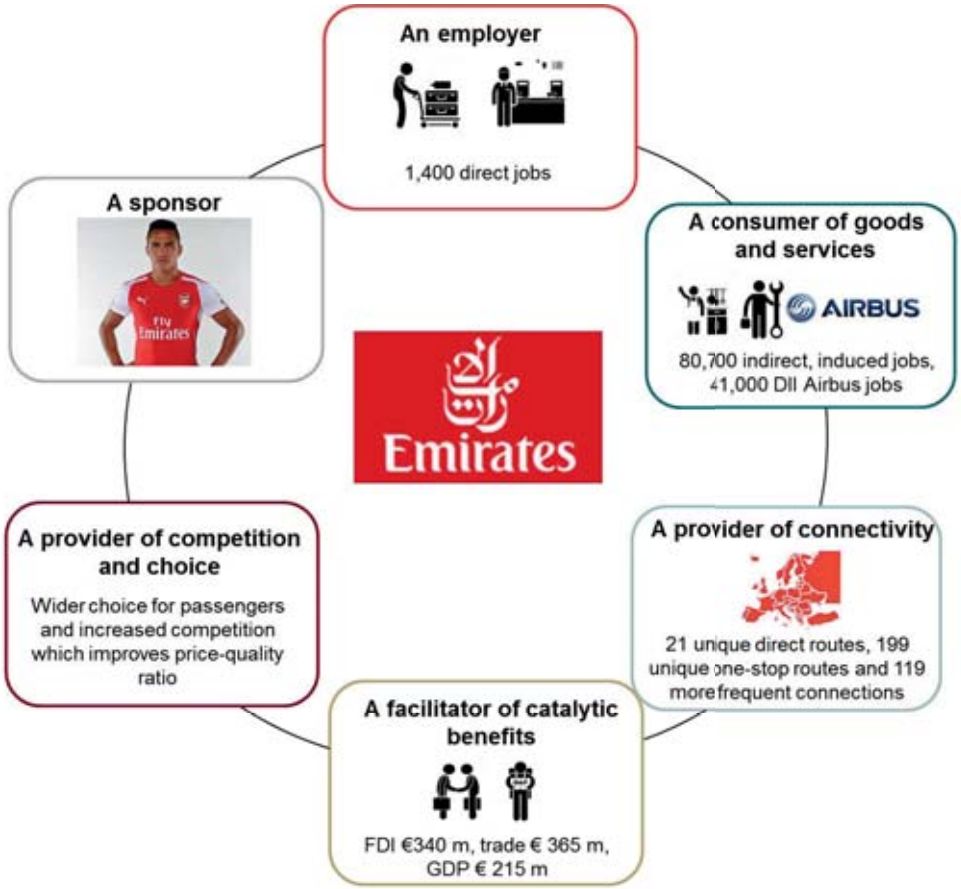
- **82,100 direct, indirect and induced jobs based on its operations;**
- **41,000 jobs based on its aircraft purchases from Airbus; and**
- **2,900 jobs based on the catalytic impact of its 21 unique direct connections and 199 unique one-stop connections from regional centres in Europe to Dubai and the rest of the world.**

In addition, there are an extra **119 one-stop connections where Emirates flies on more days of the week than all other airlines combined**. And for **58 of these one-stop connections, Emirates flies at least on twice the number of days** of the week than all alternatives combined.

In addition, the majority of the impacts are located in and around Europe's regional centres. Emirates makes a significant contribution to the EU's cohesion policy by providing international connectivity and therefore jobs, trade and FDI to regional centres such as Manchester, Hamburg or Lyon.

Emirates' economic impact is unique and additional in many respects, such as the connectivity and catalytic impacts. **Figure 7** summarises the multiple roles Emirates plays in Europe and the consequent economic impact.

Figure 7. Emirates' multi-faceted contribution to economic value



1 Introduction

1.1 Background and context

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Passengers and policy makers often perceive the economic impact of airline operations to be limited to those interactions they can observe: for example, check-in staff, sales agents, etc. In fact, the economic impact of aviation is much wider than this, in terms of the value it provides to companies doing business around the world, the role it plays in supply-chains and logistics, and the opportunity affordable air travel provides for people to travel widely and experience new places and cultures.

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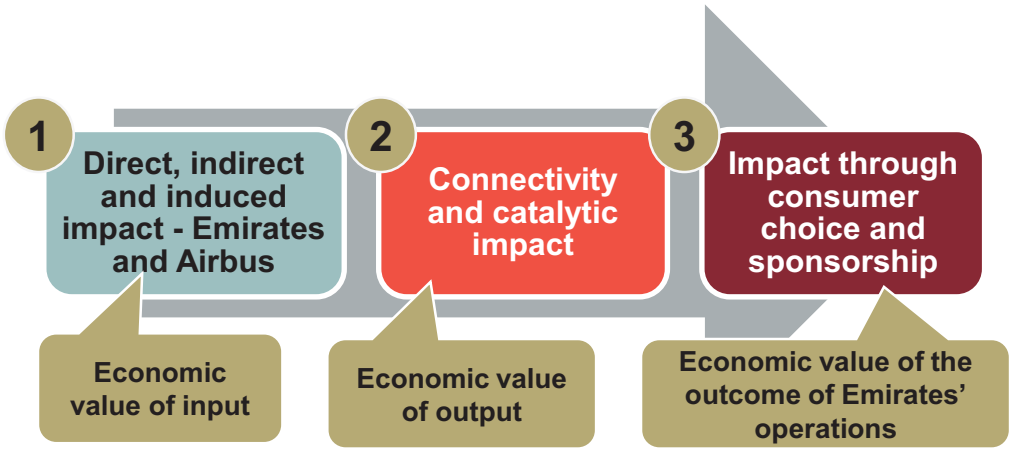
5 Based on Article 174 of the Treaty on the Functioning of the European Union.

1.3 What is the economic impact of Emirates in Europe?

Our analysis quantifies Emirates' economic impact in Europe according to the categories shown in **Figure 8** below.

Figure 8. Quantifying Emirates' economic impact in Europe



We consider three types of economic impacts:

- **Direct, indirect and induced (DII) economic benefits -** In order to provide its services, Emirates directly employs many people in Europe and in addition, spends significant amounts on goods and services. This activity has a multiplier effect through the economies in which the airline is operating, thereby creating direct, indirect and induced employment. One key category of spending is on new aircrafts. 50% of Airbus' deliveries of A380s in 2013 were for Emirates. We also quantify the economic impact of Emirates' aircraft purchases.

- **Connectivity and catalytic benefits**[6] **-** Emirates plays an important role in connecting Europe's regional centres to the rest of the world, with a pattern of serving regional centres that differs significantly from most European-based network carriers. We estimate the number of unique direct and one-stop connections Emirates provides and the associated catalytic benefits from more trade, FDI and tourism spending.

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6 The financial data used in the DII analysis relates to financial year 2013/14. Data on flight schedules used in the connectivity analysis relates to calendar year 2013.

- **Consumer choice** – By providing alternative connections, Emirates increases choice for European consumers as they have access to a wider range of airlines with different services.

1.4 How is the report structured?

This report is structured as follows:

- **Section 2** provides our methodology and results on the direct, indirect and induced employment effects;
- **Section 3** provides our methodology and results for catalytic employment effects;
- **Section 4** provides our analysis of Emirates' impact on consumer choice; and
- **Section 5** provides our conclusions.

Technical details on our methodology and key assumptions are provided in the Annexes. Annex 1 provides a summary of results by country. Annex 2 provides detailed assumptions for quantifying the direct, indirect and induced employment. Annex 3 provides detailed methodology for identifying Emirates' unique one-stop connections. Annex 4 provides detailed methodology and assumptions on the estimation of catalytic employment effects.

2 Direct, indirect and induced (DII) employment

This section provides our approach and results for direct, indirect and induced (DII) employment. We consider Emirates' operations (both Emirates and Emirates' freight division SkyCargo) separately from its aircraft purchases. First, we provide an overview of DII impacts of Emirates' operations and then discuss the methodology for each of the employment categories followed by our results. Second, we provide the DII impact of Emirates' aircraft purchases.

2.1 Quantifying DII impact of Emirates' operations

2.1.1 What is DII employment?

In order to provide its core service, Emirates employs people and uses goods and services in each of the countries in which it operates. This creates a ripple effect down the supply chain, which in turn creates indirect and induced jobs. Our analysis of direct, indirect and induced economic impact includes:

- **Direct jobs -** employees that are on Emirates' pay-roll. For instance, check-in staff, sales agents, or lounge managers at the European airports Emirates serves as well as back-office positions such as airport service managers, sales managers, finance officers, etc. based in the European cities Emirates flies to.

- **Indirect jobs -** employees along the supply chain that produce the goods and services that Emirates buys. In order to carry out its operations, Emirates incurs expenses on inputs such as catering, fuel, etc., as well as various activities such as ground-handling, baggage handling, etc. This expenditure has a multiplier effect in the economy, as goods and services from other industries are used by Emirates to provide its services. As an example, expenditure on in-flight catering will create demand in the industry for plastic trays, ingredients that go into making the meal, etc. thereby creating jobs in all of these industries. Emirates' expenditure and the consequential multiplier effect together create indirect employment.

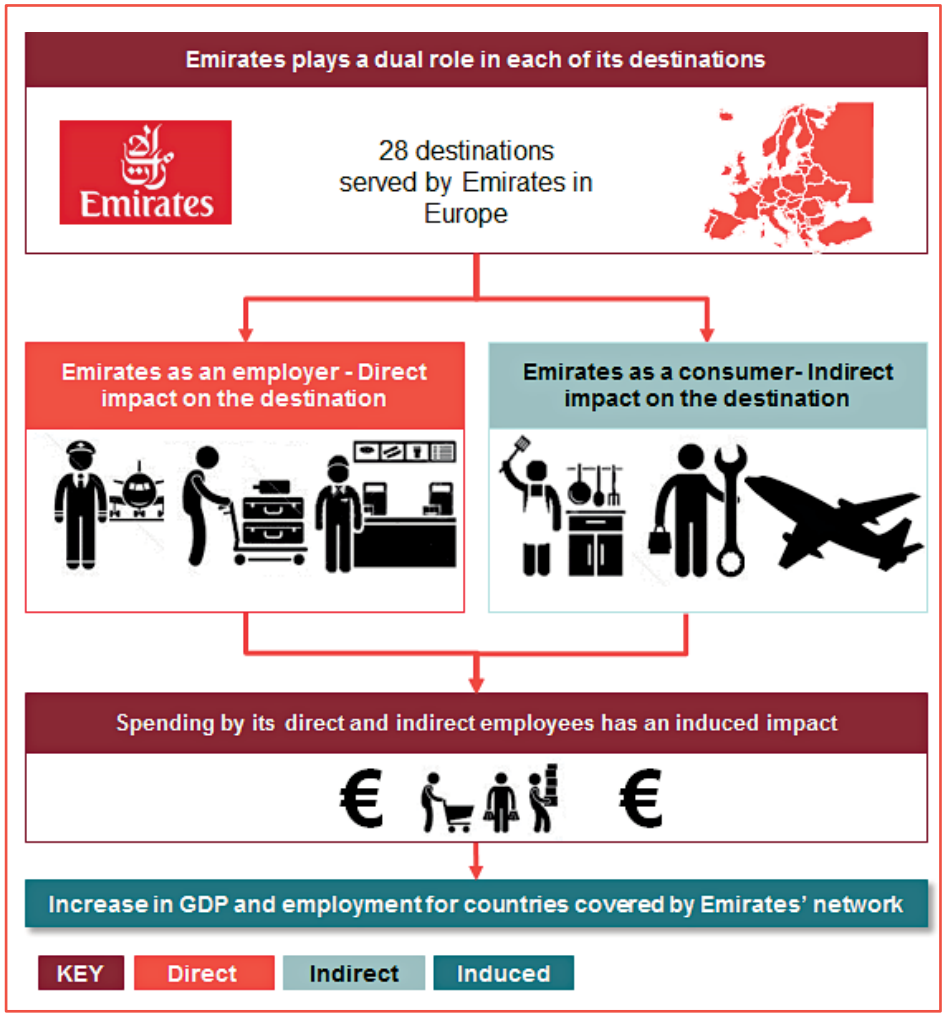
- **Induced jobs -** employees across the economy that are sustained by the demand created by direct and indirect jobs. Expenditure by direct and indirect employees in turn creates economic activity and more employment in the form of induced jobs.

DII economic impact assessments are based on a counterfactual of no alternative direct employment and expenditure. As a result, the impact needs to be

interpreted not as the truly additional economic value but simply as an estimate of the economic value associated with Emirates' activities in Europe today.

Figure 9 provides a simple illustration of the logic behind our methodology in estimating the DII impact of Emirates in Europe.

Figure 9. Illustrating the logic behind the estimates of the DII impact of Emirates' operations in Europe



2.1.2 How do we quantify direct employment?

We use Emirates' HR data for its passenger-side operations and SkyCargo services to calculate the direct employment in 2013 in each country. For example, these jobs include check-in assistants, or lounge managers at the European airports Emirates serves as well as back-office positions such as airport service managers, finance officers, sales managers, etc. based in the European cities Emirates flies to.

We do not include cabin crew as part of direct employees in Europe. This is because Emirates' crew is typically resident in Dubai and therefore does not

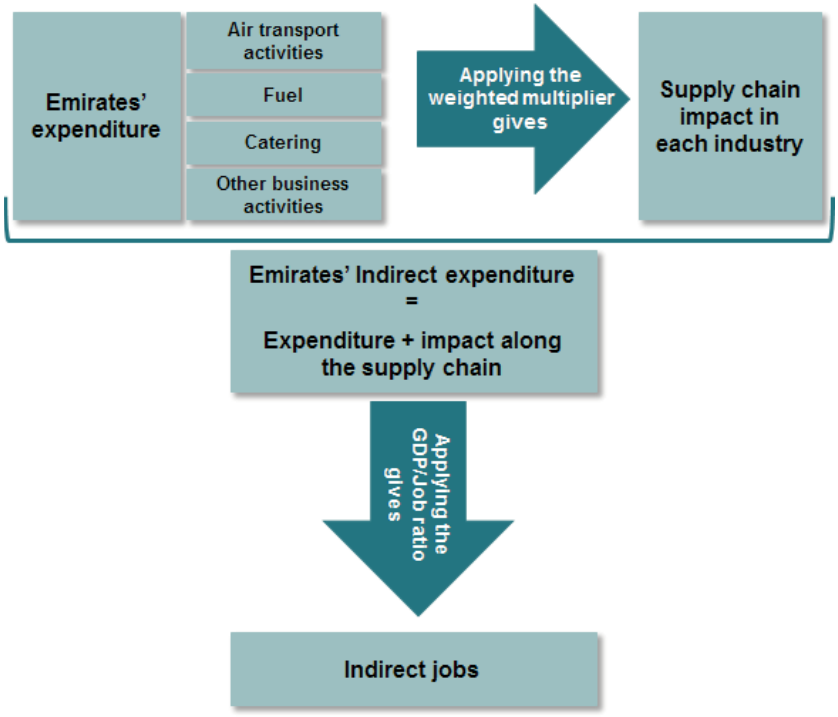
represent direct employment in European countries (even though a significant proportion of the crew originates from Europe).

2.1.3 How do we quantify indirect employment?

In addition to the people Emirates employs directly, Emirates also makes significant purchases of goods and services in the countries where it operates. The purchase of these inputs has a multiplier effect through the local economy. Expenditure on items such as ground handling, catering, fuel or crew layover expenses creates demand in the supply chain for these industries.

Figure 10 below provides a simple illustration of our methodology in estimating indirect employment for Emirates and Emirates SkyCargo.

Figure 10. Illustrating the methodology behind the indirect employment estimates



Our starting point is the financial data from Emirates recording its expenditure in each country[7]. We split this expenditure into four categories of "inputs" that Emirates uses to provide its "output" (connectivity):

7 The expenditure information is for 2013/14. As the direct employment information is for 2013, we use information for the financial year 2013/14 as a proxy for 2013.

- **Air transport activities -** This includes expenditure on items such as ground handling, airport charges or overflying costs.

- **Fuel -** Around 40% of Emirates' total expenditure is spent on fuel. However, including the entire expenditure on fuel in the economic impact assessment in Europe could lead to an overestimate of indirect employment because a large proportion of fuel is likely to be imported. In order to adjust for this, we use a country-specific figure for the percentage of jet-fuel imported based on US Energy Administration data[8]. This gives us an estimate of the proportion of Emirates' expenditure that would have an impact on the supply chain for fuel in the country.

- **Hotels and catering -** This includes expenditure on crew-layover costs and in-flight catering.

- **Other activities -** This includes expenditure on advertising, office rent, business promotion, IT services, etc.

In order to estimate the impact of this expenditure along the supply chain, we need to establish an appropriate multiplier. The OECD publishes Input-Output tables which show the flow of goods and services between different industries in the economy. From these tables, we can infer the Type I multiplier which describes the demand created down the supply chain for an industry as a result of one additional unit of demand for the output of that industry. While these multipliers are published at an industry level, consider the following simplified example. A Type I multiplier of 1.6 for a textbook implies that demanding the production of an additional textbook unit would lead to an increase of 0.6 units in the industries that produce inputs for the production of the textbook.

Because Emirates uses "inputs" from more than one industry (air transport, fuel, hotels and catering, etc.), we use a weighted average multiplier. The weights applied represent the proportion of total expenditure on each of these "input" categories. Applying this multiplier to Emirates' expenditure gives us a measure of the impact on the supply chain resulting from Emirates' activities in the country.

The supply chain impact in combination with Emirates' actual expenditure gives us the total indirect expenditure required to provide connectivity, which has an impact on GDP. We convert this into the number of jobs by using a GDP/jobs ratio, which accounts for the fact that some industries are less labour intensive than others, specifically the industry for fuel. Thus, we use a weighted average

8 US Energy Information Administration

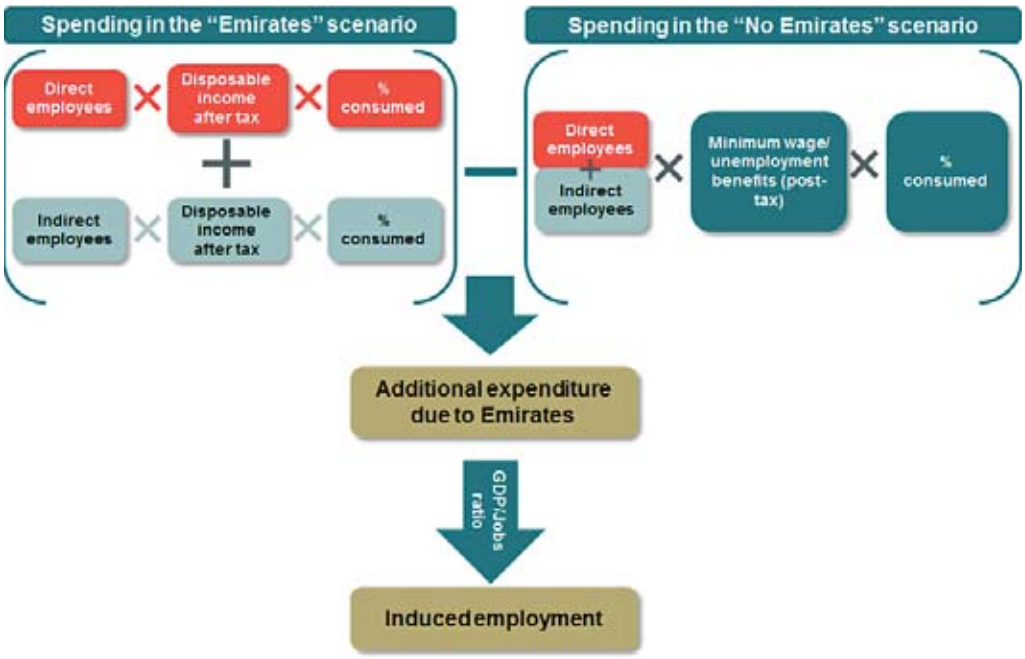
GDP/jobs ratio using a fuel sector-specific ratio and a general, national ratio, with the weights being the proportion of fuel and non-fuel expenditure.

Overall, indirect employment is derived by taking account of Emirates' expenditure on different inputs and resources and the resulting impact on the supply chain. This combined impact on the GDP is then converted into jobs by applying a GDP/jobs ratio that adjusts for the specific nature of Emirates' expenditure.

2.1.4 How do we quantify induced employment?

Induced employment is based on considering the spending by employees working both directly or indirectly for Emirates and estimating the jobs created by this spending. **Figure 11** is a simple illustration of the logic behind our methodology.

Figure 11. Illustrating the methodology behind the induced employment estimates



We start by considering the spending incurred by direct and indirect employees in the "Emirates" scenario in each country. For this, we need to first estimate the disposable income available to direct and indirect employees and then, the proportion of this income that they would spend rather than save.

For direct employees, we use the average post-tax wage based on Emirates' pay-scale data. For indirect employees, we estimate the average disposable income for

each country using Eurostat data. To estimate the proportion of this income that is spent, we use the average savings rate in each country as per Eurostat.

Having estimated the expenditure in the "Emirates" scenario, we consider the counterfactual. We assume that in the absence of Emirates, direct and indirect employees would be on minimum wage. In countries where a minimum wage does not exist, we used unemployment benefits as the income in the counterfactual. This is a more conservative and robust approach than assuming that in the absence of Emirates, direct and indirect employees would be earning no income at all.

The additional expenditure facilitated by Emirates' operations in Europe is then derived by subtracting the spending in the "No Emirates" scenario from that in the "Emirates" scenario.

As with indirect employment, we convert this additional expenditure to an employment number. For this, we use a national GDP/jobs ratio for each country derived from Eurostat. This is because the expenditure incurred by these employees takes place across all industries and so, the national average for GDP/job is most appropriate.

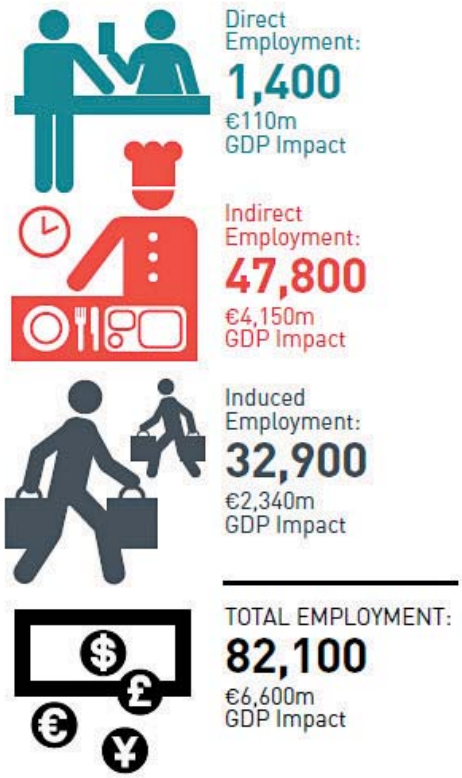
Further details on the assumptions underpinning the direct, indirect and induced methodology can be found in Annex 1.

2.1.5 What are our results?

Figure 12 shows our results for the impact of Emirates' operations on DII employment in Europe as well as the proportion of GDP it represents.

