OECD Economic Studies, No. 25, 1995/II

DEREGULATION AND PRIVATISATION IN THE SERVICE SECTOR

Jens Høj, Toshiyasu Kato and Dirk Pilat

TABLE OF CONTENTS

The authors are grateful for helpful comments and suggestions by Sveinbjorn Blöndal, Andrew Burns, Kenneth Button, Jørgen Elmeskov, Michael P. Feiner, Robert Ford, Andrew Gurney, Peter Jarrett, Jon Nicolaisen, Michael Oborne, Joaquim Oliveira-Martins, Bernard Phillips, Stefano Scarpetta, Sally van Siclen and Dimitri Ypsilanti. They are indebted to Laurence Le Fouler, Martine Levasseur, Brenda Livsey-Coates, Christophe Madaschi, Sandra Rayrnond-Guilbot and Josiane Gutierrez for their assistance.

INTRODUCTION

Since the early 1980s, structural reform programmes have been implemented in all OECD countries. Although varying in scale and scope, a common aim of these reforms was to improve overall economic efficiency and flexibility, hence enhancing the adaptability of firms and markets in the face of major economic shocks. Thus, reforms were at least partly based on the assessment that previous regulatory regimes adversely affected the ability of economies to adapt (OECD, 1994). Given its large and growing share of OECD output and employment, the service sector has increasingly become the focus for structural reform programmes.

While trade is crucial in shaping competition for manufactured goods, many services are not exposed to a high degree of external competition. Therefore, deregulation and privatisation are the key to shaping competition for services and the main elements of structural reform. Even if services are exposed to international competition, domestic producers often tend to have strategic advantages over foreign competitors, such as closeness to the market or a dominant market position. In addition, since services are often produced on the same place as they are consumed, international competition in services depends in many cases on the establishment of outlets in each specific market. In itself, this may create an entry barrier, to the extent that there are constraints on foreign direct investment.

The character of competition differs between service sectors. They tend to be either highly fragmented or concentrated into natural monopolies or oligopolistic markets (Oliveira-Martins, 1994; EC, 1993). Examples of fragmented service sectors are retailing, restaurants, road transport and professional and personal services. These sectors are typically characterised by atomistic or monopolistic competition, although the nature of competition can be affected by government regulations, or rules imposed by professional organisations and associations. Public utilities, communication and railways are generally characterised by oligopolistic (segmented) market structures, due to high sunk costs – resulting from the need to invest in infrastructure – economies of scale or network externalities. In some cases, a "natural" monopoly may exist, partly arising from network externalities, and governments have in the past often created public monopolies to avoid abuse of market power, limit inefficient entry[1] or ensure universal access to networks.

This paper discusses some of the available evidence on the impact of regulatory reforms and privatisation in enhancing competition in the service sector.[2]

Because aggregated (or macro) measures of performance in the service sector tend to be somewhat unreliable, *inter alia* because of well-known measurement problems, the focus here is on micro-based data. The first section discusses some of the broad trends in regulation and deregulation. The second section first discusses the impact of regulations in fragmented sectors, focusing on distribution, construction and road transport. In these sectors, regulatory reform of entry barriers should in principal ensure sufficient competition, so competition policy is only seldom required to prevent anti-competitive conduct. The second part of this section discusses the impact of regulation and public ownership in segmented sectors, primarily focusing on the experience of telecommunications and airlines. In these sectors, regulatory reform generally needs to be accompanied by competition policy, to ensure that incumbents do not abuse their market power and that competition is actually enhanced following deregulation. The final section discusses changes in the overall regulatory stance and some evidence on the effects of reform efforts on overall performance.

THE ROLE OF DEREGULATION AND PRIVATISATION

The traditional rationale for government regulations is, to a considerable extent, related to market failures. For example, the market conduct of firms may be regulated if there are significant externalities, such as those deriving from investment in infrastructure or networks. In addition, governments may wish to control some industries to stabilise economy-wide developments in prices and employment. For instance, part of the regulation of the financial sector typically is intended to stabilise the macroeconomic environment in general and capital markets in particular. Finally, in many markets a high degree of information asymmetry may arise, for instance because of a high information content of a product or service. To ensure well-functioning markets, governments may therefore impose standards and other requirements on the provision of product information by suppliers.

The trend of regulatory policy in OECD countries has shifted towards deregulation over the past two decades, with an increasing emphasis on promoting competition. A number of developments have contributed to this shift in policy. First, it has been widely recognised that traditional regulatory instruments can result in serious efficiency losses. Such losses result either from regulations that restrict entry – which reduce output below competitive levels and can contribute to high cost and price levels, even in fragmented sectors such as distribution or professional services – or from regulations concerning conduct (*e.g.* fixing of prices, quantities or services) – which act to limit innovation and entry if prices are set at a tow level, or boost rents to excessive levels if prices are set too high. Second, changing technology has motivated policy makers to re-evaluate traditional policy instruments, in particular with regards to the regulation of natural monopolies. In telecommunica-

tion services, for example, changing technology is increasingly allowing entrants to challenge monopolised incumbents by bringing down entry costs, while also creating both a demand for and supply of new information services, thus expanding the potential benefits from regulatory reform. Third, the globalisation of OECD economies is forcing economies to adapt and adjust to changing circumstances. Fourth, the opening-up of capital markets and free trade areas such as the European single market have eroded many of the barriers to foreign direct investment, which has increased the degree of international competition in many service industries.

There has also been a shift over the past decades in the evaluation of public ownership in network services. Public ownership is currently often considered to reduce incentives for efficient resource allocation, both in terms of improvements in internal efficiency (cost-minimisation)and allocative efficiency (pricing according to marginal cost) (see,among others, Pera, 1989).In general, privatisation can help to improve internal efficiency stimulated by the profit-seeking behaviour of private agents. The potential gains in allocative efficiency following privatisation depend critically on the incentive structure, *i.e.* the regulatory framework and the degree of Competition facing the firm. In addition, competition policy may be required to prevent privatised firms from abuse of their strong, often monopolistic, position as incumbents. Empirical studies suggest that in competitive environments, publicly-owned firms tend to have a narrower market focus, although in sectors with an element of natural monopoly it is not always obvious that private companies perform better (OECD, 1994; 1995). However, in general, the principal barrier to competition in many services is not the existence of a high degree of public ownership in itself (OECD, 1994), but the regulations which governments have imposed on entry and conduct in such sectors.

For most network services, such as telecommunications or energy supply, privatisation by itself is insufficient to obtain a competitive market. If a newly privatised company retains its monopoly position, privatisation will result in a transfer of market rents from public to private hands. However, the adverse effects of monopolisation can be mitigated through regulation (Box 1). Market structures can also be influenced to enhance greater competition. For many network services, the delivery of the final product to the consumer typically involves a set of distinct economic activities, for example the generation, transmission and distribution of electricity. Separation of activities, either by ownership or by management, makes it possible to implement competition in some activities, while others, primarily the basic network or infrastructure services, retain strong monopoly elements. If ownership or management are not separated, but competition is introduced by other means, it is important to allow new entrants interconnection with existing networks on fair and equal terms. The following section analyses the impact of regulation and deregulation in a little more detail, on a sectoral basis.

Box 1. **Frameworks to regulate monopolised markets**

"Light hand" regulation is based on the assumption that a newly privatised enterprise's market is contestable, with potential hit-and-run entry forcing the incumbent to operate as if being in a competitive market. However, high sunk costs and an incumbent's reaction to entry imply that monopolistic markets can seldom be described as contestable (Vickers and Yarrow, 1988). Newly privatised companies often enjoy a dominant or monopoly position. Surrogate competition can be implemented through other regulatory frameworks.

Competition for monopoly, *franchising*, arises when firms bid for the operation of a service over a given period (Demsetz, 1968; Baron, 1989). The system demands little regulatory control and removes the information asymmetry problem for the regulator as bidders reveal the franchise's true value. However, the system faces a number of problems, such as possible collusion between bidders, strategic advantages for the incumbent, asymmetric information between bidders, sunk cost (or asset hand-over) considerations and the difficulty of constructing contracts in the face of changing markets and technology. Franchising is, for instance, used in the licensing of television channels in the United Kingdom.

Yard-stick competition is used when the cost performance of several local monopolies determines the allowed price increase for a particular local monopoly. A firm is only allowed to increase prices in line with the cost-development in the industry's yard-stick. Hence, the firm cannot pass on increases in its own costs, and can only maximise profit by minimising costs, which in itself puts downwards cost pressure on the yard-stick. The system provides pressure towards cost minimisation and price movements towards the competitive level. Yard-stick competition can only be introduced in markets where local monopolies face similar demand and supply conditions, such as water companies, thereby limiting its use. Yard-stick competition faces a problem of asymmetric information, may lead to collusive behaviour, and provides no incentive to encourage new entrants.

RPI-X regulation is a framework that allows prices to increase by the retail price index (RPI) minus a given percentage (X), that reflects projected efficiency gains (Armstrong *et al.*, 1994). RPI-X rules increase internal efficiency, since the regulated firms may keep realised gains above X, while part of the efficiency gain is passed on to the customers through X, thereby improving allocative efficiency. Allowance is often made for passthrough of unforeseen costs outside the firm's control. The rule is simple and imposes an arms-length relationship between the regulator and enterprises, thus minimising regulatory capture. The rule is widely used in the UK, extending to almost 50 firms and has been applied to ATT since 1989. However, the rule requires regulatory commitment, whereas a problem may also arise in setting the initial price and the value of X.

(continued on next page)

(continued)

Rate of return regulation allows prices to increase by a certain amount to secure a given rate of return (Stewart-Smith, 1995) When the enterprise demands a review of prices (tariffs), its operating costs and capital requirements are examined to determine a fair rate of return. Together with assumptions concerning demand conditions the overall revenue requirement is calculated, and the appropriated tariffs are derived. The method is cumbersome and complicated, with a large risk of regulatory capture. In addition, there is no incentive for cost minimisation and the introduction of new technologies, since the rule calculates the rate of return for a given capital stock.

THE IMPACT OF REGULATIONS AND REGULATORY REFORMS: SOME SECTORAL EVIDENCE

Distribution

The distribution sector accounts for between 8 and 18 per cent of CDP across the OECD area and for between 10 and 20 per cent of total employment (Table 1). The large size of the sector and its role in channelling goods from producers to consumers, makes its performance quite important from an overall perspective on the economy. There are, however, substantial differences in the relative size of the distribution sectors across the OECD. It is particularly small in Germany, Ireland and the Nordic countries, and largest in Australia and the United States.

