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Air Connectivity in Northern Ireland: The economic impact of changes to air fares and short-haul Air Passenger Duty

A Research Paper

Final Report

December 2014

Department of Enterprise, Trade and Investment
www.detini.gov.uk

Northern Ireland Centre for Economic Policy

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1. Introduction

Background

1. DETI, in partnership with DFP, has requested that the Northern Ireland Centre for Economic Policy (NICEP) work with York Aviation to undertake research on air connectivity to identify the impact on passenger numbers from changes in airfare pricing and the associated economic impact (specialist consultants, York Aviation, were procured by DETI to provide aviation expertise on the passenger forecasts).
2. A detailed literature review was completed as a primary stage in undertaking this research study and is available separately. This has been used to inform some of the assumptions in this economic impact assessment.

Structure of Report

3. This report is structured as follows:

- Section 2 – The importance of air connectivity;
- Section 3 – Impact of pricing on passenger numbers;
- Section 4 – Economic impact of a change in prices;
- Section 5 – Impact on the level of Air Passenger Duty raised;
- Section 6 – Summary of costs and benefits.

2. The importance of air connectivity

Introduction

4. Air connectivity brings significant economic benefits to a region or country. This was the conclusion of the literature review completed separately but the key points, summarised in this report, include:

   - Understanding the importance of a hub airport;
   - Increased trade (goods and services);
   - Increased Foreign Direct Investment (FDI); and
   - Increased innovation and productivity.

5. This section also includes a comparison of NI's air connectivity with both Dublin and Edinburgh and the link between economic growth and air connectivity.

Economic benefits of air connectivity

Understanding the importance of a hub airport

6. A hub airport typically has the following characteristics1:

   - a network carrier or airline alliance which bases sufficient numbers of aircraft there to operate a 'hub and spoke' strategy;
   - a large route network;
   - is suitably located to allow airlines to cost effectively serve passengers transferring through the hub to other destinations; and
   - appropriate facilities to handle efficient connections for passengers.

7. The 'hub and spoke' business model of network carriers has developed as the most efficient way for airlines to transport passengers on a long haul basis. Consolidating passenger traffic onto fewer, higher volume routes reduces the average fixed cost per

[1] Frontier Economics (2011): '*Connecting for Growth: The role of Britain's hub airport in economic recovery*'. A report prepared for Heathrow.

passenger carried, thus making long haul route networks through the hub, both viable and more affordable. The network effect of a hub brings the following benefits:

- Improved connectivity – it is only as a result of transferring (spoke) passengers that many routes (through the hub) are viable, therefore a wider choice of routes are available;
- Increased frequency – the number of flights at the hub can be increased;
- Lower fares – economies of scale from greater numbers of passengers reduces the average cost per passenger allowing for lower fares; and
- Increased competition – with increased demand, a number of carriers may be sustained on key routes which can introduce competition resulting in increased service choice and lower fares including on direct services.

8. From a Northern Ireland perspective therefore, the local demand for many long haul destinations would not be sufficient to make a direct route viable. As a result, an indirect connection through a hub can be served more frequently and at a lower ticket price.

9. The UK's connectivity is significantly enhanced by **Heathrow's status as an international hub airport**, which serves 75 destinations world-wide that are not serviced by any other UK airport[2]. It is this international connectivity which is central to the Northern Ireland Executive's desire to ensure that the Belfast – Heathrow service is maintained.

10. However, Heathrow is currently operating at 98%[3] capacity and this raises a number of significant issues for Northern Ireland:

    - short haul routes are being squeezed out – Heathrow serves only 46 short-haul routes, behind Paris Charles de Gaulle serving 78 and then Frankfurt (74), Amsterdam (67) and Madrid (63);
    - access for UK regional airports is heavily constrained – only 6 UK regional airports have a service to Heathrow compared with 22 to Amsterdam[4]. Air France and

[2] Heathrow (2013): '*Heathrow: best placed for Britain'*
[3] Source: Heathrow
[4] House of Commons All Party Parliamentary Group for Aviation (2012): '*Inquiry into Aviation Policy and Air Passenger Duty*'

Lufthansa have also been increasing their services to UK regional airports to encourage UK traffic to connect over their hubs in Paris and Frankfurt[5]; and

- Heathrow is unable to develop new international connections – Frontier Economics estimates that the Heathrow "connectivity gap" includes 45 long haul destinations, including 15 destinations in emerging markets.

11. As a consequence the Heathrow capacity constraint impacts Northern Ireland (and the other UK regions), firstly in terms of frequency of access to Heathrow and secondly in terms of onward connectivity to international destinations.

12. In addition, maintaining and growing passenger traffic to London Heathrow from Northern Ireland is important to maintaining this route. There is a risk in the medium to longer term that the Northern Ireland service would be squeezed out by other more profitable regional or international routes.

Increased trade (goods and services)

13. Air freight is a key element of the supply chain in the advanced manufacturing sector (an area in which the UK is seeking build a competitive strength) and typically these goods are high value, light, compact and perishable (e.g. medicines). Air freight carries only a very small proportion of UK exports by weight (approx 1%) but 22% when measured by value. In 2010 the total value of UK goods exported by air was £60 billion. To put this in context, the Airports Commission identified that: "*On average, each flight from Heathrow to the BRIC countries contains £400k in exports and each flight to China specifically is worth over £1 million.*"

14. It is important to recognise that passenger connectivity and air freight connectivity are interlinked. Belly-hold freight (i.e. freight shipped in the belly-hold of passenger aircrafts) makes up the majority of all air freight out of the UK. As a result, if aviation connectivity for passengers consolidates or declines, this will have a knock-on impact in the freight market in terms of costs and frequency. This in turn impacts the UK's competitive position in manufacturing.

[5] Northern Ireland travellers have the potential to access other hub airports such as Amsterdam in addition to Dublin to enhance our connectivity, but as Heathrow is the primary European international hub, connectivity to Heathrow is seen as vital.

Northern Ireland statistics (Goods):

- Value of total goods exported is £3.2 billion (excluding to Republic of Ireland) and 20% to emerging/ growth markets;
- Exports via air freight £1 billion (31% by value);
- 60% of exports by air go via a hub airport to their final destination, including growth/ emerging markets.

Source: Oxford Economics (February 2012)

15. The UK has run a significant trade surplus in services for many years and particularly strong sectors include: financial services; insurance; and creative industries. These sectors operate in a global market place and are reliant on aviation to serve their international client base and develop client relationships with new customers.

16. Evidence also supports a correlation between connectivity and levels of trade. Frontier Economics[6] identified that in the eight fastest growing emerging markets, "*UK businesses trade 20 times as much with countries where there are daily flights, than with those of less frequent or no service.*"

17. There is, of course, a causal relationship between connectivity and trade, but it is likely to work in two ways – the strong trade links encourage greater provision of air services on that route, but also connectivity is an important determinant in establishing and developing those trade links in the first instance. The British Chambers of Commerce[7] completed a survey of business leaders in the high growth emerging markets of Brazil, China, India, South Korea and Mexico. In this survey 92% responded that direct links were important to inward investment decisions.

Tourism

18. Aviation plays a critical role in supporting in-bound and out-bound tourism in the UK. In 2011, nearly three quarters of the 31 million visits to the UK arrived through airports. Total earnings from overseas visitors in that year were £18 billion and 84% of this was spent by people travelling by air[8].

[6] Frontier Economics (2011): '*Connecting for Growth: The role of Britain's hub airport in economic recovery*'. A report prepared for Heathrow.
[7] British Chambers of Commerce (26 January 2012) 'Press Release: *UK will miss out on investment because of poor air connections*'
[8] Airports Commission (2013): '*Discussion Paper 02: Air Connectivity and the Economy*'.

19. It is important also to reference the 'tourism deficit' (i.e. where the number of outbound visitors and spend exceeds inbound visitors and spend, thereby increasing the trade deficit). In 2011 the Airports Commission, estimated UK residents spent £32 billion on visits abroad (compared to £18 billion spent by inbound tourists).

20. Whilst this has been cited by some policy makers as a rationale not to improve connectivity, there is significant domestic economic activity associated with outbound tourism. The Association of British Travel Agents (ABTA)[9] estimate that domestic spend on outbound travel products and services are broadly equivalent to spend by UK tourists abroad, touching many parts of the economy including retail, transport, tour operators and travel agents. Furthermore, qualitative factors for domestic citizens should also be considered, such as quality of life, developing new experiences and maintaining family and cultural links.

Increased Foreign Direct Investment

21. There is significant evidence to support the notion that connectivity is a critical factor in the investment decisions of companies. For example, the European Cities Monitor 2010[10] survey indicated that 51% of companies consider it is an essential factor when deciding where to locate a business. One of the other essential factors identified in the research was "easy access to markets, customers or clients", which is also very closely linked to connectivity.

Northern Ireland statistics:

- There are a total of 79,050 jobs in foreign owned companies in Northern Ireland (9.4% of the total private sector workforce)
- 54% of those jobs (42,250) are connected to their international headquarters via an international hub airport;
- The remaining 46% are connected via a direct flight.

Source: Oxford Economics and ONS

[9] ABTA (2012): '*Driving Growth – The Economic Value of Outbound Travel*'
[10] Cushman and Wakefield (2010): 'European Cities Monitor 2010'

Increased innovation and productivity

22. Finally, the literature review identified research suggesting that international connectivity may also facilitate innovation and productivity:

- the effect on domestic firms from access to foreign markets – the increased competition and choice in foreign markets encourages firms to specialise in areas where they have a comparative advantage;
- increasing competition and choice in the domestic market – this requires domestic firms to reduce their costs and adopt international best practice encouraging innovation and productivity improvements; and
- greater movement of investment capital and workers between countries – access to foreign markets provides domestic firms with access to new technologies, capital and an international labour pool. This encourages employers and policy makers to create an environment where all people can live and work and reach their potential.

Northern Ireland's air connectivity

23. The following tables set out Northern Ireland's connectivity within the UK, across Europe and internationally and to provide perspective, a comparison is given with Dublin. Connectivity is shown in both winter and summer as scheduling can vary significantly across seasons. In addition, a short comparative analysis is also undertaken between Northern Ireland (NI) and Edinburgh airport. This analysis is based on information provided by the Department of Finance and Personnel (DFP) in a report completed in August 2013.

Connectivity with Great Britain (GB)

24. Table 2.1 below shows NI to be as well connected to GB as Dublin, with broadly similar numbers of weekly departures. However, as highlighted further below, NI is much more reliant on GB (and Heathrow in particular) for onward international connectivity.

Table 2.1: Connectivity with GB (Departures per week)

	Northern Ireland		Dublin	
	Winter 12/13	Summer 2013	Winter 12/13	Summer 2013
Heathrow	57	62	123	136
Other London	143	132	179	197
Other GB Provincial	419	416	307	393
Total	**619**	**610**	**609**	**726**

Source: TTC, DFP

Connectivity with mainland Europe

25. Table 2.2 below shows a very significant gap between NI's and Dublin's direct connectivity with mainland Europe. Dublin serves approximately five times more cities than Belfast and in the summer provides 10 times more seating capacity despite only having 2.5 times the population.

Table 2.2: Connectivity with mainland Europe

	Northern Ireland		Dublin	
	Winter 12/13	Summer 2013	Winter 12/13	Summer 2013
Weekly departures	34	104	528	822
Seat capacity	5,264	16,452	101,813	171,664
Cities served	11	17	58	96

Source: TTC, DFP

26. Northern Ireland obviously has significant indirect connectivity with mainland Europe through access to hub airports, most notably Heathrow.

Connectivity with the US and Middle East

27. Table 2.3 below shows there is also a huge gap between NI's direct international connectivity and that of Dublin as measured by weekly scheduled services. This is the most striking of the connectivity analysis conducted and emphasises NI's reliance on London (and Dublin) for international connectivity.

Table 2.3: International connectivity (Weekly scheduled services)

	Northern Ireland		Dublin	
	Winter 12/13	Summer 2013	Winter 12/13	Summer 2013
United States	5	7	62	100
Middle East	-	-	17	17

Source: TTC, DFP

28. Northern Ireland obviously has significant indirect international connectivity through access to hub airports, most notably Heathrow.

Connectivity comparison between NI and Edinburgh

29. Table 2.4 provides a comparator between NI and Edinburgh, both in terms of the number of UK airports serviced (domestic connectivity) and also the number of international scheduled routes. The analysis shows that in terms of domestic air connectivity NI is as well served as Edinburgh, however for geographic reasons, NI is significantly more reliant on air travel for connectivity with GB than any other part of the UK. Furthermore, in terms of international connectivity, NI is also significantly behind Edinburgh[11].

Table 2.4: Connectivity comparison with Edinburgh

	NI	Edinburgh
No. of UK airports serviced	27	26
No. of international scheduled routes(1)	19	83

Source: CAA, DFP

Note 1: This refers to the number of routes in place, not the frequency operating on those routes.

[11] This analysis in some respects reflects demand in the local market and the fact that NI travellers also have access to Dublin for international connectivity. However, it is also recognised that travellers from Edinburgh also have access to a range of GB airports. Edinburgh (and Dublin) are economically successful cities and an important element of that success is ready access to a well-connected airport. If NI has similar economic ambitions, then enhanced local connectivity should be the aim.

