Funding of Airport Infrastructure at Selected Airports in Other Countries

Finland

Airports in Finland

- **Passenger traffic:** 25 million passengers in 2018[12]
- **Number of airports**: 24 airports, 22 of which offer commercial service

Ownership Structure of Airports in Finland

The majority of airports in Finland are owned and operated by the government-owned company Finavia Corporation (Finavia), a limited liability company wholly owned by the Finnish government.[13] Specifically, Finavia operates a network of 21 Finnish airports, of which 19 offer commercial service and two are military airports. Of the remaining three airports in Finland, two are owned by local municipalities, and one is privately held.

In 2010, Finavia began operating as a limited liability company, rather than a government agency. The Finnish government corporatized Finavia to align with the European Union (EU) principles on EU services, movement of services, and competition. The Finavia representative said that the change in corporate structure helps ensure that the government is not subsidizing or promoting unfair competition practices.

Under the airport network approach, Finavia can offset losses at one airport with revenue from a more successful airport. The Finavia representative said that some airports in the network are self-sustaining and generate sufficient revenue to cover the costs of airport operations; other network airports do not. According to the Finavia representative, Finavia applies uniform airport charges within the airport network to recover operational and infrastructure costs across the airport network and to comply with EU directives on airport charges.[14]

Helsinki Airport's Case Study

Background

Helsinki Airport is owned and operated by a government-owned company, Finavia. Of Finavia's airports, according to the Finavia representative, Helsinki Airport has the most connecting international flights and passenger boardings. For example, Helsinki Airport provides direct service to 162 international destinations, including 22 direct flights to Asia. Helsinki Airport has experienced strong passenger growth in recent years. In 2018, Helsinki Airport had 21-million passenger boardings, an increase from the prior year of about 10 percent. Most of this increase was attributable to international traffic. The Finavia representative said that Finavia anticipates passenger traffic to slow in 2020, due to an anticipated slowdown in Europe's economic growth.

Main Sources of Funding and Financing for Airport Infrastructure Investments

According to the Finavia representative, Helsinki Airport's main sources of funding for infrastructure improvements are (1) airline rates and charges, (2) passenger charges, (3) other airport-generated revenue, and (4) debt financing. Helsinki Airport collects aeronautical revenue from airline rates and charges and passenger charges directly from the airlines.[15] Helsinki Airport does not receive any public or government funding, despite being government owned, and the airport does not have any public-private partnerships.

- **Airline rates and charges:** Helsinki Airport generates revenue from air carrier and other aircraft operator rates and charges such as landing, aircraft parking, and electricity charges. In 2019, Finavia raised airline charges by 2.1 percent from 2018 levels, prompted by higher service costs resulting from airport investments. The Finavia representative said that airline rates and charges make up approximately 40 percent of the airport's total aeronautical revenue.

[12]This figure represents the number of passenger boardings at Finavia's network of 21 airports. The total does not include passenger boardings at the three airports outside of Finavia's network.

[13]The Finavia representative uses the term "state-owned", to indicate national government ownership.

[14]This includes the Finnish Act on the Airport Network and Airport Charges (210/2011) which implements the 2009 EU Directive on airport charges. Directive 2009/12/EC of the European Parliament and of the Council of 11 March 2009 on airport charges. (March 14, 2009). Official Journal of the European Union.

[15]The Finavia representative considers the aeronautical charges of airline rates and charges and passenger charges combined as "air traffic charges."

- **Passenger charges:** Helsinki Airport collects a passenger charge from airlines in order to fund infrastructure used for servicing the passengers. As of January 2019, Helsinki Airport has a euro (€) 8.60 (U.S. dollar (USD) $9.65) fee per departing passenger and a €4.10 (USD $4.60) fee per transferring passenger.[16] The Finavia representative said that passenger fees make up approximately 60 percent of the airport's total aeronautical revenue, which include both airline and passenger fees. According to the Finavia representative, Helsinki Airport does not designate revenue from airline and passenger charges for a specific use. Revenue from airline and passenger charges has been used to cover costs from providing services and operations within the Finavia network.[17]

  According to the Finavia representative, aeronautical charges, including airline rates and charges and passenger charges, are evaluated and updated once a year and Finavia sets the same charges for all airports in the Finavia airport network.[18]

- **Other airport-generated revenue:** Helsinki Airport also generates non-aeronautical revenues from sources such as concessions, commercial services at terminals, parking services, security control, and rental income from real estate.

- **Debt financing:** Helsinki Airport uses debt financing from a variety sources, including private banks, financial institutions, and public sector sources such as the European Investment Bank, a financing institution financed by the European Union, and the Nordic Investment Bank. The financing that Helsinki Airport has obtained is similar to traditional debt financing. According to the Finavia representative, Helsinki Airport does not have any restrictions or legal requirements on the types of loans that the airport can take on, nor does Finavia pledge revenue from any specific source towards the repayment of loans. However, the Finavia representative stated that Finavia does not issue bonds. The representative said that generally, the airport has relied on traditional lending because it is easier to obtain and repay a bank loan as compared to other types of debt.[19]

Factors Considered when Setting Airline and Passenger Charges

The representative said Finavia considers several factors when setting airline and passenger charges. The Finnish Act on the Airport and Network and Airport Charges requires that the pricing of airport

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[16]Finavia Corporation, *Terms of Services valid from January 1, 2019*. Currency references are presented in euro (€) and in U.S. dollars (USD) in parentheses. We calculated the U.S. dollar equivalent using Federal Reserve data on foreign exchange rates. See appendix II for additional information.

[17]Finnish Act on the Airport Network and Airport Charges (210/2011) which implements EU directive 2009/12/EC.

[18]Finavia does not publish individual airport revenue; therefore, we are not able to provide total revenue for the Helsinki Airport. However, in 2018, the total revenue generated from aeronautical air traffic charges, including airline rates and charges and passenger charges, for the full Finavia airport network was €200 million (USD $236 million).