A substantial number of regulations affect the competitive situation of the distribution sector. *Zoning laws* limit the establishment of new outlets to certain areas. Such legislation is generally intended to protect the environment and contribute to urban planning. Such laws can, however, contribute to high land cost for retail outlets and may thus contribute to high price levels. They may also work as an entry barrier for new shops and thus limit competition. Zoning laws exist in all OECD Member countries, although there is considerable differentiation in how restrictive they are (Table 1).[3]

Shop-opening hours are also legally restricted in various countries. Such restrictions were originally intended to provide shopkeepers with a common pause day, while at the same time creating a level playing field for competition. However, in addition to limiting consumer choice, these restrictions particularly protect small, owner-operated shops, for whom it is more difficult to expand opening times. Larger stores have more employees and can use part-time work and flexible working-time arrangements (provided these are legally permitted) to fill staffing

Table 1. **Performance and regulation in the distribution sector**

	Annual average growth of real output in distribution 1979-94	Annual average productivity growth in distribution 1979-94[1]	Annual average employment growth in distribution 1979-94	Share of distribution output in total GDP 1993[2]	Distribution share in total employment 1993[2]	Retail outlets per 10 000 inhabitants 1990	Average size of retail outlets (in persons employed) 1990	Regulations[3]		
								Opening hours	Zoning laws	Maximum opening hours, 8 a.m.-24 p.m 1990[4]
United States	2.3	0.8	1.5	15.7	20.5	79	9.6	UNR	PAR	112
Japan	3.4	2.2	1.1	12.5	18.4	132	4.2	PAR	REC	n.a.
Germany	2.7	0.8	1.8	7.8	11.3	85	4.4	REG	REG	60.5
France	1.9	1.8	0.1	12.2	13.8	97	3.8	PAR	PAR	n.a.
Italy	1.9	2.0	–0.0	15.3	19.3	171	2.4	REG	REG	66
United Kingdom	1.9	1.9	–0.0	12.8	17.1	81	6.5	PAR	PAR	67
Canada	2.4	1.0	1.4	10.0	16.4	n.a.	n.a.	n.a.	PAR	n.a.
Australia	3.0	1.3	1.7	17.9	20.8	90	6.7	n.a.	PAR	n.a.
Austria	2.1	1.3	0.8	12.8	14.4	69	4.8	REG	REC	n.a.
Belgium	1.9	1.9	–0.0	15.4	15.9	141	2.0	PAR	REC	73
Denmark	1.9	1.7	0.1	10.7	10.8	100	3.9	REG	REC	63.5
Finland	1.9	2.6	–0.7	8.4	12.5	77	4.1	REC	REC	80
Greece	1.5	0.6	0.9	9.6	15.5	184	1.8	UNR	REG	112
Iceland	2.1	0.8	1.3	8.9	11.9	67	4.7	n.a.	PAR	n.a.
Ireland	3.9	3.7	0.2	7.9	14.3	90	4.2	UNR	PAR	112
Netherlands	1.8	0.8	1.0	12.7	16.2	92	5.3	PAR	REC	55
New Zealand	2.0	1.5	0.5	16.8[5]	12.4	95	4.6	UNR	PAR	112
Norway	2.7	2.3	0.5	9.7	13.9	94	3.2	PAR	PAR	80
Portugal	2.6	1.9	0.7	14.1	13.2	192	2.0	UNR	PAR	112
Spain	2.3	2.6	–0.2	14.2	16.7	134	2.8	UNR	PAR	112
Sweden	1.2	1.7	–0.4	8.3	11.9	94	3.9	UNR	PAR	112
Switzerland	1.2	1.2	0.5	14.7	13.9	83	6.8	REG	REC	n.a.

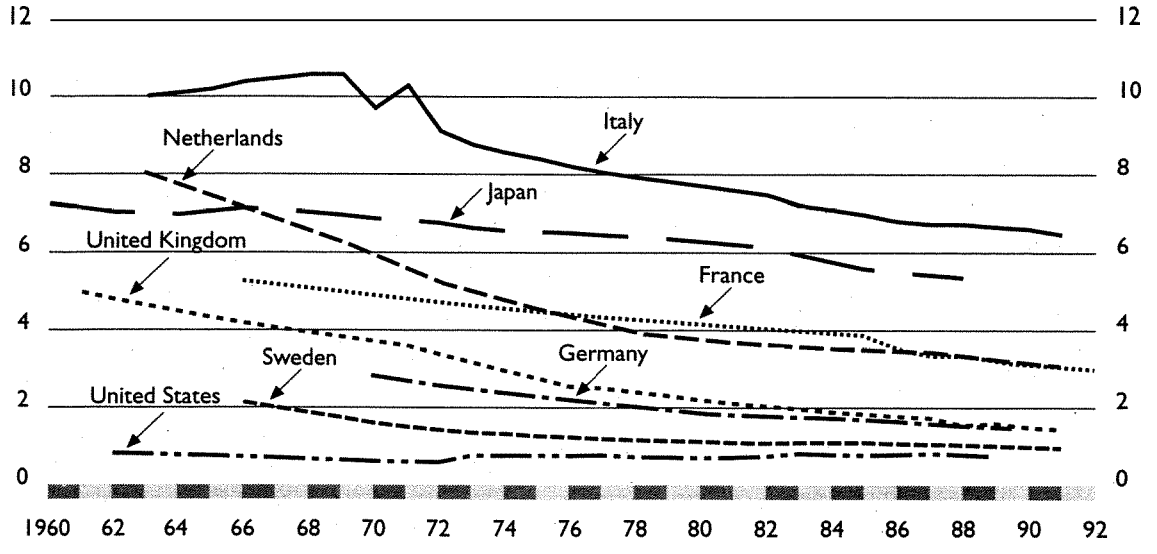
1 GDP per person employed
2 Or latest available year
3 UNR = Unregulated PAR = Partially regulated REC = regulated
4 In some countries local governments can allow opening hours to deviate from legal requirements and maximum opening hours may differ
5 Including restaurants and hotels

Source ISDB and OECD National Accounts Outlet density and average size from EC (1993a) and national sources Real expenditure on goods from OECD *Purchasing* Power *Parities* and *Real* Expenditure *1990* Vol 1 EKS results Paris 1992 Regulations from EC (1993) McKinsey (19941 OECD *Economic Surveys* and national sources Maximum opening hours from Kremers et *al* 1994

requirements (McKinsey, 1994) The general trend towards more flexible working-time arrangements by consumers, employers and employees, as well as the rise in part-time work, have put such restrictions under increasing pressure. Regulations on shop-opening hours differ substantially across the OECD (Table 1). In a few countries, including the United States, Ireland, New Zealand and Sweden, no legal restrictions exist, although in some cases local governments may apply certain restrictions. In others, including Italy and Germany, and, until recent legislative changes, Denmark and the Netherlands, opening hours are more restrictive.

In a few countries, notably Belgium, France, Italy and Japan (EC, 1993; EC 1994; McKinsey, 1994), existing retailers can – despite reforms in this area – block the establishment of new shops under *legislation aimed at large stores.* This effectively creates an entry barrier, in particular if incumbent firms are consulted with regards to the implementation of such laws. In particular in Italy and japan, but also in Belgium, such laws appear to have effectively slowed down the move towards larger stores and protected small, owner-operated shops. This type of legislation may reduce the efficiency of the distribution system, which is closely linked to the size of establishments. In larger stores, sales per employee tend to be 50-80 per cent higher than in the smallest size class (OECD, 1992). There has been a general tendency in the OECD area to move towards a larger average establishment size, and consequently a lower density of retail outlets (Figure 1), but in some countries zoning laws or restrictions on large stores appear to have limited such changes.

Figure 1. ***Outlet density in food retailing for selected OECD economies***
Numbers of outlets per 1 000 inhabitants



Source: **OECD** Secretariat.

Substantial differences remain in the OECD area regarding the average size of retail establishments (Table 1). Establishments are particularly large in Australia and the United States, and relatively small in Italy, Belgium, Greece, Portugal and Spain. Some estimated equations for the average size of establishments across the OECD area are shown in Table 2.[4] As incomes rise, there is a strong tendency for establishment sizes to increase (OECD, 1992). Moreover, a higher average size of outlets is associated with lower average price levels, consistent with the notion that larger outlets increase the overall efficiency of the distribution system. Two dummies for regulatory regimes, one reflecting zoning laws and the other large-scale restrictions, are included in the equation. Both dummies have the expected sign and the coefficient on the dummy for large-scale restrictions is significant, indicating that these restrictions may slow down growth in the average size of establishments. It is evident, however, that many other variables influence the average size of retail outlets, and economic factors tend to explain most of the variation across countries (OECD, 1995*b*).

Further evidence to this effect is provided in Table 3 that updates the results from an earlier OECD study (OECD, 1992).[5] The table shows an estimated equation for the density of food retail outlets, covering France, Germany, Italy, Japan, the Netherlands, Sweden, the United Kingdom and the United States. Three dummies are included to represent regulatory restrictions on large-scale outlets. Among the countries covered, only France (*Loi Royer* – 1974), Italy (*Commercial Law* – 1971) and Japan (*Large Scale Store Law* – 1973), have specific restrictions on large-scale outlets (OECD, 1992; McKinsey, 1994), even though these have been eased somewhat over the past decade. The dummies for Japan, Italy and France are highly significant and would, if rendered inoperative, lead to a substantial fall in the predicted number of food retail outlets, in particular in Japan and Italy. This result suggests that the removal of entry-restricting regulations on large establishments could lead to substantial efficiency gains in the distribution sector. Potential gains include reduced consumer prices (Table 2) and increased output of distribution services.

Furthermore, in regulated distribution systems, it is likely that product variety has been constrained. In addition, consumers have been confronted with additional costs, as their ability to purchase goods where and when they wanted to has been constrained. In addition, these rules have prevented structural change in the retailing industry and the sector has moved relatively slow to high value-added and high productivity formats in countries with strict regulations (McKinsey, 1992; Baily, 1993).

A lack of competition in the distribution sector can also arise from *vertical restraints*. Producers can impose restrictions on distributors, both with regards to the prices being charged (*e.g.* resale price maintenance) or to the non-price aspect of the distribution process (*e.g.* exclusive dealing or territorial restraints).

