



WORKING PAPER

ITLS-WP-11-16

**The importance of completeness
and clarity in air transport
contracts in remote regions in
Europe and Australia.**

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August 2011

ISSN 1832-570X

**INSTITUTE of TRANSPORT and
LOGISTICS STUDIES**

The Australian Key Centre in
Transport and Logistics Management

The University of Sydney

Established under the Australian Research Council's Key Centre Program.

NUMBER: Working Paper ITLS-WP-11-16

TITLE: **The importance of completeness and clarity in air transport contracts in remote regions in Europe and Australia.**

ABSTRACT: As a result of the recent financial crisis and in times of government austerity, clear contracts are of immense importance to transport authorities in order to achieve value for money when procuring air transport services. Good contracts can support them in stretching budgets as far as possible whilst ensuring that good quality, and at least minimum service level requirements, are delivered. Moreover, incomplete and unclear contracts can also have very detrimental impacts on the financial performance of regional airlines. If a contract is unclear it is likely to create uncertainty, and in the worst case, result in a lack of interest from any airline when tendered out. Weakly drafted contracts can also result in disputes and high transaction costs. This paper compares the current experience of PSO carriers in Europe and Australia. We use an internet survey to reveal what features of the contract airlines experienced *ex ante* with regard to contract clarity and then *ex post* regarding the completeness of their transport contracts. Our results show differences across carriers that go beyond differences associated with geographic region. We also find common themes for contracting PSO services, for example the importance of trust and good relationships between transport authorities and operators.

KEY WORDS: *Aviation in remote regions; public service obligations; contracts; transaction costs.*

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Acknowledgement: The authors gratefully acknowledge the support of the many airline managers who have participated in our study. The financial support of the University of Sydney Business School fellowship that enabled the first author to spend 2 months at ITLS Sydney in 2011 is also greatly appreciated.

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DATE: August 2011

1. Introduction

Passenger transport services are often regarded as public goods in areas where they are not commercially viable resulting in public interest in providing or subsidising these services. If ministries, public transport or regional authorities procure such transport services (as opposed to producing them internally), a contractual relationship between a principal (transport authority) and agent (operator) exists. Depending on the set up, these contracts can differ substantially in their clarity and completeness. For example, rail franchise contracts in Britain have been found to be very pre-specified (indicating completeness at least from the transport authorities perspective), thus leaving little room for train operators to become more efficient and provide better quality at lower prices through innovation (Merkert, 2010). However, that contract completeness may also result in lower transaction costs (which for other reasons has not happened in the UK rail market). The other dimension of contracts to impact on transaction costs is contract clarity. Hensher (2010) has shown, for a sample of bus operators that their contracts were neither overly clear nor complete, but the interesting finding of this study is that the problems normally created by incompleteness and little contract clarity could be overcome by trust and good relationships between the bus operators and the relevant transport authorities. Good relationships/trust can help reducing the costs/need of having to have and, perhaps more importantly, having to use/apply complete/clear contracts. We believe that there are trade-offs between innovation and completeness of contracts, but also between contract drafting cost (including legal cost) on the one hand and negotiation, as well amendment cost on the other hand.

Whilst there is evidence from bus and train operations on the effects of complexity/clarity and completeness of contracts, there is no literature that analyses these issues in the context of air service contracts. This is interesting given that the specification of contracts plays a vital role in securing adequate (or pre-specified) levels of air services to remote and economically underdeveloped regions, particular in Australia and Europe. Merkert and Williams (2010) have revealed that there are not only substantial differences in the interpretation and use of public service obligation (PSO) air service contracts in Europe but that specific contract details such as contract duration have a significant impact on the carriers' efficiency. Having these results and the complexity of some European PSO contracts in mind, we carried out an interview series with senior managers of Australian carriers and transport authorities. The results of these interviews suggested that Australian air transport contracts are fairly simple. This paper is an international comparison (with a focus on Australia and Europe) of the perception of the *ex ante* and *ex post* perception of these contracts, with particular emphasis on some detailed contract attributes.

The paper is structured as follows: Section 2 will briefly present the current practice of providing public air transport services in Australia and Europe. Section 3 details the theoretical framework, whilst section 4 presents the methodology and data used in this paper. The results are discussed in section 5, and section 6 offers some conclusions.

2. Air transport to remote regions in Australia and Europe

2.1 Australia

In Australia there are numerous communities with a population ranging from six people to approximately 200 people, and that population may be even lower depending on the season. Unsurprisingly, air services to these regions can be hardly provided on a commercial basis, and yet, they are important to the social inclusion and development of that community. This is why the public supports aviation in these areas under the umbrella of the Australian Government's Regional Aviation Access Program (RAAP). Since July 2010 the key four components of that

The importance of completeness and clarity in air transport contracts in remote regions in Europe and Australia

Merkert & Hensher

program are the Remote Aerodrome Inspection Program (RAI), the Remote Aerodrome Safety Scheme (RASP), the Remote Aviation Infrastructure Fund (RAIF), and the Remote Air Service Subsidy Scheme (RASS). In addition there is (until July 2012) the Airservices Australia Enroute Charges Payment Scheme, which provides substantial subsidies to regional airlines operating regular public air services and aeromedical services with aircraft of less than 15 tonnes (i.e., the Royal Flying Doctor Service) through a reimbursement of the en route air traffic control charges. In four territories/states the regional intra-state aviation is administered by the state government and although no subsidies are paid, commercial intra-state routes in these states are licensed and hence protected from competition for a fixed term. Intra-state services in all other states and, even more important, all inter-state services are fully deregulated. In this paper we focus on the RASS scheme as it is the only one where there is a contractual governance structure between the airlines and the transport authorities that is similar to a PSO. The RASS contracts govern scheduled weekly air transport services to 252 remote communities in Australia throughout Western Australia, Northern Territory, Queensland, South Australia and Tasmania. The RASS scheme covers 10 geographical regions in Australia and in 2011 a total of 5 operators were contracted by the Australian Government (see Table 1).

Table 1: RASS regions and operators in Australia

Region number	Region name	Air Operator
1	Pilbara	Golden Eagle Airlines
2	Kimberley	Slingair
3	Channel Country	West Wing Aviation
4	Cape Barren Island	Airlines of Tasmania
5	Cape York	West Wing Aviation
6	Gulf Country	West Wing Aviation
7	North of Tennant Creek	Chartair
8	South of Tennant Creek	Chartair
9	Desert Country	Chartair
10	Anangu Pitjanjatjara Yankunytjatjara	Chartair

Source: Australian Government, Department of Infrastructure and Transport (2011).

Because of the long distances involved, and since road access to many communities is often severely disrupted or even cut for a number of months during the wet season, a regular air service is essential for these communities. Although air services are often the only reliable means of transport, due to the small size of the relevant communities their provision is not commercially viable. The RASS scheme provides the selected carriers, therefore, not only with a fixed-term (natural) monopoly in their region, but also with direct subsidies from the Australian Government. The RASS contracts specify the provision of both passengers and cargo (such as fresh food, or other urgent supplies) to these regions, and although mail is also carried on these flights, the latter is governed under a separate contract with Australia Post. As there are only five operators across the 10 regions, two of them operate RASS air services in more than one region. Although there is no competition *in* the market, there is in principle competition *for* the market; operators are selected through an open tender process in accordance with the Commonwealth Procurement Guidelines. Our interview results indicate, however, that the form of competition is very limited. Due to the very long distances in Australia, there are often a very small number of bidders, and it is usually the local airline (incumbent) that is selected for the RASS contract.