Direct, indirect and induced (DII) employment

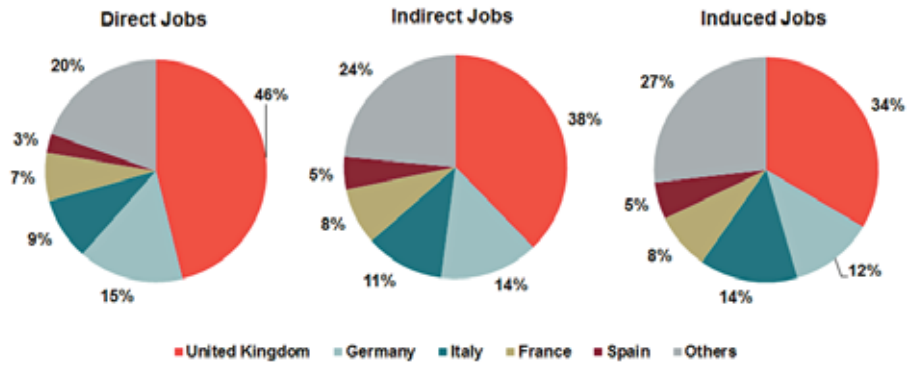
Figure 12. DII impact in Europe from Emirates' operations



Source: Frontier Economics estimates based on 2013 data. The total GDP impact is based on the EU28. See Annex 1 for a table summarising the results by country.

Overall, Emirates' operations facilitated **82,100 jobs** in Europe in 2013. This represented 0.05% of EU28 GDP or **€6.6 billion**. The detailed split by country is available in Annex 1. The split of DII impact between countries is as per **Figure 13** below.

Figure 13. DII split between countries and category of impact

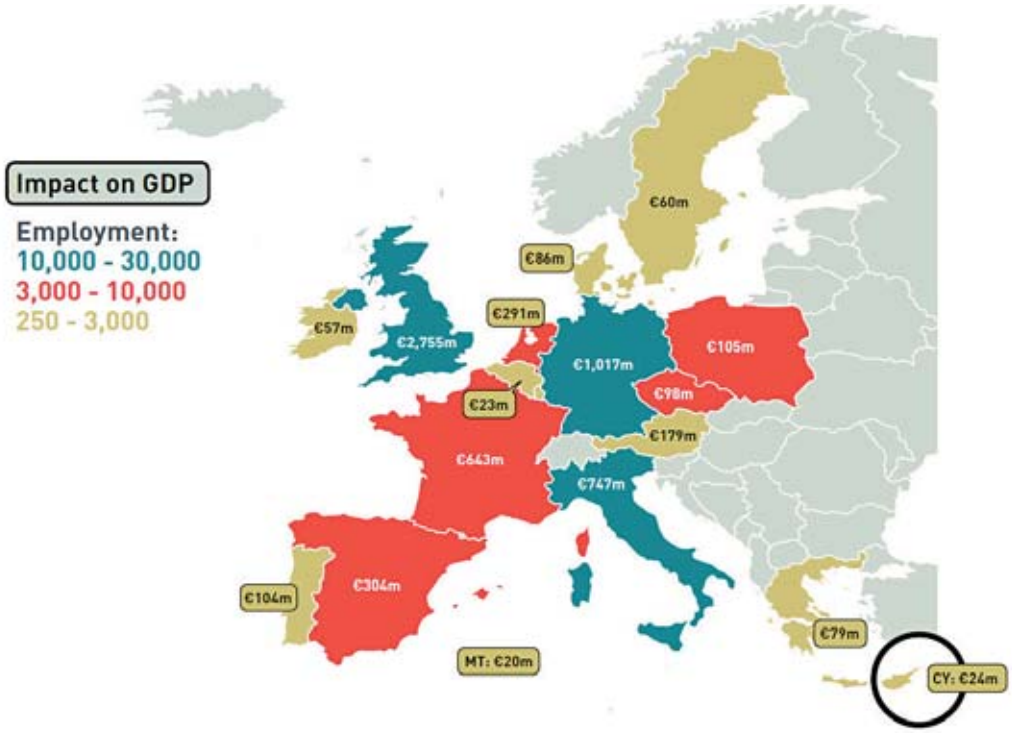


Source: Frontier Economics estimates

It is interesting to note that the split between countries is not the same for direct, indirect and induced jobs. For example, the UK makes up 46% of direct jobs but only 38% of indirect jobs. This is because the parameters used to estimate the indirect and induced employment are country-specific. First, Emirates' proportions of direct expenditure and employment are not the same in all countries as contractors and suppliers may be used in different ways. Second, each country's multiplier, GDP/jobs ratio, average disposable income, etc. is different, so the ratio of direct to indirect to induced jobs is also different.

More specifically, for indirect employment the implication of this is that Emirates' expenditure in each country does not have an identical impact in each country's supply chain because the multipliers and GDP/jobs ratios differ. Furthermore, the differences in wages, savings rates, tax rates, minimum wage, etc. mean that the induced employment generated from a given level of direct and indirect employment would also differ between countries.

Figure 14. DII impact of Emirates' operations



2.2 Quantifying Emirates' DII impact through Airbus

The economic impact of Emirates in Europe also needs to take into account its aircraft purchases. Our analysis focusses on Airbus as Boeing's production process is primarily outside Europe.

The Airbus A380 is Airbus' flagship aircraft, being the world's largest passenger aircraft. Emirates has ordered 140 Airbus A380s, of which 44 had been delivered by 2013. Airbus delivered 13 A380s to Emirates in 2013 which represents 50% of the total A380 deliveries in 2013. Emirates' orders make up over 40% of the total number of Airbus A380 orders.

Aircraft manufacture requires a highly skilled labour force and high-value inputs which creates a significant multiplier effect in the countries where Airbus has plants. We therefore follow the same chain of logic for calculating DII effects of Airbus' operations (described in **Figure 10**) to estimate the direct, indirect and induced effect of Emirates' orders of A380s.

Direct, indirect and induced (DII) employment

2.2.1 How do we quantify direct, indirect and induced employment?

Airbus[9] estimates that Emirates' A380 orders facilitated the employment of 41,000 direct, indirect and induced jobs in Europe in 2013.

In order to estimate the proportion of these total jobs that represent direct, indirect and induced employment, we first estimate DII employment facilitated by all of Airbus' operations in 2013 (not just the manufacture of A380s for Emirates). We use the following steps:

- **Estimate direct impact -** Beginning with direct employment, Airbus estimates that it employed around 55,000 staff in Europe in 2013. We use the average post-tax wage based on Airbus data on hourly wages.

- **Estimate indirect impact -** Based on Airbus' outlays at each plant in 2013, we use the same methodology described in **Figure 10** to estimate the supply chain impact. We then convert the total indirect expenditure into employment using a GDP/jobs ratio. In the absence of a detailed break-down of the outlay in each country, we have used a simple multiplier for air transport from the OECD input-output tables and the national GDP/jobs ratio from Eurostat for each country. As before, we estimate the average disposable income by country using Eurostat data. In order to estimate the proportion of this income that is spent, we use the average savings rate in each country as per Eurostat.

- **Estimate induced impact -** In order to estimate induced employment, we first quantify the additional spending by direct and indirect employees in the "Emirates" scenario over and above the "no Emirates" scenario, as was described in **Figure 11**. Again, as with the estimate of induced employment for Emirates and SkyCargo, we assume that direct and indirect employees would be either on minimum wage or unemployment benefits in the counterfactual, and spend 100% of their income.

By subtracting the spending in the "No Emirates" scenario from that in the "Emirates" scenario, we get the additional spending attributable to Airbus' deliveries of A380s for Emirates in 2013. We convert this additional spending into jobs using the national GDP/jobs ratio.

Our analysis therefore provides the ratio of direct to indirect to induced employees for all of Airbus' operations in Europe. We assume that the same proportions apply to Airbus' estimates of DII employment facilitated in 2013 by Emirates' purchases of A380s.

[9] Airbus, (2014), Airbus' economic footprint

2.2.2 What are our results?

Our estimates of the breakdown of these DII estimates and the GDP impact are as per **Table 1** below.

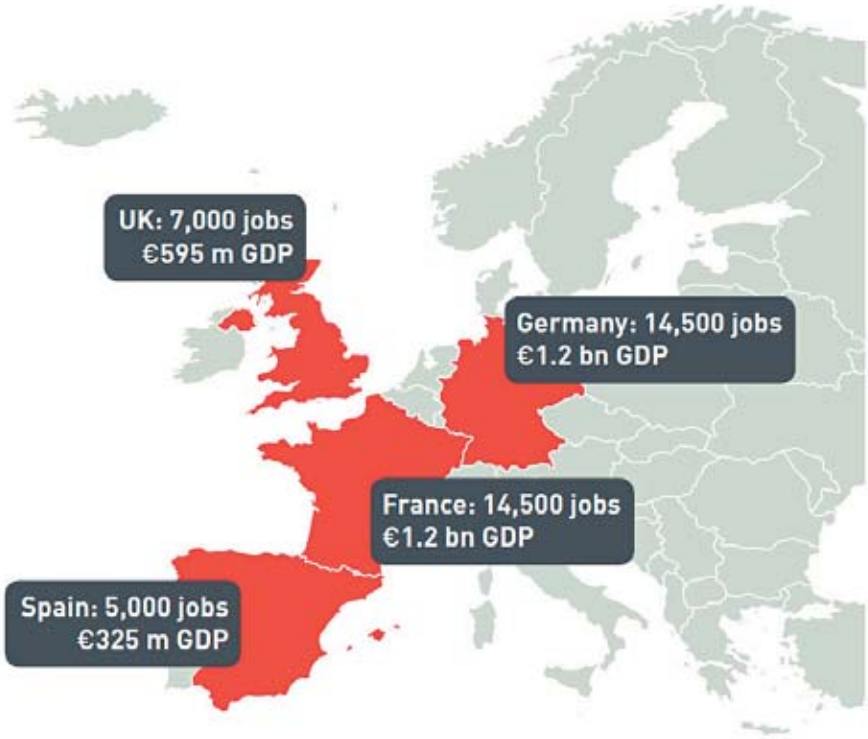
Table 1. DII impact though Airbus' deliveries of A380s for Emirates

	Direct employees	Indirect employees	Induced employees	Total	GDP impact[10]	GDP impact (%)
France	1,200	7,000	6,300	14,500	€1.2 bn	0.06%
Germany	1,200	7,400	5,900	14,500	€1.2 bn	0.04%
Spain	400	2,300	2,300	5,000	€325 m	0.03%
United Kingdom	300	4,000	2,700	7,000	€595 m	0.03%
Europe	**3,100**	**20,700**	**17,200**	**41,000**	**€3.4 bn**	**0.03%**

Our estimates of the total DII employment facilitated by deliveries of A380s for Emirates in 2013 are illustrated in **Figure 15**.

10 Numbers do not add up due to rounding.

Figure 15. DII results of Emirates' A380 deliveries



Source: Airbus' estimates for total jobs, GDP breakdown based on Frontier analysis

While Emirates' DII impact through its passenger operations and SkyCargo is not insignificant, it must be acknowledged that the impact is not necessarily additional. However, the impact through Airbus in the form of 41,000 jobs across Europe supported by deliveries of Emirates' A380s is more clearly additional. This is because no other airline has placed orders of this scale, although they plausibly could have. Consequently, the high-skill jobs and impact through a high-value supply chain have a significant impact on the European economy.

However, the time horizon for Emirates' economic impact based on aircraft purchases is different from the DII impact from its operations. This is because once all 140 A380s are delivered, the employment will be facilitated by additional orders which may or may not come from Emirates.

DII impact through dnata

dnata is one of the largest combined air services providers in the world and the largest travel management services company in the UAE. Its main activities are the provision of cargo and ground handling, catering, information technology and travel services.

Emirates and dnata are independent entities but are under common management. We therefore briefly consider the economic impact of dnata. We estimate dnata's DII impact using the same methodology as for Emirates, SkyCargo and Airbus.

dnata employs 5,000 direct employees in the countries in which it operates in Europe. Based on dnata outlays in each country and using the multiplier approach described in **Figure 10** above, we estimate the total impact on the supply chain. This combined with the outlays gives us the total indirect expenditure incurred by country which we then covert into jobs by using the national GDP/jobs ratio from Eurostat. The total indirect employment we estimate for dnata is 21,000 jobs.

Induced employment is also calculated as per **Figure 11** using the same assumptions as for the DII estimates for Airbus. We estimate that dnata induces an additional 16,000 jobs.

Overall, this implies that dnata's total economic impact is 42,000 jobs.

2.3 Conclusion

We conclude that Emirates makes an important contribution to the European economy as its operations support **82,100 jobs**. In addition, Emirates is responsible for more than 50% of total A380 aircraft deliveries in 2013 which supports **41,000 jobs**. As Emirates connects a large number of regional centres (i.e. Glasgow, Lyon) in Europe and Airbus' manufacturing facilities are spread across European regions (e.g. Toulouse), the majority of Emirates' economic impact is concentrated in the regions. As a result, Emirates' economic impact makes an important contribution towards the EU's policy goal of achieving economic cohesion.

3 Connectivity and catalytic impact

This section discusses our approach and results in estimating Emirates' economic impact based on connectivity and the resulting catalytic benefits. We first describe Emirates' unique role in connecting Europe to the rest of the world and then provide our methodology and results for the catalytic impact.

3.1 What is Emirates' role in connecting Europe?

3.1.1 Filling a connectivity gap

Connectivity between Europe and the rest of the world is mostly provided by the major network carriers that rely on five big hub airports at London Heathrow, Frankfurt, Amsterdam Schiphol, Paris Charles de Gaulle and Madrid Barajas. International connections from other cities in Europe have mostly been routed via one of these hubs, so journeys from regional centres within these countries such as Hamburg, Newcastle or Lyon required at least one-stop at a European hub. While this model makes many new destinations viable, passengers travelling from these regional centres may experience longer travel times. This creates a **connectivity gap** which may limit the growth potential of these regional centres.

Emirates flies to many regional centres in Europe and therefore helps to close the connectivity gap. Our analysis has identified that Emirates offers 220 routes that are unique in one of the following ways:

- **Unique direct connections -** These are routes from European cities to Dubai that only Emirates offers as a direct connection, i.e. all other airlines or alliances only offer a route with one or more stops between that city and Dubai;

- **Unique one-stop connections -** These are routes between European cities and the rest of the world no other airline or alliance offers as a one-stop connection, i.e. all other alternative routes would be two or more stops.

These unique routes provide a substantial connectivity benefit.

In addition to routing of connections, the frequency of connections can have a major impact on passengers' travel time. If connections are only available on particular days of the week, this may require passengers to choose longer routes on the days that they prefer to travel or alternatively may require longer stays. This is of particular importance to business travellers. We have therefore also considered the impact of Emirates on the frequency of connections provided to and from Europe. We found that there are an **extra 119 more frequent one-stop connections** – which are not unique to Emirates – but where Emirates flies on more days of the week than all other airlines combined. And on 58 of these

one-stop connections, Emirates flies on twice the number of days of the week (or more) than all other airlines combined.

3.1.2 How do we identify Emirates' unique connections?

Our approach to identifying Emirates' unique connections depends on whether we consider unique direct or unique one-stop connections.

Unique direct connections to Dubai

Emirates operates out of its hub in Dubai. From here, it flies to 28 destinations in Europe[11]. This is illustrated in **Figure 16** (which also shows destinations outside of the EU28, not covered by this report).

11 For the purpose of this report, we define 'Europe' as the EU28 countries served by Emirates in 2013 either through their passenger services or through its cargo division SkyCargo. This covers 17 countries in total – Austria, Belgium (excluding passenger services started in 2014), Cyprus, Czech Republic, Denmark, France, Germany, Greece, Ireland, Italy, Malta, Netherlands, Poland, Portugal, Spain, Sweden and the United Kingdom. We note that Emirates flies to 29 *airports* in the EU28, of which two – Heathrow and Gatwick – are in the same city. This implies that we do not consider Emirates' impact based on new EU passenger destinations started in 2014 such as Budapest and Brussels.

Figure 16. Emirates' European network

Source: Emirates

Emirates flies to major hubs in Europe, and the main network carriers in turn also fly to Dubai.

Therefore, while Emirates operates on these routes, its connection cannot be considered truly 'unique'. This is because under a 'no Emirates' scenario, passengers would still have the choice to fly direct to the major hubs. However, we have identified **21** direct European connections that are unique to Emirates, and that no other airline can offer. These routes are illustrated in **Figure 17**.

Figure 17. Unique direct connections to Dubai

Source: Frontier analysis

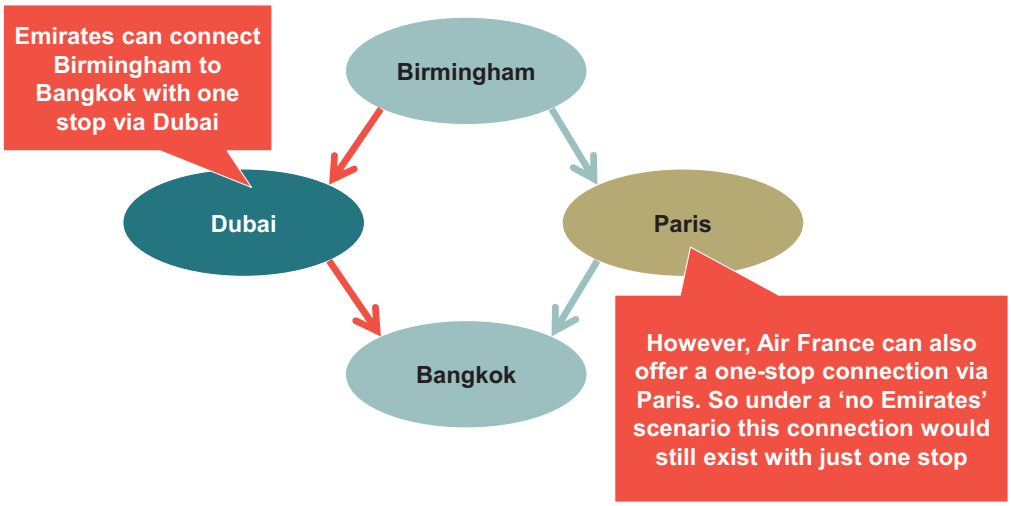
Note: This analysis is based on 2013 data from OAG Analyser. Our analysis is based on the city level. As a result, we have not included London Gatwick because it is possible to fly to Dubai without Emirates from London Heathrow instead.

For example, Emirates is the only airline that flies direct from Dubai to Warsaw. Under a "no Emirates" scenario, passengers can still continue to fly between the two cities. However, they will now have to do so with at least a one-stop connection – which is more time consuming and less convenient.

Unique one-stop connections to Dubai

As a major network carrier, Emirates connects passengers via its hub in Dubai. For example, it is possible to fly with Emirates from Birmingham to Bangkok, with only one-stopover required. However, as illustrated in **Figure 18**, not all of these one-stop connections are unique to Emirates.

Figure 18. Not all of Emirates' one-stop connections are unique



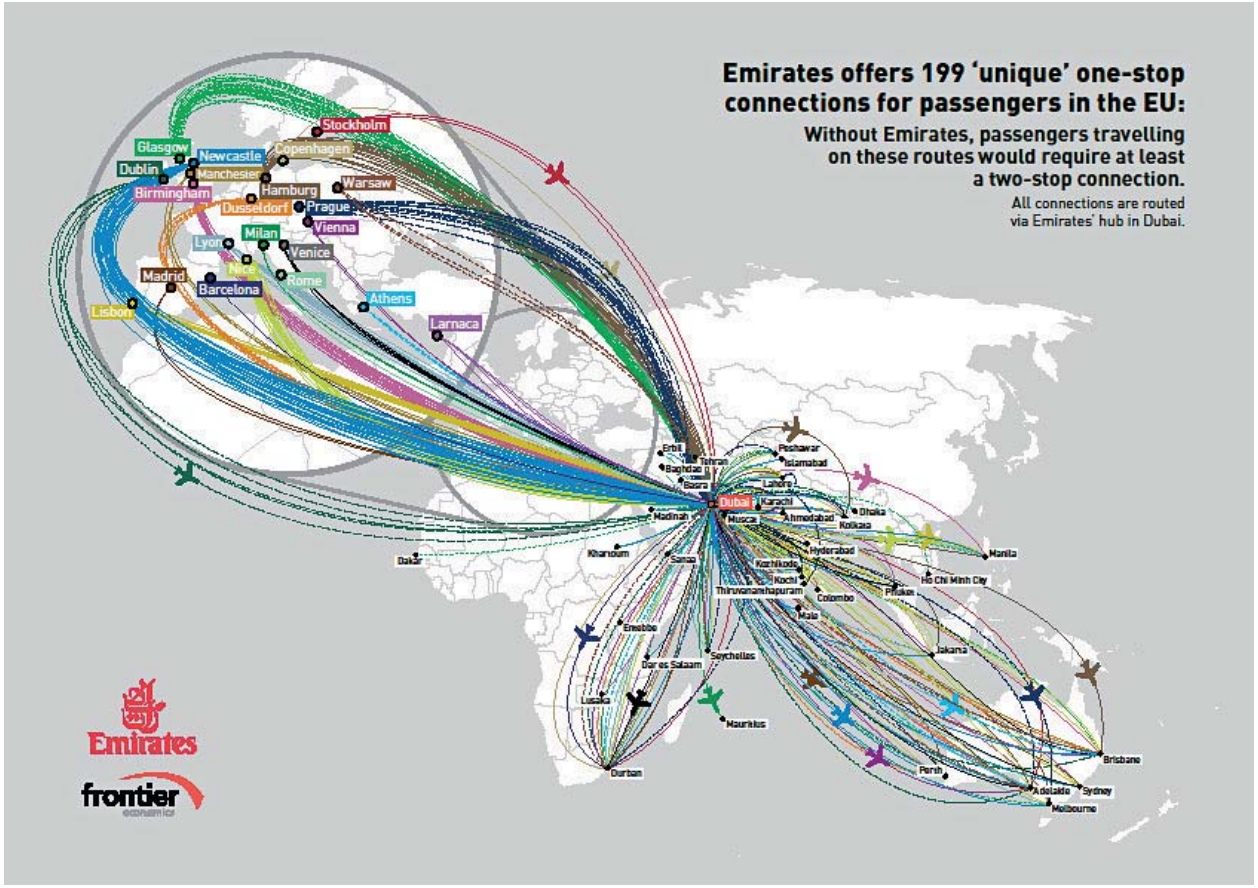
But there are **199** one-stop connections between European cities and the rest of the world that are unique to Emirates, and that no other airline offers.

We provide more technical details about identifying unique connections in Annex 3.

Results

Figure 19 provides a route map summarising the results for the unique one-stop connections. Even without considering the catalytic impact of these connections, it is clear that Emirates plays an important role in connecting Europe to the rest of the world. For example, many of the destinations in India, Australia and South Africa can only be reached with a two-stop connection from Europe's regional centres. Emirates' contribution to the connectivity of Europe's regions is therefore substantial.

Figure 19. Emirates offers 199 unique one-stop connections for passengers in the EU



3.1.3 How do we identify Emirates' more frequent connections?

In addition to the unique connections, there are also one-stop connections where Emirates provides higher frequency than any of the alternatives combined. To assess the frequency provided by Emirates compared against all other airlines, we measure frequency by the number of days a connection is available per week. We provide more detail on our approach in Annex 3.

