

The Austrian Aviation Sector in the
Context of the Business Location
Austria

Final Report

Report

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DISCLAIMER

Our work is produced for The Government of the Republic of Austria (Bundesministerium für Verkehr, Innovation und Technologie) in accordance with our letters of engagement dated 7th December 2012 and 12th June 2014. It is not intended to be relied upon by third parties. Steer Davies Gleave accepts no liability for the use of this document other than for the purpose for which it was commissioned.

The analysis carried out, as reported in this document, represents Steer Davies Gleave's best endeavours within the timescale and resource budget made available. However, the analysis contained within this report relies on numerous assumptions and judgements (based on our experience of working in the air transport industry) and is influenced by external circumstances that can change quickly and that may affect the outcome of our review.

In addition, it has been necessary to base most of this analysis on data collected by third parties only some of which we have been able to independently verify. While we have no reason to believe that the information that we have used for our review is not accurate and reliable, Steer Davies Gleave does not guarantee the accuracy of this third party data.

Executive Summary

Overview

1. On behalf of BMVIT we have undertaken a review of the current and future position of Austria's commercial aviation sector, with a particular emphasis on the traffic context that is likely to shape the development of volume at the Vienna Airport hub, along with the economic impacts of such changes.
2. We have used our analysis to identify a recommended scenario for the future development of commercial aviation in Austria and at Vienna, and have identified a series of policy options which could be promoted by stakeholders to deliver the recommended scenario.
3. The Austrian airports system is dominated by Vienna. In 2013 Austria's six leading commercial airports (Vienna, Salzburg, Linz, Graz, Innsbruck, and Klagenfurt) together served about 26.3 million passengers. Of these 22 million used Vienna.
4. Similarly Vienna is the home base for Austria's two largest carriers - Austrian Airlines and NIKI - and it is also the headquarters for Austro Control.
5. Vienna Airport has a large Origin-Destination traffic base (about 15.2 million in 2013), but it is also one of the largest connecting passenger hubs in Central Europe, with a niche focus on markets in Eastern Europe including the CIS and, to a lesser extent, Asia and the Middle East. The airport served 6.8 million connecting passengers in 2013.
6. However, connecting traffic is flexible by nature, with passengers and airlines making choices about which airport to use for transfer with reference to a range of factors including geographical location (relative to final destination), flight frequency, price (in terms of the air fare for passengers, operating costs for carriers), airline/alliance, availability of infrastructure and operational efficiencies (which can determine factors such as the risk and length of delays, or waiting time between connecting flights).
7. Vienna must therefore compete for it against a variety of other airport hubs, most notably at Munich, Zürich and Istanbul which are dominated by Austrian Airlines Star Alliance partners Lufthansa, Swiss and Turkish Airlines respectively. A form of competitive threat is also represented by Emirates at Dubai.
8. Connecting traffic is an important contributor to the success of the Vienna hub, and the airport in turn has wider impacts on the Austrian economy (which flow from both the connecting and Origin-Destination traffic). Connecting traffic can also help to underwrite the profitability of a route, and thus preserve the network available at VIE. In this respect VIE serves a number of routes in Eastern Europe where the core Origin-Destination market is too small to be viable without the additional connecting traffic that is served on the route.
9. In addition to identifying a recommended scenario we have also identified and quantified two other scenarios in which, to varying degrees, Austria is unable to capitalise on the unique position of Vienna Airport, and where potential benefits from aviation are lost to the wider national economy.

Policy recommendations

10. Our study has focused on three key scenarios:
 - **Scenario A:** VIE remains a national hub and a secondary hub in the Lufthansa-Star Alliance network including a focus on East-Europe and, to a lesser extent, on intercontinental destinations in South-East-Asia.
 - **Scenario B:** VIE remains a hub but its market position weakens as a consequence of further competition, in particular from carriers such as Turkish Airlines and Emirates.
 - **Scenario C:** VIE loses its hub function to another Lufthansa hub airport or to other Eastern-European airports without intensified operations of new-generation carriers.
11. Based on our review of benefits and impacts we recommend **Scenario A** as the one that should be promoted by Austrian policymakers and stakeholders in the national aviation sector.
12. However delivery of Scenario A will require action on behalf of BMVIT and other stakeholders in Austria. VIE operates in a competitive environment and without policy intervention there is no guarantee that a Scenario A outcome can be delivered.
13. Indeed, given our assessment of current market conditions we consider that VIE is developing towards a Scenario B outcome based on our analysis of its current competitive position along with other factors such as the comparative growth of connecting and total traffic volumes at competing hubs in the region. However in our opinion a Scenario A can potentially be delivered, assuming the correct policy options are identified and implemented. The main factors needed to prevent the emergence of Scenario B are likely to be those that in turn would support delivery of Scenario A, principally:
 - Ongoing demand growth;
 - Financial robustness of the airline sector in Austria, and in particular of Austrian Airlines; and
 - Development of the third runway at VIE.
14. Other important themes include:
 - The need to ensure continuous monitoring of the competitive environment, with mitigating actions taken where necessary. However it should also be recognised that balances need to be struck and in some cases actions that impact on individual stakeholders (for example the effects on Austrian Airlines at VIE of market entrance by Non-EU airlines) can have positive impacts for Austrian consumers and other stakeholders.
 - The need to ensure diversification of the traffic mix at VIE. On the one hand the recommended scenario is focused on further development and strengthening of the hub concept at VIE. However Austria has a relatively small aviation market which, in European terms, has a disproportionately large weight as a result of the Austrian Airlines hub operation at the airport. The hub has been successful for Austria to date, but historical examples from other European countries show that hubs sometimes fail. Diversification of the traffic

mix at VIE would provide some mitigation against a ‘worst case’ event of financial failure on the part of Austrian Airlines or a decision by the Lufthansa Group to close the VIE hub.

Current Market Context - Traffic

15. Austrian airport traffic achieved a Compound Annual Growth Rate (CAGR) of 4.9% between 2002 and 2013. This was faster than the rates of growth in Germany, Italy and Switzerland but slower than in the smaller neighbouring markets to the east.

TABLE 1.1 AUSTRIAN AIRPORTS PASSENGER TRAFFIC (000’S) 2002-2013

Year	Passengers (millions)	% Growth
2002	15.6	
2003	16.5	5.7%
2004	19.1	15.3%
2005	20.4	7.2%
2006	21.6	5.8%
2007	23.8	9.9%
2008	24.7	4.0%
2009	22.6	-8.7%
2010	24.5	8.4%
2011	25.8	5.7%
2012	26.6	3.0%
2013	26.3	-1.0%

Sources: Statistik Austria (passengers are scheduled and non-scheduled), individual airport websites

16. Growth has been fastest in the European segment (CAGR 5.0%) with long haul traffic growing at a CAGR of 4.6%.
17. Amongst Austria’s airports passenger traffic growth has been fastest at Vienna (CAGR 2002-2013: 5.7%). Growth at Austria’s leading regional airports has been modest in comparison.
18. Vienna has benefitted from its role as a connecting hub based on its:
- Geographical position, linking Western and Eastern Europe;
 - Role of Austria and Vienna as a tourist and business destination (for example there are a number of offices and headquarters of multinational companies in the vicinity of Vienna);
 - Historical and economic ties of Austria to Central/Eastern Europe and the Middle East;
 - Presence of Austrian Airlines as the incumbent hub carrier;
 - Short minimum connection time for transfer passengers;

- Strong East-West Hub; and
 - Relatively fewer infrastructure capacity constraints than other European hubs including peers within the Lufthansa group.
19. Austria’s airports host an average of approximately 1.1 annual Origin-Destination trips per capita - this is similar to the averages in Germany, Italy and Switzerland.
 20. Austria serves 1.6% of Europe’s total air passenger traffic, but 3.5% of the continent’s connecting traffic. Austria’s share of Central European traffic has risen to about 6% in 2013, having increased from about 5% in 2002. This illustrates the role of Vienna as a leading Central European transfers hub.
 21. Growth in airline capacity in Austria in recent years however this has predominantly been in the form of increased capacity on existing routes, whereas neighbours such as German have had relatively greater growth in new routes supporting enhanced connectivity.
 22. Austrian Airlines is by far the largest carrier, providing 50% of the capacity in the market. Despite its prominent role and presence within the Lufthansa Group the carrier has struggled to obtain profitability and has subsequently had to downsize its capacity in recent years while it seeks to address its weaknesses.
 23. However, there are emerging signs that Austrian Airlines is returning to financial stability. This is critical to Vienna given that Austrian Airlines is both its largest incumbent airline and also the operator of the connecting hub at the airport. The future success of the airport in developing traffic volumes is likely to be closely associated with the strength of Austrian Airlines.
 24. NIKI, with partner airberlin, has developed its market share to 19%. NIKI has consistently operated on a profitable basis although its German parent company, airberlin, has made losses on a consistent basis since 2008.

TABLE 1.2 SHARE OF AIRLINE CAPACITY: AUSTRIAN AIRPORTS SUMMER 2013

Airline	% of capacity
Austrian Airlines	50.3%
NIKI & airberlin	19.1%
Lufthansa	9.3%
Germanwings	2.2%
Turkish Airlines	1.6%
British Airways	1.6%
Air France	1.5%
Emirates	1.3%
Swiss	1.2%
Others	12.1%
Total	100.0%

Source: OAG Airline Schedules Database (July 2013)

Comparative Airport Scheduled Network Quality

25. Both Zürich and Munich serve a higher volume of connecting traffic than Vienna.
26. Zürich's connecting traffic volumes (8.2 million, 2013) have almost recovered to the levels served prior to the demise of Swissair in 2001.
27. Munich is a major connections point for Lufthansa and serves more than twice the level of connecting passengers than Vienna (15.1 million, 2013).
28. Vienna, with 143 non-stop destinations in summer 2012 offered fewer than either Istanbul or Munich, but marginally more than Zürich. However passengers originating from Vienna and the Austrian airports can fly-on over the networks of oneworld, Star Alliance and SkyTeam at hubs such as Frankfurt, Paris and London Heathrow. As a result the number of reachable destinations from Vienna is broadly comparable to peers assuming changes of aircraft en route.
29. The level of non-stop flight frequency is generally less from Vienna when compared to its peers, although these differences become smaller once one-stop routeings are taken into account. Compared to its immediate peers Vienna generally offers a lower level of frequency to the key leading global cities.
30. Linked to the above, in general Vienna tends not to offer the shortest travel time to key global points when compared to its competitors in Central Europe. This reflects the lower level of frequency along with the relatively smaller number of non-stop destinations offered (i.e. travel time is increased where a change of aircraft is needed en route at another hub airport).

Current Market Context - Economic Impact

31. Employment in the aviation sector in Austria grew steadily until around 2008-2009, when a slowdown in passenger growth and the restructuring of Austrian airlines changed this trend.
32. The sector currently directly employs around 30,000 workers in the whole country, of which around 15,300 are based at Vienna International Airport. The majority of these workers are employed by airlines and the Vienna Airport Group.
33. Previous studies have assessed the economic footprint of Vienna International Airport, estimating its direct contribution to GVA (over €1.1 billion, 2007) and to GDP (over €1.8 billion, 2011).
34. We consider three categories of economic benefits in our analysis: a) the 'economic footprint' of the aviation activities at Vienna; b) the wider 'macro-economic impacts' through additional activities attracted or enabled by aviation; and c) the benefits to the users of aviation service.
35. Of the over 15,300 workers that are directly employed at Vienna Airport about 50% work for airline companies. This includes the airport group, airlines, ground handling, retail, air traffic control, accommodation and other services associated with the airport. When considering indirect and induced employment, Vienna International Airport has a footprint of 40,000 workers.

36. The hubs' contribution to Gross Value Added is estimated at around €1 billion per year, equal to more than 1.5% of the Vienna region's GVA. When considering indirect and induced GVA, the total figure is €3.1 billion.
37. Given the current destinations available from Vienna International Airport, it facilitates Austria's access to several key global markets. We estimate that around 7% of the world's GDP is directly accessible from Vienna.
38. The World Bank's aviation connectivity index shows that Austria is the 11th best connected country by air in the world.

International comparison of Vienna International Airport

39. Excluding government taxes, Vienna's published airport charges are broadly comparable to those of Munich, and cheaper than those at Zürich. However the airport charges at Istanbul are significantly cheaper than those at Vienna, Munich and Zürich.
40. Vienna's tariff is noteworthy for the availability of extensive discounts in its passenger charges for the carriage of transfer traffic. Under its Transfer Incentive Program Vienna offers a refund of €12.50 per departing transfer passenger to eligible carriers. It also offers a range of other discounts under its Growth Incentive.
41. On a comparative basis the unit rate for air traffic control charges at Vienna are cheaper than those at Zürich. Austria's en-route unit rates are marginally lower than those in Germany, but Vienna has higher Navaid fees. However, as with other measures of user costs, the air traffic control unit rates in Turkey and at Istanbul are substantially lower than any of the Central European peer airports.
42. Austria has an aviation tax (known as the 'Aviation Levy') which operates in a similar fashion to the German aviation tax although set at a slightly cheaper level. The Levy exempts transfer passengers which are important given their prominence at Vienna. However neither Switzerland (Zürich) nor Turkey (Istanbul) has an equivalent tax.
43. The leading German political parties have discussed abolition of their own aviation tax. If this change is implemented Austria will be the only one of the countries we have studied which is maintaining an aviation tax.
44. Austria (like Germany) participates in the EU aviation Emissions Trading Scheme. Switzerland is not a member although it is set to join shortly. Turkey is outside the EU ETS and Turkish Airlines currently enjoys a degree of competitive advantage as a result although this may change pending the progress of ICAO-sponsored discussions to introduce a global system.
45. Vienna's two runways provide an hourly maximum of 68 slots which primarily services the Austrian Airlines hub system. The level of runway capacity utilisation is lower than at both Munich and Zürich. However both Vienna and Munich are seeking to build a third runway in order to support the further expansion of hub operations (by Austrian Airlines and Lufthansa respectively).
46. Vienna has the important competitive advantage of a lower Minimum Connect Time (25 minutes) for transfer passengers than any of its peer airports. Of its

competitors Munich has the closest Minimum Connect Time of 30 minutes. Zürich offers 40 minutes whilst Istanbul does not have a published standard.

47. EUROCONTROL data indicates that Vienna's flight delays are amongst the 20 worst in Europe in terms of the average minutes of delay per flight. However many of Europe's largest airports appear in this ranking, and the number of flight delays at Vienna is less than at Zürich, and only marginally more than at Munich and Istanbul. This is an important consideration as airlines bear not only the direct financial costs from delays but also a reputational cost which can, in the medium term, impact on traffic volumes. At airports delays often arise through an imbalance between demand and capacity, so projects such as a third runway at Vienna could help to alleviate delay levels, along with other potential operational enhancements.
48. While Vienna is served by rail from the city centre and has an extensive bus and coach network, it lacks the same degree of intermodal access as is available at some of its peer competitors. Improved surface access links to Vienna could help to increase the attractiveness of the airport by extending its catchment area, thus supporting growth in Origin-Destination traffic volumes.

Risks and threats to the Vienna hub

49. About one third of Vienna's connecting traffic could be at material risk from competition by Turkish Airlines and/or Emirates (notably for connections between Eastern European points, Western Europe - Middle East and Western Europe - Asia). Both carriers have attracted passenger market share from Austrian Airlines in recent years on routes into their respective hubs (Istanbul, Dubai) and are now the dominant carrier on the route in terms of capacity provided. There are various forces shaping such changes in the aviation market (for example the growth of airline alliances), and in addition market access for non-EU airlines is increasingly becoming an issue managed at the EU rather than national level. There may therefore be some limits to Austria's influence over such changes.
50. While the entrance of new airlines into the market at Vienna represents a competitive threat to Austrian Airlines it should be noted that these carriers provide choice to consumers and by supporting connectivity to key emerging global centres may deliver an overall positive economic impact for the country.
51. If current GDP growth trends persist a reduction in global market share for Austria (and Europe) is inevitable. However the global market is set to grow considerably and all regional markets seem likely to benefit. Forecasts from Airbus and Boeing point to a trebling in market volumes by 2035 on key intercontinental flows which Vienna currently serves as a hub airport.
52. Almost three quarters of the connecting traffic at Vienna is intra-European and therefore likely to be relatively immune from changes in aircraft technologies which are primarily impacting on long haul markets through the introduction of aircraft such as the Airbus A380 and the Boeing 787 Dreamliner.
53. However on most of the long haul routes operated by Austrian Airlines they face competition from rivals who have new aircraft technologies such as the Dreamliner on order. The risk of hub bypass on these routes may therefore increase over time.

54. Given their respective roles as Lufthansa Group hub airports Vienna and Munich are key airport competitors. Vienna outperforms Munich in several criteria (for example it has a more ambitious discount incentive scheme promoting connecting traffic).
55. However Munich holds the advantage in some of the more important criteria; its connecting market is over twice the size of that of Vienna and it is a home airport for Austrian Airlines parent, Lufthansa. Munich has also attracted a substantial increase in its share of scheduled Lufthansa Group capacity in recent years, whilst Vienna's share has remained largely unchanged.
56. Vienna's plans to expand the capacity of the airport through building a third runway compare favourably to development proposals at Zürich and are on a par with Munich's own ambitions for a third runway.
57. Given the importance of peak runway capacity to hub operations the earlier availability of the new runway at Vienna would be critical as it seeks to influence Lufthansa Group's strategic decisions about the placement of aircraft capacity across its network. Munich has already received a judicial decision in favour of its own runway development.
58. The average employee costs at the Lufthansa Group (which includes Austrian Airlines) and NIKI/airberlin are in the middle of the range when compared to European peer airlines. However, costs at airlines such as Turkish Airlines and Emirates are lower than European levels.
59. This may raise concerns about 'fair competition' between airlines as lower costs can help to support lower fares and in turn increase market share. However in practice 'fair competition' would be a difficult concept for the Government of Austria to monitor.
60. Similarly given that many 'fair competition' concerns have a pan-European dimension, and recognising Austria's role within the European Union, mitigating actions designed to promote 'fair competition' may be likely to be most successful if promoted and delivered at EU-level (as is currently the case).
61. EU ETS (or its replacement by an equivalent global ICAO-mandated scheme) will increase air fares and, all other things being equal, suppress demand below what it would otherwise have been. However the effects on fares may be moderate, and we have assumed will be less than the opposite effects of new aircraft technologies (which will increase demand through lower fares) and rising jet fuel prices.
62. The development of a low cost sector in ex-CIS states and other parts of Eastern Europe may represent a degree of risk to Vienna's niche hub position. However the current evidence of the extent to which this represents a material risk is mixed.

Possible scenarios for the Vienna hub

63. If delivered in full Scenario A would produce the largest benefits for the VIE hub and Austria defined in terms of traffic volume, employment, macroeconomic impact and improved international connectivity.

64. In Scenario A traffic at Vienna could develop to about 35 million passengers by 2025 and 48 million passengers by 2035. This is conditional on continued macroeconomic growth and assumes that a financially rejuvenated Austrian Airlines makes best use of a third runway at Vienna (which we have assumed could be available from about 2020).
65. In Scenario B enhanced competition from carriers such as Turkish Airlines and Emirates - especially for connecting traffic - could delay the growth of traffic and potentially have damaging knock on effects to Austrian Airlines as the hub carrier at Vienna.
66. Scenario C looks at the impacts of Vienna losing its hub function, for example if the Lufthansa Group made a strategic decision to base all East-West connecting flows at Munich instead. Examples from comparable airport de-hubbing events in Europe suggest that traffic levels might not recover to previous levels until the mid-2020s, with connecting traffic volumes falling to permanently lower levels. In this event it is likely that a third runway at Vienna would not be required in the forecast time horizon.
67. The economic footprint of Vienna and its wider impacts would be substantially different under the three scenarios presented. Direct employment at Vienna could grow up to 42,000 employees by 2035 under Scenario A, but only up to 25,000 under Scenario C. Likewise, GVA growth would range between 144% (Scenario A) and 44% (Scenario C) by 2035.
68. The impact of diminished connectivity under Scenario B and Scenario C would in turn negatively affect GDP growth for Austria in the short-term. Under Scenario C, medium-term growth (2025) would also be negatively impacted. In contrast, improved connectivity in Scenario A could boost GDP growth in Austria by up to 0.4% in the long-run (2035).
69. The differences in international connectivity from Vienna between the scenarios would have important impacts on passengers by reducing air connectivity relative to Scenario A, including potential risks to key cities in emerging markets.
70. In contrast Scenario A would deliver the largest degree of international air connectivity to key markets such as Russia and China, as well as the existing core market of Western Europe.
71. The list of policy options we have identified to deliver a Scenario A outcome is presented below.

TABLE 1.3 LIST OF POLICY OPTIONS

Objective	Issue	Stakeholder	Means of influence	Policy recommendations for Austrian stakeholders
Delivery of Scenario A	Delivery of the third runway at VIE	Flughafen Wien AG	Sponsorship and development of airport infrastructure schemes	Deliver the third runway and associated capacity expansion schemes.
Delivery of Scenario A	Restructure to become financially robust enough to support expansion of routes and connecting traffic	Austrian Airlines	Financial and operational performance	Maintain current restructuring programme to stabilise the finances of the airline as a means to create a solid base for future investment in network capacity.
Mitigate risks and threats to the VIE hub	Market entrance by competing airlines	BMVIT/Government of Austria	Review of market entrance requests by Non EU air carriers	Placed in the context of a generally pro-liberalisation approach to aviation, review applications for Non-EU airline access rights on a case-by-case basis where increased market entrance or activity by Non-EU airlines may or could be likely to affect the hub status of VIE negatively; balance the requirements of national stakeholders with the positive benefits of enhanced connectivity and diversification of the airline mix at VIE. Promote the development and application of 'fair competition' principles at EU level (for example in admitting states to the European Open Aviation Area).
Mitigate risks and threats to the VIE hub	Geographical shifts in the global economy	BMVIT/Government of Austria	Review of market entrance requests by Non EU air carriers	Facilitate rights of access to new destinations and increases in flight frequency to existing destinations in key emerging markets.
Mitigate risks and threats to	Geographical shifts in the	Austrian Airlines	Network	Develop new routes and/or increased flight frequency to existing destinations in

Final Report

Objective	Issue	Stakeholder	Means of influence	Policy recommendations for Austrian stakeholders
the VIE hub	global economy		Development	key emerging markets.
Mitigate risks and threats to the VIE hub	Geographical shifts in the global economy	Flughafen Wien AG	Infrastructure Development	Promote the ongoing development of airport capacity and infrastructure to complement projected growth in long haul traffic.
Mitigate risks and threats to the VIE hub	Hub bypass as aircraft technologies change	Flughafen Wien AG	Airport user charges and operational efficiency	Maintain discount and incentivisation schemes especially where targeted at transfer passengers and new route development. Review whether further discounting is required and affordable to enable matching of competitor offers (e.g. no transfer passenger fees at Gulf airports). Maintain competitiveness of the connecting passenger product through ongoing investment in facilities where required, along with operating productivity.
Mitigate risks and threats to the VIE hub	Competition from Munich Airport	Flughafen Wien AG	As per above	As per above. Deliver the 3 rd runway before a new runway is opened at MUC. Continue to monitor competitive developments at Munich and the other peer airports, for example in respect to the levels of discounts on user charges offered to airlines for transfer passengers.
Mitigate risks and threats to the VIE hub	Competition from Munich Airport	Austrian Airlines	Financial and operational performance	Maintain current restructuring programme to stabilise the position of the airline as a means to operating as a financially viable carrier within the Lufthansa Group. Continue to engage Lufthansa Group parent on the positive benefits of route capacity development from VIE.
Mitigate risks and threats to the VIE hub	Competition from Munich Airport	Ministry of Finance/Government of Austria	Aviation taxation	Consider reform of the level, structure and existence of the Air Transport Levy in Austria by undertaking a wider review of the Air Transport Levy to ensure that the economic benefits of the tax monies continue to outweigh the impacts on traffic volumes and airline financial performance. At the minimum ensure the levy remains lower than that in place in Germany and in the case of abolition of

Objective	Issue	Stakeholder	Means of influence	Policy recommendations for Austrian stakeholders
				the tax in Germany assess the impact of this on Austria and whether the Air Transport Levy should be reduced or abolished.
Mitigate risks and threats to the VIE hub	Inadequate airport infrastructure	Flughafen Wien AG	Sponsorship and development of airport infrastructure schemes	Deliver the 3 rd runway on time.
Mitigate risks and threats to the VIE hub	Inadequate airport infrastructure	Austro Control	Development and operation of airspace capacity.	Continue operating practices that minimise levels of ground and airborne delay. In collaboration with the Austrian government, neighbouring national governments, VIE and airlines, deliver schemes to increase the air traffic control capacity of Austria, especially in the region of Vienna.
Mitigate risks and threats to the VIE hub	Fair Competition	BMVIT/Government of Austria	Lobbying at EU level	Promote policies which generate positive economic benefits for Austria through the provision of new routes and capacity while balancing these against adherence to 'fair competition' principles.
Mitigate risks and threats to the VIE hub	Environmental impacts on traffic growth	BMVIT/Government of Austria	Lobbying at EU level	Promote policies which positively address concerns about the environmental impact of aviation through development of a globally agreed approach to the control of emissions which can be signed by EU and Non EU states.

Glossary

AB	airberlin
ACI	Airports Council International
ANS	Air Navigation Services
AÖV	Arbeitsgemeinschaft Österreichischer Verkehrsflughäfen
ATC	Air Traffic Control
BMVIT	Austrian Ministry of Transport, Innovation and Technology
CAGR	Compound Annual Growth Rate
CRCO	EUROCONTROL Central Route Charges Office
DXB	Dubai International Airport
EK	Emirates
ETS	Emissions Trading System
GVA	Gross Value Added
GDP	Gross Domestic Product
HG	NIKI Luftfahrt GmbH
IATA	International Air Transport Association
MCT	Minimum Connect Time
MPPA	Millions of Passengers per Annum
MTOW	Maximum Take Off Weight
MUC	Munich International Airport
OS	Austrian Airlines
TK	Turkish Airlines
VIE	Vienna International Airport
ZRH	Zürich International Airport

1 Introduction

- 1.1 Steer Davies Gleave has been retained by the Austrian Ministry for Transport, Innovation and Technology ('BMVIT') to undertake a study of the national aviation sector.
- 1.2 The purpose of this study is to determine the current and future position of Austria's aviation sector and from this to provide clear guidance which can be used in aviation-related structural policy.
- 1.3 Our mandate is to assess the following key questions:
- What is the actual state of Austrian aviation, taking special account of Vienna International Airport?
 - How can Vienna International Airport ('VIE') be evaluated in relation to comparable international airports in Munich, Zürich and Istanbul, respectively?
 - What are the factors jeopardising the hub function of Vienna International Airport?
 - Taking account of changes within the global aviation system, what are the potential scenarios in reference to the hub role of Vienna International Airport? What is the economic impact of respective developments on the business locations of Austria and, in particular, Vienna?
 - Based on the obtained results, which scenario should be fostered by the Austrian policy maker? What are the adequate measures to be taken by the Austrian Civil Aviation Authority in order to ensure both the sustainability and competitiveness of the Austrian aviation sector?
- 1.4 The results of the study are based on insights gained from a variety of sources including:
- Discussion with members of the BMVIT team; and
 - Stakeholder discussions with Austrian Airlines, Vienna International Airport, NIKI, Austro Control and AÖV.
- 1.5 We have also used data from a wide variety of publically available sources. These include (this list is not exhaustive):
- Airport company annual reports and other published operating and financial information (VIE, Munich Airport, Zürich Airport and TAV);
 - Other international airports and aviation bodies (e.g. Brussels Airport, UK CAA);
 - Airline websites, notably Austrian Airlines, NIKI and airberlin;
 - Various data from VIE e.g. summer 2014 airline tariff arrangements;
 - Statistik Austria;
 - OAG Airline Schedules Database;
 - Sabre/ADI;
 - Ascend Online Fleets;
 - IATA Air Charges Manual;
 - Leading aircraft manufacturers (Airbus, Boeing);
 - World Development Bank;
 - Global Insight; and
 - IMF World Economic Outlook.

2 Current Market Context - Traffic

Highlights

Overview of the Austrian airports system

The six leading commercial airports (Vienna, Salzburg, Innsbruck, Graz, Linz and Klagenfurt) served a total of 26.3 million passengers in 2013.

Vienna had by far the largest volume, serving 22.0 million passengers, 84% of the national total.

Historical development of Austria's national passenger traffic

National passenger traffic CAGR of 4.9% 2002-2013.

Austria's traffic growth was faster than the rates of growth in Germany, Italy and Switzerland but slower than in the smaller neighbouring markets to the east (e.g. Czech Republic, Hungary).

Growth has been fastest in the European segment (CAGR 5.0%) with long haul traffic growing at a CAGR of 4.6%.

Historical development of airport passenger traffic in Austria

Passenger traffic growth has been fastest at Vienna (CAGR 2002-2013: 5.7%).

Indicators of the development of Austria's air passenger traffic

Austria's airports host an average approximately 1.1 annual Origin-Destination trips per capita - this is similar to the averages in Germany, Italy and Switzerland.

Austria hosts 1.6% of Europe's total air passenger traffic, but 3.5% of the continent's connecting traffic. This illustrates the role of Vienna as a leading Central European transfers hub.

Unlike many of its neighbours Austria has benefitted from ongoing growth in airline capacity since 2007. However this has predominantly been in the form of increased capacity on existing routes, whereas neighbours such as Germany have had relatively greater growth in new routes (supporting enhanced connectivity).

Austria's share of the air passenger market in the region

Austria's share of Central European traffic has risen to 6.1% in 2013, having been circa 5% in 2002.

Key airlines

Austrian Airlines is by far the largest carrier, providing 50% of the capacity in the market. Despite its prominent role and presence within the Lufthansa Group the carrier has struggled to achieve profitability and has subsequently had to downsize its capacity in recent years while it seeks to address its weaknesses.

NIKI, with partner airberlin, has developed its market share to 19%. NIKI has consistently operated on a profitable basis although its German airberlin parent has made losses on a consistent basis since 2008.

Introduction

- 2.1 This section provides a quantitative description of the traffic characteristics and volume trends of the Austrian aviation sector, and its position within the wider European aviation market.
- 2.2 The aim of this analysis is to illustrate how the air transport market in Austria has developed in recent years and how this compares to other countries.
- 2.3 As Austria is a relatively small country with a limited own catchment (compared to some neighbouring states for example) a special focus is placed on the analysis of transfer traffic.

Overview of the Austrian airport system

- 2.4 For the purposes of this report we have focused our analysis in particular on Vienna International Airport ('VIE'), along with the leading regional airports at Graz, Innsbruck, Klagenfurt, Linz and Salzburg.