2.2 *Europe*

Although the European common market is often seen as fully deregulated, subsidised PSO air contracts are used in many European countries as important means to secure appropriate service levels in public transport to peripheral regions (such as the Orkney Islands in Scotland). National governments in Europe may impose PSOs on routes to remoter regions, if they conclude that air services are vital for the economic and/or social development of these regions, and that without subsidies and/or regulatory measures to protect them, no scheduled air services to these regions could be maintained. Although the member states must respect the conditions and requirements set out in Article 16 of the Air Services Regulation 1008/2008, the interpretation of “air service adequacy” depends on the judgement of the national or local government, or indeed the public transport authority imposing the PSO. As a consequence (but also due to significant geographical differences), there is substantial heterogeneity of aircraft types, stage lengths, frequencies etc., and an imbalance between different regions across Europe in terms of the interpretation and provision of PSO operations (e.g., Williams and Pagliari, 2004; O’Fee and Merkert, 2011). For example, in Northern Europe (Finland, Sweden, Norway, Scotland) PSO operators use rather small aircraft to provide the vital air services to the remoter communities in these regions. In contrast in France, many PSO routes are served by large aircraft such as the A320 or even Boeing 777-300ER, because these routes have high traffic in the summer months. PSO services on these routes have therefore been subject to much debate. Some argue that they might be economically not desirable but in some cases rather a product of market protectionism and government intervention (e.g., Bahuand, 2010; Merkert, 2011). Others, however, stress the social and economic advantages of these services to the airports and regions in question (e.g., Gordijn and van de Coevering, 2006).

Ten Member States (Finland, France, Germany, Greece, Ireland, Italy, Portugal, Spain, Sweden and the UK) and two European Economic Area countries (Iceland and Norway) currently impose PSOs, with France and Norway accounting for around one half of these. Interestingly, the number of PSO routes in Europe has substantially increased over the last decade. While in 1997 there were 64 PSO routes in operation, in December 2010 more than 250 routes were listed in the EC PSO inventory table. This increase of PSO traffic, but also the difficult financial situation of many transport departments (e.g., the Irish Government announced in December 2010 a cut of EUR5.5m in support for regional air services from mid-2011), resulted in an increased importance of PSO services to policy makers, regulators, transport authorities and people associated with the aviation and tourism industries.

As a result there is substantial research interest concerning best practices in procuring/contracting such air transport services. The few existing empirical studies have, however, focused on case studies or individual member states, such as Cabrera et al. (2011) who found that subsidies paid to Spanish PSO operators result in market distortions, or Calzada and Fageday (2009) who have shown that Spanish PSO routes which benefit from price discounts given to island residents, exhibit higher prices but similar frequencies than the rest of the routes. The only cross-country study on the efficiency and practice of European PSO air operators revealed that, as with Australia, there is little competition and almost no cross-border competition for the PSO contracts during the mandatory tendering process (see Merkert and Williams, 2010). What this study has also shown is that inefficiencies of PSO operators are not only a result of the geographical differences and different interpretation of the PSO mechanism, but also of specific contract attributes. It suggests that operators that are in an early stage of their contracts are more efficient than those that are close to the renewal/re-tendering of their contracts. Also operators with a large number of PSO contracts have been shown to be more efficient than those with only a few contracts. What this suggests is that learning effects could have helped operators with a large number of contracts. As most of the analysed contracts were re-rewarded to the incumbent airline it is, however, difficult to conclude whether learning effects, trust, or indeed clarity and completeness of these contracts had an impact on the operators’ (in)efficiency. In fact, so far there is very little known about the clarity and completeness of such contracts, which is surprising given the importance and potential of such

governance structures in improving the cost effectiveness and quality of the air services in question.

3. The theoretical framework and our methodology

As a result of the recent global financial crisis and in times of government austerity, clear contracts are of immense importance to both transport departments and air operators. In the provision of air transport services, many types of contracts exist. Some are very clear and complete; others are very diffuse and (often on purpose) incomplete. PSO contracts of air services to remote regions are often incomplete in the sense of their inability to verify all the relevant obligations (to achieve welfare maximisation) and to account for all external factors that may have an impact on the provision of the services (e.g., severe weather conditions). A PSO is a form of service of general interest in which a state or public transport authority can subsidize an air connection for social or economical reasons. PSO contracts can, if they are well drafted, help transport authorities to achieve value for money when procuring air transport services. Good contracts can support them in stretching budgets as far as possible, and in making sure that good quality and at least minimum service level requirements are delivered. In addition, incomplete and unclear contracts can also have very detrimental impacts on the financial performance of regional airlines. If a contract is unclear, it is very likely to create uncertainty, and in the worst case, result in a lack of interest from any airline when tendered out. Contrary, too pre-specified contracts can also weaken the interest of airlines in bidding, and can also suppress any form of innovation in the provision of the service.

Weakly drafted contracts can also result in disputes and a hence high level of transaction costs. In line with Coase (1960) and Merkert et al. (2011), we consider all costs associated with preparing, negotiating, utilising, enforcing and monitoring of air service contracts to be transaction costs. In our understanding transaction costs also include opportunity costs and welfare losses but neither production nor transportation costs. Whilst contractual incompleteness can be seen as the result of the transacting parties' willingness to save transaction costs, and we argue that later negotiation could also result in similar if not higher transaction costs. We suggest, even further, that attempts to burden the contract with complexity, instead of recognising boundaries for an incomplete contract that allow for negotiation, may often not be a preferred strategy. Hensher et al. (2010) suggest that incompleteness and negotiation give both parties the opportunity to propose changes (or variations) that move towards efficient and effective delivery, in contrast to overly complex contracts leading to ambiguity in translation, and operators focusing on such compliance with a diminished interest in exercising a commitment to continuous improvement in the service (through risk sharing outside of the contract).

In terms of a theoretical framework, New Institutional Theory and in particular its two streams of transaction cost economics and agency theory can assist in addressing the questions related to completeness and clarity of contracts. Williamson's (1985, 2002) transaction cost economics suggest that transaction cost will be high if the chosen or imposed safeguarding governance structure is not aligned with the transactions, which differ in their attributes. The main hypothesis of his "organizational failures framework" is that problems of small-numbers exchange relationships, an unsatisfying trading atmosphere (lack of trust and partnerships), high asset specificity, complex environments, frequent exchanges, and uncertainty, push firms to internalise (vertically integrate) stages of the production process. Because of their strong incentives, spot markets are initially seen as the most efficient. Depending on the transaction attributes, hybrid modes of governance like franchises or long-term contracts become more efficient (Menard, 2004). Continuing this argument, Williamson (1998, 2010) focuses on three dimensions of transaction attributes: uncertainty (including complexity), frequency and asset specificity. Asset specificity is seen as most important as transactions that are supported by investments in transaction specific assets will, as a result of incompleteness, experience weak coordination and hence inefficient results (Williamson, 2010).

Since competition in remoter air service provision is economically sensible and politically desired, internal production by transport authorities is not an option. However, because of the reportedly high asset specificity of some aircraft (e.g., in the north of Norway aircraft need specific equipment to navigate through snow storms), and the uncertainty around remote air service provision, spot markets are also no alternative. Hence, contracts are the norm and most sensible governance structure for the provision of this type of public transport.

Given our focus on contracts, the concept of bounded rationality is of particular importance, as its key hypothesis is that contracts are never complete. Although some find motivational issues for this rationality (e.g., Selten, 1990), Williamson (2010, p.219) concludes that stakeholders “are neither hyperrational nor irrational but are attempting effectively to cope with complex contracts that are incomplete”. The contract is seen as a framework, an incomplete and often not very accurate indication of the relationship in question, which should occasionally function as a guide in cases where there is doubt, or where disputes make relying on the more formal contractual relationship (supported by courts) beyond the informal partnership (that may have ceased at that point) necessary. Whilst this stream of literature is concerned with contracts being incomplete, contracts can also be a means to pre-specify transport services, which can eventually result in loss of innovation, weakened service quality/efficiency (as the authority claims to know the market better than the operators), and higher transaction costs (because of re-negotiation and information asymmetries).