[19]The Helsinki Airport combines revenue from all of these sources to be used for airport infrastructure. However, an ACI-EUROPE representative said that Helsinki Airport's revenues from aeronautical charges do not cover the cost of providing those aeronautical services. According to these officials, the deficit is covered with commercial revenues from non-aeronautical, other airport-generated revenue.

charges within the airport network are uniform, common, and transparent, based on the service level offered, and are applied on non-discriminatory and equal grounds.[20] Finavia therefore considers the Finavia airport network revenue; the cost of providing aeronautical services (including operational and electricity costs); and the costs of capital for infrastructure investment when setting the airport's airline rates and charges. According to the Finavia representative, Helsinki Airport also considers the airport market to ensure that its airline and passenger fees are competitive with similar airports in other European countries. When Finavia makes changes to its airline or passenger charges, the Finavia representative said that airlines have an opportunity to appeal the change. The Finnish Transport and Communications Agency acts as an independent supervisory authority to process disagreements on airport charges.

Coordination with Airlines on Capital Development

As part of the capital development process, Finavia must consult with airlines to seek input on planned capital investments at the airport before the airport carries out any major new infrastructure projects. Finavia organizes these discussions to assist with negotiations, but the Finavia representative said these discussions are specific to the individual airport rather than the overall Finavia network. In addition, according to the Finavia representative, when setting airline and passenger charges, Finavia consults with airlines and provides information about how airport charges relate to the facilities and services at the airport.

Recent and Planned Infrastructure Investments at Helsinki Airport

According to the Finavia representative, the Helsinki Airport development program, initiated in 2014 with a 2030 anticipated completion date, is the largest expansion project in the airport's history. It will expand Helsinki Airport's capacity and increase the number of gates. For example, the airport has planned a terminal building project that will expand the terminal by 45 percent and double the number of gates for wide-body aircraft from eight to 16 gates.

In 2016, as seen in figure 10, Helsinki Airport opened one of the passenger terminal expansions, which added 12 new departure gates to the airport. On the airside, the airport will also renovate the apron area to accommodate large aircraft. Additionally, Helsinki Airport is working on a project to improve luggage and baggage handling capabilities to accommodate the anticipated increase in baggage volume expected from airlines' use of larger aircraft.

[20]Finnish Act on the Airport Network and Airport Charges (210/2011).

Figure 10: Helsinki Airport's New Departure Gate Area, Opened in June 2016

Source: Finavia. | GAO-20-298

According to the Finavia representative, Helsinki Airport planned these capital improvements in response to expected passenger traffic growth. The representative anticipates that between 2025 and 2030, annual passenger boardings at Helsinki Airport will reach 30 million. A rendering of the entrance to Helsinki Airport's completed terminal expansion is shown in figure 11, below. Finavia will use airport cash flows from passenger fees, aeronautical revenue, and non-aeronautical revenue to fund the infrastructure projects. Finavia estimates that the total cost of the Helsinki Airport infrastructure expansion will be €1 billion (USD $1.1 billion).

Figure 11: A Rendering of Helsinki Airport's Terminal Expansion Project

Source: Finavia. | GAO-20-298

Funding of Airport Infrastructure at Selected Airports in Other Countries

Singapore

Airports in Singapore

- **Passenger traffic:** 67 million passengers in 2018[10]
- **Number of airports**: 2 commercial service airports

Ownership Structure of Airports in Singapore

Singapore has two airports that provide commercial service—Changi International Airport (Changi Airport) and Seletar Airport, which is a smaller airport that provides commercial and general aviation service.

Both airports are owned by the Singapore Ministry of Finance and operated by the Changi Airport Group. The Singapore Ministry of Finance does not have a role in the daily operations and management of the airports but reviews the types of planned airport infrastructure investments. The Changi Airport Group's board of directors is made up of two representatives from the Singapore Ministry of Finance and other board members from the private sector. The board has discretion to design, budget, and build infrastructure projects.

From 1984 until 2009, Singapore's airports were owned by the Singaporean government, and operated by the Civil Aviation Authority of Singapore, under the Ministry of Transport. In 2009, the airports were corporatized, and the Changi Airport Group took over airport operations and management.

Through two companies, Temasek Holdings and GIC Private Limited, the Ministry of Transport owns and invests in companies that serve strategic national interests, such as infrastructure. For example, according to the Changi Airport representative, Temasek has a 50 percent stake in much of Singapore's major infrastructure, including a 54 percent stake in Singapore Airlines, the country's national carrier. The Civil Aviation Authority of Singapore continues to economically regulate the Changi Airport, promote the growth of the air hub and aviation industry in Singapore, oversee and promote aviation safety, and provide air navigation services.

Changi Airport's Case Study

Background

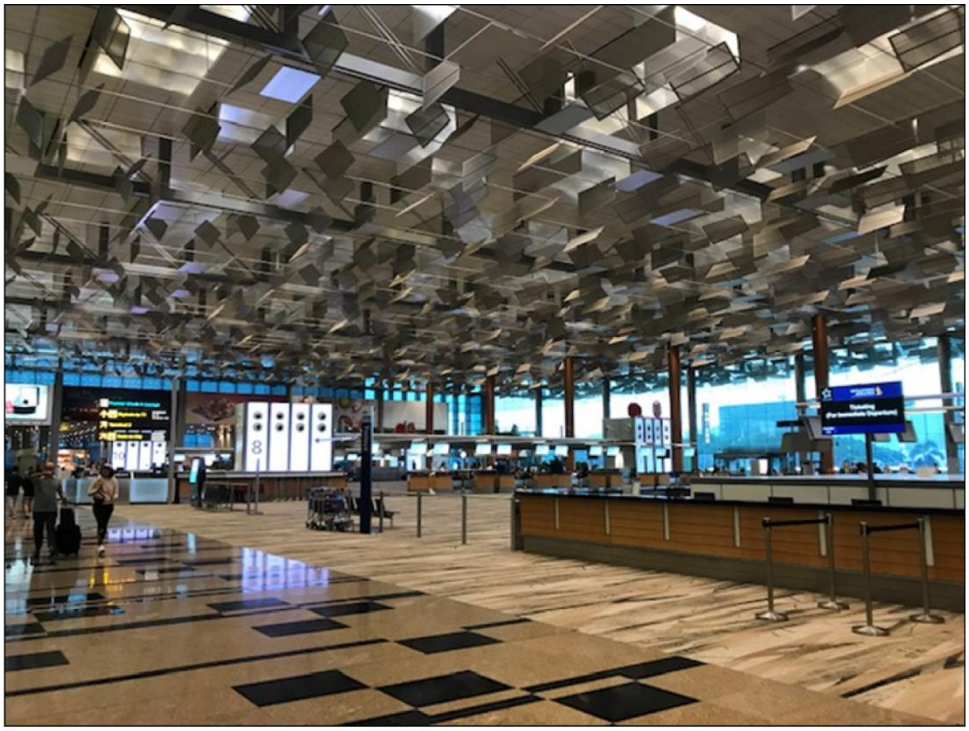
Changi Airport is the primary commercial airport in Singapore, located off the eastern coast of the country. Changi Airport was built in 1981, and according to ACI-World, was the world's 19th busiest airport in terms of passenger boardings in 2018. While Changi Airport is government owned, the airport is operated by the Changi Airport Group—a private limited company. The Changi Airport Group is responsible for the airport's operations and management, air hub development, commercial activities, and airport emergency services. It is also responsible for maintaining and investing in airport infrastructure and ensuring the airport is financially self-sustaining.

