The Economic Impact of Emirates in the United States

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# The Economic Impact of Emirates in the United States

1. **Introduction**
   1.1. About Emirates
   1.2. Background and Context
   1.3. Methodology
   1.4. Report Structure

2. **Emirates’ Operations in the U.S.**
   2.1. Emirates’ U.S. Passenger Traffic Snapshot
   2.2. Emirates’ U.S. Cargo Traffic Snapshot
   2.3. Emirates’ Fleet
   2.4. Emirates’ Employees in the U.S.

3. **Direct Impacts**
   3.1. Direct Impacts of Emirates’ U.S. Operations
   3.2. Direct Impacts of Emirates’ Purchases of U.S. Exports
   3.3. Total Direct Impacts

4. **Indirect Impacts**
   4.1. Indirect Impacts of Passenger Traffic “Stimulation”
   4.2. Indirect Impacts of U.S. Trade “Stimulation”
   4.3. Total Indirect Impacts

5. **Induced Impacts**

6. **Total Impacts**

7. **Tax Impacts**

8. **Catalytic Impacts of Emirates’ U.S. Connections**
   8.1. Impact on Passenger Connectivity to and from the U.S.
   8.2. Impact on Passenger Traffic “Stimulation”
   8.3. Impact on Consumer Choice and Competition

9. **Conclusions**

**Annexes**

- A Economic Impact Methodology
- B Emirates’ Operations in the U.S.
- C Direct Impacts of Emirates in the U.S.
- D Indirect Impacts of Emirates in the U.S.
- E Emirates’ Passenger Flight Connectivity to and from the U.S.
- F World Region Definitions
1. Introduction

1.1. About Emirates

Emirates Airline (Emirates), based in Dubai, United Arab Emirates (U.A.E), was established in 1985 and since then has grown to become one of the world’s largest and most successful carriers. Operating the world’s largest fleets of Boeing 777 and Airbus A380 aircraft, with a combined total of 259 in service and 219 on order, Emirates’ expanding network covered 155 destinations in 83 countries across six continents as of April 2017. Worth $108 billion, the new aircraft will be used to replace existing ones in the fleet as well as to grow capacity in the future. Emirates operates one of the most modern and efficient fleets in worldwide commercial aviation, with an average aircraft age of just 63 months.

In fiscal year (FY) 2016/17 Emirates was the largest international airline in the world in terms of revenue passenger miles, and carried 56.1 million passengers and 2.6 million tonnes of cargo.

Operations to the United States (U.S.) form a relatively small, but significant part of Emirates’ growing route network. As of April 2017, Emirates operated 126 passenger flights per week to 12 airports in the U.S. Emirates’ passenger operations to the U.S. started in June 2004 with New York and since then has expanded to Houston, Los Angeles, San Francisco, Dallas-Fort Worth, Seattle, Washington, D.C., Boston, Chicago, Orlando, Fort Lauderdale and Newark. Emirates SkyCargo’s freighter network in the U.S. included 11 weekly services to Atlanta, Chicago, Columbus, Houston and Los Angeles; as well as five weekly code-shared services with TNT Airways to New York.

Emirates currently has partnership agreements with JetBlue Airways and Alaska Airlines, and also has interline agreements with Virgin America and Hawaiian Airlines.

1.2. Background and Context

With a presence in the U.S. spanning 13 years, Emirates plays an important role in connecting the U.S. with markets in other regions, thereby facilitating business and trade activity for the U.S. economy – one of the hallmark objectives of the U.S. Open Skies policy.

This impact on the U.S. economy can be measured in a number of ways. In addition to improved access to the U.A.E. and other Middle Eastern markets, Emirates’ passenger flights provide efficient connections via its Dubai hub to many Asian and African markets, markets with few or no direct flights from the U.S. This expanded and improved connectivity has reduced travel times and thereby “stimulated” new travel to and from the U.S. Emirates’ operations in the U.S. also create employment and other associated economic impacts, while the “stimulated” visitors from overseas create new spending for the U.S. travel and tourism sector.

Emirates’ worldwide operations also rely on U.S. goods and services which stimulate new export trade for U.S. businesses. In aerospace, the airline is The Boeing Company’s largest customer for its 777 wide-body aircraft with 163 in service and 171 on order, and a major customer for parts and other supplies and services purchased for fleet maintenance. These aircraft are largely powered and serviced by GE Aviation, for which Emirates is also a leading customer. Emirates’ Airbus A380 fleet is also largely fitted with U.S.-manufactured Engine Alliance engines and other parts manufactured in
The Economic Impact of Emirates in the United States

the U.S. In addition to fleet-related purchases, Emirates is a major customer for U.S. technology companies and their overseas affiliates.

The presence of Emirates in the U.S. also provides new opportunities for merchandise and service trade. Emirates’ cargo capacity to and from the U.S. facilitates export sales by U.S. manufacturers and creates new U.S.-based service revenues resulting from “stimulated” commodity imports. In addition to the travel benefits, Emirates’ expanding network for passenger connectivity stimulates the export of U.S. services to other regions, and expands consumer choice and worldwide economic and other relationships.

1.3. Methodology

Emirates commissioned Campbell-Hill Aviation Group, LLC to measure the economic and employment impacts in the U.S. of its worldwide commercial activities. The economic impacts measured in this study are based on Emirates’ U.S.-related activities for calendar year (CY) 2015, which are detailed in Section 2 (with additional details on the methodology in Annex A).

The quantified impacts of Emirates in the U.S. economy include:

- **Direct Impacts of Emirates’ U.S. Operations**: Transportation, marketing and other spending, labor income and employment related to the handling of aircraft, passengers and cargo at U.S. destination airports.

- **Direct Impacts of U.S. Goods and Services Purchased by Emirates for Worldwide Operations**: The airline’s spending for:

  (1) U.S.-built aircraft, engines and other fleet-related commodities and services; and
  (2) U.S. goods and services in support of its overseas catering operations as well as information technology and reservations systems provided by U.S. companies and their overseas affiliates.

- **Indirect Impacts of U.S. Spending by New Passenger Demand or Passenger “Stimulation”**: Spending by foreign visitors and U.S. originating passengers for:

  (1) lodging;
  (2) food and beverages;
  (3) recreation/entertainment;
  (4) air and ground transportation; and
  (5) education within the U.S.

- **Indirect Impacts of “Stimulated” Merchandise and Service Trade**: Purchases of U.S. goods and services and import-related service sales “stimulated” by Emirates’ passenger and cargo connections to overseas markets.

- **Induced Impacts**: Spending by the directly/indirectly-affected companies for goods, services and labor within the U.S. plus household spending by all employees and proprietors receiving labor income and multiplier effects throughout the U.S. economy.
The Economic Impact of Emirates in the United States

- **Catalytic Impacts**: Expansion in U.S. connectivity to world passenger markets and the general effect on consumer choice and competition.

The measures used to estimate all of the impact categories include:

- **Revenues**: total spending for goods and services produced by U.S. companies;
- **Gross Domestic Product (GDP)**: total spending within individual sectors (“Revenues”) minus the purchase of immediate goods (also known as value-added);
- **Labor Income**: all forms of employment income including employee compensation (wages and benefits) and proprietor income (i.e., payments to business owners) which are components of “GDP”;
- **Employment**: total employees within each sector; and
- **Tax Revenues**: tax, duties and license fees paid to local, state and Federal governments.

All impacts are based on CY 2015 data and activity levels; all values are stated in 2016 U.S. dollars. The impacts were calculated using the national version of the IMPLAN\(^1\) model based on CY 2015 data.

### 1.4. Report Structure

The report is structured as follows:

- **Section 2** provides a summary of Emirates’ operations that have positive effects on the U.S. economy.
- **Section 3** summarizes the methodology and results for direct impacts based on Emirates’ U.S. operations and purchases of U.S. goods and services.
- **Section 4** summarizes the methodology and results for indirect impacts related to new travel spending within the U.S. plus goods and services trade “stimulated” by expanded connectivity for passengers and freight.
- **Section 5** summarizes the induced impacts associated with spending by the direct and indirect businesses and their employees.
- **Section 6** summarizes the combined direct, indirect and induced impacts.
- **Section 7** summarizes the tax revenue impacts for Federal, state and local governments.
- **Section 8** analyses the catalytic impacts of Emirates’ passenger and cargo networks in terms of increased connectivity for U.S. businesses and citizens and their international trading partners.
- **Section 9** provides conclusions based on the detailed analysis and impact estimates.

\(^1\) IMPLAN Group LLC, IMPLAN System data and software (www.IMPLAN.com)
2. **Emirates’ Operations in the U.S.**

Emirates has become an important source of passenger and cargo air services between the U.S. and international markets while also being a major purchaser of U.S. goods and services (see Annex B for additional details). This section provides background information on the level and scope of Emirates’ activities as they affect the U.S. economy, in particular activity levels as they affect the impact analysis (based on a CY 2015 base year).

2.1. **Emirates’ U.S. Passenger Traffic Snapshot**

By 2015 year-end, Emirates was providing 15 daily passenger services between Dubai and 10 U.S. destinations. This included four daily flights between Dubai and New York, including one via Milan, and two non-stop daily flights between Dubai and Seattle as well as Boston. There were also single daily non-stop services between Dubai and the following destinations: Houston, Los Angeles, San Francisco, Dallas-Fort Worth, Washington, D.C., Chicago and Orlando (see Figure 2-1). In CY 2015, Emirates scheduled a total of 9,414 one-way flights to and from the U.S. (see Figure 2-2)

![Figure 2-1](image_url)

**Figure 2-1**


Source: DIIIO, Schedule Data
The Economic Impact of Emirates in the United States

Figure 2-2
Emirates’ One-Way Passenger Flights to and from U.S. Destinations (CY 2004 – CY 2015)

Source: DIIO, Schedule Data

Figure 2-3
Emirates’ U.S. Passenger Traffic Distribution (CY 2015)

Source: Internal traffic estimates
Round-trip passengers carried between the U.S. and overseas destinations totaled over 1.35 million in CY 2015. Over half of the total round-trip passengers traveled between the U.S. and the Indian Subcontinent (see Figure 2-3) with about one-third of the passengers traveling to and from Middle Eastern destinations (including 22% to and from the U.A.E.). Passengers originating overseas ("visitors") from these two regions combined accounted for 44% of the total round-trip passengers.

In CY 2015, Emirates carried over 191,000 passengers who connected via Emirates’ 10 U.S. destination airports to other U.S. airports, accounting for 14% of the carrier’s total passengers to and from the U.S. These passengers connected via Emirates’ U.S. destinations on domestic flights to over 300 U.S. airports and thereby generated revenues for U.S. airlines.

2.2. Emirates’ U.S. Cargo Traffic Snapshot

Emirates provided a large and growing amount of cargo capacity between the U.S. and world markets through a combination of freighter flights and belly-hold capacity on its passenger flights. In CY 2015, Emirates operated a total of 1,108 one-way freighter flights to and from the U.S. supplementing the belly-hold cargo capacity available on its 9,400 one-way passenger flights. Freighter flights supplemented the passenger flights to Los Angeles, Houston and Chicago, while Atlanta and Columbus were operated exclusively as freighter destinations. These were operated twice weekly throughout much of CY 2015, connecting those markets with Dubai via Europe. Emirates also had a code-share agreement to use cargo space on five weekly TNT flights serving New York.

Based on internal company data for FY 2015/16, Emirates handled nearly 136,000 tonnes of air cargo on its U.S. flights, including 81,500 tonnes of outbound U.S. exports and 54,200 tonnes of inbound U.S. imports. As shown in Figure 2-4, Middle East markets accounted for 33% of this total, with the Indian Subcontinent responsible for 26%.

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2 A “round-trip” passenger is defined as a traveler that travels from an origin airport to a destination airport and then returns (i.e., making two one-way trips). A “U.S.-originating” passenger begins a trip in the U.S. and “visits” a foreign country and returns, while a “foreign visitor” to the U.S. travels in the opposite direction.

3 This traffic is limited to passengers traveling between the U.S. and destinations in the Middle East, Indian Subcontinent, Africa and ASEAN. It excludes traffic between the U.S. and Europe, Eurasia, Australasia and Northeast Asia as these areas were not covered in the MIDT data set used for the analysis. See Annex F for definitions of these world regions. It thus excludes traffic between the U.S. and Europe on the New York-Milan flights, but includes passengers between New York and Dubai on the flights via Milan.

4 These totals are based on operated flights as reported in the T-100 statistics and may differ from totals based on the schedule data.

2.3. Emirates’ Fleet

At the end of 2015, Emirates operated a fleet of 248 aircraft, including 233 passenger aircraft and 15 freighters. This represented a total capacity of 93,942 seats. Emirates also had an additional 258 aircraft on order including 190 Boeing 777 and 68 Airbus A380 aircraft. In CY 2015, Boeing produced 11 Boeing 777-300ER and one Boeing 777-200LRF aircraft for Emirates, with Airbus producing 16 A380 aircraft.6

2.4. Emirates’ Employees in the U.S.

In September 2015, Emirates’ passenger and cargo operations accounted for 353 direct-hire company employees located in the U.S. including:

- 120 employees at the U.S. destination airports;
- 90 employees at sales offices;
- 52 employees at its reservation and customer service centers;
- 60 employees supporting cargo operations; and
- 31 employees performing engineering and general administration functions.

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6 There is a time lag between the production of an aircraft and its delivery to the operating airline. The year of production was used in this case for the purpose of measuring the impacts on the U.S. aviation manufacturing sector.
3. Direct Impacts

The direct impacts include new U.S. revenues (and associated GDP, labor income, and employment) directly generated by:

(1) the processing of flights and traffic at U.S. airports along with supporting corporate activities located within the U.S.; and
(2) the direct purchase by Emirates of goods and services from U.S. companies in support of its worldwide network.

The following sections summarize the direct economic and employment impacts of Emirates in the U.S. (see Annex C for additional details).

3.1. Direct Impacts of Emirates’ U.S. Operations

Economic impacts result from flight activities and the processing and handling of passengers and cargo at U.S. airports, as well as through U.S.-based activities in support of administrative, marketing and aircraft maintenance activities. Some of the associated functions are handled by Emirates employees working and residing in the U.S., while other services are entirely, or partially, purchased from U.S. firms. The passenger and cargo-based impacts are limited to those associated with “stimulated” activity, i.e., passengers who would not have otherwise traveled to and from the U.S. absent the availability of Emirates’ flights.7

The primary categories of these direct impacts from Emirates’ U.S. operations are:

- **Flight and Passenger/Cargo Operations:** These impacts are associated with passenger and cargo transportation functions for which Emirates maintains staff and offices/facilities in the U.S. These functions cover operations at or near the destination airports and sales offices, as well as staff for engineering, customer service, reservations, finance and general administration functions. Emirates provided staffing and payroll/benefit levels for transportation, engineering, finance and marketing/administrative services totaling 353 persons in the U.S. as of September 2015. Direct purchases of goods and services in support of these operations within the U.S. totaled $924 million which was 38% of the $2.46 billion in total costs allocated to U.S. operations for CY 2015.8 The impact of this spending is limited to that associated with “stimulated” passenger and cargo traffic and supporting activities (i.e., excluding activity that might have occurred even without Emirates’ network services). The “stimulated” spending by Emirates with U.S. firms was estimated at $398 million while...