Information asymmetries point to agency theory, the second relevant stream of literature within new institutional economics (e.g., Alchian and Demsetz, 1972; Eisenhardt, 1989). Whenever a principal (in our case a transport authority) procures services from an agent (air operator), they enter a contractual relationship. Since in most circumstances the principal and the agent will be unable to verify all relevant variables (Saussier, 2000), and because of problems arising from information asymmetries (such as moral hazard), the incompleteness will lead to inefficient market results. If the operators can foresee the incompleteness, and if they are additionally confronted with unclear contract clauses, they will eventually either try to play uncooperatively *ex post* signing the contract, or they will bid less for the contract compared to a situation where everything is clearly and comprehensively specified. The literature around this theory focuses on different ways that contracts incentivise operators and means to assign property rights to resolve the issues that arise when contracts are incomplete (e.g., Hart and Moore, 1990).

Unclear and incomplete contracts result not only in higher market prices and less service quantity/quality, but first and foremost in higher levels of (transaction) cost. However, it has been shown that transaction costs change over time. This can be on the one hand, the result of learning effects (e.g., Vanneste and Puranam, 2010), and on the other hand it is possible that over time, growing trust and relationships assist in reducing the reliance on contracts, and hence reduce the level of uncertainty and transaction costs (e.g., Hensher and Stanley, 2008; Stanley and van de Velde, 2008). In sum, there appear to be multiple trade-offs associated with contract clarity and completeness. There is, however, evidence from other industries that the effects of weekly drafted contracts can be overcompensated by trust and relationships, which should, all other things equal, grow over time. The interesting questions would be then, what are the problematic contract attributes in the provision of remote air services, whether they differ regionally, whether the *ex ante* perceived clarity of these attributes differs from the *ex post* perceived successfulness of these contracts, and whether there is indeed growing trust between the contracting parties.

4. Empirical application and sample

As shown by Merkert and Williams (2010), the European PSO air operators differ in their performance, and we believe that one of the reasons for that may be incompleteness and a lack of clarity of the relevant PSO contracts. We argue further that many of the recent unsuccessful tenders (according to the European Commission, in late 2009 for more than 60 out of 257 PSO

routes no airline had put a bid in) could have been more successful if the contracts were better drafted. This could apply to certain contractual elements (such as incentive schemes or protection against endogenous risks), but also to the entire contract.

In his study on recent experiences in contract negotiation and subsequent commitment in the bus sector, Hensher (2010) identified a number of elements in the contracting regime of bus operations that differed in their perceived completeness and clarity. For example, one of the contract details that had a perceived high clarity was “payment procedures” and amongst those with rather poor clarity was “incentives to improve performance and grow patronage”.

In this paper we apply Hensher’s (2010) methodological approach to the remote air transport context in order to reveal key contract elements that matter in terms of contract clarity and completeness. Since the Australian contracts appear to be relatively simple compared to their European counterparts, we also analyse whether that has an impact on clarity and completeness. In addition to the *ex ante*- *ex post* divide of contract perception, we also analyse the change of levels of negotiating activity and trust over time.

An internet-based survey and a series of post-survey interviews were conducted between February 2011 and June 2011 to obtain a sample of air contracts throughout Australia and Europe. The sample was constructed from various sources, with a requirement that contracts have been active for at least two years (also contracts that were younger but were essentially only re-tendered to the same airline qualified). Different to Hensher (2010), we did not invite consultants, lawyers, trade associations or other stakeholders, but only airline managers to participate. After a review of the existing routes and operators in Australia and Europe (e.g., by studying the EC PSO route inventory), and a number of pre-survey interviews, we invited all existing relevant airlines to respond to our survey. Obtaining participation in the survey was a very time consuming activity, with many operators showing little interest (e.g., an invitation to participate posted through the European Airlines Association newsletter resulted in zero responses), until a number of follow up personalised phone calls, social network and email contacts, were undertaken. The survey was piloted both in Australia and Europe to ensure Hensher’s (2010) questions were clear and relevant to the aviation sector (after minor modifications such as replacing bus with aviation terminology (e.g., bus depot = hangar)).

In order to quantify the ‘residual rights’ and obligations, we developed a rating scale (1-100) and a five-level likert scale in which we can identify (i) the extent to which the contract is clear about operator obligations and, (ii) the extent to which airlines’ believe they have been successful in meeting their obligations (in the sense of completeness in delivery) under the contract. We are particularly interested in the *ex ante* and *ex post* situations of PSO air operators in terms of expectations and perceptions of contract completeness as well as clarity in terms of the obligations of both parties (namely the government and the airline). This information was identified through two sets of questions. The first set is given below (as questions S1_1 and S1_2) on a continuous scale:

S1_1 Prior to you signing your current contracts, how did you perceive the contracts in terms of their (i) completeness and (ii) clarity with respect to what you were being asked to do as a service provider (on a scale of 1 (very incomplete/unclear) to 100 (totally complete/clear))?

S1_2 Since signing your current contracts, how do you now perceive the contracts in terms of their (i) completeness and (ii) clarity with respect to what you are being asked to do as a service provider (on a scale of 1 (very incomplete/unclear) to 100 (totally complete/clear))?

The second question is defined on an ordered metric response scale:

S2 For each of the following 25 issues, please answer the following two questions with respect to the most recent current contract that is at least 2 years old (if you have also operated the service before renegotiation or re-tendering also this time counts):

(A) How clear is the contract about the obligations of the operator with respect to the issue? (CL...) 1=Very unclear; 2=Not overly clear; 3=Clear; 4=Very clear; 5=Cannot say

(B) In your opinion, how successful (in terms of its completeness) has the air transport operation been under the contract in addressing (or resolving) the issue? (SU...)

1=Unsuccessful; 2=Somewhat successful; 3=Fairly Successful; 4=Very successful; 5=Cannot say

Issues:

1. On-time running performance standards (..Ontime)
2. Compliance requirements in periodical performance reporting (..Compli)
3. Maintenance of accreditation currency (..AccCur)
4. Monitoring and auditing of the airline business's performance (..Audit)
5. Agreements and obligations in respect of rights of operators in adjacent locations in joint service provision (integrated networks) (..Joint)
6. The formulae used by government in funding your services (..Funds)
7. The principles used in establishing the margin (i.e. ROI, profits) (..Margin)
8. Obligations under a safety management system (..Safety)
9. Obligations regarding aircraft maintenance with contract (..Mainte)
10. Incentives to improve performance and grow patronage (..Growth)
11. Procedures in place to respond to complaints (..Compla)
12. Obligations/expectations in respect of review of network service levels (..Review)
13. Payment procedures (..Paymen)
14. Purchasing of assets (..Purcha)
15. Change events (..Change)
16. Service planning (..Planin)
17. Contract end procedures (..ConEnd)
18. Reporting requirements (..Report)
19. Adherence to contract matrix (..Adhere)
20. Contract renewal procedures (Renew)
21. Ad hoc claims (..AdHoc)
22. Additional kilometres and related services approval (..Addkm)
23. Refurbishment of aircraft (..Refurb)
24. Hangar upgrades and expansion (..Depot)
25. Overall, the contract is (..Overal).

In terms of the sample, 59 airline managers (many of them being top level management and owners, as we contacted always the CEO/MD level first) responded to our invitation to participate, but not all of them completed the survey. As shown in table 2, in total we received complete/valid responses from 21 airlines of which three were from Australia and 18 from Europe (in all of our figures that show individual operators results, the first three bars are those of Australian airlines). The total number of active contracts operated by these airlines was 58 (note that some contracts cover multiple routes). Although our sample does not cover all potential airlines, it covers more than we hoped for, and most importantly all countries that

procure PSO services. Among the airlines that declined to respond were many French airlines, such as Air France, as well as two very large airlines, namely Czech Airlines and Ryanair (not unexpected as they only operated one PSO contract which accounted for not even one per cent of their total traffic). Also, a few smaller airlines declined to complete the survey, mainly because they did not want any commercial sensitive information about their PSO services in the public domain (e.g., Manx2 which is an UK operator that just had a fatal aircraft accident). We invited all potential airlines to respond to the survey and as our sample covers all countries that operate PSO services, we have no reason to suppose there is any systematic bias in the sample selection or sample composition. The sample size is also in line with other empirical studies of firms and contracts (e.g., Saussier (2000) analysed 29 contracts and Hensher (2010) had 18 observations).

Table 2: Sample of countries/airlines

<i>Country</i>	<i>Operators</i>	<i>Contracts</i>
Australia	3	5
Denmark	1	4
Finland	2	2
France	1	2
Germany	1	2
Greece	2	4*
Ireland	1	5
Italy	1	3
Norway	3	13
Portugal	2	3
Spain	1	2
Sweden	1	9
UK (England & Scotland)	2	4
Total	21	58

*Note that particularly in Greece one single contract covers many routes, as the contract is amended as soon as another route is won by the operator.

As discussed in the previous section, there is a substantial heterogeneity across PSO air service operators, which is confirmed by a more detailed analysis of our sample. Although a number of airlines in our sample had just one PSO contract, a closer look at Table 2 reveals that there is still a large degree of variation in the number of active contracts per carrier (ranging from 1 to 9). The contracts have been signed or renewed as early as 2004 and as recently as 2009, with renewal dates ranging from 2011 to 2014. As shown in Figure 1, the contracts have, on average (per operator), a duration between one and five years, which again indicates substantial variation across the sample. Australian contracts are, on average, slightly longer than the European ones.

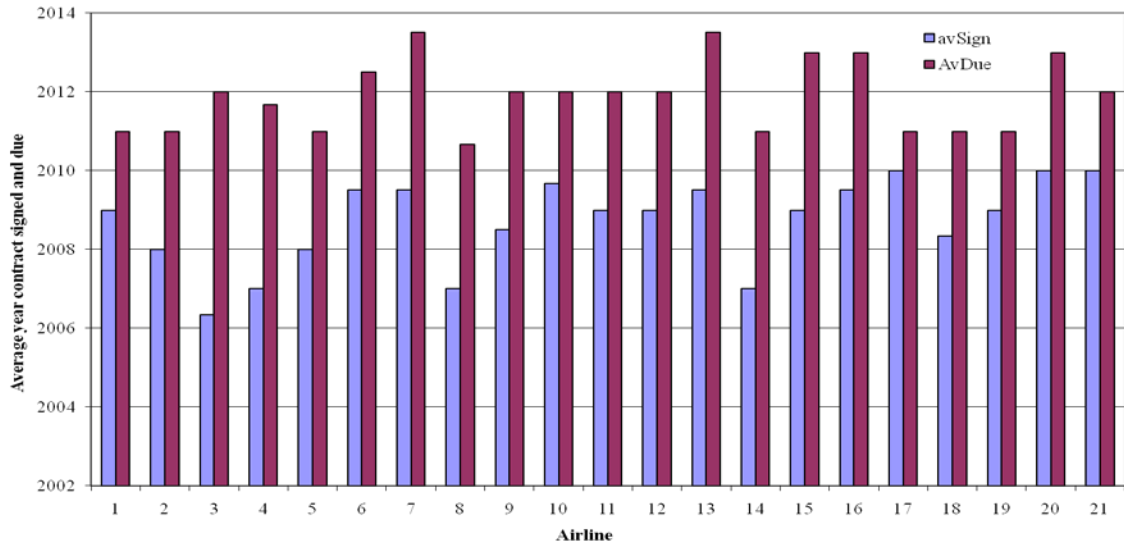


Figure 1: Year contracts are signed and due for renewal

The degree of heterogeneity becomes even clearer when looking at different indicators of the size of the analysed airlines. Not only is the number of total staff very different across the airlines (ranging from 15 to 1800 FTE), the number of aircraft that serve the current PSO contracts also varies considerably. Although the majority of airlines only use very few aircraft on their PSO routes, the range of one to 20 aircraft is still significant.

5. Results

Despite the heterogeneity in the sample (in terms of regions, size of airline and use of PSO contracts), we were able to observe interesting patterns in the results of our survey. First, the time operators that spent on contract negotiation interaction with the relevant transport authority reduces over time, which indicates that the level of transaction costs decreases over the life of the contracts, as seen in Figure 2.

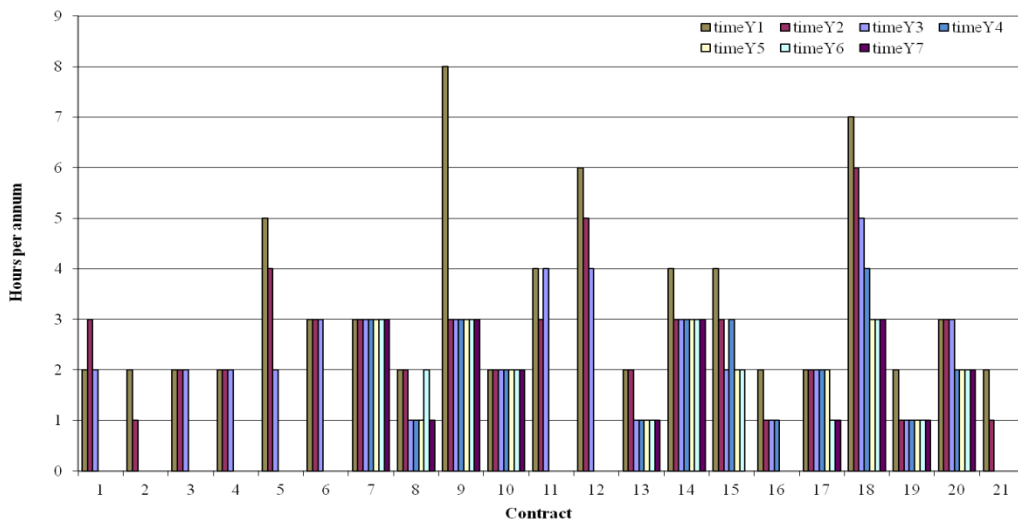


Figure 2: Change of time airlines spent on negotiation with authorities over contract life (Note: 1=0 h, 2 = 1-50 h, 3 = 51-100 h, 4 = 101-200 h, 5 = 201-300 h, 6 = 301-400 h, 7 = 401-500 h, 8 = Over 500 h, 0 = n/a.)

For the few years in which the negotiation time increased, we were able to confirm in our post-survey interviews that in these years the contracts were re-negotiated/re-tendered. Although there is variation in the number of hours spent on contract negotiation, the average is no more than 50 – 100 hours per annum.

In terms of the overall perception of contract completeness and clarity, five operators indicated a level of 100 per cent with regard to both aspects, as Figure 3 shows. However, although the average level was much higher than expected, there were also a number of operators that perceived their contracts a lot less clear and complete. This indicates a mix of operators, with some where everything appears to be working very well, and others where the contracts could be improved. This is also confirmed by evidence we found in our post-survey interviews. The widely publicised dispute between Ryanair (large low cost carrier; serving until recently one PSO route) and the Irish transport authority, can be seen as exceptional (they also did not complete our survey but that was reportedly due to other reasons).

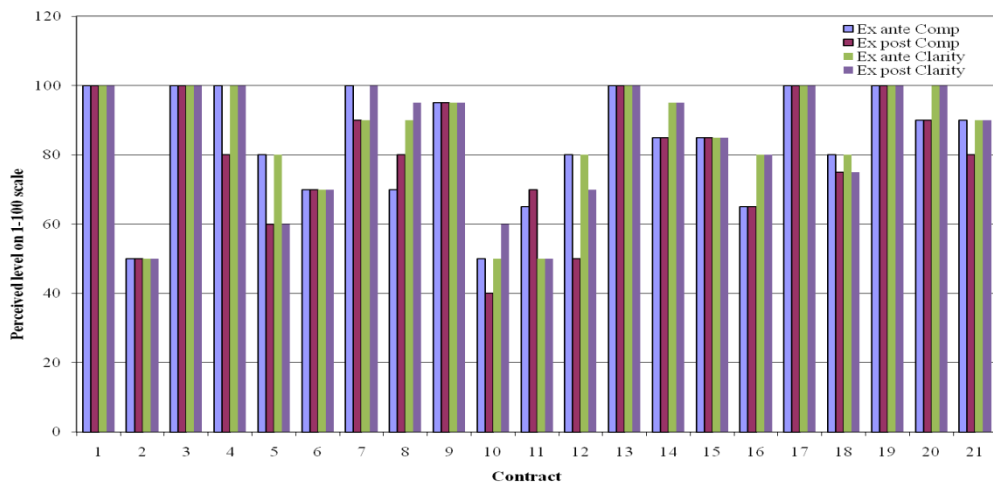


Figure 3: Ex ante and ex post perception of contracts

What Figure 3 also highlights, is a difference in the *ex ante* (pre signing) and *ex post* contract perception for many operators. This divide becomes even more apparent in Figure 5. What this figure shows is the relationship between the *ex ante* and *ex post* situation in difference form for each of the 21 operators. Although the majority of operators perceived no difference between *ex ante* and *ex post* completeness (*Compdif*) with respect of what they were asked to deliver under the contract, seven operators indicated lesser completeness (values below zero) *ex post* compared to *ex ante* signing the contract. This is not unexpected, as the constantly changing environments that PSO carriers operate in, are often hard to account for in the contracts. The *ex ante* and *ex post* perception of contract clarity (*Clardif*) is much more balanced, again with most operators perceiving no difference.

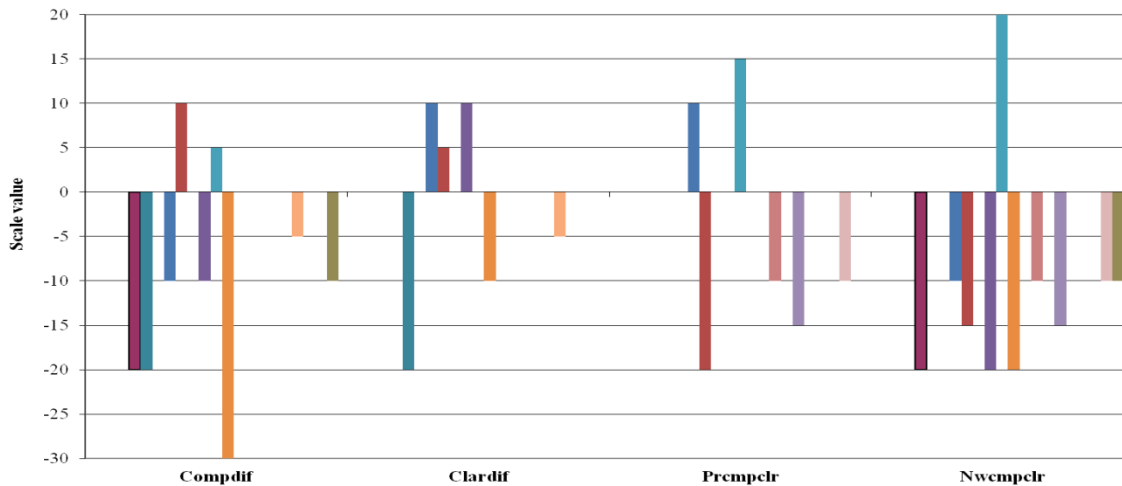


Figure: *Ex ante and ex post perception of contracts (Note: each bar is an operator, and there are 21 operators for each of the 4 dimensions. Some bars are zero.)*

We have also derived the difference between *ex ante* completeness and clarity (*Prcmpclr*) and *ex post* completeness and clarity (*Nwcmpclr*); where a positive value suggests that perceived completeness exceeded perceived contract clarity. Whilst *ex ante* the perception was more or less balanced, *ex post* a large number of operators perceived the contracts a lot clearer to what they perceived was the degree of contract completeness. The incidence of positive, zero and negative values for each of the four indicators in Figure 4 are *Compdif* (2,12,7), *Clardif* (3,15,3), *Prcmpclr* (2,15,4) and *Nwcmpclr* (1,11,9). What this suggests is that there is some divide between *ex ante* and *ex post* perception (although less than expected), that is particularly related to contract completeness. Although a large number of carriers did not perceive a difference between the indicators (interestingly all three Australian operators perceived no difference in any of the four variables), there is still some substantial heterogeneity observable.

The heterogeneity across the 21 operators in the perceptual divide of *ex ante* clarity and *ex post* completeness is also, and perhaps more notably, shown in Figure 5, which illustrates the operators' perceived difference between clarity and completeness broken down into the 24 analysed contract issues. Issues around safety issues and maintenance of aircraft have been perceived by a large number of operators as more complete/successful than their degree of clarity when signing the contract. Contrary, monitoring and auditing of the airlines business performance is perceived by more carriers as clear than successful and complete. This indicates that it is worth analysing the individual contract issues in more detail.

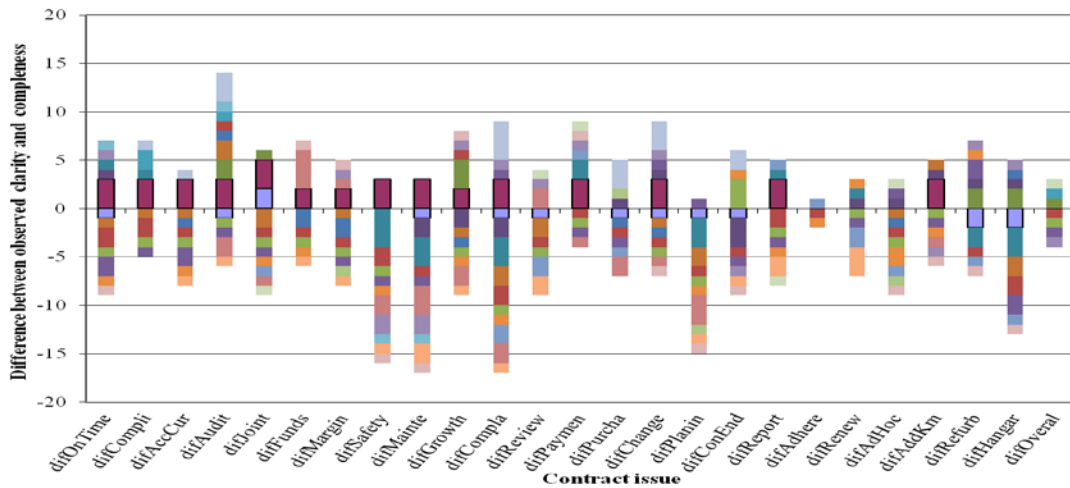


Figure 5: Clarity and completeness differencing per contract issue

Figure 6 shows the accumulated responses per contract issue and confirms that, overall, the contracts were perceived as fairly clear and complete. However, what it also illustrates is that there are contract issues that are very complete and clear and others that are much less so.

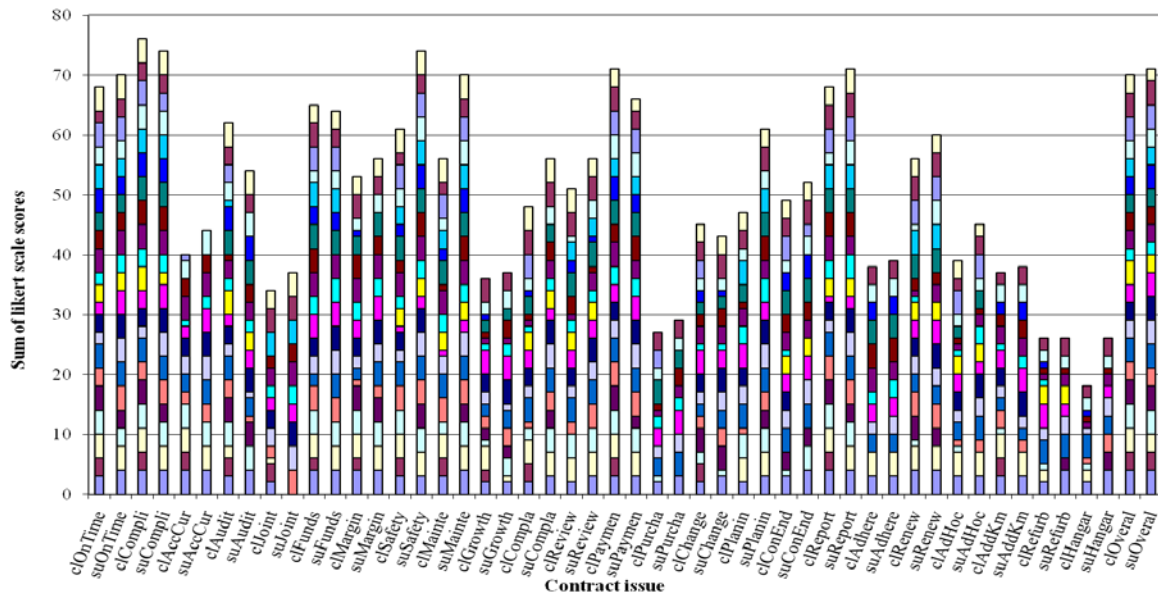


Figure 6: The perception of individual contract issues (Note: Likert scale for contract issues: 4=very clear/complete, 1=very unclear/unsuccessful, 0=n/a)

This heterogeneity is also confirmed by analysing the means and standard error profiles of clarity and completeness perceptions per contract issue, as indicated in Figure 7.

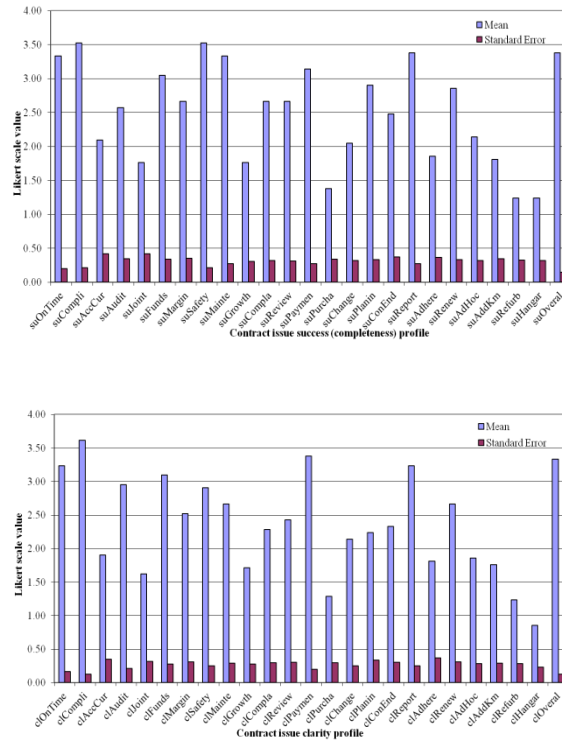


Figure 7: Contract issue clarity and completeness profiles
(Note: 4=very clear/complete, 1=very unclear/unsuccessful, 0=n/a)

One important aspect that is masked in Figures 6 and 7 is that we have observed for some contract issues a relatively high number of n/a responses, as shown in Figure 8.

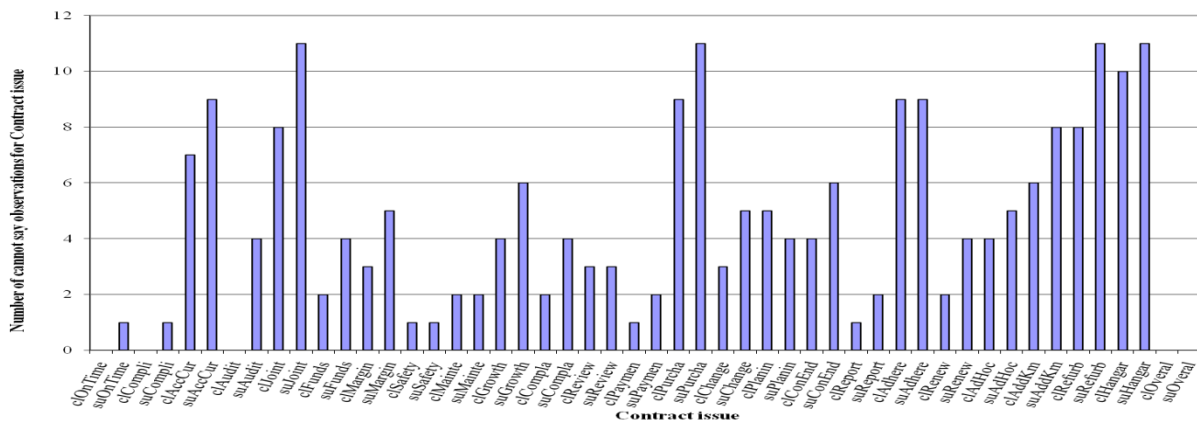


Figure 8: Number of n/a responses per contract issue

As a result of some contract issues having received a relatively large number of n/a responses, we find Figure 9 much more informative in terms of identifying weak contract issues. From the post-survey interviews, we were able to establish that these responses were mainly made for two reasons. The key reason was that some of the contract issues, such as “Purchasing of assets”, “Refurbishment or aircraft” or “Hangar upgrades and expansion” were just not relevant to the PSO carriers’ operations. The other, less often mentioned explanation, was that the relevant contract issue was commercially too sensitive.

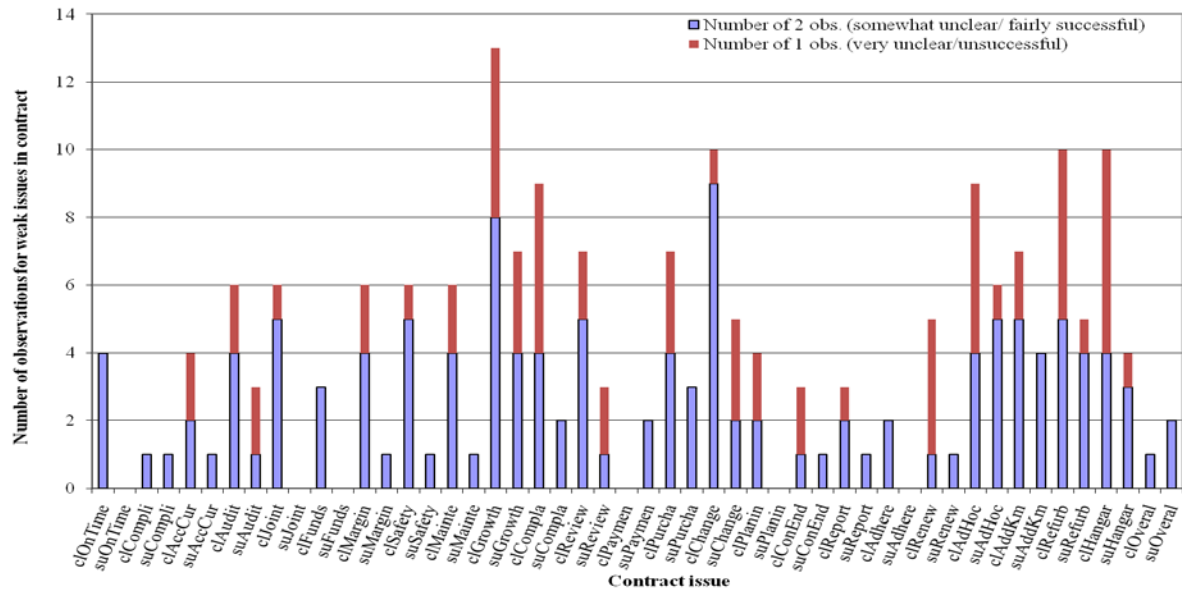


Figure 9: Unclear and incomplete contract issues

The issue that is deemed of lowest clarity (and also has low completeness) is “Growth of patronage”. This has been confirmed in the post-survey interviews, is constantly re-appearing in discussions that we have with the industry and also is very much in line with the previous literature (e.g., Merkert and Williams, 2010). It confirms that PSO contracts are often seen as contracts that serve lifeline services and in which minimum service levels are very clearly defined and set out in the contracts. Contrary, growth of patronage is not overly clear and sometimes not specified in the contracts. The other contract issue that was often raised in interviews, and that also was deemed fairly unclear and incomplete in the survey results, is that of change events. This would include issues such as sudden fuel price increases or the effects of ash clouds. Although it is perhaps difficult for authorities to draft the contract issues clearer in that respect, there may be an element of strategic behaviour in terms of avoidance of contractually specified risk sharing involved. Reportedly, PTAs are sometimes not prepared to take on the risks related to these events, and hence may have incentives to leave these issues fairly vague in the contracts. This is, however, in the operators’ perception, an important element of the contracts that could, if made clearer and more complete, assist them in serving the route more efficiently (or to make a more informed decision on whether it is worth bidding for the contracts or not).

Although, the contracts can certainly be improved with regard to the above points, it is worth noting that trust and relationship building can assist in overcoming some of the low clarity and incompleteness of contracts in the way that contracts become less important, and that the parties do rely much less on them. It is thus interesting to see the trend illustrated in Figure 10 (reading from left to right), which suggests that, apart from a couple of temporarily exceptions, the trust between our 21 airlines and their relevant transport authorities, remained either at a very high level or has increased over the analysed time period.

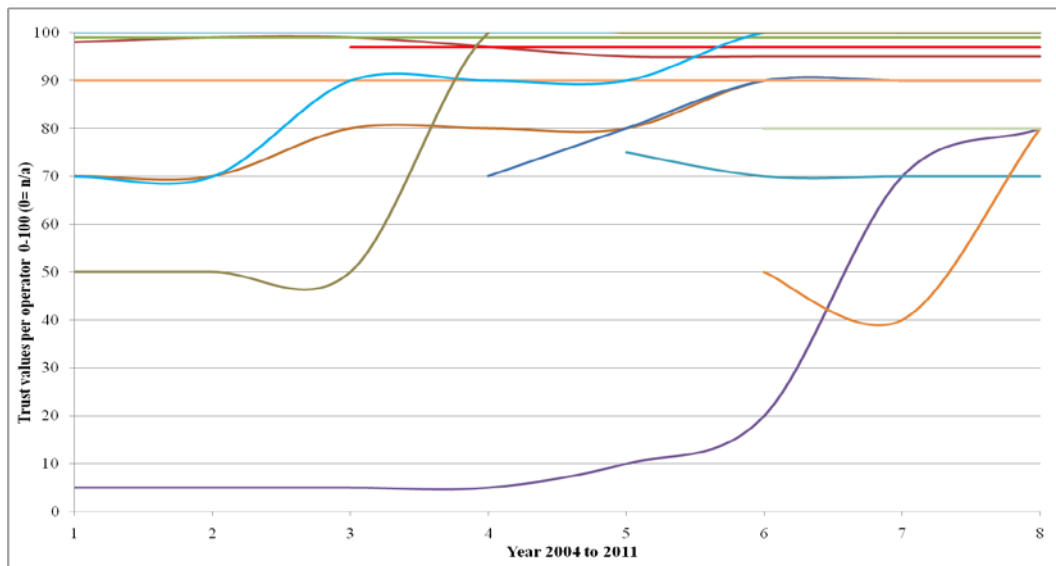


Figure 10: Change of trust level between operators and authorities over time

Since the high level of trust was somewhat unexpected and different to revealed levels of trust in Hensher's (2010) bus study, we investigated this further, using a number of truncated regression models (with lower limit = 0 as trust cannot become negative and upper limit = +inf.) to identify key determinants of the perceived trust. In addition to three separate trust models for specific years under an active contract (2004 as the start year, 2010 and 2011 as the two most recent years), we included four models to investigate trust defined as (i) accumulated trust from 2004 to 2011, (ii) the mean of trust across the eight years (important because the sum in itself does not reflect the issue that some operators did not have a contract in the earlier years of our analysis), (iii) the standard deviation of trust across the eight years, and (iv) the coefficient of variation of trust, equal to the ratio of the mean trust over the eight years to the standard deviation, scaled by 100 (the latter are both measures of trust heterogeneity over time). As with Hensher (2010), of particular interest are the impacts of the number of active contracts and asset specificity on the levels of trust. As summarised in Table 3, the independent variables assumed to drive the degrees of trust include the average number of negotiation months prior to contract signing, the time committed *ex post* to further negotiation, and the active number of contracts held (all three indicators of engagement between the carrier and the transport authority), but also physical, non-physical and human asset specificity as well as a dummy variable for ownership. Similar to Hensher's (2010) bus sample, many of our 21 analysed carriers were in family ownership but when including it in the regression models it had no significant impact on the levels of trust. This is why we tested for public ownership, and the hypothesis is that two publicly owned entities have a closer relationship with more trust, compared to a situation where private investors get involved. The other two starting hypotheses are that there should be greater trust when there are specific investments and hence high asset specificity involved, and also when the number of contracts is more than less.

Table 3: Results of the regression models of trust

Explanatory variables	Mean of expl. variable	Accumulated trust 2004-2011	Average trust 2004-2011	Stdev. trust 2004-2011	CV of trust 2004-2011	Trust 2004	Trust 2010	Trust 2011
Average number of negotiation months prior to signing	4.71							
Number of active Contracts	2.76							
Time (hours) involved in further negotiation after signing	65.95							
Physical asset specificity (1,0)	0.476	309.63 (2.98)	14.12 (1.81)	13.74 (2.15)	0.38 (1.94)	24.4 (1.67)	13.75 (2.00)	9.66 (2.47)
Non-physical asset specificity (1,0)	0.19	-259.34 (-1.72)	-27.58 (-2.43)			-47.29 (-2.67)		
Human asset specificity (FTE)	57.05							
Government owned (1,0)	0.1	362.81 (2.14)				38.65 (1.66)		
Constant		410.91 (2.99)	89.78 (8.73)			71.06 (2.51)	93.06 (10.32)	93.96 (18.27)
Log likelihood		-139.21	-85.9	-	-	-53.26	-83.16	-71.36

Note that the regression models for the standard deviation (Stdev) and the Coefficient of the variation of trust 2004-2011, had to be estimated with normal linear regression models (due to a large number of observations with the value 0).

Our key finding is that across all seven regression models physical asset specificity is a statistically significant influence, with trust increasing as physical asset specificity increases. Typical examples for that physical asset specificity were given as “specific/suitable aircraft”, usually small turboprops, but also “hangars and a base”. This shows that hangars do matter to the PSO service context; it is just the extension of them that is not relevant to most PSO contracts. Contrary to physical asset specificity, the non-physical counterpart has also a significant impact in three models, but this time it is negative. However, an analysis of the given examples for this non-physical asset specificity reveals that respondents that have indicated ownership of non-physical assets related to their active contracts misunderstood that concept, as they all indicated “staff”, “top management” and “experience” as those assets. These are clearly examples of human and not non-physical asset specificity. As most of these staff could be employed elsewhere, the human asset specificity is relatively low and has no significant impact on trust. We, therefore, do not place much importance in the findings regarding non-physical asset specificity. Surprisingly, the first three variables on engagement of the operator with the authority, and most importantly the number of contracts, had no significant impact on trust in any of our regression models. That the number of contracts is not related to the levels of trust might be related to the already mentioned issue that a number of contracts involve just one route, whereas other contracts represent a bundle of routes (such as in Greece). Public ownership has a significant positive impact on trust, but interestingly this was the case only in two of the seven models and even in these two models to a far lesser significance than what one would expect. This indicates that public compared to private ownership, is not a guarantee for trust and good relationships between the transacting parties.

In sum, the only variable of our model that is almost guaranteeing relatively high level of trusts is physical asset specificity. On the one hand, our findings are in line with the general theory, and support the evidence that physical asset specificity is not only the most tested (e.g. Riordan and Williamson, 1985) but also most important dimension in Williamson's transaction cost framework as it usually drives transaction costs if there are no appropriate governance structures or indeed good relationships and trust in place. On the other hand, we were somewhat surprised, compared to the evidence in Kappes and Merkert (2011) that was concerned with general aviation, and has found that physical assets are no longer important to airline businesses, as nowadays other factors such as slots at congested airports matter much more in terms of transaction costs and entry barriers. This shows the importance of recognising that PSO air services are different to general commercial air transport, and that it is a niche market with its own characteristics.

Conclusion

This paper set out to present a framework in which the clarity and completeness of PSO air service contracts can be identified. We have shown that transaction cost economics in combination with agency theory can offer a framework in which to investigate the clarity of obligations, given the perception of the degree of completeness of a contract *ex ante* and the degrees of freedom *ex post* to negotiate in order to clarify.

Our results suggest that the perceived contract completeness and clarity are higher than expected (and also higher than values revealed in Hensher's (2010) bus study). Contrary, the overall *ex ante* and *ex post* divide is smaller than initially anticipated (and not existing for the Australian carriers in our sample, which is the main difference between them and their European counterparts). However, deep drilling has identified that there is substantial heterogeneity with regard to this divide, but also with regard to perceived completeness and clarity in relation to individual contract issues. Performance measurement and payment issues are, for example, perceived as very clear and complete, whereas growth of patronage is generally perceived as a very unclear and incomplete issue in the PSO contracts. The contracts could be, therefore, improved in that respect, particularly if the aim of the transport authority is to develop and grow the route in order to make it, at some point, less dependent on subsidies or market access regulations (with the help of tourism etc., which it should be rather than seeing it as a subsidised lifeline service only). Also, the contract clarity and completeness with regard to change events (sudden fuel price increases, ash clouds etc.) could be improved, and would give operators much more certainty and incentives to become or stay engaged in PSO air services.

Our results also suggest that these contract issues are likely to be overcome by the relatively high and still increasing trust between the operators and the authorities. Moreover, physical asset specificity appears to be the most significant determinant on the level of trust. If the transport authorities aim for increased competition for their PSO contracts, then O'Fee and Merkert's (2011) findings suggests that transport authorities should own the aircraft. From our post-survey interviews we know that airlines would also be interested in that option, but only if maintenance and refurbishment costs are also covered in the authorities' budget. Otherwise the carriers would have to invest in maintaining/refurbishing something that they do not own, and if the duration of the PSO contract is just 2-3 years then they would be unable to recover those costs (i.e., amortize the investment). The alternative is to make the contracts longer (and hence decrease the competition *for* the market), so that the operators have time to recover their costs. Given the findings from our regression models, we would argue that if the aim is to reduce transaction cost, then the assets should stay with the operators, as they appear to drive the level of trust. One of the conditions to allow trust to grow could be to have longer contracts, or to renew the existing contract with the incumbent. Both of these options would result in less competition and hence potentially a loss in efficiency. Which of the options is most efficient remains an open question and there is hence a need for further research in that respect. Regardless of these trade-offs, a relatively short-term improvement to the contracts could be

achieved by improving clarity and completeness around the growth of patronage and with respect to change events.

References

Alchian, A. and Demsetz, H. (1972) Production, information costs, and economic organization. *American Economic Review*, 62 (5), pp. 777-795.

Australian Government, Department of Infrastructure and Transport (2011) Regional and Remote Aviation, available from: <http://www.infrastructure.gov.au/aviation/regional/rass.aspx>, assessed on 12/06/2011.

Bahuand, J. (2010) The impact of the Public Service Obligation on the economic development of Corsica, unpublished MSc thesis, Centre for Air Transport in Remoter Regions, Cranfield University.

Cabrera M., Betancor O. and Jiménez J.L. (2011) Subsidies to Air Transport Passengers: Efficiency of the European Policy Practice, in: *Proceedings of the 7th International Conference on Air Transport in Remoter Regions*, (Newquay).

Calzada, J. and Fageday, X. (2009) Public Service Obligations in the Airline Market: Lessons from the Spanish Case, in: *Proceedings of the 14th ATRS Conference* (Porto).

Coase, R.H. (1960) The Problem of Social Cost. *Journal of Law and Economics*, 3, pp. 1-44.

Eisenhardt, M.K. (1989) Agency theory: An assessment and review. *Academy of Management Review*, 14 (1), pp. 57-74.

Gordijn, H. and van de Coevering, P. (2006) Aviation as public transport: which regions are underserved?, in: *Proceedings of the European Transport Conference 2006*, (Strasbourg, France).

Hart, O. and Moore, J. (1990) Property rights and the nature of the firm. *Journal of Political Economy*, 98(6), pp. 1119-1158.

Hensher, D.A. and Stanley, J.K. (2008) Transacting under a Performance-based contract: the role of negotiation and competitive tendering. *Transportation Research Part A*, 42(10), pp. 1295-1301.

Hensher, D.A., Mulley, C. and Smith, N. (2011) Towards a simplified payment formula as a reference point for bus contract negotiation or assessment. Working Paper ITLS-WP-11-10, University of Sydney, Sydney.

Hensher, D.A. (2010) Incompleteness and clarity in bus contracts: Identifying the nature of the ex ante and ex post perceptual divide. *Research in Transportation Economics*, 29, pp. 106-117.

Kappes, J.W. and Merkert, R. (2011) Barriers to entry into European aviation markets revisited – a review and analysis of managerial perceptions, in: *Proceedings of the Air Transport Research Society (ATRS) 2011 Conference*, (Sydney).

Ménard, C. (2004) The Economics of Hybrid Organizations. *Journal of Institutional and Theoretical Economics*, 160 (2), pp. 345-376.

Merkert, R. and Williams, G. (2010) The impacts of ownership, level of competition and contractual determinants on the efficiency of European public service obligation air transport operators, in: *Proceedings of the European Transport Conference 2010*, (Glasgow).

Merkert, R. (2010) Changes in transaction costs over time – The case of franchised train operating firms in Britain. *Research in Transportation Economics*, 29, pp. 52-59.

Merkert, R., Smith, A.S.J. and Nash, C.A. (forthcoming) The measurement of transaction costs – Evidence from European railways, *Journal of Transport Economics and Policy*.

Merkert, R. (2011) Why be secret about subsidies? *Airports International*, 44 (3), pp. 22-24.

O'Fee, B. and Merkert, R. (2011) Analysing the different legal interpretations and uses of PSOs across Europe – A transport authority perspective, in: *Proceedings of the 7th International conference on Air Transport in Remoter Regions*, (Newquay).

Riordan, M.H. and Williamson, O.E. (1985) Asset specificity and economic organization. *International Journal of Industrial Organization*, 3(4), pp. 365-378.

Saussier, S. (2000) Transaction costs and contractual incompleteness: the case of Électricité de France. *Journal of Economic Behavior and Organization*, 42, pp. 189-206.

Selten, R. (1990) Bounded Rationality. *Journal of Institutional and Theoretical Economics*, 146 (4), pp. 649-658.

Stanley, J.K. and van de Velde, D. (2008) Risk and rewards in public transportation contracting. *Research in Transportation Economics*, 22, pp. 20-25.

Vanneste, B.S. and Puranam, P. (2010) Repeated Interactions and Contractual Detail: Identifying the Learning Effect. *Organization Science*, 21(1), pp. 186-201.

Williams, G. and Pagliari, R. (2004) A comparative analysis of the application and use of public service obligations in air transport within the EU. *Transport Policy*, 11, pp. 55-66.

Williamson, O.E. (1985) *The Economic Institutions of Capitalism* (New York: The Free Press).

Williamson, O.E. (1998) Transaction Cost Economics: How it works; where it is headed. *De Economist*, 146, pp. 23-58.

Williamson, O.E. (2002) The Theory of the Firm as Governance Structure: From Choice to Contract. *The Journal of Economic Perspectives*, 16 (3), pp. 171-195.

Williamson, O.E. (2010) Transaction Cost Economics: The Natural Progression. *Journal of Retailing*, 86(3), pp. 215-226.