Table 2. **Equations modelling the average size of retail outlets, 1990**

(Absolute values of t-statistics in parentheses)

	Dependent variable: average employment size of retail outlets						
	Real income level	Large scale Restrictions*	Zoning laws*	Price level of goods	R^2	Standard error of the regression	F-statistic
Equation 1	00517 (16 122)	–1 991 (2 812)			0 549	1 268	24 35
Equation 2	0 0543 (13 762)	–1 776 (2 437)	–0 633 (1 130)		0 577	1259	12 98
Equation 3	0 0787 (7 723)	–2 194 (3 548)		– 00217 (2 757)	0 678	1 099	19 99
Equation 4	0 0786 (7604)	–2 063 (3 148)	–0 350 (0687)	–0 0204 (2 497)	0 686	1.115	13 12

* These variables are dummies taking a value of zero for mild restrictions under zoning laws and no specihc restrictions on large scale stores, and one for restrictive zoning laws and large-scale restrictions, respectively

Sources Equations cover the 22 countries shown in Table 1, excluding Canada. but including Luxembourg

Table 3. **Equations modelling the density of food retail outlets**

Independent variable	Food retail outlet density	
	1	2
Constant	3.5963**	4.6264**
	(4.753)	(9.215)
Urban concentration	0.8181**	0.9271**
	(5.181)	(8.260)
Car density	−1.876**	−1.266**
	(3.178)	(3.522)
Relative price of land	−.0269**	−.0171**
	(2.671)	(2.752)
Female labour force participation rate	−2.764**	−1.550**
	(4.022)	(3.633)
Population density	1.6695**	1.3423**
	(8.398)	(10.803)
Personal consumption	−.4199	−3.2595**
	(0.283)	(3.568)
Japan dummy	..	0.6918**
	..	(9.289)
Italy dummy	..	1.0462**
	..	(16.053).
France dummy	..	0.4392**
	..	(5.772)
Summary statistics		
R^2	0.7197	0.9012
Standard error of the regression	0.4185	0.2505
F-statistic	80.44	187.49
Number of observations	195	195

** Absolute levels of t-statistics are in parentheses
** Indicates significance at the 1 per cent level
* Indicates significance at the 5 per cent level
Source OECD calculations

Governments can counter such behaviour by competition policy. Price restraints are generally prohibited in all OECD countries (OECD, 1994*a*), whereas non-price restraints are sometimes tolerated (OECD, 1992). However, recent research has concluded that – in some cases – vertical restraints may have efficiency-enhancing effects and help to improve resource allocation.[6] In addition, vertical restraints are unlikely to affect overall competition if the vertically restrained combination faces vigorous competition, even if this is from outside a narrowly defined market (OECD, 1994*a*). Competition policy is therefore confronted with a range of possible outcomes, suggesting that a complete prohibition of vertical restraints may be inefficient. Reflecting these views, a number of countries, including Germany and the United States, have recently softened their legislative stance against vertical restraints.

Deregulation of the distribution sector has been implemented in many OECD countries. An evaluation of the liberalisation of shop-opening hours in Swedish food retailing suggests that output and employment increased and that prices fell somewhat (Civildepartmentet, 1991). Regulations on large-scale stores were eased in Japan in 1992 and 1994, and the evidence suggests that competition has increased and that price levels have fallen somewhat (OECD, 1993; 1995*b*). Deregulation in the United Kingdom also appears to have had broadly positive effects (OECD, 1994*b*). Studies for France (Cette *et al.*, 1992) and the Netherlands (Kremers *et al.*, 1994) suggest that a (further) liberalisation of shop-opening hours would positively affect output and employment and contribute to lower price levels.

Construction

The construction industry consists of a large number of small companies, although in non-residential construction and civil engineering, larger companies play a significant role and some market power is likely to exist, at least at the local level. The industry is in most countries affected by a large number of regulations regarding land use, building standards, planning permits, building inspections and rent (EC, 1994; McKinsey, 1994). In addition, labour, health and safety regulations play a significant role. To some extent, such regulations and standards are necessary as they serve to protect workers and consumers and simply create a level playing field for suppliers. Excessive or unnecessarily complicated standards may, however, contribute to high price levels for residential construction (OECD, 1994*c*) and may restrict consumer choice. They may also contribute to discrimination against foreign contractors or serve as a barrier to trade in construction materials and services.[7]

Some performance measures for construction are provided in Table 4.[8] Except for Japan, Canada and Sweden, output growth in the construction sector has been very limited, and employment in most countries has actually fallen. Productivity growth over the period 1979-92 was relatively strong in Japan, France, the Netherlands and Sweden. Productivity growth in the United States was by far the lowest in the OECD area, but the productivity level of the US construction industry is among the highest in the OECD, suggesting that some of the productivity growth in OECD economies may have been due to a catch-up effect.

The price (*i.e.* cost) levels of construction expenditure deserve particular attention in assessing performance.[9] Price levels are partly related to labour costs and partly to the price and availability of land. An equation that links the price level of construction expenditure to hourly labour cost and to population density is shown in Table 5. The latter variable serves as a proxy for land availability and land prices. The lack of comparable cross-country policy variables, and the inherent complexity and heterogeneity of regulations, did not allow for a numerical assessment of the

Table **4. Performance measures for construction**

	Annual average growth of real output 1979-92[1]	Productivity growth 1979-92[2]	Job creation 1970-1990[3]	Share of construction in total GDP, 1992	Share of construction in total employment, 1992	Price level of construction expenditure, 1990 (OECD = 100)	Real construction expenditure per capita, 1990 (OECD = 100)	Comparative productivity level in 1990 (USA = 100)[4]
United States	–0.6	–1.2	16	4.0	5.1	79	101	100
Japan	2.4	1.8	20	9.7	9.3	130	142	80
Germany	0.7	1.1	–10	6.0	6.7	118	101	76
France	1.1	2.4	–11	5.5	7.2	94	113	80
Italy	0.1	0.2	–11	5.6	7.4	100	85	83
United Kingdom	0.5	1.7	3	6.2	5.8	117	60	62
Canada	1.7	1.3	20	6.9	5.6	77	172	140
Australia	0.9	0.1	12	6.8	7.0	82	121	103
Belgium	0.3	1.7	–10	5.8	7.0	100	87	90
Denmark	–2.0	–0.2	–16	5.2	6.3	128	87	66
Finland	0.5	1.5	1	6.1	7.3	124	159	94
Netherlands	0.4	2.3	–15	5.7	7.2	118	77	70
Norway	–0.2	0.2	6	4.2	6.9	98	105	69
Sweden	1.6	2.2	–13	7.3	6.3	152	87	75

1 United States 1979-91, Norway 1979-90 and Italy 1979-93
2 GDP per person employed, United States and United Kingdom 1979-91, Norway 1979-90 and Italy 1979-93
3 Number of jobs created in construction. per 1 000 persons of working-age Adjusted for labour force growth, 1970-90
4 GDP per person, adjusted to a common currency with relative price level from OECD (1993*a*)

Sources ISDB, Comparative price level for construction expenditure and real expenditure per capita from OECD, Purchasing *Power Parities* and Real *Expenditure* 1990, Vol 1 *EKS* results, Paris 1992

Table 5. **Equation modelling the price level of construction expenditure, 1990**
(Absolute values of t-statistics in parentheses)

	Dependent variable is construction price level					
	Constant	Hourly labour costs	Population density (in logs)	R^2	Standard error of the regression	F-statistic
Equation 1	39 37 (2 711)	2 877 (4 110)	4922 (2094)	0 541	1600	11 17

Note Equation covers all OECD countries, except Mexico for which no construction price level was available, and Turkey and Iceland, for which no hourly labour costs were available Hourly labour costs refer to production workers in manufacturing, as no hourly labour costs were available for construction
Source Hourly labour costs from BLS (1994); Population density from OECD, *Main Economic Indicators*

effects of these regulations. However, the results of the standard regression indicate that price levels in some countries, including Denmark, Finland, Japan, Sweden, Switzerland and the United Kingdom, are higher than suggested by the equation. These countries also tend to have a relatively low level of productivity indicating a substantial potential for catch-up.

While the complexity of regulation makes their effects difficult to quantify, regulatory barriers or other types of anti-competitive conduct have been identified in several of the countries where price levels are higher than suggested by the regression equation, suggesting that there is a link between regulations and performance across OECD economies. In Sweden, regulations are in place that can potentially impede competition at all stages of the building process (OECD, 1992*a*), including regulations applying to foreign contractors, rents and housing support measures. In Japan, government regulations facilitate exclusionary practices, such as bid-rigging, although restrictions on land development also play an important role here (OECD, 1992*b*). In Switzerland, cartelisation and segmentation of local markets in building materials and construction, and uncompetitive tendering arrangements for public works, appear to have contributed to high price levels (OECD, 1992*c*; OECD, 1994*c*). In Finland, there is a considerable degree of horizontal concentration, with four enterprises accounting for about 35 per cent of turnover (OECD, 1991), whereas technical standards appear to discriminate against imports of building materials. In addition, construction companies and building material producers are often vertically integrated. The allocation of land for construction also involves some restrictive practices. Similar restrictive practices have been identified for Denmark (OECD, 19936).

Road transport

Road freight and passenger transport used to be among the most heavily regulated sectors in the OECD area (OECD, 1990). Over the past three decades OECD economies have progressively abandoned many regulations that restricted the number of licenses and therefore entry to the industry, while freight rates were also deregulated. In contrast with road freight, only a few countries (notably the United Kingdom and New Zealand) have introduced reforms in the road passenger transport sector, which remains subject to extensive regulation in most OECD countries.

The effects of deregulation in road transport have generally been positive, in particular with regards to freight services (Table 6). Following deregulation, freight rates generally declined, services expanded and the efficiency of freight service providers increased substantially. The experience with the deregulation of intercity and local bus services is more limited. In the United States, the deregulation of long-distance services led to a sharp restructuring of the market, with fares falling but some services being cut. An important factor in the restructuring of the industry was the sharp competition from private automobiles and the deregulated airline industry (see below). In the United Kingdom, the experience is less positive as the dominant position of the national carrier, in particular with regards to inner city terminal facilities, forced new entrants out of the market which subsequently led to an increase in prices.

Telecommunications

The market structure in telecommunications differs somewhat for each of the various market segments (Table 7). Voice telephony remains dominated by large, often public, monopolies, whereas the markets for data transmission and mobile communications are slowly becoming more competitive. In general, only the markets for equipment and value-added services are fully competitive. In Europe governments are still heavily involved except in the United Kingdom, while Australia, New Zealand and japan have a somewhat lower degree of public ownership. There is no public ownership in Canada and the United States.