Changi Airport is a major hub for the region, and according to the Changi Airport Group representative, passenger boardings have been increasing steadily. For example, from 2005 to 2018, boardings increased by 30 percent. In 2018, the airport had 66.6-million boardings, an increase of about 5.5 percent from the prior year. The Changi Airport representative said that the airport is currently operating at 85 percent capacity for passenger boardings, but anticipates reaching 100 percent capacity by approximately 2026–2027.

The airport has made significant investments to enhance the passenger experience at the airport. For example, the airport has enhanced terminal features for passengers, including a butterfly garden, indoor waterfalls, a four-story slide, 19 airport lounges, and luxury shopping (see fig. 12). The 2019 World Airport Awards named Changi Airport the World's Best Airport for the seventh consecutive year.

[10]This represents the number of passenger boardings for Changi and Seletar Airports. In 2018, according to Changi Airport Group, Changi Airport had 66.6-million passengers and Seletar Airport had 29,000 passengers.

Figure 12: Terminal 3 at Changi Airport



Source: GAO. | GAO-20-298

Main Sources of Funding and Financing for Airport Infrastructure Investments

Changi Airport's main sources of funding for capital improvements are (1) airline rates and charges, (2) passenger charges, (3) other airport-generated revenue, and (4) government funding. It has not used any bank loans, bonds, or private investments to finance infrastructure projects.

- **Airline rates and charges:** The Changi Airport Group has used revenue from airline rates and charges from operation surpluses to fund infrastructure projects at Changi Airport. This aeronautical revenue includes airline-landing fees, aircraft parking charges, and jet bridge fees. According to the Changi Airport representative, aeronautical airport-generated revenues can only be used for aeronautical costs.
- **Passenger charges:** Departing passengers at Changi Airport are charged the following:
    - *Passenger service and security fee:* Similar to the United States' passenger facility charge, this Singapore dollars (S) $32.90 (U.S. dollar (USD) $24.11) fee is levied on every departing passenger, including transfers.[11]
    - *Airport development fee:* To fund the airport's new terminal project (Terminal 5, further discussed below), the Singapore government has imposed a S $10.80 (USD $7.91) airport development fee on every departing origin and destination passenger and a S $3 (USD $2.20) fee on departing transfer passengers. This fee is an example of

[11]Currency references are presented in Singapore dollars (S) and in U.S. dollars (USD) in parentheses. We calculated the U.S dollar equivalent using Federal Reserve data on foreign exchange rates. See appendix II for additional information.

prefunding, where airports charge an additional infrastructure development fee to prefund capital projects that are not yet in use. International airport stakeholders said that these fees are often used for significant airport-infrastructure developments.[12]

- *Aviation levy:* The Civil Aviation Authority of Singapore also charges a S $6.10 (USD $4.47) aviation levy on departing origin and destination passengers, but revenue generated from this levy does not go toward Changi Airport. The aviation levy is used to fund the aviation authority's activities in growing and regulating Singapore's civil aviation system.

- **Other airport-generated revenue:** The Changi Airport Group has used other airport-generated revenue from non-aeronautical operation surpluses to fund infrastructure projects at Changi Airport. This non-aeronautical revenue includes funding generated from concessions, food, and parking. According to the Changi Airport representative, there are no restrictions on how non-aeronautical revenues can be used.
- **Government funding:** When Changi Airport was first constructed, the government provided a lump sum to build Terminal 1 and the airport's two runways. The government also plans to provide funding for Changi Airport's new Terminal 5 project.

The Changi Airport Group representative stated that in 2018, Changi Airport's total revenue in fiscal year 2018 was S $2.69 billion (USD $2 billion). Non-aeronautical revenues made up 60 percent or S $1.06 billion (USD $786 million) of the airport's total revenue, and aeronautical revenues made up 40 percent or S $1.09 billion (USD $808 million) of the total revenue. According to the Changi Airport Group representative, revenue from passenger fees represent approximately 54 percent of aeronautical revenue.

Factors Considered when Setting Airline and Passenger Charges

As Changi Airport's economic regulator, the Civil Aviation Authority of Singapore sets the maximum amount the airport can collect in airline and passenger fees and reassesses this cap every 5 years. To help inform the civil aviation authority's decision, the Changi Airport Group develops its own annual proposal for airline and passenger fees. According to the Changi Airport representative, the airport considers market-driven factors, such as airline and passenger fees at similar international airports, the airport's aeronautical and passenger related costs, financing costs, and inflation. The Changi Airport Group also provides the civil aviation authority with information about projected traffic and planned capital expenditures. According to the Changi Airport representative, each year, the Changi Airport Group can adjust fees as necessary, as long as it does not deviate significantly from the maximum-fee thresholds set by the Civil Aviation Authority of Singapore.

