

Ministry of Infrastructure and the Environment

# Effects of the Air Passenger Tax

Behavioral responses of passengers, airlines and airports

KiM Netherlands Institute for Transport Policy Analysis



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The KiM Netherlands Institute for Transport Policy Analysis conducts mobility analyses that are subsequently incorporated in national policy. As an independent institute within the Ministry of Infrastructure and the Environment, KiM provides strategic research and policy analyses. The content of KiM publications does not need to reflect the views held by the minister and the state secretary of Infrastructure and the Environment.

# Foreword

The air passenger tax proved controversial from the start. Implementation of the tax in July 2008 occurred under gloomy skies, as shortly after the global credit crisis led to an historic decline in air travel worldwide. Decreasing passenger volumes at Amsterdam Airport Schiphol were even more pronounced than in other countries. And then the reports from airports in neighbouring Germany and Belgium arrived, revealing that the numbers of Dutch people taking flights from there were dramatically on the rise.

This research study reveals that the predictions made about the possible effects of the air passenger tax – namely, declining demand and defections to foreign airports (Significance et al., 2007) – did in fact largely transpire. We must however view these effects independently of the consequences stemming from the global credit crisis and the other trends and developments detailed in this report. A key question in this study is: has the air passenger tax - despite being abolished in 2009 - also had a permanent effect on passengers' behaviour and airport choices, and if so, what are the reasons for this. The answer to this question also offers insights into the possibilities and impossibilities of encouraging these passengers to return to Dutch airports.

In the meantime, the air passenger tax has remained a topical subject. In the aftermath of the credit crisis, the German government implemented an air passenger tax on 1 January 2011 as part of an extensive 'savings plan'. The Austrian government followed with the announcement that it too would implement an air passenger tax as of 1 April 2011, and other countries are also contemplating introducing such a tax as well. Concurrently, the European Union aims to incorporate the aviation sector in the  $CO_2$  emission trading system (ETS). Outside of the EU, however, there is no common will for such an approach. Germany's air passenger tax - and the publicity surrounding it – will undoubtedly impact the numbers of Dutch passengers using German airports situated in the border regions, as well as the numbers of German passengers departing from airports in the Netherlands. Also having an impact will be the changing supply of connections available at Dutch and Germans airports situated in the border regions.

There are, then, many ongoing developments regarding aviation taxes and duties. The knowledge compiled in this study about the effects of the Netherlands' one-year air passenger tax thus remains relevant and topical. KiM had previously published a retrospective study, titled *'Taxes and duties in the aviation sector'*, in late 2010. In this latest study, KiM further expands the knowledge available about this issue for policymakers and other interested parties in the aviation sector.

I wish you a pleasurable reading experience.

Jaap de Wit Director KiM

# Table of Contents

### Foreword 3

### Summary 7

### 1 Introduction 11

- 1.1 Background 11
- 1.2 Objective of the report 12
- 1.3 Research approach 12
- 1.4 Note to readers 13

### 2 History of the air passenger tax 15

- 2.1 Reason for introduction 15
- 2.2 Previously estimated effects 15
- 2.3 Resistance from within the sector 16
- 2.4 Abolishment 18
- 2.5 Air passenger tax from the European perspective 20

### 3 Airport choice behavioural patterns 23

- 3.1 Key choice factors 23
- 3.2 Rational choice model 25
- 3.3 Remarks about the rational choice model 29
- 3.4 Strategic behaviour of airline companies and airports 31

### 4 Development of passenger volumes 33

- 4.1 Introduction 33
- 4.2 Schiphol 34
- 4.3 Regional airports in the Netherlands 35
- 4.4 Developments outside of aviation 37
- 4.4.1 Economic crisis 38
- 4.4.2 Developments in foreign exchange rates and kerosene prices 39
  - 4.5 Developments in the aviation sector 39

### 5 Effects of the air passenger tax 43

- 5.1 Results of airport choice survey 43
- 5.2 Indications for defection/leakage 44
- 5.2.1 Düsseldorf 45
- 5.2.2 Brussels 48
- 5.2.3 Weeze 49
- 5.2.4 Charleroi 52
  - 5.3 Viewpoints of the sector effect of the air passenger tax 53
- 5.3.1 Airports 53
- 5.3.2 Airline companies 56
- 5.3.3 Tour operators and other stakeholders 57
- 5.4 Estimate of effect of air passenger tax on Schiphol 58

### 6 'Return' of Dutch passengers 63

- 6.1 Picture that emerged from data and interviews 63
- 6.2 Airport choice modelled with System Dynamics 64
- 6.3 Policy options 69
- 6.4 Germany's air passenger tax 70

Samenvatting 75

Bibliography 79

### Appendix A: Organisations interviewed 83

# Summary

The air passenger tax has had a decidedly negative effect on the number of Dutch passengers departing from airports in the Netherlands; specifically, from Amsterdam Airport Schiphol. Passengers have instead opted to primarily use Düsseldorf, Weeze and Brussels airports. The air passenger tax served to reinforce two developments that were already occurring: passengers, especially those from the Netherlands' eastern and southern regions, increasingly depart from foreign airports, and passengers increasingly use low-cost airlines, such as Ryanair and easyJet. The expectation is that not all Dutch passengers who use foreign airports will 'return' to Dutch airports, although this could change owing to the recent implementation of a 'ticket tax' in Germany, as well as by measures taken by Amsterdam Airport Schiphol to help lower costs.

### History of the air passenger tax

The Dutch Cabinet implemented the air passenger tax on 1 July 2008, as one of the instruments for 'greening' the tax system. Prior to implementation it was estimated that this new tax would result in the number of passengers using Amsterdam Airport Schiphol to drop by 8 to 10%. This was deemed acceptable at that time, as the aviation sector was expected to enjoy continued growth. When the air passenger tax was implemented, the number of passengers using Amsterdam Airport Schiphol did in fact decrease, and this decrease in passenger volumes rapidly intensified as a result of the global economic crisis. The confluence of these two events prompted the aviation and tourism sectors to intensify their protests against the air passenger tax. The Dutch Cabinet, as part of its 'Economic Crisis and Recovery Plan', responded by initially setting the air passenger tax at zero (0.00 euro) as of 1 July 2009, and subsequently abolished the tax conditionally on 1 January 2010.

#### **Reason for this research**

After the air passenger tax was set at zero, passenger volumes at Amsterdam Airport Schiphol did not immediately return to pre-tax levels. This was partly due to consequences stemming from the economic crisis. The question however is whether the air passenger tax led to more permanent frequent use of foreign airports. This report analyses the consequences of implementing and abolishing the air passenger tax. The report focuses on two key issues: the effects the air passenger tax has had on demand for air travel from Dutch airports; and the extent to which passengers have opted to use foreign airports and if this also contains a structural component. Further, the report outlines the context in which these developments have occurred, while also identifying the key mechanisms that explained these developments. Finally the report examines the possibilities for influencing passengers' airport choices as a means of benefiting Dutch airports. Additionally, the possible effects of Germany's new air passenger tax, which came into effect on 1 January 2011, are also discussed.

### Airport choice behavioural patterns

Many factors play a role in why passengers choose to use a particular airport. On average the three most important factors are: time spent on pre-flight transport, frequency of flights, and ticket prices. In addition, the costs associated with pre-flight transport (including parking fees), the type of flights (direct or indirect), and flight duration, also play a role. The importance of each of these factors varies per person and per journey. Choice models can help estimate what the medium-term effects of a structural air passenger tax will be. The Dutch air passenger tax however was only in force for a period of one year, and thus its impact was perhaps less than estimated beforehand.

Less rational factors also play a role in how people choose an airport, including habitual behaviour, unfamiliarity with possible alternatives, risk aversion behaviour, and failure to access all available information regarding alternatives.

In addition to people's airport choice behavioural patterns, the various airline companies' strategic actions are also important. The airline may cancel flights out of fear of low-occupancy rates and thus influence the available supply of flights.

### Declining passenger volumes at Dutch airports

Immediately following the implementation of the air passenger tax in July 2008, the number of passengers departing from Amsterdam Airport Schiphol decreased, while the number of transfer passengers (to whom the passenger tax did not apply) continued to increase. Despite this clear indication of the air passenger tax's impact, the decline in passenger volumes from 1 July 2008 to 1 July 2009 cannot be wholly attributed to the air passenger tax. The economic crisis was also an important factor. Moreover, the many developments occurring within the airline industry itself also played a role. Amsterdam Airport Schiphol was already experiencing a trend among passengers - especially those from the Netherlands' eastern and southern regions – to increasingly use airports in Germany and Belgium. A second trend that came into play was the rise of low-cost airlines, of which Ryanair is the largest. Ryanair primarily operates from

regional airports, such as Charleroi in Belgium and Weeze in Germany. If we examine the situation among regional airports in the Netherlands, we see that the air passenger tax had a minimal impact on the supply of flights offered at Groningen and Rotterdam airports, owing to their geographical locations. At Eindhoven airport the passenger tax did hamper growth. Maastricht Aachen Airport, situated close to the Belgium and German borders, lost a substantial part of its supply of flights.

#### Conservative estimate of impact of air passenger tax

It is difficult to determine the effects of the air passenger tax, because the tax largely coincided with the global economic crisis and, moreover, was influenced by various other trends and developments. A conservative estimate of the air passenger tax's effects during that period is that the tax accounted for nearly two million fewer passengers from Amsterdam Airport Schiphol. In the period immediately following the Dutch government's move to set the air passenger tax at zero, passenger volumes for the remainder of the 2009 summer season were down by close to one million passengers.

The Netherlands Institute for Transport Policy Analysis (KIM) conducted an airport choice survey among 3,000 people. One-fifth of those surveyed said that they were unaware of an air passenger tax. Fourteen per cent however confirmed that the tax had influenced their travel behaviour, with half of them saying they had cancelled a proposed flight or chosen to travel by car or train, and the other half confirming that they had opted to use a foreign airport, with Düsseldorf, Weeze and Brussels airports being the most popular choices.

These findings are in line with information garnered from foreign airports and information derived from reservation systems that track the number of Dutch passengers departing from foreign airports. The number of Dutch passengers using Düsseldorf airport has increased every year since 2001, and the increase in 2008 was greater than in previous years. Brussels airport experienced a similar trend. At Germany's Weeze airport passenger volumes tripled in two years time and the number of Dutch passengers rose approximately fifty per cent during the period in which the Dutch air passenger tax was in force. KiM estimates the extra number of Dutch passengers flying from foreign airports at 1 million passengers during this period, compared to a development without tax.

### **Publicity important**

Various representatives of airline companies, airports and other organizations active in the aviation and tourism sectors have noted that the huge amount of publicity given to the implementation of the air passenger tax was an important reason for Dutch passengers opting to use foreign airports.

### Many passengers will not immediately nor automatically return

It is difficult to statistically determine if Dutch passengers will or will not 'return' to Dutch airports. Abolishment of the air passenger tax is too recent for an accurate determination to be made. Moreover, the picture is obscured by the many developments occurring both within and outside the aviation sector. Nevertheless, it does appear likely that despite abolishing the air passenger tax. Dutch passengers will still more often continue to use foreign airports than was previously the case. A trend among Dutch people to use foreign airports already existed prior to implementation of the air passenger tax, and following implementation of the tax other passengers also discovered the supply of flights available at foreign airports. If these passengers had good experiences using foreign airports, they will continue to use foreign airports. The supply of flights particularly increased at the German airports, Weeze and Düsseldorf, and these airports remain more attractive compared to the situation prior to the air passenger tax changing choice patterns. Consequently, the air passenger tax served to accelerate the trend-driven developments that were already occurring. Dutch passengers can however be encouraged to 'return' to the Netherlands' airports through improved supplies of flights, lower costs, and improved accessibility to Dutch airports. Targeted publicity can serve to better inform this target group about the (improved) offers available at Dutch airports.

#### German passenger tax offers opportunities for Dutch airports

As of 1 January 2011, an air passenger tax is in effect in Germany. This German tax is expected to have a similar impact as the Dutch tax, although there are also some clear differences. Research reveals that Dutch airports can expect more Dutch passengers to once again depart from airports in the Netherlands, but that not many German passengers will start using Dutch airports. The reasons for this are the distances between Germany's major population centres and airports in the Netherlands; smaller price differentials; and, with regard to regional airports, unfamiliarity with Dutch airports. Maastricht Aachen Airport however is a possible exception, as this airport is situated close to the German border. Starting on 1 April 2011, Germanwings plan to operate twice daily flights from Berlin to Maastricht Aachen Airport. Various parties have anticipated the introduction of the air passenger tax in Germany. German media devoted great attention to the proposed measure. Consequently, starting in October 2010, some companies already began accounting for this tax in their flights scheduled for January 2011, and this served to heighten awareness of possible alternatives available in foreign countries. Since October 2010, Transavia's advertisements on German travel websites expressly state that their flights from Dutch airports are without 'Luftverkehrsteuer' ('air passenger tax' in German).

# 1 Introduction

### 1.1 Background

From 1 July 2008 to 1 July 2009 an air passenger tax was in effect in the Netherlands for passengers departing from Dutch airports. The air passenger tax had two rates: for destinations in EU member countries and other destinations located a maximum of 2,500 flight kilometres from the Netherlands, the tax rate was 11.25 euros<sup>1</sup>; for all other destinations the tax rate was 45.00 euros. This tax did not apply to transfer passengers or to freight shipments. The tax was expected to generate 350 million euros annually in tax revenues (Ministry of Finance, 2008).

The air passenger tax resulted in a decrease in the numbers of passengers departing from airports in the Netherlands. Some foreign airports, airline companies and tour operators deployed target marketing to capitalise on people's desire to avoid paying this tax. Consequently, airports such as Weeze/Niederrhein, Düsseldorf and Charleroi saw their Dutch passenger volumes rise. Conversely, KLM reported a loss of 900,000 passengers (Trouw, 3 March 2009). The ANVR and the Netherlands Board of Tourism & Conventions (NBTC) reported on how the tax had caused major economic damage within the aviation and tourism sector (Veldhuis, 2009).

Owing to the adverse effects within the sector, the air passenger tax was set at zero (0.00 euros) on 1 July 2009<sup>2</sup>. The question is whether the tax's abolishment will compel passengers to return to Dutch airports, or if the tax has led to a permanent increase in the use of foreign airports. This question applies conversely to passengers in Belgium and Germany who live near Dutch airports.