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7 To be conservative, the total impacts associated with Emirates’ passenger and cargo flight and traffic activity in the U.S. were proportionally adjusted to account for activity that might have occurred without the services provided by Emirates. Impacts are limited to the share of passenger and cargo traffic that is estimated to be “stimulated” traffic as determined using traditional QSI (quality service index) modeling comparing traffic levels with and without the Emirates flights (described in Annex D). The estimates are limited to service-based “stimulation” that is solely dependent on flight frequency, capacity and the number of connections and assumes no fare benefits or effects (which is also a conservative assumption).

8 The U.S. direct purchases spending in this category only includes payments to U.S.-located companies or employees and excludes internal allocations of overhead and fleet ownership costs to U.S. operations, as well as corporate communications spending within the U.S. and the purchase of U.S. goods and services for overseas operations.
The Economic Impact of Emirates in the United States

The “stimulated” share of Emirates’ labor income was estimated at $25 million for 170 jobs.\(^9\) The total “stimulated” direct spending for goods and services had a revenue impact of $429 million, supported 1,979 jobs, $106 million of labor income (including Emirates’ U.S. employment) and $193 million of GDP.

- **Corporate Communications:** In support of its CY 2015 U.S. operations, Emirates spent over $60 million within the U.S. for various marketing activities. Assuming that 43% of this activity was “stimulated” (similar to the share used for the operations estimate), the direct revenues impact of $26 million supported 142 jobs, $8 million of labor income, and $15 million of GDP.

**Hence the combined direct impacts from Emirates’ U.S. operations in CY 2015 (adjusted for “stimulation”) was $456 million in revenues, $208 million in GDP, $114 million of labor income and 2,121 jobs (Figure 3-1).**

\[\text{Figure 3-1} \]
**Direct Impacts of Emirates’ U.S. Operations (CY 2015)**

Source: IMPLAN model results

3.2. Direct Impacts of Emirates’ Purchases of U.S. Exports

U.S.-bound flights account for a relatively minor share of Emirates’ worldwide operations with just 5.2% of all non-stop passenger and cargo flights in CY 2015. However, in addition to direct impacts associated with its U.S. services, Emirates is also a major customer for U.S. corporations in aviation,

\(^9\) The share applied to passenger-related spending (43%) was based on the passenger “stimulation” analysis described in Annex D. The share for cargo activities (71%) was a weighted average assuming all of the freighter activity was newly stimulated while applying the passenger-based share for cargo activity using passenger aircraft. All general spending and labor impacts (i.e., not specific to either passenger or cargo activities) were similarly based on a weighted average (46%) using the passenger and cargo shares.
technology and related sectors that are mostly unrelated to its U.S. operations. Economic impacts on the U.S. economy from Emirates’ fleet and other purchases are covered in the following categories (all shown for CY 2015 activity levels in 2016 dollars):

- **Purchase of U.S.-Built Aircraft**: In CY 2015, Boeing completed the production of 11 Boeing 777-300ER aircraft and one Boeing 777-200LRF aircraft for Emirates. Based on U.S. export data for civil aviation aircraft and related commodities, Campbell-Hill estimated that these aircraft purchases resulted in $1.5 billion of direct revenues to the U.S. aircraft manufacturing sector. These revenues supported 1,674 direct jobs, $227 million in labor income and $444 million of GDP.\(^{10}\)

- **Purchase of U.S. Engines, Equipment and Parts**: Emirates imports a large volume of U.S.-made aviation engines, parts and other commodities in order to equip and maintain its fleet of Boeing and Airbus aircraft after production, the majority of the latter having U.S.-made engines. Emirates estimated its direct purchases from U.S. vendors in CY 2015 at $1.3 billion which directly supported 2,986 jobs, $304 million of labor income and $456 million of GDP.

- **U.S. Content in Foreign-Made Aircraft**: It is estimated that 11% of the value for Airbus aircraft produced for Emirates in CY 2015 can be attributed to U.S.-made engines and parts. The related export revenues by U.S. engine and parts manufacturers in CY 2015 are estimated at $271 million which supported 459 jobs, $53 million of labor income, and $84 million of GDP.

- **All Other Goods and Services**: In addition to fleet-related purchases, Emirates is a major customer for U.S. companies providing airline reservations systems and information technology for marketing and other purposes. The airline also purchases flight catering supplies and equipment for overseas operations through its affiliate (Emirates Flight Catering). In CY 2015, Emirates spent a total of $50 million for these goods and services which supported 279 direct jobs, $30 million of labor income, and $30 million of GDP impacts.

Combined, Emirates directly imported $3.1 billion of U.S. goods and services which generated $1.0 billion of GDP and $613 million of labor income while supporting 5,397 jobs during CY 2015 (Figure 3-2).

\(^{10}\) The direct purchase impact is based on the estimated export value of the aircraft - any impacts from foreign-made parts or components are excluded from GDP and labor impacts within the model.
3.3. Total Direct Impacts

The combined direct trade and U.S.-based activities of Emirates generated $3.5 billion of new revenues including $1.2 billion of GDP and $726 million of labor income supporting 7,518 jobs in CY 2015 (Figure 3-3).
4. Indirect Impacts

The efficiency and connectivity of Emirates’ U.S. network positively affects the ability of air travelers to visit the U.S. from destinations throughout the Middle East, Asia and Africa that generally have little or no direct service to the U.S.\textsuperscript{11} Emirates’ services also provide U.S. travelers with new options for reaching those markets for leisure, business, educational or governmental purposes. The “stimulation” of new two-way travel between the U.S. and emerging markets creates new opportunities for merchandise and service trade, as does the expanded ability to move air cargo economically in both directions. This section summarizes the indirect impacts of Emirates’ U.S. connections in terms of:

(1) spending within the U.S. by new passengers (U.S. and foreign origin); and
(2) “stimulated” merchandise and service trade.

The following sections summarize the indirect economic and employment impacts of Emirates in the U.S. (see Annex D for additional details).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure4-1}
\caption{Emirates’ Connections to and from the U.S. via Dubai (December 2015)}
\end{figure}

4.1. Indirect Impacts of Passenger Traffic “Stimulation”

Connectivity between Emirates’ U.S. destinations and growing markets in the Middle East, Indian Subcontinent, Africa and other parts of Asia has increased significantly since the airline’s entry into the U.S. in 2004. Here we consider the economic and employment impacts this has had.

\textsuperscript{11} While Emirates provides connecting services to all of these regions, the passenger impact analysis was limited to Middle East, Africa, ASEAN and Indian Subcontinent, while the cargo/trade analysis also included Northeast Asia and Australasia. See Annex F for definitions of the world regions.
As described in Annex D, an analysis of Emirates’ service levels for individual origin and destination (O&D) markets identified over 580,000 “stimulated” round-trip passengers in CY 2015 (i.e., passengers who otherwise would not have traveled without Emirates’ services). Of these passengers, over 232,000 were new foreign visitors that generated significant impacts for the U.S. travel and tourism sectors, as well as spending in the education sector. Newly “stimulated” U.S. originating passengers (348,000) also generated new travel spending within the U.S. “Stimulated” passengers that connect domestically between Emirates’ U.S. destination airports and other U.S. airports also generate new revenues for U.S. airlines.

The categories of indirect impacts related to passenger spending are:

- **Travel and Tourism Spending**: “Stimulated” passenger traffic (U.S. and foreign) generates indirect spending for the U.S. travel and tourism sectors. Foreign visitors spend on average from $1,654 to $3,401 per trip depending on the foreign country of origin. “Stimulated” U.S. travelers also generate some U.S. revenues for the purchase of flight-related parking, ground transportation and retail items at the airport. The revenues estimated for various industry sectors (e.g., accommodation, restaurants) totaled $558 million and supported 6,199 jobs, $195 million of labor income and $338 million of GDP in CY 2015.

- **Education-Related Spending**: In addition to new foreign visitor spending for travel and tourism within the U.S., the Emirates-created “stimulated” passenger traffic also generates new education-related spending, with calculations based on U.S. government travel and tourism data. Total spending impacts (assigned to the higher education sector) are estimated at $730 million which results in 6,044 new jobs supported, $389 million of labor income, and $463 million of GDP in CY 2015.

- **Domestic Air Transportation for U.S. Connecting Passengers**: Emirates’ passengers to and from the U.S. generate revenues for U.S. airlines providing domestic connecting air service at Emirates’ U.S. destinations. Revenues are estimated at $31 million in fare revenues using average non-stop distance flown by destination and domestic yield factors. These revenues supported 86 jobs, $8 million of labor income, and $14 million of GDP in CY 2015.

Combined, “stimulated” passenger traffic generated $1.3 billion of U.S. goods and services which generated $815 million of GDP and $592 million of labor income while supporting 12,329 jobs during CY 2015 (see Figure 4-2).

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12 An “O&D” includes all passengers moving between a single U.S. airport and a single foreign airport without regard to the routing (e.g. Boston-Delhi).
13 The split between U.S.-originating and foreign visitor passengers was based on the O&D-level distribution for each market in MIDT data.
14 Based on U.S. Department of Commerce data on overseas visitor spending by type (e.g., food and beverage) and originating market (Middle East, Africa, India, Other South Asia, Singapore and Other ASEAN) adjusted to 2015 dollars and based on other trip characteristics (e.g., length of stay and trip purpose). These spending levels are conservative and well below the average of $4,360 per international visitor as estimated by the U.S. Travel Association (www.ustravel.org/system/files/Media%20Root/Document/Research_Fact-Sheet_US-Travel-Answer-Sheet.pdf).
15 To be consistent with international data requirements, the U.S. has included education spending by overseas visitors in total travel spending totals since CY 2013 (and revised data back to CY 1999).
Figure 4-2
Indirect Impacts of “Stimulated” Passenger Spending in the U.S. (CY 2015)

| Source: IMPLAN model results |

4.2. Indirect Impacts of U.S. Trade “Stimulation”

As described in Section 6, Emirates’ expanded services to the U.S., in combination with its efficient and growing Dubai hub network, has greatly improved the access for passengers and cargo moving between the U.S. and emerging markets in the Middle East, Indian Subcontinent, ASEAN, Africa and other connecting markets. In addition to supporting connections to Emirates’ own network, flights between the U.S. and the Dubai hub also provide regional connections for other airlines, particularly the U.S. integrated carriers\(^\text{16}\) for cargo and national passenger carriers for countries that have limited direct service to the U.S. (see Section 8). The level of air connectivity and capacity provided by Emirates directly and positively affects the level of air trade between the U.S. and these markets, many of which have limited access to worldwide air transport networks. In addition to the effect of air cargo connectivity on merchandise trade via air, the high level of passenger connectivity and new passenger travel also “stimulates” U.S. exports of services which are of growing importance to the U.S. economy.

4.2.1. Indirect Impacts of U.S. Merchandise Trade “Stimulation”

Air trade continues to be an important component of U.S. trade activity accounting for 43% of U.S. merchandise value exported to overseas markets in CY 2015 and 68% of the imported value. Air freight transportation networks are a critical factor in the U.S.’s ability to sell exports abroad as well as maintaining access to finished goods and industrial inputs from around the world.

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\(^{16}\) Integrated carriers provide door-to-door transportation using a combination of air and ground services (as distinguished from general airport-to-airport operators). FedEx and UPS are the world’s largest integrated carriers and serve the U.S. domestic market, as well as U.S.-to-foreign and foreign-to-foreign markets.
As described in Section 8, Emirates connects U.S. airports to markets all over the world. Here we focus on cargo traffic between the U.S. and “Emirates connecting” markets served via passenger and freighter flights to and from Emirates’ Dubai hub\(^\text{17}\). As will be shown below, the expansion of Emirates’ cargo capacity on flights between the U.S. and Dubai has not just improved the trade lanes to the U.A.E., but has created new connections via Dubai to other markets in Asia and Africa. This expanded and enhanced network of cargo connections has “stimulated” new export and import merchandise trade for the U.S. (as detailed in Annex D).

The level of international air trade between U.S. regional markets (as served by Emirates’ destinations) and specific overseas markets is heavily dependent on the availability of efficient air services that minimizes transit time, interline flight connections and ground transit time. The expansion of Emirates’ cargo routings in recent years can be shown to have supported U.S. air trade growth with Emirates’ connecting service regions in the following respects:

- Emirates has greatly increased the cargo capacity (up 168% from CY 2010 to CY 2015) between the U.S. and its Dubai hub which is geographically well-situated to connect to other regions not served directly from the U.S.
- At the same time, Emirates has increased the cargo capacity and number of destinations served via Dubai for key regional markets with limited or no direct cargo services to and from the U.S. In CY 2015, Emirates operated non-stop freighter flights from Dubai to eight destinations in the Middle East (excluding those with direct U.S. service by another Gulf State carrier), six destinations in the Indian Subcontinent, 21 destinations in Africa and six destinations in ASEAN and Australia. Many of these foreign destinations had no direct cargo service from the U.S.
- Emirates has created cargo connections for many U.S. regions that do not have a primary international gateway (e.g., Pacific Northwest, Bay Area, Texas, New England and Florida).

Internal traffic data indicates the importance of Emirates’ connecting flights via the Dubai to the growth in U.S. air trade with emerging markets. U.A.E. accounts for 20% of the carrier’s U.S. traffic (see Figure 2-4).\(^\text{18}\) The Emirates cargo flights therefore connect the U.S. to many foreign markets that are growing in importance and do not have adequate direct cargo flights (e.g., Other Middle East, Indian Subcontinent, Africa, ASEAN and Australasia).

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\(^{17}\) The Dubai hub includes Emirates’ passenger and cargo operations at Dubai International Airport and cargo operations at Al Maktoum International Airport.