[12]The International Air Transport Association opposes prefunding, as current passengers pay for future users' benefit. The Changi Airport representative, however, said that it was believed prefunding was the most cost-efficient option for Changi Airport, and the Airports Council International-Global and the International Civil Aviation Organization supported the airport's use of this funding tool.

Coordination with Airlines on Capital Development

According to the Changi Airport representative, airport officials also seek the airline industry's input on airline rates and charges, which generate revenue for airport capital development. The representative explained this input helps ensure that the airport's airline fees are competitive with similar airports. The Changi Airport representative stated that airport officials will consult and engage with airlines regularly on any major infrastructure developments at the airport. For example, the representative noted that Changi Airport consulted with airlines on the development plans for Terminal 4 and the Changi East expansion project.

Recent and Planned Infrastructure Investments at Changi Airport

To meet Changi Airport's anticipated passenger growth, the airport has planned a large expansion project to develop a new Terminal 5, with an annual capacity of 50-million passengers, and an additional runway. As noted above, Changi Airport will receive government funding for the terminal expansion, which is currently in the design phase and scheduled for completion around 2030. In addition, some funds will come from the Changi Airport Group's budget surplus funding, but the amount to be contributed will be less than funding received from the government, according to the Changi Airport representative.

The Changi Airport Group is also in the process of constructing a third runway for Changi Airport's Terminal 4. According to the Changi Airport representative, the Changi Airport Group is financing this project with revenue surpluses and anticipates that the new runway will be operational by 2023. The third runway will be located on reclaimed government land and will connect to the airfield and to the two existing runways via a network of taxiways. The airport also plans to expand its cargo facilities and smart cargo hub.

Funding of Airport Infrastructure at Selected Airports in Other Countries

Germany

Airports in Germany

- **Passenger traffic:** 222 million passengers in 2018[13]
- **Number of airports**: 36 commercial airports which includes 16 international airports and 20 regional airports with scheduled passenger service.[14]

Ownership Structure of Airports in Germany

Until the 1980s, airports in Germany were traditionally owned and operated by the government. Following the 1982 creation of a federal program to privatize airports, several airports were partially privatized. According to an Airports Council International-EUROPE survey conducted in 2015, there are now two different airport ownership structures in Germany.[15]

- *Partially privatized*: about 47 percent of airports in Germany are partially owned by local, regional, or federal governments.
- *Fully government owned*: about 53 percent of airports in Germany are owned by a public authority, or by a mixture of public authorities, at a local, regional, national, or transnational level.

Frankfurt Airport's Case Study

Background

Frankfurt Airport began operations in 1936. According to Fraport AG's 2018 annual report, in fiscal year 2018, Frankfurt Airport was the largest commercial service airport in Germany and the fourth largest commercial service airport in Europe.[16] The airport is partially privatized and is owned and operated by Fraport AG. Frankfurt Airport was previously jointly owned by the federal government, the State of Hesse, and the City of Frankfurt. In June 2001, Frankfurt Airport was partially privatized, with private entities acquiring a minority ownership stake in the airport. Currently, the State of Hesse and City of Frankfurt own about 51 percent of the airport, with the remaining, about 49 percent, held by private entities.[17]

Passenger traffic at Frankfurt Airport has increased over the last few years. According to Fraport AG's 2018 annual report, Frankfurt Airport reached 69.5 million passengers in 2018—an increase of 5 million passenger or about 8 percent over the prior year.

Main Sources of Funding and Financing for Airport Infrastructure Investments

Frankfurt Airport's main source of funding for capital improvements are (1) airline rates and charges, (2) passenger charges, (3) other airport-generated revenue, and (4) debt financing.

- **Airline rates and charges**: Frankfurt Airport collects revenue from airline rates and charges paid by airlines servicing Frankfurt Airport. These charges include airline takeoff and landing, noise, parking, and other charges. Under German law, airports must obtain approval for certain airline rates and charges from the regional aviation authority, including airline takeoff and landing charges, noise charges, aircraft movement area charges, and parking charges. The only airport charges not subject to approval are charges for central ground-service infrastructure facilities and ground service charges. The regional aviation authority responsible for Frankfurt Airport is the Ministry of

[13]Eurostat, Air Transport of Passengers, as of April 12, 2019. This represents the number of passengers (arrivals and departures) for all 36 commercial airports in Germany.

[14]DFS Deutsche Flugsicherung, *Air Traffic in Germany Mobility Report 2017* (May 2, 2018).

[15]ACI-EUROPE, *The Ownership of Europe Airports* (2016).

[16]Fraport AG, Frankfurt Airport Services Worldwide, *Annual Report 2018* (Frankfurt, Mar. 19, 2019).

[17]Specifically, as of January 2019, ownership of the airport is shared amongst the state of Hesse (31 percent), City of Frankfurt (20 percent), Deutsche Lufthansa AG (8 percent), Lazard Asset Management (5 percent), BlackRock Inc. (3 percent), and about 32 percent of the shares are held in private portfolios.

Economics, Energy, Transport and Regional Development, State of Hesse.[18] In addition, the Airports Council International (ACI)-EUROPE's representatives said that the majority of airports in Europe with commercial service, including Frankfurt airport, offer discount incentives to airlines in exchange for delivering higher volumes of passengers.

- **Passenger charges**: Frankfurt Airport has passenger charges that vary depending on the destination of the passenger's flight. As with airline rates and charges, airports must also obtain approval for passenger charges from the regional aviation authority. For example, as of January 1, 2019, these charges range from euro (€)12,93 (U.S. dollar (USD) $14.51) for transfer flights to all destinations to €25,16 (USD $28.23) for international flights initiating from Frankfurt Airport.[19]
- **Other airport-generated revenue**: Frankfurt Airport also generates revenue from airport concessions, real estate leases, parking, and other sources.
- **Debt financing**: Frankfurt Airport also relies on debt financing to fund infrastructure projects. However, we were unable to receive data from Fraport AG on how much debt financing Frankfurt airport used for capital development projects in 2018.