- <sup>1</sup> The lower tariff of 11.25 euros also applied to destinations in Algeria, Libya, Morocco, the Russian Federation (west of the Urals) and Turkey that were located more than 2,500 kilometres from the Netherlands (Ministry of Finance, 2008).
- <sup>2</sup> And in December 2009 abolished (Dutch House of Representatives, reports 2009-2010, 32 1 32, nr. 3)

While this research project was being conducted, the German government proposed an air passenger tax as part of a major savings plan ('Sparpaket'). This airport tax came into effect on 1 January 2011 and, like the Dutch air passenger tax, only applies to departing passengers - not to freight shipments or transfer passengers.

## 1.2 Objective of the report

The research question is: has the air passenger tax led to Dutch people continuing to make greater use of foreign airports? The research relied on an ex-post analysis of the consequences of the air passenger tax's implementation and abolishment. The research focused on the effects the air passenger tax has had on demand for flights from Dutch airports, and on the degree of 'defection' to foreign airports, and whether this contains a structural component. Additionally, the report examines the context in which the developments occurred and highlights the key mechanisms that can explain such developments. Finally, the report briefly examines the possibility of influencing passengers' airport choice behaviour, for the benefit of Dutch airports. Finally, consideration is given to the possible effects of Germany's air passenger tax, which came into effect on 1 January 2011.

## 1.3 Research approach

The research approach undertaken for this report focused on four different segments. First, a media-analysis of news reports about the air passenger tax. Second, a data-analysis of passenger data per airport. Third, a survey of 3000 people, in which those surveyed were asked about their airport choices and the role the air passenger tax played in their choices. And fourth, a series of interviews with people from within the sector (representatives of airline companies, airports and travel organisations) and others, which aimed to discover the reasons behind their behaviour. The University of Gent (Geography section)<sup>3</sup> and the German Aerospace Center (DLR)<sup>4</sup> assisted in conducting interviews in Belgium and Germany; moreover, both

<sup>3</sup> Reported in Witlox and Derudder (2010)

<sup>4</sup> Reported in Grimme and Maertens (2010)

institutions provided useful data pertaining to Dutch passenger volumes at foreign airports.

Based on these four research segments, KiM studied the effects of the air passenger tax. In addition, we also expanded on analyses conducted prior to implementation and during the tenure of the air passenger tax<sup>5</sup>. To assist in understanding the dynamic of changes in airport choice behaviour, we also deployed a simulation model developed by Delft University of Technology and KiM<sup>6</sup>.

### 1.4 Note to readers

Chapter 2 details the history relating to the implementation and abolishment of the air passenger tax. Which arguments were used to support the tax's implementation? And what were the previously estimated effects? Chapter 2 also explores the reactions of the sectors affected by the air passenger tax, while also placing the tax in a European perspective.

Chapter 3 details the theories behind airport choice behaviour. Which features of an airport play key roles in how people choose of an airport? And in what manner is this modelled, thus allowing previous estimates to be made of the effects of the changes?

Chapter 4 examines the factual developments in passenger volumes at Schiphol and Dutch regional airports. The chapter also examines various other developments that occurred during the period when the tax was in effect and which rendered it difficult to wholly isolate the air passenger tax's consequent effects.

Chapter 5 examines the factual developments of passenger volumes at various foreign airports. These subsequent findings are also based on information derived from interviews with representatives of airline companies, airports, travel agencies and other organisations. This provided additional insights into what actually occurred and why. The chapter concludes with an ex-post evaluation of the effects of the air passenger tax and the degree of 'defection' to foreign airports.

<sup>5</sup> See Significance et al. (2007) and Veldhuis (2009)

<sup>6</sup> See Steverink (2010)

In conclusion, Chapter 6 examines the question of whether the air passenger tax has had a structural impact. In addition, this chapter examines the policy options for encouraging (Dutch) passengers to depart more frequently from airports located in the Netherlands. The chapter concludes with a consideration of the expected effects of Germany's air passenger tax, which came into effect on 1 January 2011.

# 2 History of the air passenger tax

- The effects of the air passenger tax had been estimated before it was introduced.
   Passenger volumes at Schiphol were expected to drop by 8 to 10 %. Concurrently, the overall market was expected to experience continued growth, thus preventing an actual decrease in passenger volumes at most a temporary delay in growth was expected.
- Passenger volumes at Schiphol immediately decreased following implementation of the air passenger tax. Shortly thereafter consequences stemming from the start of the global economic crisis emerged. This concurrence of events alarmed the aviation and tourism sector.
- As part of the Dutch government's 'Economic Crisis and Recovery Plan' the air passenger tax was initially set at zero (0.00 euros) and then subsequently abolished.

## 2.1 Reason for implementation

The air passenger tax was a measure introduced by the Dutch government under Prime Minister Jan Peter Balkenende (Cabinet Balkenende IV: 2007-2010) in the 2008 national tax plan. The tax was regarded as one of the instruments for 'greening' the tax system. The objective was to transfer part of the taxes imposed on labour and profit to taxes on environmental pollution (Ministry of Finance, 2007). The Cabinet believed an air passenger tax was a suitable instrument to this end, as air travel obviously caused pollution and EU legislation and international aviation treaties 'oppose excise tax and sales tax, but not an air passenger tax' (Ministry of Finance, 2007).

# 2.2 Previously estimated effects

In 2007, the Ministry of Finance, the Ministry of Transport, Public Works and Water Management, and the Ministry of Housing, Spatial Planning and the Environment (VROM) conducted joint research focusing on the effects of implementing several variants of the air passenger tax (Significance et al., 2007). The air traffic model ACCM/AEOLUS (box in section 3.2) was used to study the effects on traffic volumes and emissions in 2011 for each variant and market niche (origin-destination, transfer and freight). Based on this research, the Cabinet ultimately chose the variant that was deemed likely to cause the least damage to Schiphol's 'hub function' and network.

The estimated effects from the variant that most resembled the final design of the air passenger tax are<sup>7</sup>:

- At Schiphol, approximately 8% to 10% fewer passengers and 7% or 8% fewer flight movements in 2011 compared to the scenario without the tax. In addition, emission levels approximately 3% to 9% lower during the takeoff/landing phase than without the tax.
- At regional airports approximately 11% to 13% fewer passengers in 2011 than without the tax.
- The global CO2 emission level is approximately 1.5 megaton lower in 2011 than without the tax.

The following passage is an important point in the government's report, stating that the air passenger tax's expected effects must be seen "against a backdrop of general expectations for continuing market growth of approximately 4% per year (this percentage varying between 1% and 6% depending on the growth scenario). This means that – especially in the case of delayed indirect effects – it is possible there will be no actual decrease, but rather at most a temporary delay in growth" (Significance et al., 2007).

This passage illustrates that implementation of the air passenger tax was being considered at a time when the economy was still in good condition. The expected growth in aviation was estimated to be high enough to offset the negative effects of the air passenger tax and therefore it wasn't expected that the tax would lead to economic damage.

# 2.3 Resistance from within the sector

Prior to and during implementation of the air passenger tax, fierce protests were staged by the airline companies, airports, tour operators and other stakeholders.

<sup>&</sup>lt;sup>7</sup> This concerns the tax variant 1E-B with a tax rate of € 12.50 and € 47.50 for departing European and intercontinental passengers, respectively.

These groups feared lost revenues, while also questioning the motives behind this measure. Was this simply a desire on the part of the government for an extra source of revenue, hidden beneath the cloak of an environmental regulation? After all, some people argued, many passengers would now simply fly from airports abroad, which would lead to more not less pollution. Another complaint was that the generated tax revenue would not be spent on the environment, but rather on general government expenditures.

The Consumers' Association collected 13,000 signatures and presented this petition to the Parliamentary Committee for Finance in late September 2007. The tax must benefit the environment, the petition stated, so transfer passengers and freight must also be taxed. The ANVR organized a protest, 'Stop the Vacation Tax' (Figure 2.1), backed by 44,000 supporters. The Board of Airline Representatives in the Netherlands (BARIN) launched the website www.ikverticket.nl in opposition to the tax.



Various parties, including the Schiphol Group, BARIN, ANVR and Ryanair, filed lawsuits against the Dutch state in order to stop implementation, charging that the air passenger tax contravened binding agreements established in the Treaty of Chicago and by EU community law. The litigation mainly focused on the following sentence in article 15 of the Treaty of Chicago: 'No fees, dues or other charges shall be imposed by any contracting State in respect solely of the right of transit over of entry into or exit from its territory of any aircraft of a contracting State or persons or property thereon'.

The plaintiffs asserted that this sentence meant any form of taxation that didn't include costs incurred for use of airports and/or air traffic control facilities was prohibited. According to the Dutch state, in the context of all of article 15, that sentence was understood to prohibit discrimination; that is, with regard to taxes, the airlines from countries that have different tax systems cannot be treated differently than the airlines of the host country. As long as these rights apply for every airline, there would be no prohibition on paying for the rights to fly in, out or over a treaty country (court 's-Gravenhage, 2008).

Figure 2.1 Example of a protest banner originating from opponents of the air tax. The judge ultimately agreed with the Dutch state. The interpretation of this article however remains controversial. In Belgium, the Council of State ruled that the air passenger tax contravened the treaty. Conversely, France, Ireland and Great Britain had implemented air passenger taxes.

# 2.4 Abolishment

Passenger volumes at Schiphol began to decrease immediately after the air passenger tax took effect on July 1 2008<sup>8</sup>. On several occasions in the fall of 2008 news items appeared in the media reporting on the falling number of passengers at Schiphol. In early October, KLM announced that it had 230,000 fewer passengers since the introduction of the air passenger tax. In late October, easyJet estimated that the tax had cost it some 200,000 passengers. In late November, KLM reported that the drop in passenger volumes had now reached 400,000 passengers<sup>9</sup>.

In February 2009, hundreds of employees of Schiphol, KLM, Martinair and transavia.com protested in The Hague against the air passenger tax.

Figure 2.2 Illustration from a protest of employees of Schiphol, KLM and other stakeholders on 11 February 2009. Source: www.corporate.klm.com



- <sup>8</sup> While previously passenger volumes had continuously increased compared to the same month of the previous year.
- <sup>9</sup> Sources for this are various articles about the air passenger tax at luchtvaartniews.nl.

'Bos: Banken steun, Schiphol dreun!' ('Bos: Banks get support, Schiphol gets punched!') was the slogan with which the protestors chanted in hopes of changing the mind of Wouter Bos, the then Minister of Finance (Figure 2.2) (NOS, 11 February 2009).

Following the release of disappointing economic performance data for the travel and tourism industry, ANVR and the Netherlands Board of Tourism & Conventions commissioned SEO Economic Research to study the implications of the air passenger tax. The study concluded that the estimates made in 2007 remained plausible. Some of the decline in passenger volumes could however also be attributed to the start of the economic crisis, developments in oil prices and currency/exchange rate effects. As a direct result of the air passenger ticket tax, SEO estimated the loss of business for airlines, airports, tour operators and the tourism industry in the Netherlands at approximately 1.2 to 1.3 billion euros (SEO, 2009).<sup>10</sup>

The Cabinet eventually proved responsive to all the protests and negative effects of the air passenger tax. Although the Cabinet did still support the objectives behind the implementation of the tax, as part of the fight against the economic crisis it decided to 'reconsider the nevertheless solid arguments for implementing a national air passenger tax' (Ministry of Finance, 2009).

This lead to the air passenger tax being abolished in two steps. The first step concerned setting the air passenger tax at zero (0.00 euros) as of 1 July 2009, as part of a package of measures (Crisis and Recovery Plan) aimed at lessening the impact of the economic crisis. The second step was the actual abolishment of the air passenger tax as of 1 January 2010. A precondition for both steps was that Schiphol would implement satisfactory measures to reduce costs and hence improve its competitive position (Ministry of Finance, 2009).

One of the arguments for completely abolishing the tax, as opposed maintaining it at a zero rate, was that the government wanted to offer the sector certainty in difficult, uncertain economic times. Moreover, also in play was the fact that the aviation sector would be included in the CO2 emission trade system as of 2012, whereby a percentage of the external costs<sup>11</sup> of flying would once again be reflected in the price (Ministry of Finance, 2009).

<sup>&</sup>lt;sup>10</sup> This loss only applies if the air passenger tax had been in place for the entire year and if all parties concerned had had the opportunity to fully adapt their behaviour accordingly. The loss of business therefore only pertains to the second half of 2008 (SEO, 2009).

 $<sup>^{\</sup>scriptscriptstyle 11}$  In most cases this pertains to the costs of environmental effects.

The income generated by the air passenger tax was moreover lower than expected. As stated in the Coalition Agreement<sup>12</sup>, a structural income of 350 million euros per year as of 2008 was envisioned. The draft budget of 2008 was 152 million euros. According to the 2008 Annual Financial Report of the State, the actual income generated was 88 million euros. Meanwhile, the estimated income for 2009 was 305 million euro<sup>13</sup>, but the actual income was 179 million euro, because the tax was only in place for six months. In total, the air passenger tax generated 267 million euros.

# 2.5 Air passenger tax from the European perspective

In addition to the Netherlands, many other European countries have had or still have an air passenger tax in place. Several European countries have considered implementing an air passenger tax or are currently set to implement such a tax.

The United Kingdom was one of the first countries to implement an air passenger tax: the Air Passenger Duty (APD) has been in place since 1994, with the tax rates having gradually increased over the subsequent years. The APD currently differentiates according to four categories of distance and to flight class. Since November 2010, the lowest tax rate of £12.00 is charged for flights with a maximum distance of 2,000 miles. The highest tax rate of £85.00 meanwhile is reserved for flights with a distance of 6,000 miles. These rates apply to the lowest flight class (usually economy class). Higher flight classes have rates that are twice as high in every distance category (HM Revenue & Customs, 2010).

France has had an air passenger tax since July 2006, when the Chirac-led government introduced the '*Taxe de solidarité sur les billets d'avion*' as a means of financing France's contribution to Unitaid, an international organisation that strives to improve access to healthcare in developing countries (one of the UN's millennium goals). For economy class tickets a rate of 1.00 euro is charged for destinations within the European Union, and 4.00 euros for destinations outside the European Union. For the other flight classes the rate is ten times higher (Ministry of Foreign Affairs, 2010). Owing to the purpose and rates of this tax, there is relatively little resistance to it.

<sup>&</sup>lt;sup>12</sup> The Coalition Agreement of the Parliamentary Parties of CDA, PvdA and ChristenUnie (2007, p. 53).

<sup>13</sup> Annual Financial Report of the State 2008 respectively 2009

In March 2009, Ireland implemented the Air Travel Tax (ATT) for all departing passengers. The tax rate is 2.00 euros for all destinations in Ireland or within 300 kilometres of Dublin Airport. For destinations further away, the rate is 10.00 euros. See also Veldhuis and Zuidberg (2009). In December 2010 it was announced that a new rate of 3.00 euros would apply for all destinations as of 1 March 2011 (Irish Tax and Customs, 2010).