FIGURE 2.1 AUSTRIA'S LEADING AIRPORTS



- 2.5 VIE is the national hub and the main operating base of the national carrier, Austrian Airlines. The airport supports Origin-Destination traffic travelling to/from Vienna and the surrounding catchment area. It is also one of Central Europe's leading airports for connecting traffic, where it plays a niche role linking Western Europe with Eastern Europe, as well as serving longer distance traffic connecting to/from points in the Middle East and Asia. In 2013 almost 31% of VIE's passenger traffic was connecting at the airport.
- 2.6 VIE's role as a connecting traffic hub is based on several factors:
 - Geographical position, linking Western and Eastern Europe;
 - Role of Austria and Vienna as a tourist and business destination (for example there are a number of offices and headquarters of multinational companies in the vicinity of Vienna);
 - Historical and economic ties of Austria to Central/Eastern Europe and the Middle East;

- Presence of Austrian Airlines as the incumbent hub carrier;
 - Short minimum connection time for transfer passengers;
 - Strong East-West Hub; and
 - Relatively fewer infrastructure capacity constraints than other European hubs including peers within the Lufthansa group.
- 2.7 The rest of the leading regional airports in Austria facilitate the business and leisure demand originating from their local catchment area as well as in a number of cases (e.g. Salzburg, Innsbruck) providing capacity to service inbound tourist demand.
- 2.8 Table 2.1 summarises the passenger, flight movement and cargo traffic served at Austria's leading commercial airports during 2013. The role of VIE as the national hub is illustrated by its share of the national passenger traffic (84%), flights (80%), freight (95%) and mail (almost 100%).

TABLE 2.1 AUSTRIAN AIRPORTS TRAFFIC, 2013

Airport	Passengers (000s)	Flights (000s)	Freight Tonnes (000s)	Mail Tonnes (000s)
Graz	882	15	0	0
Innsbruck	981	12	0	0
Klagenfurt	259	5	0	0
Linz	550	10	10	0
Salzburg	1,663	18	0	0
Vienna	22,000	232	200	12
TOTAL	26,335	290	210	12

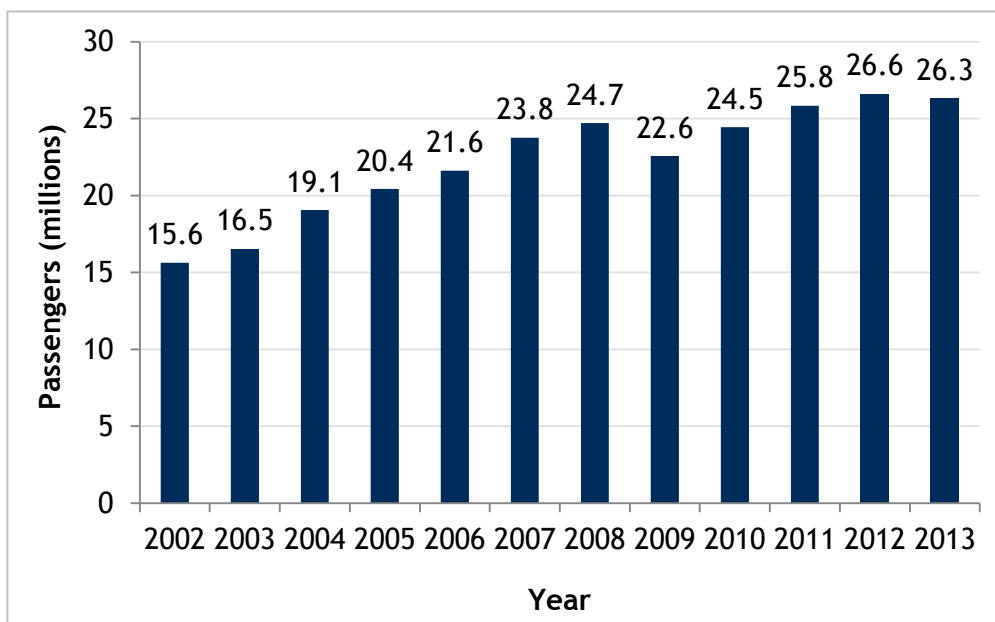
Source: Statistik Austria (passengers are scheduled and non-scheduled)

Historical development of Austria’s national air passenger traffic

Austrian Passenger Traffic Performance

2.9 Figure 2.2 illustrates the annual development of Austrian air passenger traffic during the period 2002-2013. Total traffic grew from 15.6 million passengers in 2002 to about 26.3 million passengers in 2013 (CAGR 2002-2013: 4.9%).

FIGURE 2.2 AUSTRIAN AIRPORTS PASSENGER TRAFFIC 2002-2013



Sources: Statistik Austria (passengers are scheduled and non-scheduled), individual airport websites

- 2.10 Insights on the contribution of geographical market flows to Austria’s air traffic growth can be obtained from Sabre/ADI, which provides market data up to 2013 for most of Austria’s scheduled air traffic.
- 2.11 The Sabre/ADI data indicates that the main contributor to the growth in the 2002-2013 period was traffic to/from other points in Europe (including domestic travel within Austria). This market grew from 6.1 million passengers in 2002 to 10.4 million passengers in 2013 (CAGR 2002-2013: 5.0%). The European market was responsible for delivering 87% of Austria’s total air traffic growth during this period.
- 2.12 Traffic to European points from Austria fell in 2009 (consistent with wider market declines in the wake of the Financial Crisis, and the year in which Austrian GDP fell by 3.9%) but recovered in 2010 and has since fluctuated between 10.1 - 10.8 million passengers per annum.
- 2.13 Long haul traffic from Austria grew from 1.1 million passengers in 2002 to 1.7 million in 2013 (CAGR 2002-2013: 4.6%). The long haul sector currently generates about 14% of Austria’s total commercial air passenger traffic, which is below the historical peak share of 18% in 2005 (although the share of long haul has been rising since 2012).
- 2.14 Table 2.2 sets out the annual development of Austria’s commercial passenger flights and air cargo tonnage volumes during the period 2002-2013.

TABLE 2.2 AUSTRIAN AIRPORTS FLIGHT MOVEMENT AND CARGO TRAFFIC 2002-2013

Year	Annual Flights (000s)	Annual Freight Tonnes (000s)	Annual Mail Tonnes (000s)	Combined Annual Cargo Tonnes (000s)
2002	261	121	11	132
2003	273	127	12	138
2004	303	169	13	181
2005	311	196	13	209
2006	311	216	14	230
2007	332	216	13	229
2008	346	214	14	228
2009	318	208	13	221
2010	320	244	12	257
2011	314	226	14	239
2012	304	207	13	220
2013	290	210	12	222
CAGR 2002-2013	1.0%	5.2%	0.7%	4.9%

Source: Statistik Austria (includes transit freight and mail)

- 2.15 Over this period the average number of passengers per aircraft rose at a faster rate than passenger traffic and as a result the growth in flights (CAGR 2002-2013: 1.0%) was slower than the growth in passenger volumes. The average number of passengers per aircraft rose from 60 in 2002 to 91 in 2013 (CAGR 3.8%).
- 2.16 Freight volumes grew very strongly between 2002 and 2006 (CAGR 16.1%) and also in 2010 (+ 17.5% versus 2009), but fell sharply in 2012 before growing modestly in 2013.
- 2.17 Mail volumes have plateaued at a low level. Similar trends can be observed elsewhere in Europe and reflect more general shifts in society away from the use of traditional mail services (for example email replacing the use of letters).
- Traffic Performance in 2013**
- 2.18 Table 2.3 sets out the monthly passenger traffic for VIE in 2013, as reported by Flughafen Wien in January 2014. Over the year as a whole the airport served 22.0 million passengers (-0.7 % versus 2012).
- 2.19 Origin-Destination traffic increased slightly (+0.6%) to 15.2 million passengers, but Connecting traffic declined (-3.7%).

TABLE 2.3 VIE PASSENGERS BY MONTH, 2012 AND 2013

Month	VIE TOTAL			O/D			CONNECTING		
	2012 (000s)	2013 (000s)	YoY%	2012 (000s)	2013 (000s)	YoY%	2012 (000s)	2013 (000s)	YoY%
Jan	1,398	1,374	-1.7%	930	917	-1.4%	468	457	-2.4%
Feb	1,388	1,332	-4.1%	956	945	-1.2%	431	387	-10.2%
Mar	1,701	1,705	0.3%	1,161	1,191	2.6%	539	515	-4.5%
Apr	1,890	1,797	-4.9%	1,306	1,274	-2.4%	584	523	-10.5%
May	1,985	1,970	-0.8%	1,376	1,389	0.9%	609	581	-4.6%
Jun	2,062	2,064	0.1%	1,401	1,444	3.1%	661	620	-6.2%
Jul	2,193	2,165	-1.3%	1,464	1,447	-1.2%	729	718	-1.5%
Aug	2,139	2,185	2.2%	1,420	1,450	2.1%	718	736	2.5%
Sep	2,174	2,146	-1.3%	1,482	1,449	-2.2%	692	697	0.7%
Oct	1,990	2,010	1.0%	1,340	1,357	1.3%	650	654	0.6%
Nov	1,659	1,647	-0.7%	1,145	1,169	2.1%	514	478	-6.9%
Dec	1,589	1,604	1.0%	1,132	1,175	3.8%	457	430	-6.0%
TOTAL	22,166	22,000	-0.7%	15,113	15,205	0.6%	7,053	6,795	-3.7%

Sources: VIE, Steer Davies Gleave analysis

2.20 In total the other Austrian airports served 4.3 million passengers in 2013. This is shown in Table 2.4 which also includes the totals for VIE and for Austria's leading airports overall.

TABLE 2.4 2013 PASSENGERS BY MONTH (000'S) AT AUSTRIA'S LEADING AIRPORTS

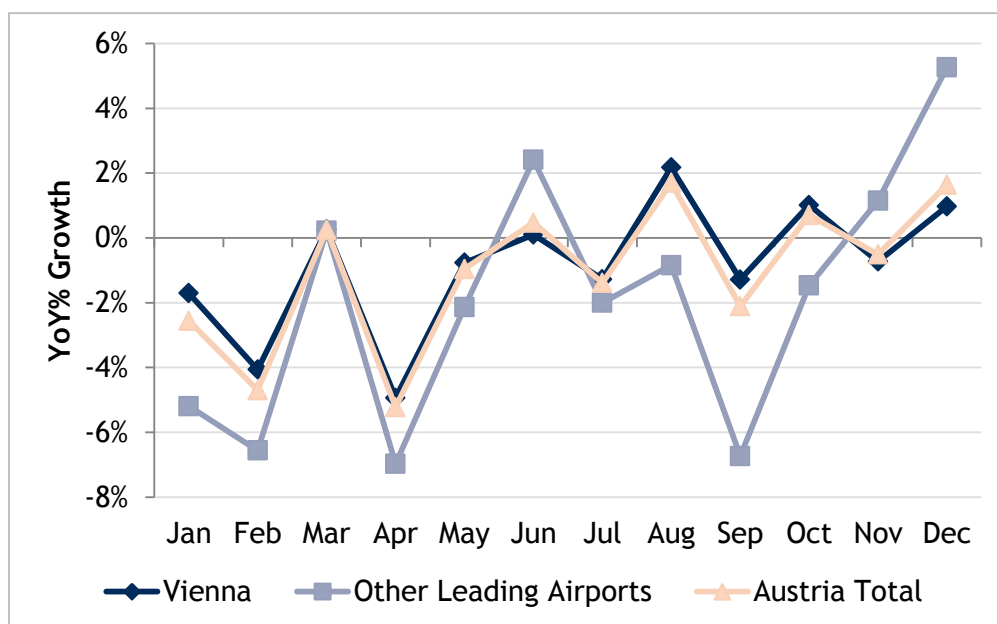
Month	Graz	Innsbruck	Klagenfurt	Linz	Salzburg	Vienna	Austria
Jan	46	145	19	23	196	1,374	1,804
Feb	50	156	20	27	192	1,332	1,777
Mar	67	171	22	34	203	1,705	2,202
Apr	69	56	19	40	99	1,797	2,079
May	80	49	23	57	109	1,970	2,288
Jun	96	69	24	72	139	2,064	2,466
Jul	98	62	28	67	142	2,165	2,562
Aug	90	61	27	68	150	2,185	2,582
Sep	93	56	25	62	126	2,146	2,508
Oct	78	38	22	42	95	2,010	2,286

Month	Graz	Innsbruck	Klagenfurt	Linz	Salzburg	Vienna	Austria
Nov	64	30	13	31	81	1,647	1,867
Dec	50	88	17	25	130	1,604	1,914
Total	882	981	259	550	1,663	22,000	26,335

Sources: Statistik Austria

- 2.21 Figure 2.3 presents the monthly year-on-year % growth trend in 2013 for VIE, the other leading Austrian airports (as a group) and the national total.

FIGURE 2.3 2013 MONTHLY % GROWTH TRENDS AT AUSTRIAN AIRPORTS

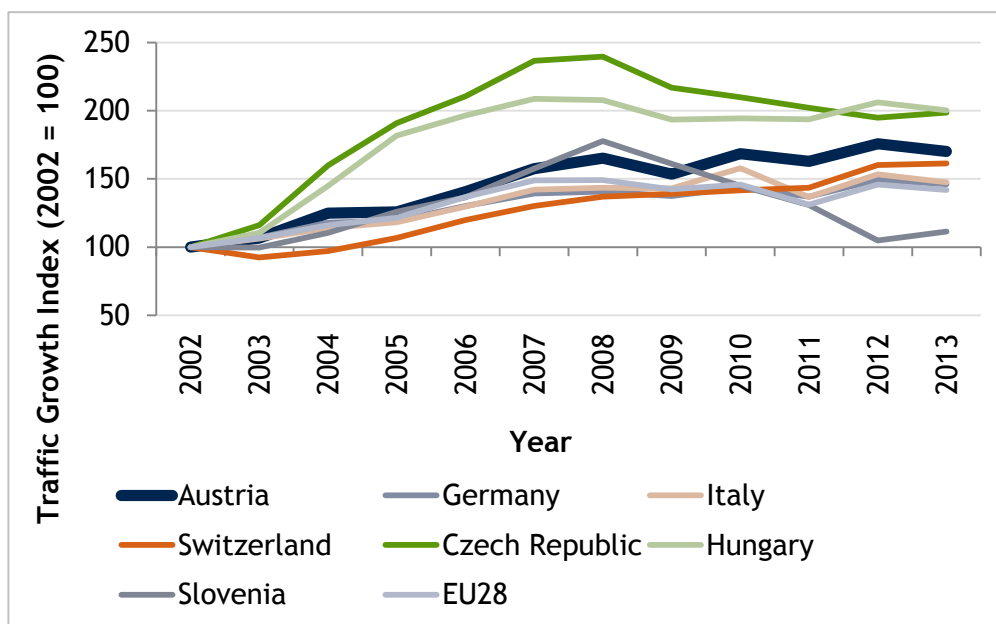


Sources: Statistik Austria

Traffic Performance compared to Neighbouring States

- 2.22 We have compared the historical performance of Austria's air passenger traffic to that of neighbouring states and the EU28 in total.
- 2.23 Traffic in Central Europe is dominated by the German and Italian markets, which in 2013 served 202 million and 144 million passengers through their leading airports (according to ADV and Assaeroporti respectively), and therefore dwarfed the size of the Austrian airport system (26 million passengers).
- 2.24 The growth of air traffic in Austria during the 2002-2013 period compared to that in neighbouring states and the EU28 overall is presented in Figure 2.4. Austria's passenger volumes grew at a faster rate than the EU28 average (CAGR 1.0%) and also those of the leading markets by volume in the region (Germany, Italy, Switzerland). The fastest rates of growth took place in the smaller and less mature markets of Slovenia, Slovakia, Hungary and the Czech Republic.

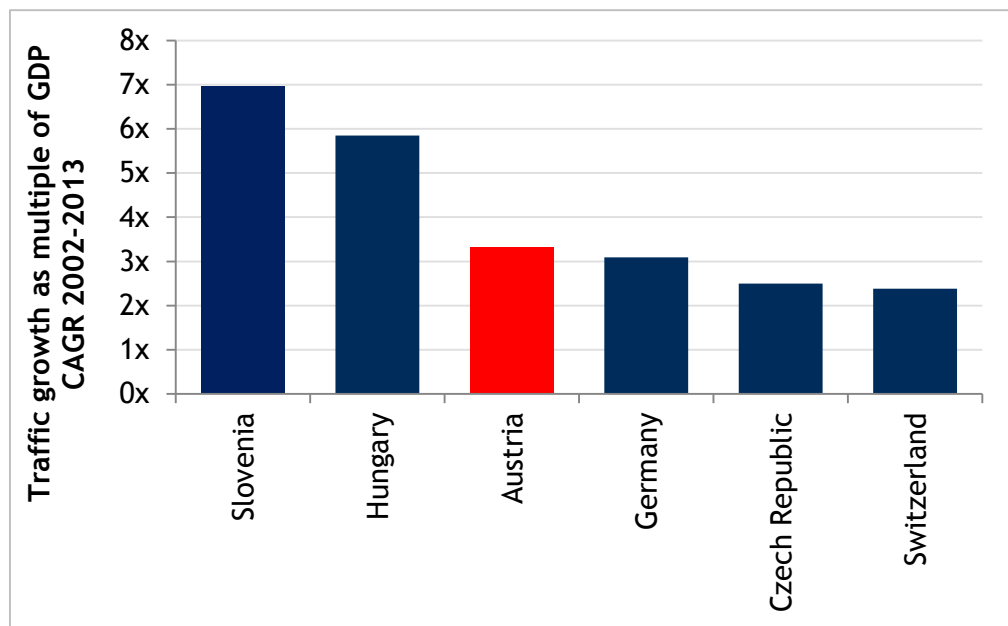
FIGURE 2.4 COMPARATIVE AIR TRAFFIC GROWTH



Source: Sabre/ADI (N.B excludes Slovakia)

- 2.25 Data from the International Monetary Fund ('IMF') shows that Austrian GDP grew at a rate averaging 1.5% during the 2002-2013 period. The average rate of air passenger traffic growth in Austria was equivalent to about 3.3x the rate of GDP growth.
- 2.26 While this metric simplifies the link between traffic, macroeconomic growth and the influences of other variables on volumes nevertheless it can provide a useful comparison between the traffic performance of different countries. In practice the rate of traffic growth will also be influenced by factors such as fares trends, the performance of Origin-Destination versus Transfer traffic, tourism and population trends.
- 2.27 Figure 2.5 presents the comparative growth performance of the states in the region expressed as multiples of their national GDP. Austria's traffic growth performance, relative to the expansion of its economy, was faster than a number of other markets in the region including Germany.

FIGURE 2.5 COMPARATIVE TRAFFIC: GDP MULTIPLES



Source: Sabre/ADI, Global Insight

Historical development of airport passenger traffic in Austria

- 2.28 The historical development of air passenger traffic at each of Austria's leading airports is summarised in Table 2.5. The overall growth of Austria's airport traffic was heavily influenced by the performance of VIE (CAGR 2002-2013:5.7%). In overall terms the other Austrian airports achieved a combined passenger traffic CAGR in this period of 1.5%.

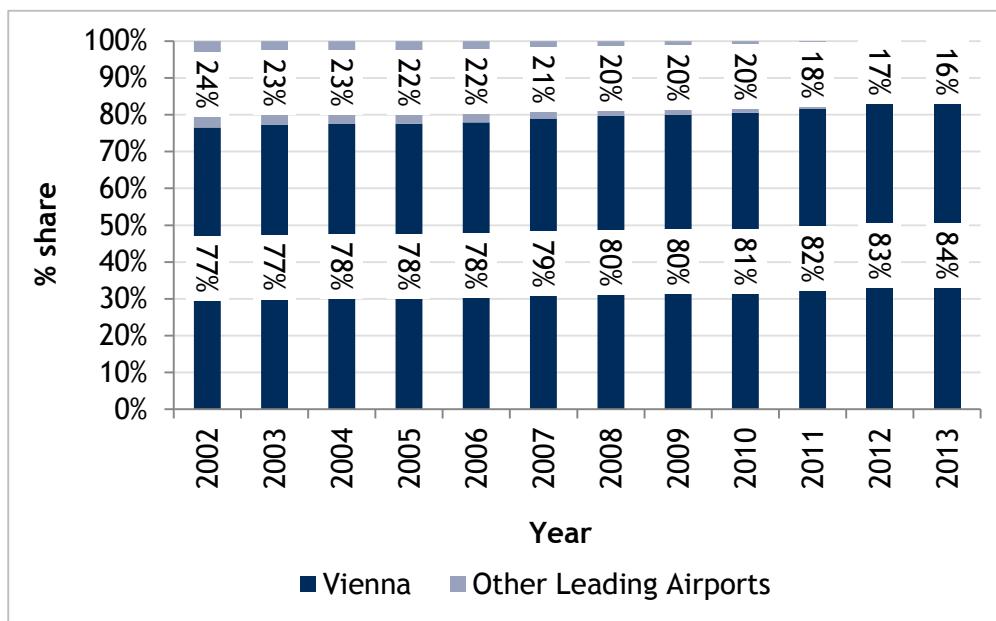
TABLE 2.5 HISTORICAL DEVELOPMENT OF AUSTRIAN AIRPORTS PASSENGER TRAFFIC

Year	Graz	Innsbruck	Klagenfurt	Linz	Salzburg	Vienna	Austria
2002	795	652	260	640	1,327	11,965	15,638
2003	860	688	313	634	1,264	12,768	16,528
2004	898	728	486	750	1,422	14,772	19,057
2005	893	738	523	726	1,695	15,847	20,423
2006	913	806	410	762	1,878	16,843	21,611
2007	948	860	470	773	1,946	18,755	23,753
2008	1,008	969	431	803	1,810	19,688	24,709
2009	948	943	410	683	1,534	18,046	22,565
2010	981	1,034	427	692	1,625	19,691	24,450
2011	976	997	376	679	1,701	21,106	25,836
2012	931	941	279	623	1,666	22,166	26,606
2013	882	981	259	550	1,663	22,000	26,335
CAGR	0.9%	3.8%	0.0%	-1.4%	2.1%	5.7%	4.9%

Sources: Statistik Austria, Individual airport websites

2.29 In 2013 VIE accounted for 83.5% of the traffic served by Austria’s leading commercial airports. Over time VIE’s share of the Austrian market has risen as illustrated in Figure 2.6, in line with its faster traffic growth performance relative to the rest of the market.

FIGURE 2.6 VIE SHARE OF AUSTRIAN AIRPORTS PASSENGER TRAFFIC



Sources: Statistik Austria, Individual airport websites

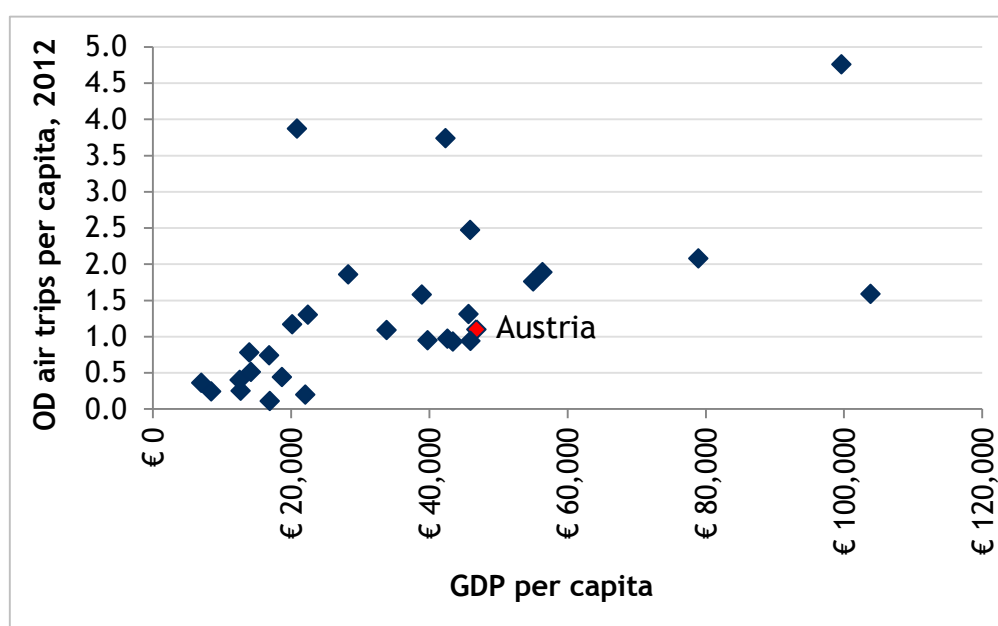
Indicators of the development of Austria’s air traffic market

2.30 The national market can be considered both in terms of the intensity of current air travel usage patterns and also the speed at which the market has developed.

Intensity of current air travel usage in Austria

2.31 The volume of Origin-Destination traffic in a country is usually quite closely linked to the stage of its economic development. In 2012 the Austrian airports hosted a level of Origin-Destination traffic which was equivalent to 1.1 trips per capita. This is broadly the same level of Origin-Destination trips per capita as observed in other leading European nations such as Germany, France, Italy and the Netherlands.

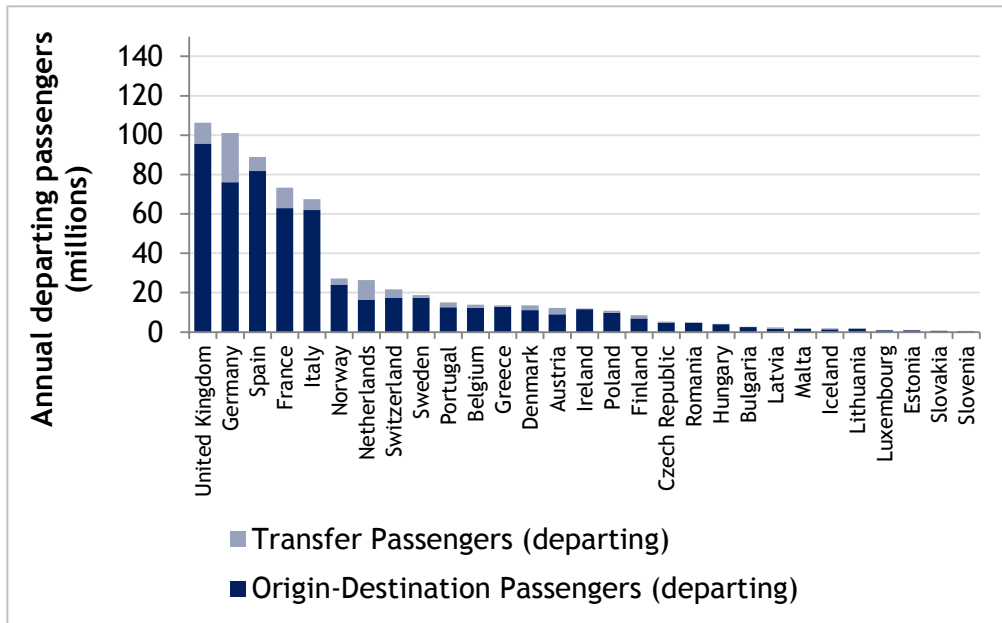
FIGURE 2.7 ANNUAL ORIGIN-DESTINATION AIR TRIPS PER CAPITA AMONG EUROPEAN COUNTRIES, 2012



Sources: Sabre-ADI, World Development Bank Indicators

2.32 The importance of transfer passengers to the individual countries of Europe is shown in Figure 2.8. The market in each of the countries is dominated by Origin-Destination traffic, although in some examples (notably Germany and the Netherlands) the power of their hub airports to attract connecting traffic can be seen.

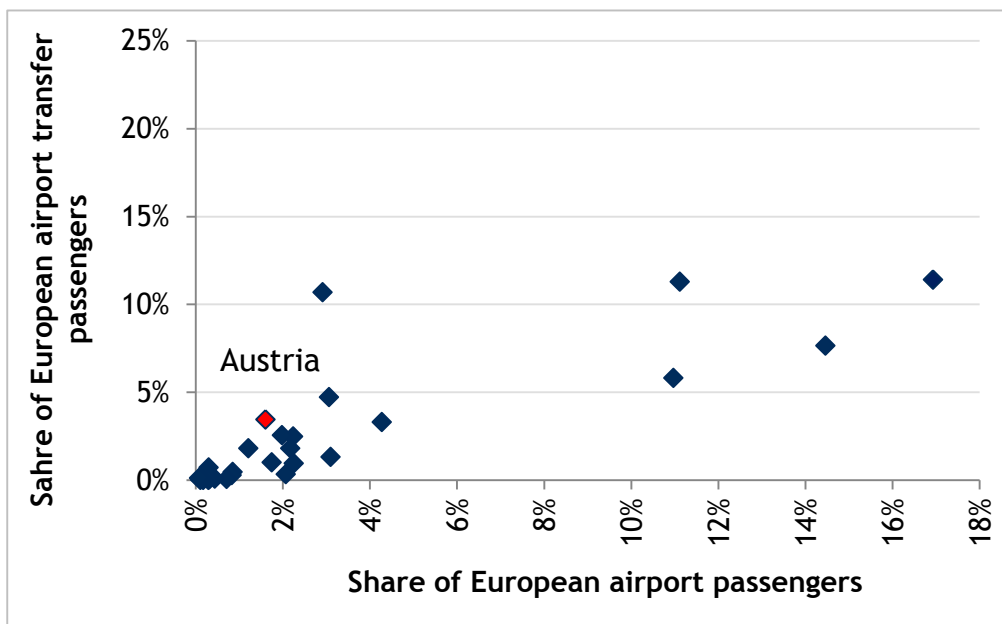
FIGURE 2.8 ORIGIN-DESTINATION AND TRANSFER TRAFFIC PER EUROPEAN COUNTRY, 2013



Source: Sabre-ADI

2.33 This can also be illustrated by looking at the share a country has in Europe’s total connecting traffic, relative to its share of Europe’s total air passenger traffic (i.e. connecting and Origin-Destination). This is shown in Figure 2.9. Relative to its share of total European traffic (1.6%) Austria has a disproportionately large share of the continent’s connecting traffic (3.5%). This illustrates the dominant role that the VIE hub plays in the Austrian market.