We were not able to confirm financial information with Fraport AG about how much total revenue Frankfurt Airport generated from each of the individual sources described above. Therefore, we are not able to provide information on the total revenue generated by Frankfort Airport in 2018.

However, information is available on the total revenue for all airports in the Fraport AG network. Specifically, according to Fraport AG's 2018 annual report, the total revenue generated from approved airline rates and charges, passenger charges, and passenger services combined for the full Fraport AG group was €1,006 million (USD $1.2 million).[20] In addition, the total revenue generated from other airport-generated revenue for the full Fraport AG group was €507 million (USD $599 million) in 2018.

Recent and Planned Infrastructure Investments at Frankfurt Airport

Fraport AG is in the process of building a new terminal—Terminal 3—at Frankfurt Airport to provide sufficient capacity and accommodate growing air traffic at Frankfurt airport. Construction for the project began in 2015 and is estimated to be completed in 2023. The first phase of the project involves construction of the main terminal building, which will include the arrival and departure levels, lounges, concession area, and a baggage

[18]Paragraph19b of the German Air Traffic Law.

[19]Fraport AG, *Airport Charges according to Art. 19b Air Traffic Act (LuftVG) Charges for Central Ground Handling Infrastructure for Frankfurt Airport*. (Frankfurt, January 1, 2019). Currency references are presented in euro (€) and in U.S. dollars (USD) in parentheses. We calculated the U.S dollar equivalent using Federal Reserve data on foreign exchange rates. See appendix II for additional information.

[20]Total revenue from airline rates and charges includes only charges that are approved by the Ministry of Economics, Energy, Transport and Regional Development, State of Hesse. Revenue from central ground service infrastructure facilities and ground service charges are reported separately, and totaled €674 million (USD $796 million) in 2018 according to Fraport AG's 2018 annual report.

handling system. This phase of the project is expected to provide capacity for about 14-million passengers a year. The second phase of the project will expand the airport facility and is expected to increase passenger capacity by up to 5-million additional passengers when completed in 2021. According to Fraport AG's current plans, the new terminal is expected to increase capacity by up to 21 million more passengers.

Fraport Ausbau Süd GmbH, a wholly owned subsidiary of Fraport AG, is responsible for managing, supervising, and monitoring the construction project. The project is being privately financed, and the estimated budget of the project is about €3.5 billion to €4 billion (USD $4.1 billion to $4.7 billion). According to Fraport AG, this project is Fraport's largest single investment at Frankfurt Airport.

We were unable to confirm information with Fraport AG representatives about factors they consider when setting airline and passenger fees or how they coordinate with airlines on the airport's infrastructure development.

Funding of Airport Infrastructure at Selected Airports in Other Countries

United Kingdom

Airports in the United Kingdom

- **Passenger traffic:** 292 million passengers in 2018[21]
- **Number of airports**: 52 commercial airports

Ownership Structure of Airports in the United Kingdom

In 1965, the Airports Authority Act established the British Airports Authority, an independent government agency, which assumed ownership and management of airports in the United Kingdom. Between 1966 and1987, the British Airports Authority acquired ownership and operation of seven of the 22 government airports—Heathrow, Stansted, Prestwick, Gatwick, Edinburgh, Aberdeen, and Glasgow airports.

In 1987, the United Kingdom privatized the British Airports Authority due to limited government funding and a need for significant capital development at large airports, according to Heathrow Airport representatives and industry stakeholders.[22] All seven airports owned by the authority were privatized. The authority was subsequently acquired in 2006 by an international consortium led by Ferrovial Aeropuertos S.A. of Spain (Ferrovial S.A.) and named BAA Ltd. This entity was later renamed Heathrow Airport Holdings Limited.[23]

The United Kingdom became the first country to privatize its major airports. According to an Airports Council International-EUROPE

survey conducted in 2015, airports in the United Kingdom have one of the following three ownership structures:

- *Government owned:* about 21 percent of airports in the United Kingdom are owned by local, regional, or national governments;
- *Partially privatized:* about 26 percent of airports in the United Kingdom are partially owned by local, regional, or national governments; and
- *Fully privatized*: about 53 percent of airports in the United Kingdom are owned by private entities.[24]

Heathrow Airport's Case Study

Background

Heathrow Airport is Europe's busiest airport with the highest passenger boardings, and is the United Kingdom's hub airport. Heathrow Airport has undergone transformation from a government-owned airport to a privately-owned airport. Heathrow Airport was privatized in 1987 as part of the privatization of the British Airports Authority. Currently, Heathrow Airport Holdings Limited owns and operates Heathrow Airport.

Although Heathrow is privatized, any airline and passenger charges the airport collects are subject to economic regulation by the U.K.'s Civil Aviation Authority. The Civil Aviation Authority—a government agency—regulates airport charges for U.K. airports with more than 5-million annual passengers. Airports Council International (ACI)-EUROPE representatives said that the Civil Aviation Authority regulates Heathrow on the basis that Heathrow is likely to possess significant market power for aeronautical services.[25]

Over the last several years, Heathrow Airport's passenger boardings have been increasing, but the number of flights has remained the same. In 2018, Heathrow had over 80-million total passengers, which includes enplaned, deplaned, and transferring passengers. This represented a 3 percent increase over the prior year. In addition, the airport had approximately 476,000 flights in 2018, about 94 percent of which were international flights. According to Heathrow Airport representatives, the number of flights has not increased in recent years due to the airport's capacity constraints, which include runway limitations. For example, Heathrow Airport representatives stated that the airport's two runways have been operating at 99 percent capacity. Heathrow Airport is currently planning to add an additional runway to address capacity constraints. Heathrow Airport representatives stated that the airport has nonetheless

[21]United Kingdom Civil Aviation Authority, *Size of Reporting Airports 2018 Comparison with 2013*, as of Mar. 3, 2019. This represents the number of passenger (enplaned and deplaned) for all of the 52 commercial airports in the United Kingdom. The total does not include passengers (enplaned and deplaned) at the Channel Islands and Isle of Man airports.