3. Impact of pricing on passenger numbers

Introduction

30. This section of the report sets out the impact of a change in prices on passenger numbers. A reduction in prices can arise in a number of ways, and the purpose of this study is to look at the wider economic impact from a reduction in air fares. However, it is recognised that Government's most obvious policy lever to reduce passenger ticket prices is through a change in Air Passenger Duty (APD). But it is also acknowledged that only a proportion of any reduction in a consumer tax is passed on in the form of reduced prices to consumers, at least in the short term.

31. As a result, if a price reduction is to be secured through a reduction in APD, this analysis must consider both the impact of the price reduction enjoyed by passengers and also the impact of the revenue retained by the airlines.

32. A detailed modelling exercise was undertaken by York Aviation to estimate the forecast changes in passenger numbers resultant from a change in pricing. This section of the report summarises the impact on passenger numbers.

33. At the outset it worth highlighting a number of issues raised by York Aviation in respect of data availability.

- Currency of data – the Civil Aviation Authority (CAA) conducts large scale passenger surveys across the UK airports on an annual basis. However, Northern Ireland airports have not taken part in this survey since 2006 and therefore information on: purpose of travel; country of residence of passengers; origin and destination within Northern Ireland; patterns of travel via hub airports; and use of premium class travel is substantially out of date.
- Insufficient air fare information – there is also limited data on air fares from Northern Ireland. Some information is available from the 2006 CAA survey but this is significantly dated and does not provide a time series. In addition, the International Passenger Survey (IPS) which does collect some information on fares is only undertaken at Belfast International and has only been collected since 2009. This limits it's usefulness in examining the past impact of changes in APD the series will not include the most substantive change in 2007. MIDT data would provide information on fares but is both expensive and flawed in terms of its coverage of key parts of the market;
- Lack of Dublin data – Dublin Airport Authority (DAA) produces yearly estimates of the numbers of NI residents using Dublin airport. In 2013 they estimated a

total of 570,000 NI residents travelled to/from Dublin airport. Whilst the number of NI residents using the airport is known, there are several other factors which remain unknown, including; routes used, final destination, surface origins of passengers and purpose of travel.

34. Clearly, these issues have impacted on the approach taken to traffic forecasting and on the level of confidence that can be applied to the forecasts and economic impact calculations that flow from them. However, it is York Aviation's opinion that the forecasts provide a sensible assessment of the market moving forward, particularly in terms of the potential difference between scenarios.

35. A further assumption has been made at the outset that over time capacity will be developed at the Northern Ireland airports to support the levels of demand seen in the passenger forecasts.

Methodological approach used by York Aviation

Price Sensitivity/ Elasticity

36. Air fare elasticities show a negative response, meaning that an increase in price results in a decrease in demand. For this exercise York Aviation has applied the air fare elasticities used by the Department for Transport (DfT) for their 2013 UK Aviation Forecasts. The DfT forecasting model considers growth in air transport demand to be a function of changes in income and changes in fares. It uses a long time series in order to determine both price and income elasticities for a range of passenger groups. As a result it is York Aviation's view that the DfT analysis represents the most detailed and robust analysis of price sensitivity for the UK air transport market.

37. It is, however, important to note that the DfT research is based on a UK wide level. Therefore the model makes the important assumption that passengers in the UK do not have alternative flying options from a national perspective (in contrast to continental Europe where citizens can fly from airports in other national jurisdictions). Clearly, Northern Ireland does not fit with this assumption, as Dublin offers a relatively easily accessible alternative option. Hence, in addition to considering the 'own' price sensitivity of demand, York Aviation has also considered how demand will be allocated across the Northern Ireland airports and Dublin and how this might change in reaction to changes in air fares in Northern Ireland using a statistically derived passenger choice model.

38. For the purposes of the econometric modelling in this study, the elasticities applied have been compared with those found in the literature. In selecting elasticities for comparison, it is essential to focus on studies which are relevant to the UK national passenger demand. For example, it would not be accurate to compare a national level price elasticity to that of a sub-national market, or an individual airline. As shown by CAA (2005), price effects at the sub-national level could be stronger, reflecting greater substitution possibilities, but substitution between routes or airlines would not affect the total market size. Also, comparisons with markets in other countries or regions of the world are complicated by their different population distribution, geography and transport systems, and market structures.

39. A literature review completed by York Aviation revealed that while there are a large number of studies of aviation price and income elasticities, relatively few are relevant to UK national demand. Key studies which are directly comparable are: Dargay & Hanley (2001)[12]; CAA (2005)[13]; and Dargay, Menaz & Cairns (2006)[14].

40. These studies do NOT cover all the market sectors modelled and used for forecasting, but where they coincide the price elasticities are broadly comparable to those used in this analysis. Table 3.1 below summarises the elasticities applied.

Table 3.1: Comparison of elasticities from literature review

		D&H (2001)	CAA (2005)	DM&C (2006)	Elasticity applied
UK Leisure	Short-haul	-0.6	-0.7 to -0.8	-1.0	-0.7 to -0.8
	Long haul			-0.4	-0.3
UK Business	Short-haul	-0.3		Minimal	-0.2 to -0.3
	Long haul				0 to -0.2
Non-UK/ RoI travellers		-0.3			-0.2

[12] Dargay & Hanley (2001) The Determinants of demand for international air travel to and from the UK
[13] CAA (2005) Demand for outbound leisure air travel and its key drivers
[14] Dargay, Menaz and Cairns (2006) Public attitudes towards aviation and climate change.

41. Table 3.2 below sets out the elasticities applied in this analysis across all types of travel and residence of traveller.

Table 3.2: Price elasticities applied in passenger modelling

Market	Residence	Purpose	Price Elasticity
Domestic	NI	Business	-0.3
Domestic	NI	VFR	-0.7
Domestic	NI	Holiday	-0.7
Domestic	GB	Business	-0.3
Domestic	GB	VFR	-0.7
Domestic	GB	Holiday	-0.7
Domestic	ROI	Business	-0.2
Domestic	ROI	VFR	-0.8
Domestic	ROI	Holiday	-0.8
Domestic	Other	Business	-0.2
Domestic	Other	VFR	-0.8
Domestic	Other	Holiday	-0.8
Short Haul	NI	Business	-0.3
Short Haul	NI	VFR	-0.7
Short Haul	NI	Holiday	-0.7
Short Haul	GB	Business	-0.3
Short Haul	GB	VFR	-0.7
Short Haul	GB	Holiday	-0.7
Short Haul	ROI	Business	-0.2
Short Haul	ROI	VFR	-0.8
Short Haul	ROI	Holiday	-0.8
Short Haul	Other	Business	-0.2
Short Haul	Other	VFR	-0.8
Short Haul	Other	Holiday	-0.8
Long Haul	NI	Business	0
Long Haul	NI	VFR	-0.3
Long Haul	NI	Holiday	-0.3
Long Haul	GB	Business	0
Long Haul	GB	VFR	-0.3
Long Haul	GB	Holiday	-0.3
Long Haul	ROI	Business	-0.2
Long Haul	ROI	VFR	-0.3
Long Haul	ROI	Holiday	-0.3
Long Haul	Other	Business	-0.2
Long Haul	Other	VFR	-0.3
Long Haul	Other	Holiday	-0.3

Source: York Aviation allocation of Department for Transport Elasticities.

42. The following comments are made to assist the understanding of the table above:

- Domestic – flights within the UK
- Short-haul – flights outside the UK but within Band A APD rating (typically Europe);
- Long-haul – flights beyond Band A
- Based on the research undertaken in this area, elasticities for Holiday and VFR (visiting friends and relatives) travellers are similar but the elasticity for business travellers is much lower (i.e. they are less price sensitive);
- The evidence also shows that short haul flights are more elastic than long haul flights.

43. The resulting forecasting process is described below.

Passenger forecasting

44. York Aviation developed a three stage approach:

a) *Estimate the size and growth of the underlying market* – this is based on CAA Passenger Survey from 2006. It provides a basis for estimating the number of passengers travelling to/ from each district in NI and is sub-divided into those travelling to domestic, international short haul and long haul destinations. The 2006 data is then adjusted to reflect 2013 demand levels using CAA statistics.

The 'Dublin effect' is then estimated as these numbers are excluded from the CAA surveys using information published by the Dublin Airport Authority. Further information is taken from the 2013 CAA Passenger Survey to identify GB passengers accessing NI through Dublin.

Underlying market growth is assumed to be in line with the DfT UK Aviation Forecast 2013 growth rates.

b) *Allocate passengers to NI or Dublin* – passenger demand at each airport is estimated based on surface access time and frequency of flights at each airport using the allocation model described above.

c) *Estimate the impact of changes in APD* – changes in APD are entered in to the model as equivalent changes in access time. A reduction in APD reduces the effective access time to Northern Ireland's airports making them more attractive choices. This will attract passengers who would otherwise have travelled via Dublin and will also stimulate new passengers to fly because of the overall reduction in price.

Impact on passenger numbers

45. Passenger forecasts have been identified and split across the following:

- Purpose of travel – tourism; visiting friends and family; and business;
- Origin of passenger – Northern Ireland; Republic of Ireland; Great Britain; and Other;
- Distance of journey – short-haul and long-haul.

46. In addition the forecasts have been identified for the baseline/ status quo scenario and three alternative scenarios based on potential changes to the rate of APD:

I. Scenario 1 – 50% reduction in APD

II. Scenario 2 – 100% reduction (abolition) of APD

III. Scenario 3 – 10% increase in APD

47. The economic impact model has used these detailed passenger forecasts and whilst this report only sets out a high level summary of the forecasts out to 2018, the more detailed passenger forecasts are available separately.

48. In terms of identifying the additional passenger numbers, two specific calculations have been made:

- **Gross additional departing passenger numbers** – this represents the increase in passengers going through Northern Ireland airports (i.e. those making the journey because the fare is lower plus those who are travelling through a NI airport rather than Dublin); and
- **Net additional departing passenger numbers** – this represents only the passengers who are making the journey because of the reduced fare (i.e. those who are 'truly' additional).

49. One further assumption relates to the extent to which a reduction in APD is passed through to customers in the form of lower prices. York Aviation has assumed that there would be some 'stickiness' in the market in the short term but given the competitive pressures, **the change in APD would be passed on in full after two years**. Specifically, it has assumed that 50% of any reduction would be passed on in Year 1, 75% passed on in year 2 and 100% passed on in year 3 moving forward.

50. The following tables **set out the forecast for departing passengers only**. Typically on a return journey, one individual will be counted as two passengers (i.e. once when arriving at the airport and once when leaving). However APD is payable by departing passengers only and therefore this report presents departing numbers only.

51. This analysis **excludes passengers flying on the Newark service** as direct long haul APD is set at 0% in Northern Ireland. APD is still payable on other indirect long haul services.

Baseline/ Status Quo Position (APD unchanged)

52. Table 3.3 below sets out the forecast number of passengers by origin on the basis that APD remains unchanged. Passengers from NI and RoI are considered to be outbound passengers (i.e. the purpose of their journey is to visit a country outside NI) and passengers from 'GB' and 'Other' are inbound passengers (i.e. the purpose of their journey is to visit NI).

Table 3.3: Forecast departing passenger numbers by origin (Baseline)

Passenger Origin	2014 '000s	2015 '000s	2016 '000s	2017 '000s	2018 '000s	2026 '000s
NI (Outbound)	1,993	2,041	2,085	2,131	2,178	2,620
RoI (Outbound)	69	70	72	73	74	88
GB (Inbound)	1,245	1,268	1,291	1,315	1,339	1,601
Other (Inbound)	198	205	208	212	216	251
Total	**3,505**	**3,583**	**3,656**	**3,731**	**3,807**	**4,560**

53. The following comments are made on these baseline forecasts:

- All passengers are assumed to make a two-way flight and therefore will be in a NI airport on two occasions, when leaving and arriving. These forecast numbers only count the individuals once so double counting of visitors has not occurred;
- Annual projected growth in passenger numbers is approximately 2.2%; and
- The percentage of passengers visiting Northern Ireland (i.e. inbound) as a proportion of the total number of passengers is 41% (i.e [GB + Other]/ Total), this remains constant throughout the 20 year forecast period.

Gross additional departing passenger numbers

Change in departing passenger numbers in Scenario 1 (50% reduction in APD)

54. Table 3.4 below sets out the increase in forecast passenger numbers by origin on the basis that APD is reduced by 50%.

Table 3.4: Forecast increase in departing passenger numbers by origin (Scenario 1)

Passenger Origin	2015 '000s	2016 '000s	2017 '000s	2018 '000s	2026 '000s
NI (Outbound)	114	170	219	220	229
RoI (Outbound)	8	11	15	15	15
GB (Inbound)	13	18	24	24	24
Other (Inbound)	20	30	37	38	39
Total	**154**	**229**	**295**	**297**	**307**
% inc over baseline	**4.3%**	**6.3%**	**7.9%**	**7.8%**	**6.7%**
% inc who are visitors	**21.0%**	**21.0%**	**20.9%**	**20.8%**	**20.6%**

55. The following comments are made on the 50% APD reduction forecasts:

- The reduction brings about a staged increase in passenger numbers over a 3 year period as the APD reduction is passed on to customers. If rates were to be reduced in 2015, we would see an increase in passenger traffic of approximately 4% in that year, 6% in 2016 and 8% in 2017;
- In the longer term, year-on-year the level of increase over the baseline falls from 7.9% in 2017 to 6.7% in 2026. This arises because year-on-year people put an increasing value on their travel time. As a consequence the reduction in the cost of air travel has less of an influence on the passengers choice of airport; and
- Only approximately 21% of the additional passenger traffic are visitors. Therefore a reduction in APD is forecast to encourage a greater uptake in outbound travel than inbound travel. This remains broadly static throughout the forecast period.