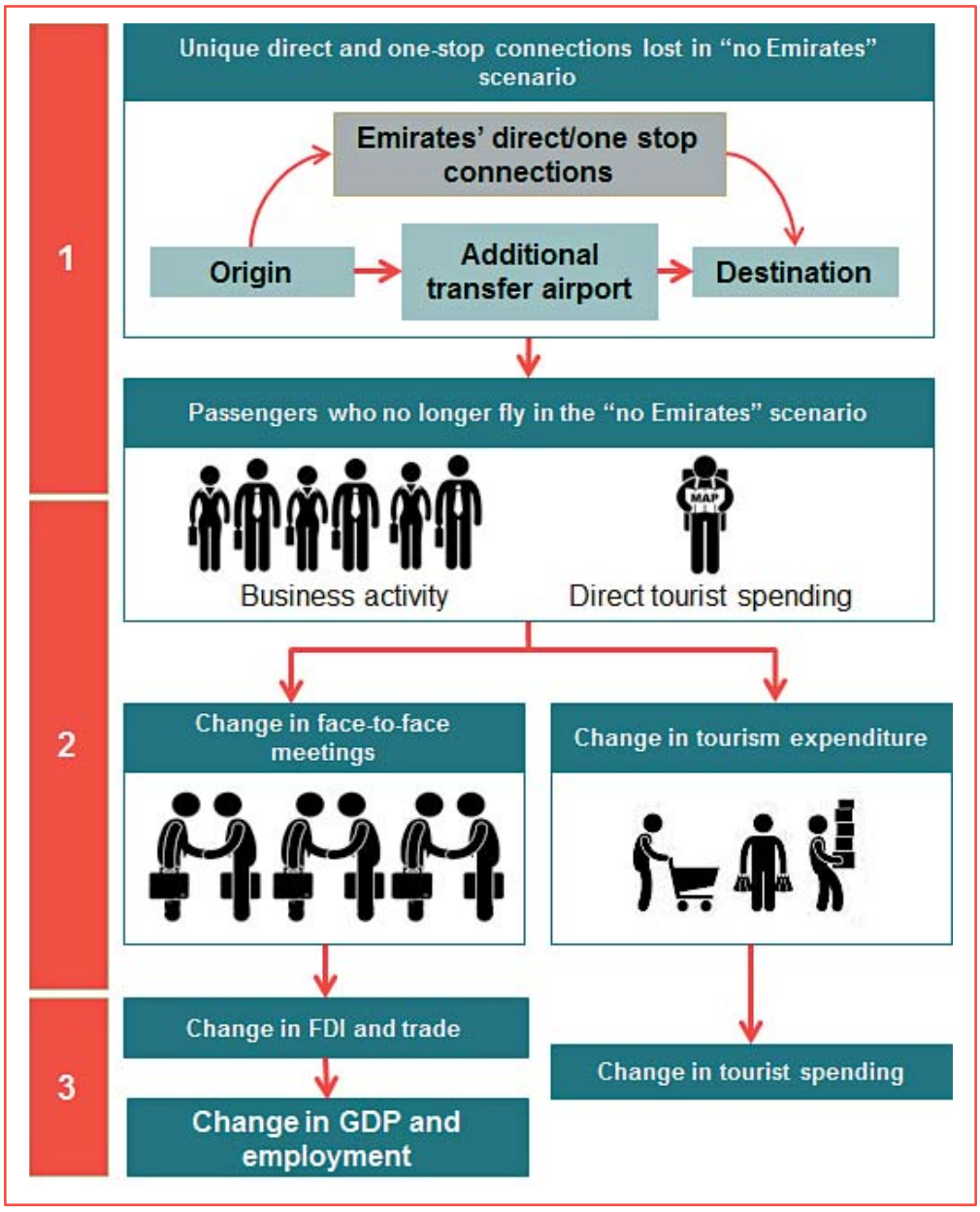
For example, Emirates provides a one-stop connection between Madrid and Brisbane seven days a week. Other airlines also provide a one-stop connection on this route – but they do so less frequently. In fact, on three days of the week, Emirates is the only airline that provides a one-stop connection between Madrid and Brisbane. Therefore, while the connection is not strictly unique, the frequency that Emirates provides can be considered special.

Our analysis has identified **119 "more frequent" connections** where Emirates provides a one-stop connection on more days of the week than the competition combined. And on **58 of these routes, Emirates' frequency was at least double the frequency of all other airlines** offering the same route combined. However, given that these connections are not strictly unique and are provided by other airlines (albeit less frequently), we have been conservative and not estimated any additional catalytic impacts on trade, FDI and tourism from these routes.

3.2 How do we quantify the catalytic impact?

In order to estimate the economic impact of Emirates' unique direct and one-stop connections, we consider their impact on the openness of the economies in Europe. **Figure 20** gives a simplified outline of the logic underpinning our methodology. Our methodology captures how air passenger travel affects the movements of goods and capital. As a result, it does not take into account the volume and value of increased belly hold air cargo connectivity.

Figure 20. Catalytic impact of Emirates' unique connections



Source: Frontier Economics

Our methodology to quantify this impact is based on three key relationships:

- Air connectivity and passenger volumes;
- Passenger volumes and FDI, trade and tourism;
- FDI, trade and productivity.

In the following sections we describe each of the relationships and discuss the evidence that underpins our parameters.

3.2.1 Air connectivity and passenger volumes

First, we need to establish a "what-if" scenario in which Emirates no longer provides connections between Europe and the rest of the world. On routes where an Emirates connection is not unique, i.e. routes where other airlines also provide direct or one-stop connections, passengers could switch to those alternatives (although their choices would depend on a range of factors including the quality of the transfer hub). For the routes which are unique to Emirates, passengers would have to take the following alternative routes:

- Without Emirates, passengers flying on Emirates' unique direct connections to Dubai would have to fly indirect using at least a one-stop connection; and
- Without Emirates, passengers flying on Emirates' unique one-stop connections via Dubai would have to fly to those destinations using at least two-stop connections.

Flying via the alternative routes involves a longer elapsed travel time because of the transfer time necessary at the additional stop. This additional travel time can be monetised by using a value of time, a common approach in land transport appraisals. The value of the additional time spent travelling can then be expressed as a proportion of the generalised travel costs (the ticket price and time value).

The higher generalised travel cost associated with these alternative routes would lead some passengers to stop flying all together. In order to estimate this marginal decrease in passenger volumes in the "no Emirates" scenario, we apply a price elasticity to the change in the generalised travel cost. Overall, removing Emirates' presence on the unique routes increases generalised travel costs of flying between the two destinations being connected, thereby decreasing the number of passengers.

3.2.2 Passenger volumes and FDI, trade and tourism

The passengers that no longer choose to fly in the "no Emirates" scenario, because of higher generalised travel costs, ultimately have an impact on the economy, in terms of:

- A reduction in direct spending from both inbound and outbound passengers; and
- A reduction in business activity in the form of FDI and trade

A reduction in direct spending (tourism)

A decrease in passenger flows between European and non-European countries leads to a decrease in direct spending from passengers in both directions. This covers both:

- European passengers spending money abroad (outbound spending) – for example, individuals from Athens spending money in South Africa; and
- Foreign passengers from outside Europe spending money in Europe (inbound tourism) – for example individuals from Australia spending money in Dublin.

These impacts then have to be netted off. To quantify the impact on tourism spending under the "no Emirates" scenario, we have used data from Eurostat to produce estimates of inbound and outbound tourism spending per passenger – for each of the countries that appear in our analysis. We have then applied these 'per passenger' figures to the volume of passengers that choose to no longer fly under the "no Emirates" scenario. As a result, this produces an estimate of forgone inbound and outbound spending that is lost under the "no Emirates" scenario.

A reduction in business activity (FDI and trade)

Fewer business passengers imply that there would be fewer face-to-face meetings and so, fewer international deals would be agreed on. There is a range of literature that identifies the importance of face-to-face meetings in overcoming the barriers to doing business across countries. In particular, in cases where business partners do not share a common language or culture and where business regulations vary significantly, face-to-face meetings are essential for doing business. This is supported by the following examples of literature:

- A survey by the UK Institute of Directors (2008) asked about the impact on businesses if the amount of business travel by air was significantly curtailed. 30% of respondents said that there would be a significant adverse effect, while 44% indicated small adverse effects.
- The World Travel and Tourism Council (WTTC) (2011) conducted a survey of business travellers and asked about the importance of personal contact which revealed that:
  - 28% of existing business could be lost without face-to-face meetings; and
  - Sales conversion rates are estimated to be 20-25% higher with face-to-face meetings.

- Poole (2010) finds that business travel to the United States by non-residents, non-citizens has a positive impact on the extensive export margin.

  Connectivity is also one of the factors that influence decisions on where to locate business headquarters. For example, Strauss-Kahn and Vives (2005) find that:

  > *Headquarters relocate to metropolitan areas with good airport facilities, low corporate taxes, low average wages, high levels of business services, and agglomeration of headquarters in the same sector of activity. The effects are quantitatively significant (airport facilities in particular).*

- Frankel (1997) illustrates the importance of face-to-face meetings as follows:

  > *Consider a kind of export important to the United States: high-tech capital goods. To begin sales in a foreign country may involve many trips by engineers, marketing people, higher ranking executives to clinch a deal, and technical support staff to help install the equipment or to service it when it malfunctions.*

Without face-to-face meetings to help establish and consolidate business relationships, there are likely to be fewer deals supporting FDI and trade. Based on our literature review, we have developed elasticities of business travel with respect to trade and FDI. More detail on this relationship is provided in Annex 2.

As there is little research on the quantitative relationship between business travel and trade and FDI, we have made the conservative assumptions that direct and indirect passengers have the same impact on trade, tourism and FDI, irrespective of whether the indirect journey involves one-stop or more. This is because the origin or destination for all of these passengers is a country in Europe.

Consequently, we only quantify the catalytic impact resulting from passengers who, in the absence of Emirates' unique direct and one-stop connections, would not be flying at all because the generalised travel cost associated with the non-Emirates alternatives would have been too high.

3.2.3 Tourism, FDI, trade and productivity

Changes in trade, foreign direct investment and tourism spending have an effect on GDP and employment, but through different channels.

Impact of changes in tourism spending on GDP

On routes between Europe and Africa, Europe and Asia, and Europe and the Middle East, we typically observe that there are more passengers originating from Europe and flying abroad, than vice versa.

Therefore, from a simple static point of view, a "no Emirates" scenario may appear to have a *positive* impact on European GDP through the change in tourism

spending. This is because under the "no Emirates" scenario there are fewer Europeans travelling and spending money abroad, and therefore this spending is effectively kept inside Europe. And while there is also a corresponding reduction in inbound tourism – from foreign passengers travelling to Europe – the fact that there are more outbound passengers than inbound passengers means that the net effect of the "no Emirates" scenario (i.e. inbound minus outbound) may be positive so the overall impact is negative.

Impact of changes in trade and FDI on GDP

Under the "no Emirates" scenario, there would be fewer business passengers travelling between Europe and the rest of the world. Therefore, there would also be fewer face-to-face meetings in the "no Emirates" scenario, and there is likely to be less FDI and trade. Similar to the net effects of tourism, from a purely accounting point-of-view, less imports and outward FDI would have a positive impact on GDP while a fall in exports and inward FDI would have a negative impact. Consequently, equal amounts of imports and exports would offset each other and there would be no impact on GDP. The same holds true for inward and outward FDI.

However, this is a narrow, short-run perspective and misses the long-term, dynamic effects of having an open economy. In the long run, imports, exports, inward and outward FDI are all indicators of openness. The more open an economy, the more likely it is to have higher productivity in the long run. Productivity is a key driver of GDP growth as it implies efficiency of production - more can be produced with less. There is extensive academic literature investigating the positive impact of imports, exports, inward and outward FDI on long-term productivity, most of which is focussed on the impact at the firm level. The literature suggests increased openness in the economy has a positive impact on productivity.

There are three main channels by which imports, exports, inward and outward investment can increase long-term productivity.

- **Innovation -** Trade is one of the key "transmitters" of innovation as it exposes companies to a wider range of products and processes in other countries. FDI can provide access to new technologies and cheaper inputs, which has a positive impact on productivity. This is particularly true for imports and outward investment.

- **Competition -** Competition puts pressure on companies to be more efficient. Exporting companies are faced with more competition as they compete in a larger market. Imports also put more pressure on domestic firms as they compete with a greater number of competitors.

- **Economies of scale -** Larger market sizes imply that production processes can benefit from economies of scale. Both trade and FDI can provide access to markets outside of Europe so that firms can reduce costs by realising economies of scale. This is particularly true for exporting firms that can access foreign markets and therefore increase their size.

For example, the OECD, (2012) finds that:

> *A main channel through which trade increases income is productivity growth. Importing creates competition that forces domestic firms to become more efficient and provides access to inputs of international calibre; exporting creates incentives for firms to invest in the most modern technologies, scales of production and worker training. The combined effect is to spawn a process of continual resource reallocation, shifting capital and labour into activities with higher productivity.*

This illustrates the combined effect of exports and imports. More detail on this relationship is provided in Annex 2.

As a result, our methodology focusses on the long-term benefit that trade and FDI generate by increasing "openness" of the economy. Therefore, our conclusion is that both exports and imports, alongside inward and outward investment, have positive long-term effects on an economy.

We use FDI and trade elasticities of GDP in order to estimate the impact of the fall in total FDI and trade on the GDP in each country served by Emirates' unique routes in the "no Emirates" scenario. As with estimating the employment effects of tourist spending, we apply a national GDP to jobs ratio in order to translate the fall in GDP to a decrease in jobs. This decrease in GDP and employment in the "no Emirates" scenario thus helps us quantify the economic value facilitated by Emirates offering these unique direct and one-stop connections to Europe.

3.3 What about causality?

The catalytic impact we estimate for Emirates' unique connections is truly additional as we only estimate the marginal impact of improved connectivity. However, studies on the relationship between connectivity and economic value are often criticised as there are a number of other factors that affect economic value. The implication is that connectivity needs to be considered as one of the factors influencing economic impact.

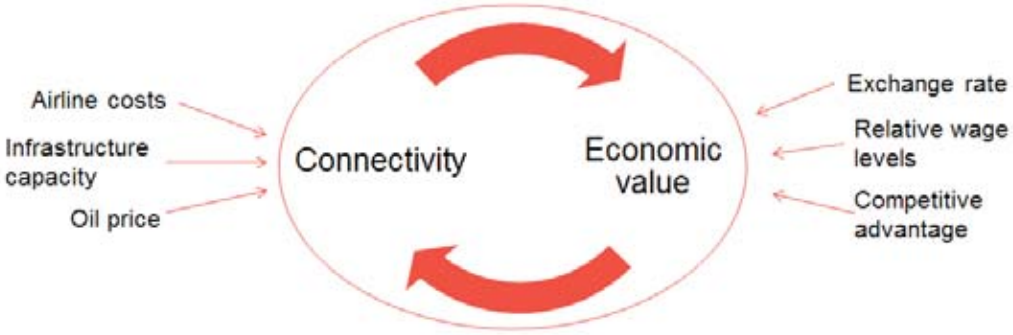
Although connectivity is an important factor in enabling the development of international business relationships, it is not by itself sufficient to cause economic growth. Obviously, there are a range of other factors that also influence economic growth. The best way to describe this relationship is a virtuous circle (shown in **Figure 21** below). The relationship goes both ways: economic growth

creates demand for connectivity, but connectivity enables growth. Both connectivity and economic value are also influenced by a range of other factors.

This reverse causality often gets ignored in studies on connectivity and economic value. We acknowledge that there is a two-way relationship between connectivity and economic value. Consequently, we interpret our results as the economic value *facilitated* by Emirates rather than the economic value *generated* by Emirates.

The fact that causation works both ways does not in any way diminish the contribution that Emirates makes to the economy. Connectivity is a participant in the virtuous circle of economic activity and growth. Although the connectivity enabled by Emirates is not a sufficient condition for creating economic activity, the role the airline plays in the economy is a necessary condition in helping a well-functioning and open economy to achieve its full potential.

Figure 21. The virtuous circle between connectivity and economic value



3.4 What are our results?

Emirates' connectivity facilitates **2,900 additional jobs** which is equivalent to **€215m of GDP**. This is based on the long-term productivity improvements from €365m of additional trade and €340m of additional FDI. **Table 2** provides a breakdown of the results. As all of our results are based on Emirates' unique connections, they represent the marginal impact of having these connections.

Table 2. Overview of catalytic results

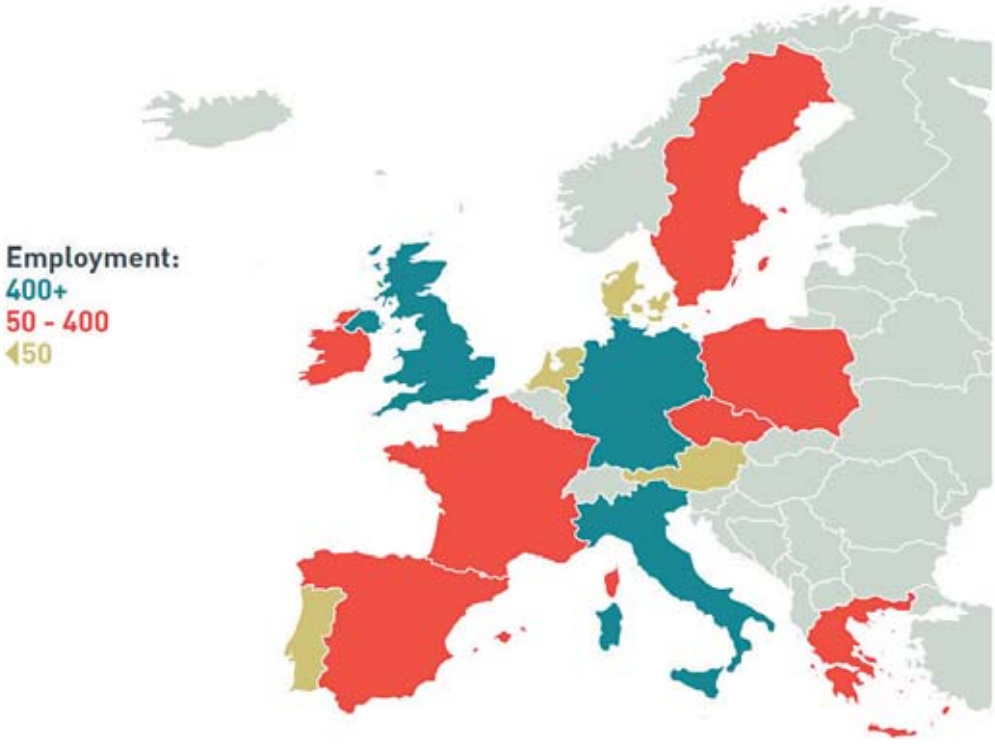
	Results
GDP	€215 million
Jobs	2,900
Top 3 countries	UK (36%), Germany (24%), Italy (14%)

Source: Frontier analysis, please refer to Annex 1 for a breakdown by country

3.5 Conclusion

We conclude that the connectivity provided by Emirates makes an important contribution to the European economy as it facilitates nearly 2,900 jobs as a result of a positive impact on FDI and trade. **Figure 22** summarises our results and shows how the results are distributed across Europe. As the most of the unique connections are from regional centres in Europe (such as Glasgow, Birmingham and Hamburg), the majority of the catalytic results can be attributed to these regions. As a result, Emirates' economic impact makes an important contribution towards the EU's policy goal of achieving economic cohesion.

Figure 22. Overview of catalytic employment impact



4 Consumer choice and competition

The previous sections highlight the economic impact on the European economy of the services operated by Emirates, including the impact of the airline's support for the Airbus A380. But it can be argued that Emirates' services create a wider benefit for European citizens by expanding the choice of options open to travellers and strengthening inter-airline competition. Greater competition between airlines provides substantial benefits to European citizens as it can increase quality and reduce prices.

4.1 Competition over service quality

In the preceding sections, we have focussed on the benefits that are likely to be forthcoming to Europe as a result of the unique connections, which Emirates creates for European regional centres. But in addition to these benefits, Emirates' contribution to the European aviation market is likely to bring wider benefits by strengthening competition between airlines.

The impact of competition on service quality is frequently overlooked as studies often focus on price effects. Competitive pressures drive airlines to seek to improve the quality of their services to attract or retain customers being wooed by rivals. In this way, Emirates' commitment to the quality of its service benefits customers of all airlines, not just those that choose to fly Emirates, because of the incentive that is created for other airlines to match or out-do their rivals.

The Emirates Group companies have won more than 500 international awards for service quality over the last 25 years. This is a testament to Emirates' success at improving the quality of all aspects of its service.

In 2013 alone, Emirates won regional and global awards for its service which included:

- In-flight experience, for business and leisure passengers;
- Catering;
- In-flight entertainment;
- Inclusive holidays;
- Loyalty programme;
- Customer helpdesk; and
- Cargo services.

Emirates' unique route offering together with these service awards illustrate how all passengers benefit from Emirates' service innovation and the resulting increase in service quality competition between airlines.

4.2 Price competition

Emirates' services in Europe mean that head-to-head competition between airlines is likely to be strengthened by an additional carrier on a given route. Economic theory suggests that in addition to increased competition over service quality, greater competition is likely to lead to lower overall fares on all airlines. In economic terms, this price competition improves consumer welfare by increasing "consumer surplus" and increasing the overall demand for air travel.

In the case of the unique routes, we have identified that there are likely to be competitive benefits for passengers, even if they do not choose to fly Emirates. For example, the 199 unique one-stop routes we have identified provide competition for the existing alternative two-stop routes. This means that it is likely that travellers continuing to use alternative routes will benefit from lower fares as rival airlines respond to the competition that Emirates provides.

As Emirates makes a substantial contribution to international connectivity of Europe's regional centres, the benefits to passengers from increased competition over prices and service quality accrue to European citizens that are located in the regions.

Sponsorship

Emirates sponsors a variety of sports teams across a number of countries in Europe. In 2013/14, Emirates spent €175 million on sponsorships across 15 countries in Europe. Sponsorship involves a variety of sports such as the 2014 Commonwealth Games, football clubs in the UK, Italy, Germany, Greece, Spain and France as well as tennis and golf tournaments. For example, people in Hamburg and Milan will recognise Emirates from their football team jerseys and people of Glasgow from their Rugby Sevens event.

While the additionality of this impact is difficult to estimate, it is clear that Emirates' sponsorship has enabled sporting clubs and events throughout Europe to perform at world-class levels and attract the best competitors. Similar to the focus on regional centres when it comes to connectivity, Emirates focusses its efforts not only on capital cities or cities with hub airports but also supports regional clubs and events such as Durham County Cricket Club, Glasgow Arena and Warrington Wolves in the UK.

5 Conclusion

Overview of key findings

The objective of this project is to answer the following questions:

- What is Emirates' economic impact in Europe?
- What is the unique contribution that Emirates makes?

Overall, we conclude that Emirates makes a substantial contribution to the European economy as it supports:

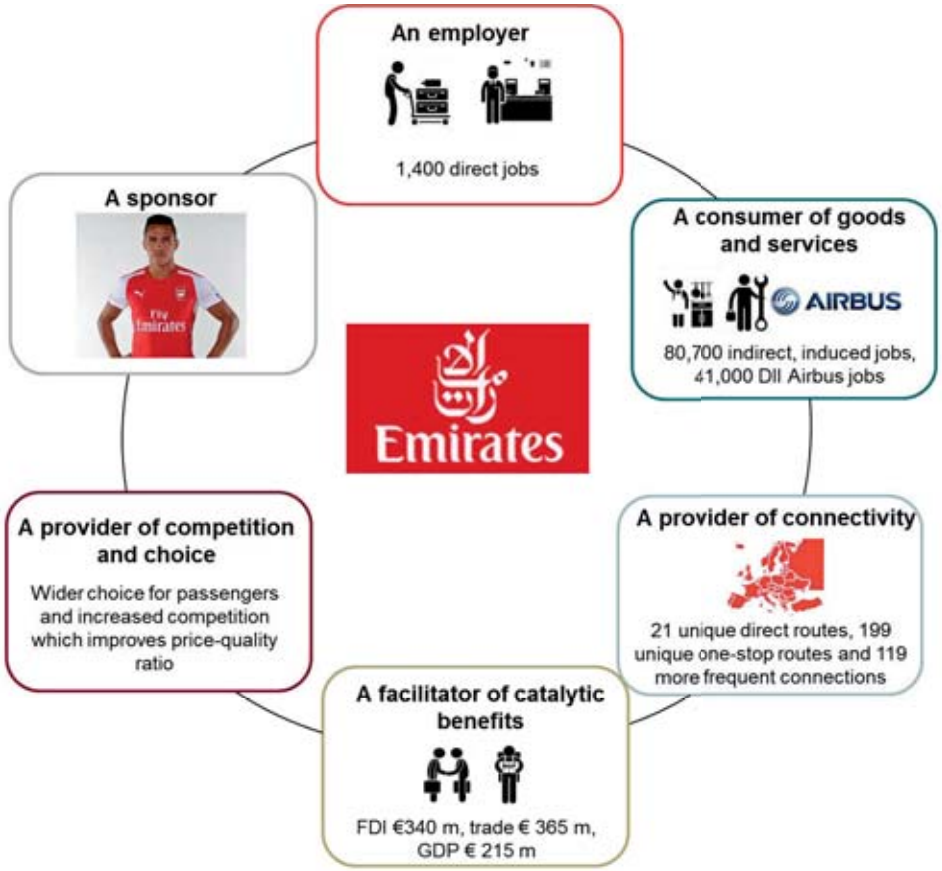
- 82,100 direct, indirect and induced jobs based on its operations;
- 41,000 jobs based on its aircraft purchases from Airbus; and
- Around 2,900 jobs based on the catalytic impact of its 21 unique direct connections to Dubai, and its 199 unique one-stop connections from regional centres to the rest of the world.