\(^{18}\) These totals include cargo traffic on all Emirates flights to the U.S. including to or from points outside the U.A.E.
The Economic Impact of Emirates in the United States

The net impact of Emirates’ cargo flights to and from the U.S. was estimated using regression analysis for Emirates’ connecting regions and the 10 U.S. Customs Districts for the U.S. destination airports.\textsuperscript{19} The “stimulation” effect was measured for each trade lane with a positive correlation between total air trade and Emirates’ traffic over the CY 2012-2015 period and then applied to the total CY 2015 air trade for those lanes. Trade “stimulation” was limited to a maximum of the total Emirates traffic estimated for CY 2015. The estimated level of this “stimulated” trade weight was allocated to the top growth commodities for each trade lane. The impact on air export trade is estimated at $1.5 billion of increased commodity sales. The impact on air import trade was similarly estimated with the direct U.S. impacts based on a $124 million increase in U.S.-based wholesale, retail and transport revenues.

The indirect revenue impacts for U.S. exports were estimated at $1.5 billion supporting $616 million of GDP, $342 million of labor income, and 3,376 jobs in CY 2015. The revenues for the U.S. wholesale, retail and domestic transport sectors that are dependent on air imports via Emirates flights was estimated at $125 million (in 2016 dollars) including $77 million of GDP, $43 million of labor income supporting 522 jobs in CY 2015.

4.2.2. Indirect Impacts of U.S. Service Trade “Stimulation”

The export of U.S. services to foreign markets is important to the country’s economic growth and vitality. In CY 2015, U.S. service exports to the world totaled $751 billion which accounted for 33% of all export trade value. While travel and transport revenues (including air transport revenues and tourism spending) are an important component of service exports, the worldwide sale of business and other services accounted for $439 billion of export sales in CY 2015.

Air passenger transportation is an important factor in promoting and executing the export of U.S. services. The expansion of Emirates’ footprint in the U.S. and worldwide has contributed to the growth of merchandise and service trade with Emirates’ connecting regions. In CY 2015, U.S. export of “business” services (i.e., excluding transport and travel) to the Middle East, India, Africa, and ASEAN totaled $44 billion (see Figure 4-3).\textsuperscript{20} ASEAN accounted for one-third of the export value followed by the Middle East, Africa and India. The top category for service exports to these regions was other business services followed by intellectual property charges, financial services and maintenance and repair services.

\textsuperscript{19} ASEAN trade lanes were eliminated in both directions due to a lack of correlation as was Australasia for U.S. imports. Orlando’s import trade was also eliminated due to a lack of traffic data for the entire analysis period. The 10 Customs Districts include those for the other nine passenger destinations and the Atlanta cargo destination.

\textsuperscript{20} The U.S. service trade data does not identify trade for all countries, so India was used to represent the Indian Subcontinent. Even though Emirates handles a significant amount of passenger traffic between the U.S. and Australia, this market was excluded due to the relatively high level of direct passenger service to and from the U.S.
The impact of expanded air passenger travel on U.S. service exports to these regions can be demonstrated by comparing regional service export values with the level of travel trade for the period CY 2007 to CY 2015. Regression analysis applied to each of the market regions and service sectors was used for this purpose. The correlations were based on a direct comparison of business service export growth to combined import and export travel trade growth adjusting for the “stimulation” impact of Emirates.\(^{21}\) The combined service trade facilitated by Emirates services totaled $1.6 billion which facilitated 12,736 jobs, $708 million of labor income, and $957 million of GDP in CY 2015 (see Figure 4-4).

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\(^{21}\) U.S. travel-related exports measure spending by foreign visitors within the U.S., while U.S. travel-related imports measure spending by U.S. visitors in overseas markets.
4.2.3. Total Indirect Impacts of U.S. Trade “Stimulation”

The total merchandise and service trade related impacts are estimated at $3.2 billion in revenues, $1.7 billion in GDP, and $1.1 billion of labor income which supports 16,634 jobs in CY 2015 (see Figure 4-5).

Source: IMPLAN model results
4.3. Total Indirect Impacts

Passenger and trade “stimulation” combined, Emirates supports $4.6 billion of indirect revenues for U.S. companies. This level of domestic and foreign trade is responsible for $2.5 billion of GDP, $1.7 billion of labor income and 28,963 jobs in CY 2015 (see Figure 4-6).

Figure 4-6
Total Indirect Impacts of Emirates in the U.S. (CY 2015)

<table>
<thead>
<tr>
<th>Source: IMPLAN model results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Jobs Supported by Emirates</strong></td>
</tr>
<tr>
<td>28,963</td>
</tr>
<tr>
<td>16,634</td>
</tr>
<tr>
<td>12,329</td>
</tr>
</tbody>
</table>
5. **Induced Impacts**

The direct and indirect revenue impacts have additional induced (or multiplier) impacts throughout the U.S. economy. The direct and indirect revenues received by U.S. companies are partially distributed to:

1. employees in the form of labor income; and
2. other U.S. companies as revenues to pay for goods and services.

For each of these categories, the secondary flow of funds is used to purchase goods and services from additional companies (e.g., direct/indirect employees spend their income on household items) and pay additional labor income. The methodology used to estimate induced impacts is described in Annex A.

The induced impacts for CY 2015 are estimated at $13.2 billion in revenues, $6.8 billion in GDP, $4.0 billion in labor income and 67,631 jobs (see Figure 5-1).

![Figure 5-1](image)

**Induced Impacts of Emirates in the U.S. (CY 2015)**

- Jobs Supported by Emirates: 67,631
- Total Revenue Generated by Emirates (Mil.): $13,231
- Total GDP Generated by Emirates (Mil.): $6,794
- Labor Income Generated by Emirates (Mil.): $4,037

Source: IMPLAN model results
6. Total Impacts

In total, direct, indirect and induced impacts supported 104,112 jobs and $21.3 billion of U.S. revenues including $10.5 billion of GDP and $6.4 billion of labor income in CY 2015 (see Figure 6-1).

Figure 6-1
Total Impacts of Emirates in the U.S. (CY 2015)

Source: IMPLAN model results
7. Tax Impacts

The affected direct and indirect industry sectors generate revenues for U.S. government entities in many forms including fuel taxes, payroll taxes and fees paid to government agencies (including public sector airports).

Combined, all of this economic activity generates $2.5 billion of revenues for the government including $1.6 billion of Federal revenues and $0.9 billion of state and local revenues in CY 2015 (see Figure 7-1).

![Figure 7-1](image)

Tax Impacts of Emirates in the U.S. (CY 2015)

Source: IMPLAN model results
8. **Catalytic Impacts of Emirates’ U.S. Connections**

In addition to the economic impacts that Emirates generates in terms of direct spending and associated impacts within the U.S. economy, the ability to connect to Emirates’ worldwide network with U.S.-based passenger and cargo flights produces catalytic impacts that go beyond the traditional transport and tourism impacts measured in aviation studies. As shown in Section 4, the expansion of cargo and passenger connectivity to underserved markets has enabled new trade lanes, not just based on increases in capacity, but also by creating new linkages to established trade lanes. This section will further explore the level and scope of Emirates’ impact on U.S. connectivity to worldwide passenger markets, the “stimulation” of new passenger travel and the general effect on consumer choice and competition.

8.1. **Impact on Passenger Connectivity to and from the U.S.**

The expansion of Emirates’ U.S. passenger flights from its Dubai hub has significantly increased the capacity and quality of service to connecting markets in the Middle East, Indian Subcontinent, Africa, ASEAN, and other parts of Asia. This can be demonstrated by analyzing the level of Emirates’ services available for individual O&D markets to and from the U.S. (with additional details in Annex E).

![Figure 8-1: Emirates’ One-Stop Connecting Destinations via Dubai (December 2015)](Image)

Source: DIIO Schedule Data

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22 An origin and destination (O&D) market includes all passengers traveling between a U.S. airport and a foreign airport without regard to routing or point of origin. For example, Amman, Jordan has online connections from all of Emirates’ U.S. destinations so would account for 10 O&D markets, while Sydney has online service from just one U.S. destination (one O&D market).
The Economic Impact of Emirates in the United States

Based on flight schedule data\(^{23}\) for December 2015\(^{24}\), Emirates provided one-stop online connecting service to 55 destinations in the Middle East, Indian Subcontinent, Africa and Asia, as well as one-stop interline connections to 63 more destinations (see Figure 8-1) of which Emirates provides the only connecting service to nine destinations. The online connecting services cover 32 countries with the interline services adding another 22 countries. Emirates provided one-stop online connections to 14 destinations in the Middle East, 17 destinations in the Indian Subcontinent, seven destinations in ASEAN, 10 destinations in Africa, four destinations in Australasia and three destinations in Northeast Asia in December 2015.

On an O&D basis, Emirates provided one-stop connecting services for 353 markets between the 10 U.S. destinations and the 55 connecting destinations via Dubai. These markets included 121 involving Indian Subcontinent destinations, 116 in the Middle East, 49 in Africa, 47 in ASEAN, 11 in Australasia and nine in Northeast Asia (see Figure 8-2).

![Figure 8-2: Emirates' Online One-Stop Connecting O&D Markets via Dubai by Region (December 2015)](image)

Source: DIIO schedule data

Emirates provided 2,906 weekly online one-stop connecting flights to these regions via Dubai including nearly 1,000 for both the Middle East and Indian Subcontinent (see Figure 8-3).

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\(^{23}\) All schedule data is sourced through DIIO’s online data source.

\(^{24}\) Emirates’ connecting flight schedules were created using DIIO’s online data source and itinerary building methodology assuming minimum connecting time of 75 minutes and maximum connecting times of 480 minutes, as well as a high level of circuitry. The overseas destinations were limited to those located in the Middle East, Africa and Asia that were served by Emirates via Dubai with at least three flights during the week of December 13-19, 2015. U.S. city markets combined multiple airports for all destinations except Seattle.
Emirates’ contribution to U.S. connectivity is indicated by the large share of O&D markets where Emirates provides either the only one-stop connecting service, the fastest available connecting service, or over half of the available direct or one-stop connecting flights (see Figure 8-4). In December 2015, Emirates provided online one-stop connecting services for 353 O&D markets between the U.S. and the Middle East, Indian Subcontinent, Africa, ASEAN, Northeast Asia and Australasia, of which only 39 markets had direct service. Of these O&D markets, Emirates provided the only online one-stop connecting service for 69 markets and the fastest service for 30 more markets, so Emirates had the most convenient service to 28% of all markets served. Of the remaining markets, Emirates provided at least 50% of the weekly flights for 30 more markets. Emirates plays a particularly significant role in terms of U.S. connectivity with the Indian Subcontinent where it provides the only service for 33 O&D markets, the fastest one-stop connecting service for 17 markets, and more that 50% of the weekly flights for 17 more markets.
8.2. Impact on Passenger Traffic “Stimulation”

The passenger spending impacts described in Section 4 were based on an estimate of how Emirates-based connectivity helped create traffic increases or “stimulated” traffic in CY 2015 (see Annex D, Section D-2). In addition to creating new spending, the improved connectivity also benefited the passengers and shippers who were now able to travel and export goods more efficiently. As shown in Table 8-1, an estimated total of 8 million round-trip passengers traveled between the U.S. and the connecting regions served via the Dubai hub in CY 2015. An estimated 580,156 of these passengers (7%) would not have traveled under a non-Emirates scenario with the most affected regions being the Middle East and the Indian Subcontinent.25

25 This “stimulation” was based solely on service levels and quality so is conservative by ignoring all fare effects.
The Economic Impact of Emirates in the United States

Table 8-1
Emirates-Based “Stimulation” of Round-Trip Passenger Traffic (CY 2015)

<table>
<thead>
<tr>
<th>Region</th>
<th>All Carriers</th>
<th>Emirates</th>
<th>Passengers</th>
<th>Factor % of Emirates</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle East</td>
<td>1,609,260</td>
<td>440,869</td>
<td>160,900</td>
<td>10%</td>
<td>36%</td>
</tr>
<tr>
<td>Indian Subcontinent</td>
<td>2,768,491</td>
<td>732,568</td>
<td>304,088</td>
<td>11%</td>
<td>42%</td>
</tr>
<tr>
<td>ASEAN</td>
<td>2,382,889</td>
<td>75,747</td>
<td>64,453</td>
<td>3%</td>
<td>85%</td>
</tr>
<tr>
<td>Africa</td>
<td>1,220,071</td>
<td>102,962</td>
<td>50,716</td>
<td>4%</td>
<td>49%</td>
</tr>
<tr>
<td>Total</td>
<td>7,980,711</td>
<td>1,352,146</td>
<td>580,156</td>
<td>7%</td>
<td>43%</td>
</tr>
</tbody>
</table>

Source: Campbell-Hill Aviation Group

As shown, the “stimulated” passenger traffic accounts for a large share of Emirates’ total passengers – 43% for all regions.

From a passenger perspective, there are enormous benefits from this increase in choice and connectivity whether it’s a U.S. citizen traveling to a new country or a foreign citizen traveling to the U.S. for the first time.

8.3. Impact on Consumer Choice and Competition

It is a well-understood principle of air transportation economics that passengers make their travel choices based on a number of market and other factors. In general, passengers trade off service quality with travel costs. Total travel costs include air fares and related flight fees and taxes, as well as other trip costs (e.g., ground access). Service quality is measured in terms of total travel time, convenience, reliability, safety and travel comfort. Key factors other than travel time used in determining service quality include:

- the number of flight or carrier transfers required;
- the ease, reliability and speed of flight and carrier transfers;
- the probability of delays and flight cancelations;
- the quality, capacity and age of the aircraft (as they affect reliability and comfort); and
- the level and quality of customer services (in air, on ground and pre-/post-trip).

The expansion of U.S. connections to the Emirates network in recent years has produced the following benefits to passengers in the affected markets:

- **More Efficient Routing**: For many O&D markets, passengers now have an online one-stop routing alternative on the same carrier rather than being limited to inferior multi-stop and/or alliance or interline service.

- **Expanded Routing Options**: Emirates adding capacity and frequencies to destinations in the Middle East, Indian Subcontinent, ASEAN and Africa has “stimulated” traffic growth and expanded the number of routing options even for O&D markets that were previously served.

- **Fare Discipline**: The expanded level of capacity in the U.S. and worldwide markets by Emirates has accommodated traffic growth for these markets which might otherwise have experienced fare increases due to restricted capacity via other routings.
The Economic Impact of Emirates in the United States

- **Modern Fleet:** Emirates’ aircraft fleet had an average age of 6.5 years (as of year-end 2015) with a high proportion of the most modern and efficient aircraft operated in passenger and cargo markets today, providing reliable operations and an enhanced in-flight experience.

