



NATIONAL ROAD TRANSPORT COMMISSION

**OPTIONS FOR REGULATION OF THE
ROAD FREIGHT INDUSTRY**

Information Paper

September 2001

Prepared by

**Ms Denise Ironfield, Tasman Economics
in consultation with National Road Transport Commission**

National Road Transport Commission

Options for Regulation of the Road Freight Industry Information Paper – September 2001

Report Prepared by: Ms Denise Ironfield, Tasman Economics in consultation with National Road Transport Commission

ISBN: 0 642 54490 5

REPORT OUTLINE

Date: September 2001

ISBN: 0 642 54490 5

Title: **Options for Regulation of the Road Freight Industry**

Address: National Road Transport Commission
Level 5/326 William Street
MELBOURNE VIC 3000

E-mail: nrtc@nrtc.gov.au
Website: www.nrtc.gov.au

Type of report: Information Paper

Objectives: To examine the different regulatory approaches for the road freight industry.

NRTC Programs: Safety, Compliance Outcomes, Productivity And Innovation

Abstract: This Information Paper reviews the rationale for government regulation in the road freight transport sector and considers a range of alternative regulatory approaches that might be used to achieve the community objectives.

Key words: heavy vehicles, road freight, regulation, safety

FOREWORD

This paper examines approaches to the regulation of the road freight sector used in other developed countries and discusses available evidence on the effectiveness of the operator licensing schemes that generally apply.

The paper has been prepared against a background which has seen a number of important changes in the way the road freight industry in Australia is regulated, since the creation of the National Road Transport Commission in 1992.

In addition to the achievement of greater clarity and consistency in traditional prescriptive regulation and on-road enforcement, innovative regulatory approaches have included:

- Accreditation based compliance (alternative compliance) developed by the NRTC and road agencies, in conjunction with the road transport industry, and through an industry scheme. This approach has led to the establishment of the industry TruckSafe scheme and the National Heavy Vehicle Accreditation Scheme.
- Chain of responsibility, which has been implemented in regulations relating to dangerous goods and driving hours and will soon be applied to all aspects of road transport law. Chain of responsibility provisions are designed to achieve behaviour change by all in the road transport chain who make decisions which may adversely affect on-road outcomes.
- Enhanced conventional compliance, through a broader range of sanctions combined with enhanced powers of officers and more effective evidentiary provisions. These provisions are required to allow more effective application of existing provisions and to enable the application of chain of responsibility.
- Performance-based standards, to be offered as an optional alternative to prescriptive standards. The purpose of performance-based standards is to allow improved transport productivity through greater innovation, whilst improving road safety outcomes, by developing standards more closely related to the purpose of the regulation. The implementation of performance-based standards will require significant changes in regulatory practices.

Whilst these regulatory innovations are at different stages of development and implementation, their impact will be high.

The purpose of this paper is to provide the information to allow more informed discussion of the Australian approach to the regulation of road freight.

Tony Wilson
Chief Executive

SUMMARY

Road freight transport plays a pivotal and growing role in Australia's economic and social welfare.

On a tonne-km basis, road carries more freight than rail and coastal shipping (see Chapter 2). Given the importance of road freight transport to the Australian economy it is crucial that road transport regulation enhances, rather than detracts from, the sector's overall efficiency, productivity and community well being.

This report considers the underlying reasons why governments regulate the activities of the road freight sector. It also considers some alternative and in some cases complementary approaches that could feasibly be used to achieve governments' objectives. This review is a timely one given the recent concern about safety and fatigue in the road freight transport sector.

Why should government regulate road freight transport?

From an economic perspective we regulate road transport to overcome or reduce the impact of market impediments which would otherwise reduce the community's welfare.

The road freight market and the markets in which it is involved have a number of features that can lead to outcomes that are undesirable from the community's perspective (see Chapter 3). Economists call these impediments 'market failures' because their existence in a market can mean that its unfettered operation will fail to maximise the community's economic welfare.

Regulation can bring benefits but can also involve costs, many of which are unintended side effects. On the other hand, regulation in some form is often the only option for resolving an underlying failure in a market's operation and in its absence Australia as a whole would be worse off.

However, the existence of a 'market failure' does not necessarily mean that a government should step in and regulate. Before deciding to regulate, government needs to be sure that the magnitude of the market failure and its importance to the community is sufficient to warrant some intervention — which may be regulation. This is because intervening in the normal workings of a market, such as the road freight market, is not a costless process for industry, for government or for the economy as whole. Regulation, just like other forms of government intervention can only be justified when the benefits outweigh the costs. Importantly, some forms of regulation impose higher costs than others.

Australian governments, like governments all around the world, have come to the conclusion that, in many instances, the benefits of regulating the road transport industry outweigh the costs.

Regulation reform in progress

Australia's current set of road transport regulations should be considered as regulation reform in progress.

Australia's states and territories have constitutional responsibility for making road transport law. This has resulted in inconsistencies across jurisdictions which imposed costs on the road transport industry and consequently on users of road transport services. Recognising the need for a more uniform or consistent system, the Commonwealth and the states and territories in July 1991 agreed to a reform agenda and the

Areas covered under the 3rd Heavy Vehicle Reform Package are relevant to current concerns about heavy vehicle safety.

Australia's current approach to regulating road freight transport is a mix of industry specific and more generic rules and regulation.

Performance-based standards will augment many of Australia's prescriptive heavy vehicle regulations. These new standards will give heavy vehicle operators more flexibility to comply with regulations and will create opportunities for innovation.

formation of the NRTC as the vehicle to help progress the agenda.

Reflecting the magnitude of the NRTC's task, the Ministerial Council for Road Transport agreed to a staged implementation of the reform process. The NRTC has completed almost all of the initial agenda, although the program of reform flowing from its work is not yet complete. The NRTC's work program has now progressed to the 3rd Heavy Vehicle Reform Package. This package is wide-ranging but has a strong focus on improving heavy vehicle safety and productivity.

Australia's current approach

- Australia's road freight regulations aim to reduce the external costs to the community which arise from the use of heavy vehicles on our roads (see Chapter 4). For example, the current regulations seek to:
- assign rights to use the road via mechanisms such as the Road Rules, heavy vehicle driver licences, vehicle registration and Restricted Access Vehicles Regulations;
- reduce road congestion via regulations which impose limits on vehicle length and width;
- minimise road damage and recover road wear costs via, for example, heavy vehicle charges and mass and dimension regulations;
- reduce vehicle noise and air pollution via, for example, Australian Design Rules; and
- improve road safety via, for example; heavy vehicle driving hours regulation, Australian Design Rules, compulsory seat belts regulation, and education campaigns.

Performance based standards

Like most countries, many of Australia's road transport regulations are prescriptive. Prescriptive regulations generally specify a standard in such technical terms that there is little or no flexibility for businesses to determine how the standard is to be met. There is a growing recognition in Australia and overseas that such a prescriptive approach to regulation reduces businesses' ability to find innovative solutions, which could better achieve the objectives of the regulation or achieve them at lower cost.

As part of the 3rd Heavy Vehicle Reform Package the NRTC and Austroads are currently developing a range of more performance-based standards which will augment as many as possible of the prescriptive regulations currently covering heavy vehicles (see Chapter 4). An advantage of implementing a system of performance-based standards is that it allows for the development of more accurate proxies for the vehicle's

contributions to congestion, accidents, road infrastructure damage and pollution. In doing so, performance-based standards will also give operators greater flexibility to comply with regulation; thus creating opportunities for improved compliance, innovation and productivity improvements.

Compliance and enforcement

Although compliance with road transport law is relatively high, there is room for improvement, particularly in the area of fatigue regulation.

Available data suggests that the majority of the road freight industry complies with speed, mass limits and blood alcohol road transport laws. On the other hand, there is evidence that a relatively high number of truck drivers fail to comply with fatigue related regulations. Over 75 per cent of drivers surveyed in 1998 considered that fatigue was a substantial problem for the industry (see Chapter 4).

Reforms to improve compliance and clarify responsibility for breaches of road transport law are in progress.

The development of new compliance and enforcement provisions is central to the NRTC's work program (see Chapter 4). Three areas of reform in this area include:

New chain of responsibility provisions broaden responsibility for breaches of road transport law.

- voluntary accreditation-based compliance processes, which rely less on detection and more on performance and quality assurance, place the onus on operators to develop management and operating systems. While these approaches can be administratively demanding for operators, the arrangements are incentives driven as they create opportunities for productivity improvements and can reduce on-road compliance costs;
- chain of responsibility provisions which recognise that enforcement should not stop with the heavy vehicle's driver but should encompass all parties with control over the behaviour which led to the breach. Chain of responsibility aims to ensure that all responsible parties in the logistics chain can be held accountable under the criminal law for their contribution to breaches of road transport law. Chain of responsibility provisions have so far been developed and endorsed for laws relating to dangerous goods, driving hours regulation, and mass, dimension and load restraint regulation. Chain of responsibility is expected to play an important role in the development of compliance culture in Australian road transport. It is expected to produce positive benefits in road safety, infrastructure protection, and competitive equity outcomes; and
- risk based categorisation of offences and sanctions are being developed under the NRTC's compliance and enforcement work program. Policy developments include a draft penalty framework for severe risk heavy vehicle overloading. Consideration is also being given to the use of abatement and/or improvement notices in road transport law.

Competition and economic regulation

The Trade Practices Act rather than specific road transport law can be used to address unfair competition in the road freight market.