In addition, there are an extra 119 one-stop connections where Emirates flies on more days of the week than all other airlines combined. And for 58 of these one-stop connections, Emirates flies at least on twice the number of days of the week than all alternatives combined.

In addition, the majority of the impacts are located in and around Europe's regional centres. Emirates makes a significant contribution to the EU's cohesion policy by providing international connectivity and therefore jobs, trade and FDI to regional centres such as Glasgow, Manchester, Hamburg or Lyon.

As we have seen, Emirates' economic impact stretches beyond what is commonly perceived to be confined to employment in customer-facing roles such as check-in staff, lounge managers, etc. In reality, Emirates' economic impact is unique and additional in many respects, such as the connectivity and catalytic impacts. **Figure 23** summarises the multiple roles Emirates plays in Europe and the consequent economic impact.

Figure 23. Emirates' multi-faceted contribution to economic value



The example of Hamburg

Emirates' economic impact is most pronounced in regional centres. As a demonstration of how Emirates' multi-dimensional role has a positive impact on regional centres, consider the example of Hamburg.

Emirates offers a unique direct connection between Hamburg and Dubai, and **17** unique one-stop connections between Hamburg and the rest of the world via Dubai. We estimate that around **155,000** passengers flew on these unique routes to and from Hamburg in 2013. Therefore, in the absence of Emirates, these passengers would be forced to use one-stop connections to Dubai and two-stop connections to the other 17 destinations. Emirates therefore helps to fill the connectivity gap that exists in Hamburg.

The connectivity brings with it catalytic impacts on FDI, trade and tourism. More business travellers can fly into and from Hamburg for face-to-face meetings, thereby facilitating business deals and any consequent FDI and trade activity. This has an impact on Hamburg's openness and therefore facilitates productivity and GDP growth in the long-run.

In order to provide these connections to Hamburg, Emirates employs staff and buys goods and services such as fuel, ground handling, catering etc. Staff working in Hamburg constitutes direct employment. Expenditure by Emirates on goods and services creates economic activity down the supply chain, thereby creating indirect employment. Most of these jobs would be in and around Hamburg. Expenditure by direct and indirect employees creates further economic activity and induced jobs.

Emirates' purchase of Airbus' A380s also has an impact on high-skill employment in Hamburg. Airbus employed 12,700 people at its Hamburg site, a proportion of which would have been involved in the manufacture of A380s for Emirates.

The people of Hamburg will also benefit from the competition and choice offered by Emirates as greater inter-airline competition is likely to improve quality and price for passengers. And they will surely recognise the impact through sponsorship of their football team.

Conclusion

Annex 1: Detailed results by country

The purpose of this annex is to report the main results of the analysis at the level of individual countries. For each country this covers:

- **DII impacts -** in terms of GDP and jobs;
- **Catalytic impacts -** also in terms of GDP and jobs; and
- **Connectivity -** in terms of the number of unique and more frequent connections that Emirates offers to the country in question.

There is a separate subsection below for each country considered in the analysis. As a summary, **Table 3** below reports the DII, catalytic and connectivity impacts by country and **Table 4** reports the breakdown of Emirates' DII impact in Europe through its Airbus spending.

Table 3. Summary of DII, catalytic and connectivity results by country

Country	DII impact		Catalytic impact				Connectivity (unique connections)		
	GDP (m)	Jobs	FDI (m)	Trade (m)	GDP (m)	Jobs	Direct	One stop	More frequent
Austria	€179	1,790	€ 2	€ 2	€ 1	10	0	2	2
Belgium	€23	250	€ 0	€ 0	€ 0	0	0	0	0
Cyprus	€24	560	€ 1	€ 2	€ 1	20	1	4	16
Czech Republic	€98	3,240	€ 0	€ 9	€ 4	130	1	13	7
Denmark	€86	860	€ 2	€ 10	€ 4	50	1	1	3
France	€643	6,720	€ 31	€ 16	€ 13	150	2	36	10
Germany	€1,017	11,040	€ 42	€ 110	€ 53	640	2	22	10
Greece	€79	1,650	€ 4	€ 7	€ 4	80	1	3	2
Ireland	€57	680	€ 48	€ 11	€ 14	170	1	5	4
Italy	€747	10,270	€ 39	€ 56	€ 30	480	3	8	4
Malta	€20	660	€ 0	€ 0	€ 0	0	0	0	16
Netherlands	€291	3,290	€ 0	€ 0	€ 0	0	0	0	0
Poland	€105	4,070	€ 0	€ 3	€ 1	50	1	3	4
Portugal	€104	2,620	€ 0	€ 3	€ 1	40	1	14	8

Spain	€304	4,030	€ 18	€ 9	€ 8	120	2	3	10
Sweden	€60	680	€ 2	€ 10	€ 4	50	1	2	1
United Kingdom	€2,755	29,700	€ 152	€ 116	€ 77	900	4	83	22
Total	**€6,600**	**82,100**	**€ 340**	**€ 365**	**€ 215**	**2,900**	**21**	**199**	**119**

Source: Frontier analysis. Numbers do not add up due to rounding.

Table 4. DII impact though Airbus' deliveries of A380s for Emirates

	Direct employees	Indirect employees	Induced employees	Total	GDP impact[12]	GDP impact (%)
France	1,200	7,000	6,300	14,500	€1.2 bn	0.06%
Germany	1,200	7,400	5,900	14,500	€1.2 bn	0.04%
Spain	400	2,300	2,300	5,000	€325 m	0.03%
United Kingdom	300	4,000	2,700	7,000	€595 m	0.03%
Europe	**3,100**	**20,700**	**17,200**	**41,000**	**€3.4 bn**	**0.03%**

12 Numbers do not add up due to rounding.

Annex 1: Detailed results by country

Austria

This section provides a summary of the economic impact that Emirates has in Austria. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Austria are summarised in **Table 5** below.

Table 5. GDP and jobs impact in Austria

	GDP (m)	GDP (%)	Jobs
DII impact	€179	0.06	1,790
Catalytic impact	€1	0.0003	10

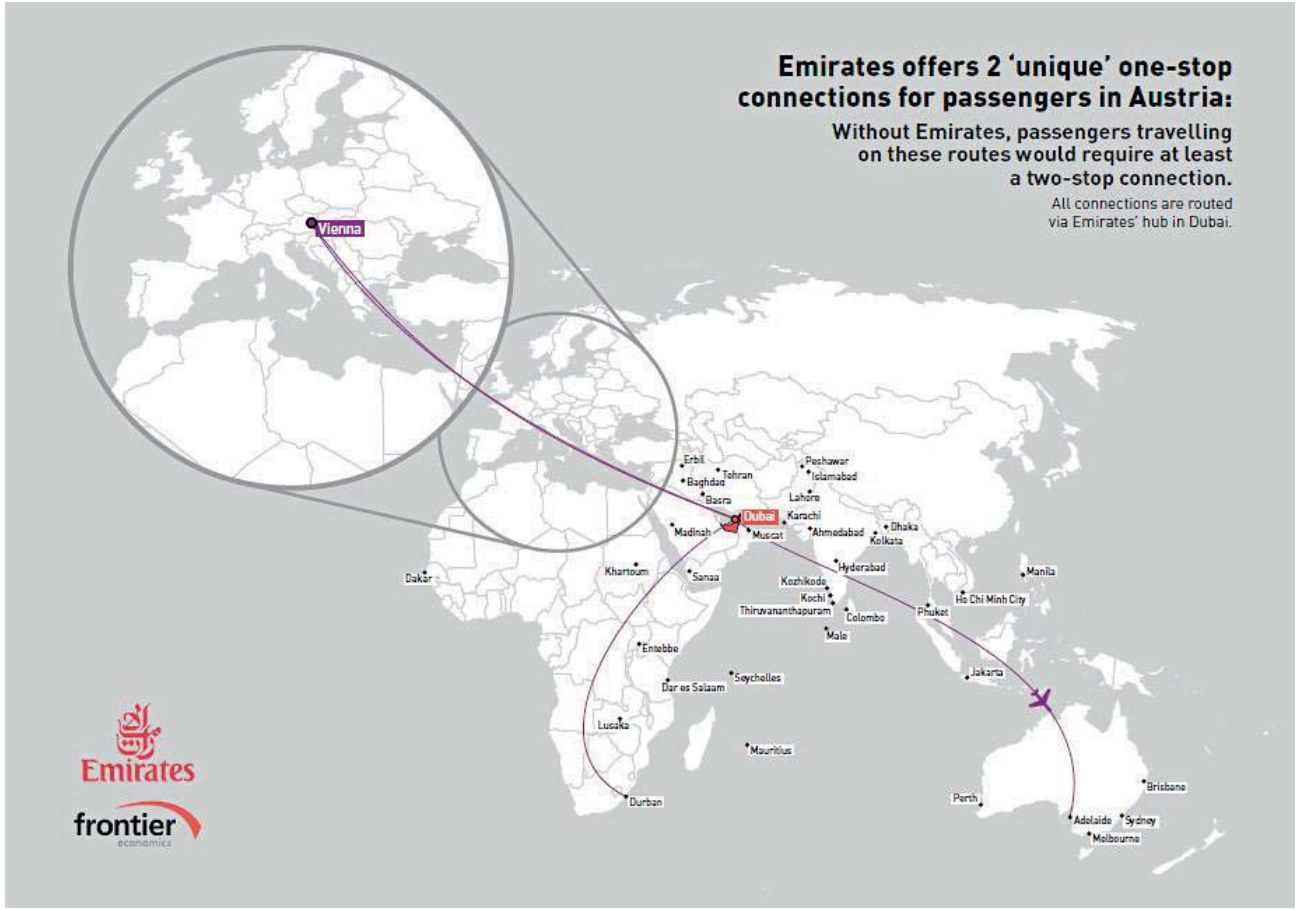
Source: Frontier analysis

Connectivity impacts

Based on 2013 data from OAG, Emirates flies a 13 weekly service from Vienna to Dubai. However, this direct connection is not unique. Emirates also provides **two** unique one-stop connections to people flying to and from Vienna. This is summarised in **Figure 24**.

In addition to the unique one-stop connections, Emirates also provides **two** extra one-stop connections on more days of the week than all other airlines combined. These routes are to Lusaka and Sialkot.

Figure 24. Emirates' unique one-stop connections to and from Vienna, Austria



Annex 1: Detailed results by country

Belgium

This section provides a summary of the economic impact that Emirates has in Belgium. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Belgium are summarised in **Table 6** below.

Table 6. GDP and jobs impact in Belgium

	GDP (m)	GDP (%)	Jobs
DII impact	€23	0.01	250
Catalytic impact	-	-	-

Source: Frontier analysis

Connectivity impacts

Emirates had not begun services to Belgium in 2013 but only ran SkyCargo operations through Liege. Consequently, Emirates did not offer unique connectivity and catalytic impacts to Belgium in 2013. A new daily service to Brussels was launched from 5th September 2014.

Cyprus

This section provides a summary of the economic impact that Emirates has in Cyprus. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Cyprus are summarised in **Table 7** below.

Table 7. GDP and jobs impact in Cyprus

	GDP (m)	GDP (%)	Jobs
DII impact	€24	0.15	560
Catalytic impact	€1	0.006	20

Source: Frontier analysis

Connectivity impacts

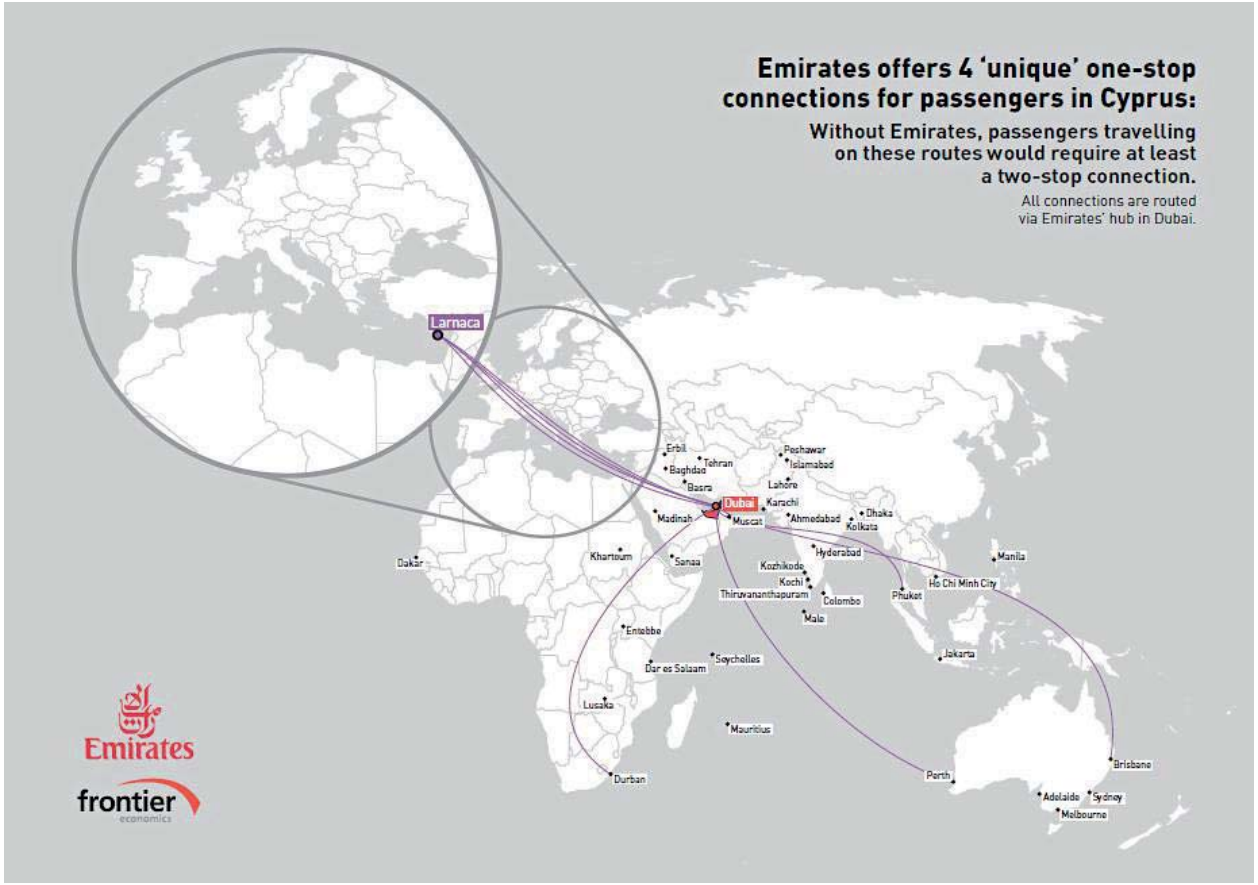
Based on 2013 data from OAG, Emirates flies a daily service from Larnaca to Dubai. This is a unique direct connection. Emirates also provides **four** unique one-stop connections to people flying to and from Larnaca. This is summarised in **Figure 25**.

In addition to the unique one-stop connections, Emirates also provides **sixteen** extra one-stop connections on more days of the week than all other airlines combined:

- Emirates flies on at least twice the number of days per week than all other airlines combined for these destinations: Ahmedabad, Jakarta, Clark Island Philippines, Melbourne, Seychelles, Sialkot, and Sydney.
- For the following destinations, Emirates flies on more days of the week than all other airlines combined (but less than double): Conakry, Dar es Salaam, Entebbe, Haneda Tokyo, Kabul, Luanda, Malé, and Ho Chi Minh City.

Annex 1: Detailed results by country

Figure 25. Emirates' unique one-stop connections to and from Larnaca, Cyprus



Annex 1: Detailed results by country

Czech Republic

This section provides a summary of the economic impact that Emirates has in the Czech Republic. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in the Czech Republic are summarised in **Table 8** below.

Table 8. GDP and jobs impact in the Czech Republic

	GDP (m)	GDP (%)	Jobs
DII impact	€98	0.07	3,240
Catalytic impact	€4	0.003	130

Source: Frontier analysis

Connectivity impacts

Based on 2013 data from OAG, Emirates flies a daily service from Prague to Dubai. This is a unique direct connection. Emirates also provides **13** unique one-stop connections to people flying to and from Prague. This is summarised in **Figure 26**.

In addition to the unique one-stop connections, Emirates also provides **seven** extra one-stop connections on more days of the week than all other airlines combined.

- Emirates flies on more than twice the number of days per week than all other airlines combined to Sialkot; and
- For the following destinations, Emirates flies on more days of the week than all other airlines combined (but less than double): Brisbane, Clark Island Philippines, Entebbe, Karachi, Lusaka, and Sana'a.

Figure 26. Emirates' unique one-stop connections to and from Prague, Czech Republic.

Annex 1: Detailed results by country

Denmark

This section provides a summary of the economic impact that Emirates has in Denmark. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Denmark are summarised in **Table 9** below.

Table 9. GDP and jobs impact in Denmark

	GDP (m)	GDP (%)	Jobs
DII impact	€86	0.03	860
Catalytic impact	€4	0.002	50

Source: Frontier analysis

Connectivity impacts

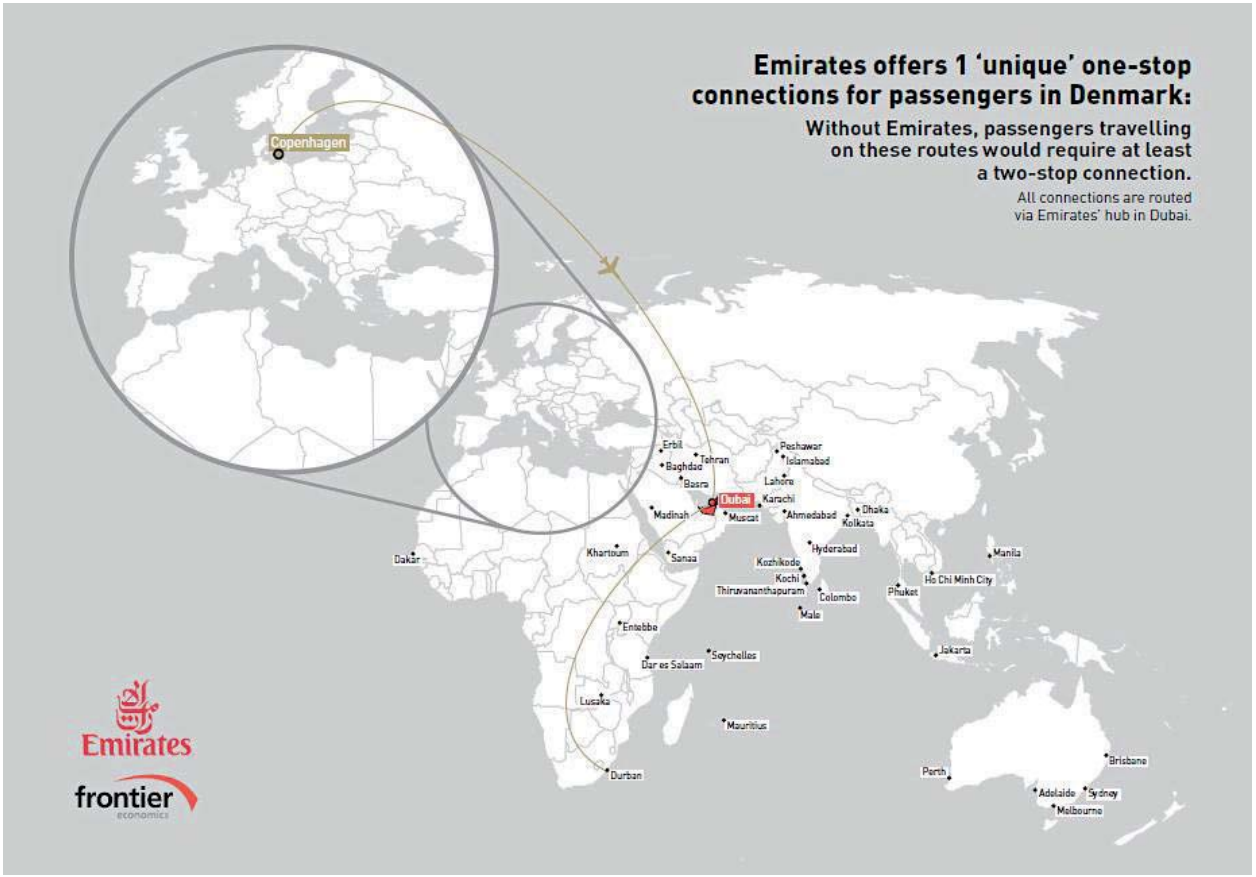
Based on 2013 data from OAG, Emirates flies a daily service from Copenhagen to Dubai. This is a unique direct connection. Emirates also provides **one** unique one-stop connection to people flying to and from Copenhagen. This is summarised in **Figure 27**.

In addition to the unique one-stop connection, Emirates also provides **three** extra one-stop connections on more days of the week than all other airlines operators combined:

- Emirates flies on more than twice the number of days per week than all other airlines combined to Sialkot; and
- For the following destinations, Emirates flies on more days of the week than all other airlines combined (but less than double): Adelaide and Lusaka.

Annex 1: Detailed results by country

Figure 27. Emirates' unique one-stop connection to and from Copenhagen, Denmark



Annex 1: Detailed results by country

France

This section provides a summary of the economic impact that Emirates has in France. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in France are summarised in **Table 10** below. The DII impact excludes Emirates' impact via its purchases of Airbus' A380s. The DII impact through Airbus has been reported separately.

Table 10. GDP and jobs impact in France

	GDP (m)	GDP (%)	Jobs
DII impact (excluding impact through Airbus)	€643	0.03	6,720
DII impact through Airbus	€1,200	0.06	14,500
Catalytic impact	€13	0.0006	150

Source: Frontier analysis

Connectivity impacts

Based on 2013 data from OAG, Emirates flies twenty weekly services from Paris to Dubai, a daily service from Nice to Dubai, and five weekly services from Lyon to Dubai. The connections between Lyon and Dubai, and Nice and Dubai are both unique direct connections. Emirates also provides **36** unique one-stop connections to people flying to and from Lyon and Nice. This is summarised in **Figure 28**.