- **Higher Quality of Service:** Emirates has been rated the top international passenger airline in terms of service quality and delivery of premium customer service on ground and in the air. It is also well-understood that competition in terms of cost and quality is critical to maintaining economical and efficient travel options. In addition to accommodating “stimulated” traffic with high quality service on its own flights, Emirates’ presence in these markets has positively influenced the level and quality of service for other carriers in the market.
9. Conclusions

The introduction and expansion of Emirates’ flights to and from the U.S. have greatly expanded the access of U.S. residents and businesses to foreign markets with the same benefits applying to foreign residents’ and businesses’ access to the U.S. The air transport activities associated with new aircraft and traffic activity generated direct impacts within the U.S. economy, while Emirates’ direct purchase of U.S. goods and services to support its worldwide network created new export sales for U.S. companies and their foreign affiliates. The improved connectivity between the U.S. and developing markets in the Middle East, Indian Subcontinent, ASEAN, Africa, Northeast Asia and Australasia provided through Emirates’ U.S. flights has “stimulated” new merchandise and service trade (indirect impacts) for U.S. companies including new passenger spending for the travel, tourism and education sectors. In addition to the benefits of new traffic and trade, Emirates’ U.S. presence has expanded the travel options for U.S. passengers and traders and broadened U.S. access to previously underserved world markets.

In this study, the direct, indirect and induced impacts of Emirates’ flight services to and from the U.S. were estimated for CY 2015 as follows (see Table 9-1):

- Direct employment of U.S. residents and purchases from U.S. companies in support of aviation activities created 7,518 jobs, $726 million of labor income, $1.2 billion of GDP, and $3.5 billion of new revenues within the U.S.

- Indirect spending within the U.S. by newly “stimulated” passengers combined with new merchandise and service trade created 28,963 jobs, $1.7 billion of labor income, $2.5 billion of GDP, and $4.6 billion of new revenues for U.S. businesses.

- Induced spending within the U.S. resulting from the direct and indirect impacts created 67,631 jobs, $4.0 billion in labor income, $6.8 billion of GDP, and $13.2 billion of new revenues for U.S. businesses.

- In total, the newly “stimulated” transportation, trade and supporting activities are responsible for 104,112 jobs and $21.3 billion of U.S. business revenues including $10.5 billion of GDP and $6.4 billion of labor income.

- Combined, all of this economic activity generates $2.5 billion of revenues for the government including $1.6 billion of Federal revenues and $0.9 billion of state and local revenues.
The Economic Impact of Emirates in the United States

Table 9-1
Summary of Emirates’ Economic Impacts in the U.S. (CY 2015)

<table>
<thead>
<tr>
<th></th>
<th>Direct</th>
<th>Indirect</th>
<th>Induced</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>7,518</td>
<td>28,963</td>
<td>67,631</td>
<td>104,112</td>
</tr>
<tr>
<td>Total Revenue (mil. $)</td>
<td>$3,526</td>
<td>$4,561</td>
<td>$13,231</td>
<td>$21,318</td>
</tr>
<tr>
<td>Total GDP (mil. $)</td>
<td>$1,221</td>
<td>$2,465</td>
<td>$6,794</td>
<td>$10,480</td>
</tr>
<tr>
<td>Labor Income (mil. $)</td>
<td>$726</td>
<td>$1,685</td>
<td>$4,037</td>
<td>$6,448</td>
</tr>
<tr>
<td>Taxes (mil. $)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State/Local</td>
<td>$167</td>
<td>$170</td>
<td>$564</td>
<td>$902</td>
</tr>
<tr>
<td>Federal</td>
<td>$262</td>
<td>$391</td>
<td>$940</td>
<td>$1,593</td>
</tr>
<tr>
<td></td>
<td>$428</td>
<td>$562</td>
<td>$1,504</td>
<td>$2,495</td>
</tr>
</tbody>
</table>

Source: IMPLAN model results

The economic impacts based on travel and transport activities resulted from (1) Emirates’ long-standing U.S. presence and expansion of connectivity to worldwide markets, (2) the “stimulation” of new passenger travel and (3) the general effect on consumer choice and competition. The combined effect of network expansion was to increase the availability of online one-stop connecting service for U.S. passengers to 353 O&D markets in December 2015. Emirates’ role in expanding connectivity and choice for U.S. and foreign travelers alike is demonstrated by having the only one-stop connecting service to 69 of these O&D markets and the fastest service for an additional 30 O&D markets in 2015.

Emirates’ presence in the U.S. and the underserved markets that can be reached more quickly through the Emirates network results in significant, measurable economic and employment benefits and similarly, it is evident that Emirates increased passenger demand which “stimulates” markets resulting in additional benefits.
ANNEX A

Economic Impact Methodology
ANNEX A

Economic Impact Methodology

A-1  Overview of Methodology and Impact Definitions

Emirates’ operations positively impact the U.S. economy, both from air transportation and supporting operations, and from expenditures by foreign visitors as well as U.S.-originating passengers. Additionally, Emirates purchases aircraft and supporting aviation parts and equipment from U.S. manufacturers for its U.S. and overseas operations, while also indirectly generating U.S. exports in support of foreign-made aircraft (Airbus). Direct revenues are generated for U.S. companies within the air transportation, travel and tourism, and aerospace manufacturing sectors as well as for firms supporting the airline’s general administrative and marketing activities. New revenues and earnings created for these sectors generate additional impacts throughout the U.S. economy due to additional purchases of goods and services by the directly-affected firms and their employees.

The economic impacts of Emirates’ U.S. activities include three types: direct, indirect and induced.¹

Direct Impacts: These impacts are new U.S. revenues (and associated income and employment) directly generated by (1) the processing of flights and passenger/cargo traffic at U.S. airports along with supporting corporate activities located within the U.S. (“Emirates’ U.S. Operations”) and (2) the purchase of U.S. export merchandise and services in support of the worldwide operations (including the purchase of aircraft, engines, spare parts, and catering supplies as well as reservations and IT services).

Indirect Impacts: These impacts occur based on the increased connectivity that Emirates’ passenger and cargo network provides between the U.S. and developing markets in the Middle East, Africa, Indian Subcontinent, ASEAN, Northeast Asia, Eurasia and Australasia.² Indirect impacts include (1) domestic spending by newly “stimulated” passengers (foreign and U.S. originating) for travel, tourism and education services (““Stimulated” Passenger Spending in the U.S.”) and (2) “stimulated” merchandise and services trade for U.S. companies (“U.S. Trade “Stimulation””).

Induced Impacts: These impacts occur as income by companies, employees and proprietors is re-spent within the economy (also known as multiplier impacts).

Economic impacts are measured in terms of the revenues, GDP, labor income, employment and taxes generated within the U.S. economy.

- Revenues measures total spending for goods and services produced by U.S. companies.

¹ The definitions of impact categories used in this study are standard for economic impact analyses of U.S. airports and the U.S. aviation sector. These definitions may differ from other impact studies covering non-U.S. regions or non-aviation activities.

² Emirates handles passenger and cargo traffic between the U.S. and all of these regions, but the passenger “stimulation” analysis was limited to the Middle East, Africa, ASEAN and Indian Subcontinent based on the traffic data available. The cargo and trade analyses included Northeast Asia and Australasia which were significant traffic sources, while the schedule analysis included all regions.
• **Gross Domestic Product (GDP)** (also known as value-added) measures the contribution to the national gross domestic product (by eliminating the double-counting effect of intermediate purchases/revenues from the revenue total).

• **Labor income** measures all forms of employment income including employee compensation (wages and benefits) and proprietor income (i.e., payments to business owners) which are components of “GDP”.

• **Employment** quantifies total employees within each sector.

• **Tax Revenues** include assessments and fees paid to national, state and local government entities by individuals and businesses.

The impact analysis was conducted using the IMPLAN model\(^3\) based on CY 2015 national-level data. The direct impacts were derived based on Emirates\(^4\) and other data sources and used as inputs for the “direct impacts” in the IMPLAN model as measured in terms of new revenues, GDP, labor income, taxes or employment. In cases where only revenue impacts were known, the IMPLAN model was used to estimate the other direct impact measurements.\(^5\) The indirect impacts were estimated using projected levels of passenger travel and foreign trade with and without Emirates’ U.S. services. The indirect spending and sales impacts were translated in employment, GDP and labor income using the IMPLAN model.

The IMPLAN model was used to translate the direct and indirect impacts into total impacts (including induced impacts) for all of these measures and with all values stated in 2016 dollars. Total government tax and other revenues are also generated within the IMPLAN model.

**A-2 Direct Impact Methodology**


The direct impacts for “Emirates’ U.S. Operations” were primarily based on detailed employment and spending data provided by Emirates (see Annex C for details on how that data was adjusted for use in the IMPLAN model). The passenger-related impacts were limited to “stimulated” aviation activities calculated based on an analysis of how Emirates’ passenger flights created new flight and traffic activity to, from and within the U.S. As a non-U.S. company, the impact estimates were limited to direct spending and employment within the U.S. in support of Emirates’ U.S. operations. An “activity by parts” (ABP) methodology was used within the IMPLAN model to derive total impacts as follows:

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\(^3\) IMPLAN is an Input-Output analysis model (with software and data provided by IMPLAN Group LLC) designed for economic impact analysis at a regional and national level. The model used for this analysis is based on CY 2015 national-level data.

\(^4\) Emirates data was provided for fiscal years 2014/15 and 2015/16 covering the 12 months ending 3/31/2015 and 3/31/2016 respectively. Calendar year estimates were calculated based on a weighting derived from traffic patterns (cargo traffic for cargo-related activities, passenger traffic for passenger-related activities, and a weighted average for activities not specific to either passenger and cargo traffic).

\(^5\) The IMPLAN model only requires one of these measures to generate direct impacts for all of the relevant statistics for a particular industry sector. For example, new direct revenues can be used to estimate direct impacts in terms of GDP, labor income, and employment.
• Direct labor income and employment for U.S. residents employed by Emirates was estimated for CY 2015 with value-added and output limited to the labor income value. The impact of “induced” spending by direct employees was measured within the model based on the level of labor income.

• Direct spending (output) by Emirates within the U.S. was assigned to specific industry sectors within the IMPLAN model which generated associated direct GDP, labor income and employment values as well as induced impacts from the re-spending of company and labor income and tax impacts.

The direct impacts for “Emirates’ Purchase of U.S. Exports” were based on estimates of the export value for purchased Boeing aircraft and U.S. engines used in Airbus aircraft combined with spending estimates for aviation parts and engines, computer and reservation services, and catering-related goods and services. These impacts are not directly related to the “stimulated” level of U.S. traffic and flight activity and could be sourced from other countries, so all of the spending is included as direct impacts. The spending levels were associated with specific industry sectors within the IMPLAN model which generated the other direct impact measures.

A-3 Indirect Impact Methodology

The indirect impacts include economic activity that is made possible by the availability of Emirates’ worldwide passenger and cargo network. Increased capacity and improved connectivity “stimulates” new passenger travel by foreign and U.S. residents and generates new spending for the U.S. travel and tourism sectors. The improved access to foreign markets by U.S. companies and residents also “stimulates” new merchandise and service trade with those markets, generating new sales and associated impacts.

As described in Annex D, the indirect revenue impacts were derived based on analysis comparing traffic and trade levels with and without Emirates’ U.S. services. The revenue impacts were associated with specific industry sectors within the IMPLAN model which generates indirect impacts in terms of employment, labor income and GDP.

A-4 Induced, Tax and Total Impact Methodology

The IMPLAN model measures all of the direct and indirect impact values from the revenues assigned to each impacted industry sector, but also generates (1) induced impacts that result from the secondary spending by the direct and indirect industries and their employees and (2) tax impacts that combine all taxes, fees and other spending that goes to Federal, state or local government entities. Total impacts combine the direct, indirect and induced impact values.

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6 The IMPLAN model estimates induced and tax impacts for each of the direct and indirect impact categories (e.g., “Emirates’ U.S. Operations”), which are combined in the total impacts.
ANNEX B

Emirates’ Operations in the U.S.
ANNEX B

Emirates’ Operations in the U.S.

B-1 Introduction

Emirates provides scheduled passenger and cargo air services to and from the U.S. In calendar year (CY) 2015, Emirates averaged 101 round-trip flights per week to and from U.S. airports. Most of those departures were scheduled passenger services (90 per week).

Table B-1
Flight Activity and Capacity by Type of Service (CY 2015)

<table>
<thead>
<tr>
<th></th>
<th>Passenger</th>
<th>Cargo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Weekly Round-Trip Flights</td>
<td>90</td>
<td>11</td>
</tr>
<tr>
<td>Average Weekly Round-Trip Seat Capacity</td>
<td>38,343</td>
<td>Average Weekly Round-Trip Cargo Capacity (tonnes)</td>
</tr>
<tr>
<td>Average Seats per Flight</td>
<td>424</td>
<td>Average Tonnes per Flight</td>
</tr>
<tr>
<td>Total Weekly Round-Trip Flights</td>
<td>101</td>
<td></td>
</tr>
</tbody>
</table>

Source: USDOT, T-100 statistics

B-2 Scheduled Passenger Services

As of year-end 2015, Emirates provided 15 daily passenger services between Dubai and 10 U.S. destinations. This included four daily flights between Dubai and New York, including one via Milan, and two non-stop daily flights between Dubai and Seattle as well as Boston. There were also single daily non-stop services between the Dubai hub and the following destinations: Houston, Los Angeles, San Francisco, Dallas-Fort Worth, Washington, D.C., Chicago and Orlando.

Emirates began serving the U.S. with a single daily flight between Dubai and New York in 2004. The Houston service was added in 2007 with expansion to Los Angeles and San Francisco in 2008. Emirates expanded flights to these destinations through 2011 before adding Dallas-Fort Worth, Seattle and Washington, D.C. in 2012; Boston and Chicago in 2014; and Orlando in 2015 (see Figure B-1).

1 As the impacts are measured for CY 2015, most of the activity statistics are shown on that basis. In some cases, statistics are shown on a fiscal year (FY) basis for Emirates internal data or at a single point in time (e.g., fleet size or service levels).
As a result of the flight increases shown in Figure B-1, round-trip passengers carried between the U.S. and overseas grew to nearly 1.35 million in CY 2015.\(^2\)

\(^2\) This traffic is limited to passengers traveling between the U.S. and destinations in the Middle East, Indian Subcontinent, Africa and ASEAN. It excludes traffic between the U.S. and Europe, Eurasia, Australasia and Northeast Asia as these areas were not covered in the MIDT data set used for the analysis. See Annex F for definitions of these world regions. It thus excludes traffic between the U.S. and Europe on the New York-Milan flights, but includes passengers between New York and Dubai on the flights via Milan.
In CY 2015, Emirates carried over 191,000 passengers who connected via Emirates’ 10 U.S. destination airports to other U.S. airports (see Table B-2), accounting for 14% of the carrier’s total passengers to and from the U.S. The share of passengers connecting to and from a U.S. domestic flight varied by destination airport with high shares for the Seattle, Boston and Dallas-Fort Worth flights. These passengers connected via Emirates’ U.S. destinations to over 300 U.S. airports.

Over half of the total round-trip passengers in CY 2015 traveled between the U.S. and the Indian Subcontinent (see Table B-3). About one-third of the traffic involved Middle East markets while Africa and ASEAN each accounted for less than 10% of the traffic. Passengers originating overseas (“visitors”) in these regions accounted for 44% of the total round-trip passengers.

---

Table B-2
Round-Trip Passenger Activity via Emirates Gateway Flights (CY 2015)

<table>
<thead>
<tr>
<th>Destination</th>
<th>Total Passengers</th>
<th>Total RPM's</th>
<th>% of Total</th>
<th>Avg. Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>398,979</td>
<td>76,884</td>
<td>19%</td>
<td>61,188</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>142,588</td>
<td>10,734</td>
<td>8%</td>
<td>5,089</td>
</tr>
<tr>
<td>San Francisco</td>
<td>147,208</td>
<td>3,413</td>
<td>2%</td>
<td>1,710</td>
</tr>
<tr>
<td>Seattle</td>
<td>135,512</td>
<td>32,646</td>
<td>24%</td>
<td>19,331</td>
</tr>
<tr>
<td>Houston</td>
<td>119,786</td>
<td>7,775</td>
<td>6%</td>
<td>3,569</td>
</tr>
<tr>
<td>Washington, D.C.</td>
<td>104,606</td>
<td>5,203</td>
<td>5%</td>
<td>2,454</td>
</tr>
<tr>
<td>Dallas/Fort Worth</td>
<td>119,311</td>
<td>23,773</td>
<td>20%</td>
<td>14,783</td>
</tr>
<tr>
<td>Boston</td>
<td>116,386</td>
<td>26,423</td>
<td>23%</td>
<td>21,018</td>
</tr>
<tr>
<td>Chicago</td>
<td>47,857</td>
<td>4,158</td>
<td>9%</td>
<td>2,063</td>
</tr>
<tr>
<td>Orlando</td>
<td>19,914</td>
<td>-</td>
<td>0%</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,352,146</strong></td>
<td><strong>191,009</strong></td>
<td><strong>14%</strong></td>
<td><strong>131,206</strong></td>
</tr>
</tbody>
</table>

Source: T-100 and MIDT data estimated by Campbell-Hill.

---

3 It was assumed that all of the Orlando traffic did not connect into other domestic U.S. flights due to a lack of routing data for the partial year service, which was commenced in September 2015.
In terms of individual countries, India was the top market with 42% of total round-trip passengers in CY 2015, followed by the U.A.E. with 22% (see Table B-4). Other top countries included Pakistan, Bangladesh, Saudi Arabia, Iran, South Africa and Thailand.

<table>
<thead>
<tr>
<th>Region of Origin/Destination</th>
<th>Total Passengers</th>
<th>Total Visitors</th>
<th>Visitor Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle East</td>
<td>440,869</td>
<td>222,394</td>
<td>50%</td>
</tr>
<tr>
<td>Indian Subcontinent</td>
<td>732,568</td>
<td>285,958</td>
<td>39%</td>
</tr>
<tr>
<td>ASEAN</td>
<td>75,747</td>
<td>35,675</td>
<td>47%</td>
</tr>
<tr>
<td>Africa</td>
<td>102,962</td>
<td>53,725</td>
<td>52%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,352,146</strong></td>
<td><strong>597,752</strong></td>
<td><strong>44%</strong></td>
</tr>
</tbody>
</table>

Source: T-100 and MIDT data estimated by Campbell-Hill.

Table B-4


<table>
<thead>
<tr>
<th>Country of Origin/Destination</th>
<th>Total Passengers</th>
<th>Share of Total</th>
<th>Total Visitors</th>
<th>Visitor Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>574,597</td>
<td>42%</td>
<td>231,478</td>
<td>40%</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>299,223</td>
<td>22%</td>
<td>149,058</td>
<td>50%</td>
</tr>
<tr>
<td>Pakistan</td>
<td>70,245</td>
<td>5%</td>
<td>23,123</td>
<td>33%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>67,065</td>
<td>5%</td>
<td>25,079</td>
<td>37%</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>48,884</td>
<td>4%</td>
<td>24,226</td>
<td>50%</td>
</tr>
<tr>
<td>Iran</td>
<td>44,339</td>
<td>3%</td>
<td>22,793</td>
<td>51%</td>
</tr>
<tr>
<td>South Africa</td>
<td>36,315</td>
<td>3%</td>
<td>23,883</td>
<td>66%</td>
</tr>
<tr>
<td>Thailand</td>
<td>23,463</td>
<td>2%</td>
<td>8,271</td>
<td>35%</td>
</tr>
<tr>
<td>Kuwait</td>
<td>14,734</td>
<td>1%</td>
<td>10,720</td>
<td>73%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>13,644</td>
<td>1%</td>
<td>10,436</td>
<td>76%</td>
</tr>
<tr>
<td>All Other</td>
<td>173,281</td>
<td>13%</td>
<td>79,120</td>
<td>46%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,352,146</strong></td>
<td><strong>100%</strong></td>
<td><strong>597,752</strong></td>
<td><strong>44%</strong></td>
</tr>
</tbody>
</table>

Source: T-100 and MIDT data estimated by Campbell-Hill.
Scheduled Cargo Services

Emirates provides a large and growing amount of cargo capacity between the U.S. and world markets through a combination of freighter and belly-hold capacity on its passenger flights. Based on T-100 statistics, Emirates operated a total of 1,108 freighter flights to and from the U.S. in CY 2015 (see Table B-5).

Table B-5
Emirates’ Cargo Activity by Service Type (CY 2015)

<table>
<thead>
<tr>
<th>One-Way Departures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Freighter - Scheduled</td>
<td>1,108</td>
</tr>
<tr>
<td>Passenger</td>
<td>9,400</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10,508</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cargo Capacity (tonnes)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Freighter - Scheduled</td>
<td>116,177</td>
</tr>
<tr>
<td>Passenger</td>
<td>663,662</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>779,839</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cargo Traffic (tonnes)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Freighter - Scheduled</td>
<td>61,052</td>
</tr>
<tr>
<td>Passenger</td>
<td>63,882</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>124,935</td>
</tr>
</tbody>
</table>

Source: USDOT, T-100 Statistics

New York was the top U.S. destination for total cargo carriage with 23% of CY 2015 traffic based on 6,420 tonnes of freighter traffic and 22,781 tonnes of passenger belly-hold traffic (see Table B-6). Flights to the 10 passenger destinations accounted for over 63,000 tonnes. Chicago was the largest destination for freighter traffic with nearly 19,000 tonnes. Emirates also handled freighter flights and traffic at Atlanta, Los Angeles, Columbus and Houston, with Atlanta and Columbus being the only freighter destinations not served with passenger flights.

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4 One tonne = 2,204.6 pounds or 1,000 kilograms.
5 The New York freighter flights were operated by TNT.
6 As shown below, some of the Chicago freighter flights also include a stop at Columbus for which the traffic is reported in the Chicago totals.
Emirates’ scheduled freighter flights in CY 2015 included the following routings to and from Dubai (shown with the number of annual flights): 

- Dubai-Amsterdam/Copenhagen-Chicago-Copenhagen-Dubai (104)
- Dubai-Amsterdam/Copenhagen-Columbus/Chicago-Brussels/Copenhagen-Dubai (39)
- Dubai- Copenhagen-Mexico City-Houston-Copenhagen-Dubai (103)
- Dubai-Frankfurt-Atlanta-Copenhagen-Dubai (112)
- Dubai-Mexico City-Los Angeles-Copenhagen-Dubai (62)
- Dubai-Amsterdam-Frankfurt-Los Angeles-Copenhagen-Dubai (43)

Emirates also had a code-share agreement to use cargo space on five weekly TNT flights operating to New York via Liege. These freighter flights between the U.S. destinations and Emirates’ Dubai hub connected traffic with freighter flights to 12 Asian airports, 14 African airports, four Middle East airports, one Australasian airport, and four additional European airports. Additional connecting options were available to more markets on passenger flights via Dubai. All of the U.S. freighter flights operated by Emirates utilized Boeing 777-200LRF aircraft.

Based on internal company data for FY 2015/16, Emirates handled nearly 136,000 tonnes of air cargo on its U.S. flights, including 81,500 tonnes of outbound exports and 54,200 tonnes of inbound traffic.

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**Table B-6**

Emirates’ Cargo Traffic by U.S. Gateway (CY 2015)

<table>
<thead>
<tr>
<th>Total Traffic (tonnes)</th>
<th>% of Total</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freighter</td>
<td>Passenger</td>
</tr>
<tr>
<td>New York</td>
<td>6,420</td>
<td>22,781</td>
</tr>
<tr>
<td>Chicago</td>
<td>18,552</td>
<td>6,387</td>
</tr>
<tr>
<td>Atlanta</td>
<td>17,590</td>
<td>-</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>12,229</td>
<td>4,979</td>
</tr>
<tr>
<td>Houston</td>
<td>6,229</td>
<td>5,396</td>
</tr>
<tr>
<td>Washington</td>
<td>-</td>
<td>5,389</td>
</tr>
<tr>
<td>Boston</td>
<td>-</td>
<td>5,353</td>
</tr>
<tr>
<td>Dallas/Fort Worth</td>
<td>33</td>
<td>5,041</td>
</tr>
<tr>
<td>Seattle</td>
<td>-</td>
<td>3,884</td>
</tr>
<tr>
<td>San Francisco</td>
<td>-</td>
<td>3,433</td>
</tr>
<tr>
<td>Orlando</td>
<td>-</td>
<td>1,240</td>
</tr>
<tr>
<td>Total</td>
<td>61,052</td>
<td>63,882</td>
</tr>
</tbody>
</table>

Source: USDOT, T-100 Statistics

---

7 Some routings varied throughout the year.
8 The U.S.-Dubai flights also carried cargo to European airports in Amsterdam, Brussels, Copenhagen or Frankfurt via intermediate stops.
As shown in Figure B-2, the Indian Subcontinent accounted for 26% of this total, with the Middle East responsible for 33%, ASEAN for 9%, and Africa for 7%.  

Figure B-2
Emirates’ U.S. Cargo Traffic Distribution (FY 2015/16)

Source: Emirates internal data

As shown in Figure B-3, the air trade is imbalanced for particular world regions with the Middle East, Africa and Australasia dominated by exports from the U.S. while the other markets are more U.S. import-oriented. The directly-served U.A.E. market is the largest (Figure B-4) based mostly on U.S. exports, while a connecting market, India, is the second largest trade market and is relatively balanced directionally. Other top countries that are served via the Dubai hub are Australia, Saudi Arabia, Vietnam, Pakistan, Sri Lanka and Kuwait.

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9 These totals vary from the totals in the T-100 data due to different reporting periods.
10 The internal cargo data included traffic for all non-U.S. destinations including some traffic not routed via Dubai. Trade with Europe is mostly served via intermediate stops on flights to and from the U.S. and is included along with Northeast Asia traffic within “All Other”. These as well as Australasia (shown separately) were included in the cargo analysis, but were excluded from the passenger analysis.
Figure B-3
Emirates’ U.S. Cargo Traffic by World Region (FY 2015/16)

Source: Emirates internal data

Figure B-4
Emirates’ U.S. Cargo Traffic by Country (FY 2015/16)

Source: Emirates internal data
Fleet Size and Composition

At the end of 2015, Emirates operated a fleet of 248 aircraft, including 233 passenger aircraft and 15 freighters (see Table B-7). This represented a total capacity of 93,942 seats. Emirates also had an additional 258 aircraft on order including 190 Boeing 777 aircraft and 68 Airbus A380 aircraft. In CY 2015, Boeing produced one 777-200LRF and 11 777-300ER aircraft for Emirates, with Airbus producing 16 A380 aircraft.\textsuperscript{11}

<table>
<thead>
<tr>
<th>Aircraft Manufacturer</th>
<th>Total Aircraft</th>
<th>Seat Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airbus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A330</td>
<td>16</td>
<td>3,792</td>
</tr>
<tr>
<td>A340</td>
<td>5</td>
<td>1,326</td>
</tr>
<tr>
<td>A380</td>
<td>72</td>
<td>35,208</td>
</tr>
<tr>
<td></td>
<td>93</td>
<td>40,326</td>
</tr>
<tr>
<td><strong>Boeing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger</td>
<td></td>
<td></td>
</tr>
<tr>
<td>777 200ER</td>
<td>6</td>
<td>1,788</td>
</tr>
<tr>
<td>777 200LR</td>
<td>10</td>
<td>2,660</td>
</tr>
<tr>
<td>777 300</td>
<td>12</td>
<td>4,368</td>
</tr>
<tr>
<td>777 300ER</td>
<td>112</td>
<td>44,800</td>
</tr>
<tr>
<td></td>
<td>140</td>
<td>53,616</td>
</tr>
<tr>
<td><strong>Freighter</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>747 400ERF</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>777 200LRF</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><strong>Boeing-Total</strong></td>
<td>155</td>
<td>53,616</td>
</tr>
<tr>
<td><strong>Fleet Total</strong></td>
<td>248</td>
<td>93,942</td>
</tr>
</tbody>
</table>

Source: DIIO

\textsuperscript{11} There is a time lag between the production of an aircraft and its delivery to the operating airline. The year of production was used in this case for the purpose of measuring the impacts on the U.S. aviation manufacturing sector.
Emirates’ passenger and cargo operations in the U.S. accounted for 353 company employees in September 2015. In addition to 120 company employees located at the passenger destination airports, Emirates employed 90 persons at its sales offices and 52 persons at its reservation and customer service centers. There were also 60 persons employed to support cargo operations with another 31 jobs for engineering and general administration.
ANNEX C

Direct Impacts of Emirates in the U.S.
ANNEX C

Direct Impacts of Emirates in the U.S.

C-1 Introduction

Direct economic impacts include new U.S. revenues (and associated GDP, labor income, and employment) directly generated by (1) the processing of flights and traffic at U.S. airports along with supporting corporate activities located within the U.S. (“Emirates’ U.S. Operations”) and (2) the direct purchases by Emirates of goods and services from U.S. companies in support of its worldwide network (“Emirates’ Purchases of U.S. Exports”). The following sections summarize the methodology for direct economic impacts of Emirates in the U.S.