Historically, the industry was characterised by high sunk costs, and most governments regarded the market as being a natural monopoly, justifying public ownership or strict regulation. In addition, a large public role has often been justified by the need for universal access to telecommunication services. Technological progress is currently enabling new entrants to provide new services, challenging incumbents, for instance by allowing high-speed links, voice mail or call-back services.[10] Such new services are effectively removing national-based monopolies on international calls and are enhancing the degree of competition in the sector. The rapid pace of technological progress is also resulting in a lowering of entry

Table 6. **Gains from deregulation in road transport**

	Periods and type of deregulation[1]	Effects			Notes[3]
		Entry	Rates and fares	Service quality[2]	
Australia	Freight: 1950s and 1960s (e,p)	UP	DOWN	UP	– (F) Concentration of ownership has increased (two largest firms control 60% of the road freight market).[4] – (F, P) Intermodal competition between road and railroad transport has increased.
	Passenger: 1986-87 (e,p)	UP	DOWN	UP	– (P) Trial period of deregulation of intra-state bus services in New South Wales (Sydney-Canberra and Sydney-North Coast).
Canada	Freight	UP	DOWN	UP	– Deregulation of both inter-and intra-provincial road transport; profits in the industry have generally fallen.
France	Freight: 1979-89 (e, p)	UP	DOWN		– The number of transport authorisations doubled between 1974 and 1987. Price levels fell by 6.4% for short-zone traffic, and by 3.4% for long-zone traffic following the 1986 deregulation.
New Zealand	Freight: 1983 (e, p, s)	UP		UP	– Intermodal competition with railroads has increased, and employment has expanded.
Norway	Freight: 1987 (e, p, s)	UP			– New licences issued in 1987 exceeded those in 1986 by 41%.
Sweden	Freight: 1964 (e) Passenger: late 1980s	UP			– (F) Progressive deregulation since 1964, resulting in a large influx of new entrants. – (P) Introduction of a new tendering system for scheduled bus services has lowered procurement costs.

Table 6. **Gains from deregulation in road transport** *(cont'd)*

	Periods and type of deregulation[1]	Effects			Notes[3]
		Entry	Rates and fares	Service quality[2]	
United Kingdom	Freight: 1968 (e, p, s)	UP		UP	– (F) The stability of markets – prices, turnover rate, safety – was maintained after deregulation.
	Passenger: inter-city 1980-85 (e, p, s)	UP	DOWN (and UP later)	UP	– (P inter-city) National Express continued to dominate the markets for inter-city bus services, yet some 15 firms survived by specialising in one or two routes offering high quality services Entry into commuter service markets to London increased steadily, creating inter-modal competition with trains and subways.
	local	UP	DOWN in some areas (UP in others)	UP	– (P local) The National Bus Company was split into 72 companies and privatised completely in 1988. Private companies have introduced minibus services (10-15% of the total stock of vehicles in use in 1989).
United States	Freight: 1980 (e, p, s)	UP	DOWN	UP	– (F) The number of carriers and intermediaries doubled between 1979 and 1985, but most new entrants were small firms with less than $1 million annual revenue, and as a result, overall concentration increased slightly.
	Passenger: inter-city 1982 (e, p, s)	UP	DOWN in some routes		– (P) Entry into the chartered bus service market increased significantly.

1. Types of deregulation: e = entry; p = prices; s = services.
2. Service quality mainly includes routes serviced, safety levels and improvement of Facilities and equipment.
3. (F) notes regarding freight transport. (P) notes with regard to passenger transport.
4. Data from Sleuwaegen. L. **(1993)** "Road Haulage", in European Community, *European Economy: Market Services and European Integration.* No. 3, Brussels

Source: OECD (1990), *Competition Policy and the Deregulation of Road Transport.* Paris.

Table 7. ***Ownership status and level of facilities competition in 1994***

Monopoly | Duopoly | Free competition

	Ownership	Degree of competition: Network competition			Data comms and leased lines		Mobile communication		
EUROPE		Local	Trunk	International	X.25	Leased lines	Analog	Digital	Paging
[illegible]	PUB	M	M	M	M	M	M	M	C
[illegible]	PUB	M	M	M	93	M	M	M	M
Denmark	MIX	M	M	M	93	M	M	D	M
[illegible]	MIX	C	C	C	C	C	D	D	D
France	PUB	M	M	M	93	M	D	D	D
Germany	PUB	M	M	M	C	M	M	D	94
[illegible]	PUB	M	M	M	97	M		D	M
Iceland	PUB	M	M	M	M	M	M	M	M
Ireland	PUB	M	M	M	93	M	M	M	M
Italy	MIX	M	M	M	93	M	M	D(94)	M
[illegible]	PUB	M	M	M	93	M	M	M	M
[illegible]	MIX	M	M	M	93	M	M	D(94)	93
Norway	PUB	M	M	M	93	M	M	D	93
Portugal	MIX	M	M	M	C	M	M	D	C
Spain	MIX	M	M	M	C	M	M	M	C
Sweden	MIX	C	C	C	C	C	C	C	C
Swiaerland	PUB	M	M	M	M	M	M	M	C
Turkey	PUB	M	M	M	M	M	M	M	M
United Kingdom	PRI	C	C	C	C	C	D	C	C
NORTHAMERICA									
Canada	PRI	M	C	M	C	C	RD	D	C
United States		PC	C	C	C	C	RD	C	C
Local and inter-exchange carriers	PRI								
Long distance and international exchange carriers	PRI								
PACIFIC									
Australia	MIX	D	D	D	D	D	D	C	C
Japan	MIX	C	C	C	C	C	RD	C	C
New Zealand	MIX	C	C	C	C	C	C	C	C

Ownership: PUB = public; MIX = mixed; PRI = private.
Key: C = Competition, D = Duopoly, PC = Partial Competition, RD = Regional Duopoly, M = Monopoly, 9x = Competition expected to be introduced this year.
Intercontinental Canada-US traffic, which constitutes 70 per cent of international traffic originating in Canada, is handled by Stentor regional telcos, Unitel and resellers on a competitive basis.
Intercontinental (non-Canada-US) traffic is carried by Teleglobe; international resale since 1991.
Source: OECD (1995), Communication *Outlook*, Paris.

costs for new entrants, leading governments to reconsider their regulatory framework. As a result, there has been a marked trend towards a liberalisation of telecommunication services over the past decade. A few countries (New Zealand and the

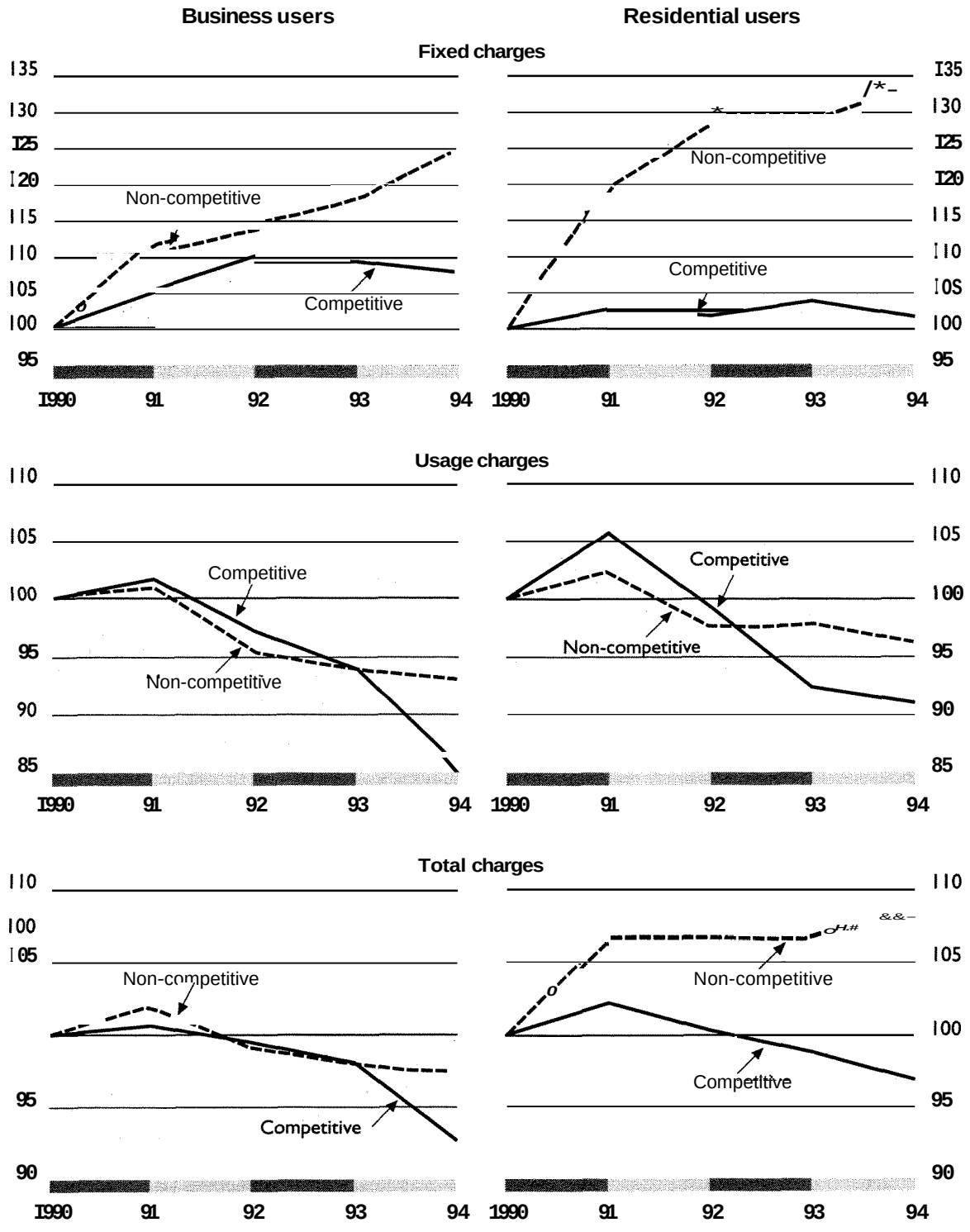
United Kingdom) have also completely privatised their public telecommunication operators (PTOs), whereas several others (including Japan, Denmark and the Netherlands) have partially privatised their PTOs.

The effects of privatisation and regulatory reform have been considerable across the OECD area, in respect to both prices and connections {OECD, 1995*c*). There has been a general move towards more efficient pricing with a move from usage towards fixed charges, reflecting the high fixed and low marginal cost of providing telecommunication services. Furthermore, the cross-subsidisation of local calls at the expense of long-distance calls has diminished. Over the period 1990-1994, in countries with competitive telecommunication industries, the price of local calls increased by 14.9 per cent, whereas that of long distance calls dropped by between 18 and 35 per cent (depending on the distance)." In contrast, in non-competitive countries, the price of local calk increased by 20 per cent and the price of long distance calls fell only with between 12 and 16 per cent (OECD, 1995*c*). From 1990 to 1994, total business charges decreased by 8.6 per cent in countries with competitive telecommunication industries, while in non-competitive countries the fall was only 3.1 per cent. The difference is even bigger for total residential charges, where private consumers in competitive countries enjoyed a 3.1 per cent fall compared with a 8.7 per cent increase in non-competitive countries (Figure 2).

In general, the improvement in technology and the rationalisation of activities (partly by increased out-sourcing) has substantially increased productivity in PTOs. However, new products and services have developed outside the traditional domain of the PTOs, and the overall demand effect of product innovation and reduced price levels has been to increase output in the telecommunications industry substantially (OECD, 1995*c*), while keeping employment roughly constant. Case studies have been made for japan and Finland. Since the 1985 privatisation of Japan's Nippon Telegraph and Telephone (NTT), as many jobs were created by new entrants in the industry as were lost by NTT. The gradual liberalisation of the Finnish telecommunications market since the mid-1980s, also resulted in substantial employment growth, with more jobs being created outside the traditional PTO than were lost by the PTO over the same period (Ministry of Transport and Communications, 1995).

Privatisation is generally insufficient to ensure competition as can be observed from the UK experience. The privatisation of British Telecom (BT) in 1984 did not initially lead to significant changes in performance, as the monopoly was simply replaced by a duopoly (BT and Mercury). Competition only increased in 1991, when entry restrictions were eased and more than eighty operators applied for licenses – of which 45 were granted – to compete in different segments of the market. Currently, BT still has about 90 per cent of the telecommunications market, mainly due to its dominance of the basic network. In general, privatisations should be accompanied by an effective competition policy that allows for new entry and ensures a level playing field in terms of competition, technical standards, and equal

Figure 2. ***The impact of competition on telecommunications charges***
Index 1990 = 100



Source: OECD (1995), *Communications Outlook*, Paris.

and fair access between different operators' networks. Indeed, the challenge for regulators in the coming years will be to adjust the regulatory framework to comply with the rapid changes in technology, the introduction of new products, and new structures, so the continued development and expansion of the telecommunication industry are not hampered.

Airlines

The structure and regulation of the air transport market generally differs between domestic and international services. In the majority of OECD economies, public monopolies dominate domestic flights. The principal exceptions are the US and Canadian domestic markets, which are highly competitive. Recent EU-legislation has created a framework that should help, in principle, to make the internal EU market more competitive. Australia, Canada, Japan and New Zealand have recently taken steps to further increase competition in their domestic markets. In general, international services are regulated through bilateral agreements. For example, each European Union country has 60 to 70 bilateral agreements with third countries (Good et *al.*, 1993). Even so, on very high volume routes, such as transatlantic flights, customers can choose between various alternatives, thereby stimulating competition.

Economies of scale are relatively limited in the industry, the main exception being off-flight activities, such as aircraft maintenance.[12] On the other hand, there are substantial economies of scope and revenue related to the ability of an airline to connect flights.[13] This happens typically through hub-and-spoke operations (predominant in the United States), through code-sharing and the operation of computer reservation systems (CRS) between airlines. In addition, customer loyalty is enhanced through frequent flyer programmes. Furthermore, reputation and experience can function as entry barriers due to a consumer preference for security and safety. These scale effects explain the high concentration in the industry, although this is less true in Europe than in the United States. Technological progress affects the industry in a very balanced manner as a result of the limited number of suppliers to the industry.

There has been a steady improvement in aircraft design, CRS and infrastructure, and correspondingly a substantial trend increase in productivity. The improvement in productivity, combined with regulatory reform, has lowered real prices throughout the OECD area.[14] The US deregulation process began in 1978, while the rest of the OECD, with the exception of the United Kingdom, only began implementing deregulation in the late 1980s. From 1980 to 1993, both the absolute and the relative differences in prices between the United States and the rest of the OECD have widened (Table 8). The average nominal price (measured in US dollars) for one revenue passenger kilometre (RPK) in the United States has increased by only 1.3 cents compared with an increase of 2.1 cents in the price of European

Table 8. **Average airline prices, costs and variance**

	1980		1985		1990		1993	
	Average prices and costs	Variance	Average prices and costs	Variance	Average prices and costs	Variance	Average prices and costs	Variance
Prices (US cents per RPK)[1]								
United States	7.74	*1.4*	8.11	*2.6*	8.39	*3.2*	9.08	*1.6*
OECD-Europe								
– Flag carriers	12.02	*10.9*	10.73	*9.9*	15.37	*22.3*	14.96	*37.4*
– Charter[2]			12.17	*102.2*	9.98	*144.1*	6.40	*20.8*
Other OECD[3]	9.05	*4.6*	9.94	*5.2*	13.13	*17.9*	14.55	*38.4*
Costs (US cents per ATK)[4]								
United States	36.99	*72.70*	40.68	*53.89*	46.50	*45.94*	45.72	*44.90*
OECD-Europe								
– Flag carriers	59.16	*276.09*	53.55	*243.19*	83.82	*702.03*	84.01	*992.06*
– Charter[2]	..	..	59.51	*829.21*	46.89	*121.42*	46.66	*194.03*
Japan	39.992	..	45.98	*281.43*	74.66	*1 494.00*	82.42	*1 231.15*
Other OECD[6]	49.00	*118.90*	42.33	*209.09*	45.07	*21.34*	39.61	*20.40*

1 RPK – revenue passenger kilometre
2 Data for charter flights start in 1988
3 Australia, Canada, Japan and New Zealand
4 ATK – available tonne kilometre
5 Data cover only one company
6 Australia, Canada and New Zealand
Source OECD calculations based on data provided by the Institute of Air Transport, Paris

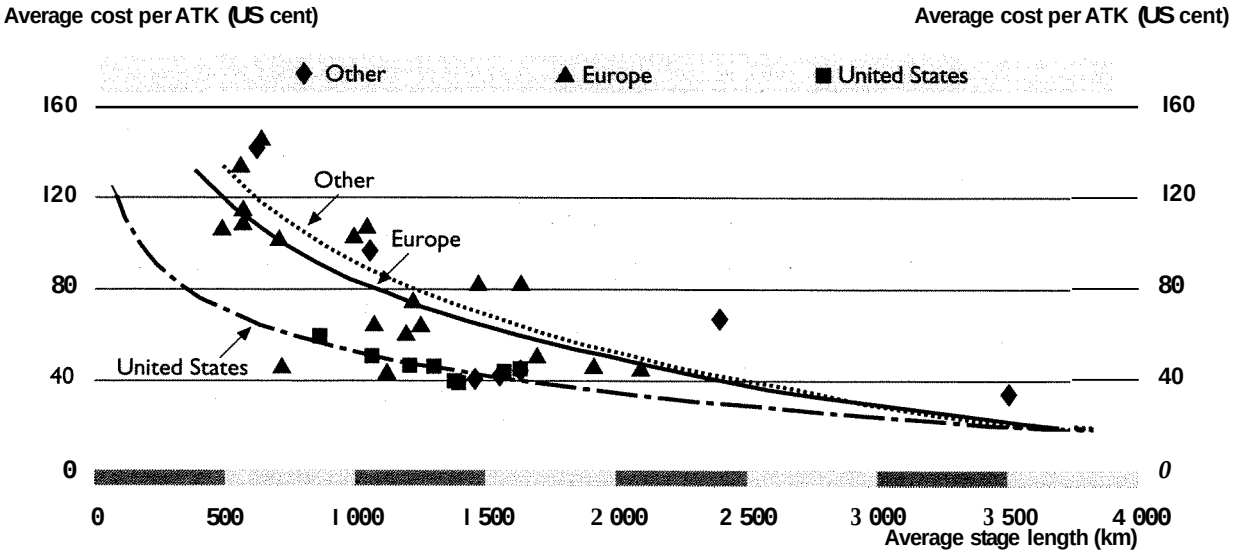
fag-carriers and 5.5 cents in the rest of the OECD. Moreover, the strong competitive pressure in the United States has ensured that prices are quite similar between the different carriers *(i.e.* a low variance). In Europe and the rest of the OECD the competitive pressure is much more uneven and prices vary much more among the different carriers *(i.e.* a high variance). While Japan continues to face difficulties in reaching price levels comparable with best practise, the deregulation process in Australia, Canada and New Zealand has successfully led to competitive price levels.

The higher prices in Europe have not led to higher profits. In fact, only the European charter business has consistently shown positive profit rates, albeit low compared with other industries. This points to substantial costs differences. Indeed, Table 8 confirms that the observed price differences and their development over time are closely related to the development in costs. Of particular interest is the increase in the European cost variance, which indicates that although a number of European operators face increased competition, a number of other European airlines face substantial difficulties in undertaking the necessary restructuring and modernisation to remain cost efficient. A major determinant in the industry's unit cost is stage length, which is due to a number of factors. For instance, fuel consumption is greatest until the aircraft has reached cruising altitude and longer stage length minimises unproductive turnaround time on the ground. However, cost differences cannot be attributed to differences in stage length alone, as the US airlines have lower unit costs than European airlines for all stage lengths (Figure 3). Recent studies suggest an almost 20 (McKinsey, 1992) to 40 per cent (European Commission, 1994) difference in productivity between the United States and Europe.

As in other segmented sectors, privatisation may not be a sufficient condition to increase competition in airline services, and provisions for allowing access to new entrants are of particular importance. Enhanced competition in air transport requires a market-based allocation of landing and take-off slots and the abolishment of the international system of bilateral agreements. In addition, an effective competition policy[15] must address a number of other issues (see Box 2) to prevent incumbents from exploiting their dominant position. For instance, incumbents may have substantial advantages through the operation of hub-and-spoke systems, frequent flyer programmes, computer reservation systems, code sharing or outright predatory behaviour, which can all be used to exclude or raise the cost of entry.

European airlines are unlikely in the present situation to become as efficient as American airlines, due to a range of external factors and the structure of the European market. The external factors include higher fly-over cost, partly reflecting inefficient air-control systems. The inefficient European system also results in delays and air congestion. Furthermore, European airport charges vary between 2.0 and 11.5 US cents per available tonne kilometres (ATK) compared with around 1.0 US cent per ATK in the United States. This is mainly the result of a lack of

Figure 3. ***Operating costs per ATK and average stage length, 1993***



Note: The lines refer to cost curves reflecting unit cost for a given stage length.
ATK Available Tonnes Kilometres.
Source: OECD calculations based on data provided by the Institute of Air Transport, Paris.

competition between ground handling providers (OECD, 1995*d*). European airlines also have 15 per cent more expensive fuel costs than US airlines, due to their smaller size and hence their weaker bargaining position (European Commission, 1994*a*). These external factors can change through reforms and investment programmes, but only over a fairly long time horizon.

The structural features of the European market, however, will hardly change. Higher European population density, together with the existence of strong intermodal competition from high-speed trains and road transport, makes it unlikely that the European market will reach the same relative size as that in the United States. Moreover, the North-South charter market is already very competitive. Hence, growth in Europe, through increased competition, is likely to be found mostly in the East-West business market, which is typically not very price sensitive and thus expands only modestly in response to lower prices. In addition, a large segment of non-business travel in the United States is to visit friends and relatives, a service which in Europe is typically served by other means of transportation. The expected benefits of deregulation in terms of consumer surplus are substantial, but are unlikely to reach US levels (McGowan *et al.*, 1989).

Box 2. **Sources of market power in the air transport industry**

Airport slots are allocated by scheduling committees including representatives for the incumbent airlines and are based on the "grandfather principle", which gives incumbents preferential treatment. An additional problem is the lack of peak pricing (with the notable exception of Heathrow and Gatwick airports in the United Kingdom). One possible solution is to set up an auction system (as it is currently done in four American airports: La Guardia and Kennedy airports in New York, Washington's National and O'Hare in Chicago) to determine the economic value of different slots (McGowan *et* al., 1989). Even in the event of a suitable auction system, there remains a potential co-ordination problem. Each airport can only sell one landing or take-off slot, but any flight needs a matching pair. For hub-and-spoke operators this is not a problem as they always have slots at their hub and hence only need one additional slot. New entrants without a hub-and-spoke are put at a disadvantage with an auction system only in landing rights. Thus, the design of an auction system becomes non-trivial if potential obstacles to new entry are to be avoided. Nevertheless, the introduction of a slot allocation system based on economic incentives would be a considerable improvement compared with the present system.

Predatory behaviour, by which an airline accepts a short-run loss against expected higher profits in the future, can either be implemented by cutting prices below marginal costs, by expanding output or by changing the timing of services. Predatory timing implies either scheduling departures around the entrants (to take over customers), or by scheduling departures away from the entrants to remove connection possibilities. Particularly for small entrants this may be a problem as the quality of their service depends on the ability to connect to other networks. From an empirical point of view, it is difficult to distinguish predatory behaviour from the effects of normal competition. Indeed, in the presence of legal sanctions, predatory behaviour only takes place when the possibility of detection and punishment is low (Dodgson, *et al.* 1991).

The hub-and-spoke system co-ordinates the incoming and outgoing flights to a central airport to facilitate interconnection between flights. This implies that during the day the hub will experience several waves of planes coming in and leaving 60-90 minutes later. The advantage of the system is that it increases the density of the route network and hence offers customers a wider choice, enhancing the revenue-scale economies for the airline operating the system. On the other hand, hub-and-spoke systems may increase the market power of the incumbent, as inter-connection takes place within the same airline and excludes competitors (McGowan, 1989). In addition, the hubs are spatially differentiated so vertical integration allows the airlines to create and exploit local monopolies around the hub. In particular, this is true with predatory scheduling, where a hub-and-spoke network allows the "owner" to engage in predatory scheduling without running the risk of becoming the target of predatory scheduling itself.

(continued on next page)

(continued)

Frequent flyer programmes allow the members to collect points to obtain discounts on future ticket purchases. In addition, members receive preferential treatment with respect to ticketing, check-in procedures, lounge facilities, and often have business facilities at their disposal. The programmes encourage members to gain as many frequent flyer points as possible, thus enhancing brand loyalty, ensuring that customers only use one airline, and expanding the value of the hub-and-spoke system. This allows the airlines to impose switching costs on the customers, whereby the system functions as a barrier to new entry. The switching costs also segment the market between the incumbents, and contributes to the creation of a number of local monopolies.

Computer Reservation Systems may present serious asymmetric problems. The systems provide information on possible travel routes and on transactions of sales and reservation. Owners of such systems may promote their products ahead of competitors, through the ordering of the computer listing or through the marketing commissions offered to the travel agents. Indeed, most customers base their decision on the first couple of computer screens presented. Codes of conduct have been established to prevent abuses. CRS systems can also be used to optimise the designation of seats into different ticket categories, thus optimising the revenue of each single flight. Moreover, the systems opened the possibility of code sharing, whereby friendly airlines' products can be promoted alongside with the proprietors. This increases the range and scope of services offered, thus increasing the value of their networks and the scale advantages enjoyed.

Other network-related services: energy, postal services and railways

In electricity supply, there is a general realisation that although the transmission and distribution of electricity are natural monopolies (IEA, 1994), the generation of electricity is not, and that a decentralised network of suppliers can contribute to the supply of electricity to the grid. In some cases, competition can be strengthened by allowing end-use consumers to choose their own power supplier. For instance, the 1989 electricity law in the Netherlands allows consumers (with the exception of municipalities) to choose where to purchase their electricity – including from foreign producers (IEA, 1994). Similar reforms were introduced in Norway, where the 1991 Energy Act has opened up the electricity grid to all producers and consumers in the country, and broken up local monopolies for electricity generation. In addition, electric power companies are now required to separate their financial accounts for power generation and for grid-related activities, thus avoiding cross-subsidisation (OECD, 1995e). A regulatory framework is required to ensure

access of private producers to the grid and to help in settling disputes with regards to transmission access and pricing. Most countries are still in the process of making a transition to more competitive markets, but preliminary evidence suggests that competitive markets for electricity can, if properly regulated, work efficiently (IEA, 1994*a*).

In postal services, less regulatory change has occurred, although many countries have moved to separate the functions of postal and telecommunication services, often as a step in the direction of partial privatisation of the latter (OECD, 1992*d*). Across the OECD, competition has generally been enhanced in basic parcel and courier services by abolishing price and entry regulations. Public monopolies, protected by entry and price regulations, remain dominant in basic letter services, however, although some countries are currently allowing private companies to deliver letters above a certain weight limit. 'Within the European Union, little progress has so far been made in liberalising this sector.

In railways, change has also been slow. A few countries, including Japan and the United States (Conrail),have privatised railway companies over the past decade, and privatisation of British Rail is currently in progress. A few countries, including Sweden and Germany, have separated the provision of transport services from grid-related activities, and Mexico and the United Kingdom are in the process of doing so. In addition, some railway companies have been allowed to differentiate prices for customer services, helping them to improve efficiency. For European railways, there are substantial differences in efficiency, and part of these differences appear to be related to the differing degrees of autonomy under which railway companies operate (Pestieau, 1993; OECD 1995*f*).

ECONOMY-WIDE CONSIDERATIONS

Effects on overall performance

The sectoral evidence presented above suggests that regulatory reform in services, if properly designed and implemented, can help to increase the degree of competition in the service sector and can contribute to improved performance. A summary of this sectoral evidence is provided in Table 9. The table suggests broadly positive experiences with regulatory reforms and also points to regulations on entry as the dominant barrier to competition in most of the service sectors.

The economy-wide effects of increased Competition are likely to exceed the sum of these sectoral effects (Pera, 1989), however. First, enhanced competition in one sector may free resources for use in other sectors of the economy and thus improve overall resource allocation (the "static" effect). Second, as suggested for instance by the results of regulatory reforms in distribution and telecommunications, a more competitive environment arising from deregulation may enhance the overall capacity for product innovation and growth (the "dynamic" effect), by

Table 9. **Effects of Regulation and Deregulation on Performance**

Sectors	Policies identified as having negative impacts on performance[1]	Effects of regulation/deregulation on performance
Distribution	Zoning laws or large scale restrictions (E), restrictions on shop opening hours (S)	– Zoning laws and large scale restrictions restrict growth in the average size of establishments, and consequently affect the productivity of the distribution system (Table 2). – Entry-restricting regulations in Belgium, France, Italy and Japan have in the past limited potential productivity gains. Removal of these restrictions could also lead to possible gains from reduced consumer prices and increased output (Table 3). – Restrictions on shop opening hours reduces consumer convenience. – Deregulation in Japan, Sweden and the United Kingdom appear to have intensified competition and limited price increases. Studies for France and the Netherlands suggest positive impacts on output and employment from a liberalisation of shop opening hours.
Construction	Cartels/regulations restricting competition (E), excessive building standards (P)	– Regulations (standards) and/or anti-competitive conduct (regulations applying to foreign competitors, cartelisation, collusive tendering, vertical restrictions, etc.) can help to explain relatively high construction prices and low productivity in some OECD countries (Tables 4 and 5).
Road transport	Licenses (E), fare (P) and service regulations (S)	– General effects of deregulation across the OECD have been to increase entry, reduce fares and increase services (Table 6).
Telecommunications	Heavily regulated (E, P, S), public monopolies dominate the sector in many countries	– Privatisation and deregulation have led to more efficient pricing (from usage towards fixed charges), reflecting the high sunk costs and low marginal costs of telecommunication services. – From 1990 to 1994 business charges and residential charges fell much faster in countries with competitive markets (Figure 2).
Airlines	Heavily regulated (mainly entry), public monopolies dominate the sector in many countries	– Following deregulation in the United States, real price levels of airline services have fallen and the price difference with most other (regulated) OECD countries has increased significantly (Table 8). Output and employment has also expanded significantly in the US market following deregulation.
Electricity	Heavily regulated (E, P, S) public and local monopolies dominate the sector	– Entry deregulation in the generation of electricity can enhance competition and efficiency.

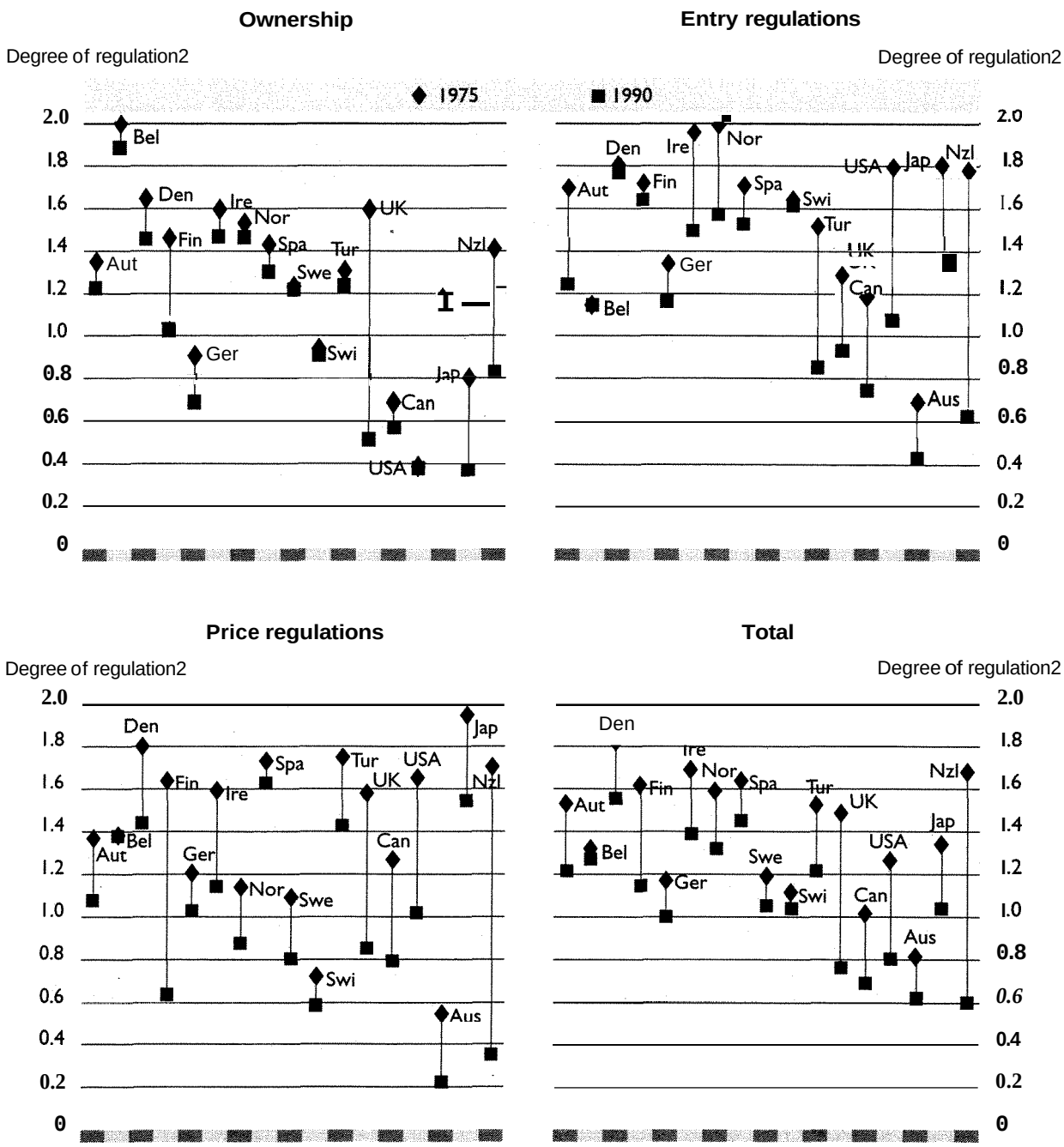
1. E = entry; P = price; S = services.

expanding the range of goods and services provided. Third, regulatory reform may contribute to improved flexibility of the economic system and thus help to reduce price and wage rigidities. Higher productivity or lower prices in one sector are also important as they lower the costs of inputs from that sector for users and can thus contribute to enhanced performance in other sectors of the economy. Deregulation in one sector can also put pressure on other sectors that remain regulated.[16] For instance, the deregulation of road haulage lowered price levels in that sector and improved the competitive position of this sector with regards to other freight carriers, in particular railways.

Evidence on the economy-wide effects of deregulation and privatisation is limited, and the analysis is complicated by the fact that most countries have opted for a gradual and sector-specific approach to regulatory reform. This implies that its effects on performance are difficult to disentangle from economic performance in general and cyclical phenomena in particular. In countries where extensive regulatory reform has been undertaken (the United States, New Zealand and the United Kingdom – see Figure 4 below), some evidence is available on the overall effects. For some other countries (Germany, Australia and the Netherlands) modelling studies provide a rough indication of the overall effects of reforms.

- Regulatory reforms in the United States, covering airlines, railways, trucking, telecommunications, cable television, brokerage and natural gas, are estimated to have increased social welfare by at least $36 to 46 billion (in 1990 prices) annually (or 0.65-0.85 percentage points of GDP), primarily due to deregulation of the transport industry (Winston, 1993). Furthermore, the gains from deregulation were often transferred to consumers, and were not at the expense of workers or producers, who generally also benefitted from the deregulation process.
- The long process of structural reforms in New Zealand – including extensive trade liberalisation and macroeconomic policy reforms – initially led to a difficult and slow adjustment to the new situation, but currently shows signs of improvement, in particular with regards to tradeable sectors of the economy (OECD, 1994; 1994*d*). Business strategies are much more internationally oriented and the trade package has diversified in both products and destination (OECD, 1994*d*). More significantly, there was a marked and significant rebound of productivity growth in the 1980s (Englander and Gurney, 1994).
- The UK structural reform packages over the past 15 years appear to have contributed to a marked improvement in international competitiveness and have helped to improve productivity and growth performance (Haskell, 1991; Crafts, 1993; OECD, 1994). Recently, Parker and Martin (1995) concluded that the UK experience with privatisation, and in particular the run-up to privatisation, could be associated with marked improvements in performance. This

Figure 4. ***Change in regulatory regimes, 1975-90***
Summary measure of regulations, selected services sectors[1]



1. Based on regulations in road transport, airlines, telecommunications, postal services and utilities.
Due to the lack of information, indicators for Belgium include only telecommunications, postal services and utilities.
2. Degree of regulation varies from 0: unregulated or private ownership, to 2 highly regulated or public ownership.

Source: OECD calculations, based on OECD, Regulatory reform, privatisation and *competition* policy, *1992*.

appeared related to a reduction in overstaffing and inefficiency in the run-up to, and following privatisation. However, the fact that several companies were able to improve performance before privatisation suggests that privatisation is not the only factor affecting performance.

- Much research has focused on the benefits of deregulation in the context of the European internal market (Pera, 1989; EC, 1993; Hoeller and Louppe, 1994). Studies from the European Commission analysed the gains from dismantling technical trade barriers and customs formalities, enhanced economies of scale and lower profit margins resulting from increased competition and found these to be quite sizable, from 3 to 7 percentage points of GDP. The real effects of integration are still difficult to evaluate, however, although a simple macroeconomic evaluation suggests an EU-wide gain of 1½ percentage points of GDP so far (Hoeller and Louppe, 1994).
- The Australian "Hilmer" reform package, that was proposed in 1993 (Hilmer *et al.*, 1993), consists of an extension of competition legislation to most sectors of the economy and also aims at regulatory reforms in the utility sector, road transport and ports. The total reform package is projected to increase Australia's level of GDP by about A$ 23 billion, or about 5.5 percentage points (Industry Commission, 1995), provide benefits to each consumer of about A$ 1500 and create about 30 000 new jobs. The benefits of the reforms are expected to be widely distributed across sectors.
- Other studies, for Germany and the Netherlands (Lipschitz *et al.*, 1989; Van Sinderen *et al.*, 1994; Van Bergeijk and Haffner, 1995), also suggest substantial benefits from deregulation, with GDP and employment rising and inflation falling following regulatory reforms.

Extent and changes in service sector regulation

Most OECD economies remain much more regulated than the United States, the United Kingdom and New Zealand. A rough overview of the strictness of regulatory policies in the OECD area can be derived by analysing indicators of regulation and ownership. Such indicators are available for utility and postal services, road transport, telecommunications and airlines and cover ownership, entry and conduct (price and services) regulations.[17] An overall indicator can be derived by weighing the sectoral indicators by their weights in GDP.[18] Figure 4 shows four different aspects of overall regulation, for 1975 and 1990, with a high value implying a high degree of regulation. The top left-hand panel shows the regulatory stance with regards to ownership. There is a substantial differentiation in the degree of public ownership, with, in particular, Denmark, Ireland and Norway having substantial public ownership in these sectors and the G-7 countries having relatively little public ownership.[19] The most significant privatisation efforts over this period took

place in the United Kingdom and New Zealand, while Finland and Japan also privatised some services. In several countries, hardly any change in ownership occurred.

Entry regulations were liberalised in several countries, in particular in New Zealand and the United States. Price regulations were most strongly liberalised in New Zealand and Finland. An overall indicator of regulation (covering the three available aspects of regulation) is shown in the final panel of the graph. In 1975, the overall regulatory stance of Denmark, Ireland and New Zealand was the most restrictive in the OECD area, while Canada and Australia were the least regulated. Since 1975, most OECD economies have deregulated their service sectors with, in particular and as discussed above, New Zealand and the United Kingdom making significant changes in their regulatory stance. Currently, the United States, United Kingdom, Canada, Australia and New Zealand use much less regulation and generally have more private ownership, than the continental European economies, while Japan occupies a "middle" ground.

The remaining differences in regulation across the OECD area imply that there is scope for further deregulation in many countries and many sectors. The analysis suggests that the benefits may be substantial. Policies that encourage entry and strengthen competition have proven to be the critical element in achieving these benefits.

NOTES

1. Entry to such sectors is often regulated if a monopoly situation is perceived to be the most efficient solution, due for instance to significant economies of scale or network externalities, and if entry barriers would otherwise be too low.
2. This paper does not cover the role of competition in the provision of social and public services, such as health or education (the health sector was discussed extensively in Oxley and MacFarlan, 1994). Nor does it cover the extensive deregulation of the financial sector, which was recently discussed in OECD (1995*a*).
3. The restrictiveness of zoning laws is partly based on an assessment by the European Commission (EC, 1993), while for non-EC countries information from OECD Economic Surveys, McKinsey (1994) and national sources was used.
4. Measured as the number of persons employed per outlet.
5. OECD (1992) discusses an earlier version of this table. The current table uses more recent data and includes data for the Netherlands for the first time.
6. Vertical restraints imposed on distributors by manufacturers could enhance efficiency under several circumstances. For instance, vertical price restraints may ensure new distributors a reasonable profit margin, and encourage them to invest in an expansion of their retail network. This may encourage competition among distributors, and could thus enhance dynamic efficiency. Vertical price restraints may also improve efficiency when the demand for a manufactured product is highly dependent on the quality of services provided by its distributors. In this case, vertical restraints prevent distributors from free-riding on service costs made by other distributors. Even though prices are higher, the increase in service should lead to an overall increase in efficiency. See Katz (1989), OECD (1992), and OECD (1994*a*) for elaborations of this issue.
7. The recent "Molitor" report (EC, 1995) suggests that a lack of harmonisation of standards and technical specifications in the European Community area forms a significant barrier to the free circulation of construction products in the EC area.
8. Output and productivity growth in the construction industry is of a highly cyclical character, implying that indicators of productivity growth depend partly, and somewhat arbitrarily, on the chosen observation period. In addition, productivity measurement in the construction industry is confronted with substantial measurement problems.
9. The relative price level in a given year is calculated as the purchasing power party divided by the exchange rate. Indicators of construction price levels are derived from

OECD estimates of purchasing power parities for total final expenditure (OECD, 1993*a*). They are based on a market price, instead of a factor cost concept, which implies that differences in the level or structure of taxation or subsidisation can influence the estimated levels. Second, price levels are influenced by movements in exchange rates. Thus, sharp disequilibrium movements in exchange rates can affect their level.

10. The actual ability of new entrants to provide these services depends on the regulatory framework, *e.g.* their ability to interconnect.

11. Defined as those countries where there is open competition in the provision of telecommunication services. As of 1994, these countries are Australia, Canada, Finland, Japan, New Zealand, Sweden, the United Kingdom and the United States. See OECD (1995*c*) for details.

12. As an example, Southwest Airlines, a very efficient domestic United States airline, only uses Boeing *737* aircraft, thereby increasing its efficiency in both aircraft maintenance and flight crew organisation.

13. Economies of revenue relate to the ability of airlines to exploit their network and generate additional revenue from a given customer base arising, for instance, from frequent flyer programmes.

14. Table 8 shows that nominal prices have risen somewhat. However, the price increase has been much less than the general increase in price levels, suggesting that real price levels have fallen substantially.

15. Another potentially crucial issue for competition is the evidence of airlines living by the "golden rule". This refers to airlines refraining from price competition on a given route to avoid retaliatory behaviour from their competitors on jointly contested routes. Evans *et al., 1994,* produce empirical evidence for the existence of "golden rule" behaviour in the United States airline industry. They show that air fares are higher in city-pair markets served by airlines with extensive inter-route contracts. Such behaviour is particularly worrisome with the current development of market structures, towards a few large airlines operating hub-and-spoke systems, which tends to increase multi-market contacts. Along the same lines of analysis, Joskow *et al.* (1994) find for the US domestic market that prices substantially above the competitive level are not sufficient to induce entry, indicating that network issues are important.

16. Enhanced competition in product markets may also increase the pressures to deregulate labour markets.

17. See OECD (1992*d*). Indicators of regulations are not systematically collected across countries, but are available for a limited number of sectors and time periods, and for 17 out of *25* OECD countries. Data for France, Italy, Greece, Iceland, Luxembourg, Mexico, the Netherlands and Portugal, are not available.

18. To derive an overall assessment of regulation, values are assigned to represent the strictness of regulation. *Public, mixed* and *private* ownership are assigned values *2,* 1 and *0,* respectively, whereas for entry, price and service regulations, *regulated, partially regulated* and *unregulated* are also assigned values *2,* 1 and *0,* respectively. The indicators can subsequently be aggregated at the industry level to derive an indicator of regulation

at that level, or they can be aggregated for all services (or types of regulation) combined by weighting them by sectoral GDP weights.

19. Figure 4 excludes Portugal, Greece, Italy and France, which have the largest share (the arithmetic average of shares in employment, gross fixed capital formation and value added) of public enterprises in the non-agricultural business sector in OECD-Europe (OECD, 1994e).

BIBLIOGRAPHY

ARMSTRONG, M., S. COWAN, and J. VICKERS (1994), *Regulatory Reform: Economic Analysis and British Experience,* MIT Press, Cambridge.

BAILY, M.N. (1993), "Competition, regulation, and efficiency in service industries", *Brookings Papers on Economic Activity*, Microeconomics, No. *2,* pp. *71-159.*

BARON, D.P. (1989), "Design of regulatory mechanisms and institutions", in R. Schmalensee and R.D. Willig (eds), *Handbook of Industrial Organization,* Vol. II, North Holland, Amsterdam.

BERGEIJK, P.A.G. VAN, and R.C.G. HAFFNER (forthcoming, 1995), *Deregulation, Privatisation and the Macroeconomy: Measurement, Modelling and Policy,* Edward Elgar, Cheltenham.

BISHOP, M., J. KAY and C. MAYER (1994), *Privatization and Economic Performance,* Oxford University Press.

Bureau of Labor Statistics (1994), "International comparisons of hourly compensation costs for production workers in manufacturing, 1975-93", Report *887,* December.

CETTE, G. *et al.* (1992), "L'impact de l'ouverture des commerces le dimanche", *Travail et Emploi*, No. *51.*

Civildepartmentet, "Affarstiderna, betankande av 1989 års affarstidsufredning", Stockholm, 1991.

CRAFTS, N.F.R. (1993), "Was the Thatcher Experiment Worth It? British Economic Growth in a European Context", in: A. Szirmai, B. van Ark and D. Pilat (eds.), *Explaining Economic Growth – Essays in Honour of Angus Maddison,* North Holland, Amsterdam.

DEMSETZ, H. (1968), "Why regulate utilities", *journal of Law and Economics,* Vol. II, pp. *55-65.*

DODGSON, J., Y. KATSOULACOUS and R. PRYKE (1991), "Predatory Behaviour in Aviation", Luxembourg: EC Official Publications.

ENGLANDER, S. and A. GURNEY (1994), "Medium-term determinants of OECD productivity", *OECD Economic Studies,* No. *22,* Spring, pp. *49-109.*

EVANS, W.N. and I.N. KESSIDES (1994), "Living by the 'golden rule': multi-market contact in the US airline industry", *The Quarterly journal of Economics,* May 1994, pp. *341-366.*

EUROPEAN COMMISSION (1993), "Market Services and European Integration", *European Economy: Social Europe,* Reports and Studies, No. *3,* Brussels.

EUROPEAN COMMISSION (1993*a*), *Retailing in the European Single Market 1993,* Brussels.

EUROPEAN COMMISSION (1994), *Panorama of EU Industry, 1994*, EUROSTAT, Luxembourg.

EUROPEAN COMMISSION (1994*a*), "Expanding horizons – civil aviation in Europe, an action programme for the future", Report by the Comite des Sages for air transport to the European Commission, Brussels.

EUROPEAN COMMISSION (1995), "Report of the group of independent experts on legislative and administrative simplification", COM(95)288 Final/2, Brussels.

GOOD, D.H., L-H. ROLLER and R.C. SICKLES (1993), 'US airline deregulation: implications for European transport", *The Economic journal,* Vol. 103, pp. 1028-*1041*.

HASKEL, J. (1991), "Imperfect Competition, Work Practices and Productivity Growth", *Oxford Bulletin of Economics and Statistics* , Vol. *53,* No. *3,* pp. *265-279.*

HILMER, F., M. RAYNOR and G. TAPERELL (1993), *National Competition Policy,* AGPS, Canberra.

HOELLER, P. and M.-O. LOUPPE (1994), "The EC's Internal Market: Implementation and Economic Effects", *OECD Economic Studies,* No. *23,* Winter, pp. *55-108.*

INDUSTRY COMMISSION (1995), *The Growth and Revenue Implications of Hilmer and Related Reforms,* AGPS, Canberra.

INTERNATIONAL ENERGY AGENCY (1994), *Electricity Supply Industry – Structure, Ownership and Regulation in OECD Countries,* Paris.

INTERNATIONAL ENERGY AGENCY (1994*a*), *Energy Policies of IEA Countries – 1993 Review,* Paris.

JOSKOW, AS., G.J. WERDEN and R.L. JOHNSON (1994), "Entry, exit and performance in airline markets", *International journal of Industrial Organization,* Vol. *12,* pp. *457-471*.

KATZ, M.L. (1989), "Vertical Contractual Relations", in: R. Schmalensee and R.D. Willig (eds.), *Handbook of Industrial Organization,* North Holland, Amsterdam.

KREMERS, J.J.M., R.H.J.M. GRADUS and P.J.G. HEIJMANS (1994), "Winkelsluiting op de Helling", *Economisch Statistische Berichten,* 13 July, pp. *628-632.*

LIPSCHITZ, L., J. KREMERS, T. MAYER and D. MCDONALD (1989), "The Federal Republic of Germany: Adjustment in a Surplus Economy", *IMF Occasional Paper,* No. *64,* Washington DC.

McGOWAN, F. and P. SEABRIGHT (1989), "Deregulating European Airlines", *Economic Policy,* No. *9,* Cambridge.

McKinsey Global Institute (1992), *Service Sector Productivity,* Washington DC.

McKinsey Global Institute (1994), *Employment Performance,* Washington DC.

Ministry of Transport and Communications (1995), *The Effects of Competition on Employment in the Telecommunications Industry: The Case of Finland,* Helsinki.

OECD (1990), *Competition Policy and the Deregulation of Road Transport,* Paris.

OECD (1991), *Economic Surveys – Finland,* Paris.

OECD (1992), "Structure and Change in Distribution Systems: An Analysis of Seven OECD Member Countries", Working Party No. 1 of the Economic Policy Committee, Paris.

OECD (1992*a*), *Economic Surveys – Sweden,* Paris.

OECD (1992*b*), *Economic Surveys – japan,* Paris.

OECD (1992c), *Economic Surveys – Switzerland,* Paris.

OECD (1992d), *Regulatory reform, privatisation and competition policy,* Paris.

OECD (1993), *Economic Surveys – japan,* Paris.

OECD (1993a), *Purchasing Power Parities – Vol.I: EKS Results, 1990,* Paris.

OECD (1993b), *Economic Surveys – Denmark,* Paris.

OECD (1994), *Assessing Structural Reform: Lessons for the Future,* Paris.

OECD (1994a), *Competition Policy and Vertical Restraints: Franchise Agreements,* Paris.

OECD (1994b), *Economic Surveys – United Kingdom,* Paris.

OECD (1994c), *Economic Surveys – Switzerland,* Paris.

OECD (19944, *Economic Surveys – New Zealand,* Paris.

OECD (1994e), *Economic Surveys – Italy,* Paris.

OECD (1995), *Financial Market Trends,* No. *60,* Paris.

OECD (1995a), "An assessment of financial Reforms in OECD countries", *OECD Working Papers,* No. **41,** Paris.

OECD (1995b), *Economic Surveys – Japan,* Paris.

OECD (1995c), *Communications Outlook,* Paris.

OECD (1995d), *OECD International Futures Programme: Functioning of Competition,* Paris.

OECD (1995e), *Economic Surveys – Norway,* 1995.

OECD (1995f), *Economic Surveys – Switzerland,* Paris.

OLIVEIRA MARTINS, J. (1994), "Market Structure, Trade and Industry Wages", *OECD Economic Studies* No. **22,** Spring, pp. 13 **1-154.**

OXLEY, H. and M. MACFARLAN (1994), "Health Care Reform – controlling spending and increasing efficiency", *Economics Department Working Papers,* No. **149,** Paris.

PARKER, D. and S. MARTIN (1995), "The impact of UK privatisation on labour and total factor productivity", *Scottish Journal of Political Economy,* Vol. **42,** No. **2,** pp. **201-220.**

PERA, A. (1989), "Deregulation and privatisation in an economy-wide context", *OECD Economic Studies* No. **12,** Spring, pp. **159-204.**

PESTIEAU, P. (1993), "Performance and competition in services", *Market Services and European Integration, European Economy,* No. **3,** pp. **125-148.**

SINDEREN, J. VAN, P.A.G. BERGEIJK, R.C.G. HAFFNER and P.M. WAASDORP (1994), "De Kosten van econornische Verstarring op macro-niveau", *Economisch Statistische Berichten,* pp. **274-279.**

STEWART-SMITH, M.C. (1995), "Industry structure and regulation", *Poky Research Working Paper,* No. **1419,** World Bank, Washington DC.

VICKERS, J. and G. YARROW (1988), *Privatization – An Economic Analysis,* MIT Press, Cambridge, MA.

WINSTON, C. (1993), "Economic deregulation: days of reckoning for microeconomists", *Journal of Economic Literature,* Vol. **31,** September, pp. **1263-1289.**