Denmark and Malta have had an air passenger taxes in the past, and in both Sweden and Belgium the governments are considering an air passenger tax, although the taxes have not yet been implemented. When the air passenger tax was in effect in Denmark, many Danish passengers began defecting to Sweden's Malmö and Göteburg airports; consequently, the Danish government quickly abolished the tax due to its negative effects on the economy and tourism industry<sup>14</sup>.

In September 2010, the German federal government decided to implement an air passenger tax for passengers departing from German airports as of 1 January 2011. Austria, following the German model, recently decided to implement an air passenger tax as of 1 April 2011. Section 6.5 examines in greater detail Germany's air passenger tax and the possible effects it will on airports in the Netherlands.

# 3 Airport choice behavioural patterns

- Many factors play a role in why passengers choose to use a particular airport. On average the three most important factors are: time spent on pre-flight transport, frequency of flights, and ticket prices. In addition, the costs associated with pre-flight transport (including parking fees), the type of flights (direct or indirect), and flight duration, also play a role. The importance of each of these factors varies per person and per journey.
- Choice models can help estimate what the medium-term effects of a structural air passenger tax will be.
- Less rational factors also play a role in how people choose an airport, including habitual behaviour, unfamiliarity with possible alternatives, risk aversion behaviour, and failure to access all available information regarding alternatives.
- In addition to people's airport choice behavioural patterns, the various airline companies' strategic actions are also important. The airline may cancel flights out of fear of low-occupancy rates and thus influence the available supply of flights.

# 3.1 Key choice factors

The passenger's choice of airport is part of a series of sequential choices that when combined lead to a person travelling by airplane from A to B. These choices are not always made in this order on the individual level. It is possible that first the destination is chosen and then the combination of airport and airline. However, conversely, it is possible that a person simply desires a cheap flight to a sunny destination, in which case the choice is likely to involve a person looking at which destinations are offered by which airlines, for example Ryanair or easyJet, and then making a choice. It is also possible that a person wants to fly from a certain nearby airport and then looks at the offers from airlines departing from that particular airport.

Regardless of the order that individuals follow to arrive at an airport choice, certain choice factors always play an important role. On behalf of the Ministry of Infrastructure and the Environment, Burghouwt and Zuidberg (2010) conducted a literature study on this subject. Three dominant factors<sup>15</sup>, independent of time and place, emerged: pre-flight transport, frequency of flights, and ticket prices.

In addition to these three variables, there are other factors that also influence choice behaviour, according to Burghouwt and Zuidberg (2010). These other factors include pre-flight transport costs (including parking fees), the type of flight (direct or indirect), flight duration, service during the flight, airline loyalty programmes and punctuality (chance of delay at the airport). See for example Hess and Polak (2005).

The valuation of choice factors differs per motive. Business travellers find short pre-flight transport times and high frequencies more important, and they are less sensitive to ticket prices. For non-business travellers however it is the other way around. Burghouwt and Zuidberg (2010) found that non-business travellers are more willing to accept substantially longer pre-flight transport times in exchange for lower ticket prices. This partly explains the success of the low-cost carrier-airports, which are frequently situated in more remote areas.

Burghouwt and Zuiberg's (2010) conclusions are supported by the results of an airport choice survey that KiM conducted. In July 2010, 3000 Dutch residents participated in a sample survey via an internet-panel<sup>16</sup>. The survey questions asked the respondents' to indicate their familiarity with various airports, their motives in choosing a particular airport, and the airports that they used. For most of the respondents the flight schedule (departure and arrival times)<sup>17,18</sup> seemed to be the decision-making factor when choosing between two airports for their last flight.

<sup>&</sup>lt;sup>15</sup> The supply of destinations is not presented here, because this – provided that the destination is chosen first – is on average less important on the level of individual choices. On an aggregated level the amount of destinations is obviously important, because a larger number of destinations can make an airport an attractive choice.

<sup>&</sup>lt;sup>16</sup>For the reliability and advantages and disadvantages of internet surveys we refer you to (De Leeuw, 2010).

<sup>&</sup>lt;sup>17</sup>Note: the percentages in Figure 3.1 do not say anything about the relative importance of the mentioned factors in the total choice process. It is, for example, possible that in the choice a preselection has already taken place regarding an acceptable ticket price and that ultimately the flight schedule was decisive, or vice versa.

<sup>&</sup>lt;sup>18</sup>The flight schedule is strongly connected to frequency. When the frequency increases, the probability is higher that there are departure and arrival times that satisfy the ideal departure time.



Additionally, the journey times to the airport and ticket prices were often cited as the most decisive factors. The cost of the journey to the airport and parking costs at the airport were regarded as decisive factors by only 2% and 0.6% of the respondents, respectively<sup>19</sup>. These and other factors are included in Figure 3.1 under the category of 'other factors'.

### 3.2 Rational choice model

The so-called 'discrete choice models' estimate the total effect of a variety of individual airport choices. Usually this means that a rational choice model, in which utility maximization is central, is chosen. In order to be able to compare the usefulness of the various options with each other, a range of features are expressed in monetary terms using key figures. An example of this is the journey time to the airport that, when multiplied by journey time valuation ('value of time'), provides a comparable expenditure expressed in monetary terms. The key figures per feature can vary in all the various segments; for example, for business and non-business travellers, but also in other features, such as inter-European flights versus intercontinental flights.

In short it comes down to the model generally used in the Netherlands to compare travel alternatives in varying situations based on generalised transport costs.

<sup>&</sup>lt;sup>19</sup> This explicitly pertains to the respondents, because there was no weighing done to render the results representative for the entire Dutch population. However, the results provide an estimate of the importance of various choice factors for the Dutch population.

The model calculates the probability that certain alternatives will be chosen based on the generalised differences in costs between the alternatives. However, because of a fundamental uncertainty about passengers' exact preferences and valuations, the model does not always choose the alternative with the lowest costs. The greater the difference in costs, the greater the probability that a passenger will choose an alternative with the lowest generalised transport costs.

What are the possible outcomes of an air passenger tax on the aggregated level? During the flight choice process, a certain percentage of consumers would not choose differently than they would have without an air passenger tax being in effect. However, another percentage of consumers will choose an airport located abroad ('leaking away' or 'defecting'), or will choose not to travel at all (drop in demand). A small percentage will choose another means of transport (substitution/'modal shift'). For those who choose to fly from a Dutch airport, it is possible some substitution will occur from more expensive to cheaper destinations, owing to rate differentiations per destination.

### Aeolus

As commissioned by the Ministry of Infrastructure and the Environment, the Aeolus model has been developed over the past few years to calculate the expected future passenger volumes at Dutch airports. Aeolus calculates passenger demand per origin-destination relationship as based on population, income and price developments. The passenger's choice for a certain departure airport is determined by the flight offers of the particular airport and the generalised transport costs (including pre-flight transport and costs and ticket price). Aeolus accounts for a certain preference for an airport in the home country. In the allocation of passengers to airports, the model also takes into account possible restrictions in the capacity of an airport<sup>20</sup>, the maximum permitted noise levels, closure at night, and the maximum capacity of an airport.

Section 2.2 briefly discusses the estimated effects prior to introduction of the air passenger tax. These effects were calculated in 2007 using the version of the Aeolus model available at that time (see box). The model's output was mainly focused on the numbers of passengers departing from Schiphol and the regional Dutch airports compared to the situation without the tax. The

<sup>&</sup>lt;sup>20</sup>For example an airport can no longer grow at a certain point because the maximum noise levels would be exceeded, because there is no or not enough capacity at night, etc.

amount of 'leaking away', substitution or loss of demand<sup>21</sup> was separately published for each variant<sup>22</sup>. Loss of demand and substitution to car/train seemed to be an equally large issue as the 'defection' to foreign airports.

The effect of the air passenger tax on the passengers' choice for an airport can be illustrated using a stylised example. The example presents a hypothetical choice between Schiphol and the foreign airports of Hamburg, Dusseldorf and Brussels, in which all airports have an equal supply of flights and equal ticket prices. Figures 3.2 and 3.3, which are divided by COROParea, show which airports can be reached most affordably in terms of generalised transport costs. Calculations for this example are based on the distances<sup>23</sup> between the regions, a journey time valuation of 15.00 euro per hour and an integral car-kilometre rate of 0.50 cents per kilometre.

<sup>&</sup>lt;sup>21</sup>Viewed from the perspective of demand for flights (and thus not from the demand for flights from Schiphol or a Dutch airport).

<sup>&</sup>lt;sup>22</sup>Significance, SEO, 2007, p. 30.

<sup>&</sup>lt;sup>23</sup>Operationalised for the example with a straight line distance between the centre of a COROP area/NUTS-3 region and the airport, a detour factor of 1.4 and an average speed of 84 km/hr by car.

Figures 3.2 and 3.3 Stylized example of changes in the catchment area as a consequence of an air passenger tax.



People in the green areas largely choose Schiphol and the airport is more than 30% cheaper to use for those in the green areas. Although Schiphol is cheaper in the yellow areas, the cost differential with alternative airports is less. The orange area is the exact opposite. Both areas can be seen as 'battle grounds'. This is where Schiphol competes with the foreign airports. Schiphol is more than 40% more expensive in red areas and this is where most people choose for the nearest airport abroad. The difference between Figures 3.2 and 3.3 is an air passenger tax of 45.00 euro. The figures show that the air passenger tax leads to a clear reduction of the market catchment area. For more people from the 'border regions' it thus becomes interesting to choose a foreign airport. The 'break-even' point with Dusseldorf will come – according to provided assumptions - about 30 kilometres to the west, close to the border with the province of Utrecht.

Figures 3.2 and 3.3 serve as an illustration of the principle and do not represent the actual location of the various areas. First, the journey time ratio classes were chosen at random. Second, the example does not take into account many other factors that differ in practice, such as the supply of

destinations, flight schedules, ticket prices, actual journey times, parking costs, check-in times, familiarity with airports and language preferences. Furthermore, as previously mentioned, choice is strongly connected to the journey time valuation, the number of persons travelling together (for a 4-person household that can save 4 x 45.00 euros, an airport situated further away can be very attractive), but also the way in which people consider all costs equally. It is known that when people use cars for travel they only consider the fuel costs. In that case foreign airports seem more attractive.

# 3.3 Remarks about the rational choice model

The rational choice model, as described in the previous section, relies on various presumptions about human behaviour. These collective presumptions are also known as the rational choice theory. The following presumptions are important for determining the effects of the air passenger tax:

- Consumers use utility maximization. When there is an equal offer, they
  choose for the lowest price option. In the case of airport choice, that is
  the option with the lowest overall transportation costs.
- Consumers are well informed and use all the available information that exists about choice alternatives.
- Consumers estimate uncertainties well and consider them objectively.
- Consumers make more conscious and rational choices.

The WRR-report *The human decider* (Tiemeijer et al., 2009) however reveals that these assumptions often do not hold. For some people and in some situations utility maximization is too much of a good thing. Considering all the options costs too much time and effort. Consequently, people are content with an alternative that is at least useful enough. This behaviour is also called 'satisficing'. In addition, regret minimisation also plays a role in decisions. Chorus (2009) defines regret as the difference in usefulness between the features of various options. Because of regret minimization people choose options that one could label as 'compromises' more often than one would expect based on utility maximization. This is because people know that a choice can be disappointing. Taking into account all features, the option of compromising can then be the least disappointing. Literature studies reveal that regret minimization becomes more important for bigger or more difficult decisions and for situations in which social accountability plays a major role.

The presumption that people are perfectly informed and use all the available information is also criticised. First, this assumes that all the alternatives are known. But in reality we know from experience that familiarity with alternatives varies, especially regarding new products or services. This why companies use marketing: one cannot consider buying a product if one does not know that product exists. The same goes for the choice of an airport. One will not consider an airport if one does not know about it. Section 6.2 uses empirical date to further elaborate on this point.

A second argument for the fact that people do not use all available information was previously mentioned: it costs too much time and effort. Moreover, in order to be able to properly consider all the information, one must know his/her own preferences very well. When it comes to comparing flights, it comes down to comparing alternatives based on ticket price, flight schedules, the price and journey times of pre-flight transport, parking costs, the quality of facilities and services at the airport, the ease with which everything functions, and the probability of encountering delays en route. Not everyone compares all aspects equally closely.

An example of a strategy for simplifying the choice process is to only compare the most important issues for which information is readily available - for example, the ticket price and flight schedule. Comparative websites can help in the search for cheap tickets and in presenting departure/arrival times. A risk inherent to this strategy however is that this choice could ultimately prove disappointing, because aspects like flight duration, journey times and parking costs were not considered. Moreover, the publicity surrounding the air passenger tax was primarily focused on ticket prices. This aspect therefore was afforded a greater role in the assessment process than would have normally been the case under other circumstances.

Some information is not known beforehand. In such cases, people must take this uncertainty into account. Based on a literature study, Tiemeijer et al. (2009) concluded that people consider certainty more important than uncertainty. Moreover, people are not good at thinking through uncertain outcomes. When choosing an airport, uncertainty can especially play a role in the pre-flight transport. Traffic jams or train delays can increase the uncertainty of arrival times. And there is even a slight chance of missing a flight. The consequence of this effect is that an airport situated further away, but which can be reached on time with a greater degree of certainty, is more attractive than would be expected if based on distance alone.

The final point of criticism is that people do not choose everything consciously, but rather most of the time their choices are based on habits. The more often a choice is made for a certain behaviour, the more strongly the habit is developed. In many cases this is useful, like, for instance, when a driver automatically looks in the mirror while driving. But in other cases it is possible that after some time new alternatives arise but go unnoticed or are not seriously considered because of habitual behaviour. An example of this is a car driver who spends time stuck in traffic every day, while a new, faster means of public transport is available. For people who fly frequently the habit can develop of choosing flights by first looking at the price and availability at one or two favourite airport(s) and then possibly comparing these with other alternatives. The easiest way to break habitual behaviour is through major changes in the choice context; for example, when a choice is no longer possible or because something essential has changed in one's private life. In the case of more minor changes, more adjustment time is needed to change habitual behaviour, or there will be no change in the behaviour at all. See also KiM's behaviour synthesis study (KiM, 2011).

All these critical remarks present no problems in terms of using a rational choice model to analyse the consequences of the air passenger tax. The Aeolus model uses price flexibility to determine the effects of increasing ticket prices, which are derived from observing behavioural responses to price differences. In this practical behaviour all previously mentioned remarks come into play. The Aeolus model is therefore generally proficient in estimating effects; however, the model is less proficient at explaining the individual behaviour behind it (other than in a statistical manner). In practice, one must take into account that choice processes can work differently than how the stylised model functions. Chapter 6 – on the policy options available for encouraging passengers to opt for Dutch airports more frequently – elaborates further on this subject.