Australia's road transport regulations do not aim to address concerns about the level or nature of competition in the road freight market. This is because Australian governments have, in most instances, chosen to take more generic action to address concerns about the nature of competition in a market.

The Trade Practices Act is the key tool for implementing this approach to competition policy. In 1999 and 2000 the Act's unconscionable conduct provisions were strengthened in order to assist small businesses in their dealings with large businesses. These provisions are intended to prevent large businesses with a high degree of bargaining power from using unfair tactics or exerting undue pressure on smaller business. These provisions, which at this stage are untested, have the potential to assist owner-drivers and other small subcontractors in the dealings with their prime contractors (see Chapter 4).

Australia has been at the forefront of the move to remove economic regulation in the road freight transport industry.

Australia currently has no regulations governing access to the road freight industry or freight rates. There is a growing trend internationally for the removal of economic regulation governing price and number of participants in the road freight industry. The Organisation for Economic Co-operation and Development (OECD) reports that the move away from economic regulation and the liberalisation of the road freight transport sector has led to reduced freight rates, improved quality of service and improved productivity (see Chapter 5).

Recent developments in road transport regulation, as well as the new 'unconscionable conduct' provisions of the Trade Practices Act, should help address safety concerns without resort to regulating entry to the road freight industry.

Recently, a House of Representative Standing Committee has raised the prospect of regulating entry to the road freight industry through a national system of accreditation (see Chapter 4 and Chapter 5). Unlike the market restrictions that were in place in the 1920s and 1930s to protect ailing rail freight services, the current call for accreditation focuses on perceived deficiencies in the management of fatigue and the safety of the road freight market itself. Consideration of these issues is taking place at a time when numerous other road transport reforms are in progress. These reforms could have a more direct and positive impact on the management of fatigue.

Alternative approaches and overseas experience

A wide range of approaches can be used to regulate road transport and road freight in particular. In some instances these approaches are substitutes in other cases they are complements.

A range of measures can feasibly be used to address impediments in the market for road freight services. These include:

- prescriptive regulations which are increasingly being replaced or augmented with performance-based regulation;
- licensing of drivers and/or operators and registration of vehicles;
- negative licensing;

- co-regulation and self regulation, including codes of conduct;
- education and training;
- improved enforcement and better directed compliance effort; and
- removal of legislative or other impediments.

In some cases these approaches are substitutes. However, in many cases they complement each other.

To varying degrees all of these approaches impose costs of one sort or another. In some instances, compliance and administration and enforcement costs associated with some of these approaches would be substantial.

While there are similarities in approaches used in Australia and overseas to regulate road freight there are some important differences.

In many respects, Australia is pursuing similar approaches to other countries. For example, the USA and New Zealand, like Australia are working to identify less prescriptive more performance-based regulatory approaches. New Zealand authorities are currently working with Australian authorities to investigate better approaches to manage driver fatigue.

Australia's approach has at least until recently focused on the driver.

Australia's approach to the regulation of the road freight industry has been, at least until recently, much more focused on the driver and the vehicle than in other countries. All countries regulate the driver and the vehicle. However many countries go further. Over 80 per cent of OECD countries make the operator of the road transport business an important focus of their regulation (Chapter 5).

In many countries responsibility for heavy vehicle safety rests with the road freight operator. Operators can lose their licence if they fail in their responsibilities.

In many countries, for example the USA, Canada, the UK and other European Union states the law implies, either directly or indirectly, that the responsibility for heavy vehicle road safety resides with the operator of the road transport business. The driver also has an important role to play but ultimately it is the operator's responsibility to ensure that to the best of their ability the driver and others abide by the rules.

Australia's new chain of responsibility provisions extend accountability throughout the supply chain.

By contrast, Australia's new chain of responsibility provisions take responsibility further as all who have control over conduct which affects compliance with road transport law can be made accountable for a failure to discharge that responsibility. This is an important development and moves Australia to the forefront of regulatory reform.

Operator licensing and safety ratings

Licensing of road freight operators is common among OECD countries.

Operator licensing is a common regulatory tool used in many countries other than Australia. Operator licensing covers a range of regulatory approaches. At one extreme, operator licensing is a simple registration process with little or no barriers to entry. At the other extreme operator licensing is used for the economic regulation of the industry and involves

significant restrictions on entry and the setting of freight rates. However, the more heavy-handed approach to operator licensing is becoming much less popular as governments are becoming aware that the costs are generally much greater than the benefits. Increasingly the primary objective of this form of regulation is to improve heavy vehicle safety.

The UK, like other European Union member states, has a system of operator licensing which requires applicants to, among other things, satisfy minimum standards of good repute and knowledge of road transport law. In all these jurisdictions the road freight operator's compliance with road safety law is regularly monitored by enforcement agencies. In some countries, for example the USA and Canada, the operator licensing process is linked to a safety ratings system. New Zealand, which also has a system of operator licensing, is currently considering a proposal to introduce risk rating of operators (see Chapter 5 and Appendix 2).

Heavy vehicle safety is the key objective of operator licensing and associated safety rating programs.

Operator licensing, safety rating systems and negative licensing all rely extensively on high-risk operators or drivers being identified before a fatality or safety breach occurs.

To be effective, an operator licensing scheme needs to identify high-risk operators before their actions lead to serious harm.

Operator licensing requires good up to date databases on all operators, their vehicles, their drivers and any breaches of the road transport law. Operator licensing also requires a substantial compliance and enforcement effort. These approaches, like all forms of regulation, also require appropriate sanctions, including shut down orders, to be enforced.

Operator licensing and risk rating schemes are information and resource intensive. They can also impose high compliance costs on industry. Many road freight operators in the USA and the UK have poor levels of compliance with road transport laws, even though they are licensed and in the USA subject to risk rating.

Studies undertaken in the USA and the UK highlight the problems that can arise with this type of regulation. For example, in the USA in 1998 only 28 per cent of licensed operators had a safety rating. Around 38 per cent of the operators with a safety rating were rated as unsatisfactory and the majority of these operators continued to operate without further safety checks. Despite the relatively strict 'O' licensing entry requirements in the UK, concerns have been raised about industry over-capacity and profitability, and the poor compliance levels of some operators with road transport law (see Chapter 5 and Appendix 2).

Obtaining timely and accurate information is often difficult, particularly in a federal system.

In both the USA and the UK, the quality of the information systems used to monitor operators has been a major problem with enforcement. Canada, which is also introducing a national safety ratings system, is having considerable difficulty in ensuring the consistent application of national standards and the consistent and timely collection of information on breaches of the law.

Recent problems with the systems in place in the USA have led to a greater reliance on enforcement and sanctions and increased efforts to improve databases.

There is little available data to compare the operator licensing and risk rating safety outcomes with those achieved in Australia.

Australia has an extensive regulatory reform program in progress which should have a direct and positive impact on heavy vehicle road safety.

In any consideration of alternatives, it should be ensured that the benefits outweigh the costs and the community's objectives could not be better achieved by other means.

The nature and level of the enforcement effort has also been a major issue, particularly in the USA. A recent review of the USA safety ratings system has led to substantial changes in the administration of the system. An important change has been a greater focus on enforcement and the greater use of sanctions, which are commensurate with the safety breach.

Unfortunately, there is little available evidence to compare the effectiveness of operator licensing and safety rating with the effects of the different approaches on Australia's new approach to improving compliance and road safety and road infrastructure use. Certainly, licensing road freight operators imposes additional compliance costs on businesses and requires substantial public resources, both financial and human. The extent of the additional compliance costs will depend on the complexity of the licensing processes, the nature of the information to be collected and assessed and the compliance effort required. Importantly, in federal jurisdictions the costs and threats to the effectiveness of operator licensing systems seem to be amplified.

The way forward

Australia has an extensive regulatory reform program in progress. The chain of responsibility provisions for heavy vehicles, new accreditation-based compliance arrangements and the introduction of new fatigue management regulations should induce further improvements in Australia's heavy vehicle safety record. At this early stage, it would appear to be good sense to follow the current reform path rather than switch to a new regulatory approach such as operator licensing. If governments did decide to pursue a form of mandatory operator licensing, care should be taken to ensure that the system could operate effectively in a federal system like Australia's and that the benefits of its introduction outweighed the costs. Importantly, government should also be confident that the considerable resources that would be required to put in place an effective form of operator licensing would not produce greater benefits if they were directed elsewhere. For example, would greater benefits be obtained by directing these resources to enforcement of existing road transport law?