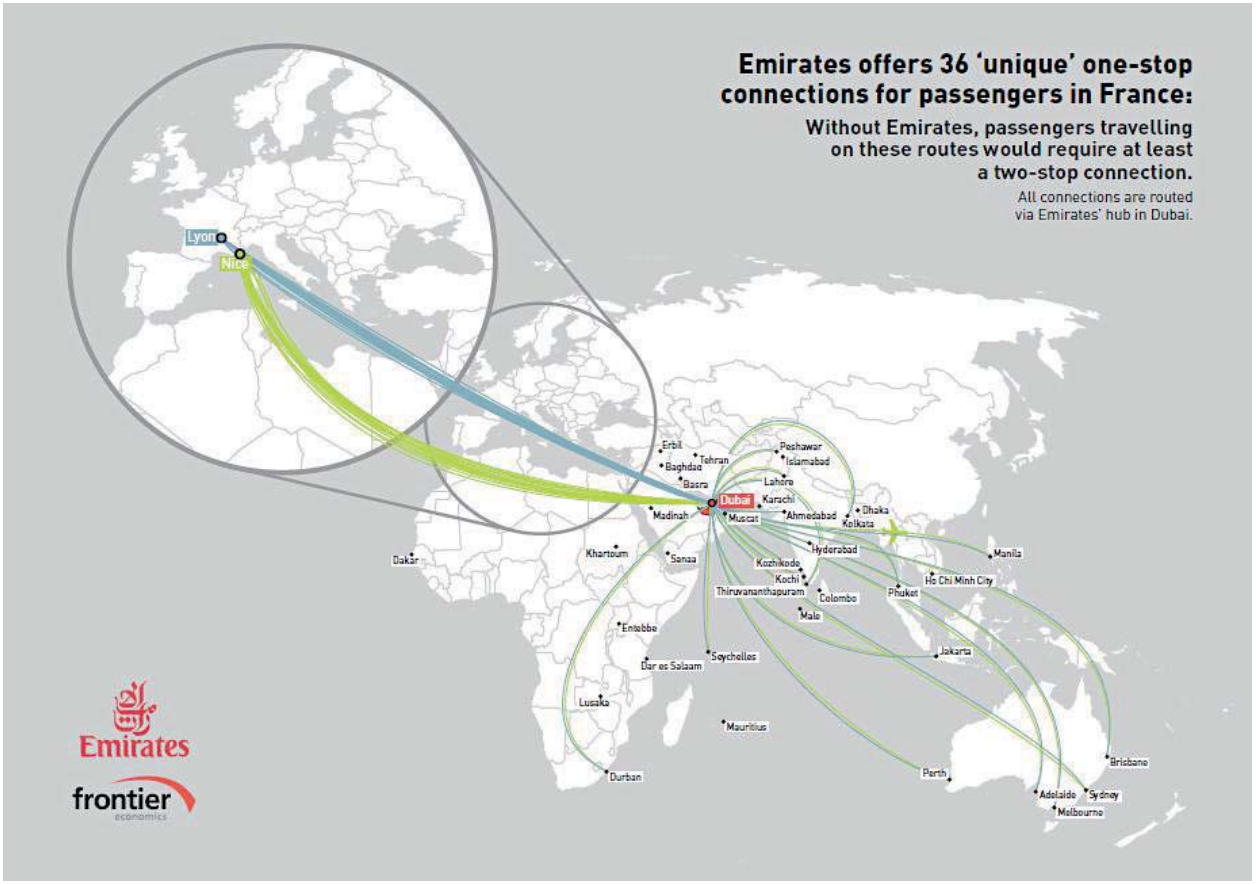
In addition to the unique one-stop connections, Emirates also provides **ten** one-stop connections on more days of the week than all other airlines combined:

- Lyon (4):

- Emirates flies on at least twice the number of days per week than all other airlines combined to Clark Island Philippines and Sialkot; and
- For the following destinations, Emirates flies on more days of the week than all other airlines combined (but less than double): Karachi and Lusaka.

- Nice (6):
  - Emirates flies on at least twice the number of days per week than all other airlines combined to Clark Island Philippines and Sialkot; and
  - For the following destinations, Emirates flies on more days of the week than all other airlines combined (but less than double): Entebbe, Karachi, Lusaka and Sana'a.

Figure 28. Emirates' unique one-stop connections to and from Lyon and Nice, France



Annex 1: Detailed results by country

Germany

This section provides a summary of the economic impact that Emirates has in Germany. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Germany are summarised in **Table 11** below. The DII impact excludes Emirates' impact via its purchases of Airbus' A380s. The DII impact through Airbus has been reported separately.

Table 11. GDP and jobs impact in Germany

	GDP (m)	GDP (%)	Jobs
DII impact (excluding impact through Airbus)	€1,017	0.04	11,040
DII impact through Airbus	€1,194	0.04	14,500
Catalytic impact	€53	0.002	640

Source: Frontier analysis

Connectivity impacts

Based on 2013 data from OAG, Emirates flies two daily services from Dusseldorf, Hamburg and Munich to Dubai and three daily services from Frankfurt to Dubai. The Hamburg and Dusseldorf connections to Dubai are both unique direct connections. And Emirates also provides **22** unique one-stop connections to people flying to and from Dusseldorf and Hamburg. This is summarised in **Figure 29**.

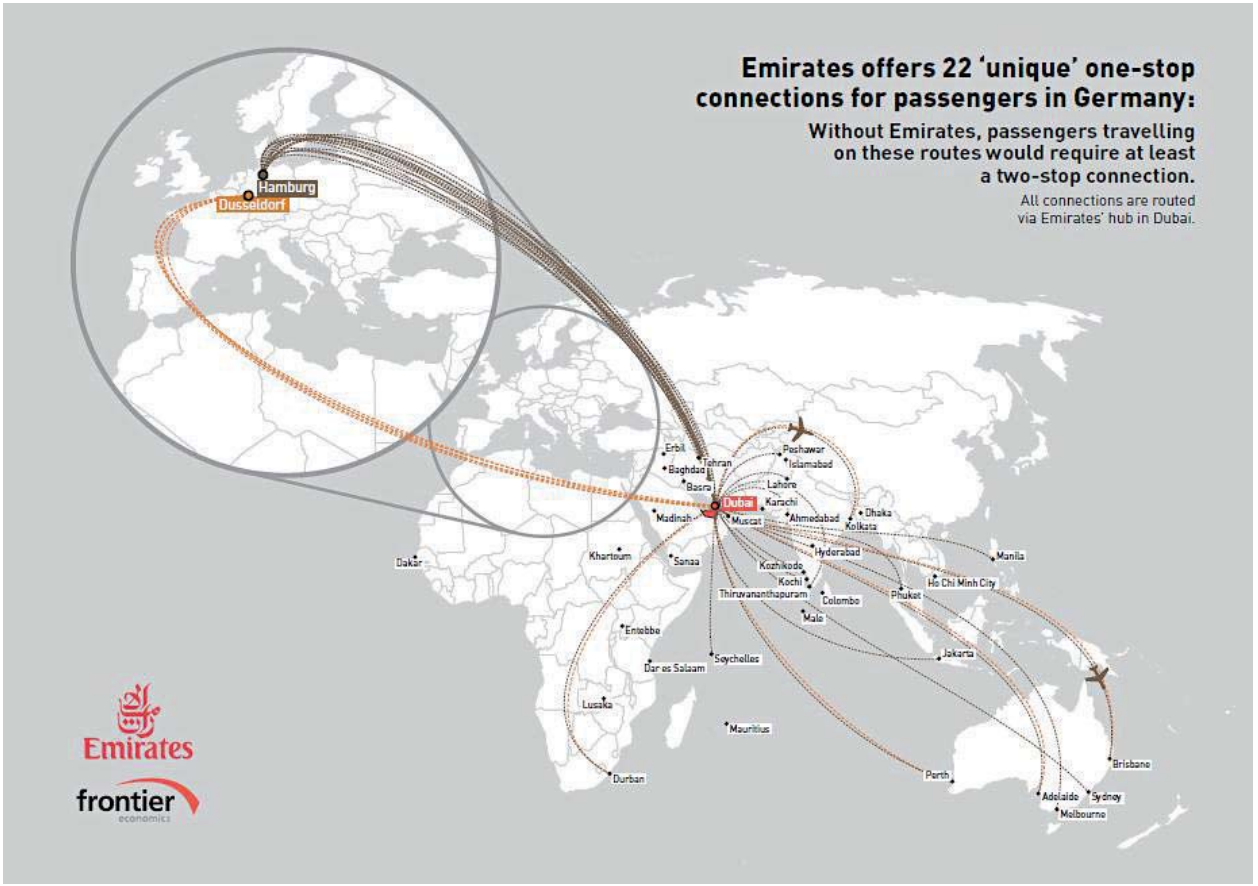
In addition to the unique one-stop connections, Emirates also provides **ten** one-stop connections on more days of the week than all other airlines combined:

- Dusseldorf (4):

- Emirates flies on at least twice the number of days per week than all other airlines combined to Clark Island Philippines and Sialkot; and
- For the following destinations, Emirates flies on more days of the week than all other airlines combined (but less than double): Entebbe and Lusaka.

- Hamburg (6):
  - Emirates flies on at least twice the number of days per week than all other airlines combined to Clark Island Philippines and Sialkot; and
  - For the following destinations, Emirates flies on more days of the week than all other airlines combined (but less than double): Entebbe, Karachi, Lusaka and Sana'a.

Figure 29. Emirates' unique one-stop connections to and from Dusseldorf and Hamburg, Germany



Annex 1: Detailed results by country

Greece

This section provides a summary of the economic impact that Emirates has in Greece. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Greece are summarised in **Table 12** below.

Table 12. GDP and jobs impact in Greece

	GDP (m)	GDP (%)	Jobs
DII impact	€79	0.04	1,650
Catalytic impact	€4	0.002	80

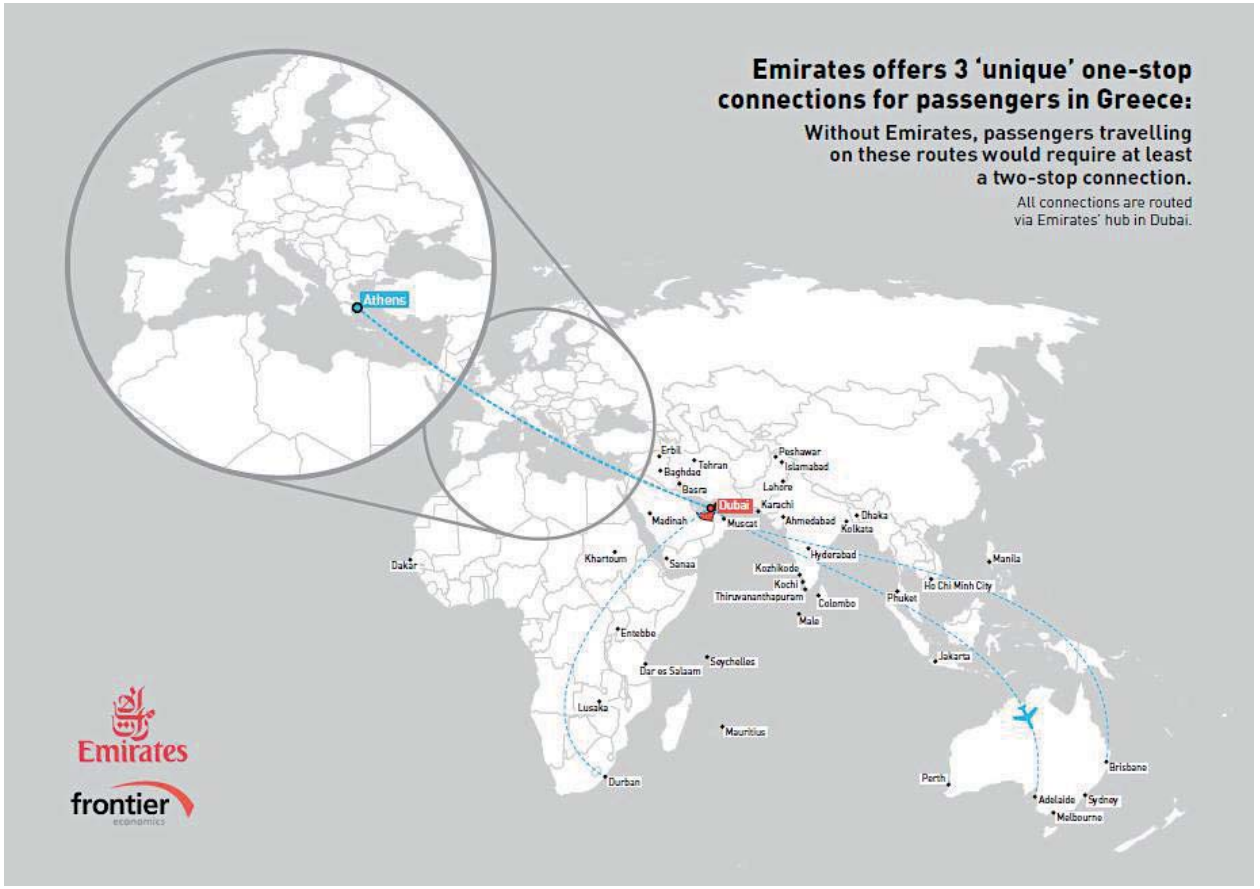
Source: Frontier analysis

Connectivity impacts

Based on 2013 data from OAG, Emirates flies a daily service from Athens to Dubai. This is a unique direct connection. Emirates also provides **three** unique one-stop connections to people flying to and from Athens. This is summarised in **Figure 30**.

In addition to the unique one-stop connections, Emirates also provides **two** one-stop connections on more days of the week than all other airlines combined. These routes are to Sialkot and Lusaka.

Figure 30. Emirates' unique one-stop connections to and from Athens, Greece



Annex 1: Detailed results by country

Ireland

This section provides a summary of the economic impact that Emirates has in Ireland. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Ireland are summarised in **Table 13** below.

Table 13. GDP and jobs impact in Ireland

	GDP (m)	GDP (%)	Jobs
DII impact	€57	0.04	680
Catalytic impact	€14	0.009	170

Source: Frontier analysis

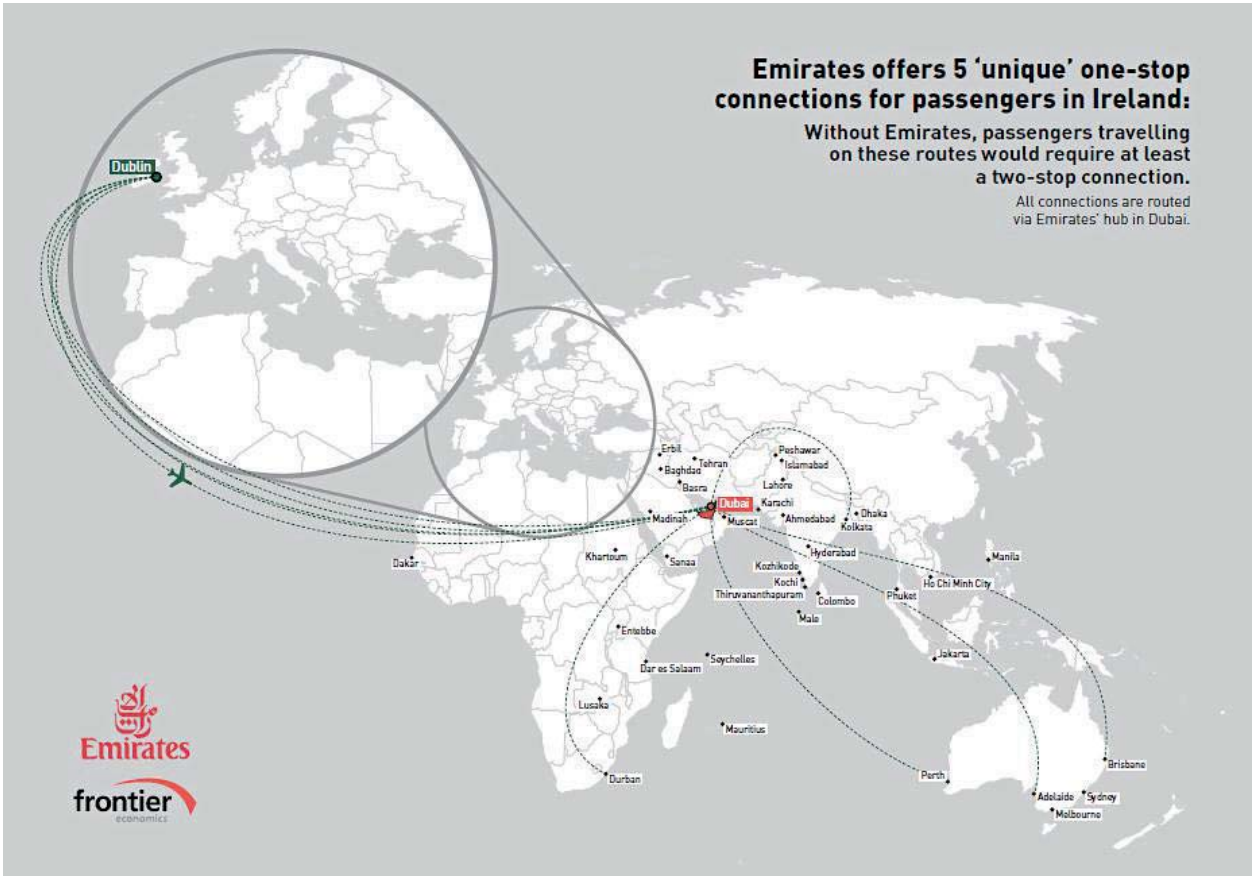
Connectivity impacts

Based on 2013 data from OAG, Emirates flies a daily service from Dublin to Dubai. This is a unique direct connection. Emirates also provides **five** unique one-stop connections to people flying to and from Dublin. This is summarised in **Figure 31**.

In addition to the unique one-stop connections, Emirates also provides **four** one-stop connections on more days of the week than all other airlines operators combined:

- Emirates flies on at least twice the number of days per week than all other airlines combined to Clark Island Philippines and Sialkot; and
- For the following destinations, Emirates flies on more days of the week than all other airlines combined (but less than double): Entebbe and Lusaka.

Figure 31. Emirates' unique one-stop connections to and from Dublin, Ireland



Annex 1: Detailed results by country

Italy

This section provides a summary of the economic impact that Emirates has in Italy. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Italy are summarised in **Table 14** below.

Table 14. GDP and jobs impact in Italy

	GDP (m)	GPD (%)	Jobs
DII impact	€747	0.05	10,270
Catalytic impact	€30	0.002	480

Source: Frontier analysis

Connectivity impacts

Based on 2013 data from OAG, Emirates flies three daily services from Milan to Dubai[13], two daily services from Rome and a daily service from Venice to Dubai. These are all unique direct connections. Emirates also provides **eight** unique one-stop connections to people flying to and from Milan, Rome and Venice. This is summarised in **Figure 32**.

In addition to the unique one-stop connections, Emirates also provides **four** one-stop connections on more days of the week than all other airlines combined:

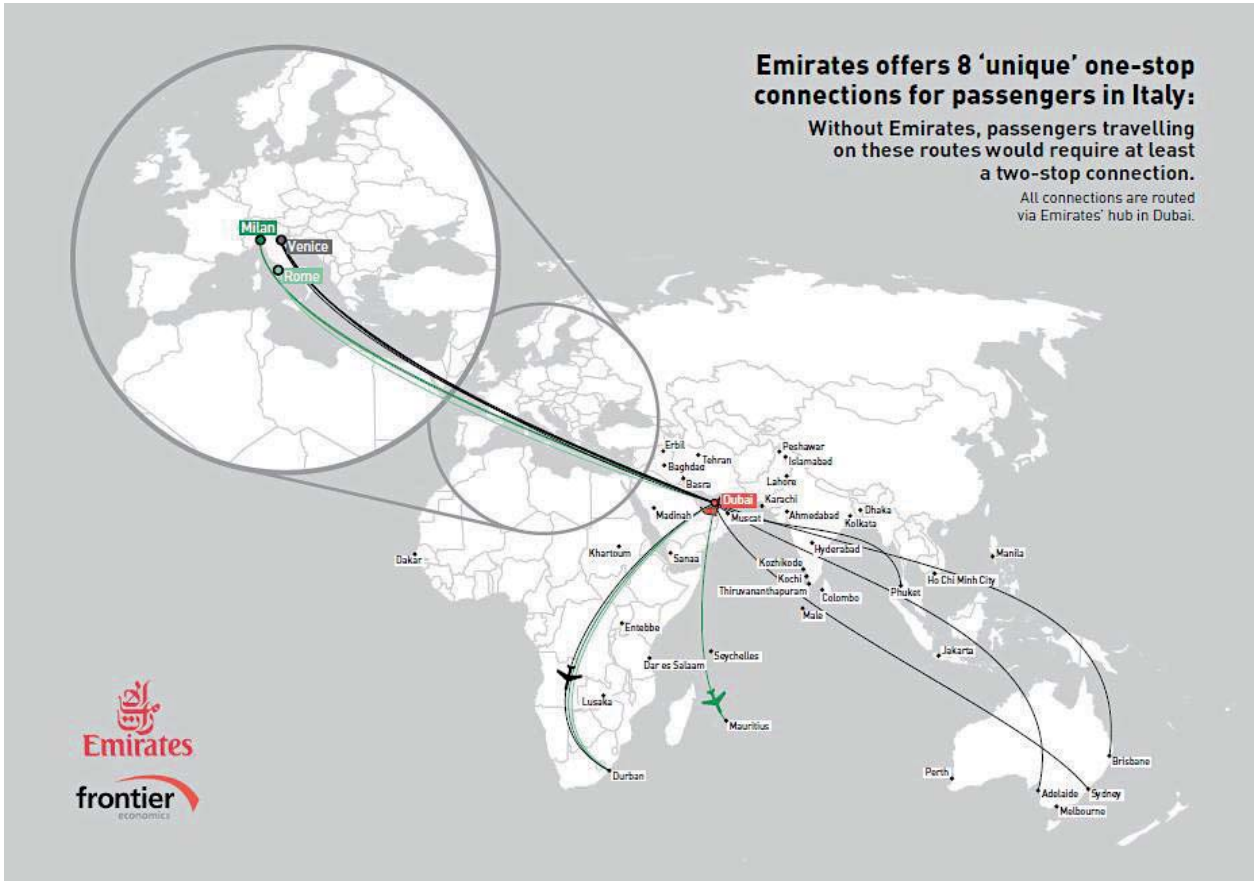
- Milan (1):
  - Emirates flies on more days of the week than all other airlines combined (but less than double) to Lusaka.
- Rome (1):

13 From 1 October 2013, one of these flights is a daily New York, JFK service to Milan.

- Emirates flies on twice the number of days per week than all other airlines combined to Sialkot.

- Venice (2):
  - Emirates flies on more than twice the number of days per week than all other airlines combined to Sialkot; and
  - Emirates flies on more days of the week than all other airlines combined (but less than double) to Lusaka.

Figure 32. Emirates' unique one-stop connections to and from Milan, Rome and Venice, Italy



Annex 1: Detailed results by country

Malta

This section provides a summary of the economic impact that Emirates has in Malta. This covers:

- Direct, indirect and induced impacts (DII) -in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Malta are summarised in **Table 15** below.

Table 15. GDP and jobs impact in Malta

	GDP (m)	GDP (%)	Jobs
DII impact	€20	0.27	660
Catalytic impact	-		-

Source: Frontier analysis

Connectivity impacts

Based on 2013 data from OAG, Emirates flies a daily indirect service from Malta to Dubai via Larnaca, Cyprus. Given that this is not a direct connection, in our analysis Emirates does not provide any unique one-stop connections to and from Malta. (As set out in Annex 3, we have not included any connections that require a scheduled stopover on any leg).

However, between September 2013 and July 2014, Emirates also temporarily provided a direct connection from Dubai to Malta. The direct flight was operated three times a week in the final quarter of 2013, and increased to a daily flight up until July 2014, when it was discontinued. The direct connection was in one direction only – with the return leg (Malta to Dubai) only available indirect.