Change in departing passenger numbers in Scenario 2 (Abolition of APD)

56. Table 3.5 below sets out the increase in forecast passenger numbers by origin on the basis that APD is abolished.

Table 3.5: Forecast increase in departing passenger numbers by origin (Scenario 2)

Passenger Origin	2015 '000s	2016 '000s	2017 '000s	2018 '000s	2026 '000s
NI (Outbound)	212	283	336	341	376
RoI (Outbound)	15	21	26	26	27
GB (Inbound)	24	35	45	45	46
Other (Inbound)	36	46	52	53	59
Total	287	384	460	466	**507**
% inc over baseline	**8.1%**	**10.5%**	**12.3%**	**12.2%**	**11.1%**
% inc who are visitors	**21.0%**	**21.0%**	**21.3%**	**21.1%**	**20.6%**

57. The following comments are made on the APD abolition forecasts:

- The reduction brings about a staged increase in passenger numbers over a 3 year period as the APD reduction is passed on to customers. If rates were to be reduced in 2015, we would see an increase in passenger traffic of approximately 8% in that year, 10% in 2016 and 12% in 2017;
- In the longer term, year-on-year the level of increase over the baseline falls from 12.3% in 2017 to 11.1% in 2026. As outlined above, year-on-year people put an increasing value on their travel time. As a consequence the reduction in the cost of air travel has less of an influence on the passengers choice of travel or airport;
- Only approximately 21% of the additional passenger traffic are visitors. This remains broadly static throughout the forecast period and is the same proportion as under scenario 1.

Change in departing passenger numbers in Scenario 3 (Increase APD by 10%)

58. Table 3.6 below sets out the decrease in forecast passenger numbers by origin on the basis that APD is increased by 10%.

Table 3.6: Forecast change in departing passenger numbers by origin (Scenario 3)

Passenger Origin	2015 '000s	2016 '000s	2017 '000s	2018 '000s	2026 '000s
NI (Outbound)	(34)	(50)	(66)	(66)	(66)
RoI (Outbound)	(2)	(3)	(5)	(5)	(5)
GB (Inbound)	(5)	(8)	(11)	(11)	(11)
Other (Inbound)	(6)	(8)	(9)	(9)	(9)
Total	**(48)**	**(69)**	**(91)**	**(91)**	**(89)**
% change over baseline	**(1.3%)**	**(1.9%)**	**(2.4%)**	**(2.4%)**	**(2.0%)**
% dec who are visitors	**23.9%**	**22.8%**	**22.1%**	**22.0%**	**21.5%**

59. The following comments are made on the 10% increase in APD rates:

- The increase brings about a staged decrease in passenger numbers over a 3 year period as the APD increase is passed on to customers. If rates were to be raised in 2015, we would see an decrease in passenger traffic of approximately 1.3% in that year, 1.9% in 2016 and 2.4% in 2017;
- In the longer term, year-on-year the level of decrease over the baseline falls from 2.4% in 2017 to 2.0% in 2026 for the reasons given above (year-on-year people put an increasing value on their travel time. As a consequence the increase in the cost of air travel has less of an influence on the passengers choice of travel or airport);
- Approximately 22% of the reduction in passenger traffic would be visitors to Northern Ireland. This proportion remains broadly static throughout the forecast period and is a similar proportion to scenarios 1 and 2.

Summary of changes to departing passenger numbers

60. Table 3.7 below sets out the percentage change in passenger numbers over the baseline position for each of the three scenarios. As explained above, the impact of the change in APD is reduced over time and therefore the percentage change in passenger numbers reduces. The table below shows the forecast change at selected years over the 20 year assessment period.

Table 3.7: Percentage change in forecast departing passenger numbers over baseline

Scenario	2017	2022	2027	2032	2034
1 – 50% reduction					
Outbound	10.6%	9.8%	8.8%	7.9%	7.6%
Inbound	4.0%	3.7%	3.3%	3.0%	2.8%
Scenario 1 - Total	**7.9%**	**7.3%**	**6.6%**	**5.9%**	**5.6%**
2 – Abolition					
Outbound	16.4%	15.6%	14.7%	13.8%	13.4%
Inbound	6.4%	6.0%	5.6%	5.1%	5.0%
Scenario 2 - Total	**12.3%**	**11.7%**	**11.0%**	**10.3%**	**10.0%**
3 – 10% increase					
Outbound	(3.2%)	(2.9%)	(2.5%)	(2.3%)	(2.2%)
Inbound	(1.3%)	(1.1%)	(1.0%)	(0.9%)	(0.8%)
Scenario 3 - Total	**(2.4%)**	**(2.2%)**	**(1.9%)**	**(1.7%)**	**(1.6%)**

61. The following comments are made in respect of these forecasts:

- The impact on outbound travel is more significant than inbound travel indicating local travellers are much more price sensitive than foreign travellers;
- The impact of a 50% reduction in APD (scenario 1) is proportionally greater than a full abolition, particularly in the early years. A reduction of 50% will increase passenger numbers by approximately 8%, but a reduction of 100% 'only' increases passenger numbers by approx. 12%. The primary reason for this, is that the initial 50% reduction has quite a significant impact in reducing the leakage to Dublin, but if the rate were to be abolished, the 'second' 50% reduction would have less of an impact (consistent with the principle of falling marginal benefits);
- An increase in APD, which at 10% is small in relative terms to the decreases of 50% and 100% also analysed, is forecast to have quite a significant impact on passenger

numbers. This would continue to drive potential passengers away from Northern Ireland airports;

- The falling impact over time of a change to APD, has the impact of reducing any economic benefits to be derived from a change in APD in the longer term. This is discussed in more detail in the next section of the report.

Net additional departing passenger numbers

Change in departing passenger numbers in Scenario 1 (50% reduction in APD)

62. Table 3.8 below sets out the net increase in forecast passenger numbers by origin on the basis that APD is reduced by 50%.

Table 3.8: Forecast net increase in departing passenger numbers by origin (Scenario 1)

Passenger Origin	2015	2016	2017	2018	2026
NI (Outbound)	18,617	28,044	37,545	37,511	37,382
RoI (Outbound)	1,231	1,849	2,469	2,456	2,388
GB (Inbound)	8,946	13,433	17,924	17,836	17,675
Other (Inbound)	1,695	2,542	3,388	3,371	3,264
Total	**30,490**	**45,867**	**61,326**	**61,174**	**60,709**
% inc over baseline	0.9%	1.3%	1.6%	1.6%	1.3%

63. The following comments are made on the 50% APD reduction forecasts:

- The reduction brings about a staged increase in passenger numbers over a 3 year period as the APD reduction is passed on to customers. If rates were to be reduced in 2015, we would see an increase in passenger traffic of approximately 0.9% in that year, 1.3% in 2016 and 1.6% in 2017;

- In the longer term, year-on-year the level of increase over the baseline falls from 1.6% in 2017 to 1.3% in 2026. This arises because year-on-year people put an increasing value on their travel time. As a consequence the reduction in the cost of air travel has less of an influence on the passengers choice of travel or airport.

Change in departing passenger numbers in Scenario 2 (Abolition of APD)

64. Table 3.9 below sets out the increase in forecast passenger numbers by origin on the basis that APD is abolished.

Table 3.9: Forecast net increase in departing passenger numbers by origin (Scenario 2)

Passenger Origin	2015	2016	2017	2018	2026
NI (Outbound)	37,607	56,933	76,591	76,488	75,971
RoI (Outbound)	2,496	3,776	5,075	5,044	4,883
GB (Inbound)	18,100	27,327	36,657	36,460	35,998
Other (Inbound)	3,420	5,152	6,897	6,860	6,622
Total	**61,624**	**93,189**	**125,220**	**124,852**	**123,474**
% inc over baseline	1.7%	2.5%	3.4%	3.3%	2.7%

65. The following comments are made on the APD abolition forecasts:

- The reduction brings about a staged increase in passenger numbers over a 3 year period as the APD reduction is passed on to customers. If rates were to be reduced in 2015, we would see an increase in passenger traffic of approximately 1.7% in that year, 2.5% in 2016 and 3.4% in 2017;
- In the longer term, year-on-year the level of increase over the baseline falls from 3.4% in 2017 to 2.7% in 2026. As outlined above, year-on-year people put an increasing value on their travel time. As a consequence the reduction in the cost of air travel has less of an influence on the passengers choice of travel or airport.

Change in departing passenger numbers in Scenario 3 (Increase APD by 10%)

66. Table 3.10 below sets out the decrease in forecast passenger numbers by origin on the basis that APD is increased by 10%.

Table 3.10: Forecast net change in departing passenger numbers by origin (Scenario 3)

Passenger Origin	2015 '000s	2016 '000s	2017 '000s	2018 '000s	2026 '000s
NI (Outbound)	-6,669	-9,977	-13,269	-13,260	-13,265
RoI (Outbound)	-451	-671	-889	-885	-867
GB (Inbound)	-3,507	-5,226	-6,924	-6,895	-6,866
Other (Inbound)	-578	-861	-1,142	-1,137	-1,108
Total	**-11,205**	**-16,737**	**-22,224**	**-22,176**	**-22,106**
% change over baseline	-0.3%	-0.5%	-0.6%	-0.6%	-0.5%

67. The following comments are made on the 10% increase in APD rates:

- The increase brings about a staged decrease in passenger numbers over a 3 year period as the APD increase is passed on to customers. If rates were to be raised in 2015, we would see an decrease in net passenger traffic of approximately 0.3% in that year, 0.5% in 2016 and 0.6% in 2017;
- In the longer term, year-on-year the level of decrease over the baseline falls from 0.6% in 2017 to 0.5% in 2026 for the reasons given above (year-on-year people put an increasing value on their travel time. As a consequence the increase in the cost of air travel has less of an influence on the passengers choice of travel or airport);

Comparison of net and gross additional departing passengers

68. Table 3.11 below sets out the proportion of net additional passengers as a percentage of gross additional passengers for each of the three scenarios. Typically only 20% to 25% of the gross additional passengers are making the journey because of the reduced fare. The significant majority would make the journey in any case but would use Dublin.

69. Given the different elasticities that proportion varies significantly between business and leisure passengers.

Table 3.11: Comparison of net and gross additional departing passengers

Scenario	2015	2016	2017	2018	2026
1 – 50% reduction					
% Business Net over Gross	8.0%	8.2%	8.4%	8.3%	7.8%
% Leisure Net over Gross	20.7%	20.9%	21.8%	21.6%	20.8%
% Total Net over Gross	**19.8%**	**20.0%**	**20.8%**	**20.6%**	**19.8%**
2 – Abolition					
% Business Net over Gross	8.8%	9.7%	10.7%	10.5%	9.3%
% Leisure Net over Gross	22.5%	25.4%	28.6%	28.2%	25.6%
% Total Net over Gross	**21.5%**	**24.2%**	**27.2%**	**26.8%**	**24.3%**
3 – 10% increase					
% Business Net over Gross	8.7%	8.8%	8.7%	8.7%	8.6%
% Leisure Net over Gross	24.8%	25.7%	26.0%	26.0%	26.3%
% Total Net over Gross	**23.4%**	**24.2%**	**24.5%**	**24.5%**	**24.7%**

70. The following comments are made in respect of these forecasts:

- The proportion of business travellers who only make the journey because of the reduced fare is significantly lower than leisure travellers. This is consistent with the research undertaken and discussed in the literature review which indicated that business travellers are much less price sensitive than leisure travellers;
- The proportion of net additional business travellers is broadly consistent across all scenarios;
- Net additional business travellers make up such a small percentage of the total net additional passengers that the overall '% Total Net over Gross' is only marginally lower than '% Leisure Net over Gross'.

4. Economic impact of a change in prices

Introduction

71. This section of the report assesses the economic benefits associated with the change in passenger numbers as a result of a change in price and is structured as follows:

- Methodological approach;
- Direct impact;
- Indirect and induced impacts;
- Catalytic impacts;
- Non-quantified economic benefit.

Methodological approach

Economic impacts

72. The methodological approach adopted identifies the full range of benefits which are likely to be accrued from lower air fares through a reduction in APD. In addition, **the exchequer cost in terms of reduced taxation revenue is also identified** (see Section 5) to determine an overall cost benefit conclusion.

Table 4.1: Economic impacts estimated

Impact	Description	Comment
Direct impact – additional passengers	Employment and investment in the aviation industry itself including both on-site and off-site (such as: airlines, airport operators, car parking, security, flight caterers, aircraft servicing).	Calculation based on the increased employment by the aviation sector.
Direct impact – retained revenues	It is recognised that some of a proposed reduction in APD may be retained by the airlines at least in the short term.	Estimate based on discussions with airlines and examples from elsewhere.
Indirect impact	Employment and investment supported through the supply chain expenditure resulting from direct expenditure.	Calculation based on the Type I multipliers sourced from the Scottish Input – Output tables.
Induced impact	Employment and investment supported by the spending of those directly and indirectly employed by the sector.	Calculation based on the Type II multipliers sourced from the Scottish Input – Output tables.
Catalytic impact	Employment and investment supported by increased passenger numbers in the wider economy such as increased inbound and outbound tourism and business.	Calculation based on increased passenger numbers identified by York Aviation and associated additional expenditure.