C-2 Direct Impacts of Emirates’ U.S. Operations

Emirates operated passenger flights between its Dubai hub and 10 U.S. destination airports during the impact period (CY 2015). The airline also operated freighter aircraft as part of scheduled services between the U.S. and its Dubai hub as well as other intermediate foreign points. These air transportation activities created economic impacts in the U.S. resulting from the processing and handling of aircraft, passengers and cargo, as well as through activities in support of administrative, marketing and aircraft maintenance activities. Some of the associated functions were handled by Emirates employees working and residing in the U.S., while other services are entirely, or partially, purchased from U.S. firms. The passenger and cargo based impacts are limited to those associated with “stimulated” activity, i.e., passengers who would not have otherwise traveled to and from the U.S. absent the availability of Emirates’ flights.¹

The general methodology for estimating direct impacts in the U.S. from Emirates’ air transportation and supporting activities was based on the following:

- Emirates provided detailed information on spending and employment within the U.S. in support of all activities associated with handling passenger and cargo traffic. These operations-related activities included airport operations, direct purchases of fuel and other supplies, station/outstation operations, engineering/maintenance, cargo/passenger handling and ground transport, reservations and customer service and administrative/financial support. The data was provided for fiscal years (FY) 2014/15 and 2015/16 (12 months ending March 31) and converted to calendar year (CY) 2015 totals.
- Purchases of goods and services from U.S. companies in support of U.S.-based activities were assigned as passenger, cargo or general (i.e. not assignable to either passenger or cargo traffic) in the U.S. were proportionally adjusted to account for activity that might have occurred without the services provided by Emirates. Impacts are limited to the share of passenger and cargo traffic that is estimated to be “stimulated” traffic as determined using traditional QSI (quality service index) modeling comparing traffic levels with and without the Emirates flights (described in Annex D). The estimates are limited to service-based “stimulation” that is solely dependent on flight frequency, capacity and the number of connections and assumes no fare benefits or effects (which is also a conservative assumption).

¹ To be conservative, the total impacts associated with Emirates’ passenger and cargo flight and traffic activity in the U.S. were proportionally adjusted to account for activity that might have occurred without the services provided by Emirates. Impacts are limited to the share of passenger and cargo traffic that is estimated to be “stimulated” traffic as determined using traditional QSI (quality service index) modeling comparing traffic levels with and without the Emirates flights (described in Annex D). The estimates are limited to service-based “stimulation” that is solely dependent on flight frequency, capacity and the number of connections and assumes no fare benefits or effects (which is also a conservative assumption).
cargo) and associated with a specific U.S. industry sector. Labor income paid to employees residing in the U.S. was similarly assigned to the passenger, cargo and general categories.

- Employment by activity type was estimated for CY 2015 using September 2015 internal data.
- The “stimulated” spending by Emirates with U.S. firms was estimated at $398 million while the “stimulated” share of Emirates’ labor income was estimated at $25 million for 170 jobs.\(^2\) The impact of this spending was limited to that associated with “stimulated” passenger and cargo traffic and supporting activities.
- Spending estimates were provided and similarly adjusted for “corporate communications” covering sponsorships, public relations and other activities promoting Emirates within the U.S. While this type of spending is not directly related to traffic levels, it was assumed that the “stimulated” or new spending impacts for the U.S. economy was based on passenger “stimulation”.
- All direct spending for CY 2015 was converted to 2016 dollars using industry-specific GDP inflation factors contained in the IMPLAN model (see Annex A). The labor income and spending estimates for air operations and corporate communications were used to estimate the direct employment, labor income, and GDP within the IMPLAN model based on the model’s structure for specific U.S. industry sectors.

The number of direct employees for Emirates in CY 2015 was estimated at 353. The “stimulated” spending by Emirates with U.S. firms was estimated at $398 million while the “stimulated” share of Emirates’ labor income was estimated at $25 million for 170 jobs. The “stimulated” direct revenue within the U.S.\(^3\) was estimated at $429 million supporting 1,979 jobs, $106 million of labor income and $193 million of GDP.\(^4\)

In support of its CY 2015 U.S. operations, Emirates spent an additional $61 million within the U.S. for various corporate communications activities, or $26 million assuming that 43% of this activity was “stimulated”. These direct revenues of $26 million supported 142 jobs, $8 million of income, and $15 million of GDP impacts.

The combined direct impact from Emirates’ U.S. operations in CY 2015 (adjusted for “stimulation”) was $456 million in revenues, $208 million in GDP, $114 million of labor income and 2,121 jobs (Figure C-1).

\(^2\) The share applied to passenger-related spending (43%) was based on the passenger “stimulation” analysis described in Annex D. The share for cargo activities (71%) was a weighted average assuming all of the freighter activity was newly “stimulated” while applying the passenger-based share for cargo activity using passenger aircraft. All general spending and labor impacts (i.e., not specific to either passenger or cargo activities) were similarly based on a weighted average (46%) using the passenger and cargo shares.

\(^3\) The U.S. direct spending only includes payments to U.S.-located companies or employees and excludes allocations of overhead and fleet ownership costs to U.S. operations as well as corporate communications spending within the U.S. and the purchase of U.S. goods and services for overseas operations.

\(^4\) Spending and labor income values based directly on Emirates data are stated in 2015 dollars. All values for revenue, GDP and labor income “impacts” produced by the IMPLAN model are stated in 2016 dollars.
C-3  Direct Impacts of Emirates’ Purchases of U.S. Exports

U.S.-bound flights account for a relatively minor share of Emirates’ worldwide operations with just 5.2% of all passenger and cargo flights in CY 2015. In addition to direct impacts associated with its U.S. transportation services, Emirates is also a major customer for U.S. corporations in the aviation, technology and related sectors although these may not have direct links to Emirates’ U.S. operations as such. Impacts on the U.S. economy from Emirates’ fleet and other related purchases are covered within the following impact categories (all shown for CY 2015 in 2016 dollars):

- **Purchase of U.S.-Built Aircraft:** In CY 2015, Boeing completed the production of 11 Boeing 777-300ER aircraft and one Boeing 777-200LRF aircraft for Emirates. Based on U.S. export data for civil aviation aircraft and related commodities, it was estimated that these purchases resulted in $1.5 billion of direct revenues to the U.S. aircraft manufacturing sector.\(^5\) These revenues supported 1,674 direct jobs, $227 million in labor income and $444 million of GDP.

- **Purchase of U.S. Engines, Equipment and Parts:** Emirates estimated its direct purchases from U.S. vendors in CY 2015 at $1.3 billion which directly supported 2,986 jobs, $304 million of labor income and $456 million of GDP.

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\(^5\) U.S. trade estimates for aircraft and related manufacturing are aggregated for confidentiality purposes. The estimated share for Emirates purchases was calculated using the airline’s share of delivered capacity for all U.A.E. airlines combined.
• **U.S. Content in Foreign-Made Aircraft:** It is estimated that 11% of the value for Airbus aircraft delivered to Emirates in CY 2015 can be attributed to U.S.-made engines and parts. The related export revenues by U.S. engine manufacturers in CY 2015 are estimated at $271 million which supported 459 jobs, $53 million of labor income, and $84 million of GDP.\(^6\)

In addition to fleet-related purchases, Emirates is a major customer for U.S. companies providing airline reservations systems and information technology for marketing and other purposes. The airline also purchases flight catering supplies and equipment for overseas operations through its affiliate (Emirates Flight Catering). Direct spending estimates were used to calculate other impacts using the IMPLAN model’s industry sector data. The estimated direct impacts are:

- **Reservations System:** Emirates spent a total of $6 million for reservations services from U.S. companies in CY 2015.

- **Information Technology:** Emirates paid U.S. firms and their foreign affiliates $33 million for computer systems design services in CY 2015.\(^7\)

- **Flight Catering:** In addition to catering spending to support its U.S. flights (contained in “Direct Impacts of Emirates’ U.S. Operations” in Section C-2 above), Emirates also purchases U.S. flight catering supplies and equipment for its overseas operations through its affiliate (Emirates Flight Catering). These purchases generated $11 million in revenues to U.S. companies for CY 2015.

In total, Emirates directly imported $50 million of other non-fleet related U.S. goods and services (in 2016 dollars) which generated $30 million of GDP and $30 million of labor income while supporting 279 jobs.

Combined, Emirates directly imported $3.1 billion of U.S. goods and services which generated $1.0 billion of GDP and $613 million of labor income while supporting 5,397 jobs during CY 2015 (Figure C-2).

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\(^6\) The total value of delivered Airbus aircraft was estimated using the ratio of delivered capacity for Airbus vs. Boeing aircraft.

\(^7\) Purchases from foreign affiliates of U.S. corporations are allocated to U.S. sales based on U.S. foreign affiliate trade data for the telecommunications sector in 2015.
Figure C-2
Direct Impacts of Emirates’ Purchases of U.S. Exports (CY 2015)

<table>
<thead>
<tr>
<th></th>
<th>Employment</th>
<th>Revenue (mil. $)</th>
<th>GDP (mil. $)</th>
<th>Labor Income (mil. $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Other</td>
<td>279</td>
<td>$50</td>
<td>$30</td>
<td>$30</td>
</tr>
<tr>
<td>U.S. Content - Airbus</td>
<td>459</td>
<td>$272</td>
<td>$83</td>
<td>$53</td>
</tr>
<tr>
<td>U.S. Aviation Engines/Parts</td>
<td>2,986</td>
<td>$1,276</td>
<td>$456</td>
<td>$304</td>
</tr>
<tr>
<td>U.S.-Built Aircraft</td>
<td>1,674</td>
<td>$1,473</td>
<td>$444</td>
<td>$227</td>
</tr>
<tr>
<td></td>
<td>5,397</td>
<td>$3,070</td>
<td>$1,013</td>
<td>$613</td>
</tr>
</tbody>
</table>

Source: IMPLAN model results
C-4  Total Direct Impacts

The combined direct trade and U.S.-based activities of Emirates generated $3.5 billion of new revenues including $1.2 billion of GDP and $726 million of labor income supporting 7,518 jobs in CY 2015 (see Figure C-3).

Figure C-3
Total Direct Impacts of Emirates in the U.S. (CY 2015)

<table>
<thead>
<tr>
<th>Employment</th>
<th>Revenue (mil. $)</th>
<th>GDP (mil. $)</th>
<th>Labor Income (mil. $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase of U.S. Exports</td>
<td>5,397</td>
<td>$3,070</td>
<td>$1,013</td>
</tr>
<tr>
<td>U.S. Operations</td>
<td>2,121</td>
<td>$456</td>
<td>$208</td>
</tr>
</tbody>
</table>

Source: IMPLAN model results
ANNEX D

Indirect Impacts of Emirates in the U.S.
ANNEX D
Indirect Impacts of Emirates in the U.S.

D-1 Introduction

Emirates’ destination network greatly enhances the ability of air travelers to visit the U.S. from markets throughout the Middle East, Asia and Africa with little or no direct air service. It also provides U.S. travelers with new options for reaching those markets for leisure, business, educational or governmental purposes. The “stimulation” of new two-way travel between the U.S. and emerging markets creates new opportunities for merchandise and service trade, as does the expanded ability to move air cargo economically in both directions. This section summarizes the indirect impacts of Emirates’ U.S. connections in terms of (1) spending within the U.S. by new passengers (U.S. and foreign origin) and (2) “stimulated” merchandise and service trade.

D-2 Passenger Traffic and Spending “Stimulation”

Emirates’ flights between its Dubai hub and the U.S. provides a significant level of direct services to the U.A.E. and a high level of connecting online and interline service\(^1\) to countries in the Middle East, Indian Subcontinent, Africa, ASEAN, Northeast Asia and Australasia.\(^2\) The addition of new efficient routings to these markets has resulted in a significant “stimulation” of new U.S. and foreign-originating passengers to and from the U.S. as shown below.

Emirates accounted for two-thirds of direct services between U.A.E. and its U.S. destinations and provided the only non-stop service for four of those destinations (Boston, Houston, Orlando and Seattle) in December 2015.\(^3\) As described in Annex E, Emirates provided online one-stop connections to 55 markets in the Middle East, Indian Subcontinent, ASEAN, Africa, Northeast Asia and Australasia, as well as numerous interline connecting options provided by other carriers serving Dubai (e.g., Air India to and from India).

The extent to which Emirates has “stimulated” new passenger traffic in individual origin and destination (O&D)\(^4\) markets can be measured using traditional QSI (quality service index) modeling that measures the effect of service levels and quality on traffic levels. To be conservative, the estimates are limited to service-based stimulation that is solely dependent on flight frequency, capacity and the number of connections and assumes no fare benefits or effects. The analysis also does not measure the effect of the higher quality passenger service provided by Emirates in terms of passenger comfort and satisfaction (as shown by top rankings relative to competing airlines).

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\(^1\) Online connecting services involves flights operated by a single airline (Emirates) while interline services involve two or more airlines.

\(^2\) While Emirates carries traffic between the U.S. and Europe, Northeast Asia, Eurasia and Australasia, these routings were not included in the passenger database so were excluded from impacts based on “stimulated” passenger traffic, but included in cargo-based impacts when appropriate. See Annex F for definitions of the world regions.

\(^3\) Two of the other U.S. destinations (Dallas/Fort Worth and San Francisco) received new service in CY 2015 by Etihad Airways but received the majority of non-stop capacity via Emirates.

\(^4\) An “O&D” includes all passengers moving between a single U.S. airport and a single foreign airport without regard to the routing.
The “stimulation” estimates for CY 2015 passenger traffic were based on the following steps:

- Quarterly passenger levels between Emirates’ U.S. destinations (including other airports in multi-airport city markets) and all non-stop or one-stop foreign destinations served directly or via connection by Emirates were estimated as described in Annex E.\(^5\)
- Direct and connecting flights between Emirates’ 10 U.S. destinations and these same destinations in the Middle East, Indian Subcontinent, Africa and ASEAN were identified for four quarters in CY 2015 based on DIIO schedule data.\(^6\) The full schedules for a week in each quarter were used to estimate QSI levels for each O&D market with Emirates service; these results were then compared to QSI levels using the schedules without Emirates’ U.S. flights. This comparison produced a “stimulation” factor for 326 of the O&D markets.
- “Stimulated” traffic levels were estimated using the adjusted quarterly traffic matched with the quarterly “stimulation” factors. The “stimulation” for U.S. vs. foreign originating passengers was based on the distribution for each O&D market using MIDT data identifying point-of-sale.

The resulting level of passenger “stimulation” is shown below by world region in Table D-1. An analysis of Emirates’ service levels for individual O&D markets identified over 580,000 “stimulated” round-trip passengers in CY 2015 (i.e., passengers that otherwise would not have traveled without Emirates’ services).