[22]Initially, the British government retained ownership of shares in the British Airports Authority, but by1996 the government's shares were sold. Until 2003, it retained the right to block a takeover by foreign investors.

[23]Heathrow Airport Holdings Limited is owned by FGP Topco Limited, a consortium owned and led by Ferrovial S.A., and other investors, including: Qatar Investment Authority, Caisse de dépôt et placement du Québec , GIC, Alinda Capital Partners of the United States, China Investment Corporation, and Universities Superannuation Scheme. Ferrovial S.A. holds a 25 percent stake in FGP Topco Limited.

[24]ACI-EUROPE, *The Ownership of Europe Airports* (2016).

[25]According to ACI-EUROPE's representatives, other U.K. airports with less market power may have varying flexibility to set charges.

experienced increased passenger numbers as a result of airlines' use of larger aircraft that have more seats per aircraft.

Main Sources of Funding and Financing for Airport Infrastructure Investments

Heathrow Airport's main sources of funding for capital improvements are (1) airline rates and charges, (2) passenger charges, (3) other airport-generated revenue, and (4) debt financing.

- **Airline rates and charges**: Heathrow Airport collects revenue from charges that it imposes on airlines that fly to and from Heathrow Airport. These charges include landing, parking, and emissions charges. Under the authority of the Civil Aviation Act of 2012, the Civil Aviation Authority establishes a pricing formula known as the "maximum revenue yield," which sets limits on the airline and passenger charges on a per-passenger basis.[26] In 2018, Heathrow Airport generated pounds (£) 549 million (U.S. dollar (USD) $734 million) in landing and parking charges, according to Heathrow Airport's 2018 financial statements.[27]
- **Passenger charges**: Heathrow Airport has several categories of passenger charges, which vary in rates depending upon the time of year of travel; whether the passenger is on a departing, transfer, or transit flight; or whether the flight destination is inside or outside of the European Union. For example, under the 2019 charges for Heathrow Airport, the passenger service charge would range from £19.84 to £46.02 (USD $25.25 to USD $58.58). In 2018, Heathrow Airport generated £1.2 billion (USD $1.6 billion) in revenue from passenger charges, according to Heathrow Airport's 2018 financial statements.
- **Other airport-generated revenue**: Heathrow Airport also generates other revenue from retail airport concessions, parking, and other sources. Heathrow Airport generated £656 million (USD $876 million) from these sources in 2018, according to Heathrow Airport representatives.
- **Debt financing:** Heathrow airport also relies on debt financing to fund infrastructure projects. In 2018, Heathrow (SP) Limited raised approximately £2.3 billion (USD $3.1 billion) of debt financing to fund infrastructure projects.[28] According to Heathrow Airport representatives, as of 2018, the airport has a total debt of £12 billion (USD $16 billion), which includes shareholders' indebted equity.

According to Heathrow Airport representatives, Heathrow Airport's largest source of funding is from airline rates and charges and passenger charges, and in 2018 the airport generated £1.7 billion (USD $2.3 billion) from airline and passenger charges combined.

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[26]Heathrow Airport Limited, *Conditions of Use including Airport Charges from 1 January 2019,* (Oct. 31, 2018).

[27]*Heathrow Airport Holdings Limited, Annual Report and Financial Statements for the Year Ending December 31, 2018*. Currency references are presented in pounds (£) and in U.S. dollars (USD) in parentheses. We calculated the U.S dollar equivalent using Federal Reserve data on foreign exchange rates. See appendix II for additional information.

[28]Heathrow (SP) Limited is the holding company of a group of companies; the group which includes Heathrow Airport Holdings Limited, which owns and operates Heathrow airport, and Heathrow Express Operating Company Limited, which owns the Heathrow Express rail service.

Factors Considered when Setting Airline and Passenger Charges

As previously discussed, the Civil Aviation Authority is responsible for economic regulation of Heathrow and other airports in the United Kingdom. Specifically, it regulates airline and passenger charges and determines the maximum amount in fees that Heathrow Airport can charge airlines and passengers on a 5-year basis, with adjustments every 2 years as needed. The level of airport charges that Heathrow levies each year is in accordance with the aviation authority's pricing formula.[29]

Each year, Heathrow Airport publishes *Conditions of Use* that describes its airport charges. According to Heathrow Airport representatives, they have flexibility in how they categorize charges, but the charges must align with the European Union's and United Kingdom's non-discrimination principle standards and with the Civil Aviation Authority's regulations.[30] According to Heathrow Airport representatives, they consider several factors, such as the infrastructure needs at the airport and the real cost of providing services, when setting airport charges. They also set charges to influence and incentivize airline behavior. For example, to incentivize airlines to replace aircraft with newer, less polluting models, the airport charges airlines a higher fee per landing when they use older aircraft. In addition, Heathrow's passenger fees vary depending on the passenger's anticipated airport use and with the costs imposed on the airport system. For example, passengers on domestic flights have lower charges than passengers traveling on international flights. This differential is because domestic passengers do not use the same facilities or the same baggage facilities as an international passenger and the costs of those facilities are higher than for facilities serving domestic passengers.

Coordination with Airlines on Capital Development

Heathrow Airport coordinates with airlines on capital development. For example, the airport organized an Airport Consultative Committee structure to obtain input on its most recent capital development plan from the 93 airlines operating at the airport. According to representatives from the International Air Transport Association, which is an association that represents airlines, the airport used this committee to reach agreement with these airlines on a capital expenditure plan related to development at multiple terminals at the airport.

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[29]The Civil Aviation Authority's pricing formula utilizes a "single till" methodology to determine the maximum fee. This methodology entails calculating the airport's capital need costs, operational expenditures; a pre-tax, real weighted average cost of capital; and other regulated charges, and determines the airport's financial restraints. The Civil Aviation Authority will then consider the airport's anticipated non-aeronautical commercial revenues to offset the charges cost base and set a maximum per-passenger fee.

[30]Heathrow Airport is also subject to a European Union directive for member states, which was transposed into United Kingdom law, by Airport Charges Regulations 2011, No. 2941. The purpose of this regulation is to ensure a common framework for regulating airport charges, including consultation and transparency of information in setting airport charges. The European Union does not have a direct role in setting charges at Heathrow Airport, but the Civil Aviation Authority does take European Union guidance into consideration in setting airport charges.