FIGURE 2.9 COUNTRY SHARE OF EUROPEAN AIRPORT PASSENGERS, 2013

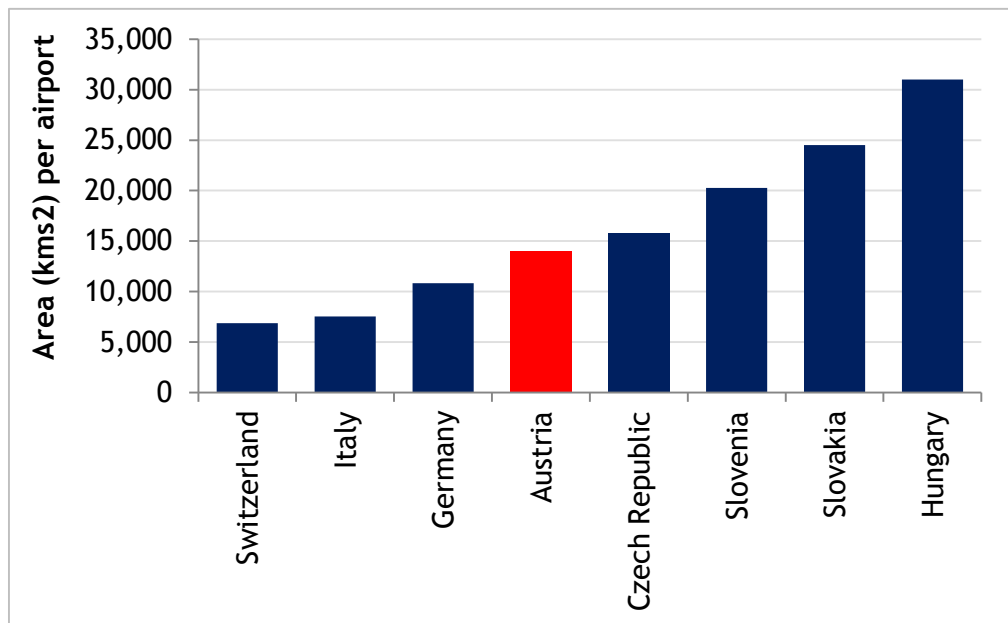


Source: Sabre-ADI

2.34 Figure 2.10 and Figure 2.11 provide information on the airport density by area and population respectively for Austria and other selected European countries. Like Switzerland, Austria has a relatively low population density per airport

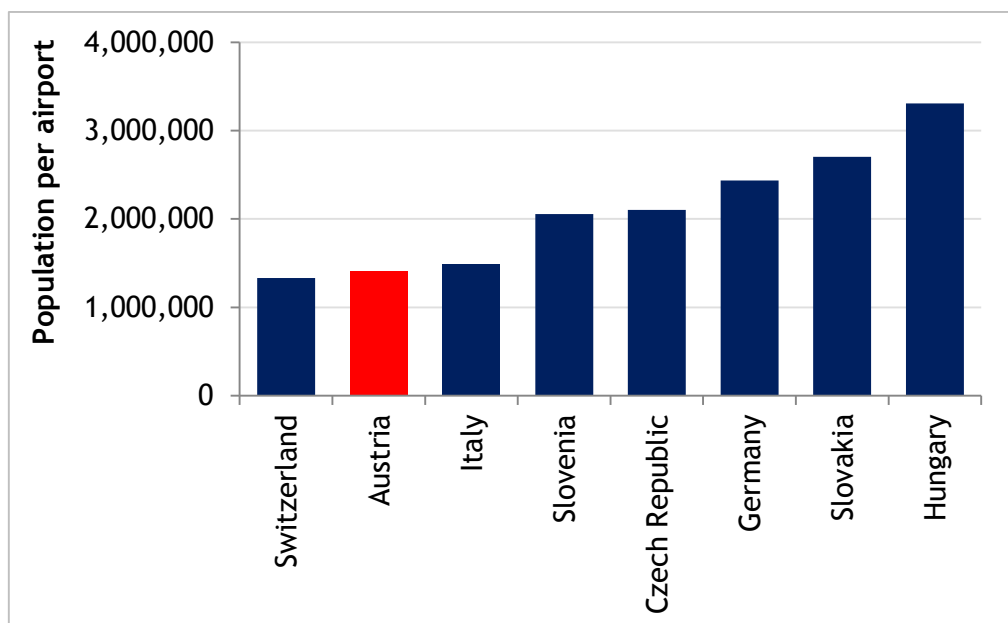
which reflects the mountainous terrain of the country and the relatively dispersed nature of the provincial population.

FIGURE 2.10 AIRPORT DENSITY PER KM²



Source: World Bank World Development Indicators

FIGURE 2.11 AIRPORT DENSITY PER CAPITA

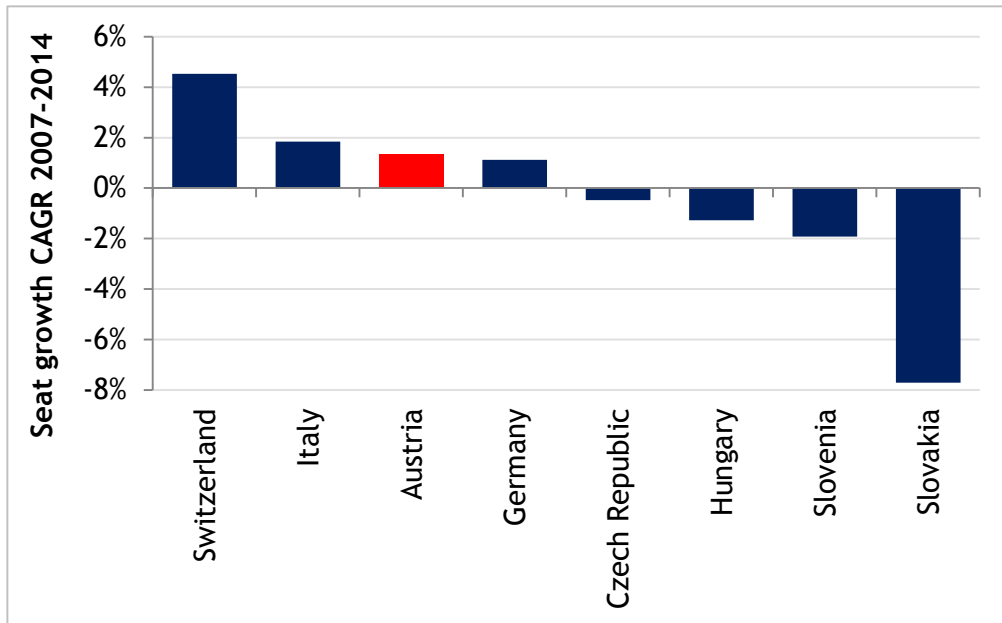


Source: World Bank World Development Indicators

Development of airline schedules

2.35 In recent years Austria has continued to benefit from an increase in the supply of airline seats serving the national market, as illustrated in Figure 2.12. In contrast a number of Austria’s neighbours have suffered from large reductions in airline capacity within their respective markets.

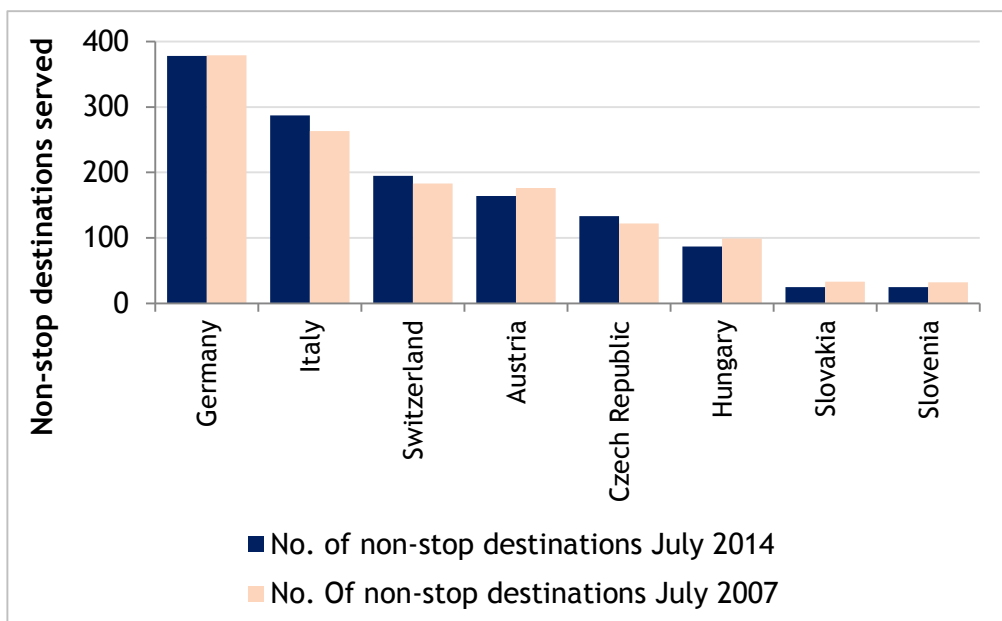
FIGURE 2.12 AIRLINE CAPACITY GROWTH 2007-2014 IN SELECTED EUROPEAN COUNTRIES



Source: Sabre ADI

2.36 Although Austria has benefitted from the availability of extra airline seats in the market the additional capacity has tended to be introduced on existing links to destinations rather than through the development of new routes. This is shown in Figure 2.13 where it can be seen that there has been a small reduction over the past seven years in the number of non-stop destinations offered from Austrian airports. In contrast each of Italy and Switzerland have benefitted from the increased connectivity that new routes provide, whilst the number of non-stop destinations served from airports in Germany has remained virtually unchanged.

FIGURE 2.13 GROWTH IN NON-STOP DESTINATIONS SERVED FROM AIRPORTS IN SELECTED EUROPEAN COUNTRIES

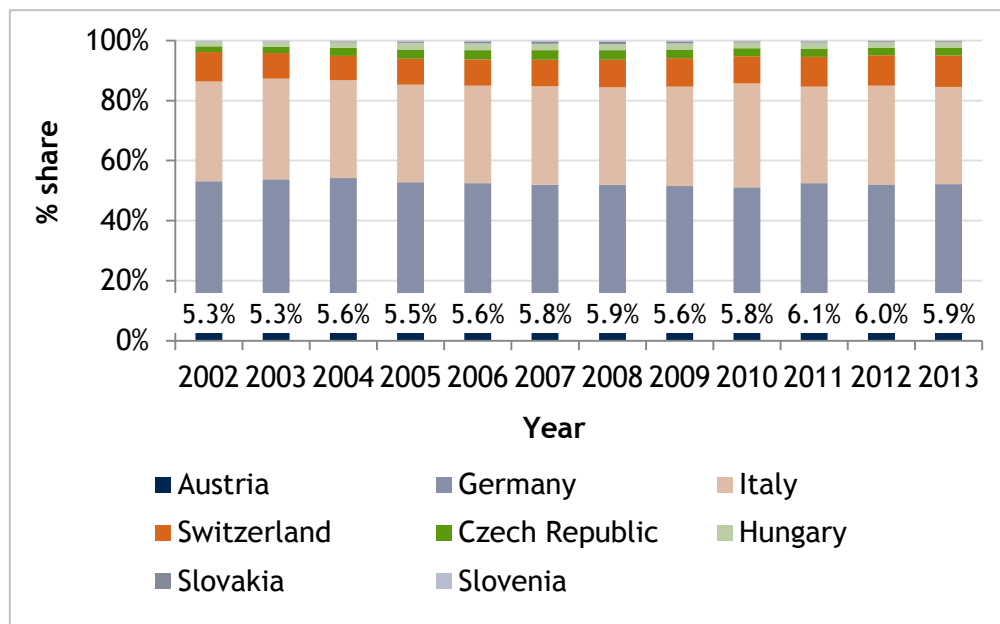


Source: Sabre ADI

Austria’s market share

2.37 Austria serves about 6% of the traffic using airports in the immediate surrounding region (comprising Austria, Germany, Switzerland, Italy, Hungary, Slovakia, Czech Republic and Slovenia). The market is dominated by Germany and Italy, which in 2013 together accounted for 79% of the airport traffic in the region. However Austria’s market share has gradually risen (for example it had a market share of just over 5% in 2002).

FIGURE 2.14 AUSTRIA SHARE OF REGION PASSENGER TRAFFIC



Source: Sabre/ADI

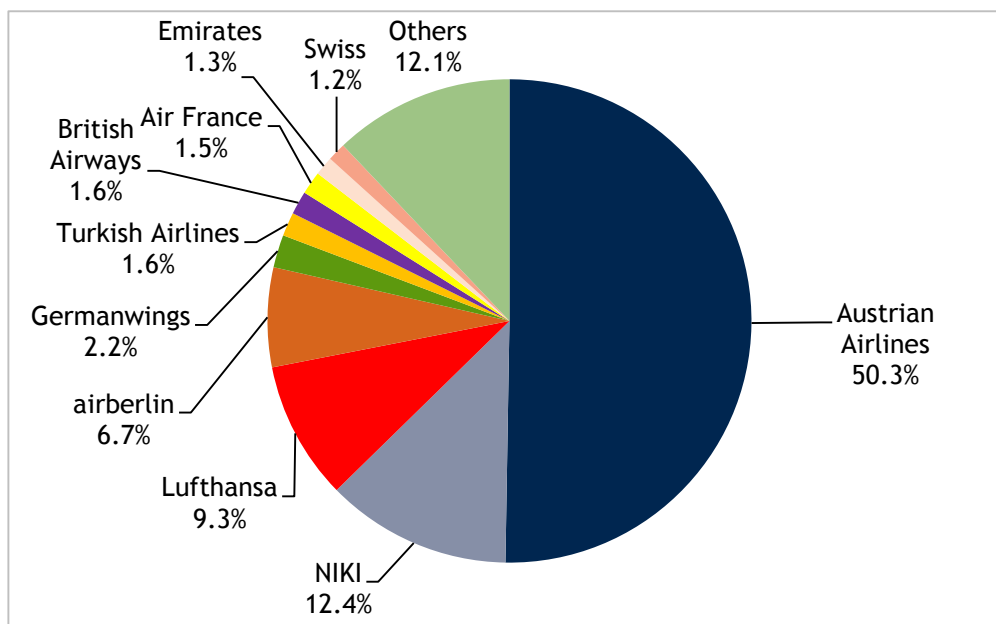
2.38 At the wider EU28 level Austria accounts for just under 3% of total airports traffic.

Key airlines

2.39 Austria is served by a range of local and foreign airlines operating flights to European and long haul destinations.

2.40 Figure 2.15 summarises the leading carriers operating in the Austrian market based on the volume of capacity (seats) offered in summer 2013.

FIGURE 2.15 SHARE OF AIRLINE CAPACITY AT AUSTRIAN AIRPORTS SUMMER 2013



Source: OAG Airline Schedules Database (July 2013)

2.41 Austrian Airlines accounts for the largest share of airline seat capacity (50% in summer 2012) in the overall Austrian market. This proportion fluctuated between 51-54% between 2005-2007, but fell after this in line with Austrian Airlines’ programme of capacity cutbacks undertaken in order to address its financial position.

2.42 NIKI has experienced the most significant growth in market share. In 2005 the airline provided 5% of the airline capacity in Austria, but by 2012 this had grown to over 12%.

2.43 In overall terms the Lufthansa Group and NIKI/airberlin dominate the market in Austria. In 2013 Lufthansa Group airlines (Austrian Airlines, Lufthansa, Swiss, Germanwings) provided close to 63% of the available capacity. Together NIKI and airberlin provided a further 19%.

2.44 Of the remaining carriers operating in the Austrian market each of Turkish Airlines, British Airways, Air France and Emirates served between 1-2% of the capacity on offer in the market.

2.45 Unlike many other aviation markets in Europe, Austria has a low proportion of capacity provided by the leading low cost airlines, Ryanair and easyJet.

2.46 In the following paragraphs we focus on the two leading Austrian carriers, Austrian Airlines and NIKI (with its partner, airberlin).

Austrian Airlines

- 2.47 The national carrier, Austrian Airlines (airline code 'OS'), carried about 11.3 million passengers across its network in 2013. The airline is headquartered in Vienna and VIE is its core base. It currently operates to about 130 global destinations including 41 in Central/Eastern Europe.
- 2.48 OS became part of the Lufthansa Group in 2009 and is a member of the Star Alliance. In addition to Austrian Airlines the Lufthansa Group comprises Lufthansa, Swiss and Germanwings. In 2012 the Group sold bmi, which had been loss making, to the International Airlines Group ('IAG').
- 2.49 The recent annual passenger traffic performance of OS has shown growth but at low levels. For example traffic rose at an overall CAGR between 2006-2013 of 0.6%. However this masks a poor performance across its non-scheduled operations, as the growth to 2012 was delivered entirely from its-scheduled network as shown in Table 2.6, while non-scheduled volumes declined by 65% between 2006-2012.

TABLE 2.6 RECENT AUSTRIAN AIRLINES PASSENGER TRAFFIC PERFORMANCE

Year	Scheduled (000s)	Non-Scheduled (000s)	Total (000s)
2006	9,096	1,739	10,835
2007	9,481	1,352	10,832
2008	9,449	1,267	10,716
2009	8,969	975	9,944
2010	10,136	728	10,864
2011	10,613	648	11,261
2012	10,856	611	11,467
2013	n/a*	n/a*	11,288
CAGR	3.0%*	-16.0%*	0.6%

Source: Austrian Airlines (*not reported for 2013)

- 2.50 The traffic results reported by Austrian Airlines for 2013 showed volumes falling back to 2011 levels, with a decline of -1.6% versus 2012. However this was not unexpected given the macroeconomic context in Austria and the Eurozone along with the planned reduction in capacity (-2.7%) implemented by the airline. Indeed Austrian Airlines was able to boost its productivity indicators as a result.
- 2.51 The financial performance of the carrier in recent years has been disappointing, and as a consequence it has undergone restructuring both before and following its acquisition by the Lufthansa Group.
- 2.52 Over the course of the 2006-2011 period Austrian Airlines only made an operating profit in one year (2007), and it made substantial losses in both 2008 and 2009. The losses continued through 2010-2012, although at a lower rate as

the company restructured under Lufthansa Group ownership. This is illustrated in Table 2.7.

TABLE 2.7 RECENT AUSTRIAN AIRLINES FINANCIAL RESULTS

Year	Operating Revenues (EUR m)	Operating Expenses (EUR m)	Operating Profit/Loss (EUR m)
2006	2,663	2,752	-89
2007	2,551	2,509	42
2008	2,531	2,843	-312
2009	2,060	2,354	-294
2010	2,033	2,099	-66
2011	2,047	2,199	-62
2012	2,259	2,265	-6

Sources: Austrian Airlines (2006-2009), Lufthansa Group (2010-2012)

2.53 Recently released results for 2013 show that the airline made a small operating profit of €25 million), the first positive financial performance for the carrier on a non-adjusted basis since 2007.

2.54 The recent difficulties for Austrian Airlines primarily reflect the fact that the carrier was seeking to address problems in both its cost and revenue structures even before the onset of the 2008/9 financial crisis which weakened the overall global aviation industry and heavily impacted on the airline.

- By 2007 the airline had already embarked on a restructuring programme in which it aimed to cut its aircraft fleet, employee levels, and to restructure its route network. The latter included the termination of a number of leisure-oriented Intercontinental routes (such as Mauritius, Colombo and Phuket).
- The Financial Crisis impacted at the wrong time for Austrian Airlines. The reduction in demand that resulted from the Crisis created a 20% reduction in operating revenues in 2009, coincident with a period in which the carrier was reducing its operating expenses by 17%. On an underlying basis the airline made an operating loss of €94 million in 2009, but it also had to bear large one-off impairment losses on aircraft and restructuring provisions in this year, leading to an overall operating loss of €294 million. This figure was on a similar level to the loss recorded in 2008.
- Operating expenses were reduced from these levels in 2010 and 2011. However the ongoing weak demand environment impacted on revenues with the result that Austrian Airlines continued to make losses through 2010 and 2011. Performance was also impacted by various one off events; for example in 2011 the airline was negatively impacted by a combination of the tsunami in Japan, floods in Thailand, Arab Spring-related unrest, along with high jet fuel prices.

2.55 The restructuring efforts continued in 2012 and included harmonising of the medium haul fleet (to the Airbus A320) and the incorporation of operations under the Tyrolean brand in order to reduce salary and pensions costs along

with duplication in certain activities such as aircraft maintenance. Further employee job cuts are planned for implementation in 2013 (which will reduce the current airline employee count of about 6,300 staff by 150).

- 2.56 The success, or otherwise, of Austrian Airlines in restructuring its operations into a profitable enterprise will be central to the ongoing competitive position of Austrian commercial aviation in the next few years.
- 2.57 The airline cited the improved performance in 2013 as resulting from strict cost management, improved load factors and successful marketing of the airline's intercontinental services.

NIKI/airberlin

- 2.58 NIKI Luftfahrt GmbH ('HG') was formed in 2003 as a joint low cost/charter carrier. Like Austrian Airlines, the airline has its headquarters in Vienna and VIE is its core base. The flyniki website states that the airlines currently operates a fleet of 23 aircraft comprising a mix of Embraer E190, Airbus A320 and Airbus A321 aircraft.
- 2.59 In 2011 (the last year for which results are publicly available) NIKI served 4.5 million passengers across its network. Data from VIE for 2013 indicates that the airline served about 11% of the annual traffic using the airport, equivalent to about 2.4 million passengers (and almost identical to the volume served by Niki at VIE in 2011).
- 2.60 airberlin ('AB') is Germany's second largest airline. In 2013 it carried over 31 million passengers, using a fleet of 140 aircraft. Having previously operated with a hybrid low cost model, in the last few years airberlin has been evolving into a full service airline and has developed a strategic partnership with the UAE-based carrier Etihad to support this change.
- 2.61 In 2010 airberlin took a 49.9% holding in Niki (having previously held 24% of the shares) and at the end of 2011 Niki was fully integrated into the airberlin group and VIE was designated as the group's hub for services into Southeastern Europe with the intention to build connecting capacity. airberlin formally joined the oneworld airline alliance in March 2012 and Niki joined as an affiliate member.
- 2.62 NIKI benefitted in recent years from growth in both its traffic volumes and operating revenues. This was accompanied by growth in the number of its employees. Table 2.8 summarises aspects of the recent performance of NIKI.

TABLE 2.8 NIKI - RECENT OPERATING AND FINANCIAL PERFORMANCE

Year	Passengers (millions)	Revenues (EUR m)	Employees
2009	2.6	269	418
2010	3.4	337	621
2011	4.5	453	Not available

Source: NIKI

- 2.63 In contrast the performance of airberlin has been mixed with the airline struggling to be operationally profitable. It has been undertaking a restructuring programme ('Turbine') in order to support its objectives of becoming a profitable full service carrier. This includes initiatives to:

Final Report

- Increase operational productivity;
- Reduce the complexity of its airline fleet; and
- Optimise its route and frequency network

2.64 Following adverse trading results for 2013 the airline has announced that it intends to accelerate the Turbine programme and also inject additional capital from the business. The latter is to come partly from Etihad and also through a new corporate bond issue.

2.65 Table 2.9 presents key performance metrics for the airberlin group.

TABLE 2.9 AIRBERLIN GROUP - RECENT OPERATING AND FINANCIAL PERFORMANCE

Year	Passengers (millions)	Revenue (EUR m)
2006	25.1	1,575
2007	29.6	2,537
2008	29.1	3,401
2009	33.4	3,240
2010	34.9	3,724
2011	35.3	4,227
2012	33.3	4,312
2013	31.5	4,147

Source: airberlin group

2.66 The carrier made a loss of €315 million in 2013.

2.67 In summary, NIKI has developed its business and started to compete in some connecting markets versus Austrian Airlines. However the financial performance of NIKI's parent company has been weak; over the medium term the ability of NIKI to compete effectively against Austrian may be determined by the strategic priorities and needs of the airberlin group as a whole. In contrast to Austrian however NIKI's performance in its core market of Austria has been strong.

Registered aircraft

2.68 Table 2.10 presents the annual number of aircraft registered to key airlines in Austria. Together with its subsidiary Tyrolean Airways, Austrian Airlines operated 77 aircraft in 2013, equivalent to 68% of the total number of registered commercial passenger aircraft in the country.

TABLE 2.10 AIRCRAFT REGISTERED TO AUSTRIAN AIR CARRIERS

Year (start of)	Austrian Airlines	Tyrolean Airways	NIKI	Other airlines	Total
2002	35	34	0	31	100
2003	35	38	0	30	103
2004	34	39	2	32	107
2005	32	47	4	35	118
2006	35	53	5	35	128
2007	35	54	6	32	127
2008	40	58	6	19	123
2009	41	58	9	19	127
2010	41	54	11	15	121
2011	42	38	17	11	108
2012	43	37	21	9	110
2013	40	37	26	10	113

Source: Ascend Online Fleets

- 2.69 The number of passenger aircraft registered to commercial airlines domiciled in Austria was 113 in 2012, from a peak of 128 in 2006. The current number of registered aircraft has therefore now dropped back to a level broadly similar to that in 2005.

3 Comparative Airport Scheduled Network Quality

Highlights

Connecting traffic in Central Europe

Vienna served 6.8 million connecting passengers in 2013. Growth was very strong up to 2005, but has slowed considerably since then.

Both Zürich and Munich serve a higher volume of connecting traffic. Zürich's connecting traffic volumes (8.2 million, 2013) have almost recovered to the levels served prior to the demise of Swissair in 2001. Munich is a major connections point for Lufthansa and serves more than twice the level of connecting passengers than Vienna (15.1 million, 2013).

Destinations

Vienna, with 143 non-stop destinations in summer 2012 offered fewer than either Istanbul or Munich, but marginally more than Zürich.

However passengers originating from Vienna and the Austrian airports can fly-on over the networks of oneworld, the Star Alliance and SkyTeam at hubs such as Frankfurt and Paris. As a result the number of reachable destinations from Vienna is broadly comparable to peers assuming changes of aircraft en route.

Flight Frequency

The level of non-stop flight frequency is generally less from Vienna when compared to its peers, although these differences become smaller once one-stop routeings are taken into account.

Compared to its immediate peers Vienna generally offers a lower level of frequency to the key leading global cities.

Travel Time

Linked to the above, in general Vienna tends not to offer the shortest travel time to key global points when compared to its competitors in Central Europe. This reflects the lower level of frequency along with the relatively smaller number of non-stop destinations offered (i.e. travel time is increased where a change of aircraft is needed en route at another hub airport).

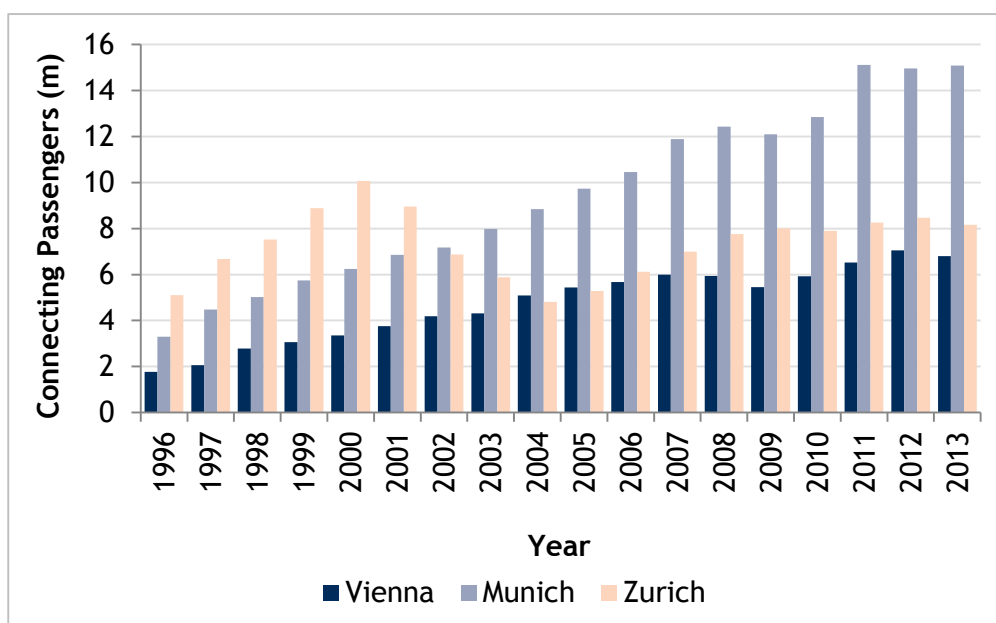
Introduction

- 3.1 The principle form of competition between Austria and its neighbours for air traffic volumes is in the connecting traffic segment, where passengers face a choice about the hub airport that they can choose to transfer flights at.
- 3.2 For many passengers it is not possible to reach an end destination without connecting at an intermediate point such as VIE. For these passengers a choice needs to be made about which airport they will make the connection at.
- 3.3 A key determinant of this choice is often the number of destinations on offer from a hub airport, along with the flight frequency per individual destination. Passengers will tend to prefer to connect at a hub which provides direct services to their destination at a level of frequency such that their connection time is optimised. Passengers want sufficient time to transfer between their flights, but also want to ensure that not too much time is wasted as they transit between flights.

Connecting Traffic in Central Europe

- 3.4 Figure 3.1 illustrates the growth of the connecting traffic served by the leading Central European hubs of VIE, Munich International Airport ('MUC') and Zürich International Airport ('ZRH') since 1996.

FIGURE 3.1 CONNECTING TRAFFIC AT CENTRAL EUROPEAN AIRPORTS



Sources: VIE, MUC, ZRH

- 3.5 The overall volume of connecting traffic served through the three airports trebled during the 1996-2013 period, reaching just over 30 million passengers (CAGR 1996-2013: 6.6%). Market growth stalled during 2009 and 2010 (in the wake of the Financial Crisis), but rebounded strongly in 2011 (+ 12.1% versus 2010). Volumes grew again in 2012 before declining slightly in 2013.

- MUC has the largest connecting traffic volume (2013, 15.1 million passengers) accounting for about 50% of the market. Connecting traffic growth at MUC averaged 9.4% per annum between 1996-2013.

- In 2013 ZRH held a share of broadly 27% of the Central European airports connecting market, serving 8.2 million transfer passengers. The historical position of ZRH was impacted by the dismantling of the old Swissair hub at the turn of the millennium but volumes have grown strongly since 2004 (CAGR 2004-2013: 6.1%), and in 2013 the connecting traffic volume at ZRH was close to pre-2001 peak levels.
 - VIE's connecting traffic grew strongly up to 2005 (CAGR 1996-2005: 13.3%). However volume growth has been slower since then (CAGR 2005-2013: 2.8%), impacted in particular during the 2007-2010 period during which Austrian Airlines began its restructuring process. VIE served 6.8 million transfer passengers in 2013.
- 3.6 In 2011 connecting traffic accounted for 27% of the annual passenger volume at IST, corresponding to about 10 million passengers (more recent figures are not publicly available). In terms of connecting traffic volume this would make it the second largest out of the group of MUC, IST, ZRH and VIE.

TABLE 3.1 CONNECTING PASSENGER TRAFFIC 2013

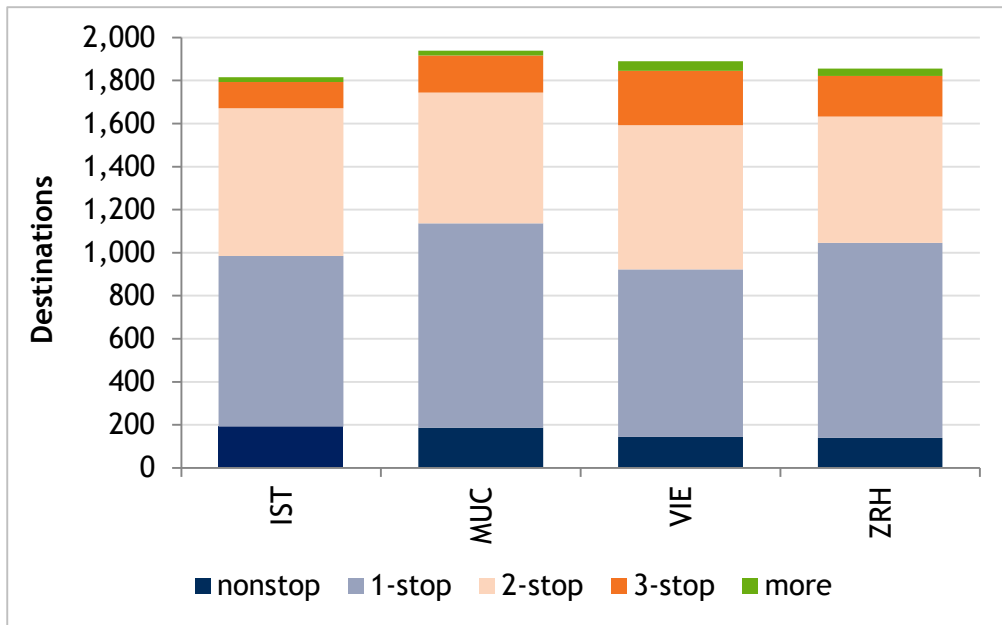
Airport	Connecting Passengers (m)
MUC	15.1
IST (2011)	10.1
ZRH	8.2
VIE	6.8

Sources: VIE, MUC, IST, ZRH

Destinations

- 3.7 Figure 3.2 shows the number of worldwide destinations that could be reached from each of VIE and its peers on a non-stop or multi stop (one stop or more) basis in summer 2012 (we do not anticipate that there have been material changes to the relative positions of VIE and its leading peers since then).