<table>
<thead>
<tr>
<th>World Region</th>
<th>All Carriers</th>
<th>Emirates</th>
<th>“Stimulation” Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Passengers</td>
<td>Factor</td>
<td>% of Emirates</td>
</tr>
<tr>
<td>Middle East</td>
<td>1,609,260</td>
<td>440,869</td>
<td>160,900</td>
</tr>
<tr>
<td>Indian Subcontinent</td>
<td>2,768,491</td>
<td>732,568</td>
<td>304,088</td>
</tr>
<tr>
<td>ASEAN</td>
<td>2,382,889</td>
<td>75,747</td>
<td>64,453</td>
</tr>
<tr>
<td>Africa</td>
<td>1,220,071</td>
<td>102,962</td>
<td>50,716</td>
</tr>
<tr>
<td></td>
<td>7,980,711</td>
<td>1,352,146</td>
<td>580,156</td>
</tr>
</tbody>
</table>

Source: Campbell-Hill analysis.

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\(^5\) These markets were limited to the Middle East, Africa, Indian Subcontinent and ASEAN and exclude passengers traveling between the U.S. and Europe, Eurasia, Northeast Asia and Australasia (which would increase the levels of “stimulation”).

\(^6\) Each quarter was represented by the schedule for the second full week in the mid-month of each quarter in CY 2015 (e.g., February for Quarter 1).

\(^7\) A “round-trip” passenger is defined as a traveler that travels from an origin airport to a destination airport and then returns (i.e., making two one-way trips). A “U.S.-originating” passenger begins a trip in the U.S. and “visits” a foreign market and returns, while a “foreign visitor” to the U.S. travels in the opposite direction.
Of the total “stimulated” passengers, over 232,000 were new foreign visitors\textsuperscript{8} that generated significant impacts for the U.S. travel and tourism sectors, as well as spending in the education sector. Newly “stimulated” U.S. originating passengers (348,000) also generated new travel spending within the U.S. for transportation to and from the U.S. destination airports. Both types of passengers generated new revenues for U.S. airlines providing domestic connecting air services within the U.S.

The categories of indirect impacts related to passenger spending are:

- **Travel and Tourism Spending:** “Stimulated” passenger traffic (U.S. and foreign) generates indirect spending for the U.S. travel and tourism sectors. Foreign visitors spend on average from $1,654 to $3,401 per trip depending on the foreign country of origin.\textsuperscript{9} “Stimulated” U.S. travelers also generate some U.S. revenues for the purchase of flight-related parking, ground transportation and retail items at the airport. The revenues estimated for various industry sectors (e.g., accommodations, restaurants) totaled $558 million and supported 6,199 jobs, $195 million of labor income and $338 million of GDP in CY 2015.

- **Education-Related Spending:** In addition to new foreign visitor spending for travel and tourism within the U.S., the Emirates-created “stimulated” passenger traffic also generates new education-related spending, with calculations based on U.S. government travel and tourism data.\textsuperscript{10} Total spending impacts (assigned to the higher education sector) are estimated at $730 million which results in 6,044 new jobs supported, $389 million of labor income, and $463 million of GDP in CY 2015.

- **Domestic Air Transportation for U.S. Connecting Passengers:** Emirates’ passengers to and from the U.S. generate revenues for U.S. airlines providing domestic connecting air services at Emirates’ U.S. destinations. Revenues are estimated at $31 million in fare revenues using average non-stop distance flown by destination and domestic yield factors. These revenues supported 86 jobs, $8 million of labor income, and $14 million of GDP in CY 2015.

Combined, “stimulated” passenger traffic generated over $1.3 billion of new revenues within the U.S. and supported $815 million of GDP, $592 million of labor income, and 12,329 jobs in CY 2015 (see Figure D-1).

\textsuperscript{8} The split between U.S.-originating and foreign visitor passengers was based on the O&D-level distribution for each market in MIDT data.

\textsuperscript{9} Based on U.S. Department of Commerce data on overseas visitor spending by type (e.g., food and beverage) and originating market (Middle East, Africa, India, Other South Asia, Singapore and Other ASEAN) using various trip characteristics (e.g., length of stay and trip purpose).

\textsuperscript{10} To be consistent with international data requirements, the U.S. has included education spending by overseas visitors in total travel spending totals since CY 2013 (and revised data back to CY 1999).
D-3 U.S. Merchandise Trade “Stimulation”

Air trade continues to be an important component of overall U.S. trade activity accounting for 43% of the U.S. merchandise value exported to overseas markets in CY 2015 and 68% of the imported value.\(^\text{11}\) Therefore, air freight transportation networks are a critical factor in the U.S.’s ability to sell exports abroad as well as maintaining access to finished goods and industrial materials from around the world.

Through its passenger and cargo network, Emirates has the ability to transfer air cargo between U.S. airports and markets all over the world, but the focus of this analysis is on cargo traffic between the U.S. and “Emirates connecting” markets served directly or indirectly via passenger and freighter flights to and from its Dubai hub.\(^\text{12}\) As will be shown below, the expansion of Emirates’ direct cargo capacity, both between the U.S. and Dubai and between Dubai and its connecting markets throughout Asia and Africa, has created new connections which has “stimulated” new export and import merchandise trade for the U.S.

The level of “stimulation” for specific trade lanes is based on a comparison of the growth in U.S. air trade levels with the growth in cargo traffic moving to various world regions via Emirates’ U.S. flights.\(^\text{13}\) The level of international air trade between U.S. regional markets\(^\text{14}\) and specific overseas

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\(^\text{11}\) U.S. Bureau of the Census data showing air value as a share of combined air and vessel values for all markets excluding Canada and Mexico.

\(^\text{12}\) The Dubai hub includes Emirates’ passenger and cargo operations at Dubai International Airport and cargo operations at Al Maktoum International Airport.

\(^\text{13}\) Emirates’ “trade lanes” are defined as a combination of the U.S. Customs District for each U.S. destination and six world regions (U.A.E., Other Middle East, Indian Subcontinent, ASEAN, Africa and Australasia).
markets is heavily dependent on the availability of efficient air services that minimize transit time (including ground transfer) at a competitive rate and quality of service (including security and reliability). The expansion of Emirates’ cargo network in recent years can be shown to have supported U.S. air trade growth with Emirates’ connecting service regions in the following respects:

- Emirates has greatly increased the cargo capacity between the U.S. and its Dubai hub which is geographically well-situated to connect to other regions not served directly from the U.S.
- At the same time, Emirates has increased the cargo capacity and number of destinations available via Dubai for key regional markets, many with limited or no direct cargo services to and from the U.S.
- Emirates has created direct cargo connections for many U.S. regions that do not have a primary international gateway with adequate services to Emirates’ connecting markets (e.g., Pacific Northwest, Bay Area, Texas, New England and Florida).

Figure D-2
Emirates’ Cargo Capacity between the U.S. and Dubai

![Bar chart showing cargo capacity between the U.S. and Dubai from CY 2010 to CY 2015.]

Source: U.S. DOT, T-100 Statistics

The expansion of Emirates’ U.S. passenger and freighter flights in recent years has greatly increased the cargo capacity connecting to its Dubai-based cargo network. The growth in Emirates’ U.S. operations resulted in a 168% increase in total cargo capacity to and from Dubai between CY 2010 and CY 2015 (see Figure D-2).15

Emirates’ increase in direct cargo capacity between the U.S. and Dubai has been complemented by an expansion in non-stop cargo flights (on both freighter and passenger aircraft) between Dubai and key trade markets in Asia and Africa. In CY 2015, Emirates operated non-stop freighter flights from

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14 While air cargo can be transferred to and from any point in the U.S. from any of Emirates’ U.S. destinations, the “regional market” will account for the majority of each destination’s traffic. Each airport’s regional market will depend on the location of alternative cargo gateways, but typically covers up to a 12-hour truck trip.
15 This total excludes cargo flights to points other than the U.A.E.
Dubai to eight destinations in the Middle East (excluding those with direct U.S. service by another Gulf State carrier), six destinations in the Indian Subcontinent, 21 destinations in Africa and six destinations in ASEAN and Australia. Of the African destinations, only eight out of the 21 served by Emirates had direct non-stop flights from the U.S. while just two of the Indian Subcontinent destinations and five of the Middle East destinations were similarly served.

As shown in Figure D-3, the growth in the number of Emirates’ connecting cargo flights via Dubai (using passenger and freighter aircraft) has been significant, particularly when compared to the growth in direct non-stop flights from the U.S. to those regions.

Figure D-3
U.S. Cargo Flight Connectivity to World Regions (CY 2010 vs. CY 2015)

Source: DIIQ, Schedule Data
This expansion of Emirates cargo routings between the U.S. and connecting markets via Dubai is reflected in the large increase in traffic handled on its U.S. flights with most of that traffic transferred to or from connecting markets. As shown in Figure D-4, traffic on Emirates’ U.S.-Dubai flights more than doubled between CY 2010 and CY 2015 with freighter traffic more than tripling as its share of total traffic increased to over 50%.

Internal traffic data indicates the importance of Emirates’ connecting flights via Dubai to the growth in U.S. air trade with emerging markets (as U.A.E. traffic accounts for 20% of the carrier’s U.S. traffic – see Annex B, Figure B-2). This growth in traffic applies to each of the key regional markets (see Figure D-5).
Figure D-5
Traffic on Emirates’ U.S. Cargo Flights by Region (FY 2012/13 vs. FY 2015/16)

Source: Emirates Internal Data

Figure D-6
Traffic on Emirates’ U.S. Cargo Flights by U.S. Destination (FY 2012/13 vs. FY 2015/16)

Source: Emirates Internal Data

The top U.S. destinations for cargo traffic (see Figure D-6) are those served with freighter aircraft (Chicago, New York, Los Angeles and Houston, each of which also had passenger service plus Atlanta which only had freighter service).
The importance of the Emirates cargo network to U.S. air trade can be demonstrated by comparing the growth patterns for total U.S. trade versus Emirates' traffic level changes. The net impact of Emirates’ cargo flights to and from the U.S. is estimated based on the following:

- Regression analysis was developed for air cargo trade (measured in shipment weight) between five of Emirates’ connecting regions (U.A.E., Other Middle East, Indian Subcontinent, Africa and Australasia) and the U.S. Customs Districts for the 10 destination airports. The “stimulation” effect was measured for each trade lane having a positive correlation between total air trade and Emirates cargo traffic over the four year period and then applied to the estimated CY 2015 air trade for those lanes. “Stimulated” trade was limited to a maximum of the total Emirates traffic handled in CY 2015.

<table>
<thead>
<tr>
<th></th>
<th>Export</th>
<th>Import</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.A.E.</td>
<td>21.3%</td>
<td>30.8%</td>
</tr>
<tr>
<td>Other Middle East</td>
<td>9.3%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Indian Subcontinent</td>
<td>21.3%</td>
<td>10.3%</td>
</tr>
<tr>
<td>Africa</td>
<td>5.5%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Australasia</td>
<td>2.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Combined Total</td>
<td>10.7%</td>
<td>8.2%</td>
</tr>
</tbody>
</table>

- The level of “stimulated” trade weight was allocated to the top five commodities in terms of net growth from CY 2012 to CY 2016 for each trade lane.

- The impact on air export trade is estimated at $1.5 billion (in 2015 dollars) as shown in Table D-2 below. The national impact of these exports is measured by the level of industry-specific sales applied to the national IMPLAN model.

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16 ASEAN trade lanes were eliminated in both directions due to a lack of correlation as was Australasia for U.S. imports. Orlando’s import trade was also eliminated due to a lack of traffic data over the entire period. The 10 Customs Districts include those for the other nine passenger destinations and the Atlanta cargo destination.

17 The “dependent shares” were applied to each trade lane’s trade weight for the top five NAICS industry codes; the “dependent” weights were totaled for each NAICS industry along with “dependent” shipment value using the average value for each trade lane and commodity.
Table D-2
U.S.-Based Manufacturing Sector Impacts for U.S. Export Stimulation (CY 2015)

<table>
<thead>
<tr>
<th>Industry</th>
<th>&quot;Stimulated&quot; Air Export Weight (MT)</th>
<th>&quot;Stimulated&quot; Air Export Sales (million $)</th>
<th>Average Value per Kilogram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Terminal and Other Computer Peripheral Equipment Manufacturing</td>
<td>1,743</td>
<td>$407</td>
<td>$233</td>
</tr>
<tr>
<td>Aerospace Products &amp; Parts Manufacturing</td>
<td>223</td>
<td>$183</td>
<td>$821</td>
</tr>
<tr>
<td>In-Vitro Diagnostic Substance Manufacturing</td>
<td>3,283</td>
<td>$168</td>
<td>$51</td>
</tr>
<tr>
<td>Pharmaceutical Preparation Manufacturing</td>
<td>567</td>
<td>$98</td>
<td>$172</td>
</tr>
<tr>
<td>Other Basic Inorganic Chemical Manufacturing</td>
<td>884</td>
<td>$92</td>
<td>$104</td>
</tr>
<tr>
<td>Turbine and Turbine Generator Set Units Manufacturing</td>
<td>354</td>
<td>$87</td>
<td>$245</td>
</tr>
<tr>
<td>Women’s, Girls’, and Infants’ Cut and Sew Apparel Manufacturing</td>
<td>1,252</td>
<td>$42</td>
<td>$34</td>
</tr>
<tr>
<td>Semiconductor and Related Device Manufacturing</td>
<td>85</td>
<td>$34</td>
<td>$404</td>
</tr>
<tr>
<td>Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing</td>
<td>51</td>
<td>$28</td>
<td>$547</td>
</tr>
<tr>
<td>Surgical and Medical Instrument Manufacturing</td>
<td>268</td>
<td>$24</td>
<td>$89</td>
</tr>
<tr>
<td>Other Pressed and Blown Glass and Glassware Manufacturing</td>
<td>210</td>
<td>$23</td>
<td>$111</td>
</tr>
<tr>
<td>Medicinal and Botanical Manufacturing</td>
<td>507</td>
<td>$22</td>
<td>$44</td>
</tr>
<tr>
<td>All Other Miscellaneous General Purpose Machinery Manufacturing</td>
<td>643</td>
<td>$21</td>
<td>$33</td>
</tr>
<tr>
<td>Electromedical and Electrotherapeutic Apparatus Manufacturing</td>
<td>155</td>
<td>$20</td>
<td>$126</td>
</tr>
<tr>
<td>Paper Bag and Coated and Treated Paper Manufacturing</td>
<td>1,250</td>
<td>$18</td>
<td>$15</td>
</tr>
<tr>
<td>All Other</td>
<td>14,806</td>
<td>$241</td>
<td>$16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26,281</td>
<td>$1,509</td>
<td>$57</td>
</tr>
</tbody>
</table>

Source: Campbell-Hill analysis.