# 3.4 Strategic behaviour of airline companies and airports

The consumers' initial behavioural responses to the air passenger tax led to a lower demand for flights from Dutch airports. In reaction to this, or to anticipate this, the airline companies tried to absorb (part of) the air passenger tax in their ticket prices.

When a substantial (but expected) drop in demand occurs, the airlines can modify their existing operations by reducing flight capacities and flight frequencies or by changing routes. Airlines that mainly fly point-to-point destinations can shift the focus of their operational bases to nearby foreign airports that do not have air passenger taxes (BB&C and Vital Link Policy Analysis, 2008).

This also seems to be happening in practice. Soon after a decision on the air passenger tax was reached, the low-cost segment responded<sup>24</sup>. The low-cost segment started reducing frequencies (Transavia, easyJet) as of the winter season (November) 2007 and cancelled routes (Jet2)<sup>25</sup>. As of April 2008, easyJet among others cancelled scheduled services and announced halts to expansion. The same happened in the run up to implementation of Germany's air passenger tax. For more information, see section 6.4.

In response to a tax, airports can be encouraged to lower their tariffs or, in any case, to not increase or only marginally increase tariffs. Airline companies from neighbouring countries seemingly have another strategy: they do the exact opposite. Foreign airports are interested in increasing their name recognition and offering accessible information about their offers and services (for example via a Dutch website). The websites of the foreign airports located not too far from the Dutch border also have Dutch-language sections. This does not however have to be a direct consequence of the air passenger tax.

<sup>&</sup>lt;sup>24</sup> Personal communication Schiphol

<sup>&</sup>lt;sup>25</sup>This was prior to major rises in oil prices, which occurred between March and July of 2008.

# 4 Development of passenger volumes

- Immediately following implementation of the air passenger tax in July 2008, the numbers of origin-destination passengers at Schiphol began to decline, while the number of transfer passengers (for whom the tax did not apply) continued to grow.
- Among the Netherlands' regional airports, the air passenger tax had a marginal effect at Groningen and Rotterdam airports due to their geographical locations and flight supplies. At Eindhoven airport the passenger tax only hampered growth. Maastricht Airport, situated close to the Belgian and German borders, lost a substantial portion of its passengers.
- The decline in passenger volumes from 1 July 2008 to 1 July 2009 cannot be wholly attributed to the air passenger tax. The economic crisis is also an important factor. Moreover, the many developments occurring within the airline industry itself also played a role. For quite some time Schiphol has been facing the trend that passengers especially those from the eastern and southern regions of the Netherlands increasingly use airports in Germany and Belgium. A second trend that came into play was the rise of low-cost airlines.

# 4.1 Introduction

Because of the air passenger tax, some passengers opted to depart from foreign airports, while others chose not to fly and did not travel or opted to use another means of transport. The air passenger tax therefore had an effect on the number of passengers that chose to depart from an airport in the Netherlands.

This chapter however does not yet examine the extent of these effects but rather sketches a general picture of the development of numbers of passengers using airports in the Netherlands prior to, during and after the air passenger tax. This chapter moreover outlines numerous developments that also impacted the number of passengers using airports in the Netherlands during the period in which the air passenger tax was in force. These developments make it difficult to precisely estimate the full impact of the air passenger tax.

### 4.2 Schiphol

The average growth of passenger volumes in the period 2000-2007 was 3%, with the highest growth rate being observed between 2003 and 2007. In 2008 passenger volumes declined by about 0.7% and in 2009 by more than 8%. In Figure 4.1 the total number of passengers per year is divided according to origin-destination passengers (OD-passengers<sup>26</sup>) and transfer passengers. The chart shows that the number of OD passengers declined in 2008, while the number of transfer passengers grew compared to 2007.



The difference in growth is even more obvious in Figure 4.2, where the number of OD and transfer passengers per month is shown for the period 2007-2010. The number of OD passengers begins to decline from July 1, 2008 – that is, from the moment when the air passenger tax is implemented. In February 2009 the number of transfer passengers experiences negative growth for the first time.

Figure 4.1 Number of passengers at Schiphol in the period 2000-2010. \*The total for 2010 is an extrapolation based on the realisation until September 2010. Source: Schiphol Group, 2010; Version KiM




The transfer segment's negative growth was primarily caused by the global economic crisis, which, at the time, was taking an increasingly definitive shape. Section 4.4 delves deeper into the influence of the economic recession. The sizeable decline in passenger volumes in April 2010 stemmed from the Icelandic volcano Eyjafjallajökull's eruption and subsequent ash cloud.

## 4.3 Regional airports in the Netherlands

The majority of Dutch air traffic flows occur via Schiphol. In recent years however the use of regional airports has increased. It is thus instructive to reflect on the influence the air passenger tax has had on regional airports, especially those situated close to the border - Eindhoven and Maastricht. Figure 4.4 shows the annual passenger volumes for Eindhoven, Rotterdam, Maastricht and Groningen from 2000 to 2010.





When the air passenger tax came into force in 2008, Rotterdam Airport was the only airport to experience negative growth. Eindhoven airport did however experience a slowdown in growth, with growth rates slightly lower in 2008 than in preceding years. In 2009, however, all airports experienced decreases except for Eindhoven.

For the two largest regional airports, Eindhoven and Rotterdam, the monthly figures for 2007-2010 increased (see Figure 4.4). As of July 2007 a slowly declining growth occurred at Eindhoven airport. By November 2008 this had turned into a negative growth, although by July 2009 the growth had once again turned positive.

At Rotterdam airport, negative growth had been experienced since April 2008. This negative growth continued until February 2010<sup>27</sup>. The conclusions drawn at both airports was that the decline in growth and the negative growth figures occurred for a much longer time than the period in which the air passenger tax was in force. The air passenger tax did play a role in this but was certainly not the only contributing factor. Both airports face limitations due to noise restrictions. Moreover, the number of takeoff slots is limited, and consequently the airports are slot-coordinated (www.slotcoordination.nl). If the (potential) market demand is much greater than the permitted levels of use, then a change in market demand due to the air passenger tax need not have any effect on the realised traffic and transport levels.

Other developments also played a role, such as the multiple day closure of Rotterdam airport in May 2008. CityJet, a subsidiary of Air France-KLM, acquired VLM which led to a restructuring of flights between the

<sup>27</sup>In April 2010 the growth is negative due to the ash cloud originating from the Icelandic volcano. Netherlands and London, whereby Schiphol assumed a greater role at the expense of Rotterdam. Eindhoven and Maastricht have a relatively large supply of low-cost carriers, like Ryanair and Wizzair. This, the most price-sensitive segment, is where the air passenger tax had the greatest impact. Conversely, in Groningen, the supply is primarily comprised of holiday travel packages, which include accommodation, thus rendering the air passenger tax but a small portion of the total holiday package price. Partly based on annual reports and interviews with managers of the various airports (see section 5.3.1), the conclusion can be drawn that, due to location and flight supplies, the air passenger tax had little or no influence on Groningen and Rotterdam airports, but a clear influence on Maastricht and Eindhoven.



### 4.4

## Developments outside of aviation

The growth of passenger volumes at Dutch airports during this period was not only influenced by the implementation and cancellation of the air passenger tax. Rather, other factors with no relation to aviation also played a role. Of these other factors, the most important were the economic crisis that started in 2008, foreign currency exchange rates, and the growth of oil prices. These factors were partly interrelated with each other, but we allow for the interaction between these factors to be explained elsewhere.

Figure 4.4 Monthly growth rates compared to the same month of the previous year for the airports Eindhoven and Rotterdam. Source: CBS, 2010; Version KiM.

#### 4.4.1 Economic crisis

There is a strong correlation between a country's gross national product (GNP) and the numbers of journeys taken by airplane<sup>28</sup>. Thus, the emergence of the credit crisis and the subsequent economic crisis made it more difficult to analyse the effects of the ticket tax because both events overlap in time. There are several indicators that could be chosen as marking the start of the economic crisis, such as for example the moment when GNP began to decline, or the moment when growth of GNP remained negative for two consecutive quarters. Given the international nature of both the economic crisis and the aviation industry, it is also appropriate to consider the global and European development of the air traffic. This provides insight into the period when Dutch airports experienced an effect from the economic crisis, regardless of the developments which are specific to the situation in the Netherlands, such as the air passenger tax.

Figure 4.5 shows the growth in the amount of Revenue Passenger Kilometers (RPK) by members of the Air Transport Association (IATA)<sup>29</sup>. RPK is the sum of the amount of kilometers multiplied by the number of paying passengers per flight. We see that the growth of RPK worldwide and for European airline companies had started declining in early 2008. For European airline companies, growth was slightly negative in September 2008, while as of November 2008 the growth figures of European airline companies were clearly negative.



Figure 4.5 Growth of passenger volumes among IATA-members The emphasis is on the percentage changes in volumes as compared to the same month of the previous year, measured in terms of Revenue Passenger Kilometres. Source: IATA, 2010

<sup>28</sup>Airbus, Global Market Forecast 2009-2028, p. 39.

<sup>29</sup>230 airline companies are registered IATA members, which combined account to for 93% of international aviation's scheduled flights (RPK's for internal flights are not counted!). Full service carriers, as well as various low-cost airlines, are members of IATA, but nevertheless some important players are missing; for example, the European carriers easyJet and Ryanair are not members. This leads to a minor distortion of the overall situation because some low-cost carriers are in fact thriving despite (or because of) the financial crisis. The recovery shows that European companies are obviously lagging behind in terms of global development. The steep decline in traffic figures in April 2010 was caused by the closure of large parts of the European airspace due to Icelandic volcano Eyjafjallajökull's ash cloud.

4.4.2 Developments in foreign exchange rates and kerosene prices In the research study "Implications of implementing the ticket tax", Veldhuis (2009) states that developments in foreign exchange rates and kerosene prices also had an effect on the development of passenger volumes at Schiphol. Foreign exchange rates are of considerable importance for the balance between incoming and outgoing air traffic. The value of the euro against that of the US dollar and the English pound rose sharply in 2008 compared to 2007, which had a significant impact on the numbers of incoming passengers from those countries. Conversely, there was an upward effect on the outgoing market to these countries.

The first half of 2008 was also characterised by the sharp rise in kerosene prices. This price is derived from the price of crude oil, which rose in July to a then record level of more than USD 140.00 per barrel. This price then decreased again significantly to a level below USD 40.00 by the end of 2008. Owing to the weakening of the US dollar, the effects of the higher oil prices were less unfavorable measured in euros. Because of developments in foreign currency exchange rates and kerosene prices, Veldhuis estimated that the autonomous growth in traffic to and from North America decreased by 3.2% in 2008, as compared to 2007 levels.

## 4.5 Developments in the aviation sector

In addition to the air passenger tax, various other longer term developments related to aviation influenced the use of Schiphol and regional airports in the Netherlands.

An important factor for the development of Dutch airports is the trend that passengers travel relatively more often with low-cost companies like Ryanair and easyJet. The combined number of passengers for Ryanair and easyJet rose from 10 million in 2000 to 110 million in 2009. Collectively, all low-cost airline companies – united in the European Low Fare Airlines Association (ELFAA) – transported 162 million passengers in 2009. By contrast the number of passengers for the traditional airport companies, as united in Association of European Airlines (AEA), stagnated.

The relative proportion of low-cost airline companies compared to AEA airline companies rose sharply from 7% in 2002 to about 32% in 2009.



The supply of low-cost operators in the Netherlands is relatively limited. which is partly owing to the noise level restrictions imposed on airports. These low-cost airline companies do however have operating bases in neighboring countries; Ryanair has bases in Weeze and Charleroi that are also used by Dutch passengers. Booking sites - like cheaptickets.nl - contribute to this by, for example, offering people alternative departures from foreign airports.

#### Low cost, full service and hybrid companies

The low-cost airline business model focuses on high utilization rates of both aircraft and crew (fast round trips), no free extra services (no-frills), the use of less expensive regional airports free of congestion<sup>30</sup>, and flights operated using one type of aircraft (Doganis, 2005). Low-cost airline companies also started utilizing the internet, allowing passengers to purchase tickets online from home. Owing to the success of low-cost airlines, the traditional full-service airlines were also forced to adjust their business models. The difference between the two models has begun to blur, as some low-cost airlines have introduced features of the full-service carriers and vice-versa. This intermediate form is called hybrid<sup>31</sup>. Air Berlin is a good example of a hybrid company: partly a leisure carrier, partly a network carrier and partly a lowcost carrier.

2010:

<sup>&</sup>lt;sup>30</sup>See eg Pels, E. (2004). Cherry picking and secondary airports: strategies of low-cost airport companies. S&RO (Town and country planning), 85(3), 30-33; Dennis (2004) Low Cost Carriers and secondary airports.

<sup>&</sup>lt;sup>31</sup>Stephen Jones, Low cost carriers become "hybrids", Travel weekly, 7 May 2008.

In the Netherlands, the real flight-discounters, Ryanair en Wizzair, fly out of Eindhoven and Maastricht airports. easyJet also flies from hub airports, but it has a special landing area at Schiphol that offers fewer facilities and for which the company pays lower landing fees. Transavia is the low-cost subsidiary of Air France- KLM in the Netherlands, yet still has a different image than Ryanair (Macario et al., 2007).

Another tendency that partly explains the outlined passenger developments is the increasing use of foreign airports, especially by people from the Netherlands' eastern and southern provinces (Twynstra Gudde, 2005). Figure 4.7 shows the number of Dutch passengers using Dusseldorf airport. The number of Dutch passengers flying out of Dusseldorf has been increasing steadily since 2001.





Finally, changes in restrictions at airports play a role. Many regional airports are closed at night to reduce disturbances for surrounding residents. Moreover, airports in the Netherlands face limitations to the total permissible noise levels.

This limits capacity, and consequently both Rotterdam and Eindhoven airports are slot-coordinated. The major hubs are usually more congested and charge higher fees, which is partially due to their expensive baggage handling systems. These airports are also slot-coordinated and charge tariffs for noise generation. There are many ongoing legal battles about these airports' operating hours and other terms of use. Changes made to these areas could bring important shifts in the competitive position<sup>32</sup>.

The developments outlined in this and previous sections have affected the number of passengers departing from airports in the Netherlands before, during and after the air passenger tax. This makes it difficult statistically to isolate the net effect of air passenger tax, and also to determine if a structural effect exists.

<sup>32</sup> Ryanair threatened to close its base at Weeze if the opening hours were reduced. http://www.ryanair.com/en/news/ryanair-to-close-dusseldorf-weeze-base

# 5 Effects of the air passenger tax

- In an airport choice survey conducted by KiM, one-fifth of those surveyed who used air travel said that they were unaware of an air passenger tax. Fourteen per cent however confirmed that the tax had influenced their travel behaviour, with half of them saying they had chosen not to travel or chosen to travel by car or train, and the other half confirming that they had opted to use a foreign airport, with Düsseldorf, Weeze and Brussels airports being the most popular choices.
- A conservative estimate of the effect of the air passenger tax for the period July 1, 2008 to July 1, 2009 is a decrease of approximately 2 million origin-destination passengers at Schiphol. The total 'defection' rate to foreign airports during the period that the air passenger tax was in force is estimated at approximately 1 million passengers.
- After the air passenger tax was set at zero (0.00 euros), passenger volumes for the rest of the 2009 summer season were down by nearly 1 million passengers compared to the reference level.
- According to various airports, airline companies and other stakeholders, publicity played a key role in the extent of this effect.

## 5.1 Results of airport choice survey

In the summer of 2010, KiM conducted an airport choice survey, in which 3000 people were randomly sampled via an internet panel. The survey questions were related to flight frequencies, awareness of various airports, and the airports considered for European and international destinations. The respondents who had flown during that time period were asked if the air passenger tax had influenced their choices. Table 5.1 shows the answers given for this question:

Answers	Number Pe	ercentages
No, I did not know that there was an air passenger tax	552	20,9%
No, I did not fly during this period	883	33,4%
No, I did not choose differently than I would have when there was no tax	838	31,7%
Yes, I did choose to depart from a different airport, namely:	191	7,2%
Yes, I did choose a different means of transport	55	2,1%
Yes, I did cancel a journey	86	3,3%
Yes something else	41	1,5%
Total	2646	100,0%
Total Yes	373	14,1%

Of the respondents, 7% said that during the air passenger tax period they chose to use another airport. A further 7% of respondents said they changed their behaviour in some way. The 191 respondents who opted to use another airport were asked to name that airport. Figure 5.1 shows that most of these people (36%) chose Düsseldorf. Weeze and Brussels were also popular choices. Charleroi and Munster were also frequently mentioned. A large share of the respondents named a combination of airports.



This section concerns the growth of passenger volumes at Düsseldorf, Weeze, Brussels and Charleroi airports. The aim is to determine if specific patterns emerge that could partially be attributed to the air passenger tax. Owing to low volumes, Munster/Osnabruck airport was not studied. The data available for each particular airport is not the same for all airports.

Figure 5.1 Answers to the question: 'From which other airport did you depart?' Source: KiM airport choice survey,2010

Table 5.1

2010

choice of airport?"

Answers given to the question: Did the air passenger tax influence your

Source: KiM airport choice survey

#### 5.2.1 Düsseldorf

Düsseldorf International is a fairly large airport situated north of Düsseldorf. It was once the largest airport in the Ruhr region and an important hub in Germany, but owing to noise level restrictions (closure at night) and limited opportunities for expansion, Frankfurt has taken over this role. Düsseldorf offers European as well as intercontinental flights. Figure 5.2 shows the growth of total passenger volumes at Düsseldorf airport from 2000 to 2009.



## Figure 5.2

Passenger volumes at Düsseldorf airport (in millions) 2000-2009. Source: Düsseldorf International, 2010

The Dutch air passenger tax had no noticeable impact annually on the development of total passenger volumes. A detailed analysis of the number of departing Dutch passengers does however reveal an impact.



#### Figure 5.3 Number of Dutch passengers departing from Düsseldorf airport Source: Grimme & Maertens, 2010

Figure 5.3 shows the numbers of Dutch passengers departing from Düsseldorf. The figures reveal that passenger volumes have risen steadily in recent years, from 130,000 in 2000 (1.6% of passenger volume) to 560,000 in 2009 (6.2% of the total passenger volume)<sup>33</sup>. The relatively sharp rise between 2007 and 2008 is notable and likely attributable to the air passenger tax.

A conservative estimate of the air passenger tax's effect is made by extrapolating the growth of departing Dutch passenger volumes in the period 2000 to 2007 and for the years 2008 and 2009. We use a linear growth, which is an average of 35,700 Dutch passengers per year. In order to prevent the calculation from becoming too complicated, the figures for 2008 and 2009 are regarded as uninfluenced by the economic crisis. Given these assumptions, in 2008 and 2009 respectively 416,000 and 451,000 Dutch passengers could be expected.

The difference with the actual amounts for both years was approximately 235,000 departing passengers. If we adjust this figure, taking into account the temporary decline in 2001, the estimate is an effect of approximately 210,000 departing passengers. In airport statistics, passengers are counted as departing and arriving. In this case, if we assume that all departing Dutch passengers arrived back at Düsseldorf, the airport processed 420,000 to 470,000 extra Dutch passengers due to the air passenger tax.

More indications regarding the effect of the air passenger tax stem from an analysis of Sabre<sup>34</sup> ticket data. Sabre uses Marketing Information Data Tapes (MIDT)<sup>35</sup> and Transaction Control Number files as its sources. This data provides information about tickets sold via worldwide booking systems. Sabre enriches this raw data with information from other sources, including passenger statistics. The data Sabre delivers does not provide a complete picture, however, although it does give a good impression of the developments (Grimme and Maertens, 2010).

Within the ticket data, a distinction is made for the airline ticket's 'point of sale' (POS). Figures 5.4 and 5.5 show the numbers of tickets and POS in the Netherlands and Germany for flights from Düsseldorf to respectively the United States and Asia, with a departure date 12 months prior to implemen-

<sup>&</sup>lt;sup>33</sup> This is why the number of departing Dutch passengers is multiplied by 2 and then divided by the total number of passengers.

<sup>&</sup>lt;sup>34</sup> Sabre is an acronym for 'Semi-Automated Booking and Reservation Environment' (Witlox & Derudder, 2010).

<sup>&</sup>lt;sup>35</sup> For more information about MIDT, we refer to (Devriendt et al., 2006).

tation of the air passenger tax, a departure date during the air passenger tax period, and a departure date 12 months after the air passenger tax was abolished.



Figure 5.4 Annual growth based on number of tickets sold from Düsseldorf to a destination in the United States. Source: Grimme & Maertens. 2010

Figure 5.5 Annual growth based on number of tickets sold from Düsseldorf to a destination in Asia. Source: Grimme & Maertens, 2010

> 0% 20%-

July o7 - June o8

POS DLD

POS NL

Figure 5.5 shows that for destinations in the United States the growth of Dutch passenger volumes in all three periods is higher than that for German passengers. There is a striking growth differential during the 12 months that the air passenger tax was in force. The fact that, despite the economic crisis, the growth of Dutch passenger volumes is only slightly negative in the 12 months following the air passenger tax's abolishment is possible evidence of a structural effect.

July o8 - June og

Figure 5.6 shows that Dutch passenger volumes for destinations in Asia grew considerably in the 12 months prior to, and during, the air passenger tax. Strikingly, German passenger volumes showed negative growth in the air passenger tax period, while the number of Dutch passengers continued to rise. In the 12 months following the air passenger tax's abolishment, Dutch passenger volumes decreased quite substantially. This does not support the hypothesis of a structural effect. Because Dutch passengers volumes declined relatively substantially compared to German passenger volumes, there is an indication of some 'recovery' here.

July 09 - June 10

#### 5.2.2 Brussels

Brussels Airport (or Brussels-National), with some 230,000 flights and nearly 1 million passengers in 2009, is the largest airport in Belgium. Brussels airport is a hub for various airline companies, including Brussels Airlines, Thomas Cook Airlines (Belgium) and Jetairfly. Figure 5.6 shows the airport's steady growth from 2002 to 2008. In Figure 5.7 the effect of the economic crisis is shown, as well as the bankruptcy of Sabena, the national airline, in late 2001.



In 2009, nearly 17 million passengers flew from Brussels Airport, of which 14.9 million were OD-passengers and 2.1 million transfer passengers. The OD-passenger group is further divided into 8.7 Belgian passengers, 1.1 million 'cross border' passengers, and 5.2 passengers from elsewhere. 43% of the 1.1 million 'cross border' passengers came from the Netherlands<sup>36</sup>, 5% from Germany, 3% from Luxembourg, and 48% from France. In 2009, these Dutch passengers were primarily from the three southern Dutch provinces: North-Brabant (32%), Limburg (16%) and Zeeland (14%). The remaining 38% were from South-Holland (15%), Utrecht (5%), and other provinces (18%). (Witlox and Derudder, 2010).

Figure 5.7 shows that - based on analysis of MIDT-data (Sabre) for Brussels the number of Dutch passengers departing from Brussels increased even before implementation of the air passenger tax. Conversely, in the 12 months following the air passenger tax's abolishment, this number declined compared to the 12 months prior to the tax.

Figure 5.6 Passenger volumes (in millions) at Brussels airport (Zaventem). Source: Brussels Airport, 2009

<sup>36</sup> This is approximately 475,000 Dutch passengers.





Unlike in the case of Düsseldorf, the available data renders it difficult to estimate the effect of the air passenger tax, as the period prior to the tax was too short to identify any trends. A rough estimate of the effect based on MIDT-data comes out to approximately 47,000 extra tickets sold. This estimate is based on a linear extrapolation between the figures for the 12 months before and 12 months after the air passenger tax. This number should be multiplied by 2 because the MIDT-data registered about half of the total number of departing Dutch passengers in 2009. Multiplying by 2 once more gives the total number of departing and arriving passengers – approximately 185,000 passengers. This is only the upper limit, however, because this calculation is too simplistic. No consideration was given to the possibility that the growth experienced prior to the air passenger tax could persist (to some extent) in the period when the air passenger tax was in force.

Detailed analysis revealed some other specific features as well. Four of the Top 5 destinations for Dutch passengers are in Morocco: Casablanca, Tangier, Nader and Oujda<sup>37</sup>. Specifically for the period when the ticket tax was in force in the Netherlands, most Dutch passengers flew from Brussels to Al Hoceima (Morocco). In July 2008 this totalled 4,266 passengers, although in July 2009 there were only 834 passengers: a decline of 80.7%. The number for July 2008 is also remarkable compared to previous years. Similar trends were noted for other similar destinations.

#### 5.2.3 Weeze

Weeze is a former British military air base (Niederrhein) located east of the Dutch border, at the same latitude as Bergen in North-Limburg. The airport was redeveloped by the Dutch and has a Dutch owner<sup>38</sup>. In 2003 the airport began civil aviation operations. Growth started once Ryanair established a base of operations there.

<sup>37</sup> Barcelona is the other Top 5 destination.

<sup>38</sup> Roma Investments, owned by Mr. Herman Buurman.





Figure 5.8 shows that Weeze enjoyed strong growth in 2008 and 2009. To some extent this could be a consequence of the air passenger tax, but part of this should also be attributed to Weeze airport's growth phase. The airport is relatively new and Ryanair was already actively solidifying its operations there. It is impossible to determine whether this growth would have occurred to the same extent without the air passenger tax.



Figure 5.9 shows the development of monthly passenger volumes at Weeze from 2007 to 2010. There is a considerable difference between June and July 2008, although this could also be a seasonal pattern. Such a pattern is particularly noticeable for 2009 and 2010. 2009 is marked by relatively strong growth compared to 2008. This is perhaps connected to the air passenger tax – especially in the winter season – but no definite conclusions can be drawn because monthly data for the 2007 winter season are not available.

Various market research studies have provided data pertaining to the percentage of Dutch passengers before and after the air passenger tax. In 2004, 32% of all passengers were from the Netherlands (Behnen, 2004); in September 2007 that figure was 37%; and in September 2009 it was 50% (source 2007 and 2009: Weeze passenger survey).

Figure 5.9 Development of monthly passenger volumes (in thousands) at Weeze for the years 2007-2010. Source: ADV, 2010. As in Düsseldorf, Weeze also experienced a rise in Dutch passenger volumes, which the air passenger tax seemingly intensified.

Weeze airport conducted research into the geographic origins of its passengers. A chart shows the situation in 2007 and an image for 2009.



An increase in the numbers of passengers from all provinces in the Netherlands was observed including from those provinces situated at greater distances, such as North Holland, South Holland and Friesland. Figures show that in 2007 the share of passengers from the Randstad (North Holland, South Holland and Utrecht) was approximately 15% of all Dutch passengers departing from Weeze. In 2009, the Randstad provinces' 'market share' rose to nearly 22%. Research by Behnen (2004) revealed that in 2004 some 32% of all Dutch passengers came from Gelderland. Based on the above figures, we can conclude that in 2007 this share declined to 31% and in 2009 fell further to 27%.The conclusion is that Weeze's so-called 'catchment area' is growing larger.

This can be related to supply, oftentimes in combination with publicity.

#### 5.2.4 Charleroi

Brussels South Charleroi Airport (BSCA) is located north of Charleroi -46 kilometres from Brussels. Since 1 January 1992, N.V. Brussels South Charleroi Airport has operated this airport. Due to its small size and close proximity to Brussels, BSCA is an interesting destination for low-cost airline companies. Ryanair has a hub at Charleroi Airport, while other commercial airlines active at this airport include Wizz Air, On Air, Jet4you and Jetairfly.





Figure 5.12 shows the development of passenger volumes at BSCA from 2000 to 2009. BSCA is obviously a fast-developing regional airport. Figure 5.13 shows the monthly development from 2007 to 2010. A distinct seasonal pattern is developing at the airport, with the summer season becoming of greater importance than the winter season.





BSCA proved unwilling to be interviewed for the purpose of compiling more detailed data. According to Witlox and Derudder (2010), in 2008 approximately 5% of all passengers (about 80,000) were from the Netherlands. This is a rough estimate based on a random sample of 2,700 passengers in April 2008. For 2009, the share of Dutch passengers was estimated at 6% (120,000 passengers). BSCA states that this number will rise in 2010 to 10% (250,000 passengers). Other stakeholders however have indicated that this forecast is extremely optimistic: they said a share of about 7% (175,000 passengers) seemed more realistic.

Witlox and Derudder (2010) conclude that BSCA has received many new flights. The airport's growth can mainly be attributed to the expansion of Ryanair. Based on the limited available data, Witlox and Derudder conclude that the air passenger tax has had little or no effect on BSCA.

## 5.3 Viewpoint of the sector regarding effect of air passenger tax

The following is a summary of the most important factors for explaining the effect of the air passenger tax, as emerged during discussions with various stakeholders.

#### 5.3.1 Airports

Interviews were conducted with staff members of various airports in the Netherlands, Germany and Belgium (see Appendix A), from which the following observations emerged (see also Grimme and Maertens, 2010; Witlox and Derudder, 2010).

Dutch passenger volumes at Cologne/Bonn, Düsseldorf, Bremen and Munster/Osnabruck airports is low: 2% to 7%. Only at Weeze is this number

higher: about 50% in 2009, after abolishment of the air passenger tax. A higher share exists for some routes that are not offered in the Netherlands. Despite the low Dutch passenger volumes, airport managers regard the market in the Netherlands as important and confirm it has been growing for years. For this reason all these German airports have Dutch-language websites.

According to most airport managers, the air passenger tax is not the most important reason for the growth in Dutch passenger volumes; instead, they credit the huge publicity the tax received prior to implementation. This process greatly enhanced the name-recognition of German airports. Additionally, some airports explicitly adapted their marketing in light of this new situation, which not only occurred among the airports themselves but also among other stakeholders, such as, for example, a bus company offering various lines from Dutch cities to Weeze airport.

Train connections to the Netherlands are important for Düsseldorf airport, although generally cars remain the most important means of transport. The average parking fees at Düsseldorf airport are lower than in the Netherlands. The German airport managers who were interviewed said that most new Dutch passengers came from the Dutch provinces located further away. These passengers seemingly accept the longer travel distances and journey times; moreover, they were 'triggered' by all the publicity about the German flight offers and wished to avoid the tax. In addition, the extra flight supplies in Weeze (mainly Ryanair) and Düsseldorf (long-distance supply mainly by Lufthansa) increases the attractiveness of these airports, which has led to a (structural) increase in Dutch passenger volumes (Grimme and Maertens, 2010, p. 18-19).

In Belgium, the consequences of the Dutch air passenger tax were most visible at Brussels airport. The sharp increase during the air tax period in Dutch–Moroccan passengers was striking, as was the steep decline after abolishment of the tax for destinations like Al-Hoceima, Nador, Casablanca, Tangier and Oujda. For groups travelling for family-related reasons, Brussels was - due to its focus on the (North) African market - an interesting alternative. In addition, destinations in the USA (New York and San Francisco) were also relatively popular among Dutch passengers.

Brussels Airport stated that it conducted no advertising campaigns in the Netherlands, as the ticket tax was also in play in Belgium and the airport sector preferred to let sleeping dogs lie. According to Witlox and Derudder (2010, p. 16), Brussels airport experienced a 'learning effect': once a person has flown once from the airport, a subsequent flight on another occasion is likely. An airport survey conducted by KiM revealed that Dutch passengers not only used Brussels but also considered Charleroi as an airport to 'defect' to. Efforts to interview an airport representative for his research failed, however.

Because Charleroi largely offers the same type of flights as Weeze (Ryanair, low cost), a similar but smaller effect is expected<sup>39</sup>. At issue here are the most price-sensitive passengers who are ready to accept longer journey times in exchange for lower ticket prices. One important difference however is the fact that Charleroi is located much further from the border with the Netherlands and thus relatively less attractive.

Antwerp airport, located close to the Dutch border and within easy reach of West-Brabant, Dordrecht, and the Rijnmond region, is a business-traveller airport with short-haul connections to London City Airport and various other airports. No low-cost airlines are based here. And no significant impact was identified at Antwerp during the Dutch air passenger tax period (Witlox and Derudder, 2010, p. 19). This further confirmed the conclusion that the air passenger tax mainly influenced the most price-sensitive passengers (Witlox and Derudder, 2010, p. 24).

Furthermore, no effect from the air passenger tax was noted at the small airports of Ostend and Liège, according to those interviewed. One reason for this: those airports are predominantly used by travel companies offering package deals (transport + accommodation). Individual tickets are rarely sold for flights at these airports.

Schiphol realised that it was pricing itself out of the market, especially pertaining to passengers who begin and end their journeys at Schiphol (annual report 2008). The airport consequently developed a new strategy. On 1 April 2009 Schiphol lowered its airport fees by 10% and made other cuts in the company. This (also) occurred as part of the conditions imposed for abolishing the air passenger tax. Marketing activities subsequently focused on convincing passengers to return to the airport.

Eindhoven Airport reported that following the decision in 2007 to implement the air passenger tax, not one airline company approached the airport to discuss possible new connections. This situation did not change until the tax was abolished, at which point, the airport says, interest from airline companies once again increased. The airport says its favourable location in a huge catchment area is the reason why it experienced so little market

<sup>&</sup>lt;sup>39</sup>Less people said they chose Charleroi as an alternative. This is understandable because of the much greater distance from Charleroi to the Dutch border, compared to Weeze.

shrinkage during the air tax period. This ensured the airport still had more potential and consequently only saw its growth slowed. One measure the airport took during the tax period was to lower its parking fees, making them comparable to the fees charged at Weeze airport.

Maastricht already had little air passenger transport. Closing the airport to passenger traffic was considered as connections continued to drop. According to those interviewed, abolishing the air passenger tax prevented this from happening and now the airport is once again experiencing growth. Germanwings signed a contract to offer flights from Maastricht-Aachen Airport as of 1 April 2011.

Groningen Airport reported that it experienced little effect from the air passenger tax. People mainly fly from Groningen to holiday destinations as part of travel packages<sup>40</sup>. This makes the additional costs for the air passenger tax less visible. Rotterdam The Hague Airport was not interviewed, because according to available figures almost no effect could be detected there. Moreover, this airport is located further from the border than the other regional airports.

#### 5.3.2 Airline companies

Three airline companies were interviewed in Germany: Germanwings, AirBerlin and Hamburg International Airlines. In light of implementation of the Dutch air passenger tax, Germanwings developed a Dutch website; Air Berlin noticed higher demand on behalf of Dutch passengers – mainly travelling to Egypt, for which the air passenger tax is 45.00 euros; and Hamburg International Airlines put an additional airplane in service at Weeze in order to profit from the additional demand from the Netherlands. Ryanair (with its large growth at Weeze) unfortunately refused to cooperate with this research.

Brussels Airlines is the largest airline company in Belgium and a member of the STAR Alliance. Brussels Airlines did not conduct an advertising campaign in the Netherlands, because the ticket tax was also in play in Belgium. CityJet, which recently merged with the Vlaamse Airport Company, headquartered at Antwerp Airport, offers short-haul business flights. About 72% of CityJet's passengers are business travellers; for this segment, CityJet said a tax of 11.25 euros is hardly a factor.

<sup>40</sup> Accommodation and other factors also included.

In Belgium, Ryanair is highly active at Charleroi airport; however, the company's representatives in Belgium also refused to cooperate with this research.

KLM attempted to react to the air passenger tax by being more flexible and manoeuvrable in the market. Aircraft capacity that became available following decreases in OD-operations, resulting from decreasing demand, was used to support the hub operation: transfer passengers were never charged the air passenger tax. KLM reported that the greatest impact it experienced was due to Lufthansa's expanded flight supplies at Düsseldorf airport, rather than because of Ryanair's operations at Weeze, as the latter primarily generates traffic on the other side of the market, which need not be unfavourable for KLM. Transavia also started a modest operation at Weeze.

Ryanair also refused to be interviewed in the Netherlands. In other countries where an air passenger tax was implemented (Denmark, Sweden, Ireland and Germany), Ryanair reacted by reducing its number of flights. On some occasions the company completely left a country: 'Ryanair makes or breaks an airport'. Ryanair joined Maastricht airport in a legal action aimed at forcing the Dutch state to abolish the air passenger tax. A court in The Hague found both parties at fault.

#### 5.3.3 Tour operators and other stakeholders

Tour operators offer complete holiday packages. This means that, in addition to the flight (normally with a charter airline company that is often owned by the same tour operator), the hotel stay is arranged, as is transport from destination airports to hotels (transfers) and the services of the tour operator's local representatives.

The 'inclusive tours' market (IT-market) allows tour operators to be flexible in assembling their travel package deals. Consequently, a cheaper hotel booking for example could be used to compensate for an air passenger tax on a ticket. When booking holidays via internet, the ticket price and air passenger tax are not usually stated separately, thus negating any possible explicit effect.

In Germany, tour operators Alltours and REWE were interviewed. These companies reported that that the Dutch market is very price-sensitive. Dutch passengers have no problem with departing from German airports because of their good accessibility by car. Moreover, passengers prefer to avoid the congestion in the Randstad. The low parking fees in Germany also play a role. Owing to the air passenger tax, Alltours began offering travel packages in the Netherlands. According to REWE, there was increased demand from the Netherlands during the 2008/2009 winter season, but not during the following summer season after the announcement that the tax was being abolished. Both tour operators did not adjust their capacities.

Belgium has two major tour operators: Thomas Cook and Jetair. Both are division of international parent companies (Thomas Cook and TUI, respectively), and both report that they had no interest in competing with their branches in the Netherlands, and thus did not conduct advertising campaigns in the Netherlands. The companies report that a small but rising percentage of their travel packages are sold to Dutch customers; these are mainly customers from border areas, like Zeeuws-Flanders and South-Limburg. The Dutch holiday period in May is important, because the holiday package prices in the Netherlands are relatively high during that period, while in Belgium and Germany they are not. Both companies indicate that the air passenger tax had an impact but cannot estimate the extent of it.

NBTC states in its overview of incoming overnight tourism that the air passenger tax had a considerable impact. NBTC emphasized the fact that one-third of the passengers of low-cost carriers are extra visitors for the country in question. (NBTC, 2010, p. 8). The capacity of low-cost carriers to the Netherlands shrunk during the air passenger tax period.

## 5.4 Estimate of effect of air passenger tax on Schiphol

Chapter 4 previously stated the strong concurrence between the effects of the air passenger tax and the effects of the economic crisis on the air traffic. Figure 5.14 shows the annual growth figures for passenger volumes of European IATA-airline companies compared to the growth figures of OD-traffic at Schiphol.

#### Figure 5.14

Growth figures compared to the same month in the previous year for European airline companies that are IATA members and for Schiphol. Source: Schiphol Group, 2010 and IATA, 2010



The European IATA members' annual growth figures serve as a good yardstick of the effects the crisis had on European aviation. The air passenger tax's effect can be determined by looking at the difference between both developments. Figure 5.15 illustrates this. Five periods are distinguished, with a red line representing the average value.



In the period prior to the air passenger tax. Schiphol's growth rate was less than that of the European IATA airline companies. A reason for this was previously stated in Section 4.4.2: Dutch passengers, mainly from the east and south, increasingly use foreign airports. For the 18 months prior to implementation of the tax, Schiphol's growth rate was on average 0.9% lower than that of the European IATA carriers. Figure 5.16 shows the effect if this decreased growth is taken into account over the whole period.



Figure 5.16 Difference between developments at Schiphol and among European IATA-companies, adjusted to account for average remaining growth in the period January 2007 to July 2008. Source: Calculations KiM



The first line of 18 months is now at the zero line. Based on a conservative estimate, the second line (July 2008 until June 2009) shows the effect of the air passenger tax. This effect seems to be -6.9% on average.

Adjusted according to the number of OD Passengers in the year prior to the air passenger tax (27.4 million), this means 1.9 million fewer passengers.

The third line refers to the second half of the summer season; that is, after the air passenger tax was abolished (July 2009 to October 2009). Here we see a negative impact of 1.6% compared to the previous year, when a negative impact of 6.9% was already prevalent. In total this is 8.5% for four months. Compared with passenger volumes from July 2007 to October 2007 (11.2 million), this is 0.96 million fewer passengers as a knock-on effect of the air passenger tax.

The fourth line represents the winter season (November 2009 to March 2010).

Schiphol's positive growth rate of 6.7% as compared to the reference level almost wholly compensates for the negative effect (-6.9%) of the air passenger tax. Virtually a complete recovery was achieved during the winter season, which stands in stark contrast to the preceding second half of the summer season.

The fifth line represents the summer of 2010. The positive difference of 1.6% from the reference level represents but a minor compensation for the losses suffered during flight tax's period of being in force. This is a possible indication of a structural loss in the summer season.

The air passenger tax's effects estimated using this method are consistent with the previously estimated effects by Significance et al. (2007) (see Section 2.2). The research study by Significance et al. also anticipated that

approximately half the effect could be explained by 'leakage' to foreign airports. The other half was due to cancelled trips or travelling by car or train. This division corresponds to the results of KiM's airport-choice survey (see Section 5.2), in which the same number of respondents indicated that they had departed from another airport or otherwise adjusted their behaviour.

In Section 5.2.1 the number of extra passengers who defected to Düsseldorf was estimated at approximately 420,000 to 470,000. In order to also estimate the defection to other airports, Table 5.2 presents ratios according to answers in the airport-choice survey about the airports passengers defected to.

#### Estimated defection as consequence of the air passenger tax (x 1.000)

Total	1.245
Other/Combo	220
FMO	50
Charleroi	75
Brussels	175
Weeze/NRN	275
Düsseldorf	450

We emphasize that this is a rough estimate. The figures in Table 5.2 are a mere indication; moreover, the estimated defection to Brussels in this calculation is in line with defection rate estimated in Section 5.2.2 based on MIDT-data.

We briefly summarize the air passenger tax's estimated effect. For Schiphol, the tax meant a decrease of approximately 2 million passengers during the period in which the tax was in force, and a further decrease of some 1 million extra passengers as 'leakage' in the period thereafter. According to the estimates, of these 2 to 3 million potential Schiphol passengers, half cancelled their travel plans or decided to use another means of transport, such as car or train. The other half of these passengers departed from a foreign airport, of which Düsseldorf was the most popular choice, followed by Weeze and Brussels.

Table 5.2 Rough estimate of the number of extra Dutch passengers at foreign airports as a consequence of the air passenger tax. Source: Calculations KiM

## 6 'Return' of Dutch passengers

- The air passenger tax may have accelerated the trend of increased use of foreign airports. Familiarity with foreign airports grew, experience was gained and passengers' traditional travel patterns were altered. The supply of flights increased mainly at Germany's Weeze and Düsseldorf airports. These are structural differences from the situation as it was prior to the air passenger tax and this has changed the choice pattern.
- The 'return' of passengers to Dutch airports could be promoted through improvements to the flight supply, lower costs and improved accessibility. Targeted publicity can enhance the target group's familiarity with the (improved) flight supply.
- Germany introduced an air passenger tax on 1 January 2011. The effects of the German tax are expected to 'mirror' those of the Dutch tax, although there are also clear differences between the two.

## 6.1 Picture that emerged from data and interviews

The development of passengers volumes at various airports in the period following the air passenger tax (see Chapters 4 and 5) reveal that not all Dutch passengers "return" to airports in the Netherlands<sup>41</sup>. In the period July 2009 - October 2009, for example, no recovery was seen at Schiphol airport, which is reverse to effect witnessed following implementation of the tax in July 2008. There should have been spurt-like growth in the year-to-year figures, yet this growth spurt effect occurred in November with the introduction of the winter service schedule. The flight supply at Schiphol and alternative airports during the summer service schedule is apparently a determining factor for the passenger volumes.

<sup>&</sup>lt;sup>41</sup> 'Return' is used here to mean that Dutch passengers less often chose for foreign airports over Dutch airports. The term 'return' literally suggest that some Dutch passengers turned their backs on their airports in the period of air passenger tax and are now coming back to them. In reality passengers to not really belong to an airport and usually in most cases they make a determination as what airport they will choose for each trip (see Chapter 3). 'Return'' then in this context is meant symbolically.

The data pertaining to Dutch passengers volumes at foreign airports indicates that implementation of the air passenger tax led to the great use of foreign airports. It is however difficult to statistically determine whether the 'return' of the Dutch passengers has occurred. First, abolition of the air passenger tax was too recent. Second, the picture is obscured by a number of developments within and outside of the airline industry (see Chapter 4).

In the aftermath of the air passenger tax, it is plausible that passengers will continue to use foreign airports relatively more often. Prior to the tax there was already a tendency among Dutch passengers to fly more often from foreign airports. Following implementation of the air passenger tax, some passengers discovered the supply of flights available at foreign airports. If these passengers were satisfied with this, they continued to take the advantage of this supply. It could be argued that this trend-like development was further accelerated due to the air passenger tax. Passenger developments in the coming years will reveal if this is indeed the case. This is also difficult to determine. As of 1 January 2011, an air passenger tax will be in force in Germany as well, which is likely to trigger a reverse process.

In order to shed some light on this possible 'return', KiM developed a model in which knowledge and perceptions of airports play an integral role. The model is explained in the following section. The policy options that we extracted from this model are discussed in section 6.3. In section 6.4 we apply this model in order to remark on the possible effects of the German air passenger tax.

## 6.2 Airport choice modelled with System Dynamics

The changes in airport choices due to the air passenger tax do not always take immediate effect. KiM's airport choice survey revealed that slightly more than 20% of the respondents who have flown were not aware of the air passenger tax (see section 5.3). In addition, not all Dutch people knew which alternatives to Schiphol there were in the Netherlands or just over the border in foreign countries.

Analysis of the airport choice survey shows that spontaneous familiarity with foreign airports also differs significantly. Some 42% of respondents cited Brussels, 32% Düsseldorf and 18% Weeze.

In addition, familiarity significantly differs among the various regions. Those who live close to a certain airport more often cite that airport than do people who live further away from that airport.

Spontaneous familiarity is an indicator of the so-called 'mental map' of the alternatives that people consider. Yet there is no direct link between spontaneous familiarity and the final choice. Passengers who are not familiar with a certain airport could opt to use it following the process of searching for tickets among booking and comparison websites, which have indicated that airport as an alternative. Nevertheless, it is likely that some passengers do not choose a particular airport because they are simply not aware of it.

Figure 6.1 is an illustration of spontaneous familiarity with Weeze airport, divided by regions. Weeze airport is shown in the figure with IATA code NRN and is situated in Germany at approximately the same latitude as Venlo.

Section 3.3 reveals how the rational choice models handle a number of assumptions regarding human behaviour that cannot be fully approached in practice. People are generally only 'partly rational' and make choices based on incomplete information. People moreover do not always make conscious choices (habitual behaviour) and do not always maximize their full utility.

Figure 6.1 Familiarity with the Weeze airport per Corop-region. Source: KiM airport choice survey 2010



Steverink (2010) developed a System Dynamics model for airport choice behaviour. The model's aim is to promote the effect of limited rationality and gain more insights into its meaning for the effects of the implementation and abolishment of the air passenger tax. The system dynamic model allows the accumulation of variables, such as familiarity and experience with an airport, to be observed at every moment.

Limited rationality is deliberately built in to Steverink's model so that it becomes possible to simulate what in the short-term could have been the effect of the short-lived air passenger tax. The Aeolus model in turn is used to show what the structural effects of an air passenger tax could have been in the slightly longer term (see also section 3.2). About this Significance (2007) writes: "The ACCM model<sup>42</sup> is a long-term model which does not take into account short-term responses of passengers, freight carriers and airlines. This is why it makes no sense to assess the situation for 2008 with the ACCM model if the tax is implemented as of 1 January 2008. This means we will concentrate on the situation in 2011".

The objective of a System Dynamics model (SD-model) is certainly not to give precise and quantitative estimates of effects but rather to get a sense of the developments of the effects over time and to offer insight into the most important influencing mechanisms.

That model simulates the competition between three airports: Eindhoven, Charleroi and Weeze. The airports were selected due to their comparable character: they are all regional airports offering primarily low-cost destinations for vacations or city-trips. Due to the limited coverage, the model can be use easily and calculations made relatively quickly. Because in actual fact the airports compete with more airports, the passenger volumes calculated by the model do not represent reality. The aim, however, is to show the development of the correlation in passenger volumes among the airports included in the model. The patterns that emerge provide information about effects that can cause changes in the system, such as the air passenger tax. The effect of increased media coverage can also be simulated as well, for example.

<sup>42</sup> The ACCM model is renamed in AEOLUS.

Figure 6.2 Schematic outline airport choice model. Source: Steverink 2010



The model's departure point is that there are three ways in which passengers receive information about an airport and the value of available alternatives at respective airports: through experience, word-of-mouth advertising, and marketing activities. In addition, passengers choose a departure airport based on the expected value and not based on the objective value of an alternative. The same airline companies operate at the three airports. Ticket prices depend on the aircraft's occupancy rate. The airlines respond with some delay to changing demand: more flights are added when demand rises and flights reduced when demand diminishes.

The initial values of the model's variables and the values of parameters and constants are selected to be close as possible to actual real values. Figure 6.2 provides as schematic overview of the model's design. For more details about the model we refer to Steverink (2010).

A key conclusion that we can make based on analyses with the model is that the 'awareness' of potential customers is very important and that this certainly applies to new airports (such as Weeze). It takes a long time before an airport really becomes a relevant alternative for passengers via word-ofmouth advertising. Media attention can provide an important impetus for familiarity and consequently lead to an airport rapidly gaining in popularity. However, personal experience is also important. In contrast, inhibitions and habitual behaviour are limiting factors.

Another key conclusion is that an air passenger tax, even a short-term one, can have structural effects. This is conditional on a significant media attention and a rapidly improving supply of flights. Indeed, the demand for flights departing from a certain airport increases rapidly due to the rapid increase of the 'awareness'. If as a result the supply expands, this makes the airport comparatively more attractive. Part of that effect will disappear when the airport passenger tax is abolished, but the supply will remain at a slightly higher level. As a result the structural attractiveness of the airport will be higher than would have been the case without the implementation and abolishment of the air passenger tax.

## 6.3 Policy options

The Dutch government terminated the air passenger tax on the condition that Schiphol airport reduces its costs.(Dutch Parliament Reports II 2008/2009, 29 665, nr. 139). In January 2009, Schiphol airport, as part of a reassessing of its strategy, decided to reorganize the company, which lead to staff reductions of some 25%. In addition, expenditures on insurance and security were cut as well. The initial investments planned for the main port for 2009 to 2014 were also reduced from 2.6 billion euros to 1.6 billion euros.

These cost-saving measures allowed Schiphol to keep its fees at the same level as those of its competitors or to raise them at a lower rate than that of other airports. As of the summer of 2008, Schiphol was the airport with the second highest fees after London's Heathrow. But once the air passenger tax was set at zero as of July 2009 and its fees adjusted, Schiphol ranked fifth in the benchmark: Paris Charles de Gaulle, Frankfurt and London Gatwick became more expensive than Schiphol (Zuidberg, 2009).

A positive effect on the 'return' of passengers could be expected from these relative price improvements.

The Steverink model was used to carry out various exercises aimed at determining which policy options had a strong effect on airport choice and which policy options therefore had the potential to exert influence. Steverink (2010, p. 93-101) highlights three main points:

- Changing (improving) the features of an airport.
- Improving the perception of an airport's features.
- Improving the 'awareness' of an airport.

Improving the features of an airport can involve improved land-based accessibility. Steverink's simulations show that this has a minor effect because major improvements are actually impossible in the case of Eindhoven, which was used for the model. Reducing parking fees has a much greater effect.

Improving the perception of an airport's features is primarily required when an airport is undervalued. The features could change due to certain policies, but potential customers may remain unaware of the improvements. Targeted marketing is a good means to this end. Steverink suggests that too high expectations driven by overly positive marketing can initially increase passenger volumes, but later - due to disappointment - this will actually result in less passengers. If however the supply is rapidly adapted to meet the increased demand, this can lead to increased market share.

In Steverink's study 'awareness' is at the forefront as a determining factor. A significant number of Dutch passengers have started using German airports and this is an irreversible fact. Conversely, the awareness in Germany of Dutch airports is obviously very low, also in the context of the large national supply. This is also reflected in the low passenger volumes at Eindhoven and Groningen airports.

Finally, Steverink focuses on the limitations of growth for airports. If an airport is limited in its growth, competitor airports benefit and they expand their supplies of flights. Thanks to this expanded supply, the overall awareness of a given airport increases even more, at the cost of the growth-limited airport. Removing growth limitations is thus effective for the growth of an airport's market share.

## 6.4 Germany's air passenger tax

The German government has announced a large cost-saving economic plan. Part of this 'Sparpaket' included an air passenger tax, which came into force on 1 January 2011. But already since October 2010 have airline companies include this tax in their fares for flights scheduled for 2011. The tax amounts to 8.00 euros for European flights; 25.00 euros for flights between 2,500 and 6,000 kilometres; and 45.00 euros for flights of more than 6,000 kilometres. As was also the case in the Netherlands, this ticket tax does not apply to transfer passengers and freight shipments (German Ministry of Finance, 2010).

The German state, Rheinland-Pfalz, where Frankfurt Hahn is located, commissioned SEO/DLR to conduct a study of the expected effects of Germany's "Luftverkehrsabgabe" or air passenger tax (Bester et al., 2010). The study calculated that, among other effects, the air passenger tax would reduce the number of passengers by 5 million, of which 1.8 million would opt to depart from a foreign airport. The researchers also calculated that half of the gross income of 1 billion euros would be lost as a result of higher unemployment compensations and lower taxes on profits and turnover. Job losses were estimated at 13,000.

As in the Netherlands, there is a fierce opposition within the sector to the tax. The German sector refers extensively to the Dutch experience and the
rapid abolition of the air passenger tax. The German government however will not change course and various legal proceeding have had no effect (yet). In September 2010, Germanwings' CEO, Thomas Winkelman, discussed with Maastricht-Aachen Airport (MAA) the possibilities of more flights from the airport. On 1 April 2011, Germanwings will launch two flights per working day to Berlin-Schönefeld. Germanwings will not station its aircraft at MAA; rather, its planes will arrive from Berlin (Aviation News, 2010a).

Ryanair took more extreme measures and has scrapped flights at four German airports. Frankfurt Hahn will be hit hardest, as 150 of the 532 flights per week are to be scrapped. Many destination offered at Weeze will also be cancelled. Ryanair calculated a loss of 3 million passengers, and the loss of some 3,000 jobs due to the tax (Ryanair, 2010). Table 6.1 presents an overview of the weekly flights to be scrapped by Ryanair and what the expected consequences are passenger volumes and the jobs at the airports concerned.

Ryanair cuts 2011	Route Cuts	Weekly Flgts	Traffic loss	Job cuts
Berlin	-4	-122	-900,000	- 900
Bremen	-8	-58	-400,000	- 400
Düsseldorf Weeze	-13	-84	-700,000	-700
Frankfurt Hahn	-9	-150	-1,000,000	-1,000
Total Loss (to date)	-34	-414	-3,000,000	3,000

Table 6.1 Flights scrapped by Ryanair at German airports following implementation of air passenger tax. Source: Ryanair, 2010

> KiM conducted an exploratory analysis of the effects the German air passenger tax will have on the use of Dutch airports. To achieve this, the model was expanded, as explained in section 6.2 (Steverink, 2010b). The analysis reveals that the German air passenger tax will primarily impact Dutch passengers, who will once again more often depart from Dutch airports. German passengers will not quickly switch to Dutch regional airports, according to model's findings. The reasons for this include: the distance from major German cities to Dutch airports that have a large supply of flights; the minimal price differential (8.00 euros for European flights), and unfamiliarity with Dutch (regional) airports.

In order to encourage the 'return' of Dutch passengers to the Dutch airports, Steverink suggests (2010, p. 99-100) that Dutch passengers should be sufficiently informed about the German air passenger tax. In order encourage Germans to use Dutch airports, he recommends initial efforts aimed at increasing the awareness of Dutch airports in the neighbouring German regions.

The model was not used to conduct analyses of long-haul flights; for this segment, Schiphol has a larger catchment area. Owing to the larger price differences, more German passengers could be convinced to overlook the longer distances. However, it appears that the number of German passengers is relatively low: a Schiphol survey revealed that in 2003 the total number of passengers from Belgium (108,216) and from Germany (108,013) was 216,000. This figure is less than 2% of the total number of passengers at Schiphol (some 11.2 million), according to Twynstra Gudde (2005). Gudde says "the conclusion can be drawn that passengers from Belgium and Germany play a small role for Schiphol's catchment area". Gudde continues: "The development in the number of passengers from Belgium and Germany declined by 3% from 1995 to 2003" (p. 16).

We can conclude that – compared to the total growth of 54% in passengers at Schiphol – the growth in passengers from neighbouring countries clearly lags behind.

Due to the exploratory nature of the model, two additional remarks can be added to the findings. The first is that the region around Aachen is a relatively densely populated area, for which the distance to a Dutch airport (in this case MAA) is shorter than to alternative airports, such as Düsseldorf or Cologne-Bonn. There is a thinly populated northern region of Germany, starting from Emden, for which Groningen Airport offers reasonable travel times compared to alternative German airports. Based on this it is reasonable to expect an increase in German passengers if the flight supply is expanded.

At present the supply at Maastricht Aachen Airport is too small to have a substantial impact on German passenger volumes in absolute terms. The situation is different in a relative sense, however. The current flights operated by Ryanair attract approximately 30% German passengers (40% Dutch, 28% Belgian and 2% other; source: interview with MAA). Expanding the low-cost flight supply therefore clearly attracts more German passengers. The 12 weekly flights to Berlin that Germanwings will start on 1 April 2011 are likely to soon make this clear.

The supply of destinations offered at Eindhoven is somewhat larger, but the distance from German population centres is also greater. The airport currently serves less than 1% German passengers. Eindhoven does not have a website in German and is obviously unfamiliar to many Germans. If the airport does not start marketing campaigns aimed at attracting German passengers, no significant growth in German passenger volumes is

expected.

Groningen has recently launched a website in German. Many of its vacation destinations can be booked at German travel agencies, such as Thomas Cook and Urlaubstours. The airport expects increased interest from Germany. Groningen also expects that some Dutch passengers residing on the edge of the catchment area, for example residents of Southeast-Drenthe, may opt to depart on vacations from Groningen instead from Münster/Osnabrück (FMO). German tour operators, which offer vacation destinations via FMO, could also absorb the tax in their total holiday package prices.

The second remark concerns assumptions about the lack of awareness of Dutch regional airports, which could be changed via publicity - for example, by Germanwings. This was the experience at Weeze: the huge publicity in the Netherlands increased the passenger flow to Weeze. Owing to the publicity surrounding Ryanair's moves to scrap flights and the threat to jobs at Hahn, many Germans will now hear that they 'must' depart from foreign airports. in October 2010 Transavia already started offering flights via Dutch airports based on a key argument: "Sie sparen die Luftverkehrssteuer".

# Outlook

The NBTC research projects expect a recovery and expansion of the low-cost connections starting prior to the summer of 2011. This is expected to have a positive effect on passenger volumes and tourism (NBTC-research, 2010, p. 5).

A survey of slot requests at Dutch airports reveals sharply increasing interest in opportunities to operate flights from airports in the Netherlands. At Schiphol this concerns 45,000 extra flights: some 20,000 new flights for KLM, 5,800 for easyJet and 4,700 for Spain's Vueling, which also stations aircraft at Schiphol. Eindhoven's slot-allocation list<sup>43</sup> reveals that low-cost carriers are planning many extra flights. In a letter dated 14 December 2010<sup>44</sup>, the government states that capacity at Eindhoven Airport conform to the recommendations of the Alderstafel commission, that capacity could be increased by 10,000 flights per year until 2015, and then, under certain conditions, be further increased by another 15,000 flights until 2020, with which an expansion for the limited transport possibilities would be provided.

43 http://www.slotcoordination.nl/

44 VenW/BSK-2010/215269

It remains to be seen if all the requested slots will actually be used, but, following the decreases caused by the air passenger tax, the outlook for recovery seems favourable.

# Samenvatting

De vliegbelasting heeft een duidelijk negatief effect gehad op het aantal reizigers dat vertrekt vanaf Nederlandse vliegvelden, met name vanaf Schiphol. De belangrijkste luchthavens waar reizigers naar uitweken, waren Düsseldorf, Weeze en Brussel. De vliegbelasting versterkte twee ontwikkelingen die al langer spelen: reizigers uit vooral het oosten en zuiden van Nederland vliegen steeds vaker vanaf buitenlandse luchthavens én reizigers maken steeds meer gebruik van lowcostmaatschappijen als Ryanair en easyJet. Verwacht mag worden dat niet alle uitgeweken reizigers 'terugkeren'. Dat kan echter veranderen als gevolg van de invoering van de Duitse 'tickettax' en door maatregelen van Schiphol om de kosten te verlagen.

#### Geschiedenis van de vliegbelasting

Het kabinet Balkenende IV voerde per 1 juli 2008 een vliegbelasting in als één van de instrumenten om het belastingstelsel te 'vergroenen'. Voorafgaand aan de invoering was de inschatting dat het aantal reizigers op Schiphol door de vliegbelasting met 8 à 10 procent zou dalen. Dat werd aanvaardbaar geacht in het licht van de op dat moment verwachte voortgaande groei van de luchtvaart. Na invoering van de vliegbelasting daalde het aantal reizigers op Schiphol inderdaad en deze daling nam daarna snel toe door de economische crisis. De luchtvaartsector en de toeristische sector verhevigden hun protesten tegen de belasting door deze samenloop van omstandigheden. Het kabinet reageerde hierop door in het Crisis- en herstelpakket de vliegbelasting eerst per 1 juli 2009 op nul te zetten en per 1 januari 2010 onder voorwaarden af te schaffen.

#### Aanleiding voor het onderzoek

Na het op nul zetten van de vliegbelasting namen de passagiersaantallen op Schiphol niet weer meteen toe tot het niveau van vóór de vliegbelasting. Voor een deel was dat het gevolg van de economische crisis. Maar de vraag is of de vliegbelasting er toe heeft geleid dat Nederlanders blijvend meer gebruik zijn gaan maken van buitenlandse luchthavens. Dit rapport analyseert de gevolgen van de invoering en afschaffing van de vliegbelasting. Enerzijds gaat het om het effect dat de vliegbelasting heeft gehad op de vraag naar vliegreizen vanaf Nederlandse luchthavens. Anderzijds gaat het om de mate waarin reizigers zijn uitgeweken naar buitenlandse luchthavens en of daarin een structurele component zit. Daarnaast schetst het rapport de context waarbinnen de ontwikkelingen plaatsvonden. Ook geeft het rapport aan wat belangrijke mechanismen zijn die de ontwikkelingen kunnen verklaren. Ten slotte gaat het rapport in op mogelijkheden om de luchthavenkeuze van passagiers te beïnvloeden ten gunste van Nederlandse luchthavens. Daarbij worden ook de mogelijke effecten meegenomen van de invoering van de Duitse vliegbelasting per 1 januari 2011.

#### Luchthavenkeuzegedrag

Er zijn veel factoren die een rol spelen bij de keuze voor een luchthaven. Gemiddeld genomen zijn de drie belangrijkste: tijd gemoeid met voortransport, vluchtaanbod/ frequentie en ticketprijs. Daarnaast spelen ook de kosten van voortransport (waaronder autoparkeerkosten), vluchttype (direct of indirect) en vluchtduur een rol. Het belang van deze factoren verschilt per persoon en per reis. Met behulp van keuzemodellen kan men schatten wat op de middellange termijn het effect van een structurele vliegbelasting zou zijn. De vliegbelasting duurde echter maar een jaar en daardoor was het effect mogelijk lager dan van tevoren ingeschat.

Ook minder rationele factoren spelen een rol bij de keuze voor een luchthaven, zoals gewoontegedrag, onbekendheid met alternatieven, risicomijdend gedrag en het niet gebruik maken van alle beschikbare informatie over alternatieven.

Naast het luchthavenkeuzegedrag van reizigers is ook het strategisch gedrag van luchtvaartmaatschappijen van belang. Zij kunnen vluchten schrappen uit angst voor onderbezetting en daarmee het aanbod beïnvloeden.

#### Daling aantal reizigers op Nederlandse luchthavens

Direct na de invoering van de vliegbelasting in juli 2008 daalde het aantal vanaf Schiphol vertrekkende reizigers, terwijl het aantal transferreizigers (waarvoor de belasting niet gold) bleef groeien. Ondanks deze duidelijke aanwijzing voor een effect van de vliegbelasting kan het verlies aan passagiers in de periode tussen 1 juli 2008 en 1 juli 2009 niet in zijn geheel aan de vliegbelasting worden toegeschreven. De economische crisis is ook een belangrijke verklaring van dit verlies. Daarnaast zijn er allerlei ontwikkelingen in de luchtvaart zelf die een rol spelen. Zo heeft Schiphol al langer te maken met de trend dat reizigers uit met name het oosten en zuiden van Nederland vaker gebruik maken van luchthavens in Duitsland en België. Een tweede trend die speelt is de opkomst van lowcostmaatschappijen, waarvan Ryanair de grootste is. Deze maatschappij opereert onder meer vanaf regionale vliegvelden zoals Charleroi in België en Weeze in Duitsland. Als we naar de Nederlandse regionale vliegvelden kijken, dan zien we dat de vliegbelasting weinig effect had op het vluchtaanbod van Groningen en Rotterdam vanwege hun ligging. Op het vliegveld Eindhoven remde de belasting de groei alleen af. Het dicht tegen België en Duitsland gelegen Maastricht verloor een flink deel van zijn vluchten.

#### Voorzichtige schatting effect vliegbelasting

Het effect van de vliegbelasting is moeilijk te bepalen, omdat het voor een groot deel samenvalt met de economische crisis en verder beïnvloed wordt door allerlei andere trends en ontwikkelingen. Een voorzichtige schatting van het effect van de vliegbelasting, komt voor de periode dat de belasting gold uit op een daling van iets minder dan twee miljoen reizigers op Schiphol. Na het op nul zetten van de vliegbelasting bleven de passagiersaantallen de rest van het zomerseizoen 2009 nog een kleine miljoen achter.

Het Kennisinstituut voor Mobiliteitsbeleid (KiM) heeft een luchthavenkeuze-enquête gehouden onder 3000 personen. Een vijfde van de ondervraagden geeft aan niet te weten dat er een vliegbelasting is geweest. Veertien procent geeft aan dat de belasting hun keuze heeft beïnvloed. De helft daarvan zegt van een vliegreis te hebben afgezien of met de auto of trein te zijn gegaan. De andere helft zegt naar een buitenlandse luchthaven te zijn uitgeweken. Düsseldorf, Weeze en Brussel zijn de buitenlandse luchthavens die daarvoor het meest gekozen zijn.

Deze bevindingen zijn in lijn met informatie van buitenlandse luchthavens en informatie uit reserveringssystemen over het aantal Nederlandse passagiers dat vanaf buitenlandse luchthavens vliegt. Op Düsseldorf blijkt het aantal Nederlanders al sinds 2001 toe te nemen. In 2008 was de stijging echter groter dan in de jaren daarvoor. Brussel laat een vergelijkbare tendens zien. Op de luchthaven van Weeze verdrievoudigde het aantal passagiers in twee jaar tijd en steeg het aandeel Nederlandse passagiers tijdens de vliegbelastingperiode naar ruim vijftig procent. Het totale aantal passagiers dat is uitgeweken naar buitenlandse luchthavens raamt het KiM in deze periode op circa één miljoen passagiers.

# Publiciteit belangrijk

Verschillende geïnterviewden van luchtvaartmaatschappijen, luchthavens en overige organisaties in de luchtvaart- en toeristische sector wijzen erop dat de vele publiciteit voorafgaand aan de invoering van de belasting een belangrijke reden lijkt te zijn voor het uitwijken naar buitenlandse luchthavens.

#### Deel passagiers komt niet meteen en niet vanzelf terug

Het is moeilijk om statistisch vast te stellen of Nederlandse passagiers wel of niet 'terugkeren'. De afschaffing van de vliegbelasting is daarvoor nog te kort geleden. Ook vertroebelen tal van ontwikkelingen binnen en buiten de luchtvaart het beeld. Niettemin is het aannemelijk dat passagiers na de vliegbelasting relatief vaker van een buitenlandse luchthaven gebruik blijven maken. Er was al een tendens dat Nederlanders steeds vaker vanaf buitenlandse luchthavens vliegen en door de vliegbelasting zijn ook andere luchtreizigers het aanbod in het buitenland gaan ontdekken. Indien dit goed bevalt, zullen ze daarvan gebruik blijven maken. Het aanbod van vluchten is met name op de Duitse luchthavens Weeze en Düsseldorf vergroot. Deze blijvende grotere aantrekkelijkheid vergeleken met de situatie van voor de vliegbelasting, verandert het keuzepatroon. Daardoor kan de trendmatige ontwikkeling waarvan al sprake was, door de vliegbelasting zijn versneld. 'Terugkeer' van reizigers naar Nederlandse luchthavens kan worden gestimuleerd door verbetering van het vluchtaanbod, lagere kosten en een verbeterde bereikbaarheid van Nederlandse luchthavens. Gerichte publiciteit kan de bekendheid met dit (verbeterde) aanbod bij de doelgroep vergroten.

#### Duitse vliegbelasting biedt kansen voor Nederlandse luchthavens

Per 1 januari 2011 is in Duitsland een vliegbelasting van kracht. De effecten van de Duitse belasting zullen naar verwachting lijken op die van de Nederlandse belasting, maar er zijn ook duidelijke verschillen. Het onderzoek laat zien dat het voor Nederlandse luchthavens betekent dat Nederlandse passagiers weer vaker vanaf Nederlandse luchthavens vertrekken, maar niet dat er veel Duitse passagiers bijkomen. Dit heeft te maken met de afstand tussen Duitse bevolkingscentra en Nederlandse luchthavens, het geringere prijsverschil en – in het geval van de regionale luchthavens – wellicht ook met onbekendheid. Een uitzondering hierop is mogelijk Maastricht. Deze luchthaven ligt dicht bij de Duitse grens. Germanwings gaat per 1 april 2011 dagelijks twee keer vanuit Berlijn op Maastricht Aachen Airport vliegen.

Verschillende partijen anticiperen op de invoering van de belasting. Er is behoorlijk wat publiciteit rond de maatregel in de Duitse pers. De belasting wordt door sommige maatschappijen al vanaf oktober 2010 in rekening gebracht voor vluchten in januari 2011 en dat heeft een effect op de 'awareness' van alternatieven in het buitenland. Transavia adverteert al sinds oktober 2010 op Duitse vakantiewebsites voor vluchten vanuit Nederland zonder 'Luftverkehrsteuer'.

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# Appendix A: Organisations interviewed

Various organizations in the aviation sector<sup>45</sup> were asked to share their views on the effects of the air passenger tax and to indicate the extent to which they were able to anticipate and/or react to the tax. The following organisations were interviewed or provided written information.

#### **Airports**

- Schiphol
- Eindhoven
- Maastricht
- Groningen
- Bremen
- Düsseldorf
- Cologne/Bonn
- Münster/Osnabrück
- Weeze/Niederrhein
- Brussels (Zaventem)
- Antwerp
- Liège
- Ostend

# **Airline companies**

- KLM
- Air Berlin
- GermanWings
- Brussels Airlines
- Cityjet/VLM
- Thomas Cook Airlines

# **Other stakeholders**

- Alltours
- REWE Touristik
- Knoben Reisen
- Jetair (tour operator)
- Thomas Cook

<sup>45</sup> And other stakeholders affected by the tax, such as tour operators and travel agencies.

# Colophon

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### **Effects of the Air Passenger Tax**

An air passenger tax was in effect in the Netherlands from 1 July 2008 to 1 July 2009. What were the effects of this measure? Did some people consequently cancel their travel plans or instead choose to depart from airports in neighbouring countries? When the tax was abolished, did these passengers return or have Dutch airports suffered a structural loss? And moreover what are the effects of the air passenger tax that Germany implemented on 1 January 2011?

This study conducted by the KiM Netherlands Institute for Transport Policy Analysis provides answers to these and other questions. The study moreover contributes insights into the functioning of the aviation system, the choice behaviour of passengers, and the subsequent reactions of airlines and airports to implementation of the air passenger tax.

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