Recent and Planned Infrastructure Investments at Heathrow Airport

According to Heathrow Airport representatives, within the last 15 years, Heathrow Airport has completed two large capital-development projects, and the airport is currently in a planning phase. In 2008, Heathrow Airport opened Terminal 5, which had a total project cost of £4.3 billion (USD $8 billion). Subsequently, in 2014, Heathrow Airport renovated its passenger terminal—Terminal 2—which cost approximately £2.5 billion (USD $4.1 billion) to complete.

Planning and design is now under way for the construction of a third lateral runway and an associated new terminal facility at Heathrow Airport, according to Heathrow Airport representatives (see fig. 13). The new runway is intended to alleviate constraints on the number of available slots for landing and takeoff. According to Heathrow Airport representatives, the new runway is expected to add capacity for at least an additional 260,000 flights per year, and the overall project will expand the airport's surface space by 50 percent. Representatives said that according to current plans, construction of the runway and associated terminal is expected to begin in 2022 and operations are expected to start in 2027. The runway project is estimated to cost £14 billion (USD $18 billon) and will be funded through cash flows from operations, equity, and debt, according to Heathrow Airport representatives.

Figure 13: Rendering of the Planned Third Runway at Heathrow Airport

Source: Heathrow Airports Limited. | GAO-20-298

Funding of Airport Infrastructure at Selected Airports in Other Countries

Canada

Airports in Canada

- **Passengers traffic:** 159 million passengers in 2018[31]
- **Number of airports**:
  - 26 National Airport System (NAS) airports,[32] which offer commercial services and are responsible for over 90 percent of all the country's passenger and cargo activity

Ownership Structure of Airports in Canada

Until the early 1990s, the Canadian federal government owned, operated, and maintained most airports and air navigation facilities in Canada. In 1994, the Canadian federal government issued the National Airports Policy, which created different ownership structures for NAS and non-NAS airports.

For NAS airports, the National Airports Policy devolved responsibility for the operations, management and expenditures of NAS airports from the federal government to Canadian Airport Authorities, which were set up as not-for-profit and non-share corporations. The Canadian government, however, still owns these airports. Under the law, Canadian Airport Authorities pay lease payments to the government under 60-year leases that include an option to renew for 20 years. These airport authorities are required to invest airport-generated revenues in airport operation and capital development.

By contrast, for non-NAS airports, the National Airports Policy transferred ownership of these airports from the federal government to regional or local entities, such as local municipalities. The government continues to support remote and Arctic non-NAS airports that service isolated communities.

Toronto Pearson International Airport's Case Study

Background

The Greater Toronto Airports Authority manages and operates the Toronto Pearson International Airport (Toronto Pearson). According to Statistics Canada passenger traffic data, Toronto Pearson is Canada's busiest airport in terms of total passenger traffic. In addition, it is North America's second busiest airport in terms of international traffic, according to Toronto Pearson's 2018 annual report.[33] The Greater Toronto Airports Authority is a not-for-profit corporation without share capital, meaning it does not have any shareholders and any profits earned are invested back into the airport.

The Greater Toronto Airports Authority assumed operations and management of Toronto Pearson in 1996 through a lease arrangement with the federal government. According to representatives from the airports authority, because Toronto Pearson generates the most revenues among Canadian airports, the authority pays the highest ground lease rate for Toronto Pearson among Canadian airports.[34] For every Canadian dollar (CAD) $1 (U.S. dollar (USD) $0.75) that the airport authority earns in revenue over CAD $250 million (USD $188 million), it pays CAD $0.12 cents (USD $.09) for the ground lease.[35]

Passenger traffic at Toronto Pearson has increased in recent years and representatives from the Greater Toronto Airports Authority stated that according to their projections, passenger traffic is expected to continue to increase. In 2018, about 48-million passengers traveled through Toronto Pearson—an increase of 2.4 million, or 5 percent, over the prior year. According to these representatives, about 70 percent of this traffic is from origin and destination passengers and 30 percent from connecting passengers. According to the airports authority's forecasts, passenger traffic at Toronto Pearson is expected to increase to 85 million in 2037.

[31]This represents the number of passengers (enplaned and deplaned) for all airports in Canada. Statistics Canada. Table 23-10-0253-01, Air passenger traffic at Canadian airports, annual.

[32]NAS airports include airports in all national, provincial, and territorial capitals as well as airports with annual traffic of 200,000 passengers or more. Airports maintaining annual passenger levels of 200,000 passengers for three consecutive years are candidates for inclusion in the NAS.

[33]Greater Toronto Airport Authority, *Greater Toronto Airport Authority 2018 Annual Report, Count on Pearson,* (Toronto Ontario: 2018).

[34]Ground lease rates are set on a progressive scale based on the amount of gross revenues.

[35]Currency references are presented in Canadian dollars (CAD) and in U.S. dollars (USD) in parentheses. We calculated the U.S dollar equivalent using Federal Reserve data on foreign exchange rates. See appendix II for additional information.

Main Sources of Funding and Financing for Airport Infrastructure Investments

Toronto Pearson's main sources of funding for capital improvements are (1) airline rates and charges, (2) passenger charges, (3) other airport-generated revenues, and (4) debt financing. Toronto Pearson does not receive any government funding, although some limited government funding is available to smaller airports through Canada's Airports Capital Assistance Program.[36]