73. **The direct, indirect and induced impacts are calculated based on the gross additional passengers** as this represents the benefits associated with greater passenger numbers through the airport. **The catalytic benefits are based on the net additional passengers** as this represents the 'real' change in those visiting and leaving Northern Ireland.

Principles

74. The following principles were applied when estimating the economic impact:

- A sensitivity analysis has been undertaken where there was a greater level of uncertainty and the materiality of assumptions made has been determined;
- All assumptions taken are based on evidence identified from detailed research and/ or backed up by consultation with sectoral experts;
- **All costs and benefits are estimated in 2014 prices**. It has been assumed that unless otherwise stated all costs, benefits and tax rates will rise in line with inflation.

75. An overview schematic of the economic impact model and calculation approach is included in Annex A.

Scenarios assessed

76. The economic impact of the following two scenarios are assessed against the counterfactual/ status quo position (i.e. unchanged APD rates) over a 20 year period:

- Scenario 1: APD reduction – a reduction in APD rates of 50% across the reduced, standard and higher rates;
- Scenario 2: APD abolition – an abolition of APD; and
- Scenario 3: APD increase – an increase in APD rates of 10% across the reduced, standard and higher rates.

Direct impact – additional passengers

77. The direct economic impact on the aviation industry from higher passenger numbers would result in increased employment at NI airports and airlines to service greater passenger numbers. This includes employees of the airport operators, airline staff based in NI and also sub-contracted staff. A review of available research was completed and a detailed consultation exercise was undertaken with the airport operators and main airlines with a NI presence to identify the employment impact of additional passenger volumes.

78. The most recent research identified was commissioned by ACI Europe[15] in 2004 which estimated that European airports current support on average approximately 950 on-site jobs per million passengers per annum. This report also referenced a previous 1998 study which estimated 1,000 jobs per million passengers, indicating efficiency improvements in the industry. Consultation with York Aviation indicated that efficiency improvements would have significantly reduced that number. Comparisons with the overall on-site employment at the three NI airports may be misleading because of significant levels of freight traffic contributing to on-site employment at Belfast International, which would not be directly impacted by a reduction in APD. Therefore the Belfast City Airport total employment (including airport, airline and sub-contracted staff) and passenger data may give a more accurate reflection of the additional employment which would be created. Employment is approximately 1,000 handling 2.5 million passengers or 400 jobs per million passengers.

79. Therefore we have also assumed 400 jobs created per million additional passengers per annum. In addition we are assuming that the efficiency per passenger improvements will continue and on the basis of industry consultations this is estimated at 2% per annum.

80. Taking these factors together, the total additional employment levels were identified and applied to the average salary for the airline/ airport sector. This has been identified at £28,750 (in 2014 prices) based on the weighted average salaries of jobs in the aviation sector including support services and revised down to reflect the Northern Ireland salary differential[16]. Given the on-going efficiency improvements, it is assumed

[15] ACI Europe (2004): '*The social and economic impact of airports in Europe*'
[16] The salaries used in the analysis ranged from £78k for pilots and engineers to £22k for junior staff. The greater number of more junior staff resulted in a weighted average of £35k. the downward revision to £28,750 reflects lower salaries in NI based on ASHE estimates.

that half of this benefit would be shared with staff in the form of higher salaries and these are assumed to increase at a rate of 1% per annum.

81. Lastly, in order to understand the full economic impact or increase in Gross Value Added (GVA), a GVA factor should also be applied to salaries. This GVA factor includes the profit and investment components of economic activity and based on ONS data of the Air Transport sector a ratio of 1.985 should be applied[17].

82. This GVA factor approach is also preferable given the difficulties in forecasting specific investment expenditure over a long term period and the revenue derived by airports from additional passenger volumes. From an investment perspective it is assumed capacity will be developed to meet demand and this investment expenditure is incorporated in the GVA uplift.

83. Table 4.2 below sets out the additional employment created and the associated economic impact on GVA over the first five years of the change in price (the model includes an analysis over a 20 year period).

Table 4.2a: Direct Impact – Employment Benefits (Scenario 1)

	2015	2016	2017	2018	2026
Add. employment	121	176	222	219	192
Ave salary in sector	£29,038	£29,328	£29,622	£29,918	£32,397
Total salaries	£3,5m	£5.2m	£6.6m	£6.6m	£6.2m
GVA Factor	1.985	1.985	1.985	1.985	1.985
Direct Impact on GVA	**£7.0m**	**£10.3m**	**£13.1m**	**£13.0m**	**£12.4m**

Note: Numbers may not calculate due to rounding

[17] Although some businesses, including the airport itself, are foreign owned, many of the on-site businesses are locally owned and therefore much of the profit will be retained locally. Furthermore, all businesses (including the foreign owned) make significant investments locally. In order to be balanced, the analysis assumes that APD revenue retained by airlines will not stay within NI.

Table 4.2b: Direct Impact – Employment Benefits (Scenario 2)

	2015	2016	2017	2018	2026
Add. employment	225	295	347	344	318
Ave salary in sector	£29,038	£29,328	£29,622	£29,918	£32,397
Total salaries	£6.5m	£8.7m	£10.3m	£10.3m	£10.3m
GVA Factor	1.985	1.985	1.985	1.985	1.985
Direct Impact on GVA	**£13.0m**	**£17.2m**	**£20.4m**	**£20.4m**	**£20.5m**

Note: Numbers may not calculate due to rounding

Table 4.2c: Direct Impact – Employment Benefits (Scenario 3)

	2015	2016	2017	2018	2026
Add. employment	-37	-53	-68	-67	-56
Ave salary in sector	£29,038	£29,328	£29,622	£29,918	£32,397
Total salaries	(£1.09m)	(£1.56m)	(£2.03m)	(£2.00m)	(£1.82m)
GVA Factor	1.985	1.985	1.985	1.985	1.985
Direct Impact on GVA	**(£2.16m)**	**(£3.09m)**	**(£4.02m)**	**(£3.97m)**	**(£3.61m)**

Note: Numbers may not calculate due to rounding

84. The following comments are made in respect of the Employment benefits:

- From 2017 onwards (at which time the full change in APD is assumed to have been passed on to passengers) the annual economic benefit from a 50% reduction in APD is approximately £13 million, and from a 100% reduction the economic benefit is £20 million. Therefore the benefit from the additional reduction (i.e. from 50% to full abolition) is not as significant as the initial 50% reduction. As explained in Section 3 of this report, significant additional passengers are attracted by the initial 50% reduction, in particular those who are currently using Dublin. However a further 50% reduction cannot continue to generate additional passengers at the same rate.
- It is estimated that if APD was raised by 10% (scenario 3) there would be approximately 60-70 fewer jobs compared to the status quo position which has a negative GVA impact of approximately £4 million per annum.
- It is important to note that these benefits fall over time because of the increased efficiency on a per passenger basis which creates fewer additional jobs. This is shown in the benefits when assessed out to 2026.

Direct impact – revenues retained by airlines

85. Where a price reduction is to be achieved through a reduction in APD, research undertaken as part of this study highlighted that airlines will, to differing degrees, retain a portion of any reduction in APD at least in the short term. Whilst the consumer will not benefit from this retained revenue element, some significant economic benefits could still arise. However, this would be dependent on how the airlines decided to allocate this additional revenue retained. In effect they have a number of options:

- Invest the revenue to develop new routes from NI – we understand that Ryanair and Aer Lingus elected to take this approach in the Republic of Ireland, following the abolition of the Air Travel Tax in the 2013 Irish Budget. Obviously, as NI has no indigenous (national) carrier, it is less clear that a similar approach would be adopted here;

- Invest the revenue to develop routes elsewhere – this would clearly not deliver additional economic benefits to Northern Ireland. If the investment was made in additional routes from other parts of the UK then a national benefit could be claimed but the NI block grant would be paying for economic development in other regions of the UK; and

- Airline retains the revenue for profit (and distribution to shareholders) – whilst this would generally be seen as not economically beneficial to NI, an indirect benefit could be derived. For example, when Bands B, C and D were abolished Continental retained the tax reduction and did not reduce fares. Their justification was that they had been subsidising the route to keep it competitive with the Dublin route and if APD was not abolished the route would have been discontinued. Therefore the economic benefit in that instance was maintaining the status quo.

86. In consultation with the airlines, York Aviation have assumed that only 50% of any proposed change in APD would be passed on to passengers in Year 1, 75% in Year 2 and then 100% of the change would be passed on in Year 3. This assumption is based on the competitive nature of the local air travel market.

87. Table 4.3 below sets out the forecast revenue retained by the airlines in 2015 and 2016, the two years in which it is anticipated that revenue would be retained. In the case of Scenario 3 (APD increased by 10%), it is assumed that airlines would absorb the rise in the same proportions over the first two years.

Table 4.3: Forecast revenues retained by airlines

	2015 (50% retained)	2016 (25% retained)	Total
Scenario 1 – 50% reduction	£14.96m	£7.91m	£22.87m
Scenario 2 – Abolition	£31.67m	£16.67m	£48.36m
Scenario 3 – 10% increase	(£2.75m)	(£1.40m)	(£4.16m)

88. It was concluded that there would be no significant investment activity generated as a result of retained revenues. Therefore the revenue retained is assumed to be lost to the local economy.

Indirect and induced impact

89. The indirect impact refers specifically to the output and employment supported through the supply chain expenditure resulting from direct expenditure. This would include companies who provide goods and services to the local airports and the airlines. For example, companies providing catering goods and services and maintenance goods and services. This has been calculated through the Type I multiplier, sourced from the 2009 Scottish Air Transport Input – Output tables (NI does not yet produce its own Input – Output tables and the Scottish tables are generally used as the most applicable in NI. The 2009 figures are the latest available).

90. The induced impact refers specifically to the output and employment supported through the spending of those directly and indirectly employed in the sector. This is typically spending by those employed directly and indirectly by the airports or airlines which supports the local economy for example in local shops. This is also typically calculated through the Type II multiplier sourced from the 2009 Scottish Air Transport Input – Output tables.

91. Table 4.4 below sets out the indirect and induced impact on GVA resultant from increased passenger numbers over the first five years of the change in price (the model includes an analysis over a 20 year period).

Table 4.4a: Indirect and induced GVA impact (Scenario 1)

	2015	2016	2017	2018	2026
Total Direct Benefits	£7.0m	£10.3m	£13.1m	£13.0m	£12.3m
Type I multiplier	0.6	0.6	0.6	0.6	0.6
Total Indirect benefits	**£4.2m**	**£6.2m**	**£7.8m**	**£7.8m**	**£7.4m**
Type II multiplier	0.3/ 0.9	0.3/ 0.9	0.3/ 0.9	0.3/ 0.9	0.3/ 0.9
Total Induced benefits	**£2.1m**	**£3.1m**	**£3.9m**	**£3.9m**	**£3.7m**

Note: Numbers may not calculate due to rounding

Table 4.4b: Indirect and induced GVA impact (Scenario 2)

	2015	2016	2017	2018	2026
Total Direct Benefits	£13.0m	£17.2m	£20.4m	£20.4m	£20.5m
Type I multiplier	0.6	0.6	0.6	0.6	0.6
Total Indirect benefits	**£7.8m**	**£10.3m**	**£12.2m**	**£12.2m**	**£12.3m**
Type II multiplier	0.3/ 0.9	0.3/ 0.9	0.3/ 0.9	0.3/ 0.9	0.3/ 0.9
Total Induced benefits	**£3.9m**	**£5.2m**	**£6.1m**	**£6.1m**	**£6.1m**

Note: Numbers may not calculate due to rounding

Table 4.4c: Indirect and induced GVA impact (Scenario 3)

	2015	2016	2017	2018	2026
Total Direct Benefits	(£2.16m)	(£3.09m)	(£4.02m)	(£3.97m)	(£3.61m)
Type I multiplier	0.6	0.6	0.6	0.6	0.6
Total Indirect benefits	**(£1.30m)**	**(£1.85m)**	**(£2.41m)**	**(£2.38m)**	**(£2.17m)**
Type II multiplier	0.3/ 0.9	0.3/ 0.9	0.3/ 0.9	0.3/ 0.9	0.3/ 0.9
Total Induced benefits	**(£0.65m)**	**(£0.93m)**	**(£1.21m)**	**(£1.19m)**	**(£1.08m)**

Note: Numbers may not calculate due to rounding

92. In employment terms, based on an average NI productivity of £35k, the indirect and induced benefits would equate to approximately 330 additional jobs in scenario 1, 520 additional jobs in scenario 2 and a loss of approximately 100 jobs in scenario 3 by 2017.

Catalytic impacts

93. A further impact on the NI economy from a change in passenger numbers is felt in the wider economy, known as the catalytic impact. This impact falls into two broad areas: tourism; and business and these are discussed in turn below.

Tourism – additional inbound visitors to NI (exports)

94. One of the key benefits of making air travel more affordable is that it will attract greater numbers of visitors to NI from overseas. The Office of National Statistics (ONS) typically categorises visitors into three groups: tourists; those visiting friends and family (VFF); and business travellers. These three groups on average spend varying amounts when they visit NI. In addition, the origin of the visitor also impacts the level of spending in the local economy and this has been categorised into those travelling from GB and 'Other' destinations. Numbers from RoI using NI airports have also been identified but they are assumed to be using local airports to reach their destination and NI is not their final destination.