CONTENTS

1. INTRODUCTION	1
2. THE ROAD FREIGHT INDUSTRY.....	2
2.1 The Road Freight Task	2
2.2 The Road Freight Fleet.....	2
2.3 Road Infrastructure.....	4
2.4 Industry Scope and Participants	5
2.5 Industry Performance and Profitability	6
3. SHOULD GOVERNMENT REGULATE THE ROAD FREIGHT INDUSTRY?	10
3.1 Market Failure	10
3.2 Evidence of Market Failures in Road Freight Transport.....	11
3.2.1 <i>Natural monopoly and market power</i>	12
3.2.2 <i>Property rights, public goods and information problems</i>	13
3.2.3 <i>Congestion and pollution externalities</i>	13
3.2.4 <i>Road infrastructure wear</i>	13
3.2.5 <i>Accidents and road safety</i>	14
3.3 Market Failure a Necessary But Not a Sufficient Condition.....	15
3.4 Concluding Comments	17
4. AUSTRALIA'S APPROACH TO ROAD TRANSPORT REGULATION.....	18
4.1 Australia's Legal Framework for Road Transport	18
4.2 The Current Situation	19
4.2.1 <i>Assignment of property rights</i>	19
4.2.2 <i>Recovery and minimisation of road wear costs</i>	20
4.2.3 <i>Air and noise pollution</i>	21
4.2.4 <i>Road safety</i>	22
4.2.5 <i>Compliance and enforcement</i>	24
4.3 Recent Developments	26
4.3.1 <i>Performance-based regulations</i>	26
4.3.2 <i>Compliance and enforcement</i>	28
4.3.3 <i>Review of national fatigue regulations</i>	31
4.4 Competition Policy and Road Freight Transport	33
4.4.1 <i>Entry and/or supply restrictions (economic regulation)</i>	34
4.5 Concluding Comments	36
5. SOME APPROACHES TO ROAD TRANSPORT REGULATION	38
5.1 Performance-Based Regulation	38
5.2 Driver and Operator Licensing or Registration	39
5.2.1 <i>Economic regulation</i>	39
5.2.2 <i>Operator licensing</i>	41
5.2.3 <i>Operator registration (Negative licensing)</i>	45
5.3 Self-Regulation and Co-Regulation	47
5.3.1 <i>Quality assurance and accreditation schemes</i>	47
5.3.2 <i>Occupational health and safety codes of practice</i>	49
5.4 Education, Training and Minimum Skill Requirements	50
5.4.1 <i>Driver licensing standards and training</i>	51
5.4.2 <i>Effectiveness of driver licence training and testing</i>	52
5.5 Improving Compliance and Increasing or Improving Enforcement	53
5.6 Identification of Other Legislative Impediments	55
5.7 Concluding Comments	56
6. CONCLUSION.....	58

REFERENCES.....	61
APPENDIX 1: MARKET FAILURES AND ROAD FREIGHT TRANSPORT.....	65
APPENDIX 2: REGULATORY APPROACHES IN SELECTED COUNTRIES.....	79

LIST OF TABLES

Table 1:	Motor vehicle use, 12 months ended 31 July 1999	3
Table 2:	Number of hire and reward fleets by fleet size and type of operation.....	6
Table 3:	Hire and reward road transport, business operations and industry performance	7
Table 4:	Summary of regulatory constraints in road freight transport in OECD Countries, 1998.....	40

LIST OF FIGURES

Figure 1:	Australian domestic freight transport 1970–71 to 1994–95(billion tonne-kms moved)	2
Figure 2:	Road freight movements, economic activity and population density by country	3
Figure 3:	Area of operation by type of vehicle 1999 (per cent of total kilometres travelled).....	4
Figure 4:	Rigid and articulated truck fleets by operator type, 1988 (per cent)	5
Figure 5:	The freight movement process	9
Figure 6:	Number and proportion of fatal road crashes, involving articulated trucks, 1981 to 2000	14
Figure 7:	Percentage of heavy vehicles travelling above the 100km/h speed limit in Victoria	24
Figure 8:	Road freight entry regulations, 1998 (percentage of OECD countries)	41

1. INTRODUCTION

The National Road Transport Commission (NRTC) was established in 1992 as an independent statutory body pursuant to an agreement between the Commonwealth, States and Territories. Under the National Road Transport Commission Act, the Commission is required to develop a legislative framework for nationally uniform or consistent road transport regulation to improve road safety and transport efficiency and reduce the administration costs of regulation.

In March 2000 the Australian Transport Council approved the 3rd Heavy Vehicle Reform Package. This package, which forms the basis of the NRTC's work program for the next three years, is wide-ranging but has a strong focus on improving heavy vehicle safety and productivity. Areas covered by the program include:

- driver health and fatigue management;
- compliance and enforcement; and
- performance-based standards

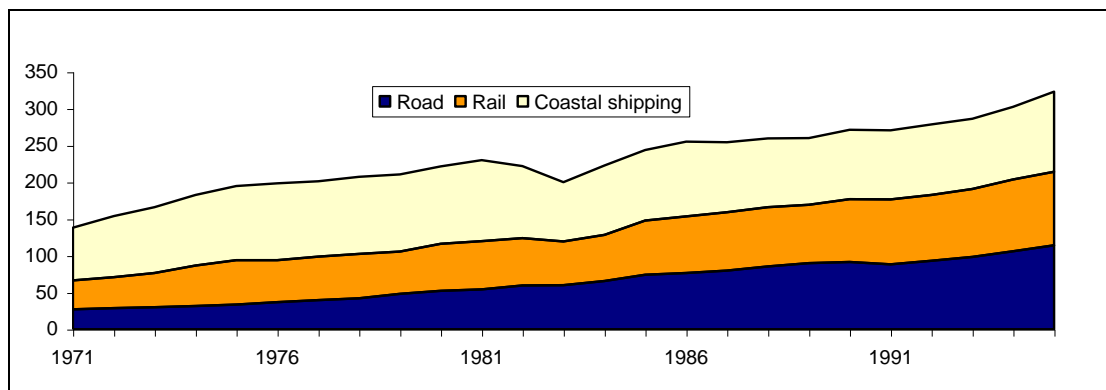
This information paper reviews the rationale for Australian government's regulation in the road freight transport sector and considers options for alternative and in some instances complementary regulatory approaches that could feasibly be used to achieve governments' objectives. The paper, after describing the road transport sector in Chapter 2, considers various reasons why governments have chosen to intervene in the free market operations of the road transport and in particular road freight transport. Chapter 4 describes the current regulatory framework and Chapter 5 canvasses a range of options which might be used as alternative or complementary approaches to regulating road freight transport. Finally chapter 6 draws together some conclusions from the reports findings.

2. THE ROAD FREIGHT INDUSTRY

2.1 The Road Freight Task

Australia's domestic freight transport task has grown rapidly. In 1970–71 the annual freight task was just under 140 billion tonne-km. By 1994–95 it had more than doubled to 323.5 billion tonne-km (Figure 1). In 1970–71 Coastal shipping was the dominant freight mode, followed by rail and then road. However, road transport's share of and importance in undertaking the domestic transport task has dramatically increased. By 1994–95 road's share of the freight transport task had increased from 19 per cent in 1970–71 to 35 per cent in 1994–95. On a tonne-km basis, road carried more freight than rail and coastal shipping.

Figure 1: Australian domestic freight transport 1970–71 to 1994–95 (billion tonne-kms moved)



Source: Austroads (2000).

The importance of road in the freight transport task is even more apparent when modes are compared on a tonnes-moved basis. Austroads (2000) reports that 65 per cent of the 1.6 billion tonnes of domestic freight uplifted in Australia was transported by road.

Road transport carries most of the freight moved within and between all regions and dominates the freight movements with the capital cities. Also, because of its flexibility, it carries most of Australia's simply transformed and elaborately transformed products. Both road and rail carry a high proportion of unprocessed material including grains, coal and construction

(Austroads 2000).

Compared to other OECD countries, Australian economic activity relies heavily on the road system. McLean (1997) estimates that Australia has nearly three times the amount of road freight per unit of economic activity than the OECD average and is above the trendline of countries when plotted against population density (Figure 2).

Reflecting Australia's urbanised population, around 90 per cent of the road-transport task (passenger and freight) is carried out on 20 per cent of the total road network.

2.2 The Road Freight Fleet

The latest Australian Bureau of Statistics (ABS) Survey of Motor Vehicle Use (ABS 2000) indicates there were 428,400 trucks registered for road use in 1999 — the majority of these vehicles carried freight (see Table 1). During the 12 months ended 31 July 1999, these

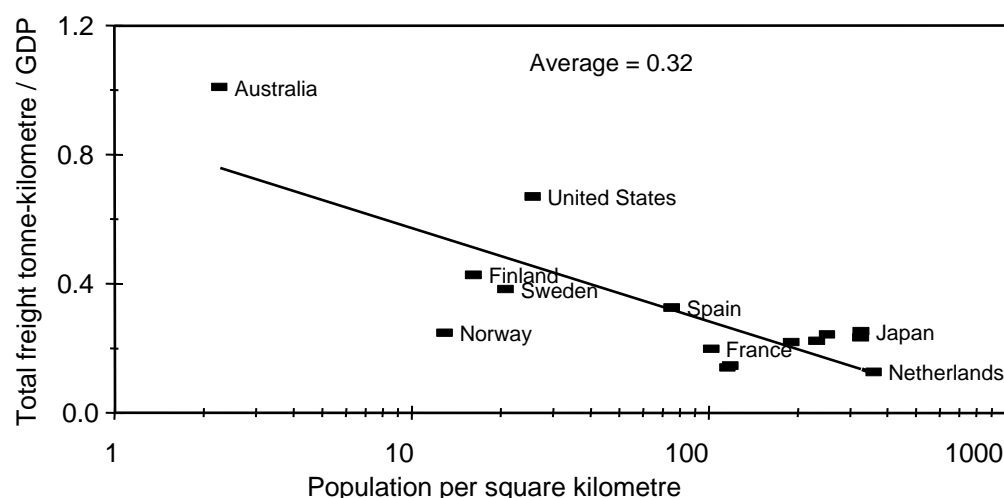
registered trucks travelled 11,918 million kilometres — a seven per cent increase on the previous year.