- **Airline rates and charges**: Toronto Pearson collects revenue from airline rates and charges, which include landing fees, terminal fees for general use of the terminal space, apron fees, deicing facility fees, and other airline charges. According to representatives from the Greater Toronto Airports Authority, airline rates and charges at Toronto Pearson have not been increased since 2012. Toronto Pearson generated about CAD $510 million (USD $393 million) in airline rates and charges in 2018 according to Toronto Pearson's 2018 annual report.
- **Passenger charges:** Passenger charges, called Airport Improvement Fees, are fees charged at every major Canadian airport and currently range from CAD $5 to CAD $40 (USD $3.76 to USD $30.12) per passenger. Each airport authority sets its own passenger fees, and there is no cap on how much each airport can charge. According to an international industry stakeholder, airport authorities, such as the Greater Toronto Airports Authority, set their respective fees based on their analysis of what the market can bear. Toronto Pearson's passenger fee is CAD $25 (USD $18.82) for departing passengers and CAD $4 (USD $3.01) for passengers connecting through the airport as of January 1, 2019.[37] The airport can only use this revenue for aeronautical-related expenses, such as capital development. The Greater Toronto Airports Authority has an agreement with each air carrier that takes off from and lands at Toronto Pearson whereby air carriers agree to collect passenger fees from each of their enplaned passengers on behalf of the authority. The airports authority commits in these agreements to use passenger-fee revenues for capital programs, including associated debt service. According to representatives from the Greater Toronto Airports Authority, the airport has not increased its passenger fees since 2012, as the increased volume of passengers has generated sufficient revenue for the airport. In 2018, Toronto Pearson generated CAD $460 million (USD $355 million) from passenger fees, in the form of Airport Improvement Fees, according to Toronto Pearson's 2018 annual report.
- **Other airport-generated revenues:** Toronto Pearson also generates revenue from other sources such as airport concessions, rental properties, car rentals, parking, and advertising. The Greater Toronto Airports Authority has more flexibility in how it can use this category of revenue, including for operating costs and for capital needs. According to the Greater Toronto Airports Authority's 2018 annual

[36]The program provides funding to small airports for projects that: improve regional airport safety; protect airport assets (such as equipment and runways); and reduce operating costs. To date, the government has invested more than CAD $785 million (USD $591 million) for 904 projects at 182 airports.

[37]Greater Toronto Airports Authority, Aeronautical Fees as of January 1, 2019.

report, the long-term objective is to increase the proportion of total revenues generated through commercial streams at the airport—from non-aeronautical sources such as parking, retail, and dining concessions—to over 40 percent. In recent years, commercial revenues have been the fastest growing component of the airport authority's revenues. In 2018, Toronto Pearson generated about CAD $502 million (USD $387 million) in other airport-generated revenue, according to Toronto Pearson's 2018 annual report.

- **Debt financing:** Canadian airports can generally use equity or raise debt in capital markets. In 2018, Toronto Pearson obtained CAD $500 million (USD $386 million) in bond financing. According to representatives from the Greater Toronto Airports Authority, the authority issues bonds to fund existing bond maturities and capital programs that exceed cash from operations. Revenue from passenger fees, in the form of Airport Improvement Fees, are used to service debt for infrastructure projects. Projects that cost less than CAD $400 million (USD $301 million) are funded with passenger-fee revenues, airline rates and charges, and other airport-generated revenues, according to these representatives.

Factors Considered when Setting Airline and Passenger Charges

Representatives from the Greater Toronto Airports Authority stated that the structure that Toronto Pearson has in place allows the airport to increase airline rates and passenger charges only when needed to generate sufficient revenue to cover the costs of planned infrastructure. According to these representatives, charges are assessed annually, but only change if there is a material imbalance between required cost recoveries against charges. To establish airline rates and charges and passenger fees, the Toronto Pearson Airport uses the "dual till" model whereby airline and passenger charges are set to recover aeronautical costs only. This contrasts with the "single till" model where all airport activities (including aeronautical and non-aeronautical) are taken into consideration when determining the level of airport charges. Representatives from the Greater Toronto Airports Authority stated that Toronto Pearson is unique among Canadian airports in doing so.

Coordination with Airlines on Capital Development

As part of Toronto Pearson's passenger-fee agreements with airlines, the Greater Toronto Airports Authority must consult with airlines and obtain approval for certain capital projects in excess of CAD $50 million (USD $38 million). Approval is sought through an airline consultation committee that the airport authority established to include representatives from airlines that provide service at Toronto Pearson. If the consultative committee does not approve a project, the airport must put the project on hold for 1 year. After the 1-year hold, the project may be initiated. According to representatives from the Greater Toronto Airports Authority, if the airport has a major capital project planned, the authority keeps the airline community informed. In particular, the airport communicates regularly with the two major Canadian airlines, which make up 70 percent of the airport's service volume, to keep them informed of planned infrastructure improvements.

Recent and Planned Infrastructure Investments at Toronto Pearson Airport

In 2018, the Greater Toronto Airports Authority completed several infrastructure improvements at Toronto Pearson, according to Toronto Pearson's 2018 annual report (see fig. 14). Some of these improvements relate to ongoing projects that the airport initiated in prior years. For example, the airports authority is upgrading and expanding its capacity at Terminal 1 to accommodate narrow-body aircraft operations in response to increased passenger traffic. During 2018, the authority expended CAD $16 million (USD $12 million) for this project. In addition, the airport expended about CAD $13 million (USD $10 million) in 2018 to make improvements at Terminal 3, which is intended to enhance passenger experience and improve passenger flow. The Greater Toronto Airports Authority also expended about CAD $23 million (USD $18 million) on Phase 1 of its baggage-handling improvement project, which will add baggage-handling capacity and is intended to improve system reliability.

According to representatives from the Greater Toronto Airports Authority, the authority has developed a 5-year capital plan that includes several projects intended to increase capacity and improve passenger flow at the airport. For example, the airports authority has begun the design phase for construction of a new concourse at Terminal 1 and an expansion project at that terminal. The airports authority is also in the design phase for constructing an integrated Regional Transit and Passenger Centre, and replacement of the baggage systems. The airport also plans to add more retail space and provide U.S. Customs and Border Protection space in the terminal to reduce international passengers' connecting time by improving passenger flow. According to representatives from the Greater Toronto Airports Authority, the estimated cost of its 5-year capital plan is CAD $3.46 billion (USD $2.61 billion), which will allow the airport authority to handle 65 million passengers.

Figure 14: Recently Completed Terminal Expansion Project at Toronto Pearson International Airport

Source: Greater Toronto Airports Authority. | GAO-20-298