- For imports, the impacted trade value was translated into wholesale, retail and transport revenues within the U.S. using commodity-specific margins contained within the national IMPLAN model. The net impact on U.S. revenues assumed that only 50% of the wholesale and transport spending occurred within the U.S. and 100% of the retail revenues. As shown below, the imports dependent on Emirates support $124 million in service sector revenues (in 2015 dollars) which are applied to the national IMPLAN model to get induced and total impacts.

Table D-3
U.S.-Based Service Sector Impacts for U.S. Import “Stimulation” (CY 2015)

<table>
<thead>
<tr>
<th>Industry</th>
<th>&quot;Stimulated&quot; Air Import Weight (MT)</th>
<th>&quot;Stimulated&quot; Air Import Sales (million $)</th>
<th>Average Value per Kilogram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmaceutical Preparation Manufacturing</td>
<td>3,353</td>
<td>$461</td>
<td>$137</td>
</tr>
<tr>
<td>Jewelry and Silverware Manufacturing</td>
<td>62</td>
<td>$324</td>
<td>$6,210</td>
</tr>
<tr>
<td>Women’s, Girls’, and Infants’ Cut and Sew Apparel Manufacturing</td>
<td>6,848</td>
<td>$289</td>
<td>$35</td>
</tr>
<tr>
<td>Men’s and Boys’ Cut and Sew Apparel Manufacturing</td>
<td>3,856</td>
<td>$69</td>
<td>$18</td>
</tr>
<tr>
<td>All Other Miscellaneous Electrical Equipment and Component Manufacturing</td>
<td>72</td>
<td>$12</td>
<td>$172</td>
</tr>
<tr>
<td>Other Aircraft Parts and Auxiliary Equipment Manufacturing</td>
<td>33</td>
<td>$12</td>
<td>$367</td>
</tr>
<tr>
<td>Curtain and Linen Mills</td>
<td>931</td>
<td>$12</td>
<td>$12</td>
</tr>
<tr>
<td>Footwear Manufacturing</td>
<td>522</td>
<td>$10</td>
<td>$20</td>
</tr>
<tr>
<td>Printed Circuit Assembly (Electronic Assembly) Manufacturing</td>
<td>39</td>
<td>$7</td>
<td>$180</td>
</tr>
<tr>
<td>Other Metal Valve and Pipe Fitting Manufacturing</td>
<td>37</td>
<td>$5</td>
<td>$123</td>
</tr>
<tr>
<td>Machine Tool Manufacturing</td>
<td>9</td>
<td>$4</td>
<td>$469</td>
</tr>
<tr>
<td>All Other Leather Good and Allied Product Manufacturing</td>
<td>108</td>
<td>$4</td>
<td>$35</td>
</tr>
<tr>
<td>Other Measuring and Controlling Device Manufacturing</td>
<td>28</td>
<td>$4</td>
<td>$130</td>
</tr>
<tr>
<td>Finfish-Fishing</td>
<td>266</td>
<td>$3</td>
<td>$10</td>
</tr>
<tr>
<td>Apparel Accessories and Other Apparel Manufacturing</td>
<td>75</td>
<td>$2</td>
<td>$32</td>
</tr>
<tr>
<td>All Other</td>
<td>1,463</td>
<td>$19</td>
<td>$13</td>
</tr>
<tr>
<td></td>
<td>17,693</td>
<td>$1,186</td>
<td>$67</td>
</tr>
</tbody>
</table>

Source: Campbell-Hill analysis.

The indirect revenue impacts for U.S. exports were estimated at $1.5 billion (in 2016 dollars) supporting $616 million of GDP, $342 million of labor income, and 3,376 jobs in CY 2015. The

D-10
revenues for the U.S. wholesale, retail and domestic transport sectors that are dependent on air imports via Emirates flights was estimated at $125 million including $77 million of GDP, $43 million of labor income supporting 522 jobs in CY 2015.

**D-4 U.S. Service Trade “Stimulation”**

As domestic manufacturing levels have declined, the export of U.S. services to markets throughout the world became increasingly important to the country’s economic growth and job creation. In CY 2015, U.S. service exports totaled $751 billion, which accounted for 33% of all export trade value (see Figure D-7). While travel and transport revenues are an important component of service exports, the overseas sale of private sector business and other services (excluding travel and transport services) accounted for $439 billion of export sales in CY 2015 (or 20% of total service export sales).

![Figure D-7](image)

**Figure D-7**

**U.S. Export Values by Source (CY 2015)**

Air passenger transportation is an important factor in promoting and executing the export of U.S. services. The expansion of Emirates’ footprint in the U.S. and worldwide has contributed to the growth of both merchandise and service trade with the connecting regions. In CY 2015, U.S. export of “business” services (i.e., excluding transport and travel) to the Middle East, India, Africa, and ASEAN totaled $44 billion, up 32% from the CY 2010 level (see Figure D-8).\(^\text{18}\) ASEAN accounted for one-third of the export value followed by the Middle East, Africa and India. The top category for service exports to these regions was other business services followed by intellectual property charges, financial services and maintenance and repair services (see Figure D-9).

\(^\text{18}\) The U.S. service trade data does not identify trade for all countries, so India was used to represent the Indian Subcontinent. Even though Emirates handles a significant amount of passenger traffic between the U.S. and Australia, this market was excluded due to the relatively high level of direct passenger service to and from the U.S.
The impact of expanded air passenger travel on U.S. service exports to these connecting regions can be demonstrated by comparing service export values with the level of travel trade spending for each market region over the period of CY 2007 to CY 2015. Regression analysis applied to each of the market regions and service sectors was used for this purpose. The correlations were based on a direct comparison of business service export growth to combined import and export travel trade growth. The net impacts on service trade levels were estimated using adjusted travel trade estimates based on the “stimulation” factors for each region (adjusting for the share of total travel accounted for by the 10 Emirates U.S. destinations). The “stimulation” in U.S. service exports is shown in Figure D-10.

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19 The regression analysis period includes activity prior to the build-up of Emirates’ U.S. operations, but was chosen to improve the correlations, particularly as the travel activity was not limited to that handled by Emirates.

20 U.S. travel-related exports measure spending by foreign visitors within the U.S., while U.S. travel-related imports measure spending by U.S. visitors in overseas markets.
Figure D-9
U.S. Service Export Categories to Emirates’ Connecting Regions (CY 2010 vs. CY 2015)

Source: U.S. Department of Commerce, Bureau of Economic Analysis

Figure D-10
“Stimulation” of U.S. Service Exports to Emirates Connecting Regions (CY 2015)

Source: Campbell-Hill analysis
The indirect impact of revenues generated overseas for U.S.-based service industries was based on matching the sales revenues for each category (e.g., financial) with a representative industry in the U.S. national IMPLAN model. The combined service trade “stimulated” by Emirates’ services totaled $1.6 billion which supported 12,736 jobs, $708 million of labor income, and $957 million of GDP in CY 2015.

D-5  Summary of Impacts of U.S. Trade “Stimulation”

As described above, Emirates’ U.S. air connections support a significant level of merchandise and service trade and positively affect the U.S. economy considering all associated economic factors.

The indirect impacts of the combined merchandise and service trade levels in CY 2015 are shown in Figure D-11. Revenues to U.S. manufacturing and service industries total $3.2 billion including $1.7 billion in GDP and $1.1 billion of labor income. The employment impact is 16,634 jobs with two-thirds of that total occurring due to service trade “stimulation”.

Figure D-11
Indirect Impacts of U.S. Merchandise and Service Trade (CY 2015)

| Source: IMPLAN model results |
The indirect impacts of the passenger spending and trade “stimulation” combined totaled $4.6 billion including $2.5 billion in GDP and $1.7 billion of labor income supporting 28,963 jobs in CY 2015 (see Figure D-12).

**Figure D-12**

Total Indirect Impacts of Emirates in the U.S. (CY 2015)

<table>
<thead>
<tr>
<th></th>
<th>Employment</th>
<th>Revenue (mil. $)</th>
<th>GDP (mil. $)</th>
<th>Labor Income (mil. $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Stimulation</td>
<td>16,634</td>
<td>$3,243</td>
<td>$1,650</td>
<td>$1,093</td>
</tr>
<tr>
<td>Passenger Spending</td>
<td>12,329</td>
<td>$1,318</td>
<td>$815</td>
<td>$592</td>
</tr>
<tr>
<td>Total</td>
<td>28,963</td>
<td>$4,561</td>
<td>$2,465</td>
<td>$1,685</td>
</tr>
</tbody>
</table>

Source: IMPLAN model results
ANNEX E

Emirates’ Passenger Flight Connectivity to and from the U.S.
ANNEX E
Emirates’ Passenger Flight Connectivity to and from the U.S.

E-1 Introduction

The expansion of Emirates’ U.S. services has greatly expanded the availability of efficient routings between its U.S. destinations and foreign destinations throughout the Emirates global network. This annex examines the level and quality of services that Emirates provides to a large number of markets, many of which previously had inferior alternatives requiring multiple or interline connections.

E-2 Emirates’ Passenger Network

In December 2015, Emirates provided non-stop passenger services between Dubai and 10 U.S. destinations. The 15 daily flights from the U.S. to Dubai connected to numerous other Emirates destinations throughout Asia and Africa ranging from 28 for Houston, Chicago and San Francisco to 52 destinations for New York (see Figure E-1).²

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¹ The December 2015 period was chosen in order to profile the level and quality of service provided by Emirates at the end of the impact period, but all impact estimates were based on the services provided throughout CY 2015.

² Emirates’ and other airlines’ connecting flight schedules were created using DIIO’s online data source and itinerary building methodology assuming a minimum connecting time of 75 minutes and maximum connecting times of 480 minutes (8 hours), as well as a high level of circuitry. The overseas destinations were limited to those located in the Middle East, Africa and Asia that were served by Emirates via Dubai with at least three flights during the week of December 13-19, 2015. U.S. city markets combined multiple airports for all destinations except Seattle.
Figure E-1
Emirates’ One-Stop Connecting Destinations by U.S. Destination (December 2015)

Source: DIIO Schedule Data

Figure E-2
Emirates’ One-Stop Connecting Destinations via Dubai (December 2015)

Source: DIIO Schedule Data
Emirates provided online, one-stop connecting service to 55 destinations in the Middle East, Indian Subcontinent, Africa and Asia in December 2015, as well as one-stop, interline connections to 63 more destinations (see Figure E-2) of which Emirates provided the only connecting service to nine destinations. The online connecting services cover 32 countries with the interline services adding another 22 countries (see Figure E-3).

Based on flight schedule data for December 2015, Emirates provided one-stop online connections to 14 destinations in the Middle East, 17 destinations in the Indian Subcontinent, seven destinations in ASEAN, 10 destinations in Africa, four destinations in Australasia and three destinations in Northeast Asia (see Figure E-4).
On an O&D basis, Emirates provided one-stop connecting services for 353 markets between the 10 U.S. destinations and the 55 connecting destinations served via Dubai. These markets included 121 involving Indian Subcontinent destinations, 116 for the Middle East, 49 for Africa, 47 for ASEAN, 11 for Australasia and nine for Northeast Asia (see Figure E-5).

Emirates provided 2,906 weekly online one-stop connecting flights to these regions via Dubai including nearly 1,000 for both the Middle East and Indian Subcontinent (see Figure E-6).

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3 An origin and destination (O&D) market includes all passengers traveling between a U.S. airport (or aggregated city market in some cases) and a foreign airport without regard to routing or point of origin. For example, Amman, Jordan has online connections from all of Emirates’ U.S. destinations so would account for 10 O&D markets, while Sydney has online service from just one U.S. destination (one O&D market).
Emirates’ contribution to U.S. connectivity is indicated by the large share of O&D markets where Emirates provides either the only one-stop connecting service, the fastest available connecting service, or over half of the available direct or one-stop connecting flights (see Figure E-7).
In December 2015, Emirates provided online one-stop connecting services for 353 O&D markets between the U.S. and the Middle East, Indian Subcontinent, Africa, ASEAN, Northeast Asia and Australasia, of which only 39 markets had direct service. Of these O&D markets, Emirates provided the only online one-stop connecting service for 69 markets and the fastest service for 30 more markets - so Emirates had the most convenient service for 28% of all markets served. Of the remaining markets, Emirates provided at least 50% of the weekly flights for 30 more markets. Emirates played a particularly significant role in terms of U.S. connectivity with the Indian Subcontinent where it provided the only online service for 33 O&D markets, the fastest one-stop connecting service for 17 markets, and more than 50% of the weekly flights for 17 more markets.
ANNEX F

World Region Definitions
## World Region Definitions

### Africa
- Algeria
- Angola
- Benin
- Botswana
- Burkina Faso
- Burundi
- Cameroon
- Cape Verde
- Central African Republic
- Chad
- Comoros
- Congo
- Democratic Republic of the Congo
- Djibouti
- Egypt
- Equatorial Guinea
- Eritrea
- Ethiopia
- Gabon
- Gambia
- Ghana
- Guinea
- Guinea Bissau
- Ivory Coast (Cote d'Ivoire)
- Kenya
- Lesotho
- Liberia
- Libya
- Madagascar
- Malawi
- Mali
- Mauritania
- Mauritius
- Mayotte
- Morocco
- Mozambique
- Namibia
- Niger
- Nigeria
- Reunion
- Rwanda

### Africa (continued)
- Saint Helena
- Sao Tome and Principe
- Senegal
- Seychelles
- Sierra Leone
- Somalia
- South Africa
- South Sudan
- Sudan
- Swaziland
- Tanzania
- Togo
- Tunisia
- Uganda
- Western Sahara
- Zambia
- Zimbabwe

### ASEAN (Southeast Asia)
- Brunei Darussalam
- Cambodia
- East Timor
- Indonesia
- Laos
- Malaysia
- Myanmar
- Philippines
- Singapore
- Thailand
- Vietnam

### Asia
- Northeast Asia
- China
- Hong Kong
- Japan
- Macau
- Mongolia
- North Korea
- South Korea
- Taiwan

### Eurasia (Central Asia & Caucasus)
- Armenia
- Azerbaijan
- Georgia
- Kazakhstan
- Kyrgyzstan
- Tajikistan
- Turkmenistan
- Uzbekistan

### Indian Subcontinent
- Afghanistan
- Bangladesh
- Bhutan
- India
- Maldives
- Nepal
- Pakistan
- Sri Lanka

### Australasia
- Australia
- Christmas Island
- Cocos (Keeling) Islands
Cook Islands
Fiji
French Polynesia
Kiribati
Marshall Islands
Micronesia
Nauru
New Caledonia
New Zealand
Niue
Norfolk Island
Palau
Papua New Guinea
Solomon Islands
Tonga
Tuvalu
United States Minor Outlying Islands
Vanuatu
Wallis and Futuna Islands
Western Samoa

Source: DIIO