Table 1: Motor vehicle use, 12 months ended 31 July 1999

	Registered vehicles (Number)	Total distance travelled (million km)	Average distance travelled (km)
Passenger vehicles	9,553,289	137,885	14,400
Motor cycles	324,080	1,003	3,100
Light commercial vehicles	1,587,922	24,986	15,700
All Trucks	428,400	11,918	
– Rigid	345,158	6,382	18,500
– Articulated	61,242	5,262	85,900
– Non-freight carrying	22,000	274	12,500
Buses	54,410	1,843	33,900

Source: ABS (2000a)

Figure 2: Road freight movements, economic activity and population density by country



Source: McLean (1997).

The road freight task is expected to continue to increase. The Bureau of Transport Economics (1999) has forecast that tonnages moved by road Australia-wide could increase by 80 per cent between 2000 and 2015. The Bureau also forecast that over the same period tonnages moved by road transport on interstate routes could more than double. This expected increase in the size of the road freight task highlights the importance of Australian governments' continuing their efforts to reform road-transport regulation to reduce or remove any impediments which negatively impact on the overall efficiency, productivity and safety of the road-transport system.

2.3 Road Infrastructure

Australia has more than 800,000 kilometres of public roads and over 33,000 bridges. Around 40 per cent of the network has a bituminous or concrete seal, the remainder being unsealed rural roads and tracks. In 1996 the entire road network was valued at more than \$100 billion (Austroads 1997).

In 1999, Australia had 1,563 kilometres of ‘controlled access roads’, which can be defined as grade separated roads greater than five kilometres long having dual carriageways. By comparison, the United States of America (USA) has around 30,566 km of controlled access roads.

In 1999 articulated trucks accounted for just over 14 per cent of the registered truck fleet. However, in 1999 articulated trucks were responsible for over 44 per cent of all kilometres travelled by registered trucks.

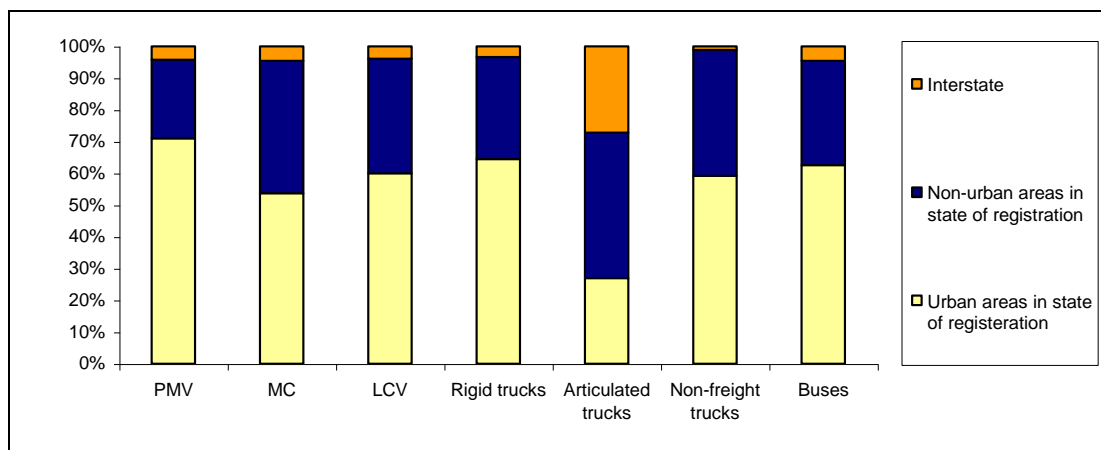
As a vehicle category, trucks account for only a small proportion of all kilometres travelled — 21 per cent in 1999. About 80 per cent of all registered vehicles on the road are passenger vehicles and these vehicles accounted for 78 per cent of the total distance travelled by motor vehicles in Australia in 1999.

Articulated trucks on average travel greater distances than all other vehicles (table 1). For example, in 1999 an articulated truck on average travelled 85,900 kilometres compared to averages of 18,500 kilometres for rigid trucks and 14,400 kilometres for passenger vehicles.

Over 70 per cent of the distance travelled by articulated vehicles is undertaken interstate or outside of urban areas within the state of registration. This proportion of non-urban travel is significantly higher than for all other vehicle categories (see figure 3).

The information on areas of operation in conjunction with the average distance travelled by freight vehicles provides an indication of the nature of the work undertaken by the different road freight vehicle categories. For example, articulated trucks are more likely to travel medium to long hauls between major population areas or between rural and urban areas whereas rigid and light commercial vehicles are more likely to travel shorter distances within urban areas in their state of registration.

Figure 3: Area of operation by type of vehicle 1999 (per cent of total kilometres travelled)



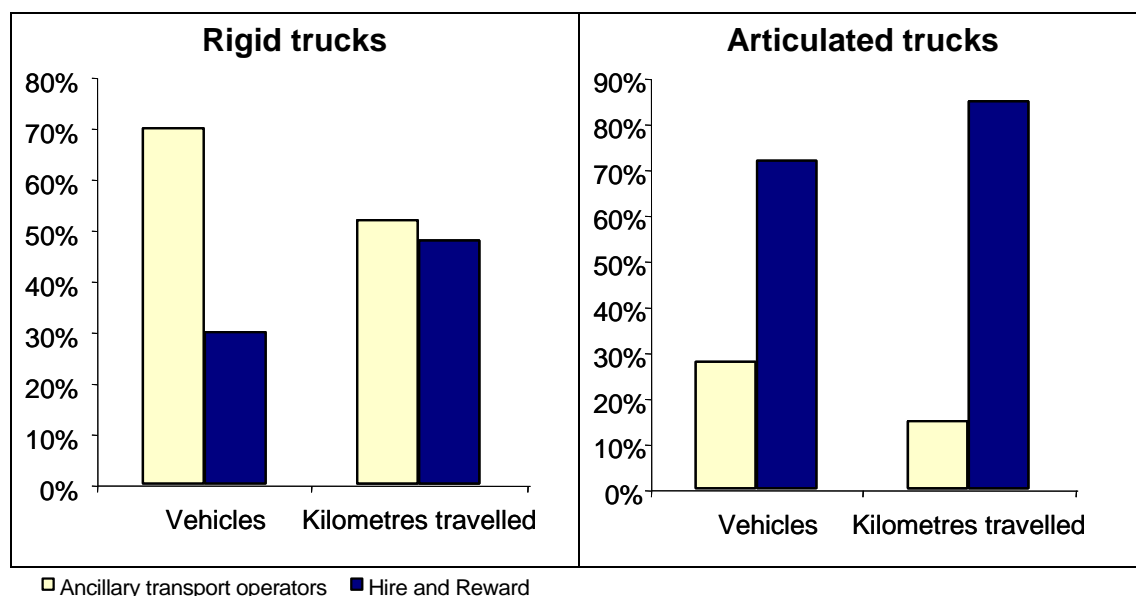
Source: ABS (2000a)

2.4 Industry Scope and Participants

It is commonplace for policy makers, vehicle operators and other stakeholders to refer to the 'road freight industry'. However, what we commonly include in a definition of the 'road freight industry' is broader than what is covered in official industry statistics collected by the Australian Bureau of Statistics. As a consequence, information on the characteristics of the road freight industry and its contribution to the economy are relatively limited.

An important difference between the two definitions of the industry is that official statistics exclude all road freight transport activity undertaken in-house by businesses whose primary source of income is not generated from providing road-transport services. In these businesses, freight transport is ancillary to their primary activity. For example, road freight activities generating employment, value added, etc. which are undertaken by Australia Post and courier businesses are included in the ABS statistics for the Postal and Courier Services industries. The ABS statistics for the Road Freight Transport industry only cover those freight businesses whose main source of income is carrying freight for others. These businesses are sometimes called hire-and-reward operations. Hire and reward businesses are responsible for only a small proportion of the trucks transporting freight. For example, the NRTC (1998) reports that two-thirds of trucks are operated by businesses whose main activity is not transport (Figure 4). However, these ancillary transport operators travel less than half the kilometres travelled by trucks in the hire and reward sector. The distance travelled by rigid trucks is evenly spread between ancillary transport operators and hire and reward, but articulated truck travel is mostly for hire and reward.

Figure 4: Rigid and articulated truck fleets by operator type, 1988 (per cent)



Source: NRTC 1998.

There is very little up-to-date information on the composition of hire and reward businesses undertaking road transport in Australia. The NRTC (1998) using 1980's data from the Bureau of Transport Economics (BTE) and the ABS estimated that the overwhelming majority of hire and reward fleets comprise only one truck, which is operated and driven by its owner. Only 19 fleets, out of the more than 44,000 fleets, had 100 trucks or more (table 2).

Table 2: Number of hire and reward fleets by fleet size and type of operation

Number of trucks in fleet	Long distance interstate	Long distance intrastate	Short distance	Road freight forwarding	Total
1	3,087	3,824	27,640	367	34,918
2	465	1,177	2,932	87	4,662
3	191	564	925	62	1,742
4	132	172	473	51	829
5 to 9	96	153	223	58	530
10 to 19	159	255	372	96	882
20 to 49	87	158	187	34	465
50 to 99	12	16	26	11	66
100 or more	4	2	10	3	19

Source: NRTC (1998).

Many owner-driver operators are involved in the long-distance line-haul trucking business. The 1984 National Road Freight Industry Inquiry (NRFII) found that the owner-driver segment of the industry earned very poor returns (NRFII 1984, p.43). Recent calls by truck drivers for an increase in freight rates to sustainable levels indicates that profitability of this sector may not have changed.