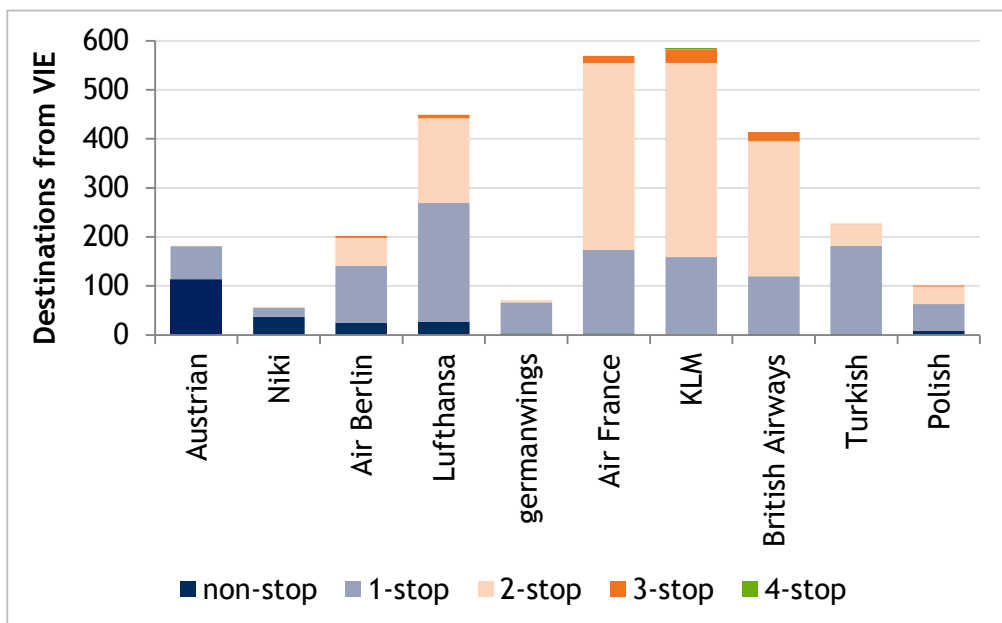
FIGURE 3.2 NUMBER OF NON-STOP OR MULTI-STOP DESTINATIONS



Source: OAG Airline Schedules Database (May 2012)

- 3.8 VIE, with 143 non-stop destinations offered fewer than IST (191) or MUC (187), but marginally more than ZRH (139).
- 3.9 VIE also offered fewer destinations on a non-stop or single stop basis. In total 923 world destinations could be reached from VIE with one or no stop.
- 3.10 Figure 3.3 illustrates the number of destinations that were available from VIE with individual carriers.

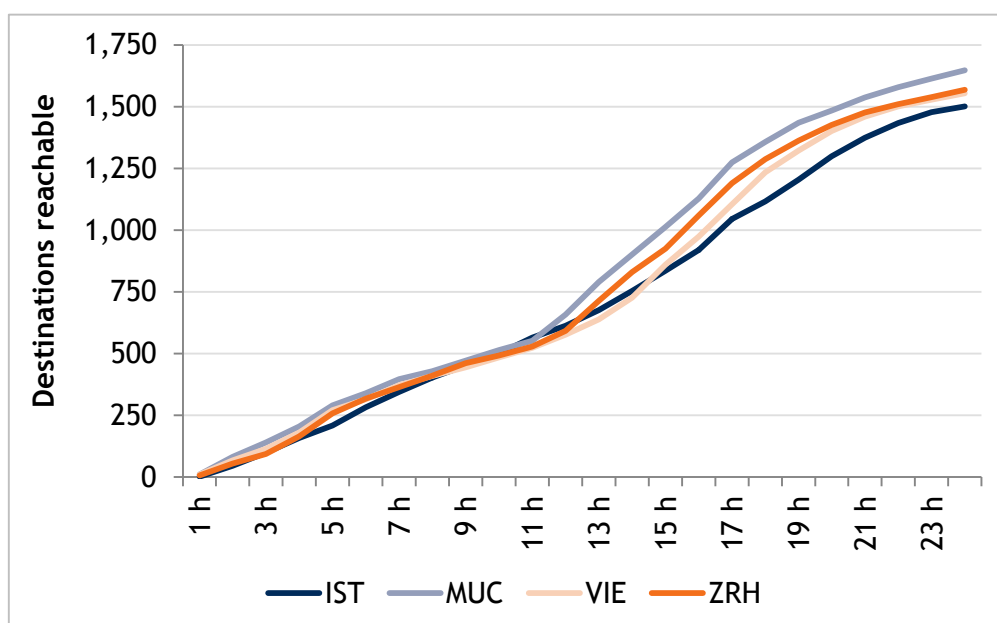
FIGURE 3.3 NUMBER OF REACHABLE DESTINATIONS FROM VIE BY LEADING AIRLINE



Source: OAG Airline Schedules Database (May 2012)

- 3.11 Over 180 destinations could be accessed from VIE with Austrian Airlines, and nearly all of these could be reached on either a non- or single-stop basis.
- 3.12 The analysis also indicates the network strength of the leading full service airlines in Europe (Lufthansa, Air France/KLM, British Airways) plus Turkish Airlines which offer a substantially larger network of destinations through and beyond their hub airports. This is exhibited by the number of destinations that could be reached with these airlines from VIE on a one, two or more stops basis.
- 3.13 While VIE offered fewer destinations than its peer competitors, the comparative connectivity of the hubs can also be considered in terms of the number of destinations that can be accessed within a specific time period. This is important as business passengers with a high value of time will be attracted to airports which can offer the quickest time to their end destination.
- 3.14 The measure of destinations that can be reached within a specific time period can also help to illustrate the depth of flight frequency available at hubs; an airport network with relatively higher levels of flight frequency will help to facilitate a faster end-to-end journey time.
- 3.15 Figure 3.4 illustrates the number of destinations that could be reached in summer 2012 from VIE and its peers within 24 hours of departure from the hub airport, whether on a non or multi-stop basis. In this analysis VIE fares comparatively better, especially where the journey time is 5 hours or less (VIE could provide access to over 270 destinations in this time period and is only bettered in this measure by MUC).

FIGURE 3.4 DESTINATIONS REACHABLE WITHIN 24 HOURS ON NON- OR MULTI-STOP BASIS

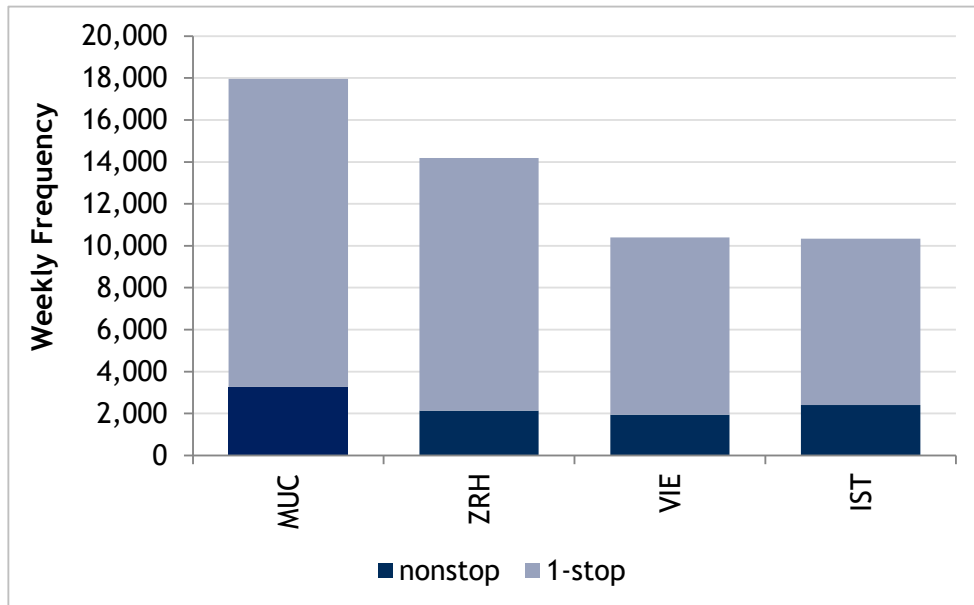


Source: OAG Airline Schedules Database (May 2012)

Flight Frequency

- 3.16 The strength of the flight frequency available from a hub can be measured by the number of non- or one-stop flights it can offer to the world's top 500 airports within a week.
- 3.17 This is illustrated in Figure 3.5. In summer 2012 VIE provided less non-stop flight frequency than the key competitors in this study. Taking into account one-stop flights it provided marginally higher flight frequency than IST, but significantly less than either ZRH or MUC.

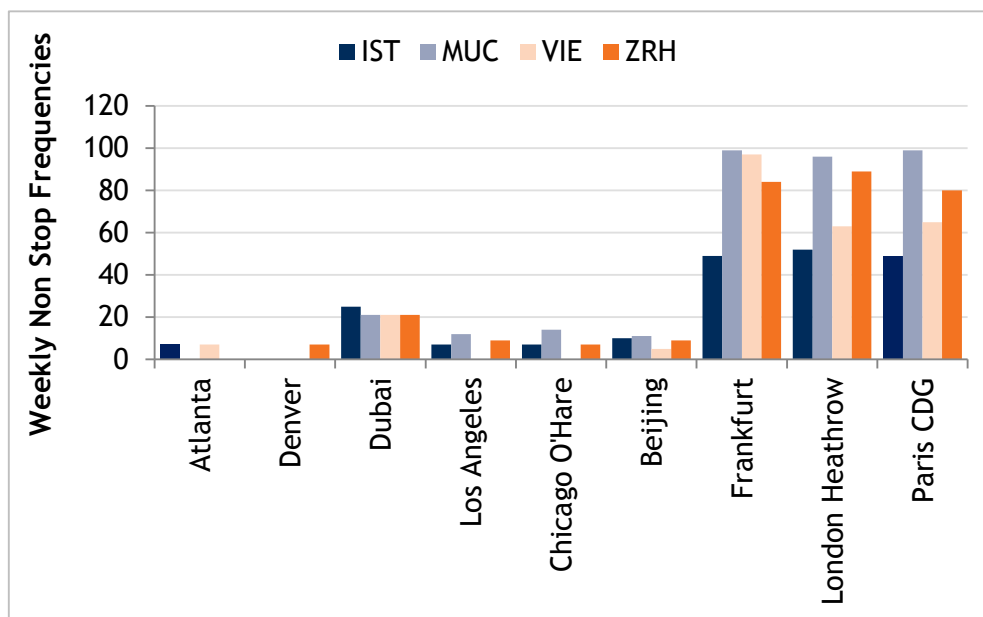
FIGURE 3.5 WEEKLY FLIGHT FREQUENCY TO WORLD'S TOP 500 AIRPORTS



Source: OAG Airline Schedules Database (May 2012)

- 3.18 The quality of the flight frequency provided can be illustrated by analysis of the weekly non-stop departing flights from VIE and its competitors to a sample of airports in leading world cities, along with Frankfurt, London Heathrow and Paris CDG (given the range of onward connections that each of these airports offers). This is summarised in Figure 3.6.

FIGURE 3.6 NON STOP WEEKLY FLIGHT FREQUENCY TO LEADING WORLD CITIES



Source: OAG Airline Schedules Database (May 2012)

- 3.19 Compared to its peers in summer 2012 VIE offered a similar level of flights to Dubai, but relatively less to leading airports in the USA along with Beijing.
- 3.20 It offered a broadly comparable level of flight frequency as MUC to the Star Alliance hub at Frankfurt, but significantly less frequency than either MUC or ZRH to the oneworld hub at London Heathrow and the SkyTeam hub at Paris CDG.

Travel Times

- 3.21 Table 3.2 summarises the shortest travel time between VIE and its key Central European peers and the leading non-European airports set out in Figure 3.6, along with a selection of other important global centres.

TABLE 3.2 TRAVEL TIME (HOURS, MINUTES) TO LEADING GLOBAL AIRPORTS FROM VIE AND ITS PEERS

Region/ Destination	VIE	MUC	ZRH	VIE ranking (1 to 3)
North America				
Atlanta	13:10	10:35	10:30	3 rd
Denver	13:05	12:30	13:25	2 nd
Los Angeles	13:55	12:20	12:30	3 rd
Chicago O'Hare	11:40	9:40	9:45	3 rd
New York JFK	9:15	9:10	8:45	3 rd
Latin America				
Mexico City	14:10	13:50	13:50	3 rd
Sao Paulo	14:05	12:35	12:05	3 rd
Africa				
Johannesburg	12:30	10:25	10:25	3 rd
Middle East				
Dubai	5:25	5:55	6:05	1 st
Indian Sub Continent				
Delhi	07:20	07:15	07:40	2 nd
Mumbai	10:35	08:25	08:25	3 rd
Asia/Australasia				
Beijing	9:35	9:40	9:45	1 st
Tokyo Narita	11:10	11:25	11:50	1 st
Hong Kong	13:10	11:10	12:05	3 rd
Singapore	14:10	11:45	12:10	3 rd
Sydney	22:35	21:30	20:50	3 rd

Source: OAG Airline Schedules Database (May 2012)

- 3.22 Relative to its closest peers VIE can offer the shortest travel time to several important destinations in Asia and the Middle East (for example Beijing, Tokyo and the Middle East). However in general terms the analysis above shows that for many leading global destinations VIE in summer 2012 did not offer the shortest travel time from Central Europe.

4 Current Market Context - Economic Impact

Highlights

Historical: aviation as a key sector of the Austrian economy

Employment in the aviation sector in Austria grew steadily until around 2008-2009, when a slowdown in passenger growth and the restructuring of Austrian Airlines changed this trend.

The sector currently directly employs around 30,000 workers in the whole country of which in excess of 15,000 are based at Vienna International Airport. The majority of these workers are employed by airlines and Vienna International Airport.

Previous studies have assessed the economic footprint of VIE, estimating its direct contribution to GVA (over €1.1 billion, 2007) and to GDP (over €1.8 billion, 2011).

Methodology used to assess current economic impacts

We consider three categories of economic benefits in our analysis:

The 'economic footprint' of the aviation activities at Vienna International Airport through the generation of employment and value added (direct, indirect and induced impacts). This is calculated using Input-Output matrix analysis and tells us the current economic footprint - as well as the change in economic footprint in the future.

The wider 'macro-economic impacts' through additional activities attracted or enabled by aviation, and in particular increased business productivity stimulated by changes in the international connectivity of Vienna airport. This is calculated using Connectivity Index analysis.

The benefits to the users of aviation service (i.e. passengers, which enjoy 'consumer surplus') is measured as the difference between passengers' willingness to pay (WTP) for air travel from Vienna and average fares. We have constructed a consumer surplus model that quantifies change in consumer surplus for different future scenarios.

A large impact for VIE in Austria

Of the over 15,000 workers that are directly employed at VIE, about 50% work for airline companies. Other activities present at VIE include the airport group itself, ground handling, retail, air traffic control, accommodation and other services associated with the airport. When considering indirect and induced employment, VIE has a footprint of just over 40,000 workers.

The hub's contribution to Gross Value Added is estimated at around €1 billion per year, equal to just under 1.5% of the Vienna region's GVA. When considering indirect and induced GVA, the total figure is €3.3 billion.

Given the current destinations from VIE, the airport facilitates Austria's access to several key global markets. We estimate that around 7% of the world's GDP is directly accessible from VIE, based on our Connectivity Index.

The World Bank’s aviation connectivity index shows that Austria is the 11th best connected country by air in the world.

Introduction

- 4.1 In this section we briefly review the historical trends in aviation employment in Austria’s aviation sector, with a particular focus on Vienna International Airport (‘VIE’). We also describe the methodology used for the economic assessment and present our findings on the current economic impact of VIE.

Historical trends in the economic impact of Austria’s aviation sector

- 4.2 In order to gain a better understanding of the historical evolution of the economic trends related to aviation in Austria, we have reviewed the data available in company reports and national statistics, as well as the relevant literature about the economic impacts of aviation in the country. Our analysis focuses on the trends of the past decade.
- 4.3 Employment data provide a useful indicator of the evolution of the sector over time. Table 4.1 shows aviation employment at VIE and in Austria from 2002 to 2011. Employment in Austrian aviation enterprises grew until 2006, reaching almost 15,000 employees. However there has been a decline in employment between 2007 and 2011, at which point around 12,000 people were employed in aviation enterprises.

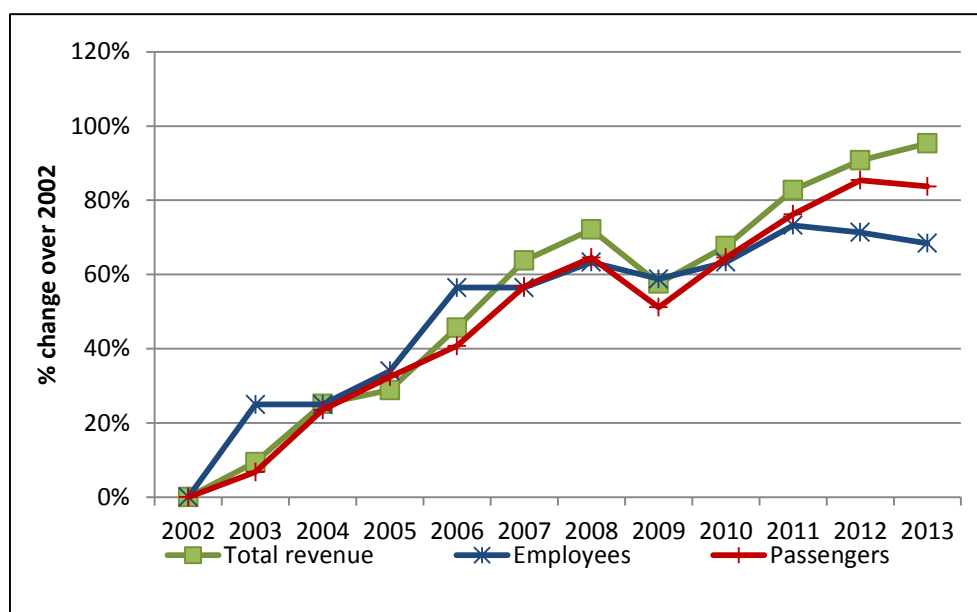
TABLE 4.1 AVIATION EMPLOYMENT TRENDS IN AUSTRIA AND VIE

1,000s	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Employees in aviation enterprises in Austria	11.7	12.1	13.0	14.2	14.8	14.7	14.7	13.2	n/a	12.3	n/a	n/a
Employees in Flughafen Wien AG	2.6	3.3	3.3	3.5	4.1	4.1	4.3	4.1	4.3	4.5	4.5	4.4

Source: WTO, Steer Davies Gleave analysis

- 4.4 The apparent decline in employment can be best explained by the relative downsizing of Austrian Airlines and the consolidation of functions within the Lufthansa Group, as well as by a decline in traffic around 2008-2009. Overall, the number of employees at the Austrian Airlines Group declined by around 700 between 2005 and 2012, most of these cuts were based in VIE.
- 4.5 Data from Flughafen Wien AG annual reports reveals that the number of employees directly employed by the Group increased by around 2,000 between 2002 and 2011. The Group cut its workforce after 2011 by around 125 staff and employed just under 4,400 people in 2013. A comparison of trends in employees and total revenue at Flughafen Wien AG and passenger volumes at VIE is provided in Figure 4.1. These trends show a correlation between traffic, revenue and employees although the relationships appear to weaken from 2011 onwards.

FIGURE 4.1 HISTORIC ECONOMIC TRENDS AT VIE 2002-2013



Source: Vienna International Airport Annual Reports

- 4.6 In addition to the employees of the airport operator, employees at VIE include a range of staff in other activities, including airlines, air traffic control, ground handling, retail, accommodation, catering and warehousing.
- 4.7 VIE is the largest employer in eastern Austria. In 2013 VIE provided employment for just over 1% of the Vienna workforce, and over two-thirds of the employment and GVA generated by VIE fall to the provinces of Vienna and Lower Austria directly. The airport's economic activity contributes €1,080 million annually to the country's GVA.
- 4.8 Previous studies have attempted to quantify the wider impacts of the aviation sector in Austria. The most recent report by Oxford Economics (2011) estimated that the direct contribution of the aviation sector to the Austrian economy is around €1.8 billion (Gross Domestic Product measure), equivalent to 0.7% of the country's GDP. However the latest estimate¹ of the specific impact of VIE calculated the direct impact of the airport at just over €1.1 billion (in terms of Gross Value Added), and employing around 1% of the Vienna's workforce.

Methodology for assessing the economic impact of Austria's aviation sector

- 4.9 We consider three categories of economic benefits in our analysis:
- The 'economic footprint' of the aviation activities at Vienna International Airport through the generation of employment and value added (direct impacts), through the infrastructure and the supply chain (indirect impacts) and through employment income (induced impacts). We also provide an estimate of the economic footprint of all airports in Austria (excluding non-airport related aviation activities, such as aerospace).

¹ JR and WIFO, Wirtschaftsfaktor Flughafen Wien, 2007

- Wider ‘macro-economic impacts’ through additional activities attracted or enabled by aviation, and in particular increased business productivity stimulated by changes in the international connectivity of Vienna airport.
- The benefits to the users of aviation service (i.e. passengers, which enjoy ‘consumer surplus’) given by a measure of the difference between passengers’ willingness to pay (WTP) for air travel from Vienna and average fares.

4.10 The methodologies for assessing these three types of economic impacts are described in more detail below.

4.11 The last section of this Chapter then considers the current economic footprint of Vienna airport. Chapter 7 presents our findings on economic impacts of the different future scenarios, including the economic footprint, the macro-economic impacts and the impacts on consumer surplus.

Economic footprint - Input-Output Modelling

4.12 The economic footprint of VIE is the amount of employment and economic activity generated in the rest of the economy through the airport’s supply chain. We estimate the airport’s economic footprint using Input-Output Modelling, which uses as a base symmetrical Input-Output tables published by Eurostat. These tables show individual industry’s use of outputs from every other sector. We have used Input-Output data from Eurostat (2005) and detailed evidence on changes in GDP and employment by sector to 2010 and 2012 respectively from Statistik Austria.

4.13 Secondly, using evidence on employment at VIE by type of activity, we then create a new sector that corresponds to the activity at the airport. This ‘new’ sector excludes the proportion of Austrian economic activity in aviation not located at VIE, but incorporates the share of air transport services, supporting services and warehousing, retail, food and accommodation located at the airport.

4.14 By modelling the supply chain linkages between VIE and the rest of the economy we are then able to quantify the amount of employment, income, output and Gross Value Added (GVA) in the Austrian economy that is sustained by the existence of Vienna Airport.

Macro-economic impacts of connectivity

4.15 For many businesses, international air connectivity is very important. It facilitates access to markets, customers and suppliers and allows efficient travel between office branches. International air connectivity is therefore often one of the most important factors considered by such businesses when considering where to locate.

4.16 The importance of international air connectivity translates to the level of the national economy. Several studies have found a robust relationship between international air connectivity and GDP growth. Our analysis of the macro-economic impacts of connectivity captures this effect.

4.17 In order to do so we have constructed a Connectivity Index (CI) which measures the accessible share of world GDP as a function of the availability and frequency of scheduled flights from VIE. The index thus takes into account data sourced from OAG about the available number of seats to different

destinations and the average travel time to those destinations. An additional weight is introduced to take into account the proportional weight of airports in the same country relative to the main airport of that country.

- 4.18 From a review of the existing literature, we have extrapolated an estimation coefficient to calculate the impact on Austrian GDP of a changing Connectivity Index over time. We have used the estimates provided by IATA², which indicate that a 10% rise in air connectivity will result in a productivity improvement of 0.07%.
- 4.19 IATA has published several reports highlighting the significant wider economic benefits that result from improved links to the global air transport network. In particular, surveys conducted internationally reveal that greater connectivity has the following benefits:
- Facilitating world trade by providing a larger customer base for goods produced nationally
 - Improving the efficiency of the supply chain by providing greater flexibility in the management of stocks of supplies
 - Enabling inward and outward investment by linking human and physical capital which is more easily attracted to well-connected locations
 - Boosting productivity across the economy thanks to the improvements listed above, increasing business productivity and hence economic growth
- 4.20 The connectivity measure used by IATA is a factor of the available destinations from each airport, number of flights and frequency of flights. We use similar inputs for our calculations.

Consumer surplus analysis

- 4.21 The end purpose of facilitating aviation services is to offer customers the possibility of accessing a wide range of destinations quickly and at a reasonable cost. A natural, and important, question about the potential future scenarios for Vienna Airport is therefore what the impacts are on passengers.
- 4.22 Each potential passenger has a willingness to pay for a journey. If the cost of the journey is lower than the willingness to pay, the journey takes place and the passenger derives a benefit, a ‘consumer surplus’, equal to the difference between the willingness to pay and the fare paid.
- 4.23 The different potential future scenarios for Vienna Airport will affect passengers’ travel opportunities. For connecting passengers a reduction in connectivity from VIE may only mean using a different routing. But for passengers travelling from and to Austria, the availability of good and frequent international air connections is very important.
- 4.24 By looking at the impacts on future passenger demand from Vienna to the different markets, and using evidence on how passengers respond to changes in the aviation offer, we can deduce the ‘fare-equivalent’ of the changes in the offer that drive the differences in passenger numbers in the different scenarios.
- 4.25 This enables us to calculate the differences in total passenger consumer surplus between the scenarios. These are real economic benefits at the core of what

² IATA Economic Briefing n.8, Aviation Economic Benefits, 2006

providing an aviation services is all about - enabling leisure and business passengers to derive benefits from being able to reach a wider range of destinations.

Assessment of the current economic impact of Austria's aviation sector

Economic footprint of VIE

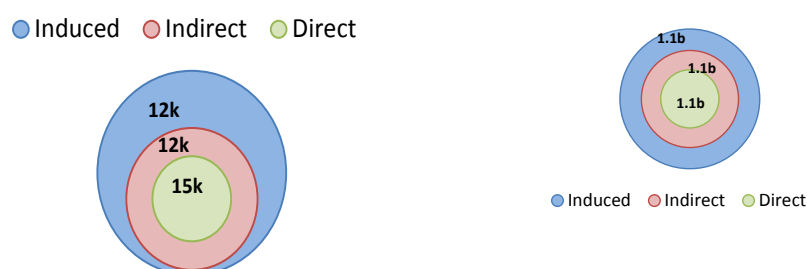
- 4.26 Our assessment of the current economic impacts of Vienna Airport is mainly based on describing the airport's economic footprint. This involves a quantification of the direct, indirect and induced employment, GVA, output and income impacts. The direct impacts refer to the economic activities directly related to VIE. This includes the airport group, airlines, ground handling, retail, air traffic control, accommodation and other services associated with the airport.
- 4.27 Our Input-Output model estimates that the employment directly attributable to VIE in 2011 is around 15,300 employees, who generate around €1.1 billion of GVA.
- 4.28 The direct airport activities generate further economic activity elsewhere in the economy through the supply chain; the airport's indirect impacts. We find that VIE's purchases from their suppliers help sustain around 12,350 jobs and generate another €1.1 billion of GVA in Austria.
- 4.29 The airport generates further impacts if we also consider that employees use a share of the incomes they earn on domestic consumption. As a result, a further 12,370 jobs are sustained. These workers generate an additional €1.1 billion of GVA.
- 4.30 In total, considering direct, indirect and induced impacts, the airport generates approximately 40,000 jobs and €3.1 billion of GVA.
- 4.31 We can also report the impacts on other economic variables. The airport generates €1.7 billion of income for the direct, indirect and induced employees. The total turnover enabled is €8.2 billion (direct, indirect and induced impacts).
- 4.32 The main results are reported in Table 4.2 and shown in Figure 4.2. Each value reported includes the specific category next to which it appears (e.g. induced GVA is estimated to be €1.1 billion, on top of the direct and indirect GVA), except for the Total which is the sum of all values.

TABLE 4.2 ECONOMIC FOOTPRINT OF VIE

Impacts type	Impacts variable	Current footprint
Direct	Employees	15,313
	GVA (€ billion)	1.060
Indirect	Employees	12,353
	GVA (€ billion)	1.070
Induced	Employees	12,365
	GVA (€ billion)	1.133
Total	Employees	40,031
	GVA (€ billion)	3.263

Source: Steer Davies Gleave analysis, 2013 values in 2010 prices

FIGURE 4.2 ECONOMIC FOOTPRINT (EMPLOYMENT AND GVA) OF VIE



Source: Steer Davies Gleave analysis, 2013 values in 2010 prices (€ billion)

Economic footprint of all Austrian airports

- 4.33 We have also repeated the above analysis in order to estimate the economic footprint of all Austrian airports. By including estimated airport, aviation, retail and accommodation employment at the other Austrian airports we find that the sector employs nearly 22,000 and generates a GVA of €1.3bn. The economic footprint includes a further 17,000 indirect and 16,000 induced jobs, giving a total of 54,000 jobs and a GVA of €3.9bn sustained because of Austria's airports.

Comparison with previous studies

- 4.34 We have compared these results with the studies listed in Table 4.3. Oxford Economics³ estimated the total number of direct jobs attributable to the aviation sector in Austria at 32,000. This figure is considerably higher than our estimate since it includes all aviation-related activities in the country (and not limited to VIE), including aerospace which is not part of our analysis. Likewise, the study obtains a higher value for GVA/worker (€87,900) which is likely to be influenced by the productivity of the aerospace sector in the whole country.

³ Oxford Economics, Economic Benefits from Air Transport in Austria (2011)

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- 4.35 The results above are however broadly similar to those previously produced by JR and WIFO for Vienna Airport, a study with a more comparable scope to ours. Based on the available data after 2000, it was estimated that the number of direct jobs attributable to VIE was 16,031 and that, when considering indirect and induced impacts too, the average GVA per employee was €70,073. Our estimates suggest a similar figure of an average €69,222 GVA per worker.
- 4.36 Our estimates of the multiplier effects sit between those provided by the two previous studies, as shown in Table 4.3. The multiplier values indicate the relationship between the direct and the other impacts of the airport, and it is used to estimate the wider footprint of VIE.

TABLE 4.3 MULTIPLIER EFFECTS COMPARISON

	Total employment / Direct employment	Total GVA / Direct GVA
Steer Davies Gleave (2013)	2.51	3.09
JR and WIFO (2007)	3.25	3.00
Oxford Economics (2011)	1.84	---

Source: Steer Davies Gleave analysis, Oxford Economics (2011), JR and WIFO (2007)

Connectivity analysis

- 4.37 The second output of our analysis, the Connectivity Index of VIE, is used to assess the economic impacts of different scenarios. We provide a snapshot estimate of accessible GDP from Vienna based on current levels of connectivity of Vienna Airport (total number of flights and time to destinations).
- 4.38 Our estimates suggest that the share of global GDP ‘reachable’ from Vienna is equal to around 7% of current global GDP as expressed in 2013 prices. Western European connections are very important due to the low travel times from Austria. However our analysis also highlights the importance of linkages to further away destinations such as Russia and China, prominent because of their large economies and significant GDP growth potential.

TABLE 4.4 CONTRIBUTION TO AUSTRIA’S CONNECTIVITY INDEX BY COUNTRY

Country	% Contribution to Austria’s CI	Forecast real GDP growth (2013 to 2035)
1. Germany	56.4%	+41%
2. France	8.6%	+47%
3. Italy	7.1%	+32%
4. Great Britain	5.2%	+61%
5. Russia	3.7%	+97%
6. Switzerland	2.4%	+28%

Sources: Steer Davies Gleave analysis, Global Insight Forecasts (2012)

- 4.39 The 7% reachable GDP from Vienna suggests that the ‘mass’ of economic activity accessible from the airport is more than 15 times greater than the GDP of Austria. However, it is a somewhat arbitrary number as the exact value depends on the specification of the connectivity metric - after all its main purpose is to analyse the economic impact of changes in connectivity.
- 4.40 The World Bank’s aviation connectivity index provides an understanding of the relative connectivity of Austria compared to other countries. As shown in Table 4.5, Austria is the 11th best connected country in the world with a connectivity score of 9.4%. The connectivity index reflects not only the number of destinations to which each country has direct links - and how many flights serve them - but also the connectivity of the destination airports. Hence, having a few direct connections to a few well-connected airports would have a greater effect on a country's score than having many connections to small, isolated airports.

TABLE 4.5 AVIATION CONNECTIVITY INDEX

Country	Connect. Index	Rank	Country	Connect. Index	Rank
United States	22.8%	1	Austria	9.4%	11
Canada	13.4%	2	Slovenia	9.4%	12
Germany	12.1%	3	Slovakia	9.2%	13
Belgium	12.0%	4	Denmark	9.1%	14
Luxembourg	11.7%	5	Croatia	9.1%	15
Netherlands	11.7%	6	Italy	9.0%	16
France	11.6%	7	Hungary	8.6%	17
United Kingdom	11.6%	8	Spain	8.5%	18
Switzerland	10.8%	9	Ireland	8.5%	19
Czech Republic	9.9%	10	Poland	8.2%	20

Source: World Bank

5 International Comparison of VIE

Highlights

Comparative airport fees and charges

Excluding government taxes, Vienna's published airport and air traffic charges are broadly comparable to those of Munich, and cheaper than those at Zürich. However the charges at Istanbul are significantly cheaper than at any of the leading Central European hub airports.

Vienna's tariff is noteworthy for the availability of extensive discounts in its passenger charges for the carriage of transfer traffic.

Aviation taxes and emissions trading

Austria's 'Aviation Levy' operates in a similar fashion to the German aviation tax although set at a slightly lower level. The Levy exempts transfer passengers which are important given their prominence at Vienna (6.8 million passengers in 2013).

Neither Switzerland nor Turkey has an equivalent tax. The German political parties have discussed abolition of their aviation tax which, if implemented, would leave Austria as the sole country in our comparison to apply an aviation tax.

Austria (like Germany) participates in the EU aviation Emissions Trading Scheme. Switzerland is not a member although it is in ongoing discussion to join in 2014. Turkey is outside the EU ETS and Turkish Airlines enjoys a degree of competitive advantage as a result.

Other benchmarks

Vienna's two runways provide an hourly maximum of 68 slots which primarily serves the Austrian Airlines hub system. The level of runway capacity utilisation is lower than at both Munich and Zürich. However both Vienna and Munich are seeking to build a third runway in order to support the further expansion of hub operations (by Austrian Airlines and Lufthansa respectively).

Vienna has the competitive advantage of a lower Minimum Connect Time (25 minutes) for transfer passengers than any of its peer airports.

Vienna's flight delay performance in 2013 was better than at ZRH but worse than at MUC, expressed in terms of the number of delay events.

While Vienna is served by rail from the city centre and has an extensive bus and coach network, it lacks the same degree of intermodal access as is available at some of its peer competitors.

Introduction

- 5.1 The importance and relevance of VIE to Austria's aviation sector is demonstrated by some high level facts about its recent operational performance.
- In 2013 VIE served a total of 22 million total passengers and was the 25th busiest airport (by traffic volume) in Europe.
 - The annual traffic decreased at VIE (-0.7%) compared to the 2012 figure. The decline was mainly driven by a 9.5% decrease in passengers from NIKI and a 1.6% decrease by Austrian Airlines. This was partially offset by an above-average growth to destinations in North America, which reflects the start of the Chicago route by Austrian Airlines as well as an increase of 20% and 35% by, respectively, Germanwings and Turkish Airlines.
 - In 2013 VIE served over 6.8m connecting passengers - equivalent to almost 31% of the total annual traffic volume.
- 5.2 Given the size of VIE's connecting traffic sector we focus in this section on the international status of VIE and benchmark the airport against key airport competitors - Munich (MUC), Zürich (ZRH) and Istanbul (IST).
- 5.3 This evaluation is important as VIE is one of Central Europe's leading hub airports, and it must compete against airports such as Munich, Zürich and Istanbul (along with others) for the connecting passenger market (as passengers have a choice of which hub airport to transfer at).
- 5.4 In addition to the comparative quality of the scheduled airline network we have therefore considered VIE's competitive position with respect to the user fees and charges at the airport, along with various benchmarks including factors such as the airport physical infrastructure and its operating permissions, financial and operating characteristics of the leading incumbent airline, and official Minimum Connect Times ('MCT's) for transferring passengers.

Comparative airport fees and charges

- 5.5 The level of fees and charges at an airport may incentivise airlines to choose one location over another when deciding where to place flight capacity.
- 5.6 The aeronautical fees at an airport typically include charges levied by the airport operator (e.g. passenger and landing fees), along with fees for other services such as air traffic control and ground handling services.
- 5.7 Fees levied by the airport company itself may be structured in ways that incentivise certain forms of traffic (for example in a number of Arabian Gulf airports the charges for connecting passengers are zero).
- 5.8 Fuel charges will also be important to airlines although they have some discretion in choosing at which airport to refuel aircraft.
- 5.9 Finally, the fees may include government taxes such as Austria's recently introduced Air Transport Levy.

Official Airport Tariffs

- 5.10 In order to compare the fees and charges at VIE versus the selected competitors we have reviewed recent data from the IATA Airport and Air Navigation Charges

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Manual. This provides the official tariff for operating from the respective airports.

- 5.11 Recent published user charges for passenger flights at VIE are set out in Table 5.1.

TABLE 5.1 VIE PUBLISHED AIRPORT CHARGES TARIFF MAY 2014

Category	Metric	EUR
Aircraft Landing Charge	5 - 45 tonnes	212.48
	Above 45 tonnes	212.48+ 5.79 per additional tonne over 45 tonnes
Aircraft Noise Charge	Per decibel	2.00
Passenger Charge	Per departing passenger	18.11
PRM	Included in Passenger Charge	0.34
Passenger Infrastructure Charge	Per departing passenger	0.88
Security Charge	Per departing passenger	7.70
Ramp Infrastructure Charge	Fixed fee per aircraft type	e.g. A320 277.72 e.g. B777-200 420.62
Aircraft Parking Charge (for aircraft over 4 tonnes weight)	First 4 hours free Fee applies after 4 hours	15% of landing charge for 24 hours or part thereof
Slot Coordination Charge	Per round trip	3.20

Source: IATA Air Charges Manual, VIE_Entgeltordnung_2014

- 5.12 In addition to the fees structure shown above a critical feature at VIE is provision of a Transfer Incentive Program which provides a refund of €12.50 for each departing transfer passenger.

- 5.13 VIE also operates a 'Growth Incentive'. The key features of this are:

- Frequency incentive. This reduces the landing fee by 60% for the first 12 months and 40% for the second 12 months of operation for new frequencies. If the new route is a long haul one and it is introduced by a new Carrier operating at VIE, the above percentages increase up to 80% and 60% respectively, with the third year landing fee to be reduced up to 40%.
- Destination incentive. This reduces the landing fee for intercontinental flights by 100% for the first 12 months, 80% for the second 12 months, 60% or the third 12 months and 40% for the fourth 12 months of operation for new destinations. For flights within Europe, the discount percentages are respectively 80%, 60 and 40%.
- High frequency incentive. This reduces the landing fee by 20%, 30%, 40% or 50% if operating a weekly frequency of 7, 14, 21, or 28 frequencies to a destination in Eastern Europe and if operating a weekly frequency of 3, 5, 7,

10 or 14 frequencies to a long haul destination by 20%, 30%, 40%, 45% or 50%.

- 5.14 VIE's incentive programmes are therefore targeted at supporting traffic volume growth in its niche connecting markets.
- 5.15 The overall airport charge for an aircraft turnaround can be important to airlines when considering where to place their capacity, especially if they operate a large network and therefore have choices about the placement of that capacity.
- 5.16 Table 5.2 compares the respective costs of operating a short haul and long haul turnaround at VIE and its peer airports. To ensure consistency across the comparison we have made the following common assumptions for each airport:
- Short haul (international) flight undertaken by a 168 seat Airbus A320.
 - Short haul passenger load factor of 70%, therefore a total of 118 passengers on-board.
 - Long haul flight undertaken by a 307 seat Boeing 777-200.
 - Long haul load factor of 80%, therefore a total of 246 passengers on-board.
- 5.17 We have considered each of the above where transfer passengers make up a relatively low proportion (20%) of the total passengers or a high proportion (80%).
- 5.18 For simplicity we have also assumed that the aircraft do not incur parking charges (with the exception of IST which provides the first two hours free the other airports do not charge for the first four or five hours that an aircraft is on the ground). We have also excluded certain noise and emissions charges from the analysis.

TABLE 5.2 COMPARISON OF AIRCRAFT TURNAROUND TARIFFS

Airport	Short Haul A320 20% Transfer	Short Haul A320 80% Transfer	Long Haul B777-200 20% Transfer	Long Haul B777-200 80% Transfer
VIE	€ 3,414	€ 2,532	€ 7,808	€ 5,966
ZRH	€ 4,183	€ 3,172	€ 9,863	€ 7,753
MUC	€ 3,149	€ 2,947	€ 7,307	€ 6,821
IST	€ 2,302	€ 2,044	€ 5,339	€ 4,799

Sources: IATA Air Charges Manual, VIE_Entgeltordnung_2014, Steer Davies Gleave analysis

- 5.19 In each case IST has the lowest turnaround charges, by a significant margin, whilst ZRH is significantly more expensive than the rest of the peer group.
- 5.20 VIE is generally more expensive than MUC for flights with a relatively low proportion of transfer passengers, while VIE remains cheaper where a flight has a high proportion of transfer passengers.
- 5.21 The average turnaround charge per passenger is shown in Table 5.3.

TABLE 5.3 AVERAGE COST PER PASSENGER PER AIRCRAFT TURNAROUND

Airport	Short Haul A320 20% Transfer	Short Haul A320 80% Transfer	Long Haul B777-200 20% Transfer	Long Haul B777-200 80% Transfer
VIE	€ 14.51	€ 10.76	€ 15.90	€ 12.15
ZRH	€ 17.78	€ 13.49	€ 20.08	€ 15.78
MUC	€ 13.39	€ 12.53	€ 14.88	€ 13.89
IST	€ 9.79	€ 8.69	€ 10.87	€ 9.77

Sources: IATA Air Charges Manual, VIE_Entgeltordnung_2014, Steer Davies Gleave analysis

5.22 Table 5.4 and Table 5.5 present the same analysis where the cost of government taxes on aviation (which are currently levied in Austria and Germany but not Switzerland and Turkey) is included in the results for VIE and MUC. The taxes are ultimately paid for by the passenger but in the first instance are collected by the air carrier. Further information on these taxes is provided later in this section of the report.

5.23 For modelling purposes we have assumed that all transfer passengers are exempt from the taxes. In practice only passengers connecting through VIE or MUC on an International - International journey are exempt; passengers connecting from within Austria or Germany (e.g. Salzburg - VIE - New York JFK) will pay the tax once on their outbound journey.

TABLE 5.4 COMPARISON OF AIRCRAFT TURNAROUND TARIFFS INCLUDING GOVERNMENT AVIATION TAXES

Airport	Short Haul A320 20% Transfer	Short Haul A320 80% Transfer	Long Haul B777-200 20% Transfer	Long Haul B777-200 80% Transfer
VIE	€ 4,072	€ 2,696	€ 14,685	€ 7,685
ZRH	€ 4,183	€ 3,172	€ 9,863	€ 7,753
MUC	€ 3,854	€ 3,123	€ 15,595	€ 8,893
IST	€ 2,302	€ 2,044	€ 5,339	€ 4,799

Sources: IATA Air Charges Manual, VIE_Entgeltordnung_2014, Steer Davies Gleave analysis

TABLE 5.5 AVERAGE COST PER PASSENGER PER AIRCRAFT TURNAROUND INCLUDING GOVERNMENT TAXES

Airport	Short Haul A320 20% Transfer	Short Haul A320 80% Transfer	Long Haul B777-200 20% Transfer	Long Haul B777-200 80% Transfer
VIE	€ 17.31	€ 11.46	€ 29.90	€ 15.65
ZRH	€ 17.78	€ 13.49	€ 20.08	€ 15.78
MUC	€ 16.39	€ 13.28	€ 31.75	€ 18.10
IST	€ 9.79	€ 8.69	€ 10.87	€ 9.77

Sources: IATA Air Charges Manual, VIE_Entgeltordnung_2014, Steer Davies Gleave analysis

- 5.24 With taxes included the short haul average turnaround costs per passenger at VIE and MUC move much closer to those of ZRH while remaining slightly lower.
- 5.25 However the main impact of the tax structures is on long haul travel as in both Austria and Germany the government tax on the longest intercontinental flights is 5 - 6 times greater than the short haul levy. For such flights the analysis indicates that both VIE and MUC move to more expensive turnaround costs than those of ZRH, especially for flights with a low transfer passenger component. Given the higher level of taxes on long haul aviation in Germany MUC becomes the most expensive airport in the sample for an aircraft turnaround.
- 5.26 In summary the inclusion of the taxes on short haul brings the turnaround charges for intra-European operations into relatively close parity for VIE, MUC and ZRH whilst IST is substantially cheaper than all. For long haul flights the size of the levy in both Austria and Germany looks set to place VIE and MUC at a competitive disadvantage versus ZRH, whilst IST once again has significantly lower turnaround charges than the other peer airports.

Airport Charges Yields

- 5.27 We have also analysed individual airport financial reports in order to determine:
- The composition of VIE's airport charges revenue;
 - How VIE's average charges yield (aeronautical revenues per passenger) benchmarks against competitors; and
 - The extent to which the individual airports are offering discounts against the official tariff in order to incentivise traffic development. It is commonplace for airports to offer individual airlines a discount against the official tariff in exchange for some form of commitment of commercial value to the airport (e.g. guarantee of a certain traffic volume from the airline, introduction of new routes).
- 5.28 On an overall basis VIE receives moderately lower revenues per passenger than either MUC or ZRH (data for IST is not individually disclosed in airport operator, TAV's, annual financial reports). In 2013 VIE achieved average total revenues per passenger of €28.27 versus €30.91 and €32.23 at MUC and ZRH respectively.
- 5.29 Analysis of the individual categories of revenue indicates a similar position with respect to aeronautical revenues (as summarised in 5.6, although caution must

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be applied as the airport operators may have different definitions for this segment of revenues).

TABLE 5.6 2013 COMPARATIVE AERONAUTICAL REVENUES PER PASSENGER (EURO)

Airport	Category	Revenue/Passenger
VIE	Airport	€15.06
MUC	Aviation & Ground Handling	€16.00 ¹
ZRH	Aviation Operations	€19.98

Sources: VIE, MUC, ZRH Annual Reports (data not available for IST) - ¹2012 data

- 5.30 Table 5.7 sets out a comparison between the levels of revenues per passenger derived in 2013 at VIE and ZRH for certain components of overall aeronautical revenues.

TABLE 5.7 COMPARISON OF VIE AND ZRH AIRPORT CHARGES PER PASSENGER, 2013 (EURO)

Category	VIE	ZRH
Passenger Fees incl. PRM	€6.57	€7.11
Landings	€2.60	€2.82
Security	€3.83	€5.33
Fuel	€0.10	€0.24
Other Fees	€1.95	€4.49
TOTAL	€15.06	€19.98

Sources: VIE, ZRH Annual Reports

- 5.31 The data indicates that VIE generally derives lower revenues per passenger than ZRH from passenger-facing activities (i.e. Passenger Fees, Security charges).

Government Taxes

- 5.32 Austria introduced its Air Transport Levy with effect from 1 April 2011.
- 5.33 The Air Transport Levy applies to passengers departing on 'motorised aircraft' (defined as mineral oil powered airplanes and rotary wing aircraft) from public airfields in Austria.
- 5.34 The charge is levied on all passengers except for certain exempted groupings which include departures by transit and transfer passengers following a stopover landing at a domestic airport which has given rise to a scheduled interruption of the passenger's flight of less than 24 hours.
- 5.35 The Air Transport Levy applies whether a passenger is flying to a domestic or international destination. The size of the charge for an individual passenger is determined according to three geographical definitions which are broadly based on distance from Austria. These comprise:

- Short Haul - includes Austria, Europe and parts of the Middle East and North Africa.
- Medium Haul - includes most of Africa (excluding Southern Africa), the Middle East (if not in the Short Haul zone) and Indian Sub-Continent, plus Iceland.
- Long Haul - all other states not defined as Short or Medium Haul.

5.36 The Air Transport Levy was introduced with the charges levels shown in Table 5.8. A revised set of charges was introduced from 1 January 2013 which reduced the tax on Short and Medium Haul departures.

TABLE 5.8 STRUCTURE OF AUSTRIAN AIR TRANSPORT LEVY

Zone	Charges from 1st Apr 2011 (EURO)	Revised charges from 1st Jan 2013 (EURO)
Short Haul	€8	€7
Medium Haul	€20	€15
Long Haul	€35	€35

Sources: Government of Austria

5.37 Austria's Air Transport Levy is comparable to the Aviation Tax implemented in Germany from the start of 2011.

5.38 The German tax has a similar structure and set of principles to that used in the Air Transport Levy. In particular:

- It is a passenger-based tax.
- It is levied according to a similar three tier geographical zoning system (which is basically the same as Austria's except for minor differences, for example Iceland is treated as a short haul point).
- Categories of exemptions include passengers connecting in Germany onto another flight (the passenger is only charged for the 1st departing flight).

5.39 The level of charges in Germany, although reduced in 2012 from those set at the time of implementation of tax, are higher than those applied in Austria across each of the destination zones. This is summarised in Table 5.9.

TABLE 5.9 COMPARISON OF GERMAN AND AUSTRIAN AVIATION TAXES

Zone	Germany - Charges from 1st Jan 2011 (EURO)	Germany - Current charges (EURO)	Austria - Current charges (EURO)
Short Haul/Annex 1	€8	€7.50	€7
Medium Haul/Annex 2	€25	€23.43	€15
Long Haul/Other	€45	€42.18	€35

Sources: Government of Austria, German Finance Ministry

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- 5.40 On this basis, VIE appears to have a small advantage over MUC in terms of the departure tax paid by passengers, although the sums may not be material. However given the relatively small size of the Austrian market stakeholders believe it is important that Austria must not be in a position where it maintained the tax in the event of Germany abolishing its own levy.
- 5.41 This advantage may change if recent discussions in the Germany by the main political parties result in an abolition, this year, of the German aviation tax.
- 5.42 Neither Switzerland nor Turkey has implemented a similar aviation tax and as a result Swiss and Turkish Airlines do not face a tax on operations in their home markets.
- 5.43 The hubs at ZRH and IST would therefore appear to have a comparative advantage over VIE and MUC in this area. There are two main reasons for this:
- The tax pushes up the overall air fare and as a result may lead to some traffic being lost by Austrian Airlines and Lufthansa respectively (on affordability grounds), which will impact traffic demand at the respective VIE and MUC hubs. This may also impact on other important airlines at either airport such as NIKI/airBerlin.
 - Airlines operate in competitive markets and are therefore unable to pass on the full extent of aviation taxes to passengers, and instead have to absorb at least some of the tax as a cost in their Profit & Loss statement. As a result the financial results of Austrian Airlines and Lufthansa are adversely impacted by aviation taxes, whereas there is no effect on Swiss and Turkish Airlines who do not face such a tax.

Air Traffic Control Fees

- 5.44 We have analysed air navigation service (ANS) costs for en-route and tower services at VIE and its peer airports.
- 5.45 Each of Austria, Germany, Switzerland and Turkey applies en route and terminal navaid charges in line with the route charges system administered by EUROCONTROL's Central Route Charges Office ('CRCO').
- 5.46 The unit rates and tariffs of en route and terminal navaid charges are established by each EUROCONTROL Member State. The charges reflect an agreed formula based on a combination of the distance flown within the member's state airspace and the Maximum Take Off Weight.
- 5.47 Recent data from the IATA Air Charges Manual is shown in Table 5.10.

TABLE 5.10 COMPARISON OF ANS FEES

Airport	En-route (EURO), unit rate	Navaid (EURO), unit rate
Austria/VIE	€73.54	€215.00
Germany/MUC	€77.47	€183.87
Switzerland/ZRH	€98.64	€241.25
Turkey/IST	€32.12	€35.00

Source: IATA Air Charges Manual, May 2014

- 5.48 On a comparative basis the unit rate for air traffic control charges at VIE are cheaper than those at ZRH. Austria's en-route unit rates are marginally lower than those in Germany, but VIE has higher Navaid fees.
- 5.49 As with other measures of user costs, the air traffic control unit rates, both en-route for Turkey and Navaid charges at IST, are substantially lower than any of the Central European peers.

Emissions Trading

- 5.50 As members of the European Union commercial aviation in both Austria and Germany has been included within the EU's Emissions Trading System ('ETS') since its full incorporation from the start of 2012.
- 5.51 The European Commission has temporarily reduced the scope of the aviation element of EU ETS following negotiation with partners in non - European countries, and pending discussions through the ICAO General Assembly on the introduction of a global approach to regulate greenhouse gas emissions from aviation.
- 5.52 However the existing legislation will continue to apply for the period 2013-2016 to all flights within and between the 30 states comprising the EU ETS. These include all of the members of the European Union plus Iceland, Liechtenstein, Norway and since 1 January 2014, Croatia.
- 5.53 Switzerland is not currently part of the EU ETS but it has passed legislation (revised CO₂ Act, December 2011) which will give the Swiss Federal Council powers to force airlines to participate in Switzerland's own ETS. The EU and Switzerland are currently in the final stages of negotiating a link between their respective ETS schemes.
- 5.54 The changes in Switzerland, once implemented, will impact on Swiss International Airlines at ZRH as it has hitherto only had to purchase CO₂ permits for its flights to and from points within the EU. Under the new arrangements Swiss would have to also purchase carbon permits to cover its domestic flights and those to non - EU points (pending the EU's discussions with ICAO).
- 5.55 Turkey is outside the EU ETS and as a developing country does not currently have a domestic emissions trading scheme. However it has been developing legislation to develop its own domestic ETS which would firstly focus on its energy market.
- 5.56 Under the current transitional arrangements Turkish Airlines at IST will continue to pay for permits for any intra-EU flights it operates, but will not be required to do so for its other operations.

Other benchmarks

Airport Infrastructure

5.57 Table 5.11 sets out details of the runway and terminal capacity available at VIE along with its key competitors.

TABLE 5.11 COMPARISON OF AIRPORT INFRASTRUCTURE

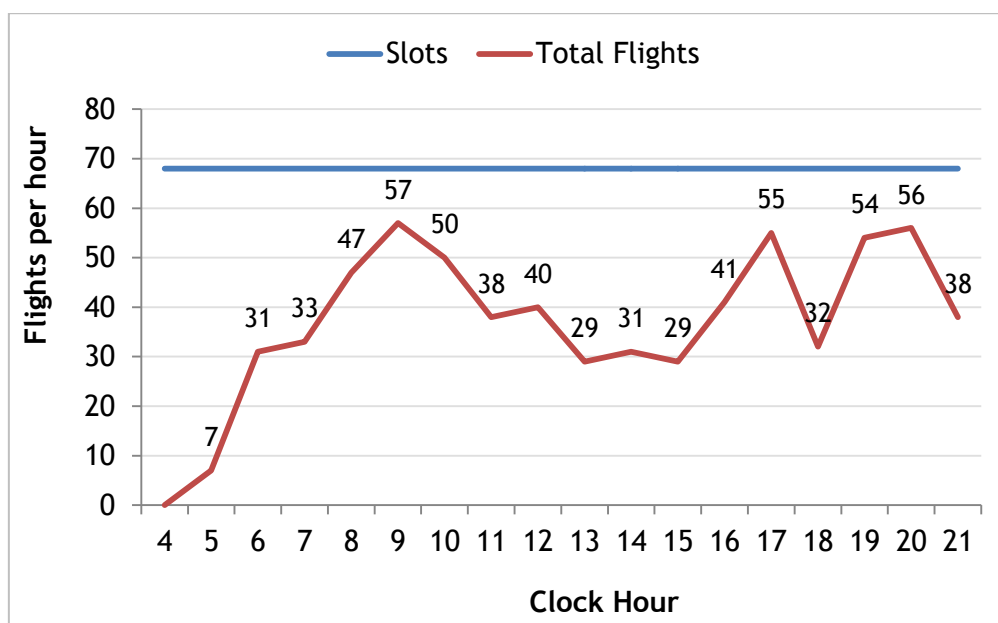
Airport	No. of runways	No. of terminals	Terminal Capacity (mppa)
VIE	2 (plans for 3 rd runway)	1	30 incl. Austrian Star Alliance Terminal
MUC	2 (plans for 3 rd runway)	2 (plus extension of T2)	40-45
ZRH	3	2	N/A
IST	3	2	38

Sources: Individual airport websites

5.58 The amount of runway slot capacity and patterns of slot usage are important factors supporting the competitive positions of the respective hubs. Network airlines such as Austrian Airlines and Lufthansa typically seek to schedule ‘waves’ of arriving and departing flights in order to facilitate flight connections and to minimise connect times. Hub airports which can provide a high number of runway slots, particularly at peak times, will be attractive to airlines as they consider how best to place their capacity (especially if, like the Lufthansa Group, they have a choice of different hub airports at which they can position their aircraft seat capacity).

5.59 Figure 5.1 illustrates the pattern of hourly runway slots made available at VIE in summer 2012 (when movement volumes were about 5% higher than in summer 2013) to airlines along with a sample profile of the scheduled usage of slots by airlines.

FIGURE 5.1 RUNWAY SLOT AVAILABILITY AND USAGE AT VIE



Sources: OAG Airline Schedules Database (for 18 July 2012), Schedule Coordination Austria

- 5.60 At present VIE schedules up to a maximum of 68 flights per hour from its two runways. This is slightly more than ZRH (which currently offers a peak of 66), and considerably less than MUC (90). EUROCONTROL's Network Operations Report for 2013 indicates that IST schedules up to 58 flight movements per hour.
- 5.61 We have also examined the annual proportion of runway slot capacity that is used at VIE, MUC and ZRH, as summarised in Table 5.12. This is defined as the actual volume of flight movements as a proportion of the annualised volume of runway slots.
- 5.62 A lower proportion of capacity usage can be advantageous for a hub as it can be an indicator of the availability of spare runway capacity. In this instance VIE appears to have some advantage as it is using a lower proportion of its annual capacity than either MUC or ZRH. However the advantage may be small as runway capacity utilisation rates in the range of 60-70% are commonplace in the airports industry.

TABLE 5.12 RUNWAY CAPACITY USAGE

Airport	Annual Runway Slots (000s)	Annual Flight Movements, 2013 (000s)	Runway Slot Capacity Utilisation %
VIE	423	231	55%
MUC	608	382	63%
ZRH	381	262	69%

Sources: Individual airport websites, slots-Austria, FHKD, Slot Coordination Switzerland

- 5.63 Runway capacity, and specifically the number and utilisation of aircraft landing and departure slots, are typically seen as a 'hard' constraint on the capacity of airports. For many reasons it is not easy for an airport to build a new runway,

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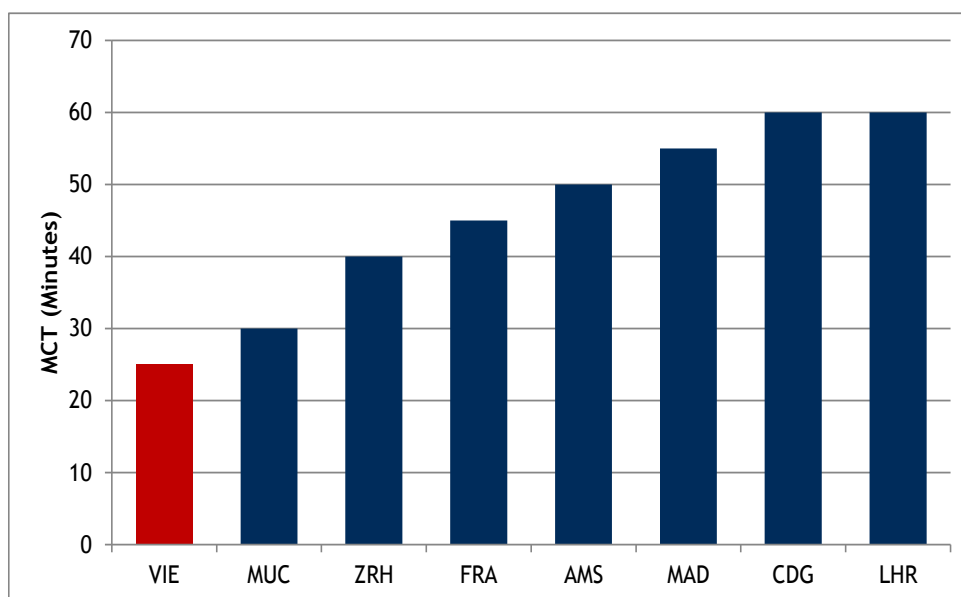
and the vital requirement for the safe sequencing of aircraft means that improvements in utilisation based on processing improvements can be difficult to achieve.

- 5.64 VIE's aspiration to build a third runway will therefore represent a major addition to the capacity of the airport by overcoming the hardest constraints on its current capacity.
- 5.65 Other elements of airport capacity (such as terminals) are typically seen as being relatively 'softer'. It is generally easier to develop new physical terminal capacity (for example through extensions to existing facilities), although this should not understate the complex financial and operational factors that need to be managed in order to do this. However while airports planning to build new runways may have a small number of very expensive options, their options for developing terminal capacity may be more varied and are likely to be relatively easier to implement.
- 5.66 In addition while leading airports such as VIE design their terminal capacity to meet international passenger space standards, this is essentially an issue of service quality (passengers like to enjoy a certain amount of space) rather than safety (unlike runway capacity where aircraft have to observe rules on spacing).
- 5.67 For these reasons it may be possible for VIE, which does not appear to have published a plan for its ultra-long term terminal capacity beyond the figure shown in Table 5.11, to derive a greater terminal capacity from the existing complex (including the Austrian Star Alliance Terminal) than is currently stated.

Minimum Connect Times

- 5.68 Airports can market themselves to transferring passengers on the basis of the 'Minimum Connect Time' or 'MCT' which is an advertised standard for the lowest time to transfer between scheduled flights.
- 5.69 VIE has a competitive advantage in its MCT as the 25 minute standard it schedules for Star Alliance flights is significantly shorter than that of most of its competitors. This is illustrated in Figure 5.2 which summarises the shortest MCT offered at a variety of leading hubs in Europe, including VIE's competitors at MUC and ZRH.

FIGURE 5.2 MINIMUM CONNECT TIMES AT LEADING EUROPEAN HUB AIRPORTS, 2013



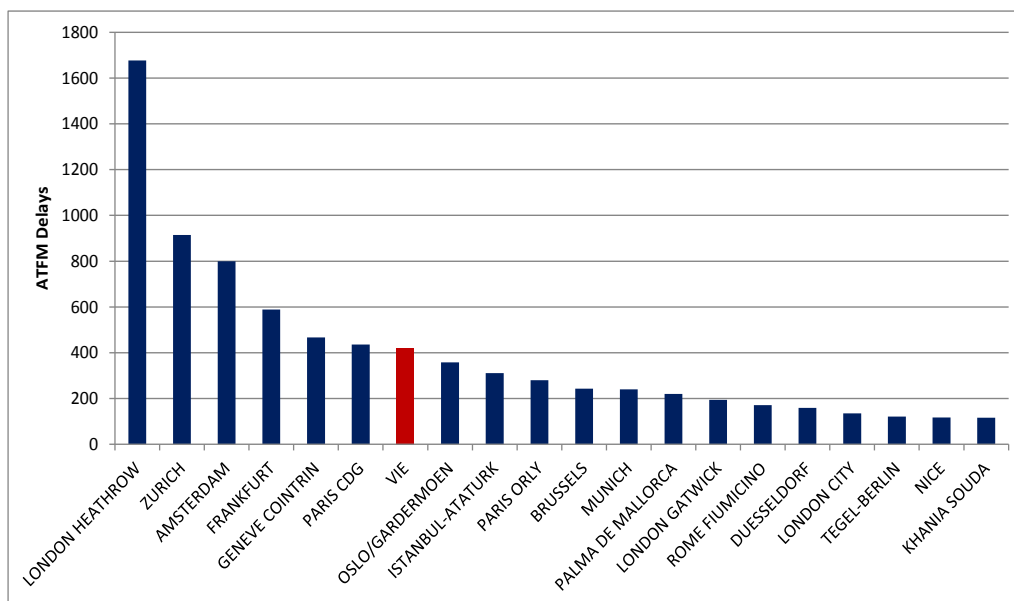
Sources: VIE, MUC, ZRH, KLM, Fraport, Iberia, Aeroports de Paris, Heathrow Airport

- 5.70 Data on the MCT is not published for IST or Turkish Airlines but we understand that it is significantly longer than that offered at VIE.

ATC Performance

- 5.71 The competitive position of VIE and its peer hub airports can also be considered in light of their respective flight delay performances. This is important as it provides an indication of the ‘user’ experience for airlines using the ATC capacity in the immediate vicinity of the airports. It also helps to provide some insight into underlying longer term airport/airspace system capacity issues which in turn impact on airline scheduling decisions.
- 5.72 EUROCONTROL’s ‘Network Operations Report’ provides data on the flight delay performance at Europe’s airports. In 2013 the delay performance at VIE (expressed in terms of the number of delays) was in the middle of the group, significantly better than the levels of delay recorded at ZRH but with more delay events than at MUC. This is illustrated in Figure 5.4.

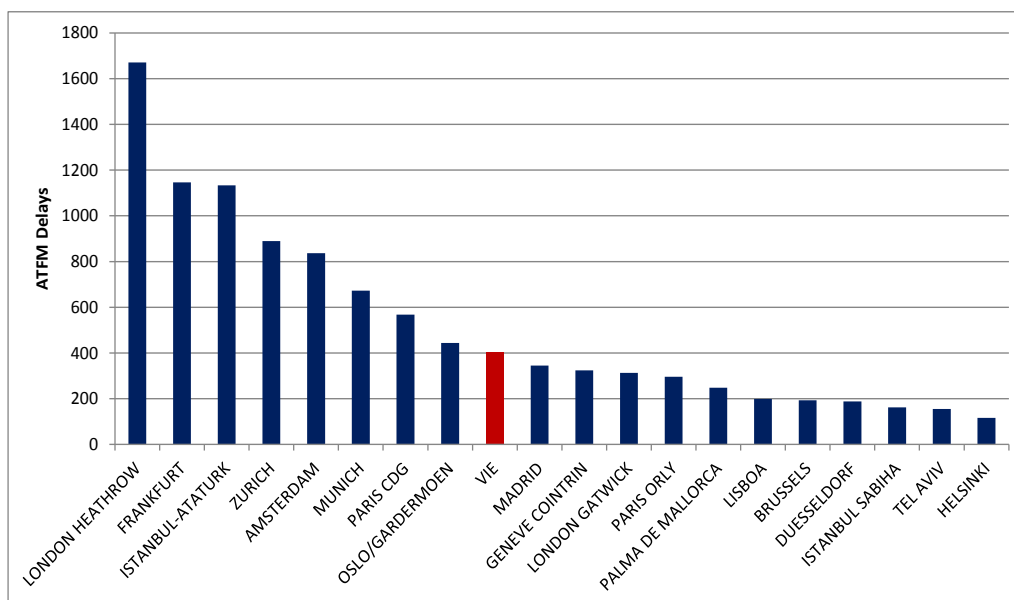
FIGURE 5.3 2013 FLIGHT DELAY PERFORMANCE (NUMBER OF EVENTS) AT LEADING EUROPEAN AIRPORTS



Source: EUROCONTROL - Network Operations Annual Report 2013

5.73 The VIE performance in 2012 and 2013 was similar, but VIE’s peers improved in 2013 their levels of delay recorded. In the previous year, in fact, VIE performed significantly better than MUC, ZRH and IST. This is illustrated in Figure 5.4.

FIGURE 5.4 2012 FLIGHT DELAY PERFORMANCE (NUMBER OF EVENTS) AT LEADING EUROPEAN AIRPORTS



Source: EUROCONTROL

5.74 Airlines are keen to control the costs they pay in terms of airspace user fees, as, like airport user charges, these are a ‘controllable’ item within their operating expenses whilst jet fuel prices are to a large extent ‘uncontrollable’.

5.75 While airspace user charges are to an extent predictable for an airline, the costs from delays can be large and unpredictable. The direct financial cost to

airlines from delays is large, as illustrated by a University of Westminster report published in 2004 which estimated that each minute of delay costs €72, with the cost to an airline making up about half of this (the remaining cost representing the loss of passengers time).

- 5.76 However the financial element is likely to be only a part of the total cost that an airline will incur, as delays can damage the public reputation of air carriers. A punctual flight record is vital for the leading incumbent airlines at VIE and its peer airports given that their business models place great importance on connecting passengers.
- 5.77 As illustrated by the comparison between scheduled Minimum Connect Times, hub airports and network airlines place great emphasis in marketing the convenience to passengers of their connecting products. A reputation for flight delays can damage the perception of an airport and persuade connecting traffic to hub via alternative airports.

Intermodality

- 5.78 The benefits of fast intermodal links to/from an airport are twofold: not only do they widen the catchment area of an airport by widening access, but also reduce travel times and increase the airport's competitiveness vis-à-vis its neighbours.
- 5.79 During the study some stakeholders suggested that intermodality should be used to further strengthen the catchment of VIE, for example through the introduction of scheduled rail connections to the airport from the leading regional cities in Austria, as well as the development of links to key points in Eastern Europe (such as Budapest). This could be expected to support the VIE hub by widening the catchment area, facilitating a higher Origin-Destination demand through easier and faster access to the airport.
- 5.80 At present travellers wishing to use rail services at VIE can choose between the faster CAT direct train service (16 minutes travel time to Vienna city centre) and the slower suburban train services (25 minutes travel time to the city with intermediate stops). The existing rail services at VIE do not link the hub with other Austrian cities, although it is possible for passengers to interchange on the regional trains.
- 5.81 Further intermodality could arguably offer some potential benefit to VIE by reducing domestic flight capacity, enabling vacated slots to be used by international flights instead. The exact benefit of this would depend on the extent to which domestic flights impact on the peak usage of the runway capacity or not, as overall runway utilisation levels compare favourably to peer airports.
- 5.82 The positive impacts of the introduction of an intermodal concept at VIE would need to be weighed against the potential effects on Austria's regional airports. If an intermodal concept resulted in a reduction in domestic flights to VIE this would naturally impact on traffic volumes at Austria's regional airports, given the prominence of VIE within the country's domestic air network. Our analysis of Sabre/ADI data indicates that VIE serves a total about 0.6 million Domestic passengers per annum (equivalent to about 7,800 flights assuming 80 passengers per aircraft).

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- 5.83 The intermodal choice for passengers arriving to and departing from the peer airports considered in our review varies to a large extent.
- 5.84 Zürich has a deep level station in the airport with multiple platforms. It already has frequent services not only into the city of Zürich (two suburban services running to the city centre in 15mins), but also to other Swiss cities (St. Gallen, Basel, Geneva). Effectively travel to Zürich Airport is seen as a core business from any station in the country. Travel by train is incentivised for most Swiss residents buying a railcard that grants them large discounts on rail travel.
- 5.85 The availability of links to and from the airport reflects the hub nature of Munich. Two suburban services link it to the city centre with around 45 minutes journey time. However the airport is not linked to other German cities and only bus services are available.
- 5.86 Istanbul's transport links to its airport are highly shaped by its geography. IST is the only one of the city's airports that is fully integrated within the urban metro network, being the terminal of one of the lines. A special service available at Istanbul is the sea-bus, which is seen as a good alternative to traffic congestion by some customers.

6 Risks and Threats to the VIE hub

Highlights

Market entrance by a competing airline

About 1/3rd of VIE's connecting traffic could be at material risk from competition by Turkish Airlines and/or Emirates (notably for connections between Eastern European points, Western Europe - Middle East and Western Europe - Asia).

Both carriers have taken market share from Austrian Airlines in recent years on routes into their respective hubs and are now the dominant carrier on the route.

Impacts of geographical shifts in the global economy

If current GDP growth trends persist a reduction in global market share for Austria (and Europe) is inevitable.

However the market is set to grow considerably; forecasts from Airbus and Boeing point to a trebling in market volumes by 2035 on key intercontinental flows which VIE currently serves as a hub airport.

The risk of hub bypass as aircraft technologies change

Almost three quarters of the connecting traffic at VIE is intra-European and therefore likely to be relatively immune from such changes.

However on most of the long haul routes operated by Austrian Airlines they face competition from rivals who have new technologies such as the Boeing 787 Dreamliner on order. The risk of hub bypass on these routes may therefore increase.

Competition from Munich Airport

VIE outperforms Munich in several areas. However Munich holds the advantage in some of the more important criteria; its connecting market is over twice the size of that of VIE and it is a home airport for Austrian Airlines parent, Lufthansa.

Munich has also attracted a substantial increase in its share of scheduled Lufthansa Group capacity in recent years, whilst VIE's share has remained largely unchanged.

Inadequate airport infrastructure

VIE's plans to expand the airport through the third runway compare favourably to Zürich and are on a par with Munich's own ambitions for a third runway.

Given the importance of peak runway capacity to hub operations the earlier availability of the new runway at VIE, if this could be delivered, could be critical as it seeks to influence Lufthansa Group strategic decisions about the placement of aircraft capacity across its network.

Structural differences in tax legislation and social standards for aviation employees

The average employee costs at the Lufthansa Group (which includes Austrian Airlines) and NIKI/airberlin are in the middle of the range when compared to European peer airlines.

Costs at airlines such as Turkish Airlines and Emirates are lower than European norms. This may raise concerns about 'fair competition' between airlines as lower costs can help to support lower fares and in turn increase market share.

Environmental impacts on traffic growth

EU ETS (or its replacement by an equivalent global ICAO-mandated scheme) will increase air fares and, all other things being equal, suppress demand below what it would otherwise have been.

However the effects on fares may be moderate, and are likely to be much less than the opposite effects of new aircraft technologies (which will increase demand through lower fares) and rising jet fuel prices.

Other risk factors

The development of a low cost sector in ex-CIS states and other parts of Eastern Europe may represent a degree of risk to VIE's niche hub position. However the current evidence of the extent to which this represents a material risk is mixed.

Introduction

- 6.1 In this section we address a variety of risks and threats that may impact on the competitive position of VIE in the future.
- 6.2 These factors will influence the development of traffic at VIE and form the basis of some of the assumptions underpinning the traffic scenario projections set out in the following section.
- 6.3 We have assessed the following issues:
 - Market entrance by a competing hub airline;
 - Impacts of geographical shifts in the global economy;
 - Developments in aircraft engineering that might facilitate 'hub bypass';
 - Competition from Munich Airport ('MUC');
 - Inadequate airport infrastructure;
 - Structural differences in tax legislation and social standards for aviation employees;
 - Environmental impacts on traffic growth; and
 - Other risk factors.

Market entrance by a competing hub airline

- 6.4 A competing 'new generation' hub airline such as Turkish Airlines or Emirates could potentially impact on the Austrian Airlines operation at VIE by either:
 - Capturing an element of the international - international connecting traffic flows that currently hub over VIE; or

- Diverting local medium/long haul traffic into their hubs at Istanbul and Dubai respectively for onward connection.
- 6.5 The key risk is likely to be in competition for connecting traffic given the generally uncommitted nature of international-international transfer flows across the aviation industry and in recognition of the fact that transfer traffic currently makes up about 31% of VIE's overall traffic base.
- 6.6 Table 6.1 focuses on a series of key global connecting air traffic flows, along with the respective market shares of airports in Austria, Turkey and the UAE in serving as hubs for these flows (we have assumed that the connecting flows through these countries are predominantly served by VIE, Istanbul and Dubai respectively).
- 6.7 The table helps to illustrate connecting markets in which Austria is strong (i.e. where it has a high % share), and markets in which it faces competition from 'new generation' carriers (i.e. where Turkey or the UAE have a high % share).
- 6.8 Policymakers might wish to consider whether specific actions need to be taken in some of these markets. For example Austria is generally strong in connecting markets touching Eastern Europe, and Vienna International Airport has incentivisation policies which support the development of traffic to Eastern Europe. One potential policy option might therefore be to consider whether there are ways to further incentivise the development of traffic from VIE into Eastern Europe in order to nurture market share.

TABLE 6.1 SHARE OF CONNECTING TRAFFIC FLOWS SERVED BY AIRPORTS IN SELECTED INDIVIDUAL COUNTRIES

FLOW	Austria%	Turkey%	UAE%
Intra Western Europe	1.7%	0.0%	0.0%
Intra Eastern Europe	6.8%	8.2%	0.0%
Eastern Europe - Western Europe	10.7%	1.2%	0.0%
Eastern Europe - Middle East	9.4%	28.8%	7.9%
Eastern Europe - Asia	2.5%	8.0%	7.9%
Western Europe - Asia	1.2%	2.7%	15.8%
Western Europe - Middle East	4.7%	14.2%	9.7%
North America - Middle East	0.8%	3.1%	7.8%
North America - Asia	0.0%	0.3%	5.2%
North America - Western Europe	0.1%	0.0%	0.0%
North America - Eastern Europe	3.3%	2.6%	0.0%

Source: Sabre/ADI

- 6.9 Austria is particularly strong in the Eastern Europe - Western Europe (and vice versa) connecting market, where in 2012 it served almost 11% of the total flow that used an airport to transfer at. Neither Turkey nor the UAE are strong in this market.

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- 6.10 However Turkey has a substantial share of the Eastern Europe - Middle East flow (a market in which Austria is strong) and the UAE also has a significant presence in this market.
- 6.11 Similarly Austria plays an important role facilitating Intra Eastern Europe connecting flows (with a 6.8% market share) but Turkey takes a larger proportion of this market (8.2%).
- 6.12 In markets connecting Western Europe with the east (Asia, Middle East) Austria has a smaller share which has to compete with the strength of Turkey (on the Western Europe - Middle East flow) and the UAE (Western Europe - Asia) respectively.
- 6.13 Table 6.2 ranks the connecting flows in order of their importance to VIE (expressed in terms of their share of the connecting traffic at the airport) and states whether Turkey and/or the UAE holds a material share of that overall connecting market (we have used a 5% share as a threshold for materiality).

TABLE 6.2 IMPORTANCE OF INDIVIDUAL FLOWS TO TOTAL AUSTRIAN CONNECTING TRAFFIC

FLOW	% of Austria	Turkey - greater than 5% market share?	UAE - greater than 5% market share?
Eastern Europe - Western Europe	35%	No	No
Western Europe - Western Europe	27%	No	No
Intra Eastern Europe	12%	Yes	No
Western Europe - Asia	8%	No	Yes
Western Europe - Middle East	7%	Yes	Yes
North America - Eastern Europe	5%	No	No
Eastern Europe - Middle East	2%	Yes	Yes
Eastern Europe - Asia	2%	Yes	Yes
North America - Middle East	1%	No	Yes
North America - Western Europe	1%	No	No
North America - Asia	< 1%	No	Yes
TOTAL	100%	-	-

Source: Sabre/ADI

- 6.14 Based on this ranking about 1/3rd of VIE's connecting traffic could be at risk from material competition from either Turkish Airlines and/or Emirates.
- 6.15 The historical development of Turkish Airlines traffic in Europe and into Vienna is set out in Table 6.3.

TABLE 6.3 TURKISH AIRLINES EUROPEAN NETWORK EXPANSION 2005-2014

Year	Number of European destinations	Average daily Flight Frequency per European destination	Daily Flight Frequency to VIE from IST (TK)	Daily Flight Frequency from VIE to IST (OS)	Total daily Flight Frequency VIE-IST	TK% share of VIE-IST seat capacity
2005	50	1.6	2.0	2.0	4.0	55%
2006	63	2.0	2.0	1.7	3.8	61%
2007	64	2.1	2.0	2.0	4.0	49%
2008	64	2.1	2.0	2.0	4.0	55%
2009	65	2.1	2.6	1.7	4.3	65%
2010	69	2.2	2.6	1.0	3.6	69%
2011	77	2.5	3.0	1.0	4.0	75%
2012	83	2.7	4.0	1.0	5.0	81%
2013	94	3.0	4.0	1.0	5.0	82%
2014	97	3.1	4.0	1.0	5.0	84%

Source: OAG Airline Schedules Database (data for July)

TABLE 6.4 EMIRATES EUROPEAN NETWORK EXPANSION 2005-2014

Year	Number of European destinations	Average daily Flight Frequency per European destination	Daily Flight Frequency to VIE from DXB (EK)	Daily Flight Frequency from VIE to DXB (OS)	Total daily Flight Frequency VIE-DXB	EK% share of VIE-DXB seat capacity
2005	19	0.6	1.0	0.7	1.7	66%
2006	20	0.6	1.0	0.8	1.8	61%
2007	21	0.7	1.0	0.8	1.8	61%
2008	22	0.7	1.0	1.0	2.0	58%
2009	22	0.7	1.0	1.4	2.4	59%
2010	24	0.8	1.0	1.0	2.0	64%
2011	26	0.8	1.9	2.0	3.9	58%
2012	31	1.0	2.0	1.0	3.0	59%
2013	33	1.1	1.8	0.5	2.4	63%
2014	35	1.1	1.3	0.8	2.1	73%

Source: OAG Airline Schedules Database (data for July)

- 6.16 Since 2005 Turkish Airlines has substantially increased the number of European destinations it serves from IST, rising from 50 to a planned 97 for summer 2014. This has included an increase in the number of Eastern European destinations (which are also targeted by VIE and Austrian Airlines) from 17 to 40.
- 6.17 In summer VIE is now served by 4 Turkish Airlines flights per day to IST, plus 1 flight to Istanbul Sabiha Gokcen. Turkish Airlines provides similar levels of non stop services to IST from both MUC and ZRH.
- 6.18 In contrast Austrian Airlines has reduced the frequency it provides from VIE to IST, reducing from about 2 flights per day up to and including 2009, to about 1 flight per day since 2010.
- 6.19 As a result, while the total number of flights per day from VIE to IST (and vice versa) has remained close to 5 throughout the 2005-2013 period, the share of frequency provided by Turkish Airlines has increased at the expense of Austrian Airlines.
- 6.20 Turkish Airlines employs larger aircraft on the route (for example it will use 178 seat Airbus A321 in summer 2014) than Austrian Airlines (who will use a mix of 100 seat Fokker 100, 138 seat Airbus A319 and 168 seat Airbus A320 for summer 2014). As a result Turkish Airlines has taken an even larger share of the total seat capacity provided on VIE-IST.
- 6.21 While Turkish Airlines has grown its majority share of capacity on the VIE-IST route it should be noted that both it and Austrian Airlines are members of the Star Alliance. This would indicate that the development of share by Turkish may not necessarily have been predatory in nature.
- 6.22 In summer 2014 Austrian Airlines and Emirates are both offering a daily flight from their respective hubs in VIE and Dubai ('DXB').
- 6.23 Previously Austrian Airlines and Emirates had moved from broad parity in the daily flight frequency between their respective hubs in VIE and Dubai ('DXB') to a position where Emirates provided 2 of the 3 daily flights on offer.
- 6.24 The amount of daily frequency provided by Emirates into VIE is marginally less than that provided to ZRH and MUC which are both served by 2 daily Emirates flights.
- 6.25 The majority share of Emirates on the VIE-DXB route is also boosted by the use of larger aircraft. Whereas Austrian uses Boeing 767 aircraft (with a capacity of about 214 seats per flight), Emirates employs Boeing 777-300ER aircraft with a capacity of 360 seats per flight.
- 6.26 In overall terms Emirates will provide over 73% of the planned seat capacity on the VIE-DXB route for summer 2014.
- 6.27 Unlike Turkish Airlines, Emirates is currently not a member of any of the leading global airline alliances, and its development of capacity on the VIE route has not been influenced by considerations of a wider alliance network.

Impacts of geographical shifts in the global economy

- 6.28 The rebalancing of the global economy may potentially provide both risks and opportunities to European hub airports. Europe will inevitably lose market share as intra-Asian air travel demand grows. However, the rise of Asia provides

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opportunity for further West-East air traffic growth (based on the effects of further globalisation), and a significant volume of this might continue to be flown via hubs, irrespective of any changes in aircraft technology.

- 6.29 Comparison of latest GDP forecasts for Austria and the EU against those of large emerging markets such as China, India and Turkey suggest that, all other things being equal, a reduction in Europe's share of global aviation is inevitable. This will naturally also impact on Austria's share of the global market.
- 6.30 Table 6.5 sets out recent long term GDP forecasts for Austria and a series of selected country comparators.

TABLE 6.5 LONG TERM GDP FORECASTS

Year/Period	Austria	Germany	Switz.	Turkey	China	India	UAE
2013	0.3%	0.5%	2.0%	4.3%	7.7%	4.4%	4.8%
2014	1.7%	1.7%	2.1%	2.3%	7.5%	5.4%	4.4%
2015	1.7%	1.6%	2.2%	3.1%	7.3%	6.4%	4.2%
2015-2019	1.5%	1.3%	1.9%	3.5%	6.7%	6.7%	4.0%
2019-2030	1.5%	1.2%	2.3%	4.1%	5.5%	6.5%	3.5%
2030-2050	1.4%	1.0%	2.1%	2.3%	2.8%	4.5%	3.3%

Sources: IMF (to 2019), OECD, Global Insight 2012 (UAE long term forecasts)

- 6.31 Recent industry forecasts produced by the leading aircraft manufacturers (which take into account macroeconomic changes as well as other factors) demonstrate that irrespective of market share shifts European aviation will continue to grow, and is likely to expand significantly on key world region routes. Table 6.6 sets out the latest Airbus projected traffic CAGRs (to the early 2030s) for traffic between Europe and a selection of key world regions.

TABLE 6.6 AIRBUS INTER-REGION AIR TRAFFIC PROJECTIONS

Flow	Traffic (RPK) CAGR
Central Europe - China	5.0%
Western Europe - China	5.7%
Central Europe - Middle East	5.7%
Western Europe - Middle East	4.8%
Central Europe - Asia	5.8%
Western Europe - Asia	4.3%
Western Europe - Indian Sub-Continent	5.7%
Intra Central Europe	6.1%
Intra Western Europe	2.9%

Source: Airbus Global Market Forecast (2012, 2013)

- 6.32 At these rates of growth most of the key traffic flows that VIE currently serves are set to experience more than a trebling in market size by the mid-2030s.

Developments in aircraft engineering that might facilitate ‘hub bypass’

- 6.33 The extent to which VIE can benefit from the potential opportunities to grow its connecting traffic will in part be influenced by the extent to which competition emerges from new intercontinental services that can bypass the traditional hubs in Europe.
- 6.34 Airport hubs have partly developed as a result of the technological limitations of aircraft (for example the success of the hub model in facilitating Europe-Asia cargo flows is due to the inability of many historic aircraft types to support a fully laden East-West freight operation). Changes in aircraft engineering may therefore alter the economics of carrying passengers over hubs.
- 6.35 Different views on the future of hubs have prompted radically different approaches to long haul aircraft technology by Airbus (whose A380 reflects belief in the rise of the mega-hub) and Boeing (whose 787 Dreamliner is designed to bypass hubs and open up service on historically thinner intercontinental routes).
- 6.36 As Table 6.2 illustrates the majority of the connecting passenger traffic in Austria is on relatively short trips between points in Western and/or Eastern Europe. In total 74% of the connecting traffic in 2012 was flying within these regions.
- 6.37 The connecting traffic at VIE is therefore likely to be relatively immune to changes in aircraft technology given the short haul nature of much of this traffic.
- 6.38 However the remaining 26% of connecting traffic involves long haul legs and may therefore be vulnerable to competition from new long haul aircraft types, operated by incumbent airlines at the other end of the routes, if this enables them to bypass hubs (e.g. Boeing 787) or if they tend to serve only primary hubs (e.g. Airbus A380), assuming that VIE is viewed as a secondary hub. For example VIE’s position as a facilitator of connecting traffic between Asia and North America could be at risk if airlines at either end of this flow introduced hub bypass aircraft technology.
- 6.39 The extent to which this may represent a future risk is illustrated in Table 6.8 which sets out Austrian Airlines’ long haul destinations in summer 2013, along with the key incumbent airline at each destination (i.e. where there is competition against Austrian Airlines on this route). We also summarise whether these competitor airlines currently operate - or plan to operate - either the Airbus A380, Boeing 787 or Airbus A350 (broadly equivalent to the B787) in their aircraft fleets.

TABLE 6.7 NEW TECHNOLOGY USAGE BY KEY CURRENT LONG HAUL COMPETITORS TO AUSTRIAN AIRLINES

Destination	July 2013 monthly OS departing flights	Key airline at destination	Current A380 operator?	A380 on order?	Current B787/A350 operator?	B787/A350 on order?
Amman	21	Royal Jordanian	No	No	No	Yes
Astana	13	Air Astana	No	No	No	Yes
Bangkok	31	Thai Airways International	Yes	No	No	Yes
Beijing	31	Air China	No	No	No	Yes
Delhi	26	Air India	No	No	Yes	Yes
Dubai	31	Emirates	Yes	Yes	No	No
New York JFK	62	United	No	No	Yes	Yes
Tehran	22	Iran Air	No	No	No	No
Tel Aviv	62	El Al	No	No	No	No
Tokyo Narita	62	All Nippon Airways	No	No	Yes	Yes
Toronto	31	Air Canada	No	No	Yes	Yes
Washington Dulles	31	United	No	No	Yes	Yes

Source: OAG Airline Schedules Database, Ascend Online Fleets, individual airline websites

- 6.40 The analysis shows that the competitive threat to Austrian Airlines at VIE from new long haul aircraft technologies is likely to increase. The main risk is likely to emerge from delivery to long haul airlines over the next five years of the Boeing 787 and Airbus A350.
- 6.41 Most of the airlines that Austrian Airlines currently competes against on long haul routes are due to take delivery of either the Boeing 787 or Airbus A350 in the short to medium term.
- 6.42 The Boeing 787 in particular has been designed to provide service on 'thin' long haul routes where traffic would otherwise be routed through a hub airport. On this basis it seems reasonable to assume that VIE (and the other hubs in Central Europe) may not necessarily experience the full benefit of the growth in intercontinental traffic flows predicted by the leading aircraft manufacturers, and that connecting volumes on these specific flows may grow in the longer term at relatively lower rates.
- 6.43 While our analysis shows that the A380 is likely to be relatively less used by the current long haul competitors to OS, its design capacity of 550 seats is of an

order that requires airlines to price competitively to fill the capacity. Given the global reach of Emirates in particular this could be having the effect of diverting connecting traffic away from VIE and other European hubs as EK is dependent on such traffic to make use of the A380 viable.

- 6.44 The free user charge arrangements for connecting passengers in the UAE airports are likely to enhance this effect, and support the operating efficiencies of the A380 in the Gulf.

Competition from Munich Airport ('MUC')

- 6.45 Based on the analysis set out in previous sections in this report, Table 6.8 compares VIE and MUC against a variety of key criteria, especially in relation to factors that impact on the level of connecting traffic that might be supported by the respective hubs.

TABLE 6.8 COMPARISON OF KEY HUB TRAFFIC CRITERIA

Criteria	VIE	MUC
2013 connecting traffic	6.8m	15.1m
Leading airline	Austrian Airlines	Lufthansa
No. of non-stop destinations (2012)	143	187
Runway capacity	2 runways, seeking 3rd	2 runways, seeking 3 rd
Minimum Connect Time	25 minutes	30 minutes
Short Haul aircraft turnaround charges per passenger (excluding government taxes)	circa € 10.80 - € 14.10	circa € 12.50 - € 13.40
Transfer Passenger charges	Minimum of € 12.50 credit per departing transfer passenger	16% discount available on Passenger Charge
Taxes	Austrian Air Transport Levy, EU ETS	German Aviation Tax, EU ETS

Source: Steer Davies Gleave analysis

- 6.46 Our analysis suggests that VIE has some advantages over MUC as a potential site for hub airline capacity, for example with respect to its lower transfer passenger charges, lower minimum connect time and marginally lower level of government taxes (although this could some become a disadvantage if Germany abolishes its aviation tax).
- 6.47 There are several key areas in which MUC appears to have a material advantage over VIE. The most important of these are:
- The size of its existing connecting traffic base. MUC serves about 2.5 times as many connecting passengers as VIE, which provides an indication of the intrinsic strength of MUC as a hub location;
 - The greater number of non-stop destinations served from MUC; and
 - Its role as a base for parent airline, Lufthansa, rather than a subsidiary (Austrian Airlines).

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- 6.48 We have also considered evidence on how the Lufthansa Group has historically placed capacity between its main hub airports (FRA, MUC, ZRH and VIE).
- 6.49 Munich is the 2nd most important airport for the Group (after FRA). However while FRA's share of Lufthansa Group scheduled seat capacity has fallen (2005 49.9%, 2013 41.5%) MUC's share has increased (2005 22.5%, 2013 28.4%).
- 6.50 In contrast VIE's share has only changed marginally (2005 13.5%, 2013 14.4%).
- 6.51 This suggests that MUC has relatively greater importance to the Lufthansa Group as it considers where to develop the based capacity to service growth in its network.
- 6.52 Scenario 3 in the next section quantifies the potential impacts on traffic volumes at VIE should the Lufthansa Group choose to close its hub activities at VIE, switching them to MUC instead.

Inadequate airport infrastructure

Airport

- 6.53 Examples from airports such as London Heathrow illustrate the dangers to hub airports wishing to protect and grow their traffic while not adequately developing their infrastructure. At Heathrow the range of destinations has shrunk considerably, connectivity to key growth markets in Asia and Latin America lags behind competitors, and the airport now faces a challenge to its role as Europe's busiest airport from Paris CDG.
- 6.54 Each of the airport companies we have studied has plans for major expansion of facilities to meet demand. Table 6.9 summarises these plans along with their current status.

TABLE 6.9 PLANNED AIRPORT INFRASTRUCTURE EXPANSION

Airport	Current capacity position	Capacity expansion aspiration	Comments
VIE	Runway full at peak times	Full length 3rd runway, parallel to existing 16/34 runway, by 2020.	Extensive stakeholder consultation process
MUC	Runway full at peak times	3rd runway to enable the airport to schedule 120 movements per hour, with expansion in terminal facilities to service demand of circa 58 mppa	Bavaria Administrative Court ruling in favour (February 2014)
ZRH	Runway and aprons busy at peak times	Develop apron areas and extend runways to facilitate 350,000 movements per annum	Local referendum voted in favour (November 2011)
IST	Airport close to capacity	Development of a new 3rd airport for Istanbul, fully operational in 2018, with ultimate long term capacity of 6 runways and 150 mppa	Turkish government has awarded construction tender to the -Cengiz-Kolin-Mapa-Kalyon OGG consortium

Sources: Individual airport websites

- 6.55 Addition of the third runway at VIE will provide additional peak capacity in which to support the hub operation of Austrian Airlines.
- 6.56 The plans at ZRH envisage further development of the existing facilities but do not include provision of a new runway.
- 6.57 The key risk for VIE therefore appears to be from MUC, which would ideally seek to introduce a third runway in a similar, if not earlier, timeframe to that previously targeted by VIE. Delivery of a third runway at MUC ahead of VIE is likely to be a key pre-condition for scenario C (described in the next section which quantifies the impact on VIE should MUC take over the role of West-East hub within the Lufthansa Group).
- 6.58 By the same logic delivery of a third runway at VIE, ahead of MUC, would appear to be a key enabler of scenario A, in which VIE is assumed to retain and develop its hub function.
- 6.59 A secondary risk identified by some stakeholders is from constraints on movement levels at VIE in the early morning/late evening periods, and in particular at night. However it was also noted that night flights are permitted at VIE - in contrast to the night flight ban at FRA for example, and that the airport has a good mechanism through its 'Dialogforum' arrangements to discuss and seek mutual solutions to issues such as aircraft noise at night.

Airspace

- 6.60 In our discussions with Austro Control they made the point that VIE has a less complex airspace than other peers (e.g. ZRH) and also has a lower level of noise complaints from neighbouring Slovakia than ZRH receives from Germany.

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- 6.61 While peak capacity issues exist at VIE the airport and its surrounding airspace have handled a materially higher number of flights in the past than at present. Similarly the current level of ATC delays is not believed to be significant relative to those experienced at other European airports.

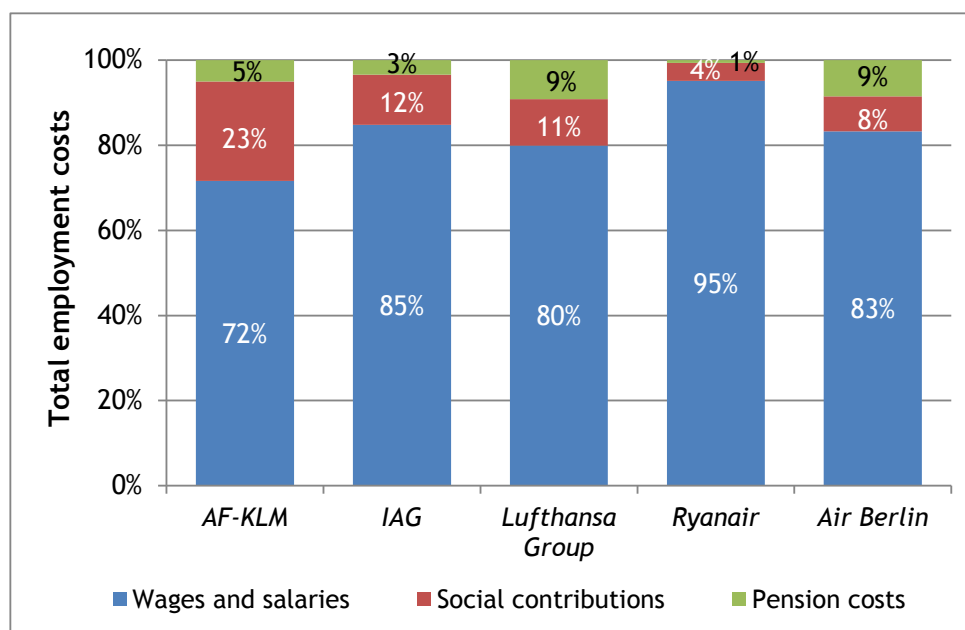
Structural differences in tax legislation and social standards for aviation employees

- 6.62 Differences in tax legislation and social standards for aviation employees can effect competition by reducing the operating costs of one hub airline versus another.

Relative employment costs

- 6.63 Air transport is a labour-intensive industry with a very high degree of international competition. Each country has different employment laws, and social and pension requirements differ.
- 6.64 Figure 6.1 illustrates how these elements vary between European carriers, based on the data available in the annual reports of these carriers (breakdown of employment costs was not available for Emirates or Turkish Airlines). Performance data for Austrian Airlines and NIKI are reported under the Lufthansa Group and airberlin respectively.

FIGURE 6.1 COMPARATIVE AIRLINE EMPLOYMENT COSTS 2013



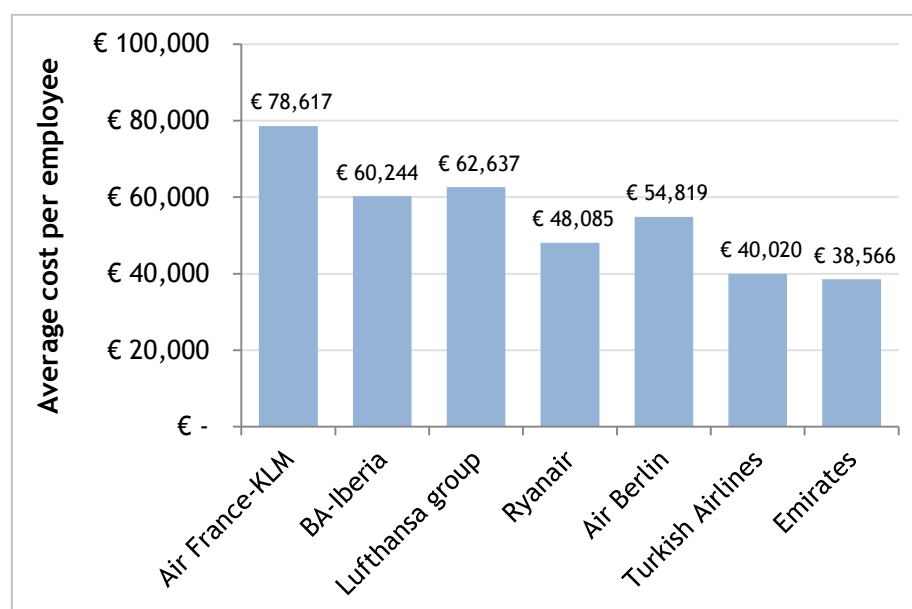
Source: Analysis of Airline annual reports (2013) where this data is available

- 6.65 The results for the Lufthansa Group and airberlin are in the middle of the range, with the extremes represented by Air France-KLM and Ryanair. Air France-KLM's total social contributions (including pension costs) are substantially higher than for its competitors, whilst the social and pension contributions of Ryanair represent only a small fraction of the overall employment costs (in 2013 5%). In Ireland it is the responsibility of the employees to make pension contributions rather than that of the company. Moreover, all Ryanair crew in Ireland and continental Europe, whether on Ryanair payroll or an agency payroll, operate on Irish contracts of employment,

on the basis that those crew work on Irish territory (i.e. on board Irish registered aircraft). This has been challenged by the French authorities and in October 2013 a French court ordered the airline to pay more than €9 million in fines and damages for breaching labour laws over non-payment of social insurance and state pension contributions in France, saying employees of foreign airlines living in France come under French social security and tax law. Ryanair appealed.

- 6.66 If Ryanair were forced to concede that Irish jurisdiction did not apply to those crew who operate from continental Europe then “it could lead to increased salary, social insurance and pension costs and a potential loss of flexibility”⁴. European legislation governing the country in which employees and employers must pay social insurance costs was introduced in June 2012 and states that employees and employers must pay social insurance in the country where the employee is based but provides grandfathering rights which means that existing employees are exempt unless where they transfer to a new base in a different country. Ryanair estimates that the change in legislation will not have any initial material impact on its salary costs although it could have an adverse impact over time.
- 6.67 Figure 6.2 compares the average total staff cost (including wages and salaries, social and pension contributions, and share-based payments where available) of these airlines, including Turkish Airlines and Emirates. By some margin, Air France’s costs per employee are the highest. When comparing this data, it should be noted that the figures for Air France-KLM group, Lufthansa group and IAG are for airlines and their subsidiaries including their catering, maintenance repair and overhaul, cargo and associated businesses.

FIGURE 6.2 AVERAGE COSTS PER EMPLOYEE, 2013



Source: Analysis of airline annual reports except Air France-KLM (registration document)

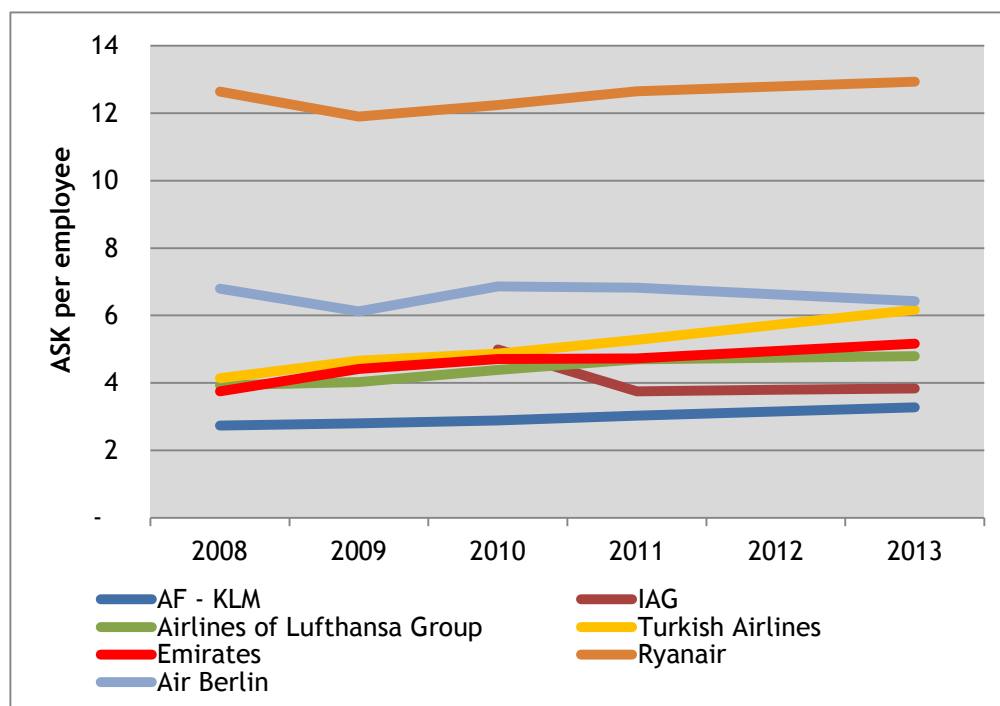
- 6.68 Emirates is the airline with the lowest staff costs in the sample. In the UAE, there is no income tax and there are no trades unions at Emirates. Additionally,

⁴ Ryanair 20F-2013 form, page 13

press reports indicate that Emirates staff who are to an overwhelming majority non-UAE nationals and come from all over the world are provided with housing, as well as medical care and transportation to/from work ensuring that even if average staff cost (and staff wages) are low, the airline can provide an attractive standard of living in the UAE and abroad.

- 6.69 The cost of living in Turkey is also lower than in the rest of Europe and explains the difference between Turkish Airlines and the other network carriers.
- 6.70 Staff productivity can also be considered, measured in terms of ASK (average seat kilometre which is a measure of airline output) per airline employee. There are some significant differences between network airlines (Air France-KLM, IAG, Lufthansa Group, Emirates and Turkish Airlines) and lower cost airlines such as airberlin or Ryanair.
- 6.71 This is because the low cost airlines operate a simpler business model without the need for a large number of staff, but also because their employee productivity is very high; for instance Ryanair pilots work close to the maximum allowed under JAA regulations of 900 flight hours per year which is not necessarily the case in other European airlines.

FIGURE 6.3 AVERAGE ASK PER AIRLINE EMPLOYEE (2013)



Source: Analysis of airline annual reports except Air France-KLM (registration document).

Notes:

The number of employees of AF-KLM only includes the number of employees of AF and KLM.

Lufthansa employee figures only include airline staff (including Austrian Airlines and Swiss).

For IAG, we were not able to isolate airline employees only.

Austrian transfer of flight operations to Tyrolean Airways

- 6.72 In 2012 Austrian Airlines decided to outsource its entire flight operations (80 aircraft, 600 pilots and 1,500 flight attendants) to its regional subsidiary Tyrolean Airways. The transfer programme was aimed to cut costs and

modernize Austrian's framework conditions in order to steer the airline back into profit. This was implemented after negotiations on a proposed new collective agreement that would have change a number of Austrian Airlines employment conditions broke down earlier in the year. Austrian's trade unions and Works Council did take legal action against the transfer but have been delayed due to the complexity of the matter, according to press sources.

- 6.73 Over the last ten months, Austrian Airlines Group with the Works Council, trade union and Austrian Federal Economic Chamber have been negotiating a new Austrian Airlines Group collective wage agreement which would have opened up the possibility to merge Tyrolean Airways and Austrian Airlines in the future. Key aspects of the agreement focussed on new flight duty rules, new salary scale, a profit sharing scheme based on the net profit, a revised pension fund model as well as a new career model for the cabin and cockpit staff.
- 6.74 However the management of Tyrolean Airways decided to withdraw its offer for a new Group collective wage agreement in June 2014 following threat of industrial action.

Benchmarks

- 6.75 One theme that develops from consideration of the competitive environment for Austrian Airlines and VIE is the extent to which they face 'fair competition' or not from other airports and/or airlines.
- 6.76 As illustrated through this study whilst VIE generally benchmarks quite closely to MUC and ZRH across a variety of indicators, in several cases the performance of IST is very different (and superior) from that of the Central European peer airports. Examples set out in this study include:
- IST average aircraft turnaround costs are typically 19-27% lower than those of the 2nd best performer among the peer airports considered;
 - Turkey is not part of an Emissions Trading Scheme and air travel volumes at the Turkish airports have not felt the full effect of the EU's ETS scheme;
 - There are no specific taxes on aviation in Turkey;
 - Istanbul is developing a new airport whereas each of VIE, MUC and ZRH have been going through various detailed forms of planning process in recent years to get approval for extension of their existing facilities.
- 6.77 While we have not focused on Dubai in detail in this study the analysis of relative employment costs highlights the advantage Emirates enjoys over European airline competitors through its significantly cheaper average staff costs. The airline has been accused in the past of benefiting from various hidden subsidies including access to cheap aviation fuel, and has vigorously denied these claims.
- Within the context of this study it is interesting to note that DXB (and other UAE airports with service into Europe such as Abu Dhabi) provide exemptions in their published passenger charges for transfer and transit traffic where the flight connection takes place within 24 hours.
- 6.78 Some of the advantages enjoyed by Austria's competitors in Turkey, the UAE and other Gulf States may reflect natural factors such as cultural differences. Similarly some competitive advantages, for example in the relative imbalance

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of flight frequency provided by Turkish Airlines and Emirates respectively on their routes into VIE have emerged gradually.

- 6.79 VIE and Austrian Airlines face strong competition from these carriers and their home airports, especially in the market for connecting West - East intercontinental traffic. We explore the potential consequences on traffic at VIE of enhanced competition from these sources - whether 'fair' or not - in 'Scenario B' in the next section of this report.

Environmental impacts on traffic growth

- 6.80 A key risk from EU ETS is that it will distort competition by raising the price of access/egress for airlines using airports in the European Union, with a resulting rise in passenger fares. There may be analogies to the impact of more general aviation taxes (for example the Air Passenger Duty levied in the UK). Here airlines have found it difficult to pass the full price of the tax onto passengers, and their route profitability has been impacted as a result.
- 6.81 Non-European airlines such as Turkish Airlines which compete with Austrian Airlines, but whose home states are not part of the European Union scheme (and which may therefore face ETS only in the European Union part of their networks), may derive an advantage. However this may only be a short term phenomenon as the European Union's recent suspension of ETS on flights in and out of the EU (while retaining it for intra-EU flights) is based on agreement to develop a global arrangement through ICAO. In this case carriers such as Turkish Airlines and Emirates may in the medium term be included in a global scheme for aviation.
- 6.82 Most studies have concluded that the actual impact of EU ETS on air fares will be quite light, amounting to no more than a few euros per ticket (at least in the short term). At present most carbon allowances are free, while over the longer term incentives on airlines to use more fuel efficient aircraft in order to lower operating costs will also help to offset the impacts of ETS (as airlines have to obtain sufficient permits for the volume of CO₂ their flights emit).
- 6.83 In modelling traffic volumes at VIE we have assumed that the effects of improved aircraft technology (which should support traffic growth by reducing unit operating costs and thus fares assuming airlines pass some of these benefits on to passengers), and rising real oil prices (which will act in the opposite direction to increase fares and thus dampen demand growth) are likely to be much more significant influencers on traffic volume growth.
- 6.84 In our 'Scenario A' traffic forecast (described in the next section) we have assumed that real air fares at VIE will decline on average by 0.3% per annum through to 2035. This takes into account the adverse impacts of EU ETS, as well as the larger impacts of factors such as jet fuel prices and technological change described above. The main influence on the overall level of demand will therefore be macroeconomic changes along with the extent to which VIE can continue to remain competitive in its niche connections market.

Other risk factors

Low cost carrier competition in Eastern Europe

- 6.85 VIE has developed its niche position in part by being able to provide connectivity into parts of the region that would otherwise be poorly served given the relative lack of competing low cost traffic.
- 6.86 As shown in Table 6.2 about 47% of Austria's connecting traffic flows in 2012 touched points in Eastern Europe. On this basis any change to the competitive balance on these individual routes could have important consequences for VIE. One such example would be the development of new low cost routes which enabled passengers in Eastern Europe to bypass VIE and the other Central European hub airports. Table 6.10 shows the contribution of individual countries to the total Eastern European connecting traffic in Austria, along with the proportion of national airline seat capacity currently provided by low cost carriers in those countries.

TABLE 6.10 KEY EASTERN EUROPEAN CONNECTING MARKETS IN AUSTRIA

Connecting Market	% of Eastern European connecting traffic (where served in Austria)	% low cost carrier capacity in home market
Albania	11.2%	6%
Croatia	9.8%	40%
Poland	9.3%	47%
Czech	8.5%	19%
Ukraine	8.0%	8%
Belarus	7.4%	1%
Bulgaria	7.0%	29%
Romania	6.7%	28%
Armenia	6.1%	1%
Russia	5.0%	1%
Serbia	4.9%	18%
Hungary	3.8%	55%
Slovenia	3.6%	7%
Others	8.6%	48%

Source: Sabre/ADI, OAG Airline Schedules Database

- 6.87 It suggests that the main risk may predominantly be in traffic to countries in the ex-CIS where important connecting markets such as Ukraine, Belarus, Armenia and Russia currently have a low proportion of their national capacity provided by low cost carriers. However flight frequency between countries in Europe and the ex-CIS is generally controlled by air services agreements, and

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these may be providing a brake on the development of low cost competition in these markets.

- 6.88 In the leading connecting markets in Central Europe (e.g. Poland, Czech Republic, Hungary and Croatia) the low cost proportion is much higher, which may indicate that Austrian Airlines has been able to maintain its connecting traffic flow in these markets despite the enhanced competition that low cost carriers can bring.

Cross-subsidisation of regional airports

- 6.89 Changes in the regulation of ANSP/ATC fees mean that costs are anticipated to fall in the near term and beyond. Similarly security charges are now calculated on a usage basis which means that the user charges for security are now lower in real terms at VIE than they were historically.
- 6.90 However some stakeholders noted that there is a common ATC arrival/departure fee at all airports in Austria (irrespective of demand) which results in users of VIE cross-subsidising users of tower services elsewhere in the country.

7 Possible Scenarios for the VIE hub

Highlights

Scenarios

This section assesses the potential long term traffic outputs and economic impacts for Austria of three key scenarios impacting on the VIE hub:

Scenario A: VIE remains a national hub and a secondary hub in the Lufthansa-Star Alliance network including a focus on East-Europe and, to a lesser extent, on intercontinental destinations in South-East-Asia.

Scenario B: VIE remains a hub but its market position weakens as a consequence of further competition, in particular from carriers such as Turkish Airlines and Emirates.

Scenario C: VIE loses its hub function to another Lufthansa hub airport or to other Eastern-European airports without intensified operations of new-generation carriers.

Traffic Forecasts

Scenario A is the most beneficial in terms of traffic development, with passenger volumes assumed to grow at VIE to about 35 million passengers in 2025 and 48 million passengers by 2035. This is conditional on continued macroeconomic growth and assumes that a financially rejuvenated Austrian Airlines makes best use of a third runway at Vienna (which we have assumed could be available from about 2020).

Enhanced competition from carriers such as Turkish Airlines and Emirates - especially for connecting traffic (Scenario B) - would delay the growth of traffic and could potentially have damaging knock on effects to Austrian Airlines as the hub carrier at Vienna.

In the event that Vienna lost its hub function to Munich (Scenario C) the effects on traffic could be similar to those seen in previous de-hubbing examples across Europe. Total traffic levels might not recover to previous levels until the mid-2020s, connecting traffic volumes could fall materially to permanently lower levels, and it is likely that a third runway at Vienna would not be required in the forecast time horizon.

Based on current market conditions we consider that VIE is developing towards a Scenario B outcome. However there are policy options available to Austria which could help to foster a Scenario A outcome.

Economic Impacts

The economic footprint of VIE and its wider impacts would be substantially different under the three scenarios presented. Direct employment at VIE could grow to up to 39,250 employees by 2035 under Scenario A, but only up to 22,600 under Scenario C. Likewise, the contribution of VIE to Austrian GVA could grow by between 48% (Scenario C) and 156% (Scenario A) by 2035.

The impact of diminished connectivity under Scenario B and Scenario C would in turn negatively affect GDP growth for Austria in the short-term relative to Scenario A. Under Scenario C, medium-term growth (2025) would be just 0.1%. In contrast, improved connectivity in Scenario A could boost GDP growth in Austria by up to 0.35% in the medium-term and over 0.5% in the long-run (2035).

The differences in international connectivity from VIE between the different future scenarios has important impacts on passengers - as is evident from the passenger forecasts. Compared to a future akin to Scenario A, the two alternative scenarios deliver significantly reduced consumer surplus. By 2035, Scenario A would mean passengers would be €1.5 billion better off than under Scenario B and €3 billion better off than for Scenario C.

Comparison of Scenario Outputs

In overall terms Scenario A is the most advantageous to the Austria delivering increased air connectivity and substantial economic benefits.

These benefits are delivered to a lesser extent in Scenario B and there is also a degree of downside risk to the traffic outcomes which in turn suggest potential downside risk to the calculation of economic benefits.

Scenario C is the least beneficial to Austria's economy.

Introduction

- 7.1 In this section we set out the results of modelling the traffic and economic impacts of different scenarios for the future development of the market at VIE.
- 7.2 The scenarios examined are:
- Scenario A: VIE remains a national hub and a secondary hub in the Lufthansa-Star Alliance network including a focus on East-Europe and, to a lesser extent, on intercontinental destinations in South-East-Asia.
 - Scenario B: VIE remains a hub but its market position weakens as a consequence of further competition.
 - Scenario C: VIE loses its hub function to another Lufthansa hub airport or to other Eastern-European airports without intensified operations of new-generation carriers.
- 7.3 Further detail about the Scenarios is provided below. We present the potential traffic outputs for each Scenario first, and then go on to examine the respective economic benefits of each.

Impacts on Traffic

Scenario A

- 7.4 Scenario A envisages the continued presence of the VIE hub and takes into account the future plans and aspirations of key stakeholders including Flughafen Wien and Austrian Airlines.
- 7.5 To some extent delivery of the benefits suggested by Scenario A will depend on factors over which policymakers will have little or no influence. For example Scenario A's traffic projections include the assumption that there will be ongoing growth in the demand for Origin-Destination travel, primarily driven by

GDP growth (at levels similar to those shown in Table 6.5) supported by a long term trend for reducing real air fares. Austrian transport policymakers are likely to have little influence over this.

- 7.6 Similarly it is important to note that the outcomes we have projected for Scenario A are unlikely to emerge to the extent projected if left solely to the workings of the market or without changes to certain key aspects of the way in which aviation in Austria and at VIE currently operates. The policy recommendations provided in this report are therefore designed to support delivery of the traffic and economic benefits of Scenario A.
- 7.7 In addition to the continued growth of Origin-Destination traffic key enablers for the successful delivery of Scenario A would include:
- Further growth in connecting traffic, reflecting similar drivers to the Origin-Destination traffic;
 - A stable financial position for Austrian Airlines enabling profitable capacity expansion to meet the growth in demand;
 - A stable strategic position for Austrian Airlines within the Lufthansa Group enabling continued focus on VIE's niche hub flows;
 - Further development of traffic by other carriers at VIE (notably NIKI/airberlin given their prominence at VIE after Austrian Airlines, but also including other carriers) in ways which were generally complimentary to the network development undertaken by Austrian Airlines. This would add to the volume of traffic at VIE but also help to diversify risk and reduce dependence on Austrian Airlines;
 - Construction and operation of the third runway to support peak hub operations; and
 - Development of ATC capacity to safely and efficiently facilitate the projected levels of traffic demand.
- 7.8 The summary results for scenario A are set out in Table 7.1.

TABLE 7.1 VIE PASSENGER TRAFFIC FORECASTS - SCENARIO A

Year	Origin-Destination (m)	Connecting (m)	Total VIE passengers (m)
2013	15	7	22
2025	23	12	35
2035	30	18	48

Source: Steer Davies Gleave analysis

Scenario B

- 7.9 There are a range of potential outcomes within this scenario; for example the development of traffic (including connecting passenger volumes) is likely to vary according to whether VIE implements the third runway or not. For Scenario B we have assumed that VIE will develop a third runway and that Austria will implement some of the measures supporting Scenario A - however the competitive environment is assumed to be difficult and as a result the traffic and economic impact outcomes are judged to be lower than those that could be derived in Scenario A.

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- 7.10 There are various extents to which this scenario could impact on the traffic volumes at VIE. We have modelled the scenario by considering the specific risks of encroachment by Turkish Airlines and Emirates on the connecting traffic markets in which VIE currently competes against IST and DXB.
- 7.11 Based on the analysis set out in Table 6.2 we have calculated that over time VIE could potentially lose between 20-25% of its connecting traffic in this way (i.e. through Turkish Airlines and Emirates targeting a greater share of markets competed for by Austrian Airlines).
- 7.12 As the competition would be focused on some, but not all, of the Austrian connecting flows we have assumed that Austrian Airlines would continue with its hub strategy and that a third runway would eventually be built to facilitate this. However there is some downside risk to this assumption; in the event that a new runway was not built the potential impacts on traffic (relative to scenario A) would potentially be greater than those set out below.
- 7.13 The summary results for scenario B are set out in Table 7.2.

TABLE 7.2 VIE PASSENGER TRAFFIC FORECASTS - SCENARIO B

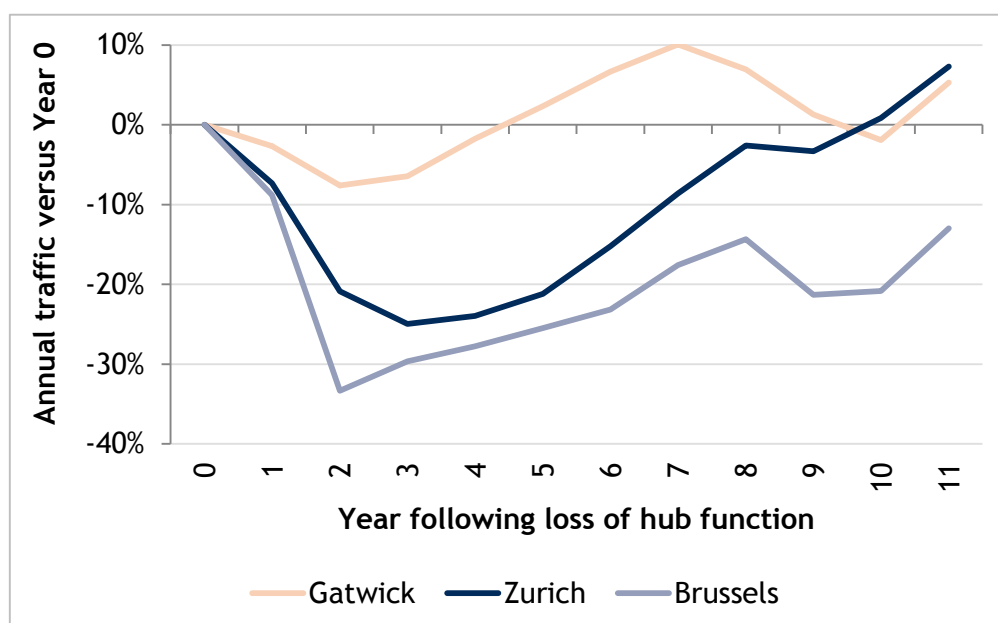
Year	Origin-Destination (m)	Connecting (m)	Total VIE passengers (m)
2013	15	7	22
2025	22	9	31
2035	28	12	40

Source: Steer Davies Gleave analysis

- 7.14 The main impacts would fall on VIE's connecting traffic. However it is likely that the enhanced competition would weaken parts of the route structure at VIE, especially impacting on thin routes in contested markets which had a high connecting proportion (for example our analysis indicates that a number of routes into Eastern Europe from VIE have a high proportion of connecting traffic). Where such routes were lost VIE could also lose the Origin-Destination traffic to these destinations.
- 7.15 As stated above, VIE operates in a competitive market and it is possible that a Scenario B outcome could develop over time irrespective of positive actions taken to influence the development of traffic at the hub. The main factors needed to prevent the emergence of Scenario B are likely to be those that in turn would support delivery of Scenario A, principally:
- Ongoing demand growth;
 - Financial robustness of Austrian Airlines; and
 - Development of the third runway at VIE.
- 7.16 Moves to develop the diversity of traffic at VIE will also help to support traffic levels and may be in the wider interests of Austria in terms of promoting connectivity and providing airline choice to travellers.

Scenario C

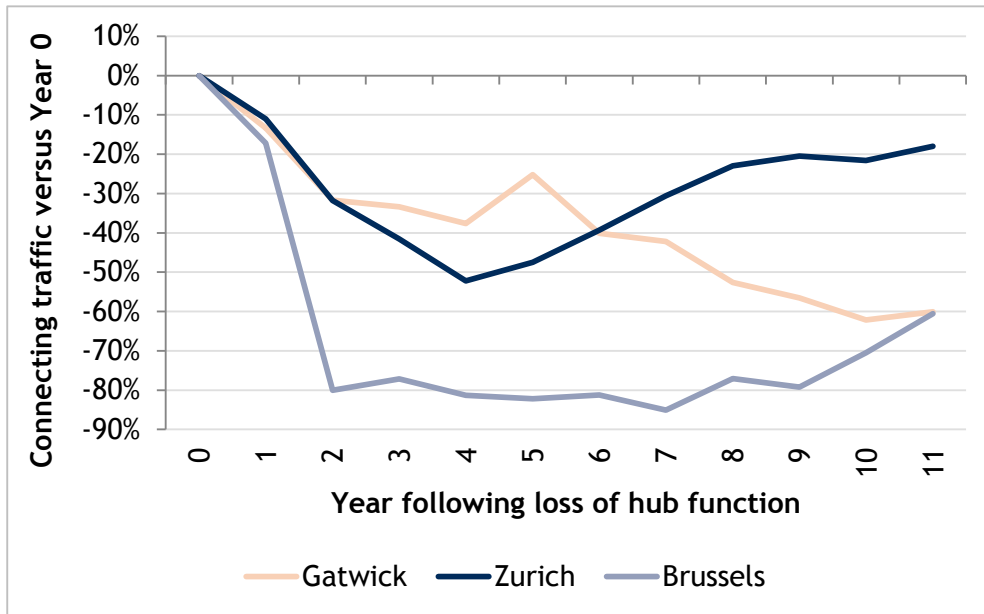
- 7.17 For this scenario we have assumed that VIE would lose its hub status to MUC in the short term, and also that it would not introduce a third runway in the period to 2035.
- 7.18 The potential impacts on traffic volumes of a loss of hub function at VIE can be assessed by reference to other airports which have undergone such changes - either because of strategic decisions about capacity placement made by the hub airline, or due to financial failure by that airline.
- 7.19 Figure 7.1 sets out the development of annual traffic in the years after a historical loss of hub function at London Gatwick, Zürich and Brussels respectively.
- Gatwick was used as a second London hub airport by British Airways before it dismantled this operation in 2000.
 - Zürich was the hub for Swissair before the carrier ceased operations in 2002 (the hub function has subsequently been re-established by the revamped Swiss International Airlines).
 - Brussels was the hub for Sabena before the airline went bankrupt in 2001.

FIGURE 7.1 TRAFFIC DEVELOPMENT FOLLOWING LOSS OF HUB FUNCTION

Sources: UK CAA, Zürich Airport, Brussels Airport

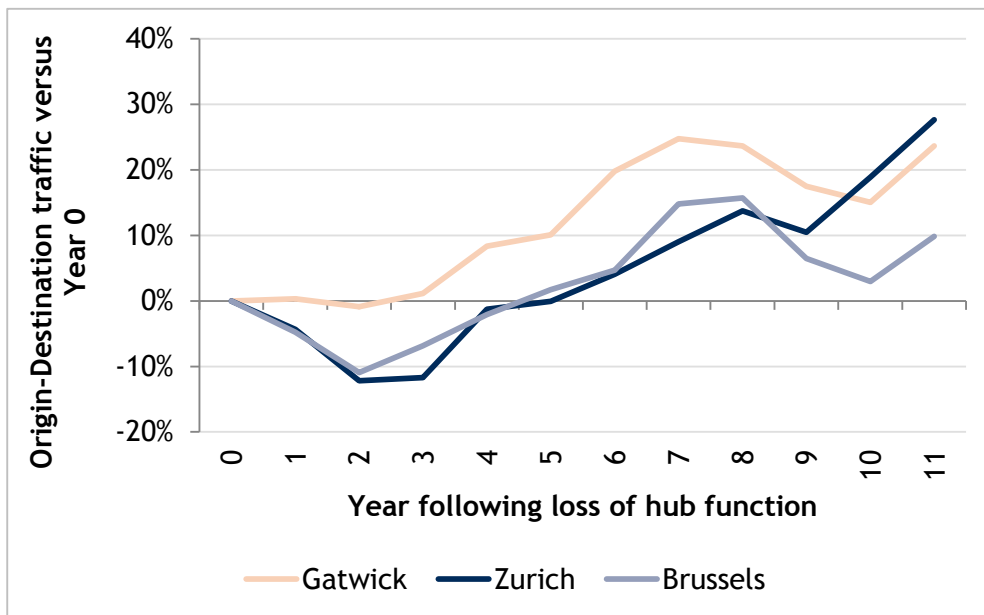
- 7.20 Gatwick took four years to recover the traffic lost after British Airways de-hubbed. At Zürich volumes took ten years to recover whilst Brussels has never fully regained the traffic lost after the demise of the Sabena hub.
- 7.21 The principle effects of these changes have been on the connecting traffic volumes whereas Origin-Destination traffic at each of these three airports rebounded quite quickly. This is shown in Figure 7.2 and Figure 7.3.

FIGURE 7.2 CONNECTING TRAFFIC DEVELOPMENT FOLLOWING LOSS OF HUB FUNCTION



Sources: UK CAA, Zürich Airport, Brussels Airport

FIGURE 7.3 ORIGIN-DESTINATION TRAFFIC DEVELOPMENT FOLLOWING LOSS OF HUB FUNCTION



Sources: UK CAA, Zürich Airport, Brussels Airport

7.22 We have developed scenario C with reference to the insights gained from the historical events at the Gatwick, Zürich and Brussels hubs. The results are set out in Table 7.3.

TABLE 7.3 VIE PASSENGER TRAFFIC FORECASTS - SCENARIO C

Year	Origin-Destination (m)	Connecting (m)	Total VIE passengers (m)
2013	15	7	22
2025	20	2	22
2035	26	3	28

Source: Steer Davies Gleave analysis

- 7.23 For modelling purposes we have assumed that the loss of hub function would occur over the 2013-2017 period, with traffic not recovering back to previous levels until the mid-2020s, and with a permanent shift away from hub activities (for example by 2025 connecting traffic would only account for about 11% of VIE's total traffic).
- 7.24 For Scenario C to materialise it would imply that Austrian Airlines had either experienced a commercial failure and/or it had lost its hub function within the Lufthansa Group. Policy actions to mitigate against the risks of such events happening would therefore need to be focused on either helping to support the financial situation of the airline, or by influencing the Lufthansa Group to retain VIE as one of its hubs.
- 7.25 These factors may in turn be linked; it is reasonable to expect that a decision to relocate hub capacity away from VIE would be harder to make if Austrian Airlines was consistently generating strong profit margins.
- 7.26 Suitable actions are therefore likely to have a principal focus of restoring Austrian Airlines to financial health and could include actions to influence operating costs borne by the airline, where the Government was able to do this.
- 7.27 A policy of traffic diversification at VIE could also be appropriate as, in the absence of Austrian Airlines, the hub would wish to quickly find replacement airline capacity to replace that lost from the previous incumbent. In this case policies that helped to nurture airlines such as NIKI/airberlin, Turkish Airlines and Emirates could also be useful in helping to maintain a strong and diverse traffic base at VIE.

Economic impacts of the Traffic scenarios

- 7.28 As explained in section 4, we present the analysis of the changing economic impacts of VIE under the three scenarios outlined above.

Economic footprint - Input-Output Modelling

- 7.29 We have expanded the Input-Output modelling used to calculate the current economic footprint in order to assess the changing footprint of VIE under the different scenarios.
- 7.30 We employ two main assumptions in our analysis. Firstly, we assume that the relationship between the number of jobs per passenger is constant. Based on the available evidence, we assume that every additional million passengers at VIE result in around 800 jobs. This is a lower estimate than the conventional

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1,000 jobs per million passengers, but it reflects the changing labour structure and the current ratio at VIE.

7.31 Secondly, we assume that the multipliers (i.e. the relationship between GVA, employees and output, as well as between direct, indirect and induced jobs) are constant. On the one hand, growth in labour productivity and changes in managerial practices towards delocalisation would tend to increase the multipliers, but, on the other, it would also reduce the number of workers required to deliver a given level of services. The net effect is therefore likely to largely cancel out and the multipliers will stay broadly constant over time.

7.32 The main results of the analysis are presented in Table 7.4 below.

TABLE 7.4 ECONOMIC FOOTPRINT OF VIE UNDER DIFFERENT SCENARIOS

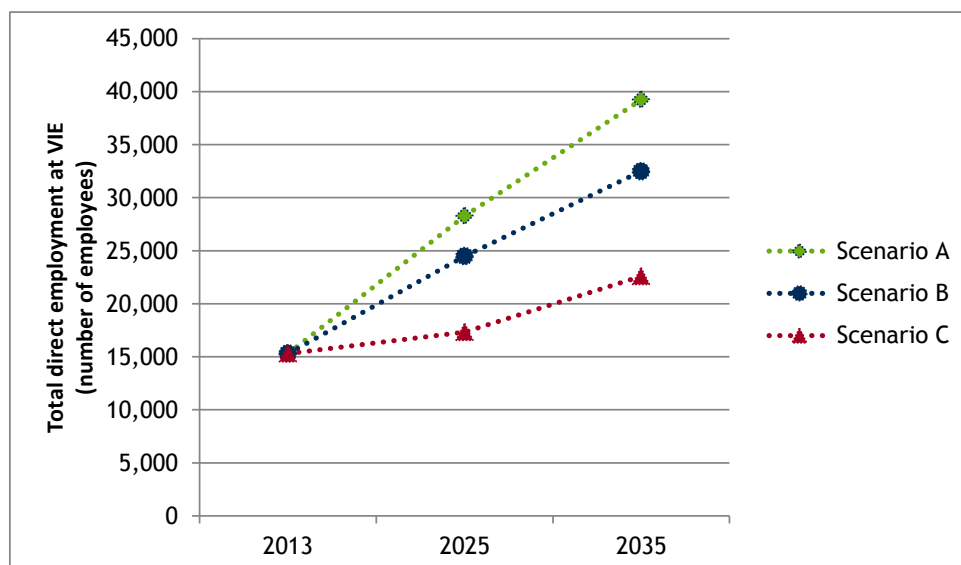
Year/Scenario	Direct employees at VIE	Total direct GVA at VIE (€2010 billion)	Direct GVA growth estimate (with respect to 2010)
Scenario A			
2025	28,275	1,957	85%
2035	39,247	2,716	156%
Scenario B			
2025	24,485	1,695	60%
2035	32,491	2,249	112%
Scenario C			
2025	17,337	1,200	13%
2035	22,591	1,564	48%

Source: Steer Davies Gleave analysis

7.33 Our analysis suggests that, under Scenario A, VIE could see a sustained growth in employment and economic output, closely related to traffic growth. However this growth would be less pronounced under Scenario B, potentially foregoing around 7,000 jobs and half a billion Euros GVA in the long-run (to 2035) compared to Scenario A. Under Scenario C VIE would initially witness a loss in jobs and GVA, with levels of economic activity over 40% lower than Scenario A by 2035.

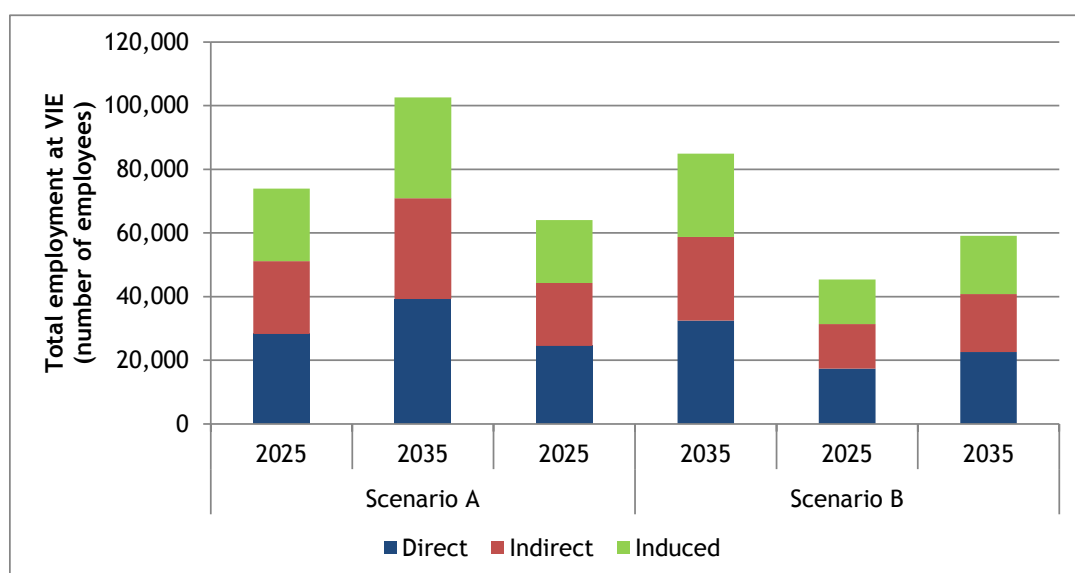
7.34 The estimated levels of employment resulting from different scenarios are shown in Figure 7.4 (direct employment) and Figure 7.5 (total employment).

FIGURE 7.4 DIRECT EMPLOYMENT AT VIE UNDER SCENARIO A/B/C



Source: Steer Davies Gleave analysis

FIGURE 7.5 TOTAL EMPLOYMENT AT VIE UNDER SCENARIOS A/B/C



Source: Steer Davies Gleave analysis

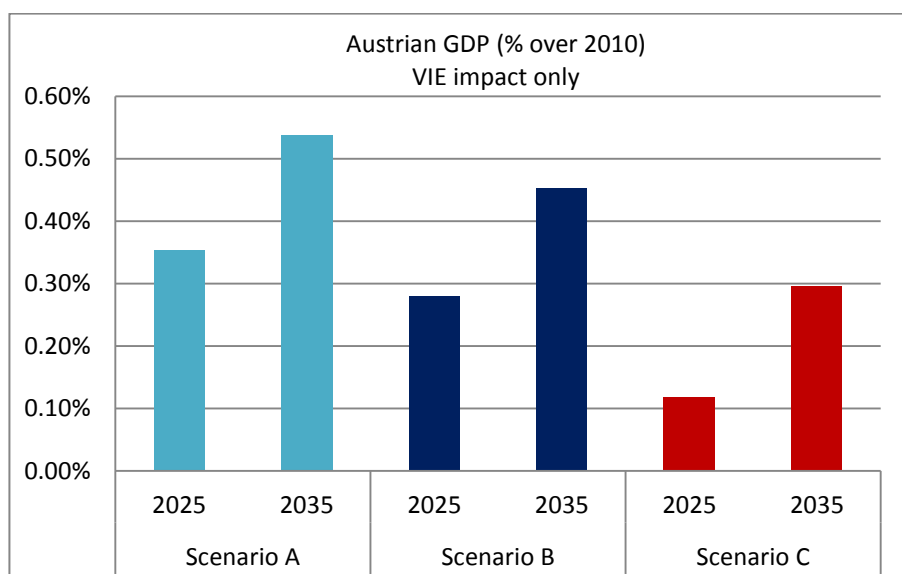
Macro-economic impacts of connectivity

- 7.35 We have further modelled the impact of changes in the connectivity index of VIE resulting from the three different scenarios in order to assess the potential gains and losses in terms of GDP for the whole Austrian economy. The methodology used to produce these estimates is explained in paragraphs 4.15 to 4.19.
- 7.36 In addition, we employ the following assumptions. Firstly, the traffic growth scenarios outlined above are applied to different connections depending on the geographical location of the airports. This step necessarily involves some top-down simplifications. Secondly, we normalise our index in relation to the biggest accessible economy in the sample (Germany) in order to obtain comparable results.

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7.37 Our analysis suggests that GDP growth in Austria could be significantly affected by a change in connectivity, both positively and negatively. Compared to 2010 levels, under Scenario A we estimate that improved connectivity could boost GDP growth in Austria by 0.35% in the medium run (to 2025) and by over 0.5% in the long-run (to 2035). This means that, assuming the Austrian economy grows by 53.3% in real terms by 2035⁵, under Scenario A the potential growth would be 53.6% instead. Under Scenario B, the positive contribution of aviation connectivity would be reduced to around 0.45% in the long-run. Under Scenario C, there would be an initial negative effect on GDP resulting from the loss in connectivity to some major global economies, followed by a restricted recovery over the medium and long-run. The main results are presented in Figure 7.6.

FIGURE 7.6 ECONOMIC IMPACTS OF CONNECTIVITY UNDER SCENARIOS A/B/C



Source: Steer Davies Gleave analysis

TABLE 7.5 ECONOMIC IMPACTS OF CONNECTIVITY UNDER SCENARIOS A/B/C

	Scenario A	Scenario B	Scenario C
2025	€1.01bn	€0.80bn	€0.34bn
2035	€1.53bn	€1.29bn	€0.84bn

Source: Steer Davies Gleave analysis; GDP values expressed in 2013 Euro prices, assuming no underlying growth - i.e. the numbers refer to the impacts of changes in connectivity only

7.38 The macro-economic impacts described above capture the potential loss of productivity and international investment which is a direct benefit of sustained accessibility to global markets. However these only refer to the potential positive/negative additional impacts on GDP growth irrespective of structural changes in the economy and assuming VIE's footprint on the Austrian economy is constant over time.

⁵ Global Insights Forecasts (2012) for real GDP 2010-2035

7.39 Besides, we have not attempted to estimate the effects of non-linear changes, including discontinuity in specific destinations and changes in the operations of long-distance and short-distance flights. Consequently our estimates can only suggest the impacts that an average growth/decline in passengers across groups of flights would yield.

Consumer surplus analysis

7.40 In any economic transaction there is a seller with a reservation price, below which it would not be willing to sell, and a buyer with a reservation price, above which it would not be willing to buy. This is also the case in the aviation industry, where most passengers are willing to pay an amount that is higher than the actual fare paid. The difference between the willingness to pay and the fare is a consumer surplus.

7.41 The willingness to pay for flying will change in response to a range of characteristics of supply, including quality of service (on-board services, convenient departure/ arrival times, flight times etc.). However, willingness to pay will also be affected by demand side characteristics, such as income levels and general consumer trends. We can therefore quantify the change in consumer surplus driven by the supply factors that cause the different passenger demands in each of the future scenarios, but we are not able to quantify the consumer surplus change between different years - as we would be unable to control for the impact of these demand-side factors.

7.42 In practice this means we can only estimate the impact on consumer surplus for a given scenario *relative to another scenario*. We here choose Scenario A as the reference case and present the impact on consumer surplus should Vienna in the future find itself in a situation akin to Scenario B or C.

7.43 Table 7.6 shows our findings by destination markets. This shows the reduction in consumer surplus to Austrian residents from the loss of travel opportunities to and from Austria to different market for scenarios B and C compared to scenario A. For instance, in 2035, scenario C would mean a loss to Austrian residents of nearly €3 billion compared to scenario A.

TABLE 7.6 CONSUMER SURPLUS OF SCENARIOS B & C COMPARED TO A

€ million	Scenario B		Scenario C	
	2025	2035	2025	2035
Domestic	-5.6	-9.4	-16.4	-24.1
Western Europe	-49.8	-56.8	-149.4	-169.1
Eastern Europe	-32.8	-96.7	-219.8	-380.0
Far East	-418.2	-905.6	-650.1	-1,179.4
Middle East	-140.9	-209.2	-125.1	-204.3
North America	-34.1	-233.4	-423.7	-768.6
Africa	0.0	0.0	-119.5	-232.2
Total	-681.3	-1,511.1	-1,703.9	-2,957.7

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Source: Steer Davies Gleave analysis

7.44 The table shows that the most adversely affected destination market would be the Far East, with North America the second. Under scenario B the losses would be relatively modest in the short term, but would reach more than half those of scenario C by 2035.

Benefits of Scenario A

7.45 Through the analysis set out in this section it is clear that Scenario A is the one that would generate the greatest economic benefits for Austria.

7.46 In summary a Scenario A outcome could deliver:

- The highest passenger volumes at VIE, including further growth in connecting traffic volumes supported by a stronger Austrian Airlines. In the ultra-long term this could represent more than a doubling in the current level of passenger traffic flown from the airport;
- The largest growth in the economic footprint of VIE, demonstrated by the projected growth in employment and contribution to the growth of GVA;
- The largest macroeconomic benefits for Austria, relative to the other Scenarios; and
- The highest degree of consumer surplus, as demonstrated by the degree of air connectivity provided for Austrian businesses and consumers to foreign destinations including those in key emerging markets such as China and Russia.

8 Policy Recommendations

Highlights

Recommended Scenario

Based on our review of the economic impacts we recommend Scenario A as the one that should be promoted by Austrian policymakers and stakeholders in the national aviation sector.

Given current market conditions we believe that VIE is developing towards a Scenario B outcome. However the outputs of Scenario A are significantly more preferable, and over the long term either Scenario A or Scenario B could be considered 'most likely'. This is because there are policy options available to Austria which could help to shape a Scenario A outcome. VIE and Austrian Airlines are putting in place actions which could be key enablers of Scenario A once fully implemented.

Available policy options

VIE operates in a competitive environment. If left solely to the market there is no guarantee of a Scenario A outcome. Delivery of Scenario A will therefore require action on behalf of BMVIT and other stakeholders in the aviation sector in Austria against a variety of policy options that we have identified.

Key themes include:

- The need for further development of airport and ATC infrastructure (especially at VIE);
- The requirement for financial stability in the Austrian airline sector (and in particular at Austrian Airlines if the potential opportunities for further connecting traffic development at VIE are to be realised); and
- Need to ensure continuous monitoring of the competitive environment, with mitigating actions taken where necessary (while recognising that there are some factors - such as competition from non-EU airlines - which may disadvantage Austrian Airlines and/or other stakeholders, but which may generate a net benefit to Austria overall).

Recommended policy options

Delivery of Scenario A will be reliant on a variety of enablers of which the most important may be:

- Reinstatement to financial strength of Austrian Airlines in order to make the most effective use of the new airport and ATC capacity provided.
- The implementation of the third runway at VIE, and
- Activities to diversify the traffic mix in ways which are complementary to the further development of Austrian Airlines and the VIE hub concept.

Introduction

8.1 In this section we set out:

- A recommended scenario based on the output of the economic impact modelling of the scenarios.
- The available policy options to promote and protect the recommended scenario.
- A recommended set of policy options, including evaluation of how the desired options might be implemented.

Recommended scenario

8.2 The present position of VIE is likely to lie somewhere between Scenario A and Scenario B although the recent court ruling in Germany in favour of a 3rd runway at MUC increases the possibility of a Scenario C outcome in the long term.

- Austrian stakeholders are undertaking actions which are key enablers of Scenario A, notably VIE's promotion of its third runway scheme, and the restructuring actions being made by Austrian Airlines from which a financially stronger carrier can be expected to emerge once the changes have been fully implemented.
- However, as illustrated in this report, VIE operates in a competitive market. It has gradually lost connecting market share to its Central European peer airports. It's incumbent carrier, Austrian Airlines, has faced growing competition from carriers such as Turkish Airlines and Emirates. VIE is seeking a 3rd runway but is behind MUC which has received a judicial ruling in favour of its new runway.

8.3 Based on the analysis set out in the preceding sections of this report we believe that **Scenario A** represents the recommended scenario for Austrian policymakers to encourage and promote, assuming that generation of economic benefits from commercial aviation is the key criteria by which a Scenario should be selected.

8.4 In summary, Scenario A:

- Generates the largest projected passenger traffic volume at VIE, which is by far the largest airport in the country;
- Has the highest employment and GVA generation potential for Austria;
- Generates the greatest projected level of consumer surplus. This includes the highest relative degree of air connectivity between Austria and the rest of the world, and the largest degree of traffic development to key centres in emerging markets.

8.5 Given the present competitive position of VIE delivery of the benefits envisaged in Scenario A will require the guidance and support of policy makers and the other key stakeholders in the Austrian aviation industry if these outcomes are to be realised.

Available policy options

- 8.6 Table 8.1 summarises our analysis of the key challenges that will face the aviation sector in Austria and in particular the VIE hub as it aspires to deliver the projected outputs of Scenario A.
- 8.7 We have considered these challenges in terms of the following key objectives:
- Activities that are prerequisites to delivery of Scenario A; and
 - Activities that will be necessary to protect the VIE hub from the competitive risks and threats identified in this report (in order to derive the full benefits from Scenario A).
- 8.8 We identify which of the key stakeholders could potentially influence the outcomes in these respective areas.
- In practice there are important factors impacting on VIE and the national commercial aviation sector which Austria's policymakers are likely to have limited influence over.
 - For example the future of Austrian Airlines is closely tied to the strategic decisions of the Lufthansa Group, whose German parent company has a private shareholding structure. This creates the risk that major decisions about the strategic future of Austrian Airlines could be made with little or no influence from Austrian policymakers.
- 8.9 Our analysis has therefore focused more on areas which can be influenced by national stakeholders. In some cases the policy or strategy tools available to stakeholders may be applicable across several themes (for example delivery of the third runway would improve the range of infrastructure available at the airport and could also improve the competitive position of VIE versus Munich).

TABLE 8.1 LIST OF POLICY OPTIONS

Objective	Issue	Stakeholder	Means of influence	Policy recommendations for Austrian stakeholders
Delivery of Scenario A	Delivery of the third runway at VIE	Flughafen Wien AG	Sponsorship and development of airport infrastructure schemes	Deliver the third runway and associated capacity expansion schemes.
Delivery of Scenario A	Restructure to become financially robust enough to support expansion of routes and connecting traffic	Austrian Airlines	Financial and operational performance	Maintain current restructuring programme to stabilise the finances of the airline as a means to create a solid base for future investment in network capacity.
Mitigate risks and threats to the VIE hub	Market entrance by competing airlines	BMVIT/Government of Austria	Review of market entrance requests by Non EU air carriers	Placed in the context of a generally pro-liberalisation approach to aviation, review applications for Non-EU airline access rights on a case-by-case basis where increased market entrance or activity by Non-EU airlines may or could be likely to affect the hub status of VIE negatively; balance the requirements of national stakeholders with the positive benefits of enhanced connectivity and diversification of the airline mix at VIE. Promote the development and application of 'fair competition' principles at EU level (for example in admitting states to the European Open Aviation Area).
Mitigate risks and threats to the VIE hub	Geographical shifts in the global economy	BMVIT/Government of Austria	Review of market entrance requests by Non EU air carriers	Facilitate rights of access to new destinations and increases in flight frequency to existing destinations in key emerging markets.

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Objective	Issue	Stakeholder	Means of influence	Policy recommendations for Austrian stakeholders
Mitigate risks and threats to the VIE hub	Geographical shifts in the global economy	Austrian Airlines	Network Development	Develop new routes and/or increased flight frequency to existing destinations in key emerging markets.
Mitigate risks and threats to the VIE hub	Geographical shifts in the global economy	Flughafen Wien AG	Infrastructure Development	Promote the ongoing development of airport capacity and infrastructure to complement projected growth in long haul traffic.
Mitigate risks and threats to the VIE hub	Hub bypass as aircraft technologies change	Flughafen Wien AG	Airport user charges and operational efficiency	Maintain discount and incentivisation schemes especially where targeted at transfer passengers and new route development. Review whether further discounting is required and affordable to enable matching of competitor offers (e.g. no transfer passenger fees at Gulf airports). Maintain competitiveness of the connecting passenger product through ongoing investment in facilities where required, along with operating productivity.
Mitigate risks and threats to the VIE hub	Competition from Munich Airport	Flughafen Wien AG	As per above	As per above. Deliver the 3 rd runway before a new runway is opened at MUC. Continue to monitor competitive developments at Munich and the other peer airports, for example in respect to the levels of discounts on user charges offered to airlines for transfer passengers.
Mitigate risks and threats to the VIE hub	Competition from Munich Airport	Austrian Airlines	Financial and operational performance	Maintain current restructuring programme to stabilise the position of the airline as a means to operating as a financially viable carrier within the Lufthansa Group. Continue to engage Lufthansa Group parent on the positive benefits of route capacity development from VIE.
Mitigate risks	Competition from	Ministry of	Aviation taxation	Consider reform of the level, structure and existence of the Air Transport Levy

Objective	Issue	Stakeholder	Means of influence	Policy recommendations for Austrian stakeholders
and threats to the VIE hub	Munich Airport	Finance/Government of Austria		in Austria by undertaking a wider review of the Air Transport Levy to ensure that the economic benefits of the tax monies continue to outweigh the impacts on traffic volumes and airline financial performance. At the minimum ensure the levy remains lower than that in place in Germany and in the case of abolition of the tax in Germany assess the impact of this on Austria and whether the Air Transport Levy should be reduced or abolished.
Mitigate risks and threats to the VIE hub	Inadequate airport infrastructure	Flughafen Wien AG	Sponsorship and development of airport infrastructure schemes	Deliver the 3 rd runway on time.
Mitigate risks and threats to the VIE hub	Inadequate airport infrastructure	Austro Control	Development and operation of airspace capacity.	Continue operating practices that minimise levels of ground and airborne delay. In collaboration with the Austrian government, neighbouring national governments, VIE and airlines, deliver schemes to increase the air traffic control capacity of Austria, especially in the region of Vienna.
Mitigate risks and threats to the VIE hub	Fair Competition	BMVIT/Government of Austria	Lobbying at EU level	Promote policies which generate positive economic benefits for Austria through the provision of new routes and capacity while balancing these against adherence to 'fair competition' principles.
Mitigate risks and threats to the VIE hub	Environmental impacts on traffic growth	BMVIT/Government of Austria	Lobbying at EU level	Promote policies which positively address concerns about the environmental impact of aviation through development of a globally agreed approach to the control of emissions which can be signed by EU and Non EU states.

Source: Steer Davies Gleave analysis

Priority policy options

- 8.10 In our opinion all of the activities set out above are likely to be important inputs to the successful delivery of Scenario A.
- 8.11 However there are likely to be certain policy options which in particular need to be pursued in order to have the best chance of achieving the desired outcome of maintaining the status of VIE as both a national hub for Austria and a secondary hub in the Lufthansa-Star Alliance network.
- 8.12 Austria currently has a disproportionately high of Europe's connecting traffic relative to its overall air traffic volume, which reflects the importance of VIE as a hub airport.
- 8.13 Under Scenario A the hub function of VIE would be protected and the full benefit (in terms of additional traffic volumes, enhanced network connectivity, and larger economic benefits) would be realised.
- 8.14 However it is unlikely that this can happen without:
- Firstly, the successful restructuring of Austrian Airlines to make best use of the additional hub capacity; and
 - Secondly, the further expansion of the airport and airspace infrastructure at VIE, so that the restructured Austrian Airlines can make the best use of the additional hub capacity.
- 8.15 This is because of the synergistic relationship between Austrian Airlines and VIE, with the former's role as the incumbent hub carrier driving the requirement for peak capacity at the airport.
- 8.16 Our analysis has indicated that some airport hubs have failed in the past as a consequence of either financial collapse by their leading incumbent airline, or through strategic choices about the basing of capacity by that incumbent. In its present market context, where Austrian Airlines is restructuring as part of the Lufthansa Group, there is some risk to the VIE hub.
- Policy options that help to diversify the traffic mix at VIE, especially on routes that are complementary to (or do not compete against) Austrian Airlines, would be prudent.
- 8.17 However VIE cannot rely on other carriers to deliver a Scenario A outcome.
- 8.18 As a consequence, and in summary, we believe that the priority policy options from the list set out above are those that will:
- Positively support the financial and operational development of Austrian Airlines;
 - Positively influence the future development of airport infrastructure at VIE and its surrounding airspace; and
 - Promote traffic mix diversification at VIE where this can be achieved in a balanced way which is complementary to delivery of the other key priorities.