Our analysis has identified **sixteen** one-stop connections that were temporarily provided by Emirates in 2013 with greater frequency than by all other airlines combined. These destinations were:

- Adelaide, Ahmedabad, Brisbane, Kozhikode, Kolkata, Jakarta, Cochin, Clark Island Philippines, Durban, Melbourne, Perth, Peshawar, Seychelles, Sialkot, Sydney and Thiruvananthapuram.

This provides an example of how Emirates is helping to bridge connectivity gaps in Europe.

Annex 1: Detailed results by country

Netherlands

This section provides a summary of the economic impact that Emirates has in the Netherlands. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in the Netherlands are summarised in **Table 16** below.

Table 16. GDP and jobs impact in the Netherlands

	GDP (m)	GDP (%)	Jobs
DII impact	€291	0.05	3,290
Catalytic impact	-		-

Source: Frontier analysis

Connectivity impacts

Based on 2013 data from OAG, Emirates flies a twice daily service from Amsterdam to Dubai. However, this is not a unique direct connection. Also, Amsterdam is a well-connected airport, and as such Emirates does not offer any unique one-stop connections. As a result, Emirates does not bring any additional connectivity benefits to the Netherlands, aside for greater competition and choice on the direct flight to Dubai, and the one-stop connections via Dubai.

Poland

This section provides a summary of the economic impact that Emirates has in Poland. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Poland are summarised in **Table 17** below.

Table 17. GDP and jobs impact in Poland

	GDP (m)	GDP (%)	Jobs
DII impact	€105	0.03	4,070
Catalytic impact	€1	0.0002	50

Source: Frontier analysis

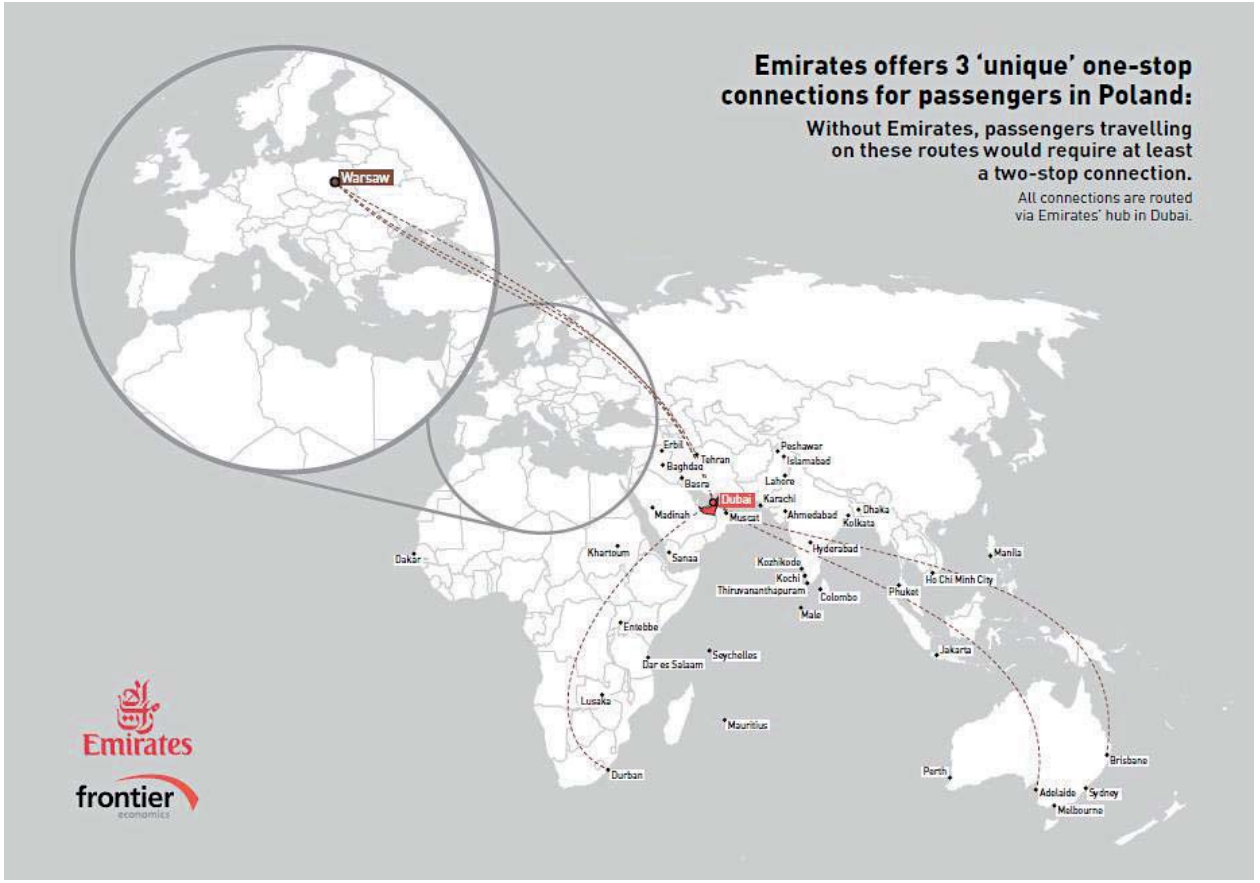
Connectivity impacts

Based on 2013 data from OAG, Emirates flies a daily service from Warsaw to Dubai. This is a unique direct connection. Emirates also provides **three** unique one-stop connections to people flying to and from Warsaw. This is summarised in **Figure 33**.

In addition to the unique one-stop connections, Emirates also provides **four** one-stop connections on more days of the week than all other airlines combined:

- Emirates flies on at least twice the number of days per week than all other airlines combined to Sialkot and Sydney; and
- Emirates flies on more days of the week than all other airlines combined (but less than double) to Phuket and Lusaka.

Figure 33. Emirates' unique one-stop connections to and from Warsaw, Poland



Annex 1: Detailed results by country

Portugal

This section provides a summary of the economic impact that Emirates has in Portugal. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Portugal are summarised in **Table 18** below.

Table 18. GDP and jobs impact in Portugal

	GDP (m)	GDP (%)	Jobs
DII impact	€104	0.06	2,620
Catalytic impact	€1	0.0008	40

Source: Frontier analysis

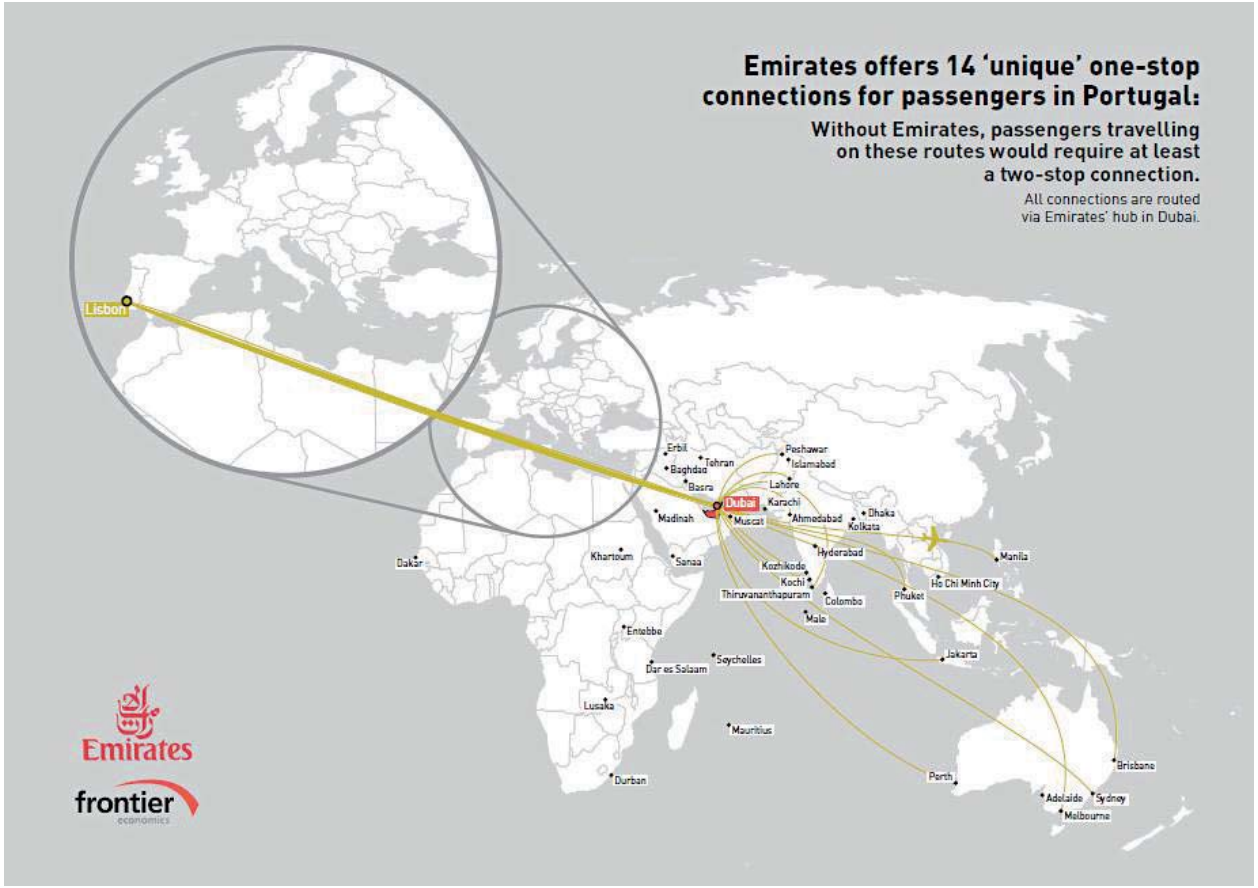
Connectivity impacts

Based on 2013 data from OAG, Emirates flies a daily service from Lisbon to Dubai. This is a unique direct connection. Emirates also provides **fourteen** unique one-stop connections to people flying to and from Lisbon. This is summarised in **Figure 34**.

In addition to the unique one-stop connections, Emirates also provides **eight** one-stop connections on more days of the week than all other airlines combined:

- Emirates flies on more days of the week than all other airlines combined (but less than double) to Clark Island Philippines, Seychelles and Sialkot; and
- Emirates flies on at least twice the number of days per week than all other airlines combined to Durban, Entebbe, Karachi, Lusaka and Sana'a.

Figure 34. Emirates' unique one-stop connections to and from Lisbon, Portugal



Annex 1: Detailed results by country

Spain

This section provides a summary of the economic impact that Emirates has in Spain. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Spain are summarised in **Table 19** below. The DII impact excludes Emirates' impact via its purchases of Airbus' A380s. The DII impact through Airbus has been reported separately.

Table 19. GDP and jobs impact in Spain

	GDP (m)	GDP (%)	Jobs
DII impact (excluding impact through Airbus)	€304	0.03	4,030
DII impact through Airbus	€325	0.03	5,000
Catalytic impact	€8	0.0007	120

Source: Frontier analysis

Connectivity impacts

Based on 2013 data from OAG, Emirates flies a daily service from Barcelona to Dubai and two daily services from Madrid to Dubai. Both of these are unique direct connections. Emirates also provides **three** unique one-stop connections to people flying to and from Barcelona and Madrid. This is summarised in **Figure 35**.

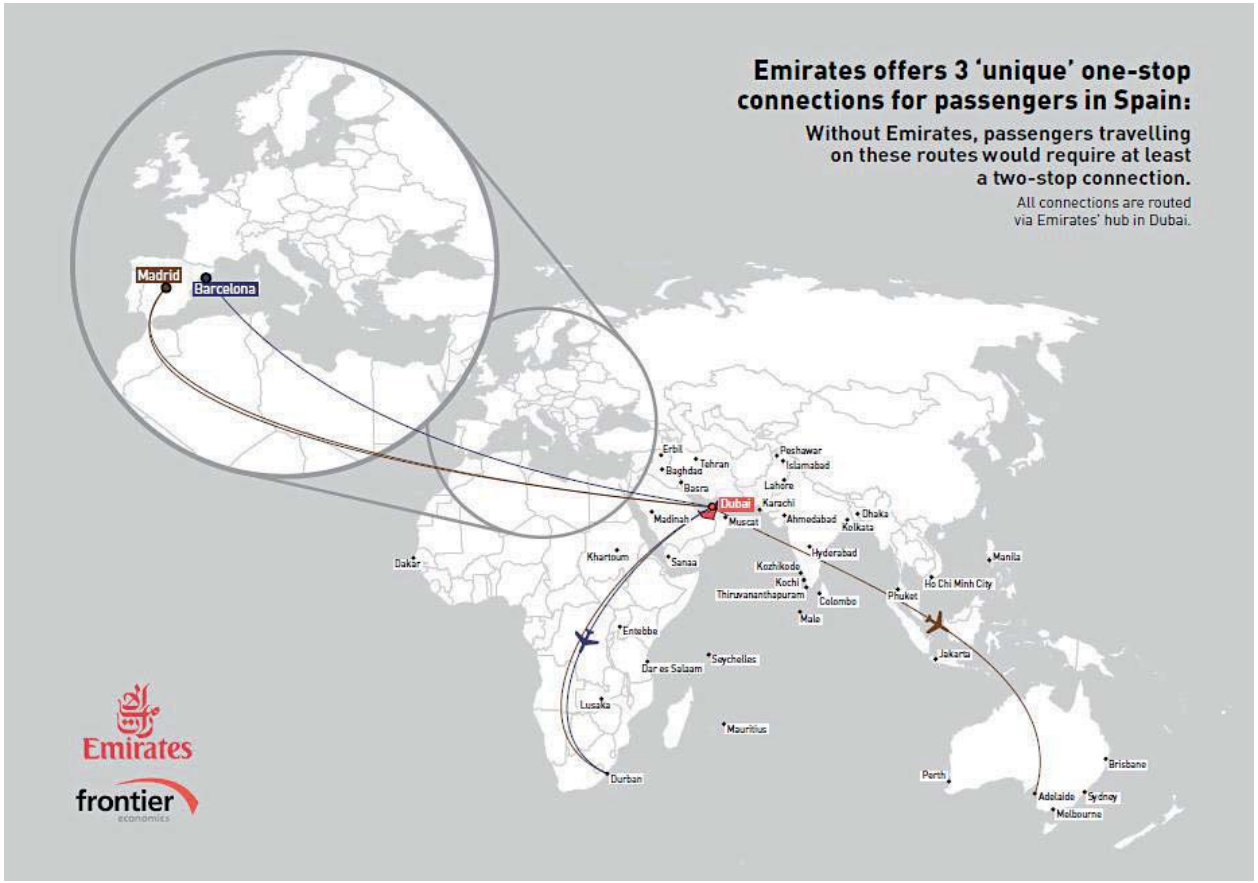
In addition to the unique one-stop connections, Emirates also provides **ten** one-stop connections on more days of the week than all other airlines combined:

- Barcelona (6):

- Emirates flies on at least twice the number of days per week than all other airlines combined to Adelaide, Brisbane, Sydney and Sialkot; and
- Emirates flies on more days of the week than all other airlines combined (but less than double) to Phuket and Lusaka.

- Madrid (4):
  - Emirates flies on more than twice the number of days per week than all other airlines combined to Sialkot; and
  - Emirates flies on more days of the week than all other airlines combined (but less than double) to Brisbane, Sydney and Lusaka.

Figure 35. Emirates' unique one-stop connections to and from Barcelona and Madrid, Spain



Annex 1: Detailed results by country

Sweden

This section provides a summary of the economic impact that Emirates has in Sweden. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in Sweden are summarised in **Table 20** below.

Table 20. GDP and jobs impact in Sweden

	GDP (m)	GDP (%)	Jobs
DII impact	€60	0.01	680
Catalytic impact	€4	0.001	50

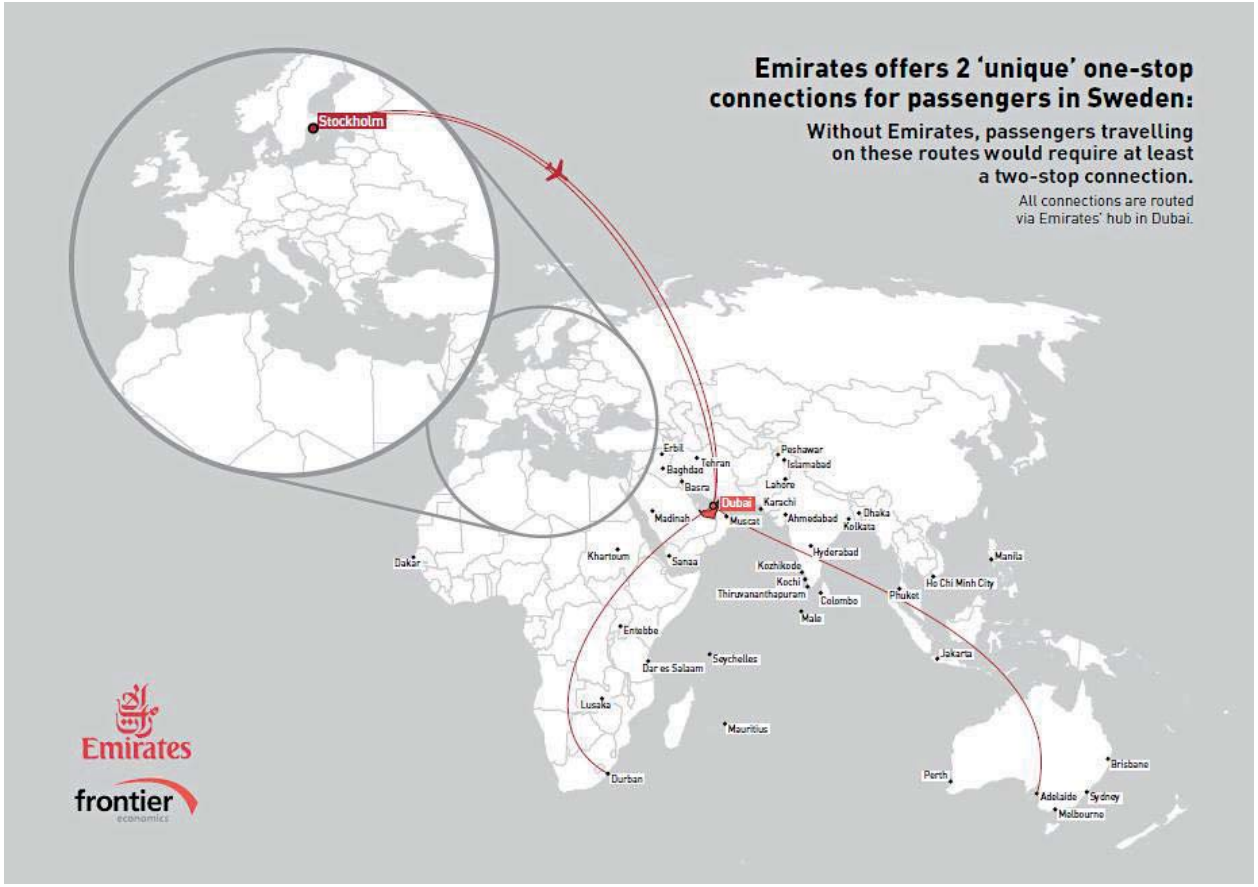
Source: Frontier analysis

Connectivity impacts

Based on 2013 data from OAG, Emirates flies a daily service from Stockholm to Dubai. This is a unique direct connection. Emirates also provides **two** unique one-stop connections to people flying to and from Stockholm, Sweden. This is summarised in **Figure 36**.

In addition to the unique one-stop connections, Emirates flies on more than twice the number of days of the week than all other airlines combined to Sialkot.

Figure 36. Emirates' unique one-stop connections to and from Stockholm, Sweden



Annex 1: Detailed results by country

United Kingdom

This section provides a summary of the economic impact that Emirates has in the United Kingdom. This covers:

- Direct, indirect and induced impacts (DII) - in terms of GDP and jobs;
- Catalytic impacts - also in terms of GDP and jobs; and
- Connectivity - in terms of the number of unique and more frequent connections that Emirates offers to passengers flying to and from the country.

GDP and jobs

The GDP and jobs from both Emirates' DII and catalytic impacts in the United Kingdom are summarised in **Table 21** below. The DII impact excludes Emirates' impact via its purchases of Airbus' A380s. The DII impact through Airbus has been reported separately.

Table 21. GDP and jobs impact in the United Kingdom

	GDP (m)	GDP (%)	Jobs
DII impact (excluding impact through Airbus)	€2,755	0.15	29,700
DII impact through Airbus	€595	0.03	7,000
Catalytic impact	€77	0.004	900

Source: Frontier analysis

Connectivity impacts

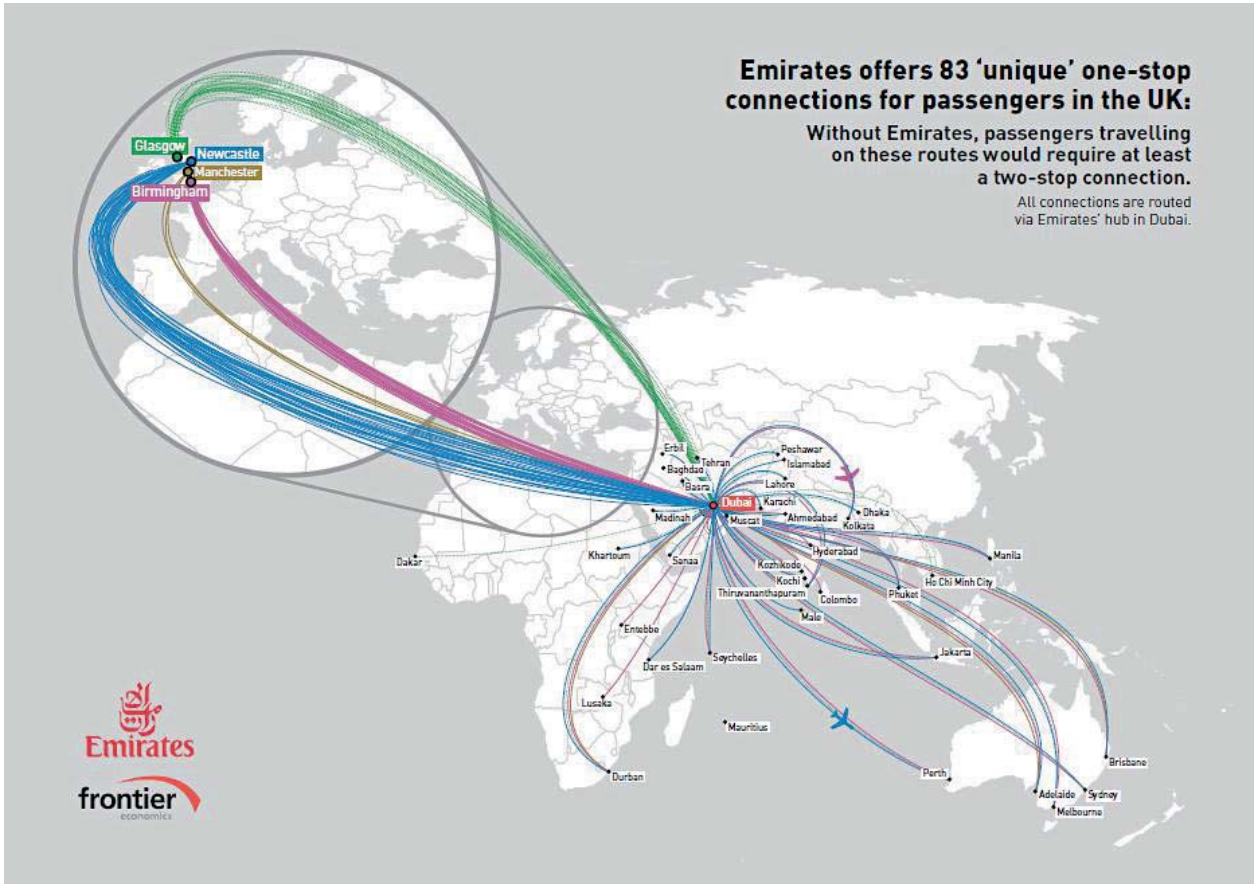
Based on 2013 data from OAG, Emirates flies a daily service from Newcastle to Dubai, two daily services from Birmingham and Glasgow to Dubai, three daily services from Manchester and Gatwick to Dubai and five daily services from Heathrow to Dubai. The connections with Newcastle, Birmingham, Manchester and Glasgow are all unique direct connections. While the Gatwick connection is technically unique (no other airline flies direct from Gatwick to Dubai), we have not included it in our analysis as passengers can fly from Heathrow on other carriers instead.

Emirates also provides **83** unique one-stop connections to people flying to and from Birmingham, Glasgow, Manchester and Newcastle. This is summarised in **Figure 37**.

In addition to the unique one-stop connections, Emirates also provides **twenty two** one-stop connections on more days of the week than all other airlines combined:

- Birmingham (4):
  - Emirates flies on at least twice the number of days per week than all other airlines combined to Clark Island Philippines and Sialkot; and
  - Emirates flies on more days of the week than all other airlines combined (but less than double) to Peshawar and Sana'a .
- Glasgow (9):
  - Emirates flies on at least twice the number of days per week than all other airlines combined to Clark Island Philippines, Kabul, Malé and Sialkot; and
  - Emirates flies on more days of the week than all other airlines combined (but less than double) to Dammam, Entebbe, Luanda, Lusaka and Chennai.
- Manchester (2):
  - Emirates flies on more days of the week than all other airlines combined (but less than double) to Lusaka and Sialkot.
- Newcastle (7):
  - Emirates flies on at least twice the number of days per week than all other airlines combined to Clark Island Philippines, Kabul and Sialkot; and
  - Emirates flies on more days of the week than all other airlines combined (but less than double) to Dammam, Entebbe, Lusaka and Chennai.

Figure 37. Emirates' unique one-stop connections to and from Birmingham, Glasgow, Manchester and Newcastle, UK



Annex 1: Detailed results by country

Annex 2: Detailed assumptions for quantifying DII impact

This annex provides detailed results by country of our estimates of Emirates' DII impact (this includes SkyCargo) in Europe in 2013. **Table 22** below gives the detailed break-down of Emirates' DII impact in Europe in 2013. Details on our assumptions behind these estimates are also provided in **Table 23** and **Table 24**.

Table 22. DII employment impact in Europe, 2013

	Direct	Indirect	Induced	Total
Austria	40	1,040	710	1,790
Belgium	0	150	100	250
Cyprus	10	320	230	560
Czech Republic	30	1,740	1,470	3,240
Denmark	20	470	370	860
France	100	3,930	2,690	6,720
Germany	220	6,850	3,970	11,040
Greece	30	800	820	1,650
Ireland	30	400	250	680
Italy	130	5,470	4,670	10,270
Malta	10	450	200	660
Netherlands	40	1,960	1,290	3,290
Poland	20	2,160	1,890	4,070
Portugal	30	1,390	1,200	2,620
Spain	40	2,240	1,750	4,030
Sweden	20	380	280	680
United Kingdom	660	18,040	11,000	29,700
Total[14]	**1,400**	**47,800**	**32,900**	**82,100**

Source: Frontier Economics estimates.

14 Numbers do not add up due to rounding.

Table 23. Key assumptions in estimating indirect employment

Input	Assumptions/Source
Type I multipliers	In order to construct our weighted average multiplier, we use Type I multipliers from the OECD Input-Output tables for the mid-2000s so as to use a consistent source for the multipliers for all countries. Furthermore, we do not try to project the multipliers for 2013 because our literature review has indicated that projections of multipliers are unlikely to be meaningful[15].
Proportion of jet fuel imported	A large proportion of Emirates' total expenditure in any country is on fuel. However, attributing a supply-chain impact to the entire quantum of expenditure would be incorrect as a significant proportion of jet fuel in that country may be imported. We assume that the proportion of Emirates' expenditure that will have an impact on the supply chain for fuel in that country to equal the proportion of national jet fuel consumption that is based on local production as per data from US Energy Information Administration.
GDP/Jobs ratio	This too is a composite measure taking into account the fact that the supply chain for fuel is less labour intensive than the supply chain for other goods and services that Emirates utilises. We construct it as a weighted average of the national, average GDP/Jobs ratio and a fuel-sector specific GDP/Jobs ratio. These are described below.
National average GDP/Jobs ratio	This is based on the average GDP/hour worked for an FTE worker as per Eurostat.
Fuel-sector specific GDP/Jobs ratio	We estimate the fuel-sector specific GDP/job figure for each country using DECC[16]'s estimate for GDP/jobs ratio in the fuel sector in the UK. This is a conservative approach because using only the national, average GDP/job ratio for all countries would overestimate indirect employment as fuel sector jobs are not as labour intensive. The alternative would have been to use a GDP/jobs ratio for "Industry, including energy but excluding manufacturing" from the OECD. However, this measure includes several industries, not just energy, thereby pulling down the average GDP/Jobs ratio. This too would lead to an overestimate of the number of jobs that would be facilitated by Emirates' expenditure on fuel.

15 Input-Output Analysis , Foundations and Extensions, Miller and Blair (2009)

16 Department of Energy and Climate Change, (2014), Review of the Refining and Fuel Import Sectors in the UK, Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/302172/Refining_and_fuel_imports_in_the_UK__FINAL_VERSION.pdf

Annex 2: Detailed assumptions for quantifying DII impact

Table 24. Key assumptions in estimating induced employment

Input	Assumptions/Source
Income earned by direct employees	This is based on pay-scale data from Emirates.
Income earned by indirect employees	This is estimated to be equal to the disposable income (this is post-tax) per employed person in each country based on Eurostat data. In the absence of a consistent data source for FTE in each country, we have used the total number of employed people. This assumption is conservative because the average disposable income per FTE would be higher than that used in our estimate, thereby leading to higher indirect employment estimates.
Income earned in the counterfactual	This is estimated to be equal to either the minimum wage as per Eurostat, or in the absence of a minimum wage, it is estimated as the unemployment benefits as per the relevant government department data.
Tax rate	Minimum wages and unemployment benefits are pre-tax. We use average personal tax rates from KPMG.
Savings rate	We use Eurostat data on household savings rates.
GDP/Jobs ratio	We use the average, national GDP/hour worked for an FTE worker as per Eurostat.

Annex 2: Detailed assumptions for quantifying DII impact

Annex 3: Identifying unique one-stop connections and more frequent connections

This annex provides more detail on our method for identifying:

- 'unique' one-stop connections; and
- 'more frequent' one-stop connections

Each type is described in more detail below.

'Unique' one-stop connections

In 2013, Emirates flew to 29 airports in 16 EU Member States, and 80 airports around the rest of the world.[17] By considering every possible combination of European airport and rest of the world airport, Emirates could provide over 2,000 one-stop connections to passengers flying to and from Europe.

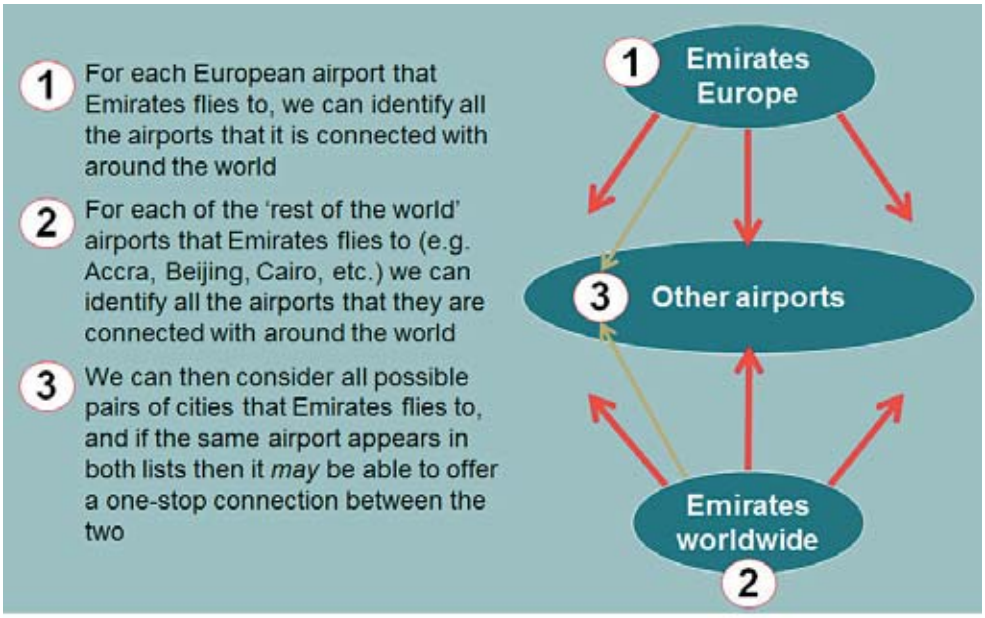
To identify which of these routes were unique, we considered OAG data for 2013 for every airport that Emirates flew to. For each airport, the data lists the number of departures to each destination served, and the airlines involved in providing those departures.

For every one-stop connection that Emirates offered, we considered whether it was possible to make a one-stop connection with an alternative routing instead – without Emirates.

For each pair in turn, we considered the route networks at both airports, and identified whether there were any destinations that appeared in both networks. Any destination that did appear in both could therefore potentially have served as an alternative connecting airport. This process is illustrated in **Figure 38** below.

17 This excludes cargo only destinations, destinations in the Americas, and destinations in non-EU Member States in Europe (i.e.Turkey, Switzerland and Russia).

Figure 38. Identifying unique one-stop connections



Note: 'Emirates Europe' refers to Emirates' 29 EU airports / 28 destinations. 'Emirates worldwide' refers to Emirates' 80 destinations outside the EU and the rest of Europe (e.g. Switzerland, Russia, etc.) – excluding the Americas.

For a given city pair, if there were no other common destinations in both airports' networks – apart from Dubai with Emirates – then we identified this as a unique one-stop connection for Emirates.[18]

For example, our analysis identified that the route networks at Dublin and Durban only shared one common destination – Dubai, which was only served by Emirates. Therefore, this is an example of a unique one-stop connection. Under a 'no Emirates' scenario, passengers wishing to travel between Dublin and Durban would only be able to do so with at least a two-stop connection.

Like the Dublin-Durban example, for many of the possible combinations, Dubai was the only airport that appeared in the route networks of both the European airport and the rest of the world airport – with Emirates providing the connections.

For other airport pairs, Emirates was not the only airline or alliance that could provide a one-stop connection. For example, there were many ways of flying between Heathrow and Sydney with only one stop – including Emirates.

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18 Note that our analysis of unique routes is based on the most recent dataset from OAG which was for 2013. As airline schedules change the number of unique routes may vary.

However, for some airport pairs, while it appeared physically possible to make a one-stop connection via another airport we did not consider them to be valid alternatives. We imposed the following tests:

- **Minimum frequency:** There must have been at least 100 departures in 2013 on both legs of any alternative routing. For example, if there were only 50 departures on one leg of a potential alternative routing, then we did not consider this to be a valid alternative. This is because, if the connection was possible, it would have only been offered with low frequency. For consistency, we also applied this test to Emirates[19];

- **Flights with a scheduled stopover:** We did not consider valid any alternative routing where either leg of the journey required a scheduled stopover. For example, it is possible to fly from some European hubs to destinations in Australia with a scheduled stopover at another hub airport along the way. Therefore, any transfer passengers flying via these European hubs would actually require at least two stopovers (i.e. one at the European hub, and another one at a hub along the way). Therefore, we did not consider examples such as this as being truly one-stop connections. For consistency, we also applied this test to Emirates. For example, Emirates flew to Abidjan via Accra, and Auckland via Australia.

- **Alliances and interlining:** Two airports may both offer routes to a third common destination. Therefore, this common destination may be capable of operating as a hub, connecting the other two airports. However, in reality it may be the case that different airlines or alliances operate on those routes. Therefore, while it remains possible to fly one-stop via the airport, in reality it may not be possible to buy a through-ticket. In this case, the connection is not guaranteed, and passengers wishing to self-connect may need to reclaim baggage at the hub. Therefore, we considered whether both legs of any potential routing were operated by the same airline or alliance. If they were, then we considered the alternative routing a valid one-stop connection. We did not consider any alternative routing where it did not appear possible to buy a through ticket. For example, based on the OAG data, in 2013 it was possible to fly direct from Prague to Abu Dhabi with Czech Airlines (a member of Sky Team), and to fly direct from Abu Dhabi to Kozhikode with either Etihad or Air India Express (neither of which were part of an alliance at the time of our analysis).[20] Based on our research we understand that it is

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19 We also applied a minimum frequency of 100 departures when testing for unique direct connections too.

20 Air India Express is a low cost airline subsidiary of Air India. Air India was not part of an alliance in 2013, but became a member of Star Alliance in 2014. Etihad is not a member of an alliance.

not possible to buy a through ticket on this particular route with these airlines. Therefore, we did not consider this – and other similar examples – to be valid one-stop alternatives. This is because from the point of view of the passenger, two separate tickets would need to be purchased, the connection would not be guaranteed, and any baggage would need to be reclaimed along the way.

By following the approach outlined above, we identified 199 'unique' one-stop connections.

'More frequent' one-stop connections

The approach outlined above identified one-stop connections which are unique. However, there are also examples of one-stop connections which may not necessarily be unique to Emirates, but where the frequency of its connections is greater than the frequency provided by all other airlines combined. We measure frequency in terms of the number of days the connection is available per week.

A conceptual example is provided in **Table 25** below. In this example, Emirates provides a daily connection, whereas two rival airlines (or alliances etc.) collectively only provide a connection on three days of the week. In our analysis, we refer to these one-stop connections as being 'more frequent'.

Table 25. Example of a 'more frequent' one-stop connection

	M	Tu	W	Th	F	Sa	Su	Total
Emirates	✓	✓	✓	✓	✓	✓	✓	7
Airline A	✓	✗	✓	✗	✓	✗	✗	3
Airline B	✓	✗	✗	✗	✓	✗	✗	2
Other airlines combined	✓	✗	✓	✗	✓	✗	✗	3

Source: Frontier illustration

The OAG data also provides information on which day of the week flights were operated on. Therefore, by considering departures by the day we could compare the frequency provided by Emirates with the combined frequency provided by other operators, and therefore identify more frequent connections. Within the category of more frequent, we also identified one-stop connections where Emirates' frequency was at least double the combined frequency provided by

alternative operators – e.g. daily for Emirates versus only three times a week with other airlines.

Also, in testing for 'unique' one-stop connections we imposed a minimum restriction on the number of flights per year. We did not consider valid any alternative routing with fewer than 100 flights per year on either leg. For consistency we also applied this test to Emirates too, and this ruled out some of its destinations. For example, towards the end of 2013 Emirates started operating new direct services between Dubai and:

- Kabul, Afghanistan;
- Sialkot, Pakistan;
- Conakry, Guinea; and
- Clark Island, Philippines.[21]

The flights were started towards the end of the year such that there were fewer than 100 departures in total in 2013. As a result, we did not consider any one-stop connections to-and-from these destinations as being 'unique'.

Similarly, on the European side, between September 2013 and July 2014, Emirates also temporarily provided a direct connection from Dubai to Malta. In the final quarter of 2013 it operated three times a week – i.e. there were fewer than 100 flights in total in 2013. Therefore, Malta was not considered when identifying 'unique' one-stop connections.

However, we have considered these connections in the context of frequency – from the point at which they were started. For example, in the final quarter of 2013, there was a daily direct connection between Dubai and Clark Island, Philippines – making one-stop connections from Emirates' European airports possible. Therefore, when testing for 'more frequent' one-stop connections, we have included these routes.

Our analysis identified 119 more frequent one-stop connections, of which Emirates' frequency on 58 of these routes was at least double that of its competitors combined.

21 Emirates subsequently terminated operations to Clark Island in May 2014.

Annex 4: Detailed assumptions for quantifying catalytic impact

This annex provides more detail on our methodology to estimate catalytic employment and the literature we reviewed to inform our assumptions. It is structured as follows:

- Overview of key steps in the methodology;
- **Key relationship 1 -** Air connectivity (i.e. the number of unique routes) and passenger volumes: detailed approach and evidence to underpin assumptions;
- **Key relationship 2 -** Passenger volumes and FDI, trade and tourism: detailed approach and evidence to underpin assumptions; and
- **Key relationship 3 -** Tourism, FDI, trade and productivity, GDP and employment: detailed approach and evidence to underpin assumptions

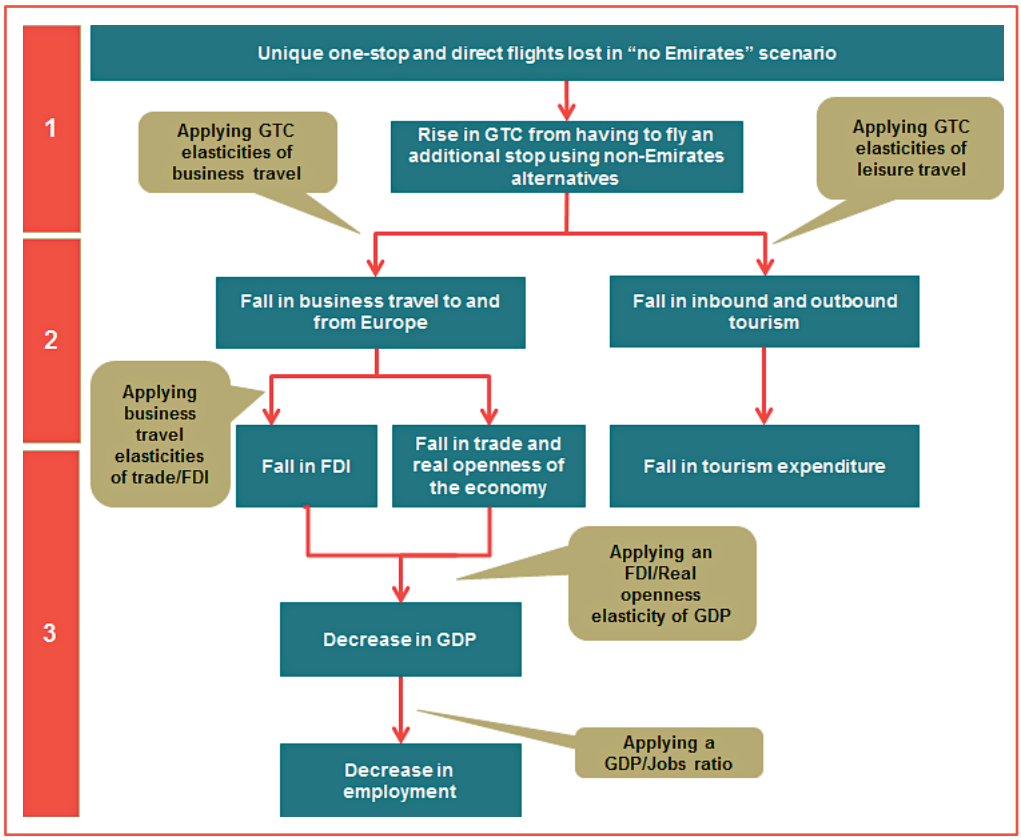
Overview of methodology

Our methodology follows the steps illustrated **Figure 39**. In particular, our approach is based on three key relationships:

- **Relationship 1** considers the change in passengers under the "no Emirates" scenario;
- **Relationship 2** then considers how this change in passengers impacts upon trade, FDI, and tourism spending; and
- **Relationship 3** considers how the change in trade and FDI subsequently impacts on GDP and jobs.

We describe these key relationships in more detail.

Figure 39. Overview of our methodology



Key relationship 1: Air connectivity and passenger volumes

Under the "no Emirates" scenario, we have considered the impact of removing Emirates' unique direct and one-stop and direct connections. In particular:

- Passengers on Emirates' unique direct connections are now faced with flying with an alternative airline (or combination of airlines) with at least one stop required; and
- Passengers on unique one-stop routes are now faced with flying with an alternative airline (or combination of airlines) with at least two stops required.

Our first key relationship is used to estimate how the volume of passengers flying on Emirates' unique connections may change under the "no Emirates" scenario. This is based on first estimating the Generalised Travel Cost (GTC) of flying with Emirates on each of its unique connections, and comparing it to an estimate

of the GTC of flying on the same route but with a different airline.[22] Therefore we have estimated:

- Travel times and the value of the time for both scenarios; and
- Average ticket fares for both scenarios

We can then estimate the change in GTC, and subsequently the change in demand by multiplying through by elasticities of demand. As a result, this produces the absolute reduction in passengers at the route-level – for example, Athens to Durban. However, data on trade and FDI is typically reported at the country level – for example Greece to South Africa. Therefore, we also need to express the reduction in absolute passengers at the route-level, as a reduction in passengers at the country-to-country level. This is to ensure that any relationships we draw between passenger volumes and trade and FDI are expressed in similar terms. We describe these steps in more detail below.

Travel times and the value of time

We have used OAG data to estimate the actual flight time on all Emirates' flights. Our analysis uses a transfer time at Dubai of 4 hours for passengers travelling with Emirates on one of its one-stop connections. This is based on our research of actual transfer times at Dubai for all 199 of Emirates' unique one-stop connections.

We assume that under the "no Emirates" scenario, passengers who previously flew on one of Emirates' unique direct connections, are now faced with an extra 4 hours of travel time. This is to capture the extra time that is now required to transfer through another airport.[23] We also assume that passengers who previously flew on one of Emirates' unique one-stop connections are also faced with an extra 4 hours of travel time – to capture the extra time that is required for an additional stop.

We then monetise the extra travel time associated with flying in the "no Emirates" scenario using values of time derived from HEATCO[24]. The values of time for European countries were available for 2002. We assumed no real change in value of time and so inflated the figures to estimate the value for 2013 using inflation rates from Eurostat. For non-European countries, we scaled the European average by the ratio of the country's GDP/capita to the average

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22 GTC = Monetised Value of Total Travel Time + Ticket Fare

23 This is based on our research of a sample of routes. We compared the actual travel times of flying direct with Emirates on its 21 unique direct connections to Europe, with flying on those routes indirectly – i.e. via another airport. The average difference was 4 hours.

24 EU, Developing Harmonised European Approaches for Transport Costing and Project Assessment HEATCO, Available: http://heatco.ier.uni-stuttgart.de/HEATCO_D4.pdf

Annex 4: Detailed assumptions for quantifying catalytic impact

GDP/capita in Europe. The monetised change in travel time then feeds into the change in total generalised travel cost.

Ticket fares

We also need to consider potential differences in ticket fares for direct, one-stop and two-stop connections. For unique one-stop connections our research has led us to use the following assumptions:

- We have used Emirates' data to estimate average ticket fares on each of its unique one-stop connections; and
- For the "no Emirates" scenario, we assume no change in ticket fares from flying one-stop with Emirates to flying (at least) two-stops with a different airline/combination of airlines. This is based on our research where we compared the average price of flying with Emirates to flying with a different airline/alliance – the difference in price is negligible.

Our assumptions are different for unique direct connections as the research suggests that a one-stop fare is on average cheaper than a direct connection to Dubai. We have therefore used:

- Emirates' data to estimate the average ticket fare on each of its unique direct connections; and
- For the "no Emirates" scenario, we assume that it is 36% cheaper to fly one-stop with a different airline from Europe to Dubai, than to fly directly with Emirates. This is based on our research of the relationship between ticket fares on direct flights versus indirect flights.

As a result, this gives an estimate of average ticket fares for both unique direct connections and unique one-stop connections, and under both scenarios – the status quo and the "no Emirates" scenario.

Change in GTC and change in demand

By combining the two components above, we can estimate the change in GTC under the "no Emirates" scenario. We then use a GTC-elasticity of demand to estimate the change in the total volume of passengers flying on each of these unique routes. This is summarised below:

*((Additional travel time * Value of time)/ Ticket price) * Travel cost elasticity of demand =*

Change in number of passengers

Annex 4: Detailed assumptions for quantifying catalytic impact

We have researched elasticities of demand with respect to price and GTC. The most disaggregated values are available from IATA (2007).[25] We have used these to estimate a travel cost elasticity of -0.70. This implies that a 1% change in GTC leads to a -0.7% change in demand.

As a result, by following this approach we have estimated the change in volume of passengers on all of Emirates' unique connections.

Expressing the reduction in passengers at the route level as a reduction in passengers at the country-to-country level

As described above, our approach allows us to estimate the reduction in OD passengers[26] on unique routings under the "no Emirates" scenario. This reduction is at the route-level – e.g. Athens to Durban, Birmingham to Adelaide, etc.

However, trade and FDI statistics are typically reported at the country-to-country level – e.g. Greece to South Africa, and the UK to Australia. Therefore, to draw relationships between the two, we need to make sure that both are expressed in common terms. In particular, this means that we need to express the reduction in passenger volumes at the route level – e.g. Athens to Durban – as a reduction in passenger volumes at the national level – e.g. Greece to South Africa. This is expressed below:

$$\frac{\text{Reduction in OD passengers at the route level}}{\text{Total OD passengers at the country-to-country level}} = \text{Reduction in OD passengers at the national level}$$

We have estimated the total volume of OD passengers at country level by considering the total volume of OD passengers that pass through the five major hub airports in Europe (London Heathrow, Paris Charles de Gaulle, Amsterdam Schiphol, Frankfurt International and Madrid Barajas). This is based on MIDT data for each hub airport. For example, we can observe the number of OD passengers that originate in Austria and fly via Frankfurt to China

As a result, we can then express the reduction in passengers at the route-level, as a reduction in passengers at the national level – which is the relevant unit of measure with which to consider trade and FDI statistics.

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25 IATA, 2007, Estimating Air Travel Demand Elasticities' IATA/InterVistas

26 OD passengers at refer to Origin-Destination passengers. These are passengers defined by a city pair - the city in which their air journey starts (the origin) and the city in which it ends (the destination). They are distinct from an airport's transit passengers who only transfer through the airport rather than either starting or terminating their journey there.

Annex 4: Detailed assumptions for quantifying catalytic impact

Key relationship 2: Passenger volumes and FDI, trade and tourism

In this section, we describe the link between passenger volumes and FDI, trade and tourism as follows:

- Relationship between face-to-face meetings and trade and FDI
- Relationship between leisure passengers and tourist spending

Relationship between face-to-face meetings and trade and FDI

Our analysis of the value of the unique connections provided by Emirates requires us to make an assumption on the relationship between face-to-face meetings, trade and FDI. Face-to-face meetings increase the likelihood of closing business deals which has a positive impact on trade and FDI. Face-to-face meetings are also important to manage increasingly globalized supply chains. This relationship is supported by qualitative literature, but it is difficult to quantify the relationship.

Concept

In spite of the increase in use of technologies such as videoconferencing, face-to-face meetings continue to play an important role in developing and maintaining successful business relationships. Most relationships are built on trust between business partners and face-to-face meetings are still the most effective way to build and establish trust. In addition, in-person meetings can be used to inspect production sites and meet larger teams which cannot be done through videoconferencing.

Face-to-face meetings therefore play a role in overcoming trade and FDI barriers between economies. The most common barriers include:

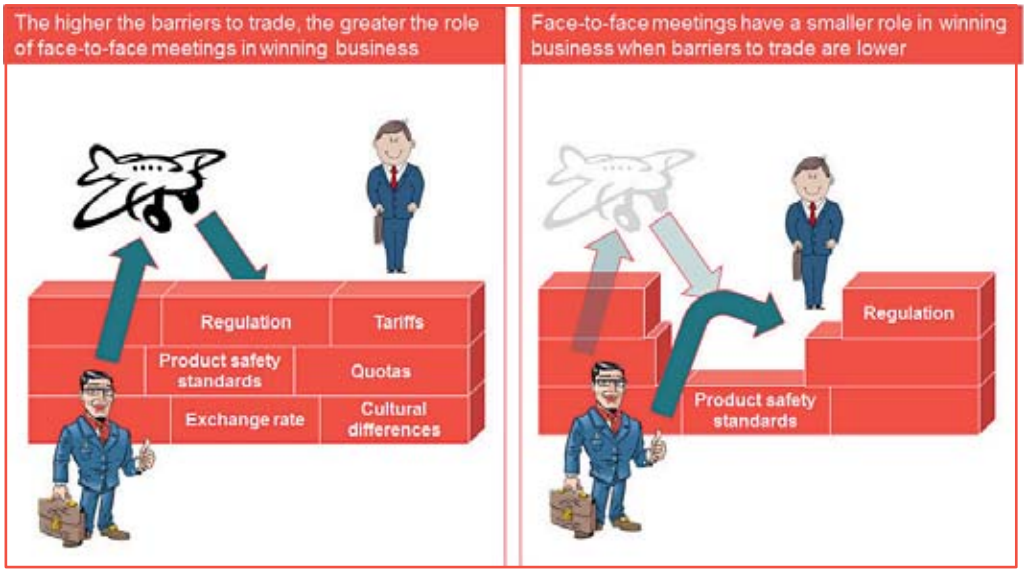
- **Product market regulation -** a range of different types of regulation (product standards, safety regulation, etc.) can inhibit trade and FDI across borders;
- **Tariffs and quotas, local content requirements -** formal trade barriers such as tariffs also reduce the likelihood of trade;

- **Exchange rate -** the risk of changes in the exchange rate can pose a significant barrier to trade and FDI, as exchange rate volatility can increase the spread of potential returns; and

- **Cultural differences -** language differences and different business cultures can impede business relationships across cultures as it is more difficult to build trust.

Business travel can reduce or overcome some of these barriers, as face-to-face meetings enable a better understanding of local product market regulation and formal trade barriers. Face-to-face meetings are also one of the key ways to build trust across cultures. **Figure 40** illustrates this concept.

Figure 40. Illustration of differences in trade barriers



Review of evidence

There is a range of qualitative, survey-based evidence that suggests face-to-face meetings play an important role in business relationships, which we elaborate on below. The importance of in-person meetings for trade facilitation is also supported by the existence of trade missions. For example, UK Trade and Investment (UKTI) helps UK-based businesses in establishing links with overseas partners. Among other events, they organise trade missions for different sectors/industries involving workshops, fairs, speakers, etc. which facilitate networking and business opportunities.

The World Travel and Tourism Council (2012) finds that sales conversion rates with an in-person meeting are 50%, compared to conversion rates of 31% without an in-person meeting. The results are based on surveys in Brazil, China,

Germany, the UK and the USA and are consistent across these countries. In 2011, the WTTC conducted another survey on the importance of business travel and found that 28% of existing business could be lost without face-to-face meetings and sales conversion rates are estimated to be 20-25% higher with face-to-face meetings. This is further supported by a range of qualitative studies.

- Frankel (1997) illustrates the importance of face-to-face meetings as follows:

  Consider a kind of export important to the United States: high-tech capital goods. To begin sales in a foreign country may involve many trips by engineers, marketing people, higher ranking executives to clinch a deal, and technical support staff to help install the equipment or to service it when it malfunctions.

- A survey by the UK Institute of Directors (2008) asked about the impact on businesses if the amount of business travel by air was significantly curtailed. 30% of respondents said that there would be significant adverse effects while 44% indicated small adverse effects.

- Poole (2010) finds that business travel to the United States by non-resident, non-citizens has a positive impact on export margins. This report has also been cited by the Airports Commission.

- Aradhyula & Tronstad (2003) find that their results support the hypothesis that both formal business exploration and casual exposure to cross-border business opportunities have a positive impact on trade.

- Strauss-Kahn & Vives (2005) find that headquarters relocate to metropolitan areas with good airport facilities, low corporate taxes, low average wages, high levels of business services, and an agglomeration of headquarters in the same sector of activity. The effects are quantitatively significant (for airport facilities in particular).

- The City of London (2008) surveyed finance and insurance companies on the importance of air travel. They found that 69% of firms consider air travel to be critical for business travel by their staff, with only 2% viewing it as not important.

- Boeh & Beamish (2012) demonstrate that travel time between different locations has a significant predictive power in firm governance and location decisions, as travel time could otherwise be employed for productive purposes.

Annex 4: Detailed assumptions for quantifying catalytic impact

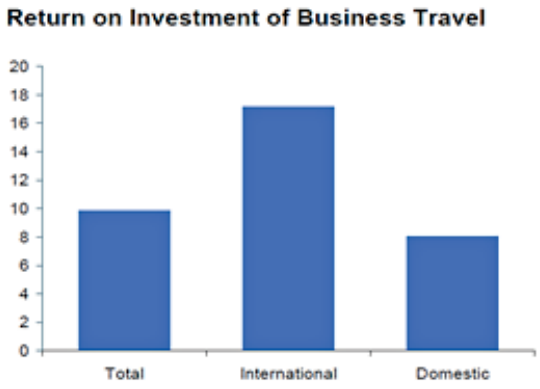
- Napier University (2004) finds that *"[…] air transport per se is not a necessary condition, but what is important are: the extent to which that area is plugged directly into other major international hubs - availability and efficiency of routes (direct, hubbed); costs and the level of competition in global transport market, and; perceived and actual interchange efficiencies. This is a key consideration in the level of foreign investment into an area and is most important for firms with international trading or contacts such as, high-tech firms, financial services and pharmaceutical firms".*

Survey-based evidence also suggests that the importance of face-to-face meetings depends on differences between business partners. Evidence from the World Travel and Tourism Council (WTTC) and the Harvard Business Review indicates that international business travel plays a more improtant role in generating and sustaining business than domestic travel. The WTTC (2012) found that:

- One extra dollar invested in international business travel would generate on average US$17 in trade; and
- One extra dollar invested in domestic US business travel by companies results in an increase in revenue of US$9.50.

This implies that the return on investment for international travel is roughly double that for domestic travel. **Figure 41** illustrates the difference in the return on investment.

Figure 41. Return on investment



Source: World Travel and Tourism Council, 2011

Similarly the Harvard Business Review (2009) confirms the role of face-to-face meetings in facilitating and sustaining business deals and also provides some evidence for the specific role of business travel in overcoming barriers to trade across different cultures. For example, it found that:

Annex 4: Detailed assumptions for quantifying catalytic impact

- 93% of survey respondents agreed that in-person meetings are helpful in negotiating with people from different language and cultural backgrounds;
- One survey respondent said that *"Communicating with our Chinese partners is enough of a challenge without face-to-face, because it is very difficult to explain a difference in perspective without body language"*; and
- A number of respondents described the need to work with clients in their own environment to get a full picture of the challenges and opportunities they face.

There is a small amount of literature that supports this view.

- Cristea (2011) found robust evidence that the demand for business-class air travel is directly related to volume and composition of exports in differentiated products. The paper finds that trade in R&D intensive manufactures and goods facing contractual frictions is most dependent on face-to-face meetings. Contractual frictions are more likely to occur with higher trade barriers so this would support a conservative assumption of an elasticity of zero for trade between the UK and Europe compared to the rest of the world.
- Poole (2010) finds that business travel for the purpose of communication acts as an input to international trade. The effect is stronger for differentiated products and for higher-skilled travellers, reflecting the information intensive nature of differentiated products. The effect is driven by travel from non-English speaking countries, for which communication with the U.S. by other means may be less effective. The findings therefore also confirm our view that business travel plays a bigger role when connecting firms from different cultural backgrounds.

Selection of assumption values

It is difficult to statistically isolate the impact of face-to-face meetings from the other factors that influence trade and FDI. As a result, there is not a vast amount of quantitative evidence on the relationship between face-to-face meetings and trade/FDI is difficult to obtain.

The World Travel and Tourism Council (WTTC) performed an econometric analysis on the relationship between flights and trade/FDI for a range of countries as shown in **Figure 42**. The figure shows the correlation coefficient as well as the results of the Granger test for causality. The figure shows that the correlations vary between 0.17 for outbound business travel from Italy to 0.98 for outbound business travel from Brazil.

Annex 4: Detailed assumptions for quantifying catalytic impact

Figure 42. Trade and business travel by country

Trade & Business Travel by country

	Inbound business travel vs imports			Outbound business travel vs exports		
		Causality (% confidence)			Causality (% confidence)	
	Correlation	Travel causes Trade	Trade causes Travel	Correlation	Travel causes Trade	Trade causes Travel
US	0.87	95%	26%	0.65	82%	86%
Canada	0.92	100%	99%	0.85	98%	87%
UK	0.54	65%	85%	0.61	95%	80%
France	0.49	57%	85%	0.63	61%	92%
Germany	0.97	90%	81%	0.69	60%	98%
Italy	0.52	99%	100%	0.17	58%	99%
Spain	0.20	75%	99%	0.74	91%	80%
Japan	0.91	97%	53%	0.40	74%	92%
China	0.32	92%	95%	0.67	90%	99%
Russia	0.83	50%	90%	0.52	100%	95%
Brazil	0.57	100%	100%	0.98	88%	87%
India	0.72	84%	66%	0.46	99%	58%
UAE	0.42	83%	49%	0.82	95%	64%
Singapore	0.70	96%	94%	0.74	83%	53%
Hong Kong	0.67	95%	100%	0.43	86%	78%

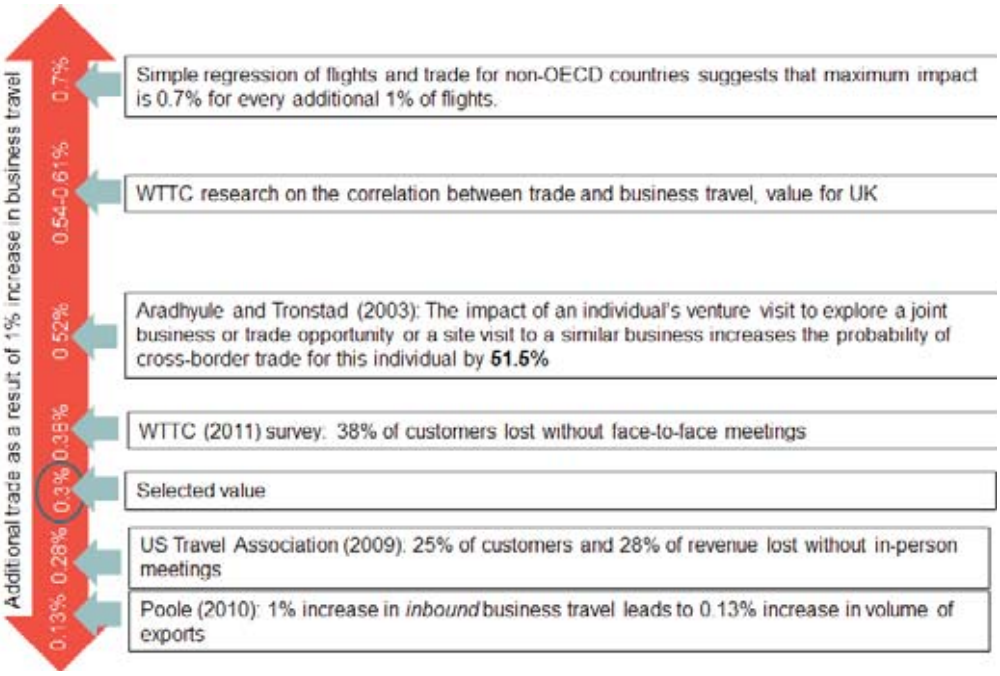
Note: causality is shown as the probability that the identified casual relationship is true

Source: WTTC, 2012

We realise that it is difficult to select an appropriate estimate for the relationship between trade and business travel. Having considered a range of evidence as illustrated in **Figure 43** we have selected 0.3% as the elasticity. Given the available evidence, this is a conservative estimate.

Annex 4: Detailed assumptions for quantifying catalytic impact

Figure 43. Evidence on relationship between face-to-face meetings and trade



It is even more difficult to select an appropriate estimate for the relationship between FDI and flights as little research has been done on this topic. For instance, a survey of businesses in Munich indicated that 55% of foreign businesses would not be located in the region around the airport if air connectivity was not satisfactory. Regressions of inbound passengers and inward FDI for different country/airport combinations suggest that the elasticity may be as high as 0.67. As these regressions suffer from omitted variable bias and endogeneity issues, we consider this an upper bound only. In order to select a conservative estimate, we have selected 0.3 as the elasticity of business travel to FDI.

Relationship between passengers and tourism spending

A decrease in passenger flows between European countries and countries around the rest of the world leads to a decrease in direct spending from passengers in both directions. This covers both:

- European passengers spending money abroad (outbound spending) – for example, individuals from Athens spending money in South Africa; and
- Foreign passengers from outside Europe spending money in Europe (inbound tourism) – for example individuals from Australia spending money in Dublin.

Annex 4: Detailed assumptions for quantifying catalytic impact

Fewer inbound tourists will have a negative impact on the economy because the expenditure they would have incurred while visiting Europe would no longer take place. On the other hand, fewer outbound tourists would have a positive impact on their economy as the expenditure they would have incurred while on holiday abroad would not take place either.

To quantify the impact on tourism spending under the "no Emirates" scenario, we have used data from Eurostat to produce estimates of inbound and outbound tourism spending per passenger – for each of the countries that appear in our analysis.[27] The Eurostat study provides estimates for EU countries. Therefore for countries outside Europe, we have scaled the European average by the ratio of the country's GDP/capita to the average GDP/capita in Europe.

We have then applied these 'per passenger' figures to the volume of passengers that choose to no longer fly under the "no Emirates" scenario. As a result, this produces an estimate of forgone inbound and outbound spending that is lost under the "no Emirates" scenario.

Key relationship 3: FDI, trade and productivity, GDP and employment

We break this section into separate relationships:

- Trade, productivity and GDP;
- FDI, productivity and GDP;
- GDP and employment

Trade, productivity and GDP

A large body of academic research investigates the positive impact of trade on productivity at the firm level. At the economy-wide level, there are also some studies which suggest additional trade leads to higher productivity. The key mechanisms by which trade influences productivity can be characterized in three ways:

- **Innovation -** trade is one of the key "transmitters" of innovation as it exposes companies to a wider range of products and processes in other countries. This applies regardless of whether the partner country is a developed or developing economy.

- **Competition -** as trade increases the market size companies that export or import are faced with more intense competition. Competition puts pressure

27 'Tourism statistics in the European Statistical System' Eurostat 2010

on companies to be more efficient. This applies to trade with any partner country.

- **Economies of scale -** larger market sizes imply that production processes can benefit from economies of scale. This also applies to trade any partner country.

For example, the OECD, (2012) found that: *"A main channel through which trade increases income is productivity growth. Importing creates competition that forces domestic firms to become more efficient and provides access to inputs of international calibre; exporting creates incentives for firms to invest in the most modern technologies, scales of production and worker training. The combined effect is to spawn a process of continual resource reallocation, shifting capital and labour into activities with higher productivity".*

Importantly, the impact of trade on productivity holds for both exports and imports. This is because we are considering the long-term impact on trade on productivity instead of the short-term. In the short-term import substitution can lead to structural changes in the economy that require some adjustments. However, once resources are allocated to more productive uses, imports have a long-term positive impact on productivity. The study that underpins our main assumption uses a measure of "real openness" which is the sum of exports and imports over GDP.

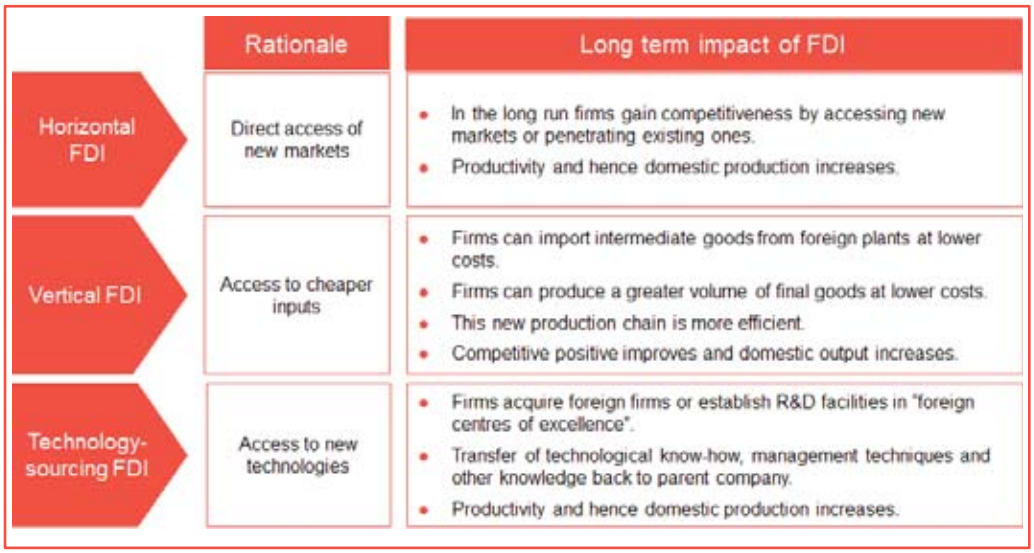
The OECD has undertaken a study with data from 21 high-income countries over nearly 30 years controlling for other factors: every 10-percentage point increase in trade exposure (as measured by trade share of GDP) contributes a 4-percent increase in GDP per capita. Similarly, in 2007 the European Commission stated that *"For instance, empirical analysis indicates that, on average, a 1% increase in the openness of the economy, as measured by the ratio of imports to value added, results in an increase of 0.6% in labour productivity in the following year".* To select a conservative assumption, we have used the lower figure of 0.4 as indicated by the OECD research.

FDI, productivity and GDP

Both inward and outward FDI have a positive impact on productivity and competitiveness. Our research suggests that access to new markets, cheaper inputs and new technology or know-how boosts the scale and efficiency of domestic production. The underlying theory is similar to that applied to free trade agreements. **Figure 44** summarises how FDI can impact productivity.

Annex 4: Detailed assumptions for quantifying catalytic impact

Figure 44. Impact of FDI on productivity



Evidence on the specific impact of FDI on productivity is limited. We have found the following studies:

- DIW (2009) studies the relationship between outward FDI and economic growth. They find that FDI enables firms to enter new markets, import intermediate goods from foreign affiliates at lower costs and access foreign technology. As a result the domestic economy benefits from outward FDI due to increased competitiveness of the investing companies and associated productivity spill-over to local firms. The analysis shows that for every 1% increase in outward FDI stock, local GDP increases by 0.19%.
- Korea Institute for International Economic Policy (2008) studies the relationship of inward FDI and productivity using Ireland as a case study. They find that FDI advances new foreign technology or import of new intermediary goods and enhances growth by accumulation of human capital by means of labour training or absorption of technology and new management techniques. Their analysis shows that for a 1% increase in inward FDI stock, local GDP increases by 0.24%.

Based on the quantitative analysis we reviewed, we make the following assumptions:

- a 1% increase in inward FDI increases productivity and thus, GDP by 0.24 %; and

Annex 4: Detailed assumptions for quantifying catalytic impact

- a 1% increase in outward FDI increases productivity and thus, GDP by 0.19 %.

GDP and employment

The relationships between trade, FDI and GDP give us a percentage change in GDP resulting from the change in trade and FDI. We translate the impact on GDP into employment numbers using the national GDP/jobs ratio as per Eurostat.

Annex 4: Detailed assumptions for quantifying catalytic impact

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