2.5 Industry Performance and Profitability

Available evidence suggests that Australia's road freight industry is at, or close to, international best practice. A 1992 study of the Australian road freight industry by the Bureau of Industry Economics (BIE 1992) found that:

- on-time delivery, in relation to promised delivery time, was on par with the other three countries benchmarked (the USA, Canada and the United Kingdom (UK));
- incidence of lost and damaged freight was below that in the USA and comparable with Canada and the UK;
- freight rates were broadly similar to those applying in the countries studied;
- customers are satisfied with the service they received;
- capital (vehicle) operating efficiency/utilisation was behind the USA but compared favourably with the UK and Canada; and
- fuel usage/productivity was similar to the USA and Canada but inferior to the UK.

There are no official statistics on the profitability of the road freight industry. However, ABS statistics on the Road Transport Industry, which covers road freight transport and road passenger transport but not the ancillary fleets, are available (see table 3).

Consistent with the hire and reward fleet statistics reported in table 2, the ABS data portrays a road transport industry with many small business and few large businesses. For example, much less than half of one percent of all businesses in the Road Transport sector covered by these ABS statistics can be defined as a large business. However, these large businesses employ about 30 per cent of the industry's labour and earn about 30 per cent of its operating income. The large businesses in the road transport sector also earn a disproportionate amount

of the industry's total operating profit before tax. However, their share of the industry's profit varies between years (Box 1).

Table 3: Hire and reward road transport, business operations and industry performance

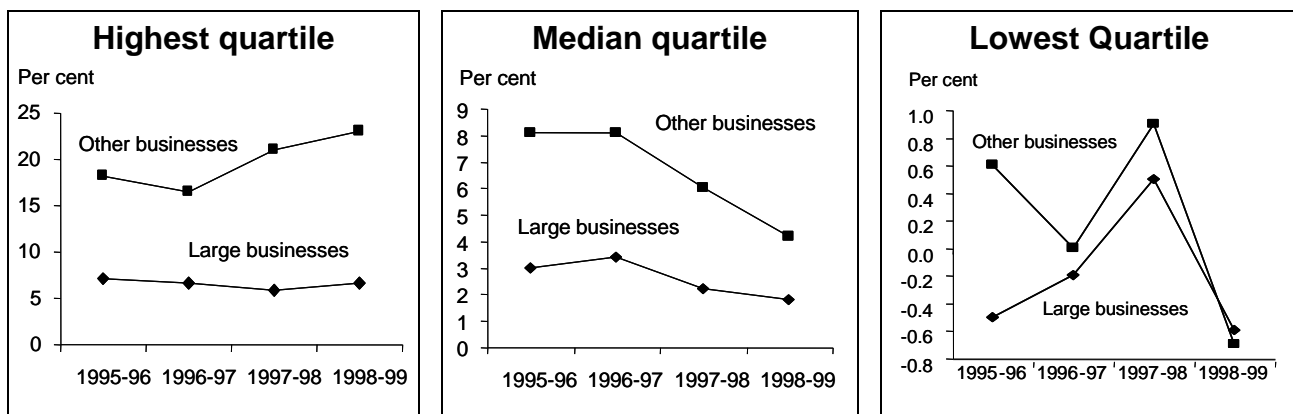
	<i>Unit</i>	<i>1993–94</i>	<i>1994–95</i>	<i>1995–96</i>	<i>1996–97</i>	<i>1997–98</i>	<i>1998–99</i>
Operating businesses	No.						
All		18,500	19,601	19,947	19,429	19,451	19,648
Large		40	38	37	33	35	37
Other		18,461	19,563	19,910	19,396	19,416	19,612
Employment	000						
All		119,701	126,517	129,258	127,268	135,392	138,747
Large		35,122	35,520	35,122	35,270	35,639	39,319
Other		84,579	90,997	94,136	91,998	99,753	99,428
Operating income	\$m						
All		12,551	13,141	14,675	14,459	15,628	15,479
Large		3,497	4,139	4,540	3,811	4,109	4,770
Other		9,054	9,002	10,134	10,648	11,519	10,709
Operating profit before tax							
All		730	642	661	682	982	978
Large		123	187	110	85	121	177
Other		607	454	551	597	861	801
Businesses which made a profit	%						
All		na	na	74.0	72.0	77.0	68.0
Large		na	na	69.7	75.0	81.8	67.5
Other		na	na	74.2	72.1	77.3	68.4
Businesses which made a loss	%						
All		na	na	21.0	21.0	19.0	28.0
Return on assets	%						
All		8.9	7.5	7.8	7.3	9.1	9.0
Large		4.1	6.4	4.1	2.9	3.7	4.4
Other		11.8	8.1	9.5	9.2	11.6	11.8
Return on net worth	%						
All		29.7	26.4	26.9	21.0	20.9	22.1
Large		16.3	18.7	14.9	9.8	8.8	9.4
Other		35.7	31.7	32.2	25.1	26.0	31.5
Long term debt to equity	times						
All		1.3	1.4	1.3	1.1	0.7	0.8
Large		2.1	1.2	1.4	1.3	0.7	0.6
Other		0.9	1.5	1.3	1.0	0.7	1.0

Source: ABS (2000b) and ABS unpublished data.

(a) Road transport covers ANZSIC 6110 Road Freight Transport, ANZSIC 6121 Long Distance Bus Transport, ANZSIC Short Distance Bus Transport (including Tramway) and ANZSIC 6123 Taxi and other Road Passenger Transport.

Note that Large has been defined as including all management units, which employ 200 or more person or have assets worth more than \$200 million.

Box 1: Transport industry profit margins by quartile (per cent)



Source: ABS (2000b)

While the road transport sector as a whole is earning an operating profit, nearly one third (28 per cent) of all businesses in 1998/99 were not profitable. By contrast, across all industries surveyed by the ABS only 21.8 per cent made a loss in 1998–99 (ABS 2000).

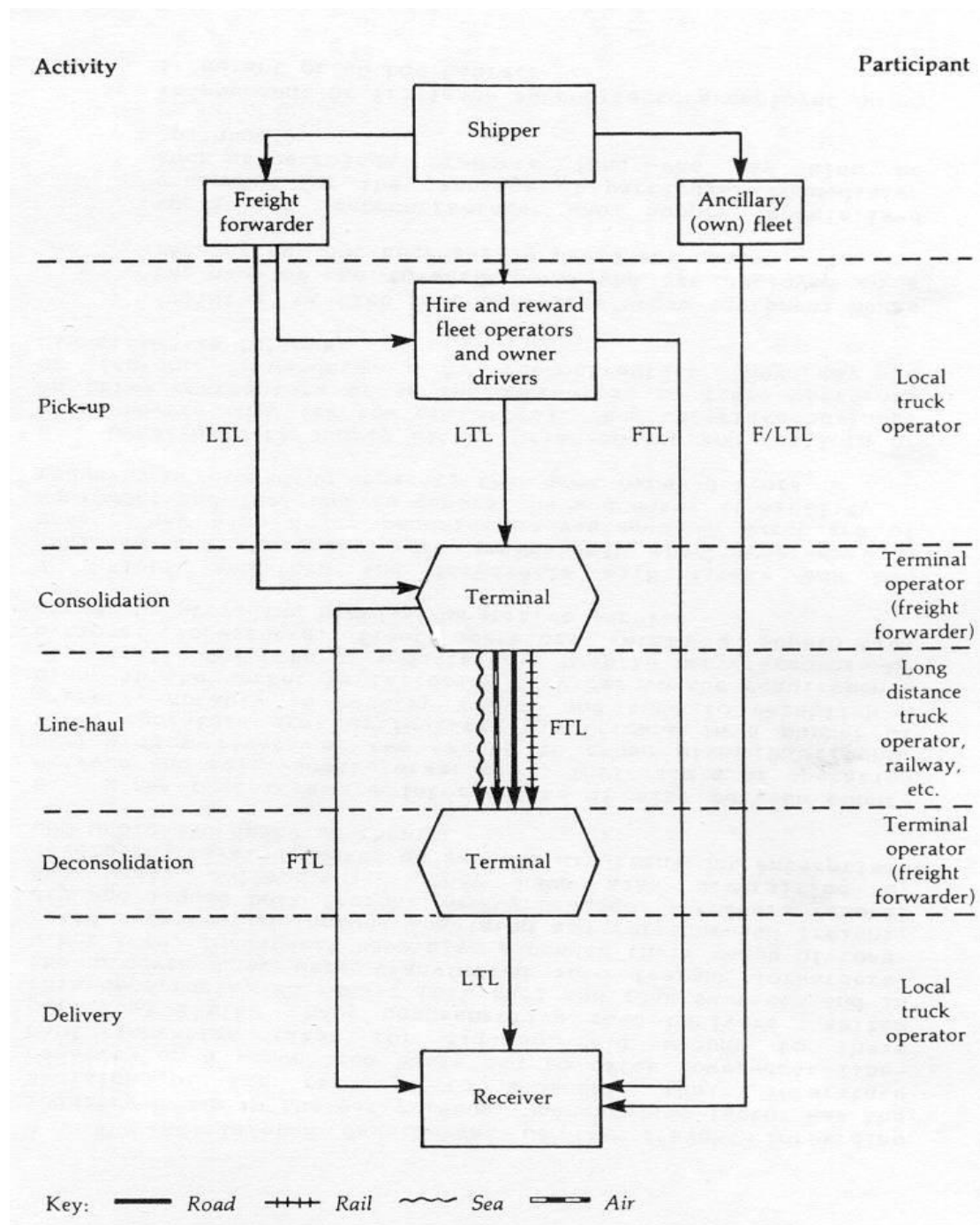
The proportion of Road Transport businesses that failed to earn an operating profit in 1998/99 was higher than in the previous three years. The ABS quartile analysis also shows that the before-tax profit margin varies significantly between businesses in the Road Transport industry.

In 1998–99, the most profitable of the large businesses (that is those businesses in the highest quartile — 75% or higher) earned a profit margin of 6.6 per cent or more in 1998/99. The most profitable of the other (not large) businesses had a profit margin of 22.9 per cent or more. At the other extreme, 25 per cent of large and other businesses in the lowest quartile made losses of around 0.6 per cent or more.

The ABS data indicates that while some road transport businesses were very profitable, many were earning only a small profit margin. Further, around 4,900 of the businesses in the industry in 1998/99 were not operating viable businesses. These data also suggest that profit margins for the majority of businesses, both large and small and medium (other businesses), in the median quartile have been squeezed over the three years up to 1998/99. Profit margins for both the large and other businesses in the lowest quartile have been negative or only marginally positive over the four years the ABS has collected these data.

Participation in the road freight industry is much broader than the vehicle owners and drivers. The operation of the road freight industry involves the participation of freight forwarders and terminal operators in addition to fleet operators. All of these participants play a role in moving freight from the shipper to the receiver. Figure 5, which describes the freight movement process, highlights this point.

Figure 5 highlights that in the hire and reward segment of the industry the four modes compete for line-haul business over longer distances. Importantly, the three other modes are reliant on road once their line-haul role has been completed. For less than a full truck load (LTL) freight movements freight forwarders and terminal operators play an important role in consolidation of freight into full truck loads (FTL) and then its deconsolidation for final delivery. Trucks operating in the hire and reward freight market comprise fleet operation divisions of freight forwarders and small, medium and large fleet operators.

Figure 5: The freight movement process

Source: NRFII (1984)

3. SHOULD GOVERNMENT REGULATE THE ROAD FREIGHT INDUSTRY?

Regulation is not an end in itself. Governments introduce regulation to achieve some objective for society as a whole or for some group in society. Before examining alternative options for regulating the road freight industry it is worth clarifying why some form of government intervention in the road freight industry is necessary at all.

The following section uses the economic concept of market failure to briefly outline some the major reasons why governments intervene in markets. Section 3.2 goes on to consider whether the road freight market, or the markets in which it is involved, have market failure characteristics which may justify some road freight industry specific government action. Section 3.3 briefly highlights that government has a spectrum of options which could feasibly deal with market failures and finally section 3.4 briefly draws together some conclusions from the chapter's analysis.

3.1 Market Failure

Economic theory suggests that in most circumstances, the unrestricted operation of markets will maximise the community's welfare by producing outcomes that are consistent with efficiency (see for example, Kahn (1989) and Boadway and Bruce (1984)). But sometimes a market has certain characteristics or conditions which can impede its efficient operation. In these circumstances markets can fail to achieve outcomes which maximise the community's welfare. Economists use the term 'market failure' to describe this problem. The presence of a market failure can sometimes justify some sort of government intervention in the operation of that market.

Market failures can be categorised into the following five broad groups:

1. Natural monopoly (and the potential to abuse market power) - is a situation where, for a given technology and level of demand, a single supplier can provide a good or service at a lower cost than two or more firms. A natural monopoly has significant economies of scale and scope, which are commonly characterised by high sunk costs, low operating costs and substantial barriers to entry and exit from the market. Natural monopoly provides an opportunity for a business to abuse its market power by reducing quality and/or output and raising prices. The business' level of market power will in part be determined by the number of substitutes and by the level and nature of the barriers to entry and exit. Unequal power on the supply or demand side of a market can lead to behaviour which can produce an outcome that does not maximise the community's welfare¹.
2. Property rights problems - the efficient operation of an unregulated market requires that market participants must be able to exchange claims on the right to use or consume its outputs. This exchange of claims normally occurs through the payment of a price and requires a well-defined system of property rights. In some markets, it is costly or even infeasible to enforce or assign property rights to some or all of its outputs. Such items are known as 'common property' rather than 'private property' because all of returns associated with undertaking the activity can not be fully appropriated by the owner.

¹ Until recently whole industries, such as rail, electricity, telecommunications and gas supply, were considered to be natural monopolies. However, in recent times it has been recognised that if natural monopoly exists in an industry it is usually restricted to only a segment of the industry - transmission in the case of electricity - with the remainder of the industry having strong potential for competition.

Public roads are a type of common property resource as the use of a congested road by motorists increases the journey time for other motorists and therefore imposes costs that are not taken into account in the decision to use or not to use the road.

3. Public goods - are goods or services that have two important characteristics that can lead to under provision by the private sector. Firstly, once the good or service is produced it is difficult or impossible to exclude those who do not pay from enjoying its benefits. This is known as the 'non-excludability' characteristic. The second characteristic of many public goods is the fact that consumption of the good or service by one individual does not reduce the amount of the good or service available for others. This is known as 'non-rivalry'.
4. Information problems - if one of the parties involved in a transaction has more information about the good or service to be traded than the other there is an information asymmetry which in some circumstances can lead to inefficient outcomes for the community. The market for used cars is sometimes used to explain why information problems can lead to a market failure. In the used car market a buyer is often not able to tell whether the car is a 'lemon' or not whereas the seller usually knows more about the car's true quality. In response to this information problem, buyers discount the price they are prepared to pay in case the vehicle they end up buying is defective. However, this discounting may drive good quality cars out of the used car market because sellers are not prepared to sell at this lower price.
5. Externalities - if all of the benefits and costs associated with the production and consumption of goods or services are not completely enjoyed or borne by the producers and consumers of those goods or services an externality arises. In these circumstances there can be over or under provision. The absence of a well-defined system of property rights is often associated with externalities. In some instances, the disparity between internal and external costs and benefits is not sufficiently large to justify government intervention, particularly given that government intervention generally involves costs of its own. However, in some cases the magnitude of the externality and its importance to the community is so great that government may decide to intervene to bring production or consumption closer to a level that maximises community welfare.

The following section considers whether any of these market failures are evident in the market for road freight transport.

3.2 Evidence of Market Failures in Road Freight Transport

This section, in conjunction with a more detailed discussion in Appendix 1, uses the concept of market failure discussed above to help identify any economic rationale which could potentially justify industry specific regulation of the road freight transport market.

This section finds that the road freight market, particularly the on-road segment of the industry is at the other extreme to natural monopoly, the first of the market failures discussed above. However, there is some evidence of the four other market failures in the road freight transport market or in the markets associated with the road freight transport market. In most cases the market failures identified permeate the entire road transport market or the inputs used by road transport. This is particularly apparent for property rights, public goods and information problems as well as congestion and pollution externalities. In these circumstances it would be difficult to justify government actions which solely focused on the road freight industry. On the other hand there could be a case for industry specific

intervention in the road freight market's operations on grounds of the externalities associated with road wear and road safety. These findings are briefly explained below. More detail is outlined in Appendix 1.

3.2.1 Natural monopoly and market power

There is no evidence of monopoly or natural monopoly in the road freight transport industry. Indeed, the on-road segment of the industry is highly competitive with many participants. This is because trucking is characterised by an absence of scale economies and relatively low capital costs, which facilitate ease of entry into the industry. The on-road trucking segment of the road freight transport market could therefore be considered at the opposite extreme to a natural monopoly, as a consequence the businesses operating in the market have very little power to influence price.

While there are very few barriers to new businesses entering the market there may be some barriers to exiting, particularly for small fleet operators and owner-drivers. These exit barriers are not new; their existence was raised as long ago as 1984 in the National Road Freight Industry Inquiry report (NRFII 1984). The report suggested that these barriers arise because many owner-drivers and small fleet owners have used their homes as collateral for the purchase of their vehicle(s). Leaving the industry threatens not only these small operators' livelihood but also the roof over their family's head. Thus the NRFII suggested that many unprofitable operators are reluctant to leave. Barriers to exit could lead to disequilibrium between demand and supply of trucking services and could further reduce the market power of truck operators.

On the other hand, there is some evidence that the less than a full truck load freight forwarding segment of the market enjoys some economies of scale. For example, studies of the USA freight industry found that the less than a full truck load freight operations, of which freight forwarding is an integral part, exhibit slight increasing returns to scale (see Braeutigam 1999). It is not apparent that these slight scale economies give participants a significant degree of market power over their customers and the truck operators which supply their services to freight forwarders. Higher than normal profits are symptomatic of a market that is exploiting its market power. However, the NRFII considered this issue and found no conclusive evidence of excessive profits in the freight-forwarding segment of the market. This finding was also supported by a 'marked absence of complaint to the Inquiry from transport users concerning forwarding' (NRFII 1984, p.39).

In 2000, the ACCC reviewed the level of competition in the road freight transport in its consideration of the proposed acquisition of Finemore Holdings Limited by Toll Holdings Limited. The ACCC assessed that competition is fierce. The countervailing power that resides with large customers is an important reason for this finding. The ACCC also assessed that smaller customers do not require the sophisticated logistics services provided by the top tier providers and have access to a large number of small providers (OECD 2001).

While the potential for non-competitive behaviour in the road freight forwarding market should not be discounted, it needs to be recognised that market outcomes can often be relatively efficient even when there appears to be only limited visible competition. The scale economies associated with freight forwarding are not sufficient to maintain a monopoly or even a duopoly market. There appears to be sufficient competition to ensure that customers in the freight forwarding market are not exploited. In addition, to some extent, the level of competition is enhanced by access to substitutes such as express post and other couriers and through the threat of entry from higher cost freight forwarding firms.

3.2.2 Property rights, public goods and information problems

The road network has common property and public good characteristics. These characteristics can create considerable problems and transactions costs for allocating property rights to the road network and in charging for its use. In the absence of some system to restrict access and prescribe standards for safety etc. individual road users, including users in the road freight transport market, would fail to take into account all the costs (such as road wear and congestion and accident damage) they impose on other road users and the wider community. Given the generic nature of these problems it would be difficult to justify government intervention, such as regulation, which solely concentrated on the road freight industry.

While there is considerable uncertainty about the benefits and costs associated with providing road infrastructure as well as about the type and level of external costs road users impose on other road users and the community as a whole, these costs are not specific to road freight transport.

3.2.3 Congestion and pollution externalities

All motor vehicles, not just vehicles in the road freight industry, generate external congestion and pollution costs. In both cases the evidence indicates that the most significant contributors to these two externalities are passenger motor vehicles. For example, passenger motor vehicles (cars) account for more than 60 per cent of the greenhouse gases emitted by the road transport sector (Australian Greenhouse Office 2001). While the contribution from vehicles operating in the road freight industry can not be discounted, any intervention which focussed on a subset of road users would have to be assessed on the basis of a full evaluation of costs and benefits to the community.

3.2.4 Road infrastructure wear

Price signals are a crucial element of an efficiently operating market. The characteristics of the road network hamper the introduction of a pricing system. Even if a system could be devised, it would be extremely difficult to charge prices which were closely related to a vehicle's use of the road and the wear and tear imposed on the road infrastructure.

An external cost is imposed on society if the damage and wear associated with the use of the road network is not covered by road user charges. In the absence of some intervention, this externality could lead to under investment in roads and over use of the road network by some users. However, this road services pricing problem applies all road users not just road freight transport users.

On the other hand, from a competitive neutrality standpoint there may be grounds for some intervention in the road freight industry, particularly if the externality arising from underpricing access to road infrastructure is very large. This is because road freight transport competes in the larger inter-modal freight transport market. Under pricing road infrastructure could give road transport a competitive advantage over the other modes. Failure to set appropriate prices for road services used by the road freight industry may negatively impact on the efficient allocation and use of resources in other segments of the wider freight transport market. Government intervention in the pricing of road services used by the road freight transport industry may therefore be justified to improve competitive neutrality and resource allocation across freight transport modes.

3.2.5 Accidents and road safety

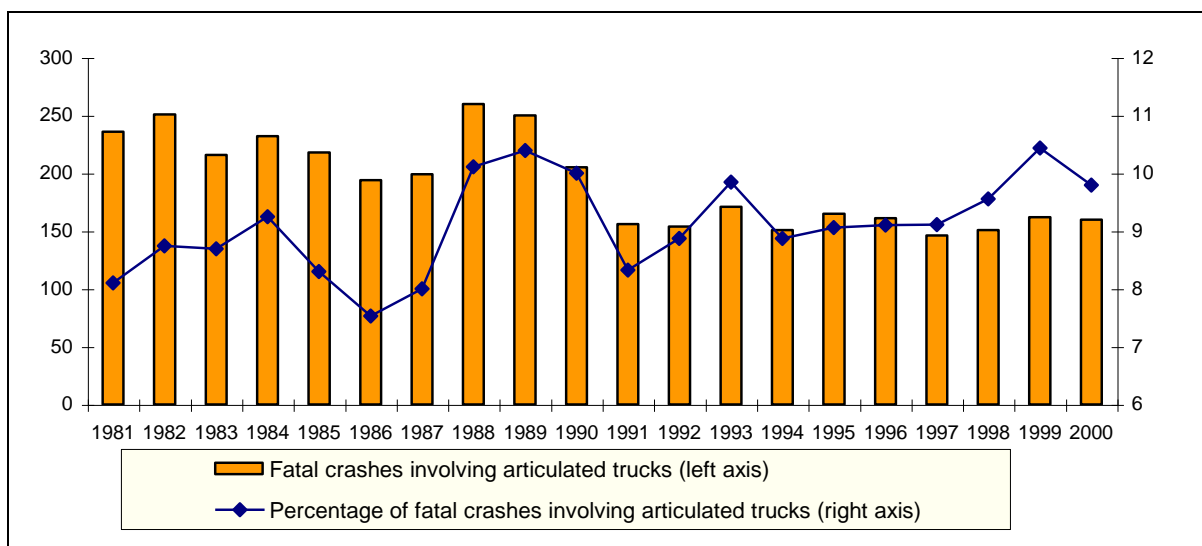
Virtually every human activity can at some stage lead to an accident; road transport and its subset road freight transport are not exceptions. Road accidents impose significant costs on the community in terms of injury, loss of life and property damage. For example, the BTE (2000) estimates that in 1996 road crashes cost Australia \$14,980 million. Many of these costs are internalised by the driver and/or operator responsible for the accident. However, some costs are inflicted on other road users and on the wider community. These external costs can be significant.

Over the last decade or so there has been a substantial reduction in the road toll. However, the current level of road fatalities is still high. Reflecting the community's concern, the Australian Transport Council has adopted a new Road Safety Strategy for 2001 to 2010. The strategy aims to reduce the road fatality rate by 40 per cent to 5.6 fatalities per 100,000 of population by 2010 (compared with 9.3 deaths per 100,000 population in 1999).

The majority of serious and fatal road accidents in Australia do not involve vehicles operating in the road freight transport industry. However, the proportion of fatal road crashes involving articulated trucks is much higher than their representation (less than one per cent) in the registered vehicle fleet (figure 6).

The number of kilometres travelled by articulated trucks is one factor that may help explain the relatively high involvement of road crashes. In addition, it needs to be borne in mind that involvement in a crash does not necessarily imply fault. Indeed the Federal Office of Road Safety has found that in the majority of crashes between heavy and light vehicles, the driver of the heavy vehicle was not at fault.

Figure 6: Number and proportion of fatal road crashes, involving articulated trucks, 1981 to 2000



Source: FORS, 1999 and ATSB, 2000

On the other hand, a number of characteristics of the road freight industry may negatively impact on the industry's road safety record. These include the long distances travelled, the time sensitivity of many transport services and the incentives to take risks; which may be related to the highly competitive nature of the road freight industry. While the higher level of

risk taking may be acceptable from the perspective of some drivers or operators it is likely to be unacceptable from the perspective of the whole of the community.

The potential for a link between competition in the road freight industry and safety has been raised in the context of the United States road freight industry. Dr Belzer (2000) argues that unregulated competition in the USA line-haul road transport market has driven down profits and wages at the expense of road safety.

Dr Belzer's claims are in sharp contrast to the finding in a recent OECD (Organisation of Economic Co-operation and Development) review of competition in the road freight industry (OECD 2001). The OECD reported that post deregulation studies in the USA showed no negative effects from deregulation. The OECD (2001) reports that Fruin (1999) found that:

Higher vehicle operating and safety standards and highway improvements [in the USA] have led to lower fatality and injury rates since deregulation. The number of years of potential life lost (YPLL) declined 32 percent between 1980 and 1995 despite the substantial increase in truck traffic over the same period.

In the Australian context research indicates that fatigue and speed are two key factors which contribute to heavy vehicle crashes (Appendix 1). The highly competitive nature of the road freight industry may increase the incentive for some drivers to take such risks.

There is continuing concern in Australia about the contribution of fatigue to the level of accidents involving trucks. Two recent reviews of the fatigue problem reflect the current level of concern. The first of these was undertaken by the House of Representatives Standing Committee on Communication Transport and the Arts and reported in 1999 (Parliament of the Commonwealth of Australia 2000). The Committee's report *Beyond the Midnight Oil: Managing Fatigue in Transport* made 41 recommendations covering rail, road, air and sea transport. A substantial number of these recommendations related directly to the road transport sector. The Committee's concern about fatigue in the road freight industry led it to recommend that a national operator accreditation scheme be developed if the road transport industry had not adequately addressed the fatigue problem by mid-2002.

The second review by Professor Michael Quinlan was instigated last year by the New South Wales Government. The findings and recommendations of the Quinlan review are yet to be released. Its terms of reference covered:

- the impact of clients' and consignors' requirements on drivers;
- the extent of proper enforcement in the industry of driving hours, speeding and drug use;
- the current forms of regulation in the industry; and
- whether current regulatory bodies with responsibility for the industry are properly coordinated and sufficiently resourced.

3.3 Market Failure a Necessary But Not a Sufficient Condition

The existence of a market failure is a necessary, but not a sufficient condition for governments to intervene in the workings of a market. Governments need to be sure that the magnitude of the market failure and its importance to the community is sufficiently large or important that government intervention of some sort is warranted.

This is because intervention in a market has costs. Some of these costs are specific to the type of intervention and are often unintended side effects of an intervention. For example, the use

of rigid and prescriptive vehicle standards could inhibit innovations that would improve the productivity of the heavy vehicle transport industry without compromising safety and the environment.

However, many costs are generic and apply to all forms of intervention to a greater or lesser extent. These include information costs, compliance, monitoring and enforcement costs, costs associated with regulatory capture, costs associated with regulatory uncertainty and dispute resolution costs.

Any policy intervention also involves a risk of government failure. For example, government intervention aimed at achieving one particular objective can have unintended adverse effects on the ability of a government to achieve its other objectives. In addition governments often have to raise taxes to finance their efforts to address market failures. These taxes can impose costs on the community that are additional to the revenue raised. As a general rule, and abstracting from equity considerations, governments should only intervene in markets when they have a high degree of confidence that they can outperform the markets.

Once a government decides that an intervention is necessary to address a market failure or some social goal it will have a choice of alternative options, which to lesser or greater degrees, will achieve their objective. Coghlan (2000) points out that there is a spectrum of response options ranging from no action to industry self-regulation and quasi-regulation to the more heavy handed explicit regulation sometimes known as black letter law (Box 2).

Box 2: The regulatory spectrum

1. No government action or regulation.
2. Government action of a non-regulatory nature (eg. information programs).
3. Agreements negotiated between industry and government.
4. Industry self-regulation.
5. Industry based code of conduct or standard with government endorsement.
6. Direct government involvement in the development and subsequent monitoring of an industry code of practice or standard.
7. Government guidelines to assist business meet legislative requirements by suggesting actions not specified in law.
8. Code of practice and standards embedded in regulation.
9. Black letter law - explicit government regulation.

Source: Coghlan (2000)

There will be benefits and costs associated with each of these alternative options. The Regulation Impact Statement required under the *National Road Transport Commission Act 1991* and under the Principles and Guidelines for National Standard Setting and Regulatory Action by Ministerial Councils and Standard-Setting Bodies, issued by the Council of Australian Governments (COAG), reflect these notions.

Under the COAG Principles and Guidelines there is an initial presumption that in most cases, the unfettered operation of the market will produce the best outcomes for society. However, as outlined above sometimes intervention by government may be necessary. In some cases the most appropriate response will be regulation.

Coghlan (2000) drawing on the principles enunciated by COAG points out that good regulation:

- yields a net benefit to the community, not just a particular group or sector;
- must be set to the minimum level necessary to achieve the objective;
- should be integrated and consistent with other laws;
- should not be unduly prescriptive and preferably be specified in terms of performance or outcomes;
- should be accessible, transparent and accountable;
- must be clear and concise and communicated effectively;
- should minimise compliance costs while achieving its objectives; and
- must be enforceable and embody minimum incentives and resources for reasonable compliance.

3.4 Concluding Comments

In some circumstances the normal operations of an unregulated market will lead to outcomes which are undesirable for the community as a whole. Economists use the term 'market failure' to describe this problem. Market failures can be categorised into five broad types: natural monopoly; property right problems; public goods; information problems; and externalities. There is some evidence of four of these market failures in the road freight transport market. However, in most cases the market failures identified relate to the road infrastructure or permeate the entire road transport market not just road freight. It would be hard to justify a focus on road freight transport alone for most of the market failures identified.

On the other hand there may be a case for industry specific intervention in the road freight market's operations on the grounds that the externalities associated with road wear can distort the inter-modal freight market. Similarly the characteristics of the road freight market may justify some industry specific interventions to ensure that road safety outcomes in the industry are sufficiently aligned with community expectations. Whether or not intervention to address these problems is warranted depends on the benefits and costs of the intervention for the community as a whole. If Government intervention is required, it should be as light-handed as possible. In other words, it should be the minimum necessary to achieve government's objectives. It may be that the most appropriate option is no response at all.

The following chapter briefly outlines the approach currently used by Australian governments to address impediments in the market for road freight market to address the externalities associated with road damage and road safety. This chapter is followed by a discussion of some alternative options for dealing with achieving these objectives.

4. AUSTRALIA'S APPROACH TO ROAD TRANSPORT REGULATION

4.1 Australia's Legal Framework for Road Transport

In Australia, the Federal Government's powers to make laws are set down in the Constitution. All unspecified powers are held by the states. As the Constitution does not make an explicit reference to roads or road transport, the authority to make laws and regulations covering these areas is held by the states and territories.² As a consequence of this allocation of powers at federation, each state continued to develop its own set of laws and regulations for road transport. This created numerous inconsistencies between state laws, and imposed significant costs on road transport businesses, on industry more generally and on the community as a whole.

Recognising the need for a more uniform system, in July 1991 the Commonwealth and the states and territories agreed to the formation of the NRTC. The Commission's charter is to develop a framework for nationally uniform or consistent road transport regulation in order to improve road safety and transport efficiency to reduce the administration costs of road transport regulation and to achieve environmental sustainability.

Reflecting the magnitude of the NRTC's task, the Ministerial Council for Road Transport agreed to a staged implementation of the reform process and the legislative task was broken into the following stand-alone modules:

1. Heavy Vehicle Charges
2. Vehicle Operations
3. Road Transport of Dangerous Goods
4. Vehicle Registration
5. Driver Licensing
6. Compliance and Enforcement

The NRTC has since completed most of this initial agenda (with the exception of the compliance and enforcement module) and its work has now progressed to the 3rd Heavy Vehicle Reform Package.

It should be stressed that the NRTC has no direct regulatory powers. Its role is to co-ordinate and develop policy and make recommendations to the Australian Transport Council of Australian Transport Ministers. The NRTC's and the Ministerial Council's work is still in progress and the program of reform flowing from previous reform packages is not yet complete. As a consequence, Australia's current set of road transport regulations should be considered as regulation reform in progress.

² A number of other heads of power in the Constitution has given the Federal Government some indirect powers over the supply of roads and the regulation of road transport. These heads of power include the corporation's power, the inter-state and overseas trade and commerce power and the power to make conditional financial grants to the states.

4.2 The Current Situation

Australia's road transport regulation has traditionally worked through 'black letter' law (ie, Acts and Regulations passed through parliament and subject to parliamentary scrutiny and regulatory review). These laws, which cover the design, construction and use vehicles on Australia's roads, can be categorised into the following two broad regulatory groups:

- general regulations governing the construction and use of all vehicles, including heavy vehicles (eg the Australian Road Rules and the Vehicles Standards); and
- specific regulations that only apply to use of heavy vehicles (eg the Mass and Loading Regulations, transport of dangerous goods regulations and the Restricted Access Vehicles Regulations).

A fundamental objective of these regulations is to improve the overall efficiency and equity of the road transport system by reducing the external costs arising from the use of heavy vehicles. In particular, the current regulations seek to:

- assign property rights;
- reduce road congestion;
- minimise road damage, and recover the cost of repairing that damage;
- reduce vehicle noise and air pollution;
- improve road safety; and
- facilitate regulatory compliance while minimising administrative and compliance costs.

On the other hand, the road transport regulations do not aim to directly address concerns about the level or nature of competition in the road freight market.

4.2.1 Assignment of property rights

In view of the practical problems associated with establishing a system of exclusive property rights governing road use, the current regulations seek instead to define a system of common property rights that establish:

- through driver licensing the right for an individual to drive a vehicle on the road and related to this the competency of an individual to drive a particular type of vehicle on the road;
- through vehicle registration the right to use a particular type of vehicle on the public road network (eg the vehicle registration rules which determine a vehicle's roadworthiness); and
- the rules that must be followed when using the public road network (eg the road rules as set out in the Australian Road Rules, Vehicles and Traffic Act, Australian Vehicle Standards Rules, Heavy Vehicle Regulations and Driving Hours Regulations).

Under such a system of common property rights, once road users have gained access to the public road network, or a tollway, they must compete with each other for road space in accordance with the road rules.

The common property rights assigned through awarding drivers licenses and the registration of vehicles are conditional. For example, a vehicle's registration may be cancelled or suspended if the vehicle is found to be unsafe. Similarly, a driver's licence may be suspended or cancelled if his or her driving behaviour, measured through demerit points, is found to be

unacceptable. In this sense, the licensing and registration systems also operate to achieve other objectives such as road safety.

The road rules allocate a common property right to use a particular area of road at a particular point in time largely on a 'first-come, first-served basis'. When other vehicles want to occupy the same area of road at the same point in time, they must obey the road rules and queue to obtain the right to use that particular section of road.

In order to be permitted to operate on the public road network, the construction of a heavy vehicle must satisfy a myriad of prescriptive regulations, including limits on vehicle length, width, height and weight.

These standards aim to ensure greater compatibility between heavy vehicles and the road network — for example lane width and vehicle mass — thereby reducing congestion costs and minimising road wear. The standards also aim to:

- reduce the compliance costs that heavy vehicle operators would otherwise have to incur in order to determine the compatibility of their vehicles with the road network; and
- reduce the administrative costs that the regulatory authority would otherwise have to incur in order to assess the compatibility of every vehicle with the road network.

4.2.2 Recovery and minimisation of road wear costs

The Heavy Vehicles Agreement (a schedule to the NRTC Act) requires the NRTC to recommend to governments road user charges for heavy vehicles.

National road use charges for heavy vehicles were first implemented between July 1995 and October 1996. The Heavy Vehicle Agreement requires the NRTC to recommend road user charges which will fully recover distributed road costs while at the same time minimising over-recovery from any vehicle class, thereby achieving full recovery of all road costs.

The charges are calculated by recovering the share of road spending (construction and maintenance) resulting from the use of heavy vehicles. This has recently been estimated at \$1,280 million a year (NRTC 1999b).

The charges comprise a notional fuel charge, collected through fