International Transport Forum

Better Economic Regulation: The Role of the Regulator

Roundtable Report

OECD

Better Economic Regulation: The Role of the Regulator

Roundtable Report

This work is published on the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

Please cite this publication as:
OECD (2011), *Better Economic Regulation: The Role of the Regulator*, ITF Round Tables, No. 150, OECD Publishing.
http://dx.doi.org/10.1787/9789282103272-en

ISBN 978-92-821-0295-4 (print)
ISBN 978-92-821-0327-2 (PDF)

Series: ITF Round Tables
ISSN 2074-3378 (print)
ISSN 2074-336X (online)

Photo credits: Cover © Stefan Lenz / Panther Media / GraphicObsession.

Corrigenda to OECD publications may be found on line at: *www.oecd.org/publishing/corrigenda*.
© OECD/ITF 2011

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to *rights@oecd.org*. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at *info@copyright.com* or the Centre français d'exploitation du droit de copie (CFC) at *contact@cfcopies.com*.

INTERNATIONAL TRANSPORT FORUM

The International Transport Forum at the OECD is an intergovernmental organisation with 52 member countries. It acts as a strategic think tank with the objective of helping shape the transport policy agenda on a global level and ensuring that it contributes to economic growth, environmental protection, social inclusion and the preservation of human life and well-being. The International Transport Forum organizes an annual summit of Ministers along with leading representatives from industry, civil society and academia.

The International Transport Forum was created under a Declaration issued by the Council of Ministers of the ECMT (European Conference of Ministers of Transport) at its Ministerial Session in May 2006 under the legal authority of the Protocol of the ECMT, signed in Brussels on 17 October 1953, and legal instruments of the OECD.

The Members of the Forum are: Albania, Armenia, Australia, Austria, Azerbaijan, Belarus, Belgium, Bosnia-Herzegovina, Bulgaria, Canada, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, FYROM, Georgia, Germany, Greece, Hungary, Iceland, India, Ireland, Italy, Japan, Korea, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Mexico, Moldova, Montenegro, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom and the United States.

The International Transport Forum's Research Centre gathers statistics and conducts co-operative research programmes addressing all modes of transport. Its findings are widely disseminated and support policymaking in Member countries as well as contributing to the annual summit.

Further information about the International Transport Forum is available at
www.internationaltransportforum.org

TABLE OF CONTENTS

SUMMARY OF DISCUSSIONS

SUMMARY CONTENTS

Paris, April 2011

1. INTRODUCTION

Good transport services contribute strongly to the productivity of an economy and extend the range of activities accessible to consumers. Good services require adequate infrastructure and reasonable usage conditions to that infrastructure. Much transport infrastructure is capital intensive and lumpy. Such cost structures imply that there will be few service providers. In some circumstances the structure of costs and technology is such that economic regulation is the best way to drive efficient outcomes. Achieving the right governance structures – including the question of when to regulate and how to regulate – is central to performance of the sector and the subject of this paper, which summarizes discussions at a Roundtable[1] held in December 2010.

Good governance and striving for efficiency is always desirable but the 2008 financial crisis has raised the stakes for getting the design of regulatory frameworks right. In its aftermath, financing infrastructure (new construction, renewals and maintenance) will be more difficult for both the public and private sectors for an extended period. There is a risk that inadequate or poorly maintained infrastructure becomes a brake on recovery and on long-term economic development.

Governance through regulation (whether of privatised companies or state-owned companies with a commercial remit) is useful particularly when very long asset life-spans demand predictability and long-term commitments in relationships, whilst preserving some flexibility to deal with changes in external circumstance. A long-term focus is sometimes difficult to reconcile with the short-term imperatives of democratic government. When infrastructure is regulated, the transparency created by a fully independent regulator is invaluable to ensuring sufficient investment, while maintaining reasonable conditions for user access. Much of the discussion at the Roundtable focussed on how to achieve effective independent regulation and how to reconcile independence with the legitimate control of policy by the executive part of government.

It deserves emphasis that independent regulation is not seen as a universal default governance arrangement. Much of the discussion also focussed on when to regulate, when state ownership and control might be preferred and when to rely on competition, even if imperfect, to drive efficiency. The discussions underscored that there are opportunities to improve performance significantly in aviation and the rail and road sectors by learning from successful experience in improving governance structures in a range of countries.

1.1. Specific assets

The provision of transport services requires relation-specific investments on behalf of some of the parties involved. Such specific investments occur throughout the economy, but they become central to transactions where sunk costs related to durable and immobile investments are large. Some key parts of transport infrastructure are characterised by very high asset specificity. Rail networks are a clear example. Investments in track and signalling infrastructure represent a large share of the overall cost of providing rail services, the investments once made cannot be transferred to any other use and the salvage value is relatively small if services are abandoned.

Governance in the public interest in sectors where specific assets are key poses several challenges. First of all, what can be done to make sure that investments with low or zero alternative value are forthcoming? Privately or publicly owned firms require reasonable certainty on rates of return and protection against expropriation. Once an investment is made in an asset that will be shared, other users have an incentive to pay as little as possible for its use (e.g. rail terminals built by one train operator to which other train operators have access), even if that means reneging on earlier promises. If the governance system does not trade off the various interests appropriately, underinvestment is likely to result over time. This dilemma can also afflict vertically integrated companies, for example, railways that are financially dependent to a large degree on compensation from government for passenger train operations operated under public service obligations. Infrastructure investments, and crucially maintenance expenditures, then have to be matched to train operations dependent on predictable levels of compensation. On the other hand, enterprises relying on a supplier that enjoys market power (e.g. railway operators relying on a separate infrastructure manager) seek protection against potential abuse of market power, i.e. against opportunistic behaviour by the infrastructure owner. The second issue is then how to deal with situations where investments present possibilities for opportunistic behaviour.

A range of potential solutions exists, from market-led to government ownership, covering private contracts, concession contracts, discretionary regulation and public enterprise (Gómez-Ibáñez, 2003). All of them have been tried, with performance very much dependent on the institutional and market contexts. In the transport sector, disenchantment with full, direct public ownership and control, coupled with a reluctance to leave governance to markets entirely, has led many governments to favour a hybrid solution, where independent regulators have oversight over privatised companies, or state-owned companies with a commercial remit. The regulator protects users' interests by keeping abuse of market power in check and protects the infrastructure owner's interests in order to maintain investment incentives, aiming ultimately to provide adequate levels and quality of service at reasonable prices, now and in the future.

Relying on an independent regulator to oversee infrastructure and service provision is just one way to handle a situation where relation-specific investments give rise to incentives for opportunism, and it has its advantages and drawbacks. Section 2 of this paper discusses under what conditions the approach is likely to outperform other governance arrangements. Discretionary regulation suits some situations better than others and this implies that the choice of approach to governance should be subject to regular reassessment. Understanding what circumstances suit discretionary regulation also contributes to the design of effective regulation. At the same time, reassessment should not undermine the very purpose of regulation, which is to mitigate risks of opportunism.

1.2. Independence

Regulators need to be independent, for if they are not they cannot credibly commit to their key tasks – protecting property rights and containing opportunistic behaviour. Independence from the regulated enterprises is clearly essential to containing opportunistic behaviour. Independence from the government of the day is similarly important, especially when the government is a shareholder in one or more of the regulated enterprises. More broadly, a "*key benefit from the independent regulatory model is to shield market interventions from interference from 'captured' politicians and bureaucrats* (OECD, 2002)." As noted by Ponti (2010), this capture mechanism "*is symmetrical, based on an exchange of favours and benefits. Typically, the agency – for example, an airport concessionaire – obtains higher tariffs and in exchange extends the workforce beyond its requirements for political consent (votes of exchange).*"

Independence from the government of the day is also needed to protect property rights and provide the stability over time needed for making the large and lumpy investments in assets with long cost-recovery periods that are typical of much transport infrastructure. A political focus on short-term consensus is the implicit price of democracy (Ponti, 2010) but is far from ideal for optimising investment in infrastructure. Long-term concession contracts and independent regulation are the main mechanisms for mitigating this problem.

From independence it follows that a regulator will have discretion. The key question then is discretion over what? Which policy issues ought to fall inside the scope of the regulator's competence to change regulation and which should remain outside, in the political realm? This is discussed in Section 3. Answering this question is particularly difficult where extraordinary events with major impacts on costs or demand are concerned.

2. WHEN TO REGULATE

2.1. Choice of governance structures depends on the (evolving) context for regulation

It may be commonplace to say that governance structures should fit their context but it is important to underline that the transport sector is very diverse. Private contract law is quite sufficient to govern relationships between private suppliers of transport services in much of the sector. Where public intervention is indicated, it may only be required in parts of the market. For example, some airports exhibit substantial market power whilst others do not. For non-hub airports served by low-cost carriers, for example, cost structures and competitive conditions arguably are such that bilateral contracts provide satisfactory outcomes so that regulation is not needed (Starkie, 2008). Indeed, in these circumstances regulation is likely to be counterproductive.

Most of the UK's regional airports have been deregulated as competition has emerged with, for example, Liverpool airport now competing with Manchester airport on both domestic and overseas routes. This has freed airports from regulatory constraints, with no evidence of detrimental results for pricing of air services. BAA Plc, the company that took over the airports around London, Edinburgh and Glasgow from the former British Airports Authority, has been required by the Competition Commission to divest some of its airports, starting with Gatwick in 2010, so that competition might gradually replace regulation of airside charges.

Setting regulatory caps on infrastructure charges is never a simple task and always contested. Deregulation avoids the cost of regulation and the larger potential costs of distortion in the market. Australian airports have enjoyed a generally successful governance framework for airside and groundside charges since 2002, free of regulation even though distance confers significant potential monopoly power on all the major airports. Charges are monitored by the regulatory authorities and the threat of potential re-regulation appears sufficient to prevent abusive pricing. Airlines are not entirely satisfied with the prices that result and Virgin Blue has twice asked competition authorities to intervene in the pricing of airside services at Sydney airport (2002 and 2010)[2]. Agreement was reached in both cases without recourse to formal arbitration by the competition authorities, most recently in early 2011. The Productivity Commission reviewed arrangements in 2007 and found that the system worked reasonably well, recommending continuation of the system for Sydney, Melbourne, Brisbane,

Perth and Adelaide airports until 2013. The Commission is now reviewing regulatory arrangements again.

Shifting the focus from airports to international airline routes, entry to many markets continues to be restricted by individual governments seeking to protect national carriers or under bilateral agreements. The benefits to consumers of deregulating these routes are potentially very large. Oum (2009) estimates that the progressive implementation of open skies agreements within the European Union and between Europe and the USA accounted for a third of the growth of revenue passenger-kilometres over the last two decades. Worldwide liberalization could increase future growth of international aviation markets by 15% (ITF, 2010). The annual net benefits of the deregulation of the US aviation market have been estimated to amount to USD 20 billion (Morrison and Winston, 1999), accounting for changes in both fares and service quality, and stemming from the 1978 decision of the government to end controls on domestic fares and routes.

As with airports, geographic proximity provides an opportunity for route-based competition between seaports that needs to be taken into account when examining issues of competition inside the ports arising from vertical integration of terminals, shipping lines and logistics companies. The northern seaports in Europe between Le Havre and Hamburg, for example, present sufficient opportunities for inter-port competition to obviate the need to regulate most port services. Access to port railheads is problematic where rail infrastructure inside the port is owned by a single enterprise. Encouragement by the government for voluntary co-operation between rail operators, through an implicit threat of regulatory intervention, appears to be the most practical approach to ensuring efficient access to and investment in essential facilities, where replication is tightly constrained by the space available in ports (ITF, 2009).

Where cost structures and competitive conditions render bilateral contracts unsatisfactory, intervention may improve outcomes. The first task is to identify which parts of transport sub-sectors fulfil these conditions. Where market outcomes are determined to be unsatisfactory, four approaches to intervention are possible:

- Non-intervention (beyond oversight by competition authorities), which remains an option should the costs and risks of intervention seem as large as the potential benefits;
- Public procurement contracts and concessions;
- Discretionary regulation, by an (independent) regulator of privatised or public sector companies;
- Public ownership and management.

Public procurement contracts and concessions work best where there is competition for the market (competition for concessions or contracts) and less well where there is bilateral negotiation with an incumbent supplier rather than open competition. Public ownership and management is one approach to governance where there is insufficient competition to serve the public interest to the best possible extent. It is, however, fraught with problems of cost-inefficiency, time-inconsistency, rent-seeking and distribution of rents.

Discretionary regulation is a response to these problems but is it necessarily better? And does it necessarily outperform private contracts or concession contracts with the public authority? There is a presumption in much of the literature that "*the ultimate goal in infrastructure regulation may be to dispense not just with public provision but, where possible, with public regulation as well*

(Gomez-Ibanez, 2003).” This, to be clear, is a performance-based judgment rather than an ideological one. We need therefore to define under what circumstances are contracts less suitable than regulation, and whether these circumstances occur particularly often in transport.

A key problem with specific contracts is that they lack flexibility. As a consequence, the relation between contractees is not very resilient against (large) unexpected changes. This vulnerability is not limited to the transport sector but it is particularly relevant in several segments of the sector because of the presence of large sunk costs and limited scope for competition. In the railway sector, sunk costs can be extremely high and network competition is difficult (although it does exist on parallel freight lines, dense freight corridors and coal in the US and between the two Canadian rail operators). Specifying contracts between network providers and users to describe contingencies in sufficient detail to promote infrastructure investment, whilst guaranteeing acceptable conditions for use of the network and preserving the ultimate consumer interest, is never fully workable. Discretionary regulation then is a better choice.

The appeal of discretionary regulation lies in its broader flexibility. This makes it more resilient to unexpected change than a pure contracting approach and able to complete what are inevitably incomplete contracts between parties. Public ownership and provision has similar flexibility but scores less well in terms of time-consistency and cost-efficiency. Discretionary regulation is more flexible, precisely because of the discretion of the regulator, and discretion requires independence.

The ability of discretionary regulation to cope with rapidly changing environments and incomplete contracts makes it particularly well suited to managing the transition from state ownership to privatisation. There is evidence that the presence of a strong, independent regulator when formerly state-owned assets are privatised leads to significantly fewer instances of *ex-post* renegotiation of contracts (Guasch *et al.*, 2003). Pure contracting means that if there is a dispute between the government and a concessionaire, a court or judge is required to reach a decision. Whilst a good judge can make a better decision than a poor or captured regulator, judges lack the flexibility of regulators and generally their economic and engineering expertise.

Discrete regulation does have its problems. Information requirements for regulation are significant and the regulator inevitably has less information than the regulated party. With an unregulated public or private monopoly the problem may be more extreme, with neither incentives nor requirements to produce information or develop asset registers for use in-house.

Regulation is also inherently somewhat unstable, prone to capture and to ossification. These are manifestations of the more general issue of opportunism that is associated with the limited specificity (increased flexibility) of the relation, and reflect the “halfway status” of regulation between contracting and public provision. The halfway status means regulation again tends to exhibit half the problems of public ownership and management, where capture and instability can be even more marked.

Good regulatory design is about limiting the drawbacks inherent in discretionary regulation. The regulator should be independent of government (i.e. have sufficient discretion) and of the regulated parties (to be in a position to arbitrate). For independence, procedural guarantees are prerequisite but a regulator will only remain independent if he or she behaves independently, in terms of both arbitration and alacrity in addressing issues where regulatory guidance is needed. The regulator does need to be accountable for decisions and performance. This accountability resides with the legislature, where the regulatory mandate originates, and is exercised by parliamentary or congressional committees and ultimately the courts. These issues are taken up further in Section 3.

2.2. Adapting governance arrangements to changing markets

The awareness that governance structures need to be adapted to circumstances is not new. A variety of structures is used in different segments of the transport sector and, within the same segment, structures evolve over time. Given that there is inertia in institutions and that interpreting fast and multi-faceted change in markets is hard, one should not expect optimal governance structures to be in place at every instant. But is adaptation fast enough? And is it moving in the right direction, given current understanding of good governance approaches internationally in industry and the research community?

The account of the aviation industry in Niemeier (2010) suggests a mixed answer: change is mostly in the right direction but it is not fast enough and we currently over-regulate airports, ground services, air traffic control and income from shopping at airports. The scope for competition-based governance is broadening gradually but restructuring and deregulation to foster competition could be expanded considerably, were it not for vested interests that slow down the process. As already noted, UK regulators and the Government have concluded that competition between airports is sufficient in most cases to optimise socioeconomic outcomes. This applies to both smaller airports and many larger airports. Aviation charges have been deregulated at Manchester, in light of growing competition, and modified at Stansted. The break-up of BAA is likely to increase scope for competition and may see further deregulation at some of the London airports. Charges may, however, continue to be regulated at Heathrow because of the continuing market power of its unique hub function. Scarcity of capacity may limit the scope for competition and the potential for collusion between the London airports may still require monitoring.

As this evolution suggests, economic regulation may be required in fewer circumstances than is often assumed. A case in point is EU Directive 2009/12/EC on airport charges, which requires regulation of tariffs at airports handling over 5 million passengers a year. This includes Gatwick, Manchester and a number of other airports that have been taken out of economic regulation by the UK Government and implies data-reporting duties that are arguably unnecessary. The general point to be made here is that one size rarely fits all. So when regulatory arrangements are being reviewed and economic regulation introduced in place of direct management by the State, it is important to recognise that not all parts of the sector may need regulating.

Recognising that the choice of governance structure is driven by context and that context is subject to change, it is necessary to regularly reassess the case for regulation[3]. The potential for competition in some transport markets possibly is large enough that the rationale for regulation as a guard against the abuse of market power no longer exists or is disproportionate to the potential problems, given the costs often entailed. The history of deregulation, e.g. in aviation in the USA, illustrates that an increased potential for competition tends to weaken the support for regulation that may have existed. There are two caveats surrounding the need for reassessment. First, reassessment should trigger change where necessary, but it should not cause disruption. A common characteristic of good regulation is market stability and temporal consistency[4]. The regulatory design should allow for gradual change, in order to reduce the likelihood of abrupt change.

Second, the case for introducing, continuing or abandoning regulation should be based on careful investigation. In the case of aviation, for example, it is not sufficient to point casually to increasing passenger numbers and low profits to conclude there is no further need for regulation. Increasing passenger numbers could reflect higher incomes and not necessarily follow from lower prices. And if prices do fall, it does not necessarily follow they are now at competitive levels. Low profits could be the consequence of competition, but also of inefficient management. Moreover, profits could be too low in the sense of not covering fixed costs or not allowing sufficient investment.

While the need for regulation in aviation may have declined overall, slot allocation at hub airports where capacity is scarce requires particular attention. Slot rents can be very high[5], and better allocation mechanisms could provide substantial economic benefits (Mott MacDonald, 2006) as well as providing clearer signals on the need for more capacity. Precisely what form this intervention might take is open to debate, but improvement over current mechanisms, through solutions which provide for a more effective market in slots, appears possible.

2.3. Adapting regulation to the institutional environment

We have assumed so far that discretionary regulation can be implemented where it needs to be, i.e. that it is a feasible choice. This is not straightforward. The broader institutional context needs to be sufficiently strong and favourable to provide a regulator with the stability and legitimacy needed to function. In the extreme, if these prerequisites are not met, independent regulation simply is not possible. Somewhat less extreme and more commonly, independent regulation is not an entirely natural concept to a country's decision-making culture. Ponti (2010) provides some examples of a culture that can be described as hostile to independent regulation. This hostility can be the result of stakeholders taking action to protect rents[6]. It can, however, also be the consequence of politicians who think, in good faith, that protecting natural monopolies is important, for example, to ensure strong national champions, generate regional economic benefits or provide supra-competitive revenues to subsidize public services[7]. Hostility to independent regulation should hence not be equated with a simple lack of concern for the public interest, but promoting national champions usually equates to collecting rents from international commerce.

In such institutional contexts it may still be desirable to introduce regulation but its design needs to be adapted to the prevailing circumstances if it is to be workable (see Section 3). The result may be a far cry from the textbook ideal of discretionary regulation. For example, governance can ideally be enhanced by keeping competition authorities separate from sectoral regulators. Competition authorities can then play a role in the necessary periodic review of the regulatory framework (for example, examining the potential to separate parts of the industry to provide for competition in place of regulation) and they can serve to hear appeals by stakeholders against regulatory decisions (avoiding the compromise of regulatory independence that would occur if appeals were made to the government). In a hostile institutional environment there may be merit in foregoing these advantages and basing a sectoral regulator inside the competition agency, at least temporarily, in order to confer sufficient authority on the regulator. Economies of scale and shortage of qualified personnel can also favour integration (Aubert and Laffont, 2002), a factor relevant to OECD countries with relatively little experience of independent regulation, as well as many developing countries. Some of the evidence brought to the Roundtable (e.g. Winsor, 2010) suggests that appreciable deviations from the textbook occur in countries such as the UK, with long experience in developing models of economic regulation.

2.4. Technical challenges for regulation

Even if regulation is the best governance solution in a given context, and even if the broader institutional framework makes regulation feasible, there are still formidable challenges to implement this effectively. Regulators act in the public interest by introducing a degree of time-consistency in the decision-making process and they protect users against the abuse of market power. Both tasks require substantial inputs of information from the regulated parties. Regulators decide more or less directly on

how much to invest and on how much to charge for the use of infrastructure and the use of services. In a well-functioning market, prices are essentially information indexes: they summarize the (private and ideally social) opportunity costs of supply as well as the marginal willingness to pay for the service or product in question. Prices do not perform that function in regulated markets. Regulators can at best construct shadow-prices with the information they have. Sometimes the data needed to construct a shadow price simply do not exist, as no-one has an interest in gathering them. Sometimes the data do exist, but the party that gathers them has no interest in sharing them with the regulator. Information is incomplete for all parties involved, and it is distributed asymmetrically (the regulator has less of it than the regulated parties). This constitutes a formidable challenge for regulation, important enough for some researchers to emphasize that informational problems are a severe drawback for regulation when considering the choice between various potential governance systems. Withholding information bears risks for the regulated company, however, as the regulator may err on the side of disadvantage to the company. Regulatory pricing regimes can be constructed to some extent to incentivise adequate disclosure of information (Lafont and Tirole, 1993).

3. DESIGNING EFFECTIVE REGULATION

3.1. Time-consistency, incomplete contracts and balancing discretion against capture

The key task of regulation is to curb opportunistic behaviour, i.e. hold all parties involved to their initial commitments. As indicated above, a contract probably outperforms discretionary regulation in this sense, but it is not suited – or not even possible – where flexibility and discretion are needed to allow agile responses to unforeseeable changes in circumstances relevant to the relation. Contracts will inevitably be incomplete when they concern complicated relations between infrastructure managers and transport service operators, and discretion is required to fill the gaps as they emerge. Discretion and agility could be even larger with public ownership, but there the balance tips unfavourably in terms of opportunism. The art of regulatory design is to minimize the probability of slippage in the direction of full discretion/opportunism (capture) or inflexible rule-type regulation (ossification).

This is the purpose of an independent regulator or independent regulatory agency. Independence provides for discretion but within a transparent, fixed framework set by legislative act. The attributes of independent regulation include:

- Consistency, reducing the risk that returns on sunk investments might be expropriated through lower than optimal charges for their use by third parties;

- Stability and predictability, reducing the risk that plans for infrastructure maintenance and development or for transport services will be changed to reflect short-term political pressures (rather than staying with long-term political objectives), raising costs or confiscating value;

- Neutrality in decision-making, mitigating the risk that the wrong projects are chosen, reflecting short-term political advantage rather than long-term policy goals; this can be particularly important in international projects where there are strong short-term incentives to favour bids on the basis of nationality rather than quality;

– Non-discrimination[8], mitigating the risk that conditions for access to critical infrastructure may be biased towards incumbents.

One question that arises in striking the balance between capture and ossification is how passive or active should regulation be. Should discretionary regulatory action be limited to responding to complaints from stakeholders that existing rules are deficient, e.g. a train operating company complaining about a network operator, or should the regulator be able to act proactively on the basis of its own analysis of the performance of the industry? Views expressed at the Roundtable very strongly leant towards the second option. Regulators not only should be allowed to take action on their own behalf, they are participants in the policy-making process, proposing and taking action that develops policy (in line with framework legislation, of course) in the regulated sector, not simply enforcing a set of narrow rules. The natural tendency for contracts to be incomplete makes this inevitable. Sectoral regulators must fill the gap if the objectives of economic regulation are to be achieved. Restricting the scope of a sectoral regulator's activities to policing primary legislation, in much the way that courts can do, would make the regulatory agency redundant. It must use discretionary powers to develop infrastructure pricing and access arrangements in a continuous drive to improve efficiency, and deliver on any other objectives of the legislation-establishing regulation. The dynamic nature of the competitive environment in which regulated industries operate, described above, also makes it important. Ever since the US Sherman Act of 1890, national antitrust authorities and sectoral regulators have exercised powers to restructure industries to preserve or indeed to create the conditions for competition. Where such powers should reside – in the sectoral regulator or an economy-wide antitrust authority – is discussed below, but it clearly endows regulators with an inescapable political identity.

3.2. Scope of discretion

Given the purpose of regulation – a protection of property rights and containment of opportunistic behaviour – it follows directly that regulators need independence to carry out their task effectively. There is no such thing as effective dependent regulation. What is controversial is not so much the need for independence but the scope of it. How far precisely does the mandate of regulation go? Given that there will often be tradeoffs with other policy goals, what is the proper division of labour between the regulator, the government and the regulated parties?

In the light of earlier remarks concerning context-dependence of regulation, concerning not just the choice to govern through regulation but also the design of regulation, one should not expect a simple recipe for the proper division of labour that fits all purposes. This division, too, is context-specific. Nevertheless, some general observations can be made.

First, the key issue in establishing governance through regulation is to define the scope of regulatory discretion. Politics ultimately takes precedence over regulatory discretion as the scope of the regulatory mandate is defined by politicians. The mandate needs to establish transparent processes to enable the implementation of broader policy goals (e.g. carbon reduction targets) and to resolve tradeoffs. But once the mandate exists, the mission of regulation, focusing on time consistency, requires that there be independence. It is no abdication of politics to refrain from intrusion in all but the most extreme circumstances, but rather a commitment to a policy choice to introduce some time consistency into decision-making, where that is thought to be important, which will help ensure that transport infrastructure is delivered more efficiently once defined, the inclination of regulators is to view their mandate as a contract; and attempts by politicians to intrude or renege will cause conflict and potentially disruption.

Regulatory mandates are established by law and this endows regulators with legitimacy for discretion and at the same time responsibility to the legislature for the independent exercise of their powers, rather than to the executive branch of government. Politicians can modify the scope of regulation and regulatory discretion by amendments to the law that established the regulator. It is when governments try to overrule regulatory discretion by means other than primary legislation that conflict arises.

Competence is an important aspect to determining the scope of regulatory discretion. For airports, determining which should be subject to economic regulation and which face sufficient competition to be free of regulation is critical. The regulator is often better placed than government to make the decision. There is a risk that regulatory agencies become reluctant to cede dominion, but this can be countered in the duties of the regulator set out in primary legislation. As regulatory agencies mature, an imbalance in the expertise available to the regulator, and that in the government department with oversight for the sector, can develop, with more resources available to the regulator. Decisions to break up businesses in order to create competition in place of regulation presents a more politically charged version of the deregulation issue. Antitrust authorities often have powers to break up firms, even if these are rarely exercised, and independent sectoral regulators can similarly be given such powers. A proper appreciation of how decision-making responsibilities are divided is important for all parties involved. For example, it might be the case that the Spanish buyer of the UK airports group, BAA, underestimated the importance of independent regulators in relation to the Government in the UK framework of governance and, as a result, over-valued its acquisition at a time when the structure of UK airports was under review.

Setting up a transparent and justifiable division of labour takes time and expertise. Discussants at the Roundtable observed that regulation is often, and sometimes unavoidably, introduced with very short lead times. The result is often sub-optimal regulatory design and, ultimately, higher costs. Railways in the UK are a case in point. Privatisation and regulation were introduced very quickly and with an ultimate focus on creating conditions in which all parts of the industry including infrastructure could be sold for maximum receipts at minimum cost to the tax-payer. Poor management from the company that bought the infrastructure assets, which turned out to have a very limited understanding of its assets and investment needs, revealed or engendered a need for more complete regulation. Effective asset management initially received inadequate attention from the regulator and took several years and a change of regulator to achieve, during which time the infrastructure and the company's records of the condition of the track had deteriorated to a point where a derailment in 2000 threw the entire industry into crisis.

The accident, at Hatfield, was caused by disintegration of a rail and killed four passengers and injured 76 others, some very seriously. The effect on the railways was of a totally different magnitude than earlier accidents involving much larger numbers of fatalities. Speed restrictions were placed on large parts of the network where maintenance records were insufficient to determine the risk of similar derailments occurring. The seeds for the ensuing conflict between regulator and government over which parties should bear the cost of remedial investment were sown in the deficiencies of the privatisation process itself[9]. Regulatory discretion had been used to address the deficiencies in Railtrack's asset management but deployment of the new rules came too late. Regulatory independence was deployed, to a degree probably not seen before or since in a regulated utility anywhere, to fund the remedial maintenance needed to remove the speed restrictions and raise standards to the level required by government, through increases in infrastructure charges. This increase in charges was passed through to the Government under the conditions of its private law concession contracts with train operators, which include clauses to insulate them from unforeseen changes in charges (see Winsor, 2010, p. 11 for details). The decisions taken by the regulator in the 2000 and 2003 reviews added £12 billion to the annual cost to government of the railways: clearly, an

issue of immense political portent but an unavoidable result of the unexpected flaws which this incident revealed in the mandate established on privatisation. Reform of the mandate (described in 3.3 below) has improved transparency in making tradeoffs between taxpayer costs and levels of service.

3.3. Regulation and politics

Regulation exists to improve time consistency in decision-making and, while it does not guarantee it (a regulator can change course and cannot control his or her successors), time inconsistency is less of a problem than with public ownership and management. The fundamental objective of removing British Rail from public ownership and placing the railways under regulatory control was to overcome the perennial instability of funding for the railways under direct annual government budget decisions. It has been very successful in meeting this objective. Regulators thus sometimes take actions that run counter to the immediate short-term interest of government. Were this not the case, there would be no need for independent regulation. It therefore makes no sense to try to design regulatory mandates to eliminate such conflict. Instead, the design issue is to keep the costs of the conflict as low as possible, in order to maintain the advantages of regulation over a single integrated political process[10]. A clear division of labour is key, together with procedures to manage dialogue between regulator and government in cases of disagreement.

The conflict between the rail regulator and the Government in the UK between 2000 and 2003 was partly the consequence of a lack of clarity over the mandate. The mandate described levels of quality and service to be maintained on the rail system, and the task of the regulator was to make sure the financial means to provide that output were raised through the stipulated charging mechanisms. Given the level of output, the sudden cost increase after the true state of the network became known could not be avoided, and the regulator saw it as an execution of the mandate to pass through the additional costs to government if the Government was not willing to reduce the outputs required from train operators under public service obligations. The Government's view was that the regulator could not impose a cost increase of this magnitude and only government is in a position to arbitrate on such major consequences for policy across the economy. Whatever one thinks about which interpretation is more reasonable, the episode led to a clarification of the division of labour through a new obligatory process of negotiation over outputs and infrastructure charges. Periodically, the Government now issues a "High Level Output Statement", setting out what services it wants to see under concession arrangements. The Office of Rail Regulation then makes a judgement on the level of charges required to provide for these services on an efficiently run network. The Government then publishes a "Statement of Funds Available". If there is a discrepancy, the regulator makes proposals for how services can be cut back to match funds, with iterations until agreement is reached. The new structure formalizes the process for arriving at consistency between output aspirations and cost expectations[11] and may help pre-empt future crises by increasing the transparency of the decisions to be made and the trade-offs involved.

There are understandable concerns that independent regulation may prove an obstacle to implementing broad policies such as decarbonising the economy or dealing with emergencies (see next section). Properly designed, this need not be the case and, indeed, independent regulation should help broader policy goals to be delivered more cost-effectively. The impact is chiefly to reveal tensions between competing policy objectives, make trade-offs explicit and drive development of durable solutions in place of unsustainable short-term compromises. Modal shift policies are a case in point. Independent rail regulation makes the cost of measures to transfer traffic from the roads to railways more transparent, which may be politically inconvenient but the stability and predictability it

brings to the planning and pricing environment makes it much more likely that the measures, if introduced, will be successful.

3.4. External shocks

Planning for events that are not just out of the ordinary but for which no historical evidence can guide behaviour is obviously difficult and presents an extreme case of the problem of incomplete contracts and determining what is for the regulator to decide and what is for politicians to decide. In general terms, we can distinguish between events about which we are consciously uncertain and those about which we are totally unaware (Modica and Rustichini, 1994); we can distinguish between "known unknowns" and "unknown unknowns" or Taleb's "Black Swans": events that are highly unlikely but have major effects when they do occur. For uncertainties that can be envisaged, regulation can provide for pre-specified adjustments to infrastructure charges or service requirements. For Black Swans, governance arrangements can pre-specify procedures for consultation, negotiation and decision, which should at least reduce the time taken to respond to shocks and improve the transparency of decisions.

For example, the regulatory framework for air-side charges at the Paris airports anticipates some external shocks. The regulation of charges agreed for the five years from 2008 took account of demand-side risk. The evolution of charges is related to projected traffic volumes, estimated largely on expected changes in GDP. Charges are reviewed each year and in circumstances where growth in traffic is more than a certain percentage above expectations, charges are automatically increased. Conversely, if traffic volumes are much lower than expected, charges are reduced. The regulator in the Ministry of Transport arbitrated this agreement between the airport manager, ADP, and its major client, Air France, resulting in an arrangement that provided independence from political intrusion in tariff-setting for a five-year period. This provides stability in an industry where the Government is an important shareholder in both commercial parties, owning ADP outright and 19% of Air France-KLM.

Unfortunately, the severity of the economic downturn in 2008 drove traffic volumes far below the levels foreseen for adjusting tariffs. Requests to make further short-term reductions, of the kind an infrastructure service provider might be inclined to offer clients in a fully competitive environment, were refused. Whatever the merits of the decision, the decision-making process would be more transparent if regulation was in the hands of a fully independent regulator and subject to an explicit process of arbitration between the Government and the regulator, of the kind developed for UK rail infrastructure after the economic shock provoked by the Hatfield accident.

The Eyjafjallajökull volcanic dust cloud in May 2010 provides another recent example of an extreme event that regulation, in regard to air safety, had not foreseen. Existing safety limits for the exposure of aircraft engines to volcanic dust were designed for situations where ash plumes are either localised problems or can be readily avoided by detour. Exposure limits were therefore set low with a wide safety margin. The 2010 eruption in Iceland produced very fine ash that dispersed much more widely than is usual. Coupled with unusually stable weather conditions, this resulted in a large area of some of the world's busiest airspace being potentially contaminated for over a week. Safety regulators, air traffic regulators, meteorology agencies and aero-engine manufacturers worked rapidly together to improve the identification of contaminated areas and improve the calibration of safe ash-exposure limits. New regulations that permitted a resumption of most of the suspended aviation services were operational within a week. But this was a very long week for airlines losing business. It should be noted that emergency arrangements between national air traffic controllers for diverting traffic were in

place and worked well, the critical element being a risk-sharing agreement to allocate revenues from diverted flights.

Responsibilities for responding to broader shocks have been clarified by the Eyjafjallajökull eruption. Other jurisdictions should be able to benefit in terms of establishing formal procedures for prompt consultation, and preparations can be made for responding to similar, but potentially much larger eruptions from a neighbouring volcano.

Can arrangements for prompt consultation prevent stakeholders lobbying ministers to pre-empt decisions on changes to regulations in a future crisis affecting aviation or other transport services? Probably not, but formal arrangements for responding to crises should reduce the negative impact on asset values to some extent.

3.5. Transparency

The importance of transparency in decision-making has been stressed several times already, in relation to ensuring infrastructure investments are forthcoming, avoiding discrimination and opportunistic behaviour and responding to external shocks. Transparency is centrally important to sustaining independent regulation and to realising its benefits; and independent regulation can also maximize transparency. But it requires systematic publication by the regulator of the findings of regulatory reviews and evidence submitted to the regulator. The basis for decisions reached needs to be set out and made public. The presumption for independent regulation is evidence-based decision-making. This implies that the types of evidence required for setting infrastructure charges, for example, need to be set out publicly by the regulator together with procedures for quality assurance. Governments can impose these duties on a regulator more effectively than on themselves by virtue of the separation of responsibilities, and regulators can help sustain their independence through pro-active implementation. Audit by parliamentary or congressional committee may also have a greater impact on an independent regulator than the executive arm of government.

3.6. How "political" do regulators need to be?

Regulators are active participants in the policy process, simply because their actions have important political consequences, e.g. through highly visible impacts on fares and service quality, and because they do not follow narrow rules but have substantial discretion. As regulators are active participants in the policy process they will need political skills, for example, to prepare stakeholders, including ministers, for change. Informing ministers ahead of major decisions is critical, though difficult when politicians do not want to hear bad news. Being part politician does not imply capture. On the contrary, political entrepreneurship helps avoid capture and helps maintain support for regulatory strategy. This support can come from politics, but given the limited time consistency of elected officials, a broader basis needs to be sought, in industry, with users and with the media. The strongest support for independent regulation naturally comes from new entrants to the market and from consumer organisations. The regulator must actively seek engagement with stakeholders and devote significant effort to seeking buy-in (including from ministers) ahead of major decisions. An independent regulator should not, or at least not always, be an intransigent regulator. Intransigence can lead to costly disruption and damages the integrity of the regulatory system at large.

A special case of political entrepreneurship concerns the European Union directives. The recast of the First Railway Package of Directives, proposed in 2010, includes a strong formulation of the requirement for establishing an independent regulator. Imposing this on reluctant national governments might prove counterproductive in the light of the observations made above on the need to match governance arrangements to the political as well as the economic context. A special effort to engage in debate on this point with governments less convinced of the merits of full independence could bring dividends in terms of the effectiveness of the reform.

Regulators are always subject to political pressure, because they make decisions about things that politicians care about. Political independence in the sense of such pressure being absent is an oxymoron. Independence, instead, should be seen as giving regulators the means to participate in the policy process to the extent this is needed for them to be able to function, recalling that the main functions are to bring more time-consistency into the decision-making process and containment of opportunistic behaviour.

3.7. Maintaining independence and avoiding capture

It is noteworthy that the strategy of acquiring and maintaining support does not just consist of partaking in the political process. It is also, and foremost, a matter of building competence and credibility. Reputation will help garner broad support and maintain independence, although at the same time it makes the regulator stronger and this increases unease among politicians. Winsor (2010) sums up the approach as follows: "*The regulator should be assiduous in doing its job well, professionally, proactively, proportionately, in accordance with its legal duties, and explain to people what it is doing, and why, and the principles upon which it is operating. It should not be found asleep at the wheel, or looking the other way.*"

Recruitment policies also contribute to independence. Industry expertise is essential for a good proportion of the staff of regulatory agencies, but for the regulator him or herself it is not necessary and can be counterproductive. More importantly, regulators that take senior positions in one of the companies subject to their authority, or lobby for the industry, shortly after leaving the regulatory agency do nothing to enhance the reputation of the agency for independence. Employment contracts can and probably should include sterilisation periods on departure. Recruitment from professions that offer high-profile or well-remunerated[12] employment opportunities outside the regulated industry after leaving the post also have merit. This includes legal, accounting and academic professions. Successful regulators from other sectors of the economy also clearly have very relevant and transferable experience. Some of the participants in the Roundtable were of the view that recruitment of the regulator from the civil service can be problematic because of a natural culture of deference to ministers among government department officials. Again, this applies to the post of regulator rather than regulatory agency staff in general.

3.8. Independence from whom?

Where there is regulation, independence needs to be real rather than simply notional if the regulator is to be able to exercise the discretion. As already noted, independence is essential to containing opportunistic behaviour and this includes independence from the government of the day, with its inevitable focus on the short term. This is a particular issue when the government is a shareholder in one or more of the regulated enterprises. It is sometimes argued that separation of

functions within government is sufficient, with regulation the responsibility of the transport ministry and ownership a function for the finance ministry. But both collegiate responsibility in cabinet and the primacy of the prime minister overrules this weak form of separation. Only a separate and independent regulator can remove the conflict of interest between ownership and arbitration in these circumstances.

3.9. Data and information

Data is essential for economic regulation, and has to be supplied to the regulator from the regulated enterprises. As noted in Section 2, in the absence of competition, infrastructure charges are established on the basis of costs, or rather the costs that the regulator judges an efficient supplier would incur. To make these calculations, data is required on the assets owned, the quality, maintenance requirements and renewal horizons for the assets, traffic carried and, ideally, data on similar systems elsewhere for benchmarking. The enterprise must also report on what it charges customers to ensure compliance with regulations. A considerable level of detail may be required. This is costly for the industry to supply and for the regulator to process, and a powerful driver for a preference to rely on competition rather than price regulation wherever possible. At the same time, this is the kind of information an infrastructure manager in a competitive environment would need for running its business profitably. Reporting costs are not overly burdensome so long as data requirements are clear and stable. Ad hoc requests for unexpected data are what create excessive burdens. Many countries have experience with requiring regulated companies to publish standard sets of data, used to regulate them and also to provide information to academics and the public, an important aspect to driving optimal outcomes over the long term (ECMT, 2007).

Regulation of capital expenditure is the most problematic area, and regulations should be designed as far as possible to create incentives to report accurate information rather than "game" the regulator (Lafont and Tirole, 1993). Incentivising efficiency and restraining prices through RPI-X formulae has in many cases proved less problematic than trying to establish a cost-plus cap on expenditure.

In some sectors, RPI-X caps to charges may have tended to push infrastructure management towards sweating assets, with potential under-investment over the long term and risks of declining quality and inflation of maintenance costs in later periods. To avoid this outcome, the regulator requires sufficient data and analytical capacity to understand the costs of the industry.

Regulators need to be adequately resourced, both in respect to analytical capacity and transparency, and the publishing duties this implies. These resources should not be viewed as a cost of independent regulation. They should rather be viewed as a cost of good governance, as the resources would be required somewhere in government for transparent, evidence-based decision-making, regardless of regulatory arrangements. In practice, the costs of even the largest transport sector regulatory agencies are modest, as a recent UK House of Lords Enquiry revealed (see Table 1), particularly in relation to the cost of regulating banks and other financial services.

Table 1. **Total operating costs out-turn by regulator by financial year (£000s)**

Regulator		2004/05	2005/06	2006/07	% increase 2004/05 to 06/07
CAA	Civil Aviation Authority	78 169	75 860	74 551	-4.63
CC	Competition Commission	22 800	26 388	21 617	-5.19
FSA	Financial Services Agency	241 600	256 300	263 700	9.15
Ofcom	Telecoms	121 555	128 986	129 420	6.47
Ofgem	Gas	32 919	32 722	35 849	8.90
OFT	Office of Fair Trading	51 678	54 845	74 526	44.21
Ofwat	Water	11 196	10 571	11 511	2.81
ORR	Office of Rail Regulation*	13 010	27 829	29 181	124.30
Postcomm	Postal services	9 026	9 693	8 763	-2.91
TPR	Pensions	22 599	27 434	31 607	39.86
Totals		604 552	650 628	680 725	12.60

*The relocation of safety regulation from a separate regulator to the ORR was a major contributor to the increase in costs in 2005/6.

Source: House of Lords, 2007.

3.10 How many regulatory agencies?

As already discussed, sectoral regulators have an obligation to use proactive regulatory powers to improve outcomes in the sector for which they are responsible. Some of these powers may overlap with those of economy-wide regulators, such as antitrust authorities. Both can have rights to initiate far-reaching changes, such as the break-up of industries to foster competition, but when this power is shared clear procedures for consultation and interaction between the authorities need to be established. Overlaps can occur also between economic regulators and safety and environmental regulation. The merits of combining regulatory functions in a single agency or keeping different tasks in separate agencies is, as with other aspects of regulatory governance, very much context dependent. It should not be forgotten, however, that safety is first and foremost a management responsibility. Fragmentation engenders co-ordination costs and scarcity of talent points in the direction of fewer agencies that can achieve economies of scale and consistency in decisions. The authority of a new sectoral regulator can in some environments be strengthened by amalgamation with an economy-wide antitrust agency, or another sectoral regulator that has already proved its independence through effective use of discretionary powers in controversial cases. On the other hand, a dedicated sectoral regulator may achieve more focus on critical issues and be able to mobilise resources more effectively than a broad regulator, which may be distracted by urgent issues in other sectors under its brief. Within transport, merging competencies for a particular mode may have more advantages than merging responsibilities for several modes, but the arguments are not clear-cut and there is little empirical evidence to support either view.

In regard to safety, changes in the approach to regulation can have major impacts on costs, even within a mode. In the UK, for example, a shift in the way rail incidents are treated, that coincided with privatisation and re-regulation of the industry, contributed to an escalation of costs. A culture of viewing small numbers of accidents as an inevitable part of running the system, with a focus on

investigating causes to identify remedial measures regardless of blame, changed to a culture of establishing fault with much greater use of criminal proceedings. The Hatfield accident and its fall-out exacerbated the trend. The response has been a large increase in expenditure on legal costs and a tendency for decisions on procurement and procedures to be excessively risk-averse, with insufficient attention to cost implications in relation to the reductions in risk to passengers and railway workers actually achieved. Combining safety and economic regulation might be one way of achieving better results for the money spent on safety but this needs to be balanced against any risk of diluting the focus of regulation on both sides of the equation. Outright conflicts of interest must be avoided, and the accident investigation service therefore needs to be kept separate from safety regulation, as its purpose is to identify deficiencies in current arrangements and propose remedies.

Safety regulation can be abused to obstruct access to rail infrastructure, particularly when some aspects of safety regulation are delegated to an incumbent train operator. With gradual market opening of European rail markets under EU directives, technical aspects of safety certification for rolling stock and drivers were initially delegated to incumbent train operators in many countries. Delays in processing applications for certificates for new entrants have been identified as a major obstacle to market entry in a number of cases. RFG (2005) gives examples in France, where a separate rail safety regulatory authority, EPSF, has recently been established to remove conflicts of interest. Discrimination is also a risk when regulation is the direct responsibility of a ministry, as concerns to promote the interests of national industries, rail equipment manufacturers as well as train operators, can result in a conflict of interests. Independent regulation is the only way to counter such conflicts of interest.

3.11 Policy priorities

Policy priorities, between safety, environment, investment, etc., change over time. The virtue of independent economic regulation is that the focus on efficient levels of investment in infrastructure over the long term is insulated from too much vacillation in the political priority accorded to it in the short term. Past decisions to make regulation of transport infrastructure independent may have caused tensions with politicians over recent years, as the environmental agenda took centre stage, tax revenues in the bubble economy loosened financial discipline and then financial crisis management diverted unprecedented volumes of public spending to rescuing banks. But in the new economic conditions of austerity, where public expenditure on infrastructure is unlikely to be sufficient to deliver the economic growth required for recovery, creating the conditions to attract investment to infrastructure is about to return to the top of the agenda. Independent regulation will be the key.

4. CONCLUSION

Good transport infrastructure contributes strongly to economic productivity and growth, and achieving the right governance structures – including when to regulate and how to regulate – is central to the performance of the sector. The evidence discussed at the Roundtable suggests that there is significant scope to improve present performance and indicates practical ways to do this by learning from successful experiences in a range of sectors and countries. The 2008 financial crisis has made investors more averse to risks of all kinds and without improved governance there is a danger that inadequate infrastructure will become a brake on economic recovery.

Governance arrangements need to be tailored to markets. Where there is competition, private contracts are adequate to protect private and public interests, subject to the standard antitrust powers of competition authorities. Where competition is possible but competitive discipline is weak, the threat of regulation can be sufficient to restrain potential rent-seeking; the antitrust authority can be given powers to introduce economic regulation should regular abuses of market power be identified.

Competition is sometimes more feasible than often assumed. Given the costs and market distortions which often accompany regulation, it is worthwhile to adopt pro-active policies to make the best use of markets. In some cases, forced divestment of assets (horizontally or vertically) will be important to enhancing competition. Fair terms of access to key infrastructure will often also be important, as is a pro-active competition policy to prevent abuse of the advantages of incumbency.

Where sunk costs are high, significant market power exists, conflicts between the interests of infrastructure management and transport service operations are strong and outcomes are likely to be unstable, economic regulation may be indicated and is most effectively delivered through an independent regulator, charged with the objectives of:

- Providing incentives for efficient investment in infrastructure and other long-term assets such as rolling stock:
  - Through protection of returns on investment from sudden changes in government policy and external shocks;
  - Through predictable pricing of infrastructure use over the medium term;
  - Through transparent and predictable processes for determining rates of return on regulated assets.
- Preventing abuse of monopoly power:
  - Preventing access arrangements and technical regulations being used to discriminate between infrastructure users;
  - Ensuring monopolists behave similarly to enterprises subject to market disciplines so that infrastructure managers adjust prices, capacity and service quality to take account of the

profitability of their clients; and that transport service operators adjust prices, capacity and service quality towards maximising consumer surplus.

Regulatory independence is the key to maintaining incentives for investment in transport infrastructure in the right places and to make the best economic use of existing infrastructure. The papers prepared for the Roundtable illustrate that, where competitive discipline is weak, present approaches to regulatory governance structures frequently result in significant inefficiency, with the wrong level of capacity (either over- or under-capacity) and inefficient use of assets.

Trade-offs with other policy goals mean there are limits to independence and elected politicians have the ultimate authority to arbitrate, but this needs to be done through transparent processes established by the regulatory framework agreed in primary legislation. Experience will often reveal that regulatory arrangements need improvement and the regulatory framework should provide for this through periodic review and, when necessary, supplementary primary legislation. It is worth emphasizing that properly structured independent regulation should not act as a barrier to the achievement of other policy goals (e.g. carbon reduction targets), but rather it should help to ensure that these broader policy goals can be delivered more cost-effectively.

There also needs to be confidence that independent regulation can respond to external shocks and not act as a hindrance to government responses to these. For uncertainties that can be anticipated, regulation can provide for pre-specified adjustments (e.g. to charges or services); for unknown unknowns, governance arrangements need to pre-specify procedures for consultation, negotiation and decision, to facilitate risk-balancing across the broad range of policy goals. With experience accumulated to date, the existence of some formerly poorly appreciated risks is now clear, notably in relation to the condition of long-term assets such as rail track. If such assets are re-regulated or privatised when knowledge of their condition is poor, regulation needs to focus on rapidly improving asset inventories and needs to establish procedures for assigning any excess costs that arise as a result of better understanding maintenance and renewal costs.

Independent regulation requires a clear division of labour – with the primary legislation specifying the regulator's responsibilities, responsibilities that remain with the executive arm of government or with other agencies – and interface arrangements between the parties. The regulator should be independent of government (i.e. have sufficient discretion) and of the regulated parties (to be in a position to arbitrate). Independence requires appropriate recruitment, security of tenure and conditions on subsequent employment, and provision of adequate resources to carry out regulatory responsibilities. For independence, procedural guarantees are prerequisite but a regulator will only remain independent if he or she behaves independently, in terms of both arbitration and alacrity in addressing issues where regulatory guidance is needed. The regulator needs to be accountable for decisions and performance. This accountability resides with the legislature, where the regulatory mandate originates. It also requires transparency in the decisions made by the regulator, achieved by publishing the data, evidence and reasoning on which they are based.

Regulators need to be proactive to be effective, intervening to improve outcomes of their own accord rather than responding only to demands from the businesses for which they are responsible. This is particularly important where re-regulation and restructuring seeks to promote private investment or creates conditions in which private and state-owned enterprises are expected to compete.

NOTES

1. See annex for participants.

2. On 4 January 2011, Virgin Blue asked the National Competition Council to recommend the "declaration" of two services at Sydney Airport under the Trade Practices Act. The complaint concerned airside services, including the use of the runways and taxiways, and domestic terminal services. The courts subsequently declared Sydney airport for access, which meant that domestic airlines could negotiate with the airport subject to arbitration by the Australian Competition and Consumers Commission (ACCC) in case of failure to reach an agreement. Agreement was reached without arbitration in early 2011. This follows a similar complaint by Virgin Blue in 2002 that resulted in declaration of the airside services in 2005 for a 5 year period and agreement finally reached between Virgin Blue and the airport in May 2007.
www.firststateasia.com/uploadedFiles/CFSGAM/PdfResearch/070906_Aust%20Airport%20Regulatory%20Review.pdf , *www.virginblue.com.au/AboutUs/Media/NewsandPressReleases*

3. The discussion here reflects a near-but-not-complete consensus view at the roundtable. A small minority argues that the case for regulation exists when there is an essential facility, and no detailed need of costs and benefits is needed. Furthermore, the regulator should base their decisions on a transport system view, not a narrow modal efficiency approach.

4. Time consistency means that regulatory decisions and more broadly government actions that affect the value of contracts and assets held by regulated businesses are made on the basis of the same principles throughout the length of the contract. Major regulatory reviews or new primary legislation can alter these principles but the circumstances under which such changes can be expected to be made should be transparent and specified in the regulatory framework.

5. The value of BA's slots at Heathrow airport was higher than its market capitalisation value in 2010 (Forsyth 2010).

6. For example, a single private company owns 60% of the toll highway network in Italy and represents 75% of the revenues. The rents are very considerable and provide both the means and the incentive to defend them. In a further aberration companies of this type are among the few that can finance, or are eligible to finance, investments in other sectors, e.g. airports. The returns on such investments then are benchmarked against the highway business returns.

7. The remaining 40% of toll highways in Italy is owned by 32 companies, some of which are partially public, with local authority involvement in particular. The rents are used to fund schools etc., leading the authorities to resent efficiency-improving regulation.

8. Note that discrimination in the sense employed here does not include differential pricing of services according the willingness of the end-use market to pay, or Ramsey pricing, which can present the most efficient way to recover the costs of fixed assets.

9. This includes the decision not to make technical experience in the rail industry a condition for companies or consortia bidding for the infrastructure assets. Such conditions are frequent in the privatisation of utilities and were standard, for example, in the privatisation of energy sector industries in central and Eastern Europe during the reform of their economies in the 1990s.

10. One could see these costs as coordination costs, similar to those emerging with separation of formerly integrated firms. The separation is beneficial for reasons, ultimately, of efficiency, but coordination costs increase.

11. The HLOS-SOFA mechanism does remove the discretion of the regulator to increase the level of funding to meet current outputs should the regulator judge it efficient to do so. Moreover, when outputs are reduced through this mechanism, open access train operators (which unlike holders of concession contracts – franchises - are not indemnified by government against changes in infrastructure services) may suffer, devaluing earlier investments in locomotives for example.

12. Recruitment of financial service regulators faces the biggest problems in this respect.

REFERENCES

Aubert, C. and J-J Laffont, *Multi-regulation for Developing Countries*, Background Paper for the *World Development Report 2002*, The World Bank, Washington DC, 2002.

ECMT, *Railway Accounts for Effective Regulation*, Louis S. Thompson, OECD publishing 2007.

Forsyth, P., *Five Puzzles in The Economics of Air Transport: A Behavioural Perspective*, Presentation to German Aviation Research Society Workshop, July 2010, *www.garsonline.de/Downloads/100701/Five_Puzzles_In_Air_Transport.pdf*

Gomez-Ibanez, *Regulating Infrastructure,* Harvard University Press, 2003

Guasch, Laffont and Straub, *Renegotiation of Concession Contracts in Latin America,* World Bank Policy research working paper 3011, Washington DC, 2003.

House of Lords, First Report of the House of Lords Select Committee on Regulators, 23 October 2007*, www.publications.parliament.uk/pa/ld200607/ldselect/ldrgltrs/189/18915.htm*

ITF 2009, Integration and Competition between Transport and Logistics Businesses, Roundtable 146, International Transport Forum, OECD publications 2010.

ITF 2010, *Transport Outlook 2010: The Potential for Innovation,* International Transport Forum, *http://internationaltransportforum.org/Pub/pdf/10Outlook.pdf*

Lafont and Tirole, *A theory of Incentives in Procurement and Regulation,* Jean-Jacques Lafont, Jean Tirole, Massachusetts Institute of Technology, 1993.

Modica and Rustichini 1994, *Awareness and Partitional Information Structures*, Salvatore Modica and Aldo Rustichini, Theory and Decision Volume 37, Number 1, 107-124,

Morrison and Winston, 1999, *Regulatory Reform of US Intercity Transportation,* Steven Morrison and Clifford Winston in *Essays in Transportation Economics and Policy* edited by Jose Gomez-Ibanez, William Tye and Clifford Winston, Brookings Institute.

Mott MacDonald 2006, *Study on the Impact of the Introduction of Secondary Trading at Community Airports,* Mott MacDonald in association with Hugh O'Donovan, Oxera and Keith Boyfield Associates, report for the European Commission.

Niemeier 2010, *Effective Regulatory Institutions for Air Transport: A European Perspective,* Hans-Martin Niemeier, University of Applied Sciences, Bremen, International Transport Forum Discussion Paper 2010-20, *http://internationaltransportforum.org/jtrc/DiscussionPapers/DP201020.pdf*

OECD, Regulatory Policies in OECD Countries: From Interventionism to Regulatory Governance, OECD Publishing 2002.

Oum 2009, *Air Transport Liberalization and its Impacts on Airline Competition and Air Passenger Traffic*, Tae Hoon OUM, University of BC, Canada, Xiaowen FU, Hong Kong Polytechnic University, Anming ZHANG, University of BC, Canada, *http://internationaltransportforum.org/2009/workshops/pdf/Oum.pdf*

Ponti 2010, *Transport Regulation from Theory to Practice: General Observations and a Case Study*, Marco Ponti, TRT Trasport e Territorio SRL, Milan, International Transport Forum Discussion Paper 2010-19, *http://internationaltransportforum.org/jtrc/DiscussionPapers/DP201019.pdf*

RFG, *Rail Freight and France*, Rail Freight Group, February 2005 *www.rfg.org.uk/library/?pid=3158&lsid=3290&edname=17546.htm&ped=17546*

Starkie 2008, *The Airport Industry in a Competitive Environment: A United Kingdom Perspective,* David Starkie, Economics-Plus Ltd, London, International Transport Forum Discussion Paper 2008-15, *http://internationaltransportforum.org/jtrc/DiscussionPapers/DP200815.pdf*

Taleb, *The Black Swan: The Impact of the Highly Improbable*, Random House, New York, 2007.

Winsor, T. (2010), *Effective Regulatory Institutions: The Regulators Role in the Policy Process, Including Issues of Regulatory Independence*, Tom Winsor, Partner, Transport & Infrastructure, White and Case LLP, London, International Transport Forum Discussion Paper 2010-21, *http://internationaltransportforum.org/jtrc/DiscussionPapers/DP201021.pdf*

EFFECTIVE REGULATORY INSTITUTIONS FOR AIR TRANSPORT: A EUROPEAN PERSPECTIVE

Hans-Martin NIEMEIER

University of Applied Sciences
Bremen
Germany

SUMMARY

Bremen, November 2010

"*Member States shall guarantee the independence of the independent supervisory authority by ensuring that it is legally distinct from and functionally independent of any airport managing body and air carrier. Member States that retain ownership of airports, airport managing bodies or air carriers or control of airport managing bodies or air carriers shall ensure that the functions relating to such ownership or control are not vested in the independent supervisory authority.* EU Directive on Charges, Article 11 (3)."

"*As for Frankfurt Airport, the Hesse Ministry of Economics, Transport, Urban and Regional Development (HMWVL) – which is the responsible government entity for aviation – is clearly separated and acts independently from the Hesse Ministry of Finance, which represents the State's 30 per cent shareholder interest in Fraport.* Stefan Schulte (2009), p. 8."

1. INTRODUCTION

Self-evident things are usually taken for granted and people act on them without questioning their rationale. For example, no citizen of the European Union (EU), in principle, would question the independence of the law courts. Law courts are designed to judge independently, and people have recourse to appeal if that is not the case. With regard to regulatory institutions fixing airport charges, however, the rule seems to differ. It took the EU Commission about twenty years to put the EU Directive on Airport Regulation into law. This law mandates Member States to set up an independent regulatory authority for airports. The debate over this directive is not over, though: the word "independent" has yet to be clearly defined. Indeed, it appears probable that the European Union might end up with regulators whose independence is so restricted that the true meaning of independence has been turned on its head.

The heated debate on the regulatory framework for airports, which if wrongly designed might lead to regulatory capture and regulatory failure, has highlighted the importance of creating good institutions for air transport in general. This is especially important, because airports are moving from a public utility type of state-owned organisation to an industry with a mixture of competitive and monopolistic elements, different forms of ownership and levels of commercialisation all influenced by different types of implicit and explicit regulatory regimes. To give a few examples of these changes:

- Airport privatisation began in the late 1980s with BAA and has led to a fully privatised industry in the UK, with only a few exceptions. This differs markedly from the rest of Europe, where only a minority of airports are partially privatised. These changes were accompanied by changes in regulation. The UK has adopted an independent regulatory body, while most continental states lack such an institution. Elsewhere, Australia and New Zealand have privatised some of their airports as well. Australia initially went through a phase of price-cap regulation and changed later to a monitoring system. New Zealand abolished *ex ante* regulation, but later re-regulated airports.

- Competition among airports, which hardly existed twenty years ago, developed due to the privatisation and liberalization of downstream markets. A consequence of this was the influence on the scope and method of regulation. Again, these challenges are best observed in the UK. The UK Competition Commission directly influenced the market structure when

it ordered the break-up of BAA (which is currently disputed for different reasons in the courts). In turn the regulator initiated an inquiry into how to change regulation to encourage a more competitive environment. The positive effects of competition can replace regulation, which makes it necessary to decide which airports should or should not be subject to regulation. For example Manchester airport has been de-designated, while Stansted not, although the later decision remains controversial. In the Netherlands, the Dutch Competition Authority assessed the market power of Schiphol and reached the conclusion that regulation should be continued, as changes in the market structure are currently not politically feasible. With growing demand for air transport and liberalization of the downstream market, more competition among airports will develop. This will call into question the necessity of airport regulation. Regulatory authorities will increasingly be faced with the decision which airports should be regulated and which should be left unregulated.

- Privatisation of air traffic control (ATC) has also been an issue in Europe. The UK partially privatised NATS[1] and price-capped its ATC charges. In Germany, partial privatisation of ATC was stopped on legal grounds in 2006 but is still an option, although a rather political one.

- Liberalisation and privatisation of airlines have led to intense competition in many parts of the world and have changed the vertical relationship between infrastructure providers and users. Access to often scarce infrastructure and the pricing of it becomes increasingly important to determining the competitiveness of airlines. In turn, it is also crucial for airports and ATC providers to utilise existing capacity efficiently and to finance new capacity. Scarcity can be created and monopolistic rents can be reaped by the use of increasingly sophisticated strategies.

- Air transport has always been subject to external shocks, but in a liberalised and (partially) privatised environment the question of who bears the risks becomes important. In particular, the question arises how to design institutions that not only are capable of implementing cost-based regulation, but also incentive-based regulation with the risk of substantial losses for infrastructure providers.

- Finally, strategic behaviour of airlines and other stakeholders has become vital for profitability and competitive position. Hence policymakers will face substantial and increasing rent-seeking behaviour. This will certainly not facilitate the task of developing effective regulatory institutions.

This paper addresses the following two research questions:

1) Which parts of the value chain of air transport are *ex-ante* regulated?
2) Is this *ex-ante* regulation carried out by effective regulatory institutions or should the regulatory institutions be reformed?

Regulation here is defined as rules which limit contractual freedom and thereby determine price, quantity, quality, investment and access. Inappropriately formulated regulation can lead to a stalling of infrastructure expansion and to high congestion costs. Getting economic regulation right is therefore critical for transport policy. Environmental and safety regulations are not covered in this analysis, although they also carry risks, for example, excessive fees for safety services and longer travelling times. The focus of the paper is entirely on the regulatory framework and not on its content. It therefore does not discuss specific methods of regulation.

The paper addresses the two questions posed in reverse order. Section 2 defines the concept of effective regulatory institutions. Section 3 describes the value chain of air transport and how the state intervenes with what type of regulatory institution. The final section summarizes the results, by highlighting the institutional reforms necessary to make regulation effective.

2. EFFECTIVE REGULATORY INSTITUTIONS FOR AIR TRANSPORT

There are two rationales, one economic and one political, for an effective regulatory institution for public utilities applicable to air transport. The economic rationale is to ask how to effectively correct for market failure and how to develop instruments and institutions to correct for it. The political rationale asks if and how politics should delegate power to independent institutions such as a regulator or a commission. Both approaches are complementary and have much in common (Bartle and Vass, 2007). Both view the problem of public utilities as a contracting problem with asymmetric information between principals and agents (Gomez Ibanez, 2003).

The *economic rationale* justifies ex-ante regulation if an industry has persistent market power and regulation increases economic welfare. The absence of any close substitute due to entry barriers creates persistent market power. This might be due to legal and planning restrictions or to a production technology characterized by natural monopoly with a combination of economies of scale and scope[2] and large sunk costs. The latter is a result of assets that are highly specific and not easily redeployed (Baumol *et al.*, 1977; Forsyth, 1997).

Market failure can be corrected by a variety of different governance models, particularly by state ownership or by regulated, private monopolies. For the latter model the question arises how to encourage private investment in a regulated framework? Privatisation of such an industry is not straightforward. A major problem is how to write long-term contracts for fixed investments, which have value only in a specific exchange relation. Asymmetric information makes it infeasible to write complete long-term contracts that cover all contingencies. Hold-up problems due to opportunistic behaviour might occur so that markets and long-term contracts fail. The central problem is to create discretionary commitment – a point summarized by Gomez-Ibanez (2003, p.3): *"The expensive, durable and immobile investments help make all parties – the company, its customers, and the government – vulnerable to opportunism and desirous of stability and commitment.*" In particular, Levy and Spiller (1994), Stern (1997) and Stern and Holder (1999) argue stability and commitment can be best achieved by an independent regulator, an institution with limited discretionary power which provides long-term creditability and trust, expertise and flexibility without arbitrariness. Such an independent regulator should be part of a well-designed and functioning legal system and it should prevent regulatory capture by either the regulated firm (Stigler, 1971) and/or consumer groups (Posner, 1971). With respect to airports, Wolf (2004) argues that an independent regulator applying incentive regulation is a necessary condition for full privatisation because otherwise private investors will accept the risk of an investment in a specific asset only if the government shares such risks.

The *political rationale* argues that politicians should delegate discretionary power to an agency in order to avoid both inconsistent decisions over time and opportunistic behaviour. Both are relevant to the organisation of public utilities, irrespective of the form of ownership because of the long-term immobile asset-specific character of these investments. Majone (1997, p.152) points out that

"*independent agencies enjoy two significant advantages: expertise and the possibility of making credible policy commitments.*" Democratically elected governments only have power for a short period of time and cannot bind future governments, but they can assign limited discretionary power to independent regulators, which have expertise and are committed to long-term political goals. Independent central banks, the European Commission and independent utility regulators are examples of these "*non-majoritarian institutions*" (Thatcher and Sweet, 2002), which exercise public authority in well-defined areas of public policy and which are neither elected nor directly controlled by politicians. This rationale is independent from the question of ownership and can be applied to publicly-owned utilities as well. For example, instead of managing a public utility through a public bureau it might be better to form an independent agency or to corporatise a public utility regulated by an independent authority.

From both of these strands of theory it follows that an independent regulator with discretionary power provides a good governance model for public utilities. This will become important when analysing the air transport sector, which is characterised by a variety of institutions, among them corporatised, partially- to fully-privatised public utilities.

These theories have also defined principles and criteria for effective regulatory institutions adopted by the OECD[3] (1995, 1997) and by a number of high-income countries (for example, the UK[4]) and lower-income countries (for example, Brazil, Chile[5]):

- *Legislative mandate from elected legislature*. Regulators should have a well-defined set of objectives from their parliament. These objectives must be clearly defined and separate the regulator from general policymaking and from the management of public utilities. The legal framework should separate the roles and responsibilities and define principles of good regulation.

- *Independence and accountability to democratic bodies*. Independence can be undermined directly by the regulated firm or by users: this is termed regulatory capture. For independence, it is necessary to separate the function of regulation from the functions of ownership and management of public utilities. The regulator must be separated from ministries which fully or partly own or manage public utilities. It must be an autonomous body with secure funding. Officers should not be dismissed unfairly by politicians and should not benefit personally from their decisions, for example, by being offered senior positions in firms they have regulated. Delegation of discretionary power to a regulator must be controlled by parliament. Parliament should exculpate regulatory decisions through, for example, approval of an annual report from the regulator. The regulated firms and the users of public utilities (for example, independent consumer bodies) must have the right to appeal against regulatory decisions by being able to take the regulator to court.

- *Fair, accessible and open process.* Public hearings and consultation should be part of any good regulatory approach. Results should not be predetermined; they should be published and it should be made transparent why contested points have been adopted or rejected. Fair process also provides for predictability and trust, as changes do not occur arbitrarily. Predictability and trust are especially important to avoid hold-up problems. Predictability should not be misunderstood such that processes should not be subject to adaptation through learning and evolutionary change. Vass (2006, p. 204) points out that this is one of the *"fundamental lessons*" for good regulatory governance: "*Achieving sound regulation and an effective regulatory state is an evolving process, where mistakes are made and lessons learned*."

- *Cost-effective regulatory processes*. The legislative mandate should be effectively implemented avoiding high bureaucratic costs. Regulation is not an end in itself, but should serve the end to increase economic welfare. It should create a net benefit to society. This implies that the scope and method of regulation should be assessed by a third party in terms of benefits and costs (for an overview on various methods, see ACCC, 2010).

- *Well-targeted and temporary.* The causes of market power are not immune to change over time. Deregulation of at least parts of the value chain for public utilities has been successful in many jurisdictions. This raises the question which part of the value chain and which firms should be subject to regulation. The answer to this should be part of an inquiry in which the regulator and the stakeholders participate, but the final decision should be taken by a third party.

These principles can be applied to public utilities in general. In applying it, it is important to differentiate between vertically integrated and separated utilities. In vertically integrated industries such as the water industry the regulator becomes the interface between the regulated firms and the final consumers. Unlike the water industry the services of the air transport industry are unbundled, at least in those countries that have deregulated their airline industry. For such an industry the task of regulation includes not only supervision of price and quality of service but also access to essential facilities and infrastructure bottlenecks under monopolistic control.

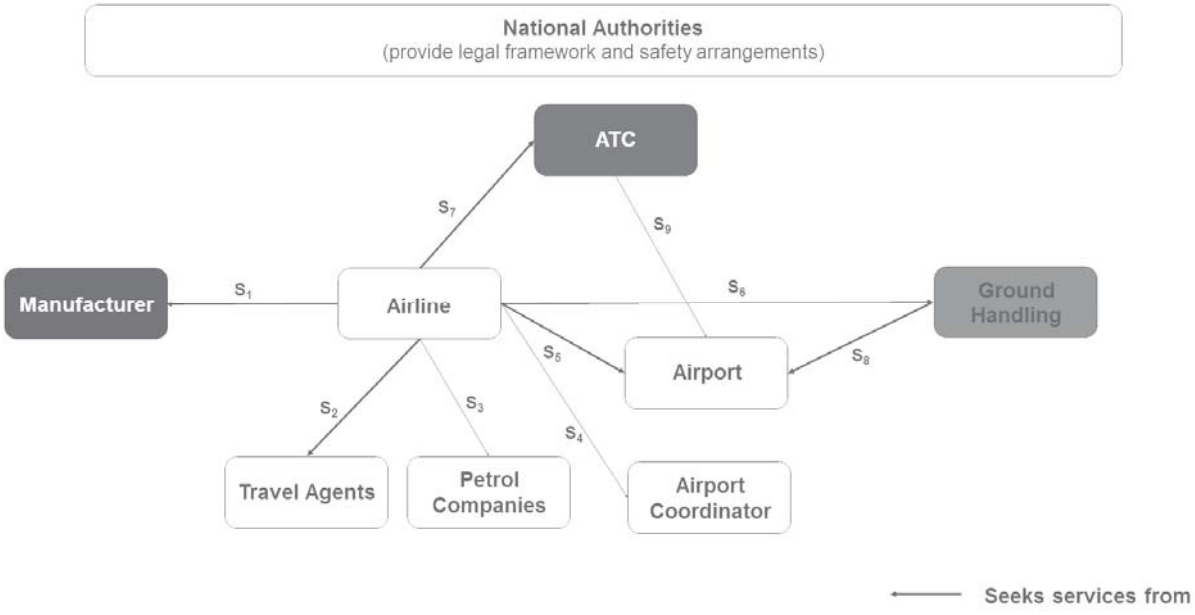
3. THE VALUE CHAIN FOR AIR TRANSPORT AND REGULATORY INTERVENTION

In this section, the value chain of air transport is described in order to provide an overview on how the industry is vertically organised and which parts of the chain are regulated. Then regulation is analysed in more depth and the following question addressed: is regulation in line with the criteria for effective regulatory institutions?

3.1. The value chain for air transport

The nature of air transport is changing and in many countries different forms of organisation are used. Gomez-Ibanez (2003), building on Williamson (1985), differentiates between spot markets, private contracts, concession contracts, discretionary regulation, public enterprises and hybrid forms. In air transport, almost all these organisational forms are practised. Interestingly, there is no country which has organised air transport as a privatised, vertically-integrated public utility subject to regulation. Typically, a disaggregated approach has been adopted, consisting of regulated infrastructure and a partly liberalized downstream market.

Figure 1. **Value chain of air transport**



Legend
S_1: Purchase/leasing of aircraft
S_2: Sale of aviation services
S_3: Request for fuel and refuelling of aircraft
S_4: Application for airport slots (for fully co-ordinated and schedule-facilitated airports only)
S_5: Request for infrastructure
S_6: Request for ground-handling services (e.g. cleaning, catering, push-back)
S_7: Request for airway slots and air traffic control services
S_8: Request for ground-handling infrastructure
s_9: Request for office space

Demand for air transport is a derived demand, stemming from the final demand for investment and consumption of goods and services. Airlines sell their final products, consisting largely of seats and freight transport, directly via the Internet or indirectly through travel agents and freight agents, to consumers and firms (see Figure 1, S_2). The Internet has substantially decreased the market power of booking systems and has reduced the market share of travel agents over the last ten years. Air fares are traded on spot markets, part of packages with holiday or other services, like car rental, hotel rooms, travel insurance and so on. In the business segment, airlines sell their tickets at a discount to large companies. These down-stream markets are more-or-less competitive industries subject to competition law, but not to economic regulation.

Compared to international shipping, the airline market is still a tightly regulated industry. The major aviation markets in the US, Europe and Asia-Pacific have been deregulated internally. Liberalization has been a success story (Morrison and Winston, 1992). In the US, air fares decreased in real terms by 40% from 1976 to 2001, and about 60% of this drop can be attributed to deregulation (Morrison, 2002)[6]. European deregulation is in line with the US experience. According to Arndt (2004), liberalization caused fares to fall by 31 to 35% in real terms for the period 1989 to 2000. Passengers gained USD 311 per trip in 1999 (in 1989 prices).

Since 2000, low-cost carriers have intensified competition, gaining larger market shares. This is especially the case with Southwest in the US, where its entry forced fares down on direct routes, and to a lesser extent on adjacent routes. Morrison (2002) termed this the "*Southwest Effect*". Similar effects are observed in Europe when Ryanair enters a market. It appears though that direct competition is the main driver, while potential competition has a rather weak effect. Therefore, aviation markets are seen as not fully contestable (Borenstein, 1992). Although airplanes are still seen as "capital with wings", part of the airlines' fixed costs are sunk in, for example, developing hub operations or the marketing of routes. Airlines have difficulties covering their high fixed costs and have generally low profitability. Despite developing sophisticated pricing strategies, airlines are forced in times of crisis to adopt short-run marginal cost pricing.

Overall, the welfare gains of deregulation are so large that re-regulation is not a serious policy option. It is a market with imperfections, driven by economies of scope and density (Caves *et al*., 1984; Brueckner and Spiller, 1994) and subject to competition law regarding mergers and alliances, predatory pricing, cartels and price fixing (for an overview, see Lee, 2006).

Additional, restrictive regulation applies when airlines try to serve destinations outside their home countries. For these services, airlines require traffic rights (*freedom of the air*). Restrictive air service agreements allow for only a limited number of flights and carriers on many international routes, thereby artificially reducing supply, with the result that fares are above competitive levels. The rents are reaped by the designated airlines. Open skies agreements usually eliminate these regulations and the associated rents, but some forms of ownership restrictions still prevent access to these markets (Doganis, 2002). The economic rationale for this kind of regulation is weak, but as a completely liberalized aviation market is not on the political agenda of even the most liberal countries, such as the US, regulation of air service agreements is analysed below.

Airlines acquire a number of inputs from upstream markets. Aircraft are bought from manufacturers or are leased from specialised leasing companies (S_1). There is a functioning secondary market for leasing and buying aircraft. Aircraft production is characterised by learning economies and state subsidies. There are only a few producers in certain market segments, such as large, wide-body jets. Overall, there is no need for economic regulation, and the issues are addressed through competition and trade policy.

Airlines buy fuel on the world market using different types of contract, including hedging against the risk of oil price changes (see S_3). As refuelling can only be done on the ground, airports might create access problems for ground handling services (see below). Airports can also have opportunities to cross-subsidize fuel for certain carriers or destinations.

Airlines need the right to start and land at the airport they intend to serve. This is not a problem at airports with ample capacity but there are access problems at busy airports. Outside the US, airlines apply for slots at busy airports (see S_4), and the slot co-ordinator distributes the slots in line with IATA rules. In the US, access to busy airports is rationed on a first-come, first-served basis (grandfather rights).

Only at a limited number of high-density traffic airports has slot trading been practised. More or less ineffective forms of peak and congestion pricing have been practised, notably at Heathrow, Manchester and Stansted.

The way scarce resources are allocated in air transport creates substantial welfare losses. Morrison and Winston (2008) estimate an annual welfare loss of USD 6 billion for US airports. Mott MacDonald (2006) estimate that secondary trading of slots would lead to a gain in consumer

surplus in the European Union of +EUR 31 billion and a producer surplus of +EUR 1.2 billion at current prices in 2025. Furthermore, the link between scarcity prices and investment is broken, so that substantial welfare losses might occur due to a lower-than-efficient level of investment. Very often the runway is the constraining factor but in some cases, for example, Vienna and Bratislava, ATC capacity sets the limit. Slot allocation creates a number of access problems and regulation is analysed in more detail below.

Air traffic control (ATC) services (S_7) are another indispensable input for airlines. These services consist of local services at the airport and en-route services in the upper air space[7]. ATC guides the aircraft from the gate to the take-off runway and controls the flight within a certain radius around the airport. Then it is handed over to the en-route manager, who guides it to the final destination and hands it to the local ATC provider. ATC is responsible for co-ordinating flights on the ground and in the air so that air transport is safe and delays are minimised. Given the high fixed costs, and the fact that there cannot be two competing air traffic management systems in the same flight corridor, makes most of the ATC services a natural monopoly[8], regulated or controlled by the state in some way or another (Oster and Strong, 2008). Large differences between ATC organisations in terms of cost efficiency and delay management have led to varied forms of governance. In addition, ATC systems have not adjusted their price structure when demand increases and peak and congestion problems occur. Reform of ATC can create win-win situations but also losers and winners[9]. Precise efficiency assessment is difficult due to the fact that, as Button (2010, p. 22) argues, ATC has to meet complex "*societal demands for safety, security and environmental protection. … There remains the challenge of moving towards best practices in terms of developing new institutional structures and technical standards.*" Regulation will form part of these new institutional structures, and is analysed below.

Airlines buy a wide range of services (S_5) from airports, and airports supply direct and indirect services to both airlines and passengers. Airports provide aircraft movement facilities, including aprons, runways and taxiways as well as passenger processing facilities, consisting of aerobridges, baggage systems, check-in facilities, public areas in terminals, flight information displays and landside roads. At some airports, terminals are leased to airlines and ground handling is performed by the airlines or third-party providers. Some airports provide local ATC, others do not (see below). Airports also supply non-aeronautical services, such as car parking, restaurants, administrative office space and other commercial and retail services.

Airports have been depicted as natural monopolies due to their asset specificity and economies of scale. The empirical evidence for the latter is not conclusive, as studies show that economies of scale run out at levels in the range of 3 million to 90 million passengers (Niemeier, 2009). The sunk-costs character of airport investment is unanimously acknowledged, but differs with the kind of services involved. The runway can be redeployed to uses which create only marginal value, but office space in a terminal can be used for other value-creating purposes. The market power of an airport depends in particular on the available substitutes. This differs from airport to airport and for the type of service. For example, there are good substitutes available for Manchester airport because nearby Liverpool airport offers good services for origin and destination traffic, and Heathrow is the more attractive hub for connecting traffic. Other airports such as Dublin or the two Parisian airports (under common ownership)[10] lack such good substitutes.

Airports with persistent market power do not necessarily have market power across all services. Some have market power for local origin and destination traffic in specific market segments and hardly any market power in the freight market. Some have market power in the provision of aeronautical services but only limited power in the non-aeronautical services. For example, Schiphol airport has market power in the provision of aeronautical services for business travellers, but the market power for parking is limited by a well-functioning public transport system. Some of the profits

of an unregulated airport with market power reflect that power but they can also reflect locational rents.

Some airlines use long-term contracts with airports. For example, low-cost airlines like Ryanair have long-term contracts with low-cost airports such as Charleroi airport. A few airports, for example, Bordeaux, Bremen and Schiphol, have differentiated their product and provide dedicated low-cost terminals. Airlines and airports are usually not vertically integrated, but terminals are sometimes leased to airlines on a long-term basis. In the US, Europe and Australia, some airports have dedicated terminals. Lufthansa has a share in Fraport, its main hub, and has a joint ownership agreement with Munich over a terminal building.

In the last 20 years, airports have developed their non-aeronautical businesses on a large scale. The share of non-aeronautical revenues has risen by up to 50% of total revenues at some airports (Graham, 2008). This growth has happened despite most of these airports being subject to a single-till regulation, which indirectly taxes these activities. At the same time, airports have voluntarily restricted their prices on non-aviation products and services to high-street levels.

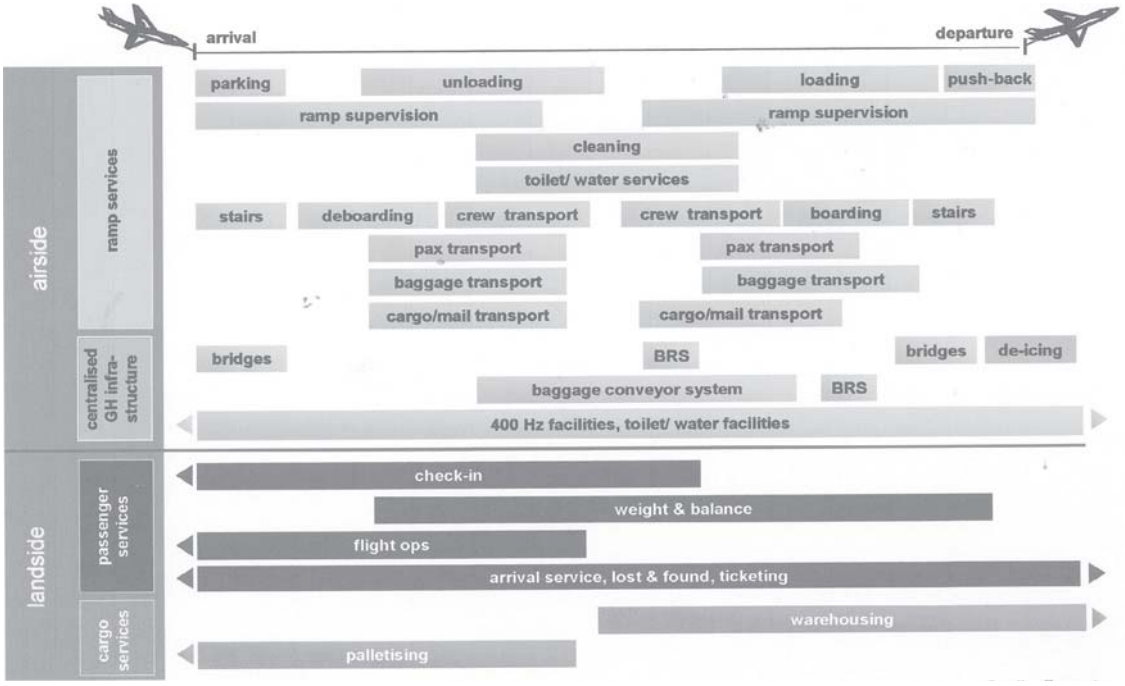
Airports have chosen a variety of contractual arrangements to organise commercial activities, ranging from vertical integration to different forms of long-term contracts. Dublin Airport Authority (formerly Aer Rianta) and BAA plc are the most notable for in-house production of the full range of commercial services. This is the exception, and other airports usually outsource many activities to specialised companies. Graham (2008) differentiates between concession contracts, management contracts and joint-venture arrangements. This shows that many of these services involve specific investments, but there is little evidence for market failure (see below). An exception might be car parking, which generally is very profitable, and airports located in cities with poor public transport might have substantial market power.

The heterogeneity of airport services makes it necessary to identify in which services airports have substantial market power. How regulatory institutions deal with this problem is analysed below. Before this, ground handling -- a service provided by airlines and airports -- is described.

Ground handling consists of ramp, baggage, freight and mail, fuel and oil and central infrastructure services (see Figure 2). These services can be provided in-house by airlines themselves, by airlines as third-party handlers, by independent ground handling companies and by airports. Ground handling services are not bought on a spot market but under five- to seven-year contracts, or are produced in-house.

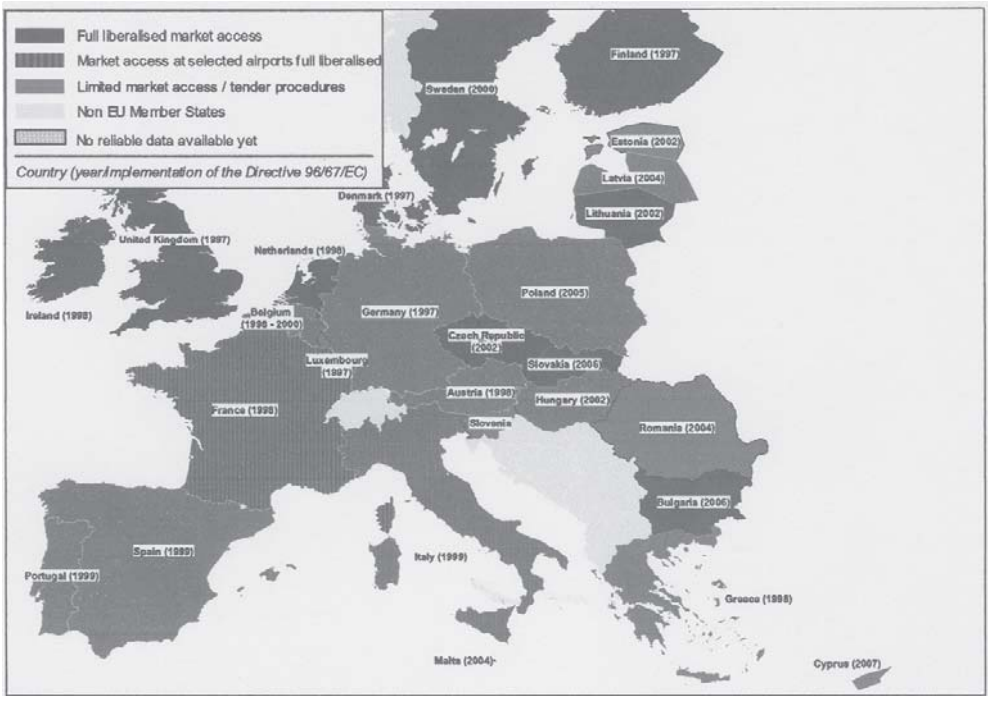
In many European countries, ground handling was traditionally either a monopoly of the airport or a monopoly of the flag carrier. But the rationale for such monopolies has always been rather weak. Ground handling services do not need a high degree of specific investments and are therefore regarded as a contestable market (Templin, 2006), which can in principle be liberalized. The EU has attempted to make liberalized ground services the rule, with Directive 96/67. The directive faced a lot of resistance from various stakeholders, in particular from airports and labour unions. Nevertheless, it has led to substantial change. More and more countries have liberalized ground handling (see Figure 3) and "*in general, prices for ground handling services decreased since the introduction of the Directive* (Airport Research Center, 2009, p. 18)." However, the opening up of markets faces a number of obstacles. The report of the Airport Research Center (2009) for the EU Commission states that at "*airports where the airport operators stayed active, the market shares of airport ground handling companies have decreased, but remained on a high level*" (*ibid.*, p. 18). The report argues that incumbents still have substantial market power and that competition is less effective due to access problems. How access is regulated is analysed below.

Figure 2. **Overview of the vertical chain for different ground handling processes**



Source: Templin (2006).

Figure 3. **Types of liberalization of ground handling services in Europe**



Source: Airport Research Center (2009).

3.2. Regulatory intervention

This section focuses on institutional problems of regulation in air transport. This is a wide field as regulation differs from country to country and in many countries regulation is not very transparent. Therefore, this paper cannot provide a comprehensive overview, but gives examples of how basic regulatory questions are addressed.

The questions to be answered are:

- In which parts of the value chain is it necessary, for economic or for overriding political reasons, to regulate *ex ante*?
- Which institution fulfils this task?
- Is this institution well designed or could it be more effective?

These questions are answered in turn by analysing airlines (designation of airlines in restrictive ASAs), airports (charges and access to ground handling), ATC (regulation of charges) and slot co-ordination.

Airlines

Government policy makes it unlikely that air service agreements will be abolished in the foreseeable future, but partial liberalization with the development of low-cost carriers on international routes increasingly challenges the incumbent position. This erodes rents for designated carriers and creates political tensions. It raises three questions for regulation:

- Who decides on air service agreements?
- Who designates which competing carriers?
- Who designates which competing airports?

In nearly all countries, the department of transport and/or the department for international affairs negotiate(s) ASAs and thereafter designate(s) airlines and airports. The only exception seems to be Australia (see below). Elsewhere, politics dominate. Recent examples are the blocked entry of Air Asia X on the route Malaysia to Sydney and of Emirates on the route Stuttgart to Dubai. In the case of Air Asia X, a private airline, liberalization would undermine the monopoly of Malaysian Airlines, fully owned by the Government of Malaysia. Air Asia X is campaigning for market opening by painting the slogan "*Liberate Sydney. End the Monopoly*" on its newest aircraft, backed by Sidney airport[11] (Associated Press, 2010). In Germany, the ASA allows Emirates only to serve a limited number of airports. In the 1990s, restrictive ASAs even named airports so that competition among large secondary airports was restricted. With growing demand and technological changes, secondary airports become increasingly attractive for direct services. As part of the privatization process, the City State of Hamburg urged the Federal Government to liberalize restrictive ASAs faster and give up restrictions on a number of airports. The initiative was based on a study by Gillen *et al.* (2001), which showed that liberalization of ASAs with Canada, Chile, China, Ghana, Japan, Russia, Thailand, UAE and Ukraine increased consumer surplus by 20% and producer surplus by 9%. The German transport ministers of the 16 states and the Federal Department of Transport also approved a proposal that negotiations should be guided by the principle of welfare maximization (*cf.* VMK, 2000). This initiative faced initial resistance from Lufthansa, which was fully privatised in the period from 1994-1997, and from the *Länder* government of Hesse and Bavaria, where the hub airports of Frankfurt and Munich are located. Nevertheless, the initiative succeeded and led to further liberalization until the

emergence of Emirates in 2005. The "*Inititative Luftverkehr für Deutschland*" (German Air Transport Initiative), formed in 2003 by the two hubs, Lufthansa and the German ATC provider, characterised Emirates as a major challenge to Lufthansa and to the German economy. Full liberalization with the Gulf States would cause yearly losses of 700 000 passengers and 2 000 jobs from 2012 onwards (*Initiative Luftverkehr für Deutschland*, 2007). The study was based on an input-output model and did not address the question of economic welfare. Nevertheless, the initiative won in the cases of Berlin and Stuttgart, although in the latter the Prime Minister of Baden Württemberg directly intervened, by calling on Chancellor Merkel to reverse the decision.

These examples show that ASAs create substantial rents for which stakeholders lobby effectively. The arguments also show an important weakness: instead of calculating the benefits and costs of liberalization, dubious effects are calculated on the basis of crude input-output models, which neglect substitution effects and treat the economy as being in a persistent state of unemployment. The result is a mercantilist policy, preventing foreign carriers from entering the market, and causing a decrease in competition and less international division of labour.

The Australian Department of Infrastructure, Transport, Regional Development and Local Government is responsible for negotiating bilateral air service agreements, and thereby determines the available capacity, while the International Air Services Commission allocates the capacity to airlines. The Commission was established under the International Air Services Commission Act 1992 as an independent statutory authority. Its overall objective is to promote "*economic efficiency through competition in the provision of international air services, resulting in:*

- *increased responsiveness by airlines to the needs of consumers, including an increased range of choices and benefits;*
- *growth in Australian tourism and trade; and*
- *the maintenance of Australian carriers capable of competing effectively with airlines of foreign countries* (International Air Services Commission, 2009, p.4)."

The Commission assesses the proposals of competing carriers on public benefit criteria. It invites all interested carriers to apply and has made the process open and fair. It consists of a chairperson and two other members. The Governor-General[12] appoints the members of the Commission, usually for a period of five years, and can re-appoint members (International Air Services Commission Act 1992, Part 5). The Commission has substantial discretionary powers. It usually allocates the scarce capacity for a period of five years, but can shorten this period and can review its decisions, in particular if a carrier has not used the allocated capacity. It can hold public hearings, for example, on the development of specific routes. The authority communicates actively with stakeholders and interested parties. The Commission asks them to monitor its performance which has been rated highly, in particular its transparent and fair procedure. Also, the Commission advises the department on ASAs in general. Both institutions consult each other on prospective new applicants. The Commission submits a yearly report to the DOT, which passes it on to Parliament (International Air Services Commission, 2009).

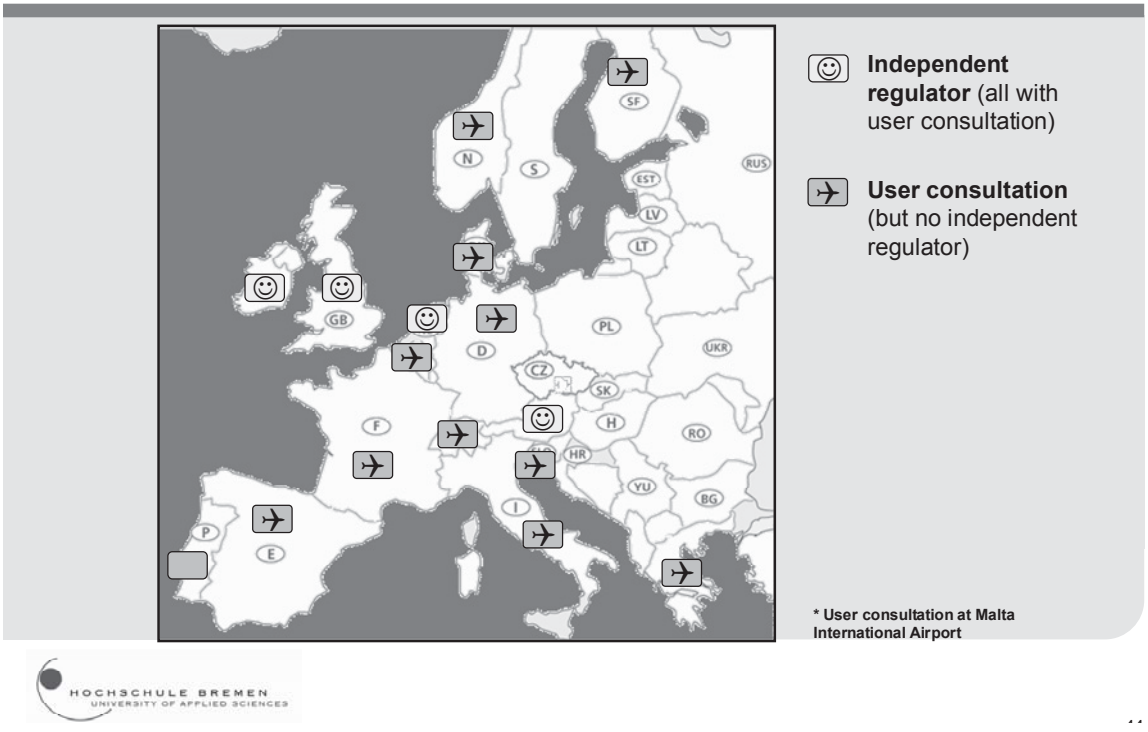
Airports

In most parts of the world airports are regulated in some form or another. This raises the following questions:

- Are airports regulated by an independent body?
- Who decides which airports are subject to regulation?
- Who decides which airport services should be regulated?

The EU Directive on Charges, in article 11 (3) demands that "*Member States shall ensure that the independent supervisory authority exercises its powers impartially and transparently.*" However, the problem here is that independence is not clearly defined and allows Member States to keep the *status quo* (see Figure 4). German airlines have demanded that the DOT establishes an independent regulator because the existing regulators, the *Obersten Luftfahrbehörden* of the *Länder*, face a conflict of interest. They sit frequently on the board of directors of the commercialised airports and form part of the government of states that partially own airports. The regulator for network industries could also regulate airports. The airports claim that they are a competitive industry and suggest not changing a "*well-functioning regulatory system*." They fear that a change might create a new bureaucracy. Furthermore, they claim that the functions of ownership and regulation are separated if the functions are performed by two different ministries within the state government. This is clearly at odds with the concept of effective regulation and allows for regulatory capture (Beckers *et al.*, 2010). In Austria, these two functions have been separated because the regulator, the DOT, is independent from the owner of the airports. Airports are, as in the case of Vienna, partially owned by the *Länder* and other municipalities and fully in the case of regional airports. Nevertheless, airlines demand reform in Austria too and would like to set up a regulatory body which is more independent from the government.

Figure 4. **Regulation of European airports**



As noted in the introduction, UK airports are fully privatised, with only a few exceptions. This differs remarkably from the rest of Europe, where only a minority of airports has been partially privatised. The UK has adopted an independent regulatory body, while most continental states lack such an institution. It is remarkable that the UK and Irish regulatory systems have been copied in Australia but not in Europe, with the notable exception of the Netherlands.

The EU Directive on airport charges answers the question of which airports are subject to regulation, by defining a threshold of 5 million passengers per year, beyond which all airports are subject to regulation. This is a rather imprecise answer to a complicated question, which so far only a few independent regulators have carefully analysed. Only the UK, the Netherlands and Australia have analysed the market power of individual airports in their studies (CAA, 2007; Competition Commission, 2003, 2008 and 2009; Bilotkach, 2010; Productivity Commission, 2002). These studies distinguish between aircraft movements, passenger processing and non-aeronautical activities for the different services. The next step is to define the relevant market in order to identify sources of substitution for the airport's services. Market definition is not an end in itself but part of a more comprehensive assessment, using quantitative and qualitative analysis. The market power of an airport depends in particular on a number of demand and supply characteristics, including capacity and slot allocation. The results of the 2002 Productivity Commission inquiry into the market power of Australian airports are reported in Table 1.

Table 1. **Market power for particular airports**

Airport	Market segment	Destination substitution	Modal substitution	Airport substitution	Market power
Adelaide	Business, VFR	Low	Moderate	Low	Moderate
Alice Springs	Holiday	High	Moderate	High	Low
Sydney	Business, VFR	Low	Moderate	Low	High
Melbourne	Business, VFR	Low	Moderate	Low	High

Source: Based on Productivity Commission (2002).

Australia has some geographical particularities and there is no effective competition from other transport modes. But even for this country, it is obvious that a notion such as *the airport industry has substantive market power* is misleading. European airports face more competitive restraints than Australian airports. Given this fact, and that airports of a certain size must be regulated, it is hard to explain why up to now in most countries neither departments of transport nor competitive commissions have assessed the market power of airports. For Europe, it probably means that regulation is both too narrow and too wide.

Similarly, the question *in which airport services does an airport have market power?* has been largely neglected. The answer depends in particular on the availability of substitutes at the airport or off-airport, as the results of the Productivity Commission study show (Table 2).

Table 2. **Market power in particular airport services**

Service	Market power	Assessment
Aircraft movement facilities	High	Essential facility
Passenger processing facilities	High	Essential facility
Lounge	Low	No evidence to constrain supply of space
Vehicle access facilities	High	Incentive to shift demand to car parking
Car parking	Low/moderate	Short-term parking limited by other modes
Taxi facilities	Low/moderate	Charges limited by competing modes
Aircraft refuelling	Moderate/high	High switching cost for refuelling
Aircraft light maintenance	Moderate	Access to side for third parties
Service	**Market power**	**Assessment**
Aircraft heavy maintenance	Low	Low switching costs
Flight catering facilities	Low	Good off-airport locations available
Freight facility & storage sites	Low	Good off-airport locations available
Waste disposal facilities	Low	Good off-airport locations available
Administrative office space	Low/moderate	Incentive to constrain supply of space
Commercial & retail services	Low	Retail rentals reflect locational rent

Source: Based on Productivity Commission (2002).

Ground handling

EU Directive 96/67/EC has slowly opened the market for ground handling services in Europe. The remaining regulatory questions to be answered are twofold:

- How can non-discriminatory access to central infrastructure be provided?
- How can the right to provide services at airports with a restricted number of providers be tendered out?

Central infrastructure. Article 8 of the Directive defines the concept of centralised infrastructure explicitly as consisting of services like baggage-handling systems, de-icing facilities, passenger bridges, fixed power installations, toilet services and check-in systems. It is up to the Member States to define these services in a transparent manner and to add other services to the list. The actual list is long and diverse (see Airport Research Center, 2009, p. 113). The centralised infrastructure should and must be used by all suppliers and provided to them without discrimination. It should be priced transparently and fairly. The pricing has been criticised as too high by independent ground handling companies and by handling airlines (*ibid*, p. 117). Airlines demand that "*fees for the Centralised*

Infrastructure and the access to airport installation should be treated similarly to airport charges and included in the regulation (*ibid*, p. 117)." This demand indicates that the scope of regulation of airport charges at some European airports is too narrow (Niemeier, 2009; see above) and should cover central infrastructure.

Tender process. Member States may limit baggage handling, freight, mail handling, ramp handling and fuel and oil handling to a certain amount for airports of a certain size. For airports with more than 2 million passengers or 50 000 tonnes of cargo, the number of third-party providers may be limited to no fewer than two handling companies, of which one of the third-party providers must be independent from the airport and/or the dominant airline[13]. Where the airport operator is also providing ground handling, an authority must select the limited number of independent suppliers.

Several formal infringement procedures may be instigated by the EC against Member States (e.g. Germany, Poland, Malta, Hungary) which may not have properly adapted the Directive, especially with regard to the tender procedures, selection of suppliers, market access barriers, etc.

Effective regulation demands that, at the very least, the regulating authority should be separate from the owner and at best from the ministry in order to avoid regulatory capture[14]. Hence, airports offering ground-handling services that are owned by the State or the national airline with a ground-handling service monopoly, should not decide on the tender. It is also unclear how the number of possible contenders is decided on the basis of transparent criteria. The following table summarizes how certain Member States have established authorities for ground-handling tenders. France and Germany have not separated the functions of regulation and ownership. In Germany, the *Oberste Luftfahrtbehörden* decides on the tender but, either within the ministry or in a different ministry, the political representative sits on the airport board and may give the ground-handling company a competitive edge. Only in Austria is the regulator independent, and even then on a limited scale. Given this institutional setting, which invites regulatory capture, the claims of independent ground-handling providers are plausible. They argue that "*the final selection seems not to be comprehensible and in some cases politically inspired* (Airport Research Center, 2009, p. 132)."

Table 3. **Regulation at selected EU airports with tender for ground handling**

Country	Deregulation	Regulation
Austria	Market share of partially privatised Vienna Airport decreased from 100% to 93 % in 1996 to 93 in2002 to 89 % in 2007.	DOT decides on tender. DOT is separated from owner
Belgium	Airport and Brussels Airline do not offer ground handling. Belgian law allows currently only for two handlers but is under revision (Avia Partner, Flight Care former Sabena Handling) and two self-handlers (American Airlines).	DOT. No regulatory conflict, as airport and airline do not offer services
France	ADP offers ground handling. AF self- and third-party handling. Penauille Serviscair is third part provider, but there are different limitations varying from terminal to terminal between two and three handlers. Market shares in 2004: AF 65%, 13% ADP, Serviscair 13%, Others 8%.	Regulatory conflict as DOT is part government with majority stake in ADP and a minority share in AF/KLM
Germany	All airports offer ground handling except Berlin Airport and have a dominant position. The major shifts recently happened in Hamburg (0% share of independent handler); Düsseldorf up to 30% for independent handler and Munich up to increasing 11% for independent.	Regulatory conflict as the respective *Landesluftfahrtbehörde* is part of government which has at least a majority share in airport
Greece	Olympic Airways has monopoly at airports with less than 2 million passengers. Partially privatised, Athens Airport offers no services and has opened the market through tender processes.	Regulatory conflict as Olympic Airways is state owned and Athens majority owned
Portugal	No detailed information available.	The Portuguese Civil Aviation Administration is not an independent body.
Spain	Tender process has increased competition and at some major airports three handlers have been allowed market access, whereas at most of the airports market access is limited still to two handlers. IBERIA with 21 has lost its dominant position as licences increased from 33 to 55. At Madrid IBERIA has one out of 8 licences.	AENA is supposed to be independent, but has opened up the market.

Sources: ARC (2009), Beyer (2010), Cross (2007), Lufthansa, Templin (2006).

Slots

Adopting a slot allocation system to rational demand raises two regulatory institutional questions, namely:

- How independent is the slot co-ordinator?; and
- Who sets the slot limit?

In France, the importance of the discretionary power of slot co-ordinators became significant a few years ago (for an overview on other countries, see Table 4). Since 1995, slots at Paris Charles de Gaulle, Orly, Lyon and Nice have been co-ordinated by COHOR. The organisation has been subject to heavy criticism from Virgin Express[15] and EasyJet with regard to its information policy, the treatment of low-cost carriers and alleged preferential treatment of Air France. EasyJet failed to prove these complaints at the European Court of Justice (2006) but doubts remain because COHOR is not fully independent. It is financed by its members and any airport or airline may become a member; however, the board of directors, which elects the co-ordinator, is appointed only by the founding members[16]. No further complaints have been raised against the French or against any other European slot co-ordinator. Nevertheless, the current institutional organisation leaves some doubt about its effectiveness because IATA guidelines for the independence of slot co-ordinators (see below) have not worked well in the case of COHOR. Nevertheless, the IATA guidelines can be interpreted as an attempt to change the old system, whereby slot co-ordinators co-operated with a country's dominant airline. How much this attempt has achieved must be left open for further research.

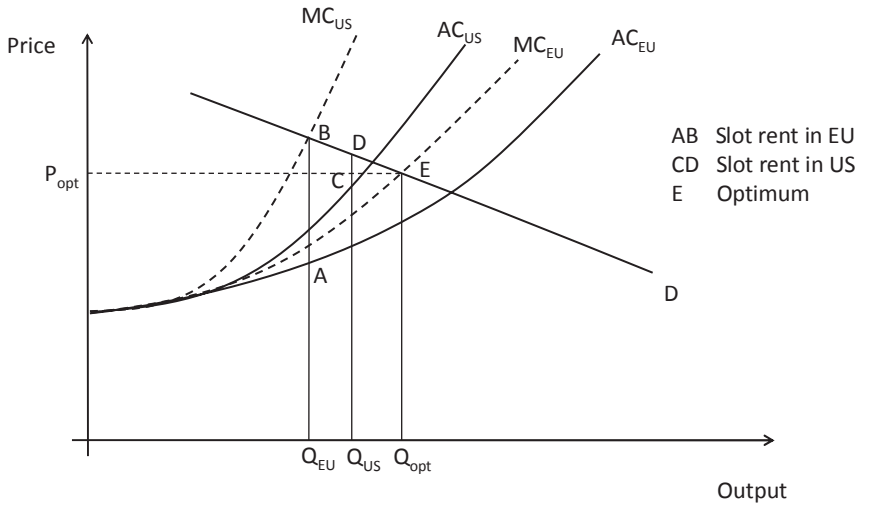
The importance of setting slot limits becomes obvious in a recent comparison between the US and Europe, based on the 34 busiest airports in 2007-2008. Odoni and Morisset (2010, p. 1) summarize as follows: "*In general, US airports achieve higher capacities, in terms of aircraft movements, than their European counterparts by using visual separation procedures when weather permits and by not placing slot constraints on the number of movements that can be scheduled at airports. European airports, on the other hand, limit air traffic delays and increase schedule predictability by using slot controls and by determining the number of available slots with reference to airport capacities under instrument meteorological conditions.*" The difference is not so much a technical one but signals two different ways to allocate scarce resources (see Figure 5).

Table 4. **Independence of slot co-ordinator**

	Best Practice **Functional Independence**	**Best Practice** **Financial Independence**
✓	The company employing the staff should be the co-ordinating entity	Multiple parties representing various stakeholders share funding of the co-ordinating entity
✓	An alternative employment arrangement is a clear secondment contract to the co-ordinating entity	"Single till" approach, which allows some internal cross-subsidy in the co-ordinating entity
✓	Financial stakeholders review budget only	Not-for-profit organisation (cost recovery primarily, but allows for ICAO principle of reasonable margin)
✓	The Board of the co-ordinating entity cannot influence co-ordination decisions	Revenue generation acceptable but must not affect the functional independence
✓	Separation of physical location or independent office facilities	Secondments from stakeholder organisations are acceptable but financial control of co-ordination staff through pay must not be in the hands of stakeholders
✓	Separation of co-ordination software systems and schedule data from other stakeholders, e.g. airlines or airports	
✓	The co-ordinator must conduct business in an independent manner	
✓	No conflict of co-ordination role with other activities	
✓	No single stakeholder holds a majority interest	
✓	All stakeholders should be consulted for the appointment of a co-ordinating entity	
✓	Separation of co-ordination role from sanctions role in order to maintain a "balance of power"	
✓	Free from external direction	
	Poor Practice	**Poor Practice**
×	Active employees of interested stakeholders are responsible for co-ordination (governments, airports, airlines)	One party fully funds co-ordination
×	Dual role (co-ordinator/airline scheduler)	Co-ordination is subsidized by an interested party

Source: IATA (2010).

Figure 5. **Model of EU and US slot-constrained airport**



In the US, the constraint is set more to the right (point Q_{us}) and, by relying on queuing, selects the upper congestion function (MC_{US}), while Europe sets a stricter constraint (Q_{EU}) and selects the lower congestion function (MC_{EU}). *Ceteris paribus*, the slot rent reaped by airlines in the US (line DC) is lower than in Europe (line AB). This result depends both on the rationing device and the slot constraint. Rationing by co-ordination substantially reduces congestion, although the current system does not give the slot to the user with the highest willingness to pay[17]. Ideally, the slot constraint should be set at a point (E) at which the marginal benefit (slot price) equals the marginal congestion cost (Forsyth and Niemeier, 2008). Most probably, neither the US DOT nor the DOT of each European Member State set the slot constraint at an optimal level. A reform of the system would also have to address the question of which authority should set the constraint. Profit-maximizing airlines have an interest in low congestion costs and reaping high slot rents. Profits maximizing unregulated airports with market power have an interest to limit output and reap scarcity and monopoly rents. Both stakeholders might not be the ones who should determine capacity. The question then is whether the DOT is independent from both stakeholders to make the welfare maximizing choice. This also presupposes knowledge and expertise. The current practice in Europe lacks an economic approach and is more driven by an engineering approach to determine the technical and operational capacity of certain qualities. Therefore, it might be better to shift responsibility to the slot co-ordinator or to the airport regulator, but if and only if these institutions are truly independent.

ATC

Commercialisation and public-private partnerships have raised hopes for stronger incentives towards cost efficiency but also concerns regarding the abuse of market power. In addition, public ATC systems face principal and agent problems. Delays, pricing and investment decisions become increasingly important. Some airlines have acquired a share in their national ATC: this puts even more weight on the question: *How independent is the regulator of ATC?*

Table 5. **Governance of selected air navigation service providers**

Country	ATC Name	Ownership	Regulator
Australia	Airservices Australia	Government corporation	Commission oversight
Canada	NAV CANADA	Not-for-profit private corporation	Legislated principles/appeals
France	Direction des services de la navigation Aérienne (DSNA)	State department	DGAC (French CAA) Approved by Transport Ministry
Germany	Deutsche Flugsicherung GmbH (DFS)	Government corporation	Bundesaufsichtsamtes für Flugsicherung (BAFG)
Ireland	Irish Aviation Authority	Government corporation	Regulatory commission
Netherlands	Luchtverkeersleiding Nederland (LVNL)	Not-for-profit government corporation	Approved by Transport Ministry
New Zealand	Airways Corporation of New Zealand	Corporation	Self-regulating/appeals
South Africa	Air Traffic and Navigation Services Ltd.	Not-for-profit joint-stock corporation	Transport Ministry committee
Switzerland	Skyguide	Not-for-profit government corporation	Approved by Transport Ministry
United Kingdom	National Air traffic System, Ltd.	Public/private partnership	Civil Aviation Authority Independent regulator
United States	FAA's Air Traffic Organization	State Department	Financing from taxation

Source: Based on Button and Dougall (2006). Updated from various ATC websites.

Table 5 provides an overview of selected ATCs. While, historically, ATCs were organised as a state department, an increasing number of countries have moved away from this arrangement.

The exception is the US which, rather late in 2005, formed the Air Traffic Organization (ATO), an organisation within the Federal Aviation Administration. According to Oster and Strong (2007), the ATO suffers from organisational dependence, lack of accountability and a disconnection between cost and revenue drivers. The ATO is financed through excise and general taxes, while other countries rely on user charges. Most countries have separated management from regulation in some form. The EU Parliament (2004) has asked its members to separate these functions in a bid to develop a Single European Sky: "*The national supervisory authorities shall be independent of air navigation service providers. This independence shall be achieved through adequate separation, at the functional level at least, between the national supervisory authorities and such providers. Member States shall ensure that national supervisory authorities exercise their powers impartially and transparently* (Article 4)." The separation creates problems for EUROCONTROL, which provides ATC services and assists the European Community in regulating ATC services. Oster and Strong (2007) criticize the dual role of Eurocontrol in the inevitable consolidation of a fragmented European airspace: "*The consolidation may well lead to competition among ANSPs to seek which will take on more airspace and which will take on less. In such a world, the ANSPs view EUROCONTROL as a competitor but one whose ability to shape regulation gives it an enormous, and arguably unfair, advantage* (p. 68)."

An unambiguous separation has been adopted in the UK. The partial privatisation of NATS with a minority share for a consortium of airlines was combined with a reform of regulation along the lines of British public-utility price-cap regulation. NATS is regulated by the CAA. This form of governance was also discussed in Germany in 2005. The German provider, *Deutsche Flug Sicherung* (DFS), a limited corporation fully owned by the Federal State, was planned to be privatised and price-capped in 2005-6 and a consortium of airlines was planning to bid for a substantial share of it. However, the privatisation law was not signed by the German President for legal reasons. Since then, privatisation has been postponed, although the management and the airlines are lobbying for it. In 2009, a new regulatory authority was implemented in accordance with the EU directive. The *Bundesaufsichtsamt für Flugsicherung* is a separate regulator, but not as independent from the DOT as the CAA (BGBL, 2009).

Australia and Ireland have also organised their ATC as a government-owned corporation and have given the regulator a more independent status. Independence is clearly missing in France. The DNSNA is an autonomous entity and regulated by the DGAC, the French civil aviation authority, which belongs to the DOT.

Other countries restrict the profit-maximizing behaviour of their ATCs. This is the case in Canada, where a club of airlines owns and manages ATC, as is the case in the Netherlands, Switzerland and South Africa. These countries aim at combining private management styles, but want to limit profit-maximizing motives by applying, for example, the not-for-profit principle. Interestingly, this mix of motives can also be found in the privatisation of NATS. "*The choice of the Airline Group had other advantages. It has presented its bid as being on a 'not for commercial return' basis* (UK House of Commons, 2002; as quoted in Steuer, 2010, p. 29)." The objective of non-commercial returns in itself does not eliminate the need for regulation. This is so because an ATRS provider might still have incentives to discriminate among its users, especially if a large number of users is not represented in the group of shareholders. In the case of NATS, the CAA (2004) pointed out that the not-for-profit principle was not part of the contract and therefore not binding. The CAA concluded that "*in itself, this is not a basis for treating NATS differently from any other regulated company* (*ibid*, p. 13)." Giving a group of ATC users a share in ownership is akin to vertical integration. This might have positive and negative effects, which largely depend on the extent to which the interests of the shareholders approximate the interests of the users as a whole. In the case of NATS, BAA represents the interests of airports and a group of eight airlines presents roughly 30% of all airlines. The danger might be that users discriminate against each other through the fee structure (although this is limited

by the legal framework of EUROCONTROL, which might also be discriminatory) and by providing a sub-optimal trade-off between costs and services. As the average cost of ATC services is in the range of 5% of an airline's operating costs, service quality in terms of delays becomes relatively more important. Compared to a profit-maximizing, unregulated ATC provider, NATS might provide a service quality with less delay. It might be a different way to internalise delay costs. However, regulation and ownership by users are going in the same direction, as both prevent the management from providing too low a quality. Therefore, the CAA concluded that the ownership structure of NATS "*should be a positive force for users as a whole in setting the direction of NATS, but there is a need for these arrangements to be buttressed by effective regulation to help ensure a sharp focus on users' concerns* (CAA, 2004, p. 12)."

Overall, while there is a general trend to commercialise ATC services and to separate management from regulation, only a few countries have given the regulator the necessary independence to achieve truly effective regulation.

4. SUMMARY: REFORM OF REGULATORY INSTITUTIONS

The analysis of the regulatory intervention in the value chain of air transport has shown a large variety of governance models and regulatory institutions. The analysis found that some regulatory institutions allow for both regulatory capture and mismanagement. From the review, a picture of best practice and a blue-print for regulatory reform emerge (see Table 6).

Table 6. **Overview on regulatory institutional reform of air transport**

	Regulatory reform	**Country**
Air Service Agreements	First option, full liberalization. Second option, ASA by DOT and designation by independent commission.	Australia
Airports	Independent regulator for airports with market power. Designation of airports by DOT or commission.	UK, Ireland
Ground handling	First option, full liberalization. Second option, central infrastructure charge regulated by airport regulator and tender by independent airports or independent regulator.	Denmark, Ireland, Netherlands, Sweden, UK
Slot allocation	Independent slot co-ordinator with independent regulator on slot constraint.	Australia
	Independent regulator.	UK

Countries with an Anglo-Saxon tradition have led the way on regulatory reform. The UK privatised its public utilities in the 1980s and 90s. It had to develop regulation quickly to prevent monopolies from exploiting consumers and to encourage private investment into assets with sunk-cost characteristics. Other countries have been more reluctant to reform regulation of air transport. Countries can be characterised as follows:

- Australia has an excellent system in allocating capacity determined by negotiations on air service agreements. The system could be improved if Australia adopted the first-best option, namely, full liberalization. In this particular respect, it seems that Australia is less liberal than, for example, the US.

- The UK model of airport regulation and regulation of public utilities can serve as a blue-print in the design of effective regulatory institutions in other countries. The UK approach is not perfect and might be heavy-handed but, at the very least, independence of the regulator is guaranteed. Ground-handling is a market that should be fully liberalized throughout EU countries. The tendency towards full liberalization should be enforced by the EU directive, but it faces resistance from countries like France and Germany where the airport regulator lacks independence. Regulatory capture leads to regulatory failure in the regulation of airports and in the access regulation of ground-handling. Both effects lead to substantial welfare losses: German airport regulation is cost-based for partially liberalized airports, which creates incentives for gold-plating and high costs (e.g. waste of resources and provision of excessive quality). French airport regulation of partially privatised ADP airports is incentive-based, but on a low scale. In both countries, ground-handling prices have not fallen as much as in comparable liberalized markets.

- The French and German airport regulatory systems do not set incentives for allocatively efficient price structures; a point they have in common with most other European systems. Allocation is by slots, and implies government decisions on the number of co-ordinated movements and the distribution of the resulting slots by slot co-ordinators. The system has led to lower congestion than the US method of queuing, but could be improved if the slot constraint were determined independently and optimised through secondary trading. Such a system should be organised by an independent institution. Contrary to past experience, no complaints regarding the independence of slot co-ordinators have been raised lately. However, national slot co-ordinators could easily be given a more independent role.

- The role of an independent regulator for ATC will become more urgent if the general trend to commercialise ATC services and to separate management from regulation gains momentum. So far, only a few countries have given the regulator the necessary independent role to achieve effective regulation.

Environmental and safety regulation is not covered in this analysis[18]. The former might lead to blockades of infrastructure expansion and high congestion costs. The latter might lead to high safety fees and longer travelling times. These are important problems for further research, in particular because such interdependencies might only be effectively addressed if regulators are also more integrated in the state's governance and share knowledge and information (see Bartle and Vass, 2007).

The current regulatory institutions are far from being effective enough to increase economic welfare. This is the case for models in which air transport is organised as a mixed public utility, with elements of competition for air transport services, public ownership and regulation of infrastructure on the one hand, and for models which rely on private-public ownership on the other. Both models could

be organised more effectively if ownership and regulation of monopolistic bottlenecks were clearly separated, because independent regulators provide long-term commitments for immobile and specialised investment. The greatest tensions are created when downstream markets are liberalized while the upstream infrastructure market remains regulated by dependent regulators, especially if the functions of ownership and regulation are not clearly separated. This opens the door to regulatory capture. Even if regulators with a strong sense of public duty and inspired to work in the public interest are not captured, conflicts are created between the regulated firm and its users. Investors will then require safeguards against regulatory risks that inflate prices. Dependent regulators raise barriers to private investment in airports and ATC. Continental Europe has, with a few exceptions only dependent regulators and typically partially privatised airports with minority, private shareholdings. This weakens the incentives for cost and allocative efficiency in the short-run, and in the long-run it prevents the spreading of competition and therefore possible positive long-run competitive effects. Some parts of the value chain of air transport (e.g. ATC) are unlikely to be subjected to effective competition. However, some other elements of the value chain might, through growing demand and technical changes (e.g. increasing speeds and declining costs for alternative modes of transport), be subjected to effective competition. If and to what extent this potential can be realised depends largely on the ability to attract private capital and entrepreneurship. Dependent regulators might effectively prevent competition by turning former natural monopolies into legal monopolies and allowing access discrimination. The latter is happening in ground-handling at a number of large European airports (e.g. ADP and Fraport). The full price for such inefficiencies is difficult to measure. There is evidence of inefficiencies at airports, in ground-handling, slot allocation, ATC and also in airlines (Button, 2010; Oum *et al*., 2006; Winston and de Rus, 2008). But these estimates are largely based on the *status quo* operating in markets which have fully explored the potential of efficiently organising the industry. The full costs of inefficiency can only be measured in comparison to an imaginary air transport sector organised as a well-functioning supply chain in a competitive industry.

Acknowledgements

The author is grateful to Nicole Adler, Martin Dresner, Peter Forsyth, David Gillen, Jörg-Stefan Fritz, Alexander Holzrichter, Paul Hooper, Jürgen Müller, Tae Oum, Brian Pearce, Ralf Schikorr, Cornelia Templin, Mike Tretheway, Claus Ulrich and Hartmut Wolf for provision of valuable information on regulatory details and of extensive comments on earlier drafts of the paper. He is also indebted to Janetta Carlucci, Karsten Fröhlich, Julia Hellmers, Adele Nemeth and Eric Njoya for excellent research assistance. The research builds on data and analysis from the GAB (German Aviation Benchmarking) research project, supported by the Federal Ministry of Education and Research. The responsibility for any remaining shortcomings lies with the author.

NOTES

1. National Air Transport Services, UK's ATC.

2. In the case of the multi-product firm, the condition is changed to a sub-additive cost function (Baumol *et al.,* 1997).

3. The following principles arise from the recommendations of the OECD: "*Good regulation should: i) serve clearly identified policy goals, and be effective in achieving those goals; (ii) have a sound legal and empirical basis; (iii) produce benefits that justify costs, considering the distribution of effects across society and taking economic, environmental and social effects into account; (iv) minimise costs and market distortions; (v) promote innovation through market incentives and goal-based approaches; (vi) be clear, simple, and practical for users; (vii) be consistent with other regulations and policies; and (viii) be compatible as far as possible with competition, trade and investment-facilitating principles at domestic and international levels* (OECD, 2005)."

4. See the publications of the Better Regulation Task Force, in particular on the role of independent regulators (Better Regulation Task Force, 2003).

5. See APEC-OECD (2008).

6. In addition, liberalization led to increases in service provision and growth in the number of markets served. The contribution to economic growth and tourism has also been large.

7. Above 24 500 feet.

8. However, note that many empirical questions need to be resolved as there is evidence of both increasing and decreasing returns. These studies are based on data collected from established ATC centres, which have been created by history, not through optimisation. An economically interesting and highly political question concerns the optimally sized ATC area (Gillen, 2010).

9. All users will benefit from a lower price level due to cost reductions, but only some will benefit from higher peak and lower off-peak prices.

10. Aéroports de Paris (ADP) owns the Charles de Gaulle and Orly airports. It faces only mild competition from Beauvais Airport, situated 84 km to the north of Paris. Although passenger numbers have risen dramatically there, they are still marginal (*2000*: 0.38 million; *2005*: 1.8 million; *2007*: 2.2 million) compared to ADP airports (*2000*: 73.5 million; *2005*: 78.7 million; *2007*: 86 million). Hub competition for Charles de Gaulle has been reduced by an alliance with Schiphol. Heathrow and Frankfurt have excess demand. There is some competition

from other modes. The TGV is an important competitor for regional air transport and for the Paris-London route (Forsyth *et al*., 2009).

11. Russell Balding (CEO of Sydney Airport) is reported to say: "*We look forward to welcoming AirAsia X. Fundamentally, airlines should be able to fly where passengers want them to go* (*Streetcorner*, 2010)."

12. The Governor-General is the representative of the Australian Monarch (Elizabeth II). He or she exercises the supreme executive power, but acts only on the advice of the Prime Minister or other ministers.

13. Airlines with more than a 25% share of passengers.

14. In such a case, the EU directive demands that the decision should be taken by "*competent authorities of the Member States which are independent of the managing body of the airport concerned, and which shall first consult the Airport Users' Committee and that managing body* (Art. 11)".

15. Commercial Director, Sies comments: "*It was a joke. First, we put in an offer to take over part of Air Lib's assets and staff to get slots -- as the government had indicated -- but then COHOR decided not to take the argument into account. Then Virgin Express, acting independently, was allocated a set of slots that were, for the majority, absolutely useless, at least for the economics of an LCC. With the slots that were allocated to us we would achieve a daily aircraft utilization of around seven hours while we target eleven. Also, in order to use the morning slots to Rome we would have to station an aircraft overnight, which was, needless to say, not our idea of establishing a base in Orly* (Paylor, 2004, p. 2)."

16. COHOR's founding members consist of Air France (part-owned by the French Government), two airlines owned 100% by Air France (Britair and Regional), two independent airlines (Star Airlines and Corsair), Aéroport de Paris (owned by the French Government) and two airlines now bankrupt (Euralair Horizon and Air Littoral).

17. Slots are traded in the UK and the market is regarded as working fairly well. Elsewhere, a grey market for slots does not exist.

18. Please note that the co-ordination of competition policy is also outside the scope of this report.

BIBLIOGRAPHY

Airport Research Center (ARC) (2009), *Study on the Impact of Directive 96/67/EC on Ground Handling Services, 1996-2007*, Brussels.

Australian Competition and Consumer Commission (ACCC) (2010), "Evaluating Infrastructure Reforms and Regulation: A Review of Methods", ACCC/AER Working Paper 2 /August, www.accc.gov.au

APEC-OECD Integrated Checklist on Regulatory Reform: A Policy Instrument for Regulatory Quality, Competition Policy and Market Openness, www.oecd.org/dataoecd/3/53/36326815.pdf #search='apec%20oecd%20integrated%20checklist

Baldwin, R. and M. Cave (1999), *Understanding Regulation – Theory, Strategy, and Practice*, Oxford, Oxford University Press.

Bartle, I. and P. Vass (2007), "Independent economic regulation: A reassessment of its role in sustainable development", *Utilities Policy*, 15, 261-269.

Beckers, T., J.P. Klatt and J. Kühling (2010), *Entgeltregulierung der deutschen Flughäfen*, TU-Berlin, www.wip.tu-berlin.de

Better Regulation Task Force (2003), *Independent Regulators*, London: Cabinet Office.

Beyer, L. (2010), "Analysis of competition structure and its development in the ground handling sector on airports in Germany", Seventh Aviation Student Research Workshop, Amsterdam, July 1 to3, 2010 http://www.garsonline.de/

BGBl (2009), Gesetzes zur Errichtung eines Bundesaufsichtsamtes für Flugsicherung und zur Änderung und Anpassung weiterer Vorschriften vom 29. Juli, BGBl.

Bilotkach, V., F. Fichert, H.M. Niemeier, E. Pels and A. Polk (2010), *Study of the economic market power on the relevant market(s) for aviation(-related) services on the Amsterdam Airport Schiphol*, Study for the Netherlands Competition Authority, Den Hague.

Borenstein, S. (1992), "The Evolution of US Airline Competition", *Journal of Economic Perspectives*, 6, 45-73.

Brueckner, J.K. and P.T. Spiller (1994), "Economies of Traffic Density in the Deregulated Airline Industry", *Journal of Law and Economics*, 37, 379-415.

Button, K. (2010), "Comparative inefficiencies of various air navigation systems", in: P. Forsyth, D. Gillen, K. Hüschelrath, H.M. Niemeier and H. Wolf (eds.), *Liberalisation in Aviation*, Aldershot, Ashgate, *forthcoming*.

Civil Aviation Authority (CAA) (2004), *NATS Price Control Review 2006-2010*. Review of Responses to the CAA's Initial Consultation Document, July, London.

Civil Aviation Authority (CAA) (2007), "De-designation of Manchester and Stansted airports for price regulation. The CAA's advice to the Secretary of State", www.caa.co.uk

Competition Commission (2003), "Market Investigation References: Competition Commission Guidelines", London, www.competition-commission.org.uk

Competition Commission (2008), "BAA airports market investigation, Provisional Findings Report", 20 August, London, www.competition-commission.org.uk

Competition Commission (2009), "BAA airports market investigation, A report on the supply of airport services by BAA in the UK", 19 March, London, www.competition-commission.org.uk

Caves, D.W., W. Christensen and W.M. Tretheway (1984), "Economies of Density versus Economies of Scale: Why Trunk and Local Service Costs Differ", *RAND Journal of Economics*, 15, 471-489.

Cross, B. (2007), Ground handling opens up, *Jane's Airport Review*, May, p. 24-25.

European Parliament (2004), Regulation (EC) No. 549/2004 of the European Parliament and of the Council of 10 March 2004, laying down the framework for the creation of the single European sky.

European Court of Justice (2006), EasyJet Airline Co. Ltd gegen Kommission der Europäischen Gemeinschaften, Urteil vom 4.7.2006, T-177/04, www.Lexetius.com/2006,1357

Forsyth, P. and H.-M. Niemeier (2008), "Setting the Slot Limits at Congested Airports"; in: A. Czerny, P. Forsyth, D. Gillen, H.-M. Niemeier (eds.), *Airport Slots. International Experiences and Options for Reform*, German Aviation Research Seminar Series No. 3, Ashgate, Burlington, pp. 63-83.

Forsyth, P., H.-M. Niemeier, J. Müller and H. Wiese (2009), "Regulation of ADP Airports – An Economic Assessment", paper presented at the 13th Air Transport Research Society World Conference, Abu Dhabi, 27-30 June.

Gillen, D. (2010), *Explaining variability in air traffic control costs in the domestic US* Working paper Centre for Transportation Studies at University of British Columbia, Vancouver

Gillen, D., H. Hinsch, B. Mandel and H. Wolf (2000), *The Impact of Liberalizing International Aviation Bilaterals on the Northern German Region*, Aldershot, Ashgate.

Graham, A. (2008), *Managing airports, an international perspective*, 3rd edition, Amsterdam, Elsevier.

International Air Transport Association (IATA) (2010), IATA Worldwide Scheduling Guidelines. Effective August 2010, 20th Edition, Montreal.

International Air Services Commission Act, 1992, Attorney-General's Department, Canberra, www.comlaw.gov.au/ComLaw/Legislation/ActCompilation1.nsf

Initiative Luftverkehr für Deutschland (2007), Hintergrundpapier zur Studie der Initiative "Luftverkehr für Deutschland": "Die Expansion der Luftverkehrsinfrastruktur und -kapazitäten im Mittleren Osten und ihre Auswirkungen auf den Luftverkehrsstandort Deutschland", Frankfurt am Main, http://www.initiative-luftverkehr.de/

Levy, B. and P.T. Spiller (1994), The Institutional Foundations of Regulatory Commitment: A Comparative Analysis of Telecommunications Regulation, *Journal of Law, Economics, and Organization*, 10, pp. 201-246.

Lee, D. (ed.) (2006), *Competition Policy and Antitrust*, *Advances in Airline Economics*, Vol. 1, Amsterdam, Elsevier.

Morrison, S.A. (2001), "Actual, Adjacent and Potential Competition: Estimating the Full Effect of Southwest Airlines", *Journal of Transport Economics and Policy,* 35, 239-256.

Morrison, S.A. (2002), "The Evolution of the Airline Industry – before and after September 11th", New Directions in Regulation Seminar, www.dac.neu.edu/economics/morrison/research

Morrison, S.A. and C. Winston (1992), *The Evolution of the Airline Industry*, Washington, Brookings Institution.

Morrison, S. and C. Winston (2008), Delayed! US Aviation Infrastructure Policy at a Crossroads, in: C. Winston and G. de Rus (eds.), *Aviation Infrastructure Performance: A Study in Comparative Political Economy,* Washington, Brookings Institution Press, pp. 7-35.

Mott Mac Donald (2006), *A Study on the Introduction of Secondary Trading at Community Airports*, commissioned by the EU Commission, http://ec.europa.eu/transport

Odoni, A. and T. Morisset (2010), "Performance Comparisons between US and European Airports", Paper given at the 12th WCTR, 11-15 July, Lisbon, Portugal.

OECD (1997), *Report on Regulatory Reform,* Paris: Organisation for Economic Co-operation and Development.

OECD (2005), *OECD Guiding Principles for regulatory quality and performance*, Paris: Organisation for Economic Co-operation and Development.

Productivity Commission Australia (2002), *Price Regulation of Airport Services*, Report No. 19, Canberra.

Oster, C.V., Jr. and J.S. Strong (2008), *Managing the Skies*: *Public Policy, Organization, and Financing of Air Navigation*, Aldershot, Ashgate.

Oum, T.H., N. Adler and C. Yu (2006), Privatization, corporatization, ownership forms and their effects on the performance of the world's major airports, *Journal of Air Transport Management* 12 (3), pp. 109-211.

Paylor, A. (2004), "The Slots Game", *Air Transport World*, August, www.atwonline.com/magazine

Stern, J. (1997), What Makes an Independent Regulator Independent? *Business Strategy Review*, June, Vol. 8, Issue 2, pp. 67-74.

Stern, I. and S. Holders (1999), *Regulatory Governance: Criteria for assessing the performance of regulatory systems*, NERA, London.

Schulte, S. (2009), "Financing Airport Infrastructure – the Fraport Perspective", paper for the International Transport Forum 2009, 26-29 May, Leipzig.

Stigler, G. (1971), The Theory of Economic Regulation, *Bell Journal of Economics* 2 (1), 3-21.

Templin, C. (2010), "Competition for Airport Services – Ground handling services in Europe. Case studies on six major European hubs", in: P. Forsyth, D. Gillen, J. Müller, H.M. Niemeier (eds.), *Competition in European Airports*, Aldershot: Ashgate, pp. 393-412.

Thatcher, M. and A.S. Sweet (2002), "Theory and Practice of Delegation to non-majoritarian institutions", *West European Politics*, 25 (1), pp. 1-22.

Vass, P. (2006), "Regulatory governance and the lessons from UK practice", in: M. Crew and D. Parker (eds.), *International Handbook on Economic Regulation***,** Cheltenham, UK: Edward Elgar, pp. 188-208.

Verkehrsministerkonferenz (VMK) (2000), Beschluß zur Liberalisierung bilateraler Luftverkehrsabkommen und zur Stärkung der Wettbewerbsfähigkeit deutscher Regionen innerhalb der EU vom 27/28. September, Frankfurt.

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

Winston, C. and G. de Rus (2008), *Aviation Infrastructure Performance, A Study in Comparative Political Economy,* Washington: Brookings Institution Press.

Wolf, H. (2003), *Privatisierung im Flughafensektor*. *Eine ordnungspolitische Analyse*, Berlin, Heidelberg, New York, Hongkong: Springer.

Wolf. H. (2004), Airport Privatisation and Regulation: Getting the Institutions Right, in: P. Forsyth, D. Gillen, A. Knorr, O. Mayer, H.M. Niemeier and D. Starkie (eds.), *The Economic Regulation of Airports*, Aldershot: Ashgate, pp. 201-212.

EFFECTIVE REGULATORY INSTITUTIONS: THE REGULATOR'S ROLE IN THE POLICY PROCESS, INCLUDING ISSUES OF REGULATORY INDEPENDENCE

Tom WINSOR

Rail Regulator and International Rail Regulator, Great Britain, 1999-2004

Partner, Transport & Infrastructure
White & Case LLP
London
United Kingdom

SUMMARY

London, November 2010

ABSTRACT

This paper discusses three connected aspects of regulation:

1) What makes a regulatory authority effective;
2) What is the legitimate role of a regulatory authority in the making and implementation of policy, and how that role may be regarded by others, and
3) The issue of independence of regulation from undue political intervention.

It argues that regulators are usually established to carry out complex technical tasks which government is unable or unwilling to do, partly because government wishes to distance itself from responsibility for some decisions. However, having invested regulatory authorities with sometimes considerable powers, which are more detailed and intrusive than any possessed by government over state-owned entities or industries, political or bureaucratic impatience or intolerance of that power sometimes takes over, and undue governmental pressure or interventions follow. These interventions come about either because of regulatory failures, or because politicians wish themselves to exercise regulatory powers which they regret having transferred to regulatory authorities. Regulatory independence from political intervention and regulatory freedom from political considerations is internationally recognised as an important facet of effective economic regulation; but despite that, it can come under such severe pressure that the system will fracture, causing severe loss of confidence in the regulatory system and in the reputation of the host government for fairness and respect for the integrity of the system of checks and balances which has been established for the protection of investment. It argues that regulatory independence is as much about regulatory behaviour and legal status.

1. INTRODUCTION

Regulation is not a dull, technocratic process carried out by a priesthood of economists, lawyers and administrators, or at least it should not be. Its role and purpose are far more important than being a mere cipher for central government decisions affecting the regulated companies or the regulated industry. Nor should a regulatory authority be treated as the external economics consultancy for government departments, with all the key decisions being taken according to political rather than economic and public interest criteria, irrespective of the legal or constitutional status of the regulator. Although regulators will often be used by politicians as lightning conductors for political blame, that is not their primary role.

Why do I begin in these defensive, somewhat agitated terms? It is because in too many respects regulatory authorities – particularly in the transport industries, probably because of the high role of

public subsidy – have been treated or regarded in exactly these ways. This does real harm to the authority and integrity of the regulatory authorities, especially when they are seen to be complacent in such treatment, sometimes even complicit in it. It harms the reputation of the state in respect of the fairness with which investment is treated, and in terms of its reputation for respecting the integrity of the institutions of the state, which are – and need to be – distant from overt (or covert) political control. Pretending an institution is independent when in reality it is not can be extremely harmful. The pretence can often do more harm than an honest acknowledgement of a lack of regulatory independence.

A great deal depends on the quality of regulatory design. Mistakes in the design of a regulatory system can be very expensive: in terms of lost opportunities; weaknesses in the system which allow or even foster behavioural abuses or malfunctions on the part of industry players; the deterrence of investment; a government's reputation for competence and fairness; and the sheer cost in terms of money and time in putting right the mistakes – if indeed repair is even possible. Despite these materially adverse considerations, governments go on making these design mistakes and then facing criticism and worse when things go wrong, as they undoubtedly will.

This paper discusses regulation in transport industries, and its examples are mainly (but not exclusively) drawn from railways. Railways provide perhaps the starkest instances of regulatory failure, issues about effectiveness and encroachment or assault on regulatory independence.

2. PURPOSE OF REGULATION

A broad definition of regulation is any measure or intervention which seeks to change the behaviour of individuals or groups. The purpose of regulation is to achieve better outcomes than if regulation were not present.

In its essentials, economic regulation is about protecting the weak and restraining the powerful, so as to achieve economically and politically sustainable outcomes. It is about promoting and protecting investment on the one hand, and protecting the consumer and the public interest on the other hand. Both need to be achieved.

The best regulator is undoubtedly the customer, provided the customer has an effective choice. In cases of monopoly, that choice is not present. Rail infrastructure is a monopoly, and because of the exclusivity which is conferred on passenger rail operators, either *de jure* or *de facto*, it is often the case that rail services (passenger train operations) are also monopolies.

Transport regulation – like infrastructure regulation – is necessary when the state determines that the provision of transport services cannot be left entirely to the private sector. This is because:

(a) the transport infrastructure – in most cases – will be a monopoly, and the holder of that monopoly will have an incentive and usually a tendency to abuse that position through charging excessive prices, demanding other unreasonable terms for access to the infrastructure, and providing a poor or declining quality of service, to the detriment of the users of the system and the public interest; and

(b) transport is a critical local, regional and national service, where the price, quality and security of supply are important to the economy and consumers.

In its broadest sense, as stated, economic regulation involves government – using legislative or administrative authority – imposing controls on business, so as to achieve behaviours or outcomes which business would not otherwise attain or provide, if allowed to make all decisions itself. It is a means to an end, not an end in itself.

What matters is the safety, availability, quality, security of supply and price of transport infrastructure and transport service operations. These are functions of the levels of capital investment, the profitability of the regulated companies, service quality in its particulars, productivity gains, expansion of basic services to new customers and functioning of new and existing markets. If the regulatory system does not achieve these objectives, it would be politically unsustainable. If it fails to support commercially viable enterprises, it will be economically unsustainable. Both masters must be served if regulation is to achieve its objective, and getting the balance right is not straightforward or simple.

According to the World Bank, the "ultimate goal is a best-practice regulatory system – a regulatory system that transparently provides investors with credible commitments and consumers with genuine protections[1]."

3. THE ROLE OF POLITICIANS

Establishing a regulator is not, and should not be, an exercise in ministerial abdication of power and responsibility. It is generally accepted that ministers should retain responsibility for broad sector policy, including public investment, the structure of the industry, taxation, subsidies and the legislative framework. Regulators should work within that policy framework, but the framework should not be altered frequently or arbitrarily. To do so would be to destabilize the integrity of the regulatory system, raise legitimate concerns on the part of industry players, and therefore raise the cost of investment and prejudice service quality and the development of the industry.

3.1. Rail-specific complexities

The regulation of railways is usually more complex than in other industries. There are two principal reasons for this:

(a) The industry is usually in receipt of public subsidy on a long-term basis, which raises issues of political interference and possible tensions with politicians, as well as regulatory legitimacy; it can be a magnet for political incursions on regulatory jurisdiction or independence; and

(b) Railways transport people and goods, in a safety-critical environment, using assets which, by their nature, are more vulnerable to breakdown and consequent operational disruption.

The range of regulatory instruments in the case of railways therefore usually needs to be greater than in other network industries, such as energy, water and telecommunications. Political sensibilities and sensitivities also need to be far more acute, on the parts of regulatory authorities as well as the companies operating in the railway industry. The political acuity of railway companies is a developing, infant science.

3.2. What do rail regulators do?

Overall, and depending on the industry's structure and government's existing relationship with the private sector industry participants, rail regulation usually involves all or some of the following:

(a) Safety accreditation, monitoring and enforcement;

(b) The establishment, amendment and abolition of operating and technical standards;

(c) Licensing operators of railway assets, imposing conditions concerning the stewardship of railway assets (note that in some systems, the regulatory authority may be supervising, monitoring and enforcing a contract between the state and the private sector, rather than a licence);

(d) Compliance monitoring and enforcement of licence (or contract) obligations;

(e) Setting the structure and maximum levels of charges for the use of railway assets (infrastructure and operations, including fares);

(f) Preventing the monopoly elements from exploiting their market power to the detriment of the public interest;

(g) Determining the terms and conditions (including price and quality standards) for access to or the use of railway facilities, including stations and maintenance facilities;

(h) The process for timetabling and capacity consumption and allocation;

(i) The supervision of industry-wide codes which are necessary for system integrity and co-ordination, including the establishment of those codes and their development over time;

(j) Handling appeals on industry-specific issues, such as safety and technical standards, and issues concerning mandatory changes to rolling stock or fixed railway facilities (network, stations and maintenance facilities);

(k) Sometimes acting as competition authority for the industry.

The way in which these functions are regulated varies considerably from country to country, and the regulator may perform these functions on a spectrum ranging from an advisory role to a determination and even a policymaking role[2].

Regulators sometimes are required to participate in the renegotiation of long-term contracts between the state and the private sector. For example, the privatisation of the London Underground involved the private sector maintaining, renewing and enhancing the infrastructure, and the public

sector running trains. This was done under a 30-year contract, with re-specification by the public sector of its requirements every 7½ years. If the public and private sector parties were unable to agree on what was to be done and how much it would cost, a specialist arbiter had been established to determine the matter according to regulatory principles. However, he could only be brought in if the parties' negotiations had broken down[3].

Elsewhere in Europe, national governments enter into multi-annual financing contracts with their railway infrastructure managers. Regulators, operating under European directives, must ensure that the infrastructure managers, if operating competently and efficiently, are fairly and adequately remunerated for the services they are required to supply. This provides them with protection against the state demanding a level of services for which it is not prepared to pay the efficient price[4].

In Great Britain, since the passage of the Railways Act 2005, the economic regulator performs a similar role, and is constrained in the level of access charges it may set by a statement of financial restraint issued by the Treasury.

3.3. Regulatory design principles

In essence, governments need to make up their minds at the outset what they want regulatory authorities to do, and how they want them to do it. In relation to the latter consideration, the degree of independence which the regulatory authorities will have is critical. (Independence is discussed later in Section 6: "Independence" *et seq*.)

Once these things have been established, they should not be subject to violent, abrupt or seismic changes. That is not to say that governments may never reform regulatory systems after they have first been established. On the contrary, the quality and intensity of regulation is always a matter for legitimate political attention on the part of the legislature and the executive government. Regulators are established by government with the authority of the legislature, or directly by the legislature. It would be perverse to suggest that, in relation to institutions with such considerable power over economic and safety matters, and which are usually established to operate in perpetuity, they should never change. Regulatory authorities must always change in response to developments in the industries which they are regulating, and ideally they should change themselves, using mechanisms for change established or authorised by the institutions which established the regulators in the first place[5].

4. REGULATORY POLICY

In its simplest form, policy is what politicians do. The Oxford English Dictionary defines policy in the following way: *"A principle or course of action adopted or proposed as desirable, advantageous or expedient, especially one formerly advocated by a government, political party, etc."*

But that is too simple for our purposes. Whilst it is uncontroversial that the elected representatives of the people, through their legislature and the appointed executive government, should make overall transport policy, that is not to say that all courses of action which are considered to be advantageous to the public should be decided upon by politicians. There are many things of importance to the citizen and the community which politicians should not do, the most conspicuous and obvious being the tasks which are allocated to the judicial branch of government. Regulators are not established merely to be the obedient instruments of politicians. For the reasons given above, they are there to do things which government is unable or unsuitable to do, and which require a degree of political detachment and distance, in order to ensure that the quality of decisionmaking, and the criteria according to which decisions are made, can engender confidence in those likely to be affected by those decisions.

So, the question arises, what are the boundaries of regulatory policy, and when does regulatory policy intrude into political policy? It should be recognised that the boundary line may very well move according to the political climate.

Many less intellectually able politicians and bureaucrats, and some very able ones, misunderstand (sometimes deliberately) and will not tolerate the possession of real executive power in the hands of an institution which is not controlled by central government. They may know, or have had explained to them, why it is necessary for regulatory authorities to be distant from political control, and to operate according to non-political criteria, but that does not prevent them trying to seize the levers of regulatory power, or subtly and more gradually to encroach upon regulatory jurisdiction, when a stronger or more compelling political and bureaucratic motive prevails. This issue is discussed further in the section of this paper concerning independence (see Section 6, "Independence" *et seq*).

However, the question of where the boundary line is placed, and how that boundary may be changed over time, is a critical one for regulatory design, and therefore for political policy. In the UK, for example, the last Labour government (1997-2010) ruled that decisions of national and regional importance on the planning and establishment of infrastructure projects, and their approval, should be delegated to an independent infrastructure planning commission. This commission would operate according to clear public interest criteria, set out in its enabling statute, and would make the final decision (subject to the usual challenges on judicial review grounds of legality, rationality and procedural fairness). The commission was empowered to make decisions as sensitive as the siting of nuclear power stations, and the route of a new high-speed railway. This was regarded by many politicians, including the new Conservative-LibDem coalition Government (which took office in Britain in May 2010), as a step too far. There are some decisions which are so politically sensitive that it would be intolerable for them to be taken according to non-political criteria by people who are not elected. And so the infrastructure planning commission is to become a reformed, purely advisory body, with the final decision being taken by the minister. There are some things which ministers alone

should decide and take responsibility for: and that is unobjectionable as long as the rules of the game are known and understood by those likely to be affected by them. It becomes much more problematical when the rules are changed after the game has started, especially when that change is sudden, unforeseeable and significant.

When an industry is being restructured and prepared for privatisation, it is again hardly tenable that decisions on the overall structure of the industry should be taken by anyone other than the elected government. However, after privatisation, it may very well be that further restructuring, for example, the breaking up of a large, unresponsive monopolist, should be taken by regulatory authorities according to economic rather than political criteria. This is what happens in the UK. Both positions are defensible, with the hands on the levers of control being dependent upon the stage of the privatisation process.

In the case of transport, where networks can be perpetually in receipt of public subsidy, these issues can become quite acute. In UK industries, such as water, electricity, gas and telecommunications, none of which receives overt public subsidy, the independent economic regulator's role is to determine the condition, capacity and capability of the network in question, and the intensity of use which the network is likely to face in the following five years. It then sets the user charges for those five years, according to the revenue requirements which an efficient and competent infrastructure manager will reasonably require in those circumstances. In railways, exactly the same questions have to be determined by the regulatory authority. However, in the case of railways, the infrastructure manager (Railtrack, then Network Rail) had about 40 customers; namely, passenger and freight train operators. In the case of the passenger operators, they in turn had contracts with the State (franchises). The franchises were not supervised by or otherwise approved by the regulator; they were direct private law contracts between the State and the private sector franchise-holders, freely entered into by a sovereign government. As well as specifying in considerable (some say excessive) detail everything the passenger train operator had to do in providing commercial services to the public, the franchises contained a financial indemnity. That indemnity was given by the Government to the private-sector franchise operators, to protect them (the franchisees) from the uncertainty about the condition of the rail network, and against any increases in infrastructure charges which may be determined by the regulator when the condition of the network, and the efficiency of the infrastructure manager, were more fully understood and made predictable. At the time of privatisation, as is the case in so many industries around the world, the state-owned railway during the period of public ownership, had been compelled for political reasons to defer maintenance and renewal, and otherwise to neglect its network. After privatisation, that was not a risk which the private sector franchisees could reasonably be expected to take, and so it was decided by the Government that they would not be required to do so. Instead, legitimately, the State would take that risk. Accordingly, increases in access charges would be fully indemnified by the State. This, of course, meant that the decisions of the regulator would flow directly through to the national treasury. The seeds of a destructive political tension were thereby sown.

In the period 1996-2000, it became apparent that the condition of the British national rail network was probably much worse than had been assumed at privatisation in 1996, and that it would require considerably more money if it was to be restored to a sound and sustainable operating condition. The position was complicated by the fact that the infrastructure manager, Railtrack, was politically detested by the Labour government.

In October 2000, the regulator increased Railtrack's revenue from £10 billion to £14.8 billion, and in December 2003 increased that by a further £7.4 billion, giving a final settlement of £22.2 billion. These were, of course enormous increases, and attracted a great deal of political dissatisfaction. Politicians complained bitterly that an unelected regulator was making very significant

decisions about the levels of public expenditure on the railways and, by extension, the diversion of public money away from other uses such as health, education and criminal justice. This, of course, mis-represented the position, because the regulator was only doing what the legislature had required him to do. The fact that the State, by private law contract, had chosen to indemnify private sector companies against the consequences of the regulator's decision did not make the regulator's jurisdiction illegitimate. But that is not how it was seen. Ignoring the fact that the financial consequences of the regulator's decisions were entirely a function of contracts voluntarily entered into by a sovereign government, without any participation of the regulator, government ministers and others criticised the regulator's jurisdiction as if it had been a function of his statutory birthright instead. They therefore resolved (with the assistance of the soon-to-be appointed chairman of the Office of Rail Regulation) to cut it down and, using primary legislation (Railways Act, 2005), placed a financial cap, determined by the national treasury, on the value of the contract-based indemnities. Had it not been for the (justifiably) political timidity of the private sector companies in question, there would have been scope for a successful challenge on the grounds that the value of their private law contracts with the State was being arbitrarily reduced without the payment of adequate compensation.

This is an illustration of political intolerance towards what was perceived to be the regulator's power to make policy concerning the level and application of public subsidy in the railway industry.

If it is politically objectionable for the regulatory authority to have a particular jurisdiction, whether or not it is characterised as a power to make regulatory or political policy, then at the beginning, before the assets are privatised and before citizens are invited to make investments, the decision should be taken that that jurisdiction should not be conferred. It is unsustainable, and severely damaging, for government ministers later to criticise a jurisdiction conferred with the authority of the legislature, and enhanced by the sovereign act of the same government.

Unfortunately, that is how some politicians usually behave. When things are quiet, they happily load onto regulators additional duties and functions, contentedly congratulating themselves that they have offloaded politically sensitive decisions which can conveniently be blamed on the regulators if things go wrong. But things do go wrong, whether as a result of regulatory failure or an intensity or severity of circumstances, which lead the politicians simply to lunge back at the levers of control, assuming responsibility for what has been properly delegated to the regulator.

The instinct of politicians is, of course, that they have democratic legitimacy because they, unlike anyone else, have been elected. That is undoubtedly true. However, that does not mean they should try to control and run everything, even in times of crisis.

In the UK, the legislature established the regulators, gave them their powers, and settled on them their statutory duties, which are their objectives. So the regulators have a legislative birthright, which is the highest source of democratic legitimacy.

It could never have been expected, and nor should it have been expected, that having through the legislature created regulators, politicians would shrink back into the shadows, observing the scene from a respectful distance, offering the occasional deferential submission in regulatory consultations, and otherwise playing no part. Politicians should never completely disengage from the subject matter of what regulators do or how they do it. That would be an illegitimate abdication of the obligation of politicians to engage with regulators in an appropriate way, and to an appropriate extent, and to set overall transport policy.

The issue is the correct balance of political jurisdiction and political criteria on the one hand, and regulatory jurisdiction and regulatory criteria on the other hand. If the boundary line between the two

is placed in the wrong position, it will come under possibly severe pressure, and along its fault lines it may fracture. That is what happened in the UK in 2001 in the railway industry, and the costs were very considerable. We will return to the subject later in this paper, when we will deal with independence (see Section 6, "Independence" *et seq*).

If politicians are uncertain or uncomfortable about the scope of regulatory power, they could, when making regulatory design decisions, establish the regulatory authority at first as an advisory body, with final decisions on critical issues being reserved for ministers. Over time, and as confidence grows, the regulatory authority could be given more autonomy, and thus a sliding scale system of independent regulation could be established. The critical factor is that private sector players have confidence in the system, and in the jurisdiction, integrity and competence of the regulatory authority.

A source of significant difficulty can be the establishment of a competitor regulator.

During the author's time in office, a competitor regulator existed, called the Strategic Rail Authority (a grave political mistake, now happily consigned to oblivion). It was created in 2001, partly to make up for the failure of Railtrack, the national rail infrastructure manager, to give leadership to the railway industry in matters of planning, but it was also meant to be ministers' iron fist in an iron glove. They were very fond of the idea of central command and control of the railway industry, which they wished had never been privatised. Unlike the Rail Regulator, the SRA was politically controlled: the minister could tell it exactly what to do. It was supposed to be responsible for franchising passenger rail services, but over time it – and the ministers who created it – became frustrated with its statutory impotence, and decided that it should do more. The SRA, therefore, with no legal authority and with significant political (and bureaucratic) support, simply asserted a jurisdiction which it plainly did not have. This caused considerable confusion and uncertainty in the railway industry and in the public mind, and territorial encroachments into the jurisdiction of the Rail Regulator became commonplace, and often had to be publicly repelled. This was an unattractive and damaging state of affairs.

Because ministers and civil servants deliberately confused the true nature of the relative jurisdictions of the two regulatory authorities, and asserted for the SRA a jurisdiction which it did not have (one which was truly vested in the economic regulator, for example, in matters of capacity allocation, stewardship and enforcement), this played into the hands of critics who wanted to pull down the pillars of the established regulatory structures. But by its sometimes aggressive behaviour and conspicuous failures, having at first been the golden hope of ministers, the SRA lost political support and operational traction, and descended into a crippled command and then a fallen empire. It was abolished in 2006, with most of its functions transferred back to the Department for Transport.

Political support for a competitor regulator, and ministers' deliberate or negligent denial of the true source of regulatory authority, did no-one any good, and brought the entire system into disrepute.

Such instances of regulatory competition are not confined to Europe. In the area of anti-trust regulation in the United States, there are competing authorities which will resist the intrusions and encroachments of others rather than co-operate, even though they are all supposed to be on the same side. The Chairman of the Federal Trade Commission recently described the situation in these terms: "*We have an archipelago of policymakers with a very inadequate ferry service between the islands. In too many instances, when you go to visit these islands the inhabitants come out with sticks and torches and try to chase you away*."

It is almost inevitable that the establishment of independent economic regulators creates or aggravates a state of infuriated impotence on the part of some people in central government who are

jealous of the power of regulators – their powers of enforcement and control – to a degree of specification and detail which central government has never had. They are also intolerant when regulators proceed according to their own policies and agendas, as they interpret their statutory duties, and even communicate with their industries and the public according to their own priorities. This can be a source of considerable tension.

In Europe, the existence of European law can be a material source of protection and assistance. In Estonia, the railway was privatised in 2001. Being a new Member State of the European Union, the Estonian Government was bound by the relevant directives concerning railway infrastructure, including those which provide that the infrastructure manager is entitled to be fairly compensated for the efficient and competent operation, maintenance and renewal of its network.

A change of transport minister led to a severe conflict between the Estonian Government and the owners of the privatised railway. The minister declared his intention of reversing the privatisation, and used his powers over the Estonian rail regulator to secure a regulatory settlement, which set access charges significantly below the irreducible minimum needed for operating the railway. This was illegal, and the infrastructure manager pursued legal action in the Estonian courts as well as international arbitration in Stockholm and Washington D.C. (the latter under a bilateral investment protection treaty between the United States and Estonia). One of the greatest protections was European law, which required the regulator to set access charges according to sustainable economic principles and not political ones. In 2006, proceedings were about to be commenced in the European Court of Justice for an advisory declaration as to the applicable European law (which would no doubt have been obtained on satisfactory terms), when the Estonian Government made an acceptable offer to settle the litigation and instead buy out the foreign investors, and renationalise the railway by the payment of compensation[6].

None of these dynamics is new. It is in the nature of politics and politicians that when people obtain power, they want to use it. If they find that power in the hands of someone else, despite their accession to high political office, they will often try to seize it or subvert it. This goes back centuries.

In 1833, President Andrew Jackson of the United States wanted the funds of the federal government to be removed from the Bank of the United States and deposited in state banks. He asked the Secretary of the Treasury, Louis McLane, to do this. However, the authority of the Bank of the United States ran until 1836, and the relevant statute provided the government funds were to be kept in it "unless the Secretary of the Treasury shall at any time otherwise order and direct". When Treasury Secretary McLane decided against removing the funds, President Jackson removed him, and appointed William Duane as his successor. Duane also refused the President's persistent demands, explaining that under the relevant legislation Congress had conferred a discretionary power on the Secretary of the Treasury and not the President, and therefore the decision was his. After a lengthy and fervent correspondence between them, Duane refused to accede to the President's directions, and Jackson removed him too from office. Jackson then appointed Roger Taney as Secretary of the Treasury, and almost immediately, Taney made the requested order[7].

A politician, dissatisfied by the limitations on his power imposed by the very source of that power, was determined to get his way, and ultimately did. That often happens, although the means employed to resolve the situation can be brutal, and the financial and other consequences severe.

These cases are illustrations of the wisdom of the legislature putting the policy and jurisdictional boundaries in a sustainable place, and of politicians respecting, and working with, and not against, that legislative decision.

5. EFFECTIVE REGULATION

When regulation is working well, and it is not thought to be trespassing on matters of political sensitivity, the regulators usually do not hear from the politicians.

If regulators, faced with the juggernaut of government, give into improper political pressure, and shrink back from using their powers for fear that they will be taken away from them or diminished, this would be a violation of their statutory duties as regulators, however much that may upset the politicians. However, there are ways in which regulators can mitigate or minimise that kind of political pressure through careful handling of the politicians, although this does not always work.

When regulators do a bad job or are seen to be weak, they magnetically attract political pressure and criticism, as well as industry, media and public dissatisfaction and pressure. It is quite a simple job to avoid this happening.

It comes down to this. The regulator should be assiduous in doing its job well, professionally, proactively, proportionately, in accordance with its legal duties, and explain to people what it is doing, and why, and the principles upon which it is operating. It should not be found asleep at the wheel, or looking the other way.

In 2008, the UK Parliamentary Commissioner for Administration – the ombudsman which investigates allegations of maladministration on the part of public authorities – published its report into the mis-regulation of the insurance company, Equitable Life. Many thousands of people who lost out had a "justifiable sense of outrage" in a "decade of regulatory failure" and "serial maladministration". According to the Ombudsman, the regulators were "passive, reactive and complacent", their actions "largely ineffective and often inappropriate".

In May 2006, the House of Commons Transport Select Committee criticised the Office of Rail Regulation for being "timid", having reluctantly taken a "softly, softly" approach to Network Rail (the company which ORR is charged with regulating), appearing "meek and reluctant to use" its powers, "weak and overly cosy with the primary organisation it regulates". Four years later, in September 2010, the House of Commons Public Accounts Committee – the most powerful committee of the legislature – added to those criticisms. It criticised the Office of Rail Regulation for being "remarkably relaxed" about the performance of Network Rail, and having an apparent "marked complacency" in its approach. These are severe and well-merited criticisms of an organisation which has been consistently failing since its establishment in July 2004. It will come as no surprise to the ORR Board that the attentions of politicians are now drawn upon it, and its competence, if not its constitution, will be reformed one way or another.

With the considerable powers that regulators have comes a responsibility to use those powers fairly, proportionately, competently and professionally. It is in this respect that regulators so often get things wrong. Regulators should be seen to be on the job all the time, not simply reacting to events when they could have taken preventative action much earlier. After political intolerance of regulatory power, ineffective regulation is the second principal cause of political intervention.

6. INDEPENDENCE

The literature – in the UK and internationally – on the importance and beneficial effects of having independent economic regulation, is enormous. Of course, the models differ but the message coming across – whether from the OECD, the World Bank, the Asian Development Bank, the Department of the Treasury in Australia, the European Investment Bank, the ratings agencies, legislative bodies and committees, the universities, think-tanks, industry participants themselves and others – is that independence in economic regulation is a very considerable strength in creating and maintaining the conditions for confident, competent and economic private investment in projects.

The OECD said, in *Regulatory Policies in OECD Countries – From Interventionism to Regulatory Governance*:

"*The key benefits sought from the independent regulatory model are to shield market interventions from interference from 'captured' politicians and bureaucrats*[8]."

In April 2001, the World Bank published a working paper on issues and international experience in power and gas regulation, in which it said:

"*... the general principle for the allocation of responsibilities to Government bodies is that the functions of policy-making, ownership and regulation should be separated. This independence is essential as it is important for the regulator to make discretionary decisions solely on the basis of the facts of each case, and thus must remain out of the scope of influence of either the government or companies. Independence in decision-making is important to investors in and users of regulated facilities. It assures them that covert pressures from any quarter will not influence decisions. This is an important confidence-building factor in the regulated utility industry. ... The ... most important misunderstanding (about regulatory independence) arises from confusion about the reason for independence. Independence is not an end in itself, but a means to an end. What ultimately matters is not whether the regulatory entity is independent, but whether the government can give a credible commitment to investors and consumers. Investors, both domestic and foreign, need assurances that their investment will not disappear through direct expropriation or through many small regulatory actions that add up to de facto expropriation*[9]."

In May 2004, the House of Lords' Select Committee on the Constitution (part of the UK legislature) stated:

"*We have received clear evidence that independence of regulators from ministers is welcomed by ministers and is seen as a vital ingredient for maintaining consistency, for ensuring that regulatory decisions are taken by 'competent authorities' (which accords well with current and prospective developments in the governance of the European Union), and for promoting confidence about regulation among the regulated, those investing in regulated enterprises, and the customers and citizens on whose behalf regulation is carried out*[10]."

Despite its actions against an independent regulator in 2001 (see below), in 2003 the British Government shared that view, telling the UK House of Lords' Select Committee on the Constitution that:

"*the independence of economic regulators from Government – insulating decisions from short-term political factors – is a fundamental contributor to regulatory certainty and prerequisite for continuing to attract private finance to regulated sectors*[11]."

The independence of regulators was conferred with the authority of the legislature. In law, it can only be taken away by the legislature. But there is more to this than law. Legal independence is only half the story. It is an essential condition, but not a sufficient one.

Behavioural independence matters just as much. When leaving office in 2004, the author warned his successors not only of the likelihood that political pressure would be brought to bear on them some time in the future, but also of the essential need, when inappropriate demands or pressures are placed on them by politicians, not to be seen to be giving way and thus violating their statutory duties. He explained that they could lose their independence, either if the legislature were to change the law or if, by their behaviour, they showed that they were not in fact independent. Bend to that, and you will have lost your independence just as surely as if the legislature had taken it away, because people will never believe in your independent behaviour – your willingness to be independent – ever again: and once you have lost it, you will never get it back.

In the Summer of 2001, the national railway infrastructure manager, Railtrack, engaged in secret, and eventually unsuccessful, negotiations with the UK Government for a financial rescue in the aftermath of the severely expensive operational difficulties they had experienced after the Hatfield rail crash in October 2000. That bailout proposal contemplated a four-year suspension of the regulatory regime, and more or less an open cheque-book from the government. In my opinion, the government was not serious about these unacceptable proposals, and instead devised an alternative plan, which involved taking back the assets of Railtrack without compensation, by engineering the apparent insolvency of the company.

In order to get Railtrack into administration, it was necessary for the government to establish to the satisfaction of the High Court that the company was insolvent. The problem was the jurisdiction of the Rail Regulator. As long as his jurisdiction was intact, the company had an alternative source of finance which could have led to the company being advanced billions of pounds of additional public money, against the will of the Treasury. This was a power which needed to be neutralised. Therefore, 48 hours before the government went to court, knowing nothing about it until that point, the author was informed by the secretary of state for transport of the government's intention to apply for an administration order, and that if the author were to intervene to improve the company's financial position, he had the authority of the Prime Minister and the Chancellor to introduce emergency legislation into the legislature to take him, the independent regulator, under direct political control. Despite these threats, which the author regarded as completely improper, the following day he indicated to Railtrack that he would be prepared to initiate the necessary review of their financial position, and to announce it publicly, but by then the company had given up.

The legislation had been prepared, and no amount of explaining to government the very severe consequences which such a step would have, not only for investor confidence in the railway industry but in all the other independently regulated industries, and for the government's programme for getting private money into public projects, the independence of the Bank of England, and much else besides, would do. They were not to be moved. Railtrack therefore went quietly into that long dark night.

After that, there was a review of regulation lasting several months, from which the author and his staff were excluded. It was only when government realised that they needed the author's co-operation to get Railtrack out of administration, which was proving both operationally and financially extremely expensive, that the dogs were called off and the spectre of primary legislation to extinguish independence in the economic regulation of the railways was removed.

Three months after leaving office, in September 2004, the author discussed this affair with Mr. Robin Cook, MP. At the time of Railtrack's collapse, he had been a cabinet minister (Leader of the House of Commons), and so had had to defend what had been done. The author put it to him that the severity of the consequences of such a threat to independent economic regulation was so great, it was hard to understand why government would take this risk when, as Rail Regulator, he had hardly shown himself to be a soft touch when dealing with Railtrack. He answered in this way: "*Tom, in the 17th century, Parliament fought a bloody civil war to gain control of public expenditure, and we were not about to give it up to you.*" That was a very revealing remark in relation to the mindset of ministers, careless of the constitutional implications for the sanctity of contract and the rule of law, and indeed for the government's reputation for fair dealing.

The political pressure at that time was, as you can see, enormous. Even after Railtrack had been effectively killed off, they were still determined to extinguish the independence of the regulator and to transfer his jurisdiction to a politically-controlled entity. In those circumstances, it was necessary to play the game long, and to allow the weaknesses of the political policy to be exposed over time and so ultimately disable the assault. That strategy worked and, despite all the predictions to the contrary, the integrity and independence of economic regulation of the railways was maintained and protected until the author handed over to his successors.

Regulators are often accused of being unaccountable because they are independent. This notion is misconceived. Regulators have significant amounts of accountability, far more than the accountability of the self-regulating nationalised industries which preceded them.

Regulators have statutory duties, enforceable by action for breach of statutory duty or through judicial review. They have obligations to make annual reports to the legislature, and to provide answers to written questions tabled in the legislature. Regulators can be and are called to give written and oral evidence to committees of the legislature, including the Public Accounts Committee. Regulators are answerable to the Parliamentary Commissioner for Administration in cases of allegations of maladministration, and their performance is scrutinised by the National Audit Office. They are required to give information, advice and assistance to ministers in some respects, and of course they must comply with the rules of administrative law and the rules of good public administration, including in relation to the duty to act fairly, to keep an open mind, to hear all sides before making a decision, and to take into account all truly relevant considerations. They are bound by the rules as to the lawful exercise of powers, reasonableness and proportionality, consistency of decision-making and compliance with procedural rules.

All these things buttress the obligation to do the job properly.

One extremely important responsibility, which the author took very seriously, is the duty to explain: to explain not only what you are doing and why you are doing it, but also the principles which inform those decisions, as well as making clear in advance the criteria and procedures which will be used for the making of the decisions, followed by the publication of full written reasons for them.

It is a fallacy to say that regulatory independence means that regulators and ministers must never communicate. The author believes that it is a violation of the regulatory birthright to adopt this policy.

Of course there must be a respectful distance between the two, but ministers and regulators should engage regularly. It is very important that ministers understand what regulators are doing, and what they may do in the future, and that they play their parts in communication and information exchange. Uninterested or disinterested, unengaged ministers are a major hazard to the proper prosecution of regulatory policy, as the author saw in his 2003 access charges review for the railway industry, leading up to what was then the largest financial settlement the railway industry had ever had. Getting the Secretary of State for Transport and his officials to engage with us in a timely and worthwhile manner was very difficult indeed, and only when the die had been cast and there was nothing much that could be done about it towards the end of the process, did we really get anything like the quality of engagement which we had needed months before.

Ministers are stakeholders in the regulatory state, just as are customers and industry participants. It is when regulators become distant from stakeholders, or are thought by stakeholders to be uninterested, that trouble begins.

As said above, regulators are the creations of the legislature, not the executive government. This is often misunderstood by commentators, and even by ministers. But, particularly in the context of behavioural independence, it is extremely damaging when this is the opinion of the regulators themselves. Regulators do themselves and their stakeholders no favours when they display a mindset such as the one the author encountered in a discussion in 2008 with one of the principal economic regulators.

He had said at a conference that, because he was unelected and ministers are, he lacked democratic legitimacy. As a consequence, in his opinion, it was not only appropriate but necessary for him to defer to the will of ministers. The author challenged him on this important issue and explained that his statutory powers and duties were given to him by the legislature, and that is the highest form of democratic legitimacy anyone can have. After all, we live in a country which is subject to the rule of law. He replied, "*I regard the rule of law as a scary concept*." When ministers choose regulators from that mould, legal independence really does not matter.

In too many respects, some regulators have blurred the distinction between the will of the executive government and the will of the legislature. This is damaging to investor confidence.

One should not be understood to think that, having created regulatory institutions and given them their powers and duties, the legislature should never be permitted to return to the subject. Of course not. It is undoubtedly the right of the legislature, having created a regulatory structure, to review and if necessary amend the powers and duties of the regulators, since it is from the legislature that those powers and duties came in the first place. There will be times when amendments are needed. There may be occasions when regulation needs to be changed significantly. It is for the legislature to do this, not ministers through bullying, intimidation or inducements. It is for ministers to make their case in the legislature, and not treat the legislature as little more than a rubber-stamp. If the legislature makes a decision to change the powers, duties or even independence of the regulator, it should do so after very careful reflection, on rational evidence-based grounds. One of the key considerations must be the faith and confidence which investors, industry participants and others have in the integrity and operation of the regulatory system, free of undue political intervention. It is a step which the legislature should take with great caution.

Because of the importance of the decisions which regulators take, and the fact that they are required to take them without regard to inappropriate political considerations, there is an inevitable tension in the system. The possibility of conflict with politicians is built-in, and in that, tension may be healthy. But it is a combustible state of affairs.

Politicians protest the independence of regulators, and react with apparent – sometimes feigned – horror at any suggestion of dilution. But it is easier instead to take the jurisdiction of the regulator, and transfer it to ministers or another politically-controlled entity. When they have done that, in relation to the power in question, independence has been completely extinguished.

Regulators must be vigilant in relation to political pressure and encroachments on their jurisdiction. They must not be seen to be giving in to improper pressure. If the legislature decides to take away their jurisdiction or their independence, or to diminish those things, that is the right of the legislature. But it is for the legislature, not ministers to do this. Regulators should not shrink from engaging in that debate. Politicians should welcome that engagement and debate about the merits of the proposed changes and, in the words of Thomas Jefferson, "*prefer the homage of reason to that of blindfolded fear*".

Until the legislature has made a change, regulators should adhere to their statutory remit as it stands, not as ministers may threaten to change it. Anything less is a voluntary abdication of independence and jurisdiction, and regulators should not accommodate ministers in this respect. The damage is too great.

A great deal depends on the kinds of people who are appointed to regulatory authorities. Appointments should be made more distant from politicians, and there should be a regulatory appointments commission on a statutory basis. Commissioners should be appointed by the legislature or a committee of the legislature, after nomination by ministers. Once appointed, they should apply specific, statutorily established criteria for appointment of members of regulatory authorities, and those criteria should have nothing to do with party politics or short-term political considerations.

In the UK, we also need much better scrutiny in the legislature of what regulators do. It should not be happening only when something has gone wrong and a *post mortem* is needed. We need committees of the legislature which are truly expert in the issues of regulation, who can take a cross-industry view and really subject the regulators to intense, focused and substantial scrutiny. There may even be a case for the appointment of counsel to the committee to make up for the lack of forensic skills on the part of some politicians who sit on these committees.

The culture of regulation is important. Regulators should do much more to explain the principles, procedures and criteria on which they act. They need to take seriously their duties to explain and to communicate. It should be the legislature that is the primary scrutinising body for the actions or shortcomings of regulators, and it should have a different and improved role in their appointment.

In these ways, the inevitable tensions of the dynamics of the political-regulatory relationship can be constructive rather than destructive.

NOTES

1. A. Brown *et al*. (2006), *Handbook for Evaluating Infrastructure Regulatory Systems*, World Bank, Washington, DC, p. 9.

2. See page 12, last paragraph.

3. The public-private partnership for the London Underground came to an abrupt and unsatisfactory end. Metronet, the company which took over two of the three parts of the London Underground infrastructure in 2002, collapsed into administration in 2007, after a ruling on its efficiency by the Arbiter. In 2010, Tube Lines, the other private company, under considerable pressure from London Underground, the public sector partner, sold its interest back to the State in the final stages of the Arbiter's periodic review of the costs of the network. Overall, the London Underground PPP was a conspicuous failure, mainly because of: the over-specification and micro-managerial nature of poorly-designed, over-complex contracts; the unsatisfactory procurement and contracting practices which Metronet was allowed to engage in for infrastructure services; significant uncertainties as to the jurisdiction of the Arbiter; the Arbiter's violations of established regulatory standards regarding conduct and quality; and severe hostility towards privatisation on the part of the public sector partner (London Underground), whose co-operation was needed to make the contracts work. London Underground provides a case in point for municipalities or national governments contemplating any aspect of rail privatisation or commercialisation.

4. See p. 13, last paragraph, and p. 14, first paragraph.

5. As for the use of a regulatory system with an in-built change regime, see *The Future of the Railway, Robert Reid Memorial Lecture,* 10 February 2004, at: www.rail-reg.gov.uk/server/show/nav.37

6. In other countries with no established tradition of regulatory institutions operating separately from political control or even at a distance from it, and without the protection of European law, private-sector investors try to protect themselves from possible arbitrary, capricious, expropriatory or simply incompetent behaviour by regulators (as well as ministers), through the use of stabilization provisions in their contracts with the State. These instruments are designed to give investors a degree of insulation from political or regulatory actions, and financial compensation (ideally, in international tribunals) if they are affected by such interventions. Developing countries often enact investment protection laws to facilitate such mechanisms, although sometimes those laws are themselves inadequately designed.

7. The result was a political furore, with the Senate passing a resolution of censure and subsequently rejecting Taney's nomination as Treasury Secretary, the first time in American history that it had rejected a presidential nomination to the Cabinet. When, in 1835, President Jackson nominated

Taney to a seat on the Supreme Court of the United States, that nomination also failed. Changes rejected a presidential nomination to the Cabinet. When, in 1835, President Jackson nominated Taney to a seat on the Supreme Court of the United States, that nomination also failed. Changes in Senate membership finally permitted his renomination and confirmation as Chief Justice of the United States months later – an extremely unfortunate occurrence since Taney, probably more than anyone else, was responsible as Chief Justice, for the outbreak of the American Civil War.

8. OECD (2002), *Regulatory Policies in OECD Countries – From Interventionism to Regulatory Governance*, *Reviews of Regulatory Reform*, Paris: Organisation for Economic Co-operation and Development, p. 97.

9. *Power and Gas Regulation – Issues and International Experience*, The World Bank, Washington, DC, April 2001.

10. *The Regulatory State: Ensuring its Accountability*, House of Lords' Select Committee on the Constitution, 6th Report of Session 2003-04, Vol. I, *Report,* para. 113.

11. *Op. cit.*, paragraph 113 and Vol. II, p. 373, paragraph 9.

TRANSPORT REGULATION FROM THEORY TO PRACTICE: GENERAL OBSERVATIONS AND A CASE STUDY

Marco PONTI

Research Centre on Transport Policy
Politecnico di Milano
Milan
Italy

SUMMARY

Milan, October 2010

ABSTRACT

The paper suggests a set of recommendations arising directly from the (negative) experience of regulating certain transport sectors in Italy. The main proposals are as follows:

- Build alliances with other regulatory agencies, as well as at a higher level (European Commission). Isolation facilitates capture.
- Use extensive and transparent quantitative evaluation methods (cost-benefit analysis). Discretionary approaches also facilitate capture.
- From the start, define a strictly efficiency-oriented scope for the regulatory agency: social and environmental issues are prone to political interference.
- A special problem is the regulation of infrastructure investment: here further research is badly needed.

1. INTRODUCTION

Economic regulation *per se* is a highly controversial issue, and more so in the transport sector, given its high technical complexity - infrastructure and services, public and private actors, social and efficiency objectives. Moreover, there is little consolidated, practical experience in this sector, as regulatory institutions are rather scarce and their tasks far from being clearly defined.

The first part of the paper analyses a number of general transport and mode-specific issues that can provide indications for both setting up regulatory bodies and orienting their strategies.

In Section 5, a national case study is presented (Italy), where no specific regulatory institution for the transport sector has existed until now, but where some attempts at introducing regulatory principles have been made, albeit with little practical success. Nevertheless, the defence mechanisms set in motion by the regulated companies (and the political actors supporting them, either within a "captured" context or simply to maintain their dominant role), can provide some important suggestions for future action, corroborating the initial, more general considerations.

2. SOME GENERAL ECONOMIC ISSUES RELEVANT FOR INSTITUTIONAL CHOICES

2.1. A special difficulty

Regulation, an alternative to the "command and control" approach for implementing public policy, is concerned above all with the concept of "capture" from special interests. Capture occurs when a state regulatory agency, created to act in the public interest, acts instead in favour of the dominant commercial or special interests in the industry or sector it is charged with regulating. Regulatory capture is a form of government failure. More generally, capture can concern both the state agency and the elected-electors relationship. In this paper only the former will be dealt with, even if the latter also has important policy implications.

Shifting from a traditional situation of command-and-control to a regulatory one is very difficult, for solid theoretical reasons. First, an advance consensus has to be reached that a capture mechanism is in place and, second, that this mechanism is severely harming the public interest. But the nature of the capture mechanism in the state agency context is symmetrical, i.e. based on an exchange of favours and benefits. Typically, the agency – for example, an airport concessionaire – obtains higher tariffs and in exchange extends the workforce beyond the requirement for political consent (votes of exchange). Possible examples are numerous.

"*Ay, there's the rub*... ." In fact, the same actor that is supposed to change the situation from command-and-control to regulation, is the political body (the state, in one form or another) that benefits from the above-mentioned exchange of favours. Thus, there arises a double obstacle to regulation: both parties – the state and the agencies or firms to be regulated – are strongly against it. In fact, the regulator often has to face the continuing hostility of these two actors, even after the regulatory institution has been set up. In some European cases, opening up competition has been easier in the private rather than public sectors, as in the former case opposition came from one side only - the private actors.

From this, a first indication emerges for the regulator: it is necessary to protect the scope and goals of its activity as far as possible in order to avoid political interference (while pressure from the regulated actors is considered natural). This implies adhering strictly to efficiency goals, allowing the politicians freedom over decisions concerning social objectives. But this is easier said than done: there are many blurred areas. Let us have a brief look at the main ones.

2.2. Social issues

Only under a strictly traditional, neo-classical approach are income distribution issues perfectly separated from efficiency issues: in more recent times the picture is far less clear-cut. As an example: cost savings policies for public transport services may well imply a net reduction of income for the workforce, and privatisation and/or competition policies imply an explicit remuneration of invested capital and its risks, i.e. given fixed public resources, a transfer of income from labour to capital.

Another sensitive issue concerns PSOs (Public Service Obligations): evidently this has a social aspect, and not a minor one. Technically, PSOs can be efficiently covered via highly differentiated tariffs: for example, a public transport service paid at full cost and available to all, even in isolated locations. But in general some form of equalised or moderated tariff policy is employed. Furthermore, the regulator has to clarify, in advance and in detail, the social content requested by the policymaker.

A third social issue is a really complex one: the environment. Technically, it is a problem of efficiency rather than a social problem. Efficiency requires that every external cost is paid for by the polluter (the "polluter pays" principle), and an extensive literature exists on the monetary value of these external costs, together with international standards, etc. But there also exists a relevant equity issue: the compensation of those polluted. Sometimes this is plainly not possible, and sometimes it is complex both in practical and theoretical terms. For example, if an airport generates noise pollution within its vicinity, in general the victims are not the more recent inhabitants, but the initial ones (the newer owners and tenants will have benefited from lower purchase prices or lower rents, due to the already existing noise situation).

The only strong recommendation that emerges here is the duty of the regulator to calculate the opportunity cost of every social choice that the policymaker wants to make. This is for obvious technical reasons: the regulator by definition is supposed to be technically capable of calculating costs and benefits related to the sector it is appointed to regulate (while the policymaker may lack both the will and the capability to evaluate those costs).

Concerning this last observation in particular, another duty for the regulator emerges: the need for explicit and transparent accounting for the costs and benefits, both *ex-ante* and *ex-post*, of the same regulatory policy and decisions that it is itself requested to undertake. The results are far from obvious[1]. Sometimes the transaction costs of regulation are very high, and sometimes the possibility of mistakes by the regulator are higher than the potential gains[2]. The existing command-and-control practice may sometimes be acceptably efficient, and at other times a plain and straightforward privatisation has a better chance of success than a complex regulation. Performing these evaluations is an important proof of independence by the regulator, since it has an obvious implicit interest in extending its role and activities in every possible situation.

2.3. Infrastructure

Another relevant issue concerning the independence of the regulator is related to infrastructure investment. The problem here is twofold: theoretical and practical. In fact, the theory of regulation of large, long-lasting, land-consuming investments appears far from well-defined, and moreover far from being corroborated by solid results. This fact, if unchecked, leaves much room for political interference, both appropriate and, especially, inappropriate.

The second problem is that planning (in the regulatory way of thinking, a form of command and control) is generally necessary for this type of investment: land use is planned, nor can one imagine that this could be substituted by standard regulatory practice. Land can certainly be private, but its efficient use has little to do with the kind of efficiency expected from utilities. This fact, in turn, allows for systematic interference by planners (i.e. politicians, or politically-driven technicians) in the field of regulatory activity. In general, this attitude generates over-investment, or "gold plating" practices. Why does this tendency prevail against the potentially symmetrical alternative, i.e. under-investment? This is mainly due to the political and media-related visibility of infrastructure investments and, in some transport sectors, the self-financing of large investments without any

substantial resistance from users (see the low elasticity of road demand, i.e. the high willingness to pay for this modal choice).

Therefore, inefficient investments are frequently planned (i.e. requested by the political decisionmakers), under the pretext that they are needed for social reasons. On top of this, a special alliance among concessionaires and the political world is rapidly rebuilt: since the investments requested by politicians (local or central) are in general not paid for by existing tariff levels, the tariffs have to be readjusted upwards. This type of investment can be called exogenous, as opposed to endogenous investments that concessionaires will make in order to save costs or to enlarge capacity at the existing tariff level; i.e. investments that are profitable even without an increase in tariff.

A particular form of the Averch-Johnson[3] effect ensues: the concessionaire is motivated to obtain political support (or to actively pursue it) for any type of new investment, since, even in the case of normal profit rates, its *total* quantity of profit will grow.

What are the consequences for the regulator in this "objective" situation? These are not easy to define, except in terms of its direct involvement in the economic analysis of the investment projects, in order to verify if social benefits will compensate costs; but definitely this is an uphill path. Nevertheless, insisting on this point is a sign of political independence, and of the regulator's will to defend it[4]. A final consideration on this point concerns the need for the appointed regulator to spend some time and resources in understanding the specific capture mechanisms that are in place, remembering that the real *raison d'être* of regulation is to fight against capture practices. These mechanisms can assume very different forms: they can be linked with the economic power of the regulated companies; the influence of the trades unions (particularly in cases of overstaffing); local levels of public administration, which may fear losing some special advantage; or the ideology of the "national champion", i.e. the assumption that large companies' monopolistic rents, even if harmful for the taxpayer, in the end may benefit the economic weight of the country. The concept of reciprocity is also used in order to justify the undue protection of national monopolies from competition. This tool can be very influential in reinforcing the regulator's strategy of independence, providing it with a sound basis for subsequent action.

3. SOME INSTITUTIONAL ASPECTS

3.1. History

As stated in the previous section, the independence of the regulator has to be set against two separate actors: the state, in its different forms and administrative levels, and the regulated companies. Since the institutions for transport regulation are in a relative state of infancy compared to other sectors, special attention has to be given to the regulatory context that already exists. History may help here: the more consolidated, independent regulatory authority is concerned with the promotion of free competition, and the famous Sherman Act of a hundred years ago helped to abolish the idea of the State as a benevolent, all-knowing ruler. Not only are markets not always spontaneously efficient, but the state is not the best entity to regulate them. Independent regulation was born, and with it the concept of "capture". The independent regulation of natural or legal monopolies emerged as a consequential need. Regulation is necessary on both counts in order to defend public interests, since

too often the state appears not up to the task, given its political constraints (short-term consensus, etc.), which is the implicit price of democracy. (The assumption of the non-spontaneity of the market, contrary to the common, apologetic wisdom of the "invisible hand", can be clearly found in the writings of Adam Smith[5].)

Concerning the independence of new regulators, an obvious preliminary obstacle lies in the pressure from existing ministries to keep at least part of their established role. This often means duplicating functions with the regulatory body, with highly negative results in the form of contradictory signals, etc.

3.2. Proximity

As a consequence, close contact between the regulatory authority and the antitrust authority can be strongly recommended. This is also beneficial for technical reasons through an approach based on the subsidiarity principle (i.e. free competition whenever efficient, regulation when necessary, command-and-control only as a default solution). This approach can be supported by the cultural proximity to the antitrust institution, which generally has a strong tradition of fighting the pressure from monopolistic firms or cartels, often defended by some captured public body or institution.

Even in strictly technical terms, a newly-born regulatory body can learn much from a more consolidated institution, assuming that the new body starts as a branch of the antitrust authority and sets out as a separate entity only when solidly established, in technical and cultural terms. Initial isolation may mean a far higher risk of capture from both sides (the state and the regulated or to-be-regulated companies).

Needless to say, this proximity can be recommended only if the antitrust authority is: a) fully independent; and b) not prone to "substituting" for the regulator in order to enlarge its role beyond its own remit.

3.3. Higher levels

Another dimension to be considered is the emergence of different possible institutional levels of regulation besides the traditional national level. A higher level is especially relevant for the European context, represented by the European Commission. But more generally there are some issues that may require an even higher level, similar to that represented by the WTO for international commerce. This could be valid for global transport services, such as airlines and sea freight transport.

However, let us limit ourselves to the European dimension. The role of the Commission can be extremely important in order to curb and limit the strong tendency towards protecting "national champions", which at a national level are one of the strongest political obstacles that a regulatory agency has to face in order to protect users from monopolistic behaviour (and its related social costs). Needless to say, the symmetrical and widespread protection of "national champions" is not even a zero-sum game: in the end everyone will be worse off. In the transport sector these examples are very relevant and numerous[6]. The indication emerging here for national regulators is to develop links as tight as possible with the supra-national institutions as another way of protecting their independence, even though capture pressures are sometimes able to reach this higher level also[7].

3.4. Lower levels

So far so good, but a contradictory instance emerges from lower administrative levels: the regions, in particular, have increasing political weight, after the German experience of effective decentralisation (*Länder*).

This tendency is apparent in the UK (Scotland), obvious in Spain, in Italy now a major issue of political debate, and growing even in super-centralised France, not to speak of the United States. The first question here is: are the lower levels of public administration more or less prone to capture mechanisms than the central government? A second point is: can the regulatory rules and norms needed for natural or legal monopolies be efficiently differentiated in space?

Both answers are far from obvious. Let us consider a simple example: tariff rules for toll highways.

A weak regulation will directly affect the users of a specific highway, and their political representatives may well be more interested in defending them at local level (where they vote) than at national level. In other words, local regulatory agencies may well have an easier task in defending local users or taxpayers. But a set of different tariffs may generate complex problems at national level, even for technical reasons related to fare collection. Similarly, local, monopolistic rail services may need higher subsidies than those tendered out, generating local discontent and the consequent pressures to extend the "good practice" of tenders in every region.

But all this is far from guaranteed: a counter-argument can be that local monopolists have to face a weaker counterpart than the central state. For example, the Italian experience has been negative up to now, with stronger "capture" tendencies at local than at central level. All things considered, perhaps the best recommendation would be to set the regulatory agency at national level, with local branches in charge of analysing local situations, even supplying technical support to specific situations that may emerge (on top of controlling the proper local enforcement of central directives).

4. SPECIFIC ISSUES FOR TRANSPORT REGARDING INSTITUTIONAL ASPECTS

4.1. Slow technical evolution

Technologies that evolve at a fast pace notoriously require less stringent regulation. A famous example is the "qwerty" issue, evolving from the standard typewriter keyboard to the more recent Microsoft MS-DOS software (i.e. a special case of a natural monopoly based on a standard feature). The final argument that made American judges decide against direct action toward that quasi monopoly was the potential competition arising from free software and technical progress (Apple, etc.). The issue is still somewhat controversial, but basically that monopoly is no longer considered a threat to public welfare (while the actual behaviour of Microsoft has been censured several times...).

In transport, the picture is quite different.

Basic infrastructure is solid and durable, with almost no possibility of evolution. Furthermore, as stated above, it represents a legal monopoly, over and above a natural one. Who can realistically build a competing airport near to a large congested one? Or a competing high-speed line even if there are large profits on the existing one? Land use is generally planned, especially where land is a scarce resource, as in Europe. On intensely exploited land, existing infrastructures generally preclude possible new ones. Therefore, the regulation of incumbent companies in charge of operating and managing infrastructure is a major task for the regulator, even if sometimes, as already seen, the political will is focused on encouraging new investment without paying much attention to efficiency (although efficiency is, in fact, the primary objective of regulation).

For services, the situation is more similar to that for infrastructure than one may think. Innovations in vehicle technology that can put competitive pressure on incumbent service providers are not yet in sight. In the first place, transport vehicles are generally on open sale to every operator. Contrary to what happened during the last century for some types of aircraft, no transport operating company can now afford to develop and buy for itself an innovative vehicle able to compete with those of the existing incumbent.

Secondary markets for vehicles do exist, perhaps with the partial exception of trains. But here the incumbents tend to have the upper hand, being generally bigger and more protected than the new entrants[8] (a special case for high-speed services will be presented later).

The only possible field where innovation may play an important role is in the managerial area of services. The evidence comes from low-cost air carriers, which proved able to compete with the incumbent companies via a complex mix of pricing strategy, route planning, airport choice and personnel management. The outcome of this rather timid liberalization of the European air sector was unexpected, and shed light on the potential for liberalizing other services. This appears to be the only field where innovation can play an important role and, therefore, where the regulator must pay great attention, and where its proximity to the antitrust institution can be very helpful – being in fact, a case of de-regulation.

4.2. Diverse problems among the transport modes

Transport is notoriously a highly diverse sector. Let us first look at the technical differences. Some modes have single-point infrastructure, like air and sea transport; complex networks (roads and railways); unconstrained access (roads); and planned access (ports, airports and railways). They may be entirely subject to tariff systems (again ports, airports and railways), or partially free of charge (part of the road system). There is some dedicated infrastructure (mainly ports for freight services, but also some railway lines); and there exists one super-specialised mode (pipelines).

In functional terms, the road network represents the only self-sufficient system, while all the others generally require further complementary modes for the final part of their routes. Needless to say, transport is necessary both for freight and passengers. For the latter category, there are collective modes (trains, trams, buses, air services, ferries and cruise ships) and individual modes (cars, trucks and a few airplanes and ships). There are also semi-individual modes (taxis and other rented services).

In terms of ownership and economic structure, the situation is certainly no less complex. Infrastructure is mainly public, but less so recently. Often it is public but managed by private

enterprise. Land transport services are both public and private for passengers, but for freight the private sector is dominant, as with air services. Some passenger services are subsidized (urban and regional collective transport in Europe, e.g. some long-distance train services); other services are heavily taxed (road transport in Europe and Japan, and in several growing economies, mainly via fuel taxation). Infrastructure investment is sometimes paid by the state (mainly railway lines and non-toll roads), sometimes by the users, and quite often there is a mixed contribution.

As we have already seen, there also exist important social and distributive issues in the sector, and these too are highly differentiated. Income distribution may be relevant for public land transport, but not for high-speed trains or air services, nor for freight. Infrastructure can help the economic development of certain marginal regions. Some modes suffer congestion, and the best regulatory practices (congestion charging) can disproportionally prejudice low-income groups. Some modes are eco-friendly (railways), others highly polluting (air and road transport). The environmental impacts on land use are also diverse: some infrastructure is much more intrusive and land-consuming than others.

Finally, in strictly regulatory terms, there are natural monopolies (but again with different degrees of contestability). These are the infrastructures that, as we have seen, are generally also legal monopolies. But there exist pure legal monopolies (often public transport, many train services and some air companies) and even dubious situations, where secondary markets are weak and transaction costs and entry barriers very high (with large investments required), as in the rail passenger service sector.

What kind of indication emerges from this extremely complex picture (basically, different problems concerning different sub-sectors) for transport's regulatory institutions? A possible obvious answer is to break up the regulatory agencies into specialised ones, i.e. one agency for each main transport mode: railways, toll highways, ports and navigation, airports and air services (pipelines are not relevant enough to remain separate).

But generally this is not the case, and for some well-founded reasons. The capture risks are far from eliminated when a specialised, independent agency is created in order to avoid or minimize them. A specialised, modal regulator obviously will set up a bilateral relationship with the regulated sub-sector, its interests and its political supporters. This relationship will be a very long-term one. The risks of "capture" may well be maximized. On the other had, a multi-modal agency by definition exercises a sort of cross-check and control on the modal sections that may become "weak", or diverge into strategies and techniques from the mainstream. Furthermore, the arising of divergences, if not an expression of capture, may well become a learning tool, and have very positive effects: regulation is a discipline in which "learning by doing" plays a very important role (e.g. the dynamic information contained in the incentivising price-cap method)[9].

Both of these positive aspects would be lost by setting up isolated, autonomous modal agencies.

Moreover, with this approach, if the financing of the regulatory agencies is in some way linked to the overall revenues of the various transport modes, it will be possible to allocate funds according to the complexity of the regulatory tasks to be performed, a complexity in several cases quite independent from the economic dimension of the sub-sector.

5. A CASE STUDY: TRANSPORT REGULATION IN ITALY

5.1. The failed beginnings of the Transport Authority

In Italy in 1990, a centre-left government established the first independent regulatory authority (for antitrust activities), and it was rather successful and respected. In 1991, another centre-left government designed a law proposing independent authorities for energy, telecommunications and transport, but only the first two authorities have been established. Transport disappeared in the final text of the law. The formal reasons were related to the complexity of the sector, and the excessive political burden of setting up three new administrative bodies at the same time. The idea nevertheless was not fully dead, and was re-proposed in 2002 by still another centre-left government, but without any practical consequence. Alternating centre-right governments in the same period showed little interest in regulatory activities, even trying to actively reduce the independence of the existing agencies: quite a different attitude from the government of Mrs. Thatcher, which in some ways can be seen as the precursor of modern regulatory policy.

5.2. A first experience with airports

In the late nineties, an economic adviser to a transport minister, from a centrist government with a clear regulatory attitude, was appointed to deal with the airport sector[10]. The subsequent attempt to introduce the idea in the ministry that airports were natural monopolies, to be regulated in order to defend the interests of the users (or the taxpayers), and not those of the concessionaires, was perceived as a total culture shock. The minister was expected to help the concessionaires and their profits as a proof of good economic health, whatever their levels. "Capture" was explicit: the goal of the ministry's civil servants was to be employed, after a few years of good but underpaid work, by the concessionaire of some airport that appreciated their efforts, and this generally in a managerial position. As soon as a completely alternative approach was proposed, their collaboration ground to a halt, followed by a similar change of attitude by the concessionaires themselves, which initially had been very generous in terms of economic data supply. As the ministry was unable to directly impose anything on them, they simply found it impossible to agree on suitable dates for further meetings. (By the way, the budget data, proudly provided by them to begin with, showed in many cases exceptional levels of profit.)

A single, very expert official declared his intention to collaborate with this new approach, but after the fall of the government, he was unable to continue in that direction, and was assigned a post as supervisor in an airport in the south of Sicily.

5.3. NARS and its lost battles: airports, highways and railways

The implementation of regulatory agencies in two important sectors (energy and telecommunications) produced some effects on other sectors, transport in particular. In 1996, a special body of experts, NARS[11] (*Nucleo di consulenza per l'Attuazione e la Regolazione dei Servizi di*

interesse pubblico), mainly composed of external consultants, was established within the Ministry of the Economy for unregulated utilities: postal services, water supply and, for the transport sector, airports, railways and toll highways. Ports remained outside the regulatory tasks of this body, since in Italy they have a very specific status.

The role of NARS was limited to the supply of technical advice on regulatory matters to the Interministerial Committee of Economic Planning (CIPE), the body in charge of taking the actual decisions.

Let us now consider the three main issues dealt with by NARS in the transport sector, and the ensuing results: railways, airports and the main one, toll highway regulation.

Railways in Italy are heavily subsidized; the regulatory process started with a "transfer-cap/price-cap" strategy. Transfers and possible fare increases were linked with a set of expected performances, in terms of costs, quality of service, etc. The core of the strategy nevertheless was aimed at raising the share of self-financing activities, given the overall low level of fares compared with other European rail companies. Negotiations with Ferrovie dello Stato (FS) actually went smoothly, since the (politically appointed) management of FS was agreeing on the overall strategy proposed by NARS. But the end of the experiment came brusquely after only two years, shortly before upcoming political elections: the fare increases were cancelled with the (unproven and unreal) argument that in order to curb inflation no fare increase for public services was allowed.

At present, a new entrant has appeared in the form of high-speed services, and activity is expected to begin in 2011. This seems to prove that a possible secondary market for trains may emerge, at least for this type of rolling stock, due to mandatory technical standardization imposed by the European Commission.

Slightly more successful was the action for airport regulation (after the initial failure described above). NARS defined a price-cap formula, and obtained its approval from the CIPE. The method was quite flexible: only the air-side tariffs were involved, leaving the profits on the land side untouched (a kind of half dual-till). But NARS was without any real power of enforcement, not being an independent authority, and the concessionaires endlessly delayed the submission of any proper regulatory accounting, paralysing the entire process. Recently, a partial dual-till has been introduced but, similarly, never implemented. Still more recently, the ministerial body (ENAC) formally in charge of airports, under joint pressure from concessionaires and the political will to show more investment in infrastructure (see above), has defined an across-the-board increase of 3 EUR/pax for large airports, and 1 EUR for small ones, with no efficiency checks whatsoever. NARS seems to have been silent on this, as if it were no longer in charge of this infrastructure either.

Furthermore, a recent national airport plan seems to be mainly aimed at protecting national interests from the attack of the low-cost companies, setting a very specific role and hierarchy for every airport, and even suggesting the closure of many minor ones, which have been the main entry gates for highly competitive companies across Europe.

But by far the most relevant and hard-fought issue was related to toll-highway regulation. The system is quite extensive (6 000 km), generating annual revenue of over EUR 5 billion. The dominant concessionaire (Autostrade SpA) owns more than 60% of the network (and even more than this share in revenues) and it is fully privatised. The conflict concerned the interpretation of the initial concession contract, which was extremely vague (only one page dealt with the technical content of the price-cap mechanism).

Here, we can only hint at the main issues on the table, i.e. the proper RAB (Regulatory Asset Base), the claw-back mechanism, rewards for quality, the allocation of traffic risk, and investments.

The core of the conflict was due to a special case of capture. The privatisation of Autostrade SpA, made mandatory by the European Commission within its overall action to reduce the weight of IRI, a large public conglomerate, generated a conflict of interests: quick and huge money for the public purse, against the long-range protection of users from monopolistic rents. The first objective prevailed, and the result was, as we have seen, a very vague set of regulatory rules, obviously accepted by the private buyer, which in exchange paid up-front EUR 7 billion for a long-lasting concession (40 years).

The conflict emerged over the interpretation of ill-defined rules, and it rose to such a level that some political analysts attributed the (temporary) resignation of the Finance Minister to disagreement on this issue with another member of the governing coalition, at least as a component of his decision.

In the end, the concessionaires won "more than ever expected" (a public declaration by a manager of Autostrade SpA) via a special law voted by parliament, bypassing the minister, CIPE and obviously NARS, which even here was totally excluded from the regulation of toll highways. The price-cap mechanism no longer exists. Concessionaires, in the following years and even during the present recession, showed egregious levels of profit, far above those of the most successful large Italian companies. The toll level actually never decreased, even when the related infrastructure was fully amortized, and the average level of profit for the sector has been in the order of 10%.

The role of NARS was further weakened in the following years, and at present seems no longer influential in transport regulation, which has been returned almost entirely to the political sphere.

5.4. The case of local transport

Local transport is not a natural monopoly, but in Italy is definitely a legal monopoly, heavily subsidized (70% of its revenue), with very high production costs, and supplied by small companies, mostly owned by local administrations.

A regulation-oriented reform was started in the 1990s[12] (again, by a centre-left government), setting rules for competitive concessions (Demsetz competition[13]). But no independent authority was in place, and therefore a strong, bi-partisan resistance by the local administrations ensued. Postponements of the threshold date for tendering began, one after another. A peculiar aspect of this "fight" was that, while a wide number of articles favourable to competition in the sector were published with data and international comparisons, not a single line or a single speech against it appeared. This fact by itself seems to provide a strong indication of capture, and the widespread existence of "hidden agendas".

At the beginning of this century, a fair number of local administrations (about one hundred), decided to tender out their transport services. But the law, in its final form, showed a fatal flaw, and not by chance: it allowed that the participants in competition for the market were the same incumbent companies owned by the local administrations who were judging the offers. The result was obvious: very few competitors for each tender, and the incumbents won an embarrassing 99% of the total tenders. The explanation cannot be completed without observing the existence of "residual claimants": in the past the state had never allowed even extremely inefficient companies to go bankrupt. So the possible reduction of costs stemming from competition was set against the much larger political

advantages (in the best cases) of owning monopolistic public companies (i.e. guaranteed support from the unions, and "revolving doors" for the administrators at the end of their political careers).

Recently, the financial crisis has seen a sharp reduction of public funds, even for transport services, but its final result is far from clear: many local administrators have declared that fares will not increase, nor will services be cut (even those with negligible patronage), or tendered out in order to reduce costs.

Per se, even free-of-charge transport services can be justified (for welfare and/or environmental considerations). But providing services at an unreasonably high cost cannot be justified on any social grounds.

5.5. The case of ports

Ports in Italy, simply for historical reasons, follow an administrative regime completely different from other infrastructure. They are governed at regional level, even if the appointment of top management has to be approved by the central government. For this reason they have never been considered possible subjects for regulation. They receive funds for investment from the central administration in a highly discretionary way. Efficiency is not considered an important issue (actually, there are two residual claimants: the central state and the regional administration). No general concessionaire exists: sometimes partial concessions are granted to private operators, and the dominant opinion is that the tariffs agreed are quite low, based mainly on political considerations. For example, the above-mentioned transfers from the central state render negligible the pressure to recover at least part of the costs of investment, even when market conditions would allow for this recovery.

5.6. Some positive aspects nevertheless

The picture of Italian transport regulation outlined above appears to show a list of failures. Nevertheless, this is not entirely true. The capture mechanisms have won, but the basic concepts of regulation have infiltrated certain levels of the administration, some aspects of public debate, including the media, and even affected the attitude of the regulated companies.

"Monopolistic rent" is no longer a forbidden term. Inefficiency, on the contrary, was never a forbidden concept, but always seen in terms of the quality and quantity of the services supplied, far less in terms of production costs.

Even the lessons to be learned from the Italian case, with some effort, may be seen as positive. The major lesson is to never forget the difficulties of innovating in this field: those interests hit by effective regulation will be vocal and well-informed and, above all, their reaction is immediate. The potential beneficiaries (the users and/or taxpayers) are in exactly the reverse position, and the benefits they obtain are to be compared against a rather intangible, highly hypothetical "do-nothing" situation: How much highway toll would I have to pay today, if proper regulation had not been put in place?

6. CONCLUSIONS AND RECOMMENDATIONS

From the large number of issues raised and the case illustrated above, perhaps a limited set of solid conclusions and consistent recommendations can be drawn.

1. Transport sector regulation may well be less advanced and more fragmented compared with other utilities. Quite often, no independent sector-wide regulatory agency exists. Therefore, solid links and alliances have to be built, and particularly so with the antitrust agencies (for "subsidiarity" reasons, and given the strong market-oriented culture of those institutions), and with international bodies (in order to reduce the risks of domestic capture). For the same reason, any fragmented, mode-by-mode solution has to be avoided.

2. The growing administrative and political role at the regional level is double-edged in this field: more direct control from the users/local taxpayers, but weaker regulatory powers. Probably, a case-by-case strategy has to be implemented, even accepting some compromises. A national regulator setting overall rules, with local offices for implementing and controlling them, seems to be a possible solution (allowing some space for local negotiations).

3. Capture mechanisms are enhanced by discretionary practices. Politicians love them, sometimes for acceptable reasons, sometimes less so. As a consequence, the cost-benefit analysis rationale, even with all its well-known limitations[14], needs to become the backbone of regulatory activity, especially in transport, given its multi-faced structure. This is true for the costs and benefits of every regulatory action, but not less so for investments or for social and environmental aspects. Another central issue is to guarantee open relations with the media, which will also minimize capture risks. Making quantitative analysis and policy recommendations available to a wide public is also a powerful tool against capture, and can foster independence as well.

4. Social and environmental issues are very important in the transport sector, but often used in order to circumvent and reduce the independence of the regulator (as hinted at above). A ring-fencing attitude is mandatory. A possible choice is to leave the distributive issues to the political decisionmakers, but not the environmental ones (a tonne of CO_2 emitted can well be measured and even priced by a technical body, in a cross-sectoral and transparent way). But also for distributive issues, the measurement of social impacts (not their "weights") can remain in the hands of the regulator, and made public (who is gaining and how much, who is losing and how much from a certain liberalization?). See in particular the IBRD experience.

5. Perhaps it is useful to remember that, whatever the technical sophistication of the tools available to the regulator today, its final choices generally retain a high political content: what kind of economy do we want, and in the final analysis, what kind of (capitalistic) society do we want?

NOTES

1. Posner, R.A. (1999).

2. Coase, R.H. (1960).

3. Averch, H. and L. Johnson (1962).

4. See this point also in the section on the Italian airport plan.

5. *"People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices." The Wealth of Nations*, p.152.

6. On the liberalization of the airport slots, and on local public transport, the European action has been very conservative, under pressure from specific national interests. See also the Alitalia case.

7. See the initial part of the proposed new European Directive on rail regulation (a very innovative document).

8. The incumbent national rail companies in continental Europe still control 90% of the market, and this after almost 20 years of the first Directive aimed at liberalizing the sector (D. 420/91).

9. The price-cap method is based on the inter-temporal "extraction" of informative rents from the regulated companies. On this issue, see also Laffont, J.J. and J. Tirole (1993).

10 The author of the present note. Probably the "regulatory attitude" of this government (Mr. Dini's presidency) was related more to its technical than to its political origin (a bi-partisan compromise).

11. Nucleo di consulenza per l'Attuazione e la Regolazione dei Servizi di interesse pubblico.

12. Again, the author of this paper was involved in the reform.

13. Demsetz, H. (1968).

14. Adler, M.D. and E.A. Posner (2006).

BIBLIOGRAPHY

Adler, M.D. and E.A. Posner (2006), *New Foundations of Cost-Benefit Analysis*, HUP, Cambridge, Mass.

Averch, H. and L. Johnson (1962), Behaviour of the Firm under Regulatory Constraint*, American Economic Review*, **52**.

Banister, D. (1997), Bus deregulation in the UK, in: McConville, J., *Transport regulation matters*, Pinter, London.

Buchanan, J.M. (1969), *Cost and Choice: An Enquiry in Economic Theory*, Markham, Chicago.

Coase, R.H. (1960), The Problem of Social Cost, *Journal of Law and Economics*, Chicago.

Coco, G. and C. De Vincenti (2008), Optimal price-cap reviews, *Utilities Policy*, 16, 238-244.

Demsetz, H. (1968), Why regulate utilities?, *Journal of Law and Economics*, 11.

Doganis, R. (2001), *The Airline Business in the 21st Century*, London and New York, Routledge.

Fawkner, J. (1999), *Buses in Great Britain, Privatisation, Deregulation and Competition*, London Transport.

Gomez-Ibànez, J. (2003), *Regulating Infrastructures. Monopoly, Contracts and Discretion*, Harvard University Press.

Japan Railway and Transport Review (1994), *Domestic Transport in Japan Present and Future*.

Kerf, M. (1998), *Concessions for infrastructure – A Guide to their Design and Award*.

Laffont, J.J. and J. Tirole (1993), *A theory of incentives in procurement and regulation*, MIT, Boston.

Litman, T. (2010, updated), Land Use Impacts on Transport, http://www.vtpi.org/tdm/tdm20.htm

Maffii, S. and M. Ponti (2002), Pianificazione dei trasporti e del territorio: effetti attesi ed effetti perversi, *Ricerchetrasporti*, Milano.

Mohring, H. (1972), Optimization and scale economies in urban bus transportation, *American Economic Review*, 62 (4), 591-604.

Newbery, D.M. (1998), *Fair and Efficient Pricing and the Finance of Roads*, University of Cambridge.

Nuti, F. (1997), Il caso britannico, in: *Nomisma, Liberalizzazione e privatizzazione nelle ferrovie europee*, Vallecchi, Firenze.

Parry, I. and K.A. Small (2007), Should Urban Transit Subsidies Be Reduced?, paper presented at the 54th Annual North American Meeting of the Regional Science Association International, Savannah, Georgia.

Ponti, M. (1997), Le esternalità di consumo nei trasporti collettivi, *Economia e Politica Industriale*, 96, Franco Angeli.

Ponti, M. (2001), European transport policy from a "public choice" perspective, 9th World Conference on Transport Research, Seoul.

Ponti, M. and A. Gervasoni (1996), Il finanziamento delle infrastrutture, *Ricerca Economica e Trasporto*, Federtrasporto – Centro Studi.

Posner, A.R. (1969), *Natural Monopoly and its Regulation*, Cato Institute, Washington DC.

Preston, J., A. Root and D. Van de Velde (1999), *Railway Reform and the Role of Competition: The Experience of Six Countries*, Ashgate.

Segal, I.R. (1998), Monopoly and soft budget constraint, *Rand Journal of Economics*, 29, 596-609.

Shapiro, C. and R. Willig (1990), Economic rationales for the scope of privatisation, in: E.N. Suleiman and J. Waterbury (Eds.), *The Political Economy of the Private Sector and Privatization,* Boulder CO, Westview Press.

Thompson, L. (2001), *Railways in Eastern Europe*, ECMT Round Table 120, Cambridge, OECD/ECMT, Paris.

Transport for London (2007), *Central London Congestion Charging Impacts Monitoring, Fifth Annual Report*, TfL, London.

Tucci, G. (2001), Ricerca di stabilità dell'equilibrio di lungo periodo nell'industria del trasporto aereo internazionale, 42° Corso Internazionale ISTIE - Nuova regolazione dei trasporti: principi e strumenti, Università di Trieste.

LIST OF PARTICIPANTS

Mr. David THOMPSON **Chairman**
14 Harrow View
GB-HA1 1RG HARROW
Middlesex
UNITED KINGDOM

Prof. Hans-Martin NIEMEIER **Rapporteur**
University of Applied Sciences
Department of Nautical Sciences and International Economics (FB6)
Werderstr.73
D-28199 BREMEN
GERMANY

Prof. Marco PONTI **Rapporteur**
Politecnico University of Milan
Dipartimento di Architettura e Pianificazione
Research Centre on Transport Policy
Via Bonardi 3
I-20133 MILANO
ITALY

Mr. Tom WINSOR **Rapporteur**
Partner, Transport & Infrastructure
White and Case LLP
5 Old Broad Street
GB- LONDON EC2N 1DW
UNITED KINGDOM

Mr. Richard ABEL
Managing Director
Macquarie Infrastructure and Real Assets (Europe)
City Point
1 Ropemaker Street
GB-EC2Y 9HD LONDON
UNITED KINGDOM

Monsieur Philippe AYOUN
Direction Générale de l'Aviation Civile (DGAC)
50 rue Henry-Farman
75720 PARIS CEDEX 15
FRANCE

Prof. Alain BONNAFOUS
Laboratoire d'Économie des Transports (LET)
ISH
14 avenue Berthelot - ISH
F-69363 LYON CEDEX 07
FRANCE

Dr. Harry BUSH
Group Director, Economic Regulation
Civil Aviation Authority CAA
45-59 Kingsway
GB- LONDON WC2B 6TE
UNITED KINGDOM

Prof. Jaap DE WIT
Managing Director
Ministry of Infrastructure and the Environment
Netherlands Institute for Transport Policy Analysis
P O Box 20901
NL-2500 EX LA HAYE
NETHERLANDS

Mr. Knud ELM-LARSEN
Chief Adviser
Trafikstyrelsen
Public Transport Authority
Gammel Mønt 4
DK-1117 COPENHAGEN K
DENMARK

Mr. Sean ENNIS
Senior Economist
OECD Competition Division
2 rue André-Pascal
F-75775 PARIS CEDEX 16
FRANCE

Mr. Mark FAGAN
Senior Fellow
Mossavar-Rahmani Center for Business and Government
Harvard Kennedy School
John F. Kennedy School of Government
Mailbox 114
79 JFK Street
USA-CAMBRIDGE, MA 02138
UNITED STATES

Professor Peter FORSYTH
Department of Economics
Faculty of Business and Economics
Monash University
PO Box 11E Monash University
AUS-VICTORIA 3800
AUSTRALIA

Professor Jose GOMEZ-IBANEZ
Derek C. Bok Professor of Urban Planning and Public Policy
Harvard University
John F. Kennedy School of Government
79 JFK Street
USA-CAMBRIDGE, MA 02138
UNITED STATES

Mr. Frank JOST
EU Commission
Directorate-General for Mobility and Transport
Unit MOVE D2
Rail Transport and Interoperability
rue Demot 24, 2/18, 1040 Etterbeek
B- 1049 BRUXELLES
BELGIUM

Dr. Markus KSOLL
Deutsche Bahn AG
Mobility Networks Logistics
Potsdamer Platz 2
D-10785 BERLIN
GERMANY

Mr. Twan LAAN
Schweizerische Bundesbahnen SBB
Finanzen F-CC-PMR
Hochschulstrasse 6
CH-3000 BERNE 65
SWITZERLAND

Mr. Goran MATESIC
Chairman of the Administrative Board
Rail Market Regulatory Agency
Vladimira Nazora 61
HR-10000 ZAGREB
CROATIA

Mr. Andrew MEANEY
Managing Consultant
Oxera
Park Central
40/41 Park End Street
GB- OX1 1JD OXFORD
UNITED KINGDOM

Prof. Fumitoshi MIZUTANI
Professor of Public Utility Economics
Kobe University
2-1 Rokkodai
Nada
KOBE 657-8501
JAPAN

Prof. Jürgen MÜLLER
Berlin School of Economics
(Fachhochschule für Wirtschaft)
Badensche Str. 50-51
D-10825 BERLIN
GERMANY

Prof. Jan-Eric NILSSON
VTI
Box 55 685
S-10215 STOCKHOLM
SWEDEN

Prof. Dr. Karsten OTTE
Director
Federal Network Regulatory Agency
Head of Railway Regulation Department
Tulpenfeld 4
D-53113 BONN
GERMANY

Mr. Russell PITTMAN
U.S. Department of Justice
Antitrust Division
NW, Room 10-000
600 E Street
USA- WASHINGTON DC 20004
UNITED STATES

Dr. Andrew SMITH
University of Leeds
Institute for Transport Studies
36 University Road
GB - LS2 9JT LEEDS
UNITED KINGDOM

Mr. John THOMAS
Head of Regulatory Economics
Office of the Rail Regulator
1 Waterhouse Square
138-142 Holborn
GB- LONDON, EC1N 2ST
UNITED KINGDOM

Mr. Louis S. THOMPSON
Thompson, Galenson & Associates
14684 Stoneridge drive
USA- SARATOGA CA 95070-5745
UNITED STATES

Dr. Hartmut WOLF
Kiel Institute for the World Economy
Hindenburgufer 66
D-24105 KIEL
GERMANY

INTERNATIONAL TRANSPORT FORUM SECRETARIAT

Mr. Jack SHORT - Secretary General

JOINT TRANSPORT RESEARCH CENTRE:

Mr. Stephen PERKINS - Head of Centre

Dr. Kurt VAN DENDER - Chief Economist

Dr. Michel VIOLLAND - Administrator

Dr. Sungwon LEE - Senior Research Fellow

Ms. Françoise ROULLET – Publications Assistant

Mrs. Julie PAILLIEZ - Assistant

ALSO AVAILABLE

Improving the Practice of Transport Project Appraisal. Series ITF – Round Table 149 (2011)
(74 2011 01 1 P1) ISBN 978-92-821-0129-2

Stimulating low-carbon Vehicle Technologies. Series ITF – Round Table 148 (2010)
(74 2010 05 1 P) ISBN 978-92-821-0291-6

Implementing Congestion Charges. Series ITF – Round Table 147 (2010)
(74 2010 04 1 P) ISBN 978-92-821-0284-8

18th International Symposium on Transport Economics and Policy – The Future for Interurban Passenger Transport – Bringing Citizens Closer Together (2010)
(74 2010 02 1 P) ISBN 978-92-821-0265-7

Integration and Competition between Transport and Logistics Businesses. Series ITF – Round Table 146 (2010)
(74 2010 01 1 P) ISBN 978-92-821-0259-6

Competitive Interaction between Airports, Airlines and High-Speed Rail. Series ITF – Round Table 145 (2009)
(74 2009 05 1 P) ISBN 978-92-821-0245-9

Terrorism and International Transport: Towards Risk-based Security Policy. Series ITF – Round Table 144 (2009)
(74 2009 03 1 P) ISBN 978-92-821-0231-2

Port Competition and Hinterland Connections. Series ITF – Round Table 143 (2009)
(74 2009 02 1 P) ISBN 978-92-821-0224-4

The Cost and Effectiveness of Policies to Reduce Vehicle Emissions. Series ITF – Round Table 142 (2008)
(74 2009 01 1 P) ISBN 978-92-821-0212-1

Privatisation and Regulation of Urban Transit Systems. Series ITF – Round Table 141 (2008)
(74 2008 06 1 P) ISBN 978-92-821-0199-5

To register for information by email about new OECD publications: www.oecd.org/OECDdirect
For orders on line: www.oecd.org/bookshop
For further information about ITF: www.internationaltransportforum.org

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where governments work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Commission takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

OECD PUBLISHING, 2, rue André-Pascal, 75775 PARIS CEDEX 16
(74 2011 02 1 P) ISBN 978-92-821-0295-4 – No. 58149 2011

International Transport Forum

Better Economic Regulation: The Role of the Regulator

Efficient provision of transport infrastructure is critical to economic growth. The long asset lives of much transport infrastructure indicates governance through regulation, rather than through contract or public ownership. This can ensure predictability in long-term relationships whilst preserving some flexibility to deal with changes in external circumstances.

The transparency created by a fully independent regulator is invaluable for ensuring that sufficient investment is forthcoming, while maintaining reasonable conditions for user access. Discussion at the Roundtable focussed on how to achieve effective independent regulation and how to reconcile independence with the legitimate control of policy by the executive part of government.

Independent regulation is not seen as a universal default governance arrangement. Much of the discussion focused on when to regulate and when to rely on competition, even if imperfect, to drive efficiency. The discussions underscored that there are opportunities to improve performance significantly in the aviation, rail and road sectors, by learning from successful experience in improving governance structures in a range of countries.

OECD publishing
www.oecd.org/publishing

International Transport Forum
2 rue André Pascal
75775 Paris Cedex 16
itf.contact@oecd.org
www.internationaltransportforum.org

9 789282 102954
(74 2011 02 1 P1)
ISBN 978-92-821-0295-4