95. Table 4.5 below shows the average expenditure per overnight visitor by visitor type and origin.

Table 4.5: Estimated overnight spend by visitor type and origin of traveller

	GB	Other
Tourist	£242	£228
VFF	£189	£315
Business	£333	£580

Source: DETI analysis, NI Passenger Survey (NISRA)

96. The passenger forecasts have also been identified by passenger type and origin of traveller and these are presented in Table 4.6 below.

Table 4.6a: Additional inbound tourism passengers (Scenario 1)

	2015	2016	2017	2018	2026
Tourist	1,926	2,892	3,860	3,843	3,788
VFF	8,208	12,321	16,438	16,355	16,146
Business	472	707	942	938	932
Total additional inbound tourists	**10,606**	**15,921**	**21,240**	**21,135**	**20,866**

Table 4.6b: Additional inbound tourism passengers (Scenario 2)

	2015	2016	2017	2018	2026
Tourist	3,894	5,879	7,885	7,846	7,709
VFF	16,604	25,065	33,616	33,429	32,882
Business	950	1,428	1,907	1,898	1,882
Total additional inbound tourists	**21,449**	**32,371**	**43,408**	**43,173**	**42,473**

Table 4.6c: Additional inbound tourism passengers (Scenario 3)

	2015	2016	2017	2018	2026
Tourist	-726	-1,083	-1,435	-1,430	-1,418
VFF	-3,164	-4,715	-6,246	-6,218	-6,174
Business	-185	-276	-366	-364	-363
Total reduction inbound tourists	**-4,075**	**-6,074**	**-8,047**	**-8,012**	**-7,955**

97. Table 4.7 below summarises total in-bound tourism spend by visitor type.

Table 4.7a: Additional inbound tourism spend – exports (Scenario 1)

	2015	2016	2017	2018	2026
Tourist	£459,443	£689,901	£920,696	£916,568	£903,877
VFF	£1,700,066	£2,551,826	£3,404,115	£3,386,907	£3,337,801
Business	£165,919	£248,567	£330,976	£329,506	£327,253
Tourism spend (exports)	**£2,325,427**	**£3,490,294**	**£4,655,787**	**£4,632,981**	**£4,568,930**

Table 4.7b: Additional inbound tourism spend – exports (Scenario 2)

	2015	2016	2017	2018	2026
Tourist	£928,923	£1,402,307	£1,880,957	£1,871,634	£1,839,291
VFF	£3,438,483	£5,189,472	£6,958,891	£6,920,333	£6,795,578
Business	£333,905	£501,745	£669,985	£666,835	£660,988
Tourism spend (exports)	**£4,701,311**	**£7,093,524**	**£9,509,834**	**£9,458,802**	**£9,295,857**

Table 4.7c: Additional inbound tourism spend – exports (Scenario 3)

	2015	2016	2017	2018	2026
Tourist	-£173,467	-£258,632	-£342,804	-£341,464	-£338,631
VFF	-£648,641	-£966,561	-£1,280,417	-£1,274,801	-£1,263,846
Business	-£64,522	-£96,270	-£127,690	-£127,169	-£126,680
Tourism spend (exports)	**-£886,630**	**-£1,321,463**	**-£1,750,911**	**-£1,743,434**	**-£1,729,157**

Tourism – additional outbound travellers (imports)

98. The analysis also showed that lower prices will result in increased numbers of outbound travellers as a greater number of local residents choose to holiday abroad. **This has a negative impact on the NI economy as it represents a tourism import and therefore is also included in the overall impact calculation.**

99. However, as highlighted in the literature review, there is a significant level of economic activity in the local economy associated with outbound tourism. The ABTA commissioned research estimated that domestic spend on outbound travel products and services was broadly equivalent to the spend by UK tourists abroad. This domestic spend touched many parts of the economy including retail, transport, tour operators and travel agents.

100. In consultation with the broader research team (including DETI and York Aviation), it was agreed that the local benefit of expenditure associated with outbound travel would be equivalent to 25% of overseas spend. (This is significantly lower than the 'almost equal' spend found in the ABTA research and includes additional spending in airports by outbound tourists).

101. Table 4.8 below sets out the net impact from outbound tourism across the three scenarios.

Table 4.8a: Outbound tourism passengers and spend (Scenario 1)

	2015	2016	2017	2018	2026
Tourist	11,599	17,498	23,462	23,480	23,434
VFF	6,584	9,893	13,212	13,163	13,081
Total Outbound tourists	**18,182**	**27,391**	**36,674**	**36,643**	**36,514**
Average per capita spend [(1)]	£399	£399	£399	£399	£399
Total tourism spend (import)	**£7,254,808**	**£10,929,063**	**£14,633,083**	**£14,620,714**	**£14,569,224**
Local spend factor	£1,813,702	£2,732,266	£3,658,271	£3,655,179	£3,642,306
Net tourism spend (import)	**£5,441,106**	**£8,196,797**	**£10,974,812**	**£10,965,536**	**£10,926,918**

Note 1: ABTA estimate that the average UK tourist spends £532 per head. As NI GVA per head has averaged 75% of UK GVA per head in the last three years, average NI tourism has been estimated at £399.

Note 2: Business travellers abroad is not considered to be an import as it is an important aspect of driving exports, therefore only tourist and VFF travellers are considered (additional NI business passenger traffic is discussed further below).

Table 4.8b: Outbound tourism passengers and spend (Scenario 2)

	2015	2016	2017	2018	2026
Tourist	23,423	35,512	47,846	47,861	47,609
VFF	13,310	20,105	26,984	26,871	26,610
Total Outbound tourists	**36,732**	**55,616**	**74,830**	**74,732**	**74,219**
Average per capita spend	£399	£399	£399	£399	£399
Total tourism spend (import)	£14,656,213	£22,190,922	£29,856,982	£29,817,974	£29,613,329
Local spend factor	£3,664,053	£5,547,731	£7,464,245	£7,454,493	£7,403,332
Net tourism spend (import)	**£10,992,160**	**£16,643,192**	**£22,392,736**	**£22,363,480**	**£22,209,997**

Table 4.8c: Outbound tourism passengers and spend (Scenario 3)

	2015	2016	2017	2018	2026
Tourist	-3,990	-5,979	-7,967	-7,975	-7,989
VFF	-2,511	-3,746	-4,968	-4,951	-4,941
Total Outbound tourists	**-6,500**	**-9,725**	**-12,934**	**-12,926**	**-12,930**
Average per capita spend	£399	£399	£399	£399	£399
Total tourism spend (imports)	**-£2,593,597**	**-£3,880,217**	**-£5,160,705**	**-£5,157,419**	**-£5,159,204**
Local spend factor	-£648,399	-£970,054	-£1,290,176	-£1,289,355	-£1,289,801
Net tourism spend (import)	**-£1,945,198**	**-£2,910,163**	**-£3,870,528**	**-£3,868,064**	**-£3,869,403**

Net economic value of tourism

102. Having identified both import and export tourism spend, the relevant GVA factor is to be applied. This is based on NITB/ Visit Britain data which estimates the GVA multiplier of the tourism industry at 0.417 (i.e. for every £100 spent in the tourism sector, £41.70 is added to GVA). Table 4.9 below sets out the net economic impact of tourism from changes to the APD rate.

Table 4.9a: Net Economic Value of Tourism Expenditure (Scenario 1)

	2015	2016	2017	2018	2026
Tourism spend (exports)	£2,325,427	£3,490,294	£4,655,787	£4,632,981	£4,568,930
Net tourism spend (import)	£5,441,106	£8,196,797	£10,974,812	£10,965,536	£10,926,918
Tourism Deficit	**-£3,115,679**	**-£4,706,504**	**-£6,319,025**	**-£6,332,555**	**-£6,357,988**
GVA Factor	0.417	0.417	0.417	0.417	0.417
Economic value of tourism	**-£1,298,199**	**-£1,961,043**	**-£2,632,927**	**-£2,638,564**	**-£2,649,162**

Table 4.9b: Net Economic Value of Tourism Expenditure (Scenario 2)

	2015	2016	2017	2018	2026
Tourism spend (exports)	£4,701,311	£7,093,524	£9,509,834	£9,458,802	£9,295,857
Net tourism spend (import)	£10,992,160	£16,643,192	£22,392,736	£22,363,480	£22,209,997
Tourism Deficit	**-£6,290,849**	**-£9,549,667**	**-£12,882,902**	**-£12,904,679**	**-£12,914,140**
GVA Factor	0.417	0.417	0.417	0.417	0.417
Economic value of tourism	**-£2,621,187**	**-£3,979,028**	**-£5,367,876**	**-£5,376,949**	**-£5,380,892**

Table 4.9c: Net Economic Value of Tourism Expenditure (Scenario 3)

	2015	2016	2017	2018	2026
Tourism spend (exports)	-£886,630	-£1,321,463	-£1,750,911	-£1,743,434	-£1,729,157
Net tourism spend (import)	-£1,945,198	-£2,910,163	-£3,870,528	-£3,868,064	-£3,869,403
Tourism Deficit	**£1,058,568**	**£1,588,700**	**£2,119,617**	**£2,124,630**	**£2,140,246**
GVA Factor	0.417	0.417	0.417	0.417	0.417
Economic value of tourism	**£441,070**	**£661,958**	**£883,174**	**£885,263**	**£891,769**

103. In conclusion, **the net economic value of tourism from a reduction in APD is negative because the assumption is that the lower prices will encourage more local residents to take their holidays outside NI than encourage foreigners to travel to NI.**

Business

104. As discussed throughout the research, air connectivity is closely linked with economic growth and facilitates an increase in business activity, in the following ways:

- Increased access to markets to sell goods and services;
- Increased business investment (including FDI) as businesses have easier access to markets, customers and qualified staff; and
- Increased productivity – as NI firms become more exposed to international markets and competition, and productivity increases through improved working practices.

105. Whilst these occurrences have been observed as markets and economies have improved their access, the impact can be very difficult to quantify. In terms of this economic impact assessment we have adopted two approaches to provide a quantifiable context to the analysis.

a. Estimate the value of the additional outbound business trips; and

b. Complete a 'what if …' analysis on increases in levels of FDI (given uncertainty over the additional FDI attracted, this will NOT be included in the cost benefit analysis but is used for illustrative purposes).

Value of outbound business trips

106. Business travel generates an economic impact through direct expenditure in the aviation and hospitality sectors and this has been incorporated above. However, this element of the assessment focuses specifically on the impact or value business travel has on company performance and by extension, the wider economy. Research undertaken by Oxford Economics USA[18], showed very significant returns from 'investment' in business travel with the following key findings based on surveys and econometric analysis:

[18] Oxford Economics USA (2009): '*The Return on Investment of US Business Travel*'.

- For every dollar invested in business travel, companies realised between $2.50 and $5.10 in incremental profits;
- The conversion rate of prospective customers to new customers is 40% with an in-person meeting compared to 16% without such a meeting;
- The average business in the US would forfeit 17% of profit in the first year of eliminating business travel; and
- 28% of current business would be lost without in-person meetings.

107. For the purposes of this impact assessment we have **assumed a 2.5-to-1 return** (at the bottom end of the scale found in the Oxford Economics research) on business travel. There is limited research on the levels of expenditure (or investment) business travellers incur when overseas, however for the purposes of this assessment, we have assumed an amount equivalent to GB business travellers when visiting NI (i.e. £333). Finally we must also include an uplift factor to identify the full GVA impact because in addition to the profit generated, there will also be a positive salary impact. As this is an overall business impact the GVA/ profits ratio for the overall economy was used. The ratio applied is 1.584.

108. Table 4.10 below shows the potential economic impact from the additional air travel.

Table 4.10a: Economic Value of Business Air Travel (Scenario 1)

	2015	2016	2017	2018	2026
Additional NI business passengers	435	652	870	868	866
Average spend	£333	£333	£333	£333	£333
Profit ratio	2.5:1	2.5:1	2.5:1	2.5:1	2.5:1
GVA Factor	1.584	1.584	1.584	1.584	1.584
Total value of business travel	**£573,270**	**£860,264**	**£1,147,412**	**£1,144,315**	**£1,143,807**

Table 4.10b: Economic Value of Business Air Travel (Scenario 2)

	2015	2016	2017	2018	2026
Additional NI business passengers	875	1,317	1,761	1,756	1,751
Average spend	£333	£333	£333	£333	£333
Profit ratio	2.5:1	2.5:1	2.5:1	2.5:1	2.5:1
GVA Factor	1.584	1.584	1.584	1.584	1.584
Total value of business travel	**£1,153,593**	**£1,736,292**	**£2,322,337**	**£2,315,464**	**£2,309,967**

Table 4.10c: Economic Value of Business Air Travel (Scenario 3)

	2015	2016	2017	2018	2026
Additional NI business passengers	-169	-252	-335	-334	-334
Average spend	£333	£333	£333	£333	£333
Profit ratio	2.5:1	2.5:1	2.5:1	2.5:1	2.5:1
GVA Factor	1.584	1.584	1.584	1.584	1.584
Total value of business travel	**-£222,760**	**-£332,859**	**-£442,150**	**-£440,998**	**-£441,675**

Inbound business trips

109. Given we have assumed that increased outbound business travel delivers an economic benefit through increased exports, then logic may suggest that increased inbound business travel would have an economic cost through increased imports. However, there are a number of factors which would run counter to this logic:

- It is reasonable to assume that local businesses would only enter into new contracts with external suppliers if it were financially advantageous to them. Therefore local business would render a benefit from these new arrangements;
- Given the structure of the Northern Ireland supply chain, it is possible/ probable that contracts with external suppliers would be displacing other external suppliers rather than an NI indigenous supplier, potentially reducing imports;
- It is generally accepted that open trade between nations or regions is economically beneficial to all;
- Inbound business travellers in many cases are undertaking activities which benefit the local economy including making investments (discussed further below) and visiting suppliers;
- No research was identified which assessed the wider economic impact of inbound business travellers (in addition to their spending as outlined above) to Northern Ireland therefore making it very difficult to provide an evidence based quantification of their impact.

110. Overall increased air connectivity for business travellers, both inbound and outbound, is considered to be positive for a local economy. Therefore, it is considered inappropriate to make an arbitrary estimate of a potential economic 'cost' associated with greater inbound business traffic.

Non-quantified Economic Benefit

Value of increased Foreign Direct Investment (FDI)

111. The Northern Ireland economy has benefited significantly from increased levels of inward investment in recent years and attracting investment from overseas remains a key element of the NI Executive's overall economic strategy. To that end, consultees have suggested that lower air fares (through a reduction in APD) could help increase the attractiveness of Northern Ireland as a FDI location.

112. In terms of evidence to support this notion, the European Cities Monitor survey[19] asked companies to identify the factors they consider when deciding where to locate their businesses. Overall, four factors are consistently cited as the most important with over half of businesses identifying these as absolutely essential.

Table 4.11: Essential factors when making FDI decisions

Factor	%
Easy access to markets, customers or clients	61
Availability of qualified staff	58
Quality of telecommunication	55
Transport links with other cities and internationally	51

Source: Cushman and Wakeman (2010): 'European Cities Monitor 2010'

113. Two of these top four factors are directly linked to air connectivity, underlining the importance of creating an environment which encourages improved air access to national and international destinations.

114. Findings from the literature review suggest strongly that business travellers tend to be less price sensitive than other travellers. **Therefore FDI would only be likely to increase if the number of air connections to business destinations increased rather than simply a reduction of fares on existing routes**. As a consequence, only if a reduction in APD resulted in airlines increasing their investment on their route network from Belfast, would FDI levels increase.

[19] Cushman and Wakeman (2010): 'European Cities Monitor 2010'

115. Although not included in the overall cost benefit analysis, a simple 'what if …?' analysis was undertaken to provide an economic perspective on the potential benefit.

Northern Ireland statistics (Foreign Direct Investment):

- In the last five years (2008-09 to 2012-13), Northern Ireland has received an average of £430 million[20] per annum in FDI.
- If a reduction in airfares improved connectivity, 'what if FDI were to increase by only 1%?'. On this basis, **the NI economy would receive an additional £4.3 million per annum in FDI**.

[20] Source: Invest NI, fDi Intelligence

Summary of Economic Benefits

116. Table 4.12 below sets out a summary of the benefits for each scenario for the period 2015 to 2018 and 2026. A more detailed discounted net present value analysis including tax revenues lost and a sensitivity analysis over the entire assessment period is set out in section 6 of this report.

Table 4.12a: Summary Economic Benefits (Scenario 1 – 50% reduction)

	2015	2016	2017	2018	2026
Direct Impact	£6,963,961	£10,263,661	£13,056,629	£13,010,687	£12,378,893
Indirect and Induced	£6,267,565	£9,237,295	£11,750,966	£11,709,619	£11,141,004
Tourism	-£1,298,199	-£1,961,043	-£2,632,927	-£2,638,564	-£2,649,162
Business	£573,270	£860,264	£1,147,412	£1,144,315	£1,143,807
Total Economic Benefit	**£12,506,597**	**£18,400,177**	**£23,322,080**	**£23,226,057**	**£22,014,542**

Economic benefits have been calculated in 2014 prices

Table 4.12b: Summary Economic Benefits (Scenario 2 – abolition)

	2015	2016	2017	2018	2026
Direct Impact	£12,975,692	£17,195,907	£20,375,064	£20,400,892	£20,475,966
Indirect and Induced	£11,678,123	£15,476,316	£18,337,558	£18,360,802	£18,428,369
Tourism	-£2,621,187	-£3,979,028	-£5,367,876	-£5,376,949	-£5,380,892
Business	£1,153,593	£1,736,292	£2,322,337	£2,315,464	£2,309,967
Total Economic Benefit	**£23,186,221**	**£30,429,487**	**£35,667,084**	**£35,700,209**	**£35,833,410**

Economic benefits have been calculated in 2014 prices

Table 4.12c: Summary Economic Benefits (Scenario 3 – 10% increase)

	2015	2016	2017	2018	2026
Direct Impact	-£2,159,877	-£3,089,867	-£4,022,753	-£3,970,741	-£3,612,905
Indirect and Induced	-£1,943,890	-£2,780,880	-£3,620,478	-£3,573,667	-£3,251,615
Tourism	£441,070	£661,958	£883,174	£885,263	£891,769
Business	-£222,760	-£332,859	-£442,150	-£440,998	-£441,675
Total Economic Benefit	**-£3,885,457**	**-£5,541,648**	**-£7,202,207**	**-£7,100,144**	**-£6,414,425**

Economic benefits have been calculated in 2014 prices

117. This section of the report has focused on the economic benefits, however the economic cost, in terms of lost revenue from taxes through the NI Block Grant is also considered. These are set out in section 5 of this report.

5. Impact on the level of Air Passenger Duty raised

Introduction

118. The single most significant policy lever Government can use to change the direct cost of air travel to passengers is to alter Air Passenger Duty (APD). Therefore this section of the report sets out the estimated impact of a reduction in APD rates on the level of revenue raised by HM Treasury. This section is set out as follows:

- Counterfactual/ status quo scenario – this sets out the level of APD raised based on current rates (2014 prices);
- Scenario 1 – APD reduction (50%);
- Scenario 2 – APD abolition;
- Scenario 3 – APD increase (10%).

119. This lost revenue to HM Treasury also has an economic impact in terms of an equivalent reduction to the NI Block Grant.

120. Two approaches have been identified to calculate the tax revenue lost. The first approach is based on the passenger forecasts produced by York Aviation applied to the APD rates. The second approach is to use the estimate calculated by HMRC and uplift this on annual basis in line with OBR projected uplift for UK APD revenues.

121. **This section sets out in detail the first approach, based on the York Aviation passenger forecasts, and for comparison purposes provides a summary of the impact HMRC/ OBR taxation assumption at the end of the chapter**.

122. **The impact on the level of APD raised has been calculated in 2014 prices**.

123. This analysis excludes the passengers travelling on the Newark service as direct long-haul APD has already been devolved to Northern Ireland and set at zero. Indirect long-haul APD is still payable at the normal rate and this analysis treats indirect long haul in the same way as short-haul APD across each scenario considered (e.g. 50% reduction, full abolition and 10% increase).

Counterfactual/ Status Quo

124. Table 5.1 below sets out the forecast passenger numbers in each of the scenarios being assessed. Each alternative scenario is then assessed in more detail further below.

Table 5.1: Summary gross passenger forecasts (000s)

Scenario	2014	2015	2016	2017	2018	2026
Baseline scenario	3,505	3,583	3,656	3,731	3,807	4,560
1: 50% APD reduction	3,505	3,737	3,886	4,026	4,104	4,866
2: 100% APD reduction	3,505	3,870	4,041	4,191	4,272	5,067
3: 10% APD increase	3,505	3,535	3,587	3,640	3,716	4,470

125. This scenario calculates the level of APD raised based on current APD rates and passenger growth forecasts. Table 5.2 below sets out the APD rates for 2014 and 2015. From April 2015, Bands B, C and D will be merged

Table 5.2: Air Passenger Duty rates (£ per passenger)

Band	Reduced Rate		Standard Rate	
	April 2014	April 2015	April 2014	April 2015
A (0 – 2000 miles)	£13	£13	£26	£26
B (2001 – 4000 miles)	£69(1)	£71(1)	£138(1)	£142(1)
C (4001 – 6000 miles)	£85(1)	Merged(2)	£170(1)	Merged(2)
D (over 6000 miles)	£97(1)	Merged(2)	£194(1)	Merged(2)

Source: HM Treasury, 'Briefing note for new Air Passenger Duty operators'.
Note 1: From 1 January 2013 the rates for direct long-haul flights to Bands B, C and D from Northern Ireland were devolved, and set at £0.
Note 2: From April 2015, Bands B, C and D will merged
Note 3: A higher rate also applies to all chargeable passengers on flights aboard aircraft of 20 tonnes and above with fewer than 19 seats and is double the standard rate.

126. APD is paid by all travellers when departing from a UK airport.

127. Under the status quo scenario it is assumed that APD rates will remain unchanged in real terms and therefore all costs and benefits calculated in this assessment are in 2014 prices. On that basis, the anticipated revenue to be raised on an annual basis is set out in table 5.3 below, with increases driven by higher levels of passenger volumes.

Table 5.3: Air Passenger Duty forecast revenue

2014	2015	2016	2017	2018	2026
£55.3m	£56.3m	£57.5m	£58.8m	£60.1m	£72.3m

Scenario 1: APD reduction (APD rates reduced by 50%)

128. The reduction scenario calculates the level of APD raised based on APD rates reduced by 50% from the baseline scenario. Table 5.4 below sets out the assumed reduced APD rates.

Table 5.4: Air Passenger Duty reduced rates

Bands	Reduced Rate	Standard Rate
A (0 – 2000 miles)	£6.50	£13
B (2001 – 4000 miles)	£0	£0
C (4001 – 6000 miles)	£0	£0
D (over 6000 miles)	£0	£0

129. With the assumed reduction in APD and the associated lower travel costs, it is forecast that passenger numbers will increase. Table 5.5 below shows the anticipated increase in passenger numbers over the first five years of a fares reduction.

Table 5.5: Change in gross passenger numbers (000s)

	2014	2015	2016	2017	2018	2026
Baseline scenario	3,505	3,583	3,656	3,731	3,807	4,560
Scenario 1: 50% reduction	3,505	3,737	3,886	4,026	4,104	4,866
Difference in passenger numbers	**0**	**154**	**229**	**295**	**297**	**306**

Note: Numbers may not calculate due to rounding

130. On that basis, the anticipated revenue to be raised over the next 5 years is set out in table 5.6 below.

Table 5.6: Scenario 1 – 50% reduction in APD revenue

	2014	2015	2016	2017	2018	2026
Baseline scenario	£55.3m	£56.3m	£57.5m	£58.8m	£60.1m	£72.3m
Scenario 1: 50% reduction	£55.3m	£29.9m	£31.6m	£33.1m	£33.8m	£40.0m
Difference in revenue	**£0**	**(£26.3m)**	**(£25.9m)**	**(£25.6m)**	**(£26.2m)**	**(£32.3m)**

Note: Numbers may not calculate due to rounding

Scenario 2: APD abolition

131. With the assumed abolition of APD and the associated lower travel costs, it is forecast that passenger numbers will increase further. Table 5.7 below shows the anticipated increase in passenger numbers over the first five years of a fares reduction.

Table 5.7: Change in gross passenger numbers (000s)

	2014	2015	2016	2017	2018	2026
Baseline scenario	3,505	3,583	3,656	3,731	3,807	4,560
Scenario 2: 100% reduction	3,505	3,870	4,041	4,191	4,272	5,067
Change in passenger numbers	**0**	**287**	**384**	**460**	**466**	**507**

Note: Numbers may not calculate due to rounding

132. The cost of reduction is equivalent to the APD revenue raised in the counterfactual scenario and repeated in table 5.8 below.

Table 5.8: Scenario 2 – Reduction in APD revenue

2014	2015	2016	2017	2018	2026
£0m	(£56.3m)	(£57.5m)	(£58.8m)	(£60.1m)	(£72.3m)

Scenario 3: APD increase (APD rates increased by 10%)

133. The increased APD scenario calculates the level of APD raised based on APD rates being increased by 10% from the baseline scenario. Table 5.9 below sets out the assumed higher APD rates.

Table 5.9: Air Passenger Duty reduced rates

Bands	Reduced Rate	Standard Rate
Band A (0 – 2000 miles)	£14.30	£28.60
Band B (2001 – 4000 miles)	£0	£0
Band C (4001 – 6000 miles)	£0	£0
Band D (over 6000 miles)	£0	£0

134. With the assumed increase in APD and the associated higher travel costs, it is forecast that passenger numbers will fall. Table 5.10 below shows the anticipated increase in passenger numbers over the first five years of a fares reduction.

Table 5.10: Change in gross passenger numbers (000s)

	2014	2015	2016	2017	2018	2026
Baseline scenario	3,505	3,583	3,656	3,731	3,807	4,560
Scenario 3: 10% increase	3,505	3,535	3,587	3,640	3,716	4,470
Change in passenger numbers	**0**	**-48**	**-69**	**-91**	**-91**	**-90**

Note: Numbers may not calculate due to rounding

135. On that basis, the anticipated revenue to be raised over the next 5 years is set out in table 5.11 below.

Table 5.11: Scenario 3 – 10% increase in APD revenue

	2014	2015	2016	2017	2018	2026
Baseline scenario	£55.3m	£56.3m	£57.5m	£58.8m	£60.1m	£72.3m
Scenario 3: 10% increase	£55.3m	£60.1m	£61.7m	£62.8m	£64.2m	£77.7m
Increase in revenue	**£0**	**£4.4m**	**£4.2m**	**£4.0m**	**£4.1m**	**£5.5m**

Note: Numbers may not calculate due to rounding

Economic impact of tax reduction

136. The tax revenue lost to the UK Exchequer would be 'paid for' by an equivalent reduction to the NI Block Grant. Therefore the reduction in APD would have two economic impacts (one negative and one positive). These are discussed in turn.

Reduced Government spending (negative)

137. A reduction in tax revenues in one area would typically lead to a reduction in Government spending or an increase in other taxes (or combination of both). It is assumed that the most likely outcome would be that the Executive would choose to reduce spending in other areas of Government. To identify the full impact this could have on the economy, a number of steps are taken:

- Step 1: Applying a GVA factor – as with expenditure in other areas of the economy, a GVA factor is applied to determine the impact on GVA. Using the Scottish Input-Output tables, the average GVA effect factor for 'Public Administration and Defence', 'Health' and 'Education' is 0.75;
- Step 2: Consider the knock-on impact – a reduction in Government spending would also have a knock-on effect in the economy similar to the indirect impacts assessed previously in section 4. Therefore a multiplier should also be applied. Using the Scottish Input-Output tables, the average GVA multiplier across the three sub-sectors of Government is 1.3.

138. Table 5.12 below sets out the impact reduced government expenditure would have on GVA.

Table 5.12: Reduced Government spending impact

	2015	2016	2017	2018	2026
Scenario 1 – 50% reduction					
Tax impact	(£26.3m)	(£25.9m)	(£25.6m)	(£26.2m)	(£32.3m)
GVA Effect	0.75	0.75	0.75	0.75	0.75
Multiplier	1.3	1.3	1.3	1.3	1.3
Government Spend Impact	**(£26.1m)**	**(£25.7m)**	**(£25.4m)**	**(£26.0m)**	**(£32.0m)**
Scenario 2 – Abolition					
Tax impact	(£56.3m)	(£57.5m)	(£58.8m)	(£60.1m)	(£72.3m)
GVA Effect	0.75	0.75	0.75	0.75	0.75
Multiplier	1.3	1.3	1.3	1.3	1.3
Government Spend Impact	**(£55.8m)**	**(£57.1m)**	**(£58.3m)**	**(£59.6m)**	**(£71.8m)**

Scenario 3 – 10% increase					
Tax impact	£4.4m	£4.2m	£4.0m	£4.1m	£5.5m
GVA Effect	0.75	0.75	0.75	0.75	0.75
Multiplier	1.3	1.3	1.3	1.3	1.3
Government Spend Impact	**£4.4m**	**£4.2m**	**£4.0m**	**£4.1m**	**£5.4m**

Note: Numbers may not calculate due to rounding

Income effect (Positive)

139. Whilst a reduction in taxes leaves Government with less money, consumers and businesses experience a positive income effect. In the case of a reduction in APD, that is shared between airlines (at least in the short term) and passengers.

140. The revenue retained by the airlines has already been identified in section 4 and it is assumed that this will not benefit the Northern Ireland economy. In addition revenue retained by non-NI residents is unlikely to benefit the local economy, therefore only revenue retained by NI residents is considered to have a positive economic benefit locally. Finally, a GVA effect factor is also applied to the revenue retained by NI residents (the average GVA effect factor based on Scottish Input-Output tables is 0.67) to identify the income effect. This is set out in Table 5.13 below.

Table 5.13: Income effect

	2015	2016	2017	2018	2026
Scenario 1 – 50% reduction					
Tax impact	(£26.3m)	(£25.9m)	(£25.6m)	(£26.2m)	(£32.3m)
Retained by airlines	£15.0m	£7.9m	£0	£0	£0
Retained by passengers	£11.4m	£17.9m	£25.6m	£26.2m	£32,3m
Proportion NI residents	58%	58%	58%	58%	59%
GVA Factor	0.67	0.67	0.67	0.67	0.67
Income Effect	**£4.4m**	**£7.0m**	**£10.1m**	**£10.3m**	**£12.7m**
Scenario 2 – Abolition					
Tax impact	(£56.3m)	(£57.5m)	(£58.7m)	(£60.1m)	(£72.3m)
Retained by airlines	£31.7m	£16.7m	£0	£0	£0
Retained by passengers	£24.6m	£40.8m	£58.8m	£60.1m	£72.2m
Proportion NI residents	58%	59%	59%	59%	59%
GVA Factor	0.67	0.67	0.67	0.67	0.67
Income Effect	**£9.6m**	**£16.1m**	**£23.3m**	**£23.9m**	**£28.8m**

Scenario 3 – 10% increase					
Tax impact	£4.4m	£4.2m	£4.0m	£4.1m	£5.5m
Retained by airlines	(£2.8m)	(£1.4m)	£0	£0	£0
Retained by passengers	(£1.7m)	(£2.8m)	(£4.0m)	(£4.1m)	(£5.5m)
Proportion NI residents	57%	57%	57%	57%	57%
GVA Factor	0.67	0.67	0.67	0.67	0.67
Income Effect	**(£0.6m)**	**(£1.1m)**	**(£1.5m)**	**(£1.6m)**	**(£2.1m)**

Note: Numbers may not calculate due to rounding

HMRC/ OBR Tax estimate

141. HMRC have estimated the levels of tax revenues received from each of the three devolved administrations in the UK (and separately England). They have estimated that in 2012/13 (the latest year for which figures were available at time of producing the report), Northern Ireland contributed £78 million in APD revenue to the total UK APD tax take of £2.79 billion. This estimate is significantly greater than the estimate of approximately £55 million in 2014 based on the York Aviation passenger forecasts and therefore has a very significant impact on the economic cost-benefit outcome.

142. In consultation with DETI and DFP it is recognised that if APD were to be devolved, then the initial HM Treasury cost estimate would most likely align with the HMRC estimate. Clearly a detailed negotiation would then be undertaken between DFP and HMT on the most appropriate 'cost' to be applied to the NI Block Grant. This study does not seek to anticipate the outcome of that negotiation, however, this research has also quantified the net economic impact if the higher, HMRC estimated cost, was to be applied.

A note on the HMRC Methodology

143. A detailed analysis of the HMRC estimation methodology has not been undertaken but following consultations with York Aviation a number of **potential** reasons have been identified to explain the significant difference between the York Aviation and HMRC estimates:

- Direct flights from NI are already exempt from band B, C and D and it is not clear that the HMRC estimates reflect the fact that passengers travelling from NI to direct long haul destinations do not pay APD;
- It is unclear if HMRC has adjusted for the different levels of premium class travel from airports across the UK. Premium class travel is heavily concentrated on London and if no adjustment is made to reflect this, APD in regional markets is likely to be

overstated. Premium class travel from Northern Ireland particularly is believed to be limited.

144. It must also be acknowledged that York Aviation raised a number of risks around the currency of data they used to make their estimates of passenger numbers for 2014, particularly in terms of end destinations of passengers and classes of travel. Therefore whilst the York Aviation estimate may be more accurate, it is recognised that that neither estimation methodology can be described as perfect. As a consequence the summary below sets out the economic impact using both calculation approaches.

Summary

145. Table 5.14 below sets out a summary of the 'Reduced Government spending' impact and the 'Income Effect'.

Table 5.14: Summary economic impact on tax revenue (Based on York Aviation passenger forecasts)

	2015	2016	2017	2018	2026
Scenario 1 – 50% reduction					
Government Spend Impact	(£26.1m)	(£25.7m)	(£25.4m)	(£26.0m)	(£32.0m)
Income Effect	£4.4m	£7.0m	£10.1m	£10.3m	£12.7m
Net Impact	**(£21.7m)**	**(£18.6m)**	**(£15.3m)**	**(£15.7m)**	**(£19.3m)**
Scenario 2 – Abolition					
Government Spend Impact	(£55.8m)	(£57.1m)	(£58.3m)	(£59.6m)	(£71.8m)
Income Effect	£9.6m	£16.1m	£23.3m	£23.9m	£28.8m
Net Impact	**(£46.2m)**	**(£40.9m)**	**(£35.0m)**	**(£35.8m)**	**(£42.9m)**
Scenario 3 – 10% increase					
Government Spend Impact	£4.4m	£4.2m	£4.0m	£4.1m	£5.4m
Income Effect	(£0.6m)	(£1.1m)	(£1.5m)	(£1.6m)	(£2.1m)
Net Impact	**£3.8m**	**£3.1m**	**£2.4m**	**£2.5m**	**£3.3m**

Note: Numbers may not calculate due to rounding

146. The HMRC estimates of APD raised from NI is higher than those based on the York Aviation passenger forecasts and therefore the tax impact is greater. HMRC estimated NI's contribution to total UK APD was £78 million in 2012/13 and for this analysis, the HMRC estimate is increased annually in line with the assumed Compound Annual Growth Rate (CAGR) identified for UK APD by the OBR. The OBR projections are in nominal terms therefore have been discounted back to 2014 prices. In 2015 it is estimated that the taxation (or Government Spend Impact) will be £79.3 million rising to £89 million by 2026.

147. Table 5.15 overleaf provides a summary of the impact.

Table 5.15: Summary economic impact on tax revenue (Based on HMRC/ OBR passenger forecasts)

	2015	2016	2017	2018	2026
Scenario 1 – 50% reduction					
Government Spend Impact	(£39.6m)	(£40.0m)	(£40.5m)	(£40.9m)	(£44.5m)
Income Effect	£7.8m	£11.8m	£16.0m	£16.2m	£17.7m
Net Impact	**(£31.9m)**	**(£28.2m)**	**(£24.4m)**	**(£24.7m)**	**(£26.8m)**
Scenario 2 – Abolition					
Government Spend Impact	(£79.3m)	(£80.1m)	(£80.9m)	(£81.8m)	(£89.0m)
Income Effect	£15.5m	£23.7m	£32.1m	£32.5m	£35.4m
Net Impact	**(£63.7m)**	**(£56.4m)**	**(£48.9m)**	**(£49.3m)**	**(£53.6m)**
Scenario 3 – 10% increase					
Government Spend Impact	£7.9m	£8.0m	£8.1m	£8.2m	£8.9m
Income Effect	(£1.6m)	(£2.4m)	(£3.2m)	(£3.2m)	(£3.5m)
Net Impact	**£6.4m**	**£5.6m**	**£4.9m**	**£4.9m**	**£5.4m**

Note: Numbers may not calculate due to rounding

6. Summary of Findings

Introduction and caveat

148. This section of the report sets out a summary of the total costs and benefits of a change in APD. The costs and benefits have been identified on an annual basis from 2014 to 2026 and the tables below provide a summary across a number of years within that time period.

149. The results are based on the assumptions set out in section 4 of this report. In many cases these are based on information taken from ONS databases (such as average salaries, GVA factors and multipliers to be applied) and also from local research conducted in order to facilitate this type of economic impact assessment (such as visitor expenditure). In these cases the assumptions can be considered reasonable. However in a small number of instances, the research conducted has highlighted the potential for significant variability (in particular in respect of the impact on the Block Grant and elasticities applied). In this instance, there is greater uncertainty around these assumptions and therefore a sensitivity analysis is undertaken to determine their significance.

Summary of findings

150. Table 6.1 below sets out a summary of the costs and benefits:

Table 6.1 – Summary of Costs and Benefits (Lower Tax scenario)

Scenario	2015	2016	2017	2018	2026
1 – 50% APD reduction					
Economic Benefit	£12,506,597	£18,400,177	£23,322,080	£23,226,057	£22,014,542
Tax Impact	(£21,719,833)	(£18,646,957)	(£15,349,970)	(£15,703,498)	(£19,292,220)
Net Benefit	**(£9,213,236)**	**(£246,780)**	**£7,972,110**	**£7,522,559**	**£2,722,322**
2 – APD Abolition					
Economic Benefit	£23,186,221	£30,429,487	£35,667,084	£35,700,209	£35,833,410
Tax Impact	(£46,210,303)	(£40,946,618)	(£35,014,821)	(£35,754,486)	(£42,948,495)
Net Benefit	**(£23,024,082)**	**(£10,517,131)**	**£652,263**	**(£54,277)**	**(£7,115,084)**
3 – 10% APD increase					
Economic Benefit	(£3,885,457)	(£5,541,648)	(£7,202,207)	(£7,100,144)	(£6,414,425)
Tax Impact	£6,374,509	£5,642,037	£4,885,987	£4,933,230	£5,359,961
Net Benefit	**£2,489,051**	**£100,389**	**(£2,316,220)**	**(£2,166,915)**	**(£1,054,464)**

Note: Numbers may not calculate due to rounding

Table 6.2 – Summary of Costs and Benefits (Higher Tax scenario)

Scenario	2015	2016	2017	2018	2026
1 – 50% APD reduction					
Economic Benefit	£12,506,597	£18,400,177	£23,322,080	£23,226,057	£22,014,542
Tax Impact	(£31,872,544)	(£28,210,184)	(£24,429,937)	(£24,666,148)	(£26,799,807)
Net Benefit	**(£19,365,947)**	**(£9,810,007)**	**(£1,107,857)**	**(£1,440,091)**	**(£4,785,264)**
2 – APD Abolition					
Economic Benefit	£23,186,221	£30,429,487	£35,667,084	£35,700,209	£35,833,410
Tax Impact	(£63,745,087)	(£56,420,368)	(£48,859,874)	(£49,332,295)	(£53,599,614)
Net Benefit	**(£40,558,866)**	**(£25,990,881)**	**(£13,192,790)**	**(£13,632,086)**	**(£17,766,203)**
3 – 10% APD increase					
Economic Benefit	(£3,885,457)	(£5,541,648)	(£7,202,207)	(£7,100,144)	(£6,414,425)
Tax Impact	£6,374,509	£5,642,037	£4,885,987	£4,933,230	£5,359,961
Net Benefit	**£2,489,051**	**£100,389**	**(£2,316,220)**	**(£2,166,915)**	**(£1,054,464)**

Note: Numbers may not calculate due to rounding

Overview of Results

151. The following high level overview of the results is provided:

- The net benefit position is higher in the lower tax scenario, as expected. But if the NI Block had to incur the higher tax cost then the overall cumulative position would be a negative economic benefit, across all three scenarios;
- The optimum solution appears to be a partial reduction in APD, rather than a complete abolition because the first 50% of a reduction achieves a greater number of additional passengers than the second 50% reduction;
- Even in the lower taxation scenario, the net economic benefits are estimated to be relatively small;
- The economic benefits tend to be much lower in 2015 and 2016 because not all of the tax reduction is passed on to passengers in the form of lower prices during the first two years and the tax revenue assumed to be retained by the airlines is 'lost' to the Northern Ireland economy;
- The peak year for benefits appears to be 2017 as over time benefits reduce in value; and
- The analysis also suggests that increasing APD would have a negative economic impact.

Understanding the Results

152. The following points should provide a greater understanding of the results and the impact a change in APD has on passenger forecasts and the difference between the benefits (economic impact) calculation and the cost (tax impact) calculation:

- Profile of passenger growth across scenarios – a 50% reduction in APD creates a relatively significant uplift in passenger numbers (approximately 8%), however a total abolition of APD, in effect doubling the reduction, does not double the uplift in passenger numbers but increases by 'only' approximately 12%. The primary reason is that the first 50% reduction has a much greater impact in reducing the leakage to Dublin than the 'second' 50% reduction. As a consequence the benefits associated with a 100% reduction are not equivalent to double the benefits associated with a 50% reduction.

- Benefits reduce at a faster rate than costs over time – all benefits and costs are driven off the forecast additional passenger numbers. As detailed previously, the number of additional passengers starts to decrease as the value of travel time starts to exceed the reduction in price as a result of a reduction in APD. Therefore other things being equal, one would expect both costs and benefits to reduce at the same rate. However, direct benefits reduce at a greater rate because of assumed efficiencies on a per passenger basis resulting in the need for fewer additional staff in the longer term. In contrast the tax rate differential holds steady and therefore benefits reduce at a faster rate than costs.

- Tax revenue differentials – if the APD tax rate was reduced by 50%, the revenue take would fall by less than 50% because of the increase in passenger numbers generated. However, if the APD tax rate was reduced by 100% then the revenue take would fall by 100%. As a consequence, the cost associated with a 100% reduction is more than double the cost of a 50% reduction.

- Increasing taxation – a relatively small increase in APD (10%) has a relatively large negative impact on passenger numbers (down by approximately 2.4%), this is proportionally much greater impact than either of the two tax reduction scenarios. The primary reason for this is that further increases make Dublin more attractive and leakage would increase further. The economic benefits therefore are negative as it impacts both inbound tourists and outbound business travellers and the tax revenue take does not increase proportionally with the increase in tax rate.

Sensitivity analysis – Direct and Indirect Long-haul flights

Change in APD for short haul flights only

153. NI is currently exempt from APD on direct long-haul flights. This currently only impacts one route, the Newark service, and therefore passengers flying on this service have been excluded from this study. However, passengers flying from NI on an indirect long-haul flight, through for example London Heathrow, are required to pay long-haul APD. The scenarios assessed in this study have assumed that any changes to APD would be applied equally to both short-haul and indirect long-haul APD.

154. However, from a sensitivity perspective the impact of changing only short-haul APD has also been assessed. Table 6.4 below sets out the difference in the impact for each of the three scenarios for 2017 (this is the first year when the full impact of tax changes is felt by travellers).

Table 6.4a – Difference in economic impact 2017 (Scenario 1 – 50% reduction)

	Baseline	Shorthaul APD only
Direct Benefit	£13.1m	£10.3m
Indirect and Induced	£11.8m	£9.3m
Catalytic	(£1.5m)	(£1.4m)
Total Economic Impact	**£23.3m**	**£18.2m**
Govt spend impact	(£25.4m)	(£21.6m)
Income effect	£10.1m	£8.5m
Net tax implication	**(£15.3m)**	**(£13.0)**
Total Net Impact	**£8.0m**	**£5.2m**

Note: Numbers may not calculate due to rounding

Table 6.4b – Difference in economic impact 2017 (Scenario 2 – Abolition)

	Baseline	Shorthaul APD only
Direct Benefit	£20.4m	£17.1m
Indirect and Induced	£18.3m	£15.4m
Catalytic	(£3.0m)	(£2.8m)
Total Economic Impact	**£35.7m**	**£29.6m**
Govt spend impact	(£58.3m)	(£46.2m)
Income effect	£23.3m	£18.4m
Net tax implication	**(£35.0m)**	**(£27.8m)**
Total Net Impact	**£0.7m**	**£1.8m**

Note: Numbers may not calculate due to rounding

Table 6.4c – Difference in economic impact 2017 (Scenario 3 – 10% increase)

	Baseline	Shorthaul APD only
Direct Benefit	(£4.0m)	(£3.6m)
Indirect and Induced	(£3.6m)	(£3.3m)
Catalytic	£0.4m	£0.4m
Total Economic Impact	**(£7.2m)**	**(£6.5m)**
Govt spend impact	£4.0m	£3.4m
Income effect	(£1.5m)	(£1.3m)
Net tax implication	**£2.4m**	**£2.1m**
Total Net Impact	**(£4.8m)**	**(£4.4m)**

Note: Numbers may not calculate due to rounding

155. This would have the following implications:

- Long-haul traffic would be unchanged relative to the baseline and therefore the only change in traffic would be short-haul;
- In scenarios 1 and 2 the direct and indirect benefits in terms of additional employment and supply chain spending would be lower as there would be no additional indirect long-haul passengers;
- The net tourism position would be marginally improved as fewer outbound tourist trips would occur (but this impact is minimal);
- The Government spend impact would be lower (similar to the 'tax cost') – as those travelling indirect long-haul would now be paying full APD rates. The associated income effect (where local NI residents enjoy a financial benefit from the lower tax rate) would also be lower.

156. Therefore reducing short-haul APD only and maintaining indirect long-haul APD would not materially change the conclusions of this report.

Sensitivity analysis – Elasticities

Change in demand elasticities

157. The literature review highlighted a wide range of elasticities which could be applied. The baseline elasticities used in this study are based on central DfT assumptions but the data for NI is not current and therefore uncertainty exists around the appropriate levels which should be applied. As a result, York Aviation provided passenger forecasts based on the following changes to elasticities:

- Elasticity 1: Less elastic – elasticity is assumed at half the level applied in the central/ baseline scenario. This means that demand for air travel will be less sensitive to changes in the price (both increase and decrease). Therefore a relatively large change in price will result in a relatively small change in the number of air passengers.

- Elasticity 2: More elastic – elasticity is assumed at twice the level applied in the central/ baseline scenario. This means that the demand for air travel will be much more sensitive to changes in price. Therefore a relatively small change in price will result in a relatively large change in the number of air passengers.

Table 6.5 – Sensitivity analysis (Elasticities)

Scenario	2015	2016	2017	2018	2026
1 – 50% APD reduction					
Net Benefit (Baseline)	(£9,213,236)	(£246,780)	£7,972,110	£7,522,559	£2,722,322
Net Benefit (Elasticity 1)	(£10,447,584)	(£2,138,810)	£5,401,224	£4,986,953	£421,984
Net Benefit (Elasticity 2)	(£6,729,740)	£3,570,648	£13,173,240	£12,651,011	£7,366,407
2 – APD Abolition					
Net Benefit (Baseline)	(£23,024,082)	(£10,517,131)	£652,263	(£54,277)	(£7,115,084)
Net Benefit (Elasticity 1)	(£25,447,283)	(£14,298,198)	(£4,544,327)	(£5,177,549)	(£11,745,068)
Net Benefit (Elasticity 2)	(£18,118,598)	(£2,818,378)	£11,292,584	£10,430,387	£2,323,856
3 – 10% APD increase					
Net Benefit (Baseline)	£2,489,051	£100,389	(£2,316,220)	(£2,166,915)	(£1,054,464)
Net Benefit (Elasticity 1)	£61,972	(£2,160,367)	(£4,415,013)	(£4,236,241)	(£2,813,557)
Net Benefit (Elasticity 2)	(£1,326,629)	(£4,195,944)	(£7,067,651)	(£6,859,890)	(£5,257,057)

Note: Numbers may not calculate due to rounding

Elasticities discussed

158. The following conclusions are made from the sensitivity analysis:

- If elasticities are lower than those assumed in the central/ baseline scenario then the economic benefits will be lower. This is intuitively correct because the rationale for reducing APD is to stimulate significant additional passenger numbers. Therefore, if the elasticity is lower, the level of additional passengers will be lower.
- Although a more elastic scenario delivers greater benefits, they reduce quite significantly year on year and soon return to small (or even negative) net benefit positions.
- In all scenarios an increase in the rate of APD will deliver negative economic benefits.

Risks and uncertainties

159. There are a number of significant risks and uncertainties associated with the reduction of APD. These are discussed in turn below.

Cost to NI Block

160. The cost HM Treasury will impose on the NI Block would be subject to negotiation and therefore is an unknown. The research has shown that if the cost imposed was in line with HMRC estimates, then the economic benefit would be negative. It is only where the tax cost would be much lower that a positive economic benefit would be achieved.

Future cost risk

161. If APD were devolved to NI, there is a significant risk around the open ended nature of the cost. If the UK Government increased APD rates from their current levels, then the 'cost' to NI in terms of a reduction to the 'Block Grant' would increase if NI did not increase APD by the same amount. Therefore the cost of NI APD policy would still be linked to GB APD policy even if the power was devolved.

Impact risk

162. There are significant uncertainties identified around the data used on which the forecasts were developed, in terms of both the availability of up to date passenger data for NI and the potential range of elasticities which could be applied. As a consequence it is more difficult to be highly confident about the level of benefits which could be achieved.

Deadweight risk

163. Reducing APD increases the number of passengers, however in order to achieve this increase in passenger numbers all passengers receive a tax reduction, not just the additional passengers. As a result there are high levels of deadweight.

164. In scenario 1 (a 50% reduction in APD), the number of additional passengers is approximately 8% (which falls over time) and the abolition of APD is estimated to increase passenger numbers by approximately 12% (which also falls over time). Therefore deadweight is in the range of 88% to 92%.

Effectiveness risk

165. The rationale for reducing APD is to stimulate economic development, through either increased business traffic and/ or increased inbound tourism. However reducing APD is a very broad intervention and one of the biggest impacts is to increase outbound tourism (effectively a NI import). Business travellers are less price sensitive and it is uncertain that a reduction in APD would lead to the establishment of new routes to business destinations. therefore it may not be the most effective way to stimulate the desired response from the industry.

Increased business investment (upside risk)

166. A reduction in APD also has the potential to make NI a more attractive destination for Foreign Direct Investment. This economic benefit is very difficult to accurately quantify and therefore has not been included in this analysis. Whilst this may be small in absolute terms it is important to recognise in making an overall assessment.

Conclusion

167. The analysis shows the most likely outcome from a reduction in APD would deliver a small positive net economic benefit (and that is based on a lower tax cost), however given that benefits reduce year on year and the risks and uncertainties identified above, **a strong case for change has NOT been made**.

168. Given the scale of cost of reducing or abolishing APD and the levels of deadweight identified, DETI may wish to consider a more direct targeted intervention. One example could be a programme to stimulate route development to primarily business destinations (rather than holiday destinations).

Impact of December 2014 Autumn Statement

169. The Chancellor of the Exchequer announced in the December 2014 Autumn Statement that APD would be abolished for children under 12 from May 2015 and then extended to those under the age of 16 by 2016. As the announcement was made after the completion of this report, its impact has not been quantified in this analysis. However it is likely that the abolition for children would have the following implications:

- The cost to the NI block grant would be reduced – it is likely that the level of APD raised in NI (and across the rest of the UK) will be lower. Therefore the cost imposed by Treasury associated with abolition or a further reduction in APD in NI would be lower than quantified in this assessment;

- Greater levels of tourism traffic rather than business traffic – the abolition for children will most likely increase the level of tourism traffic through NI airports as the lower price makes it more attractive relative to Dublin and for a small number of families the reduction in cost may make the flight affordable. The analysis undertaken as part of this study showed that a reduction in APD would have a greater impact on outbound tourism than inbound tourism.

170. In terms of the scale of the impact, HM Treasury estimate that the abolition of APD for those under 16 will cost £80 million in 2016/17 against a total APD tax take of £3.3 billion in that year. Therefore the impact is likely to be less than 2.5%. As a result, the Autumn Statement announcement is unlikely to have a material impact on the conclusions reached in this report.

Annex A – Economic Impact of Air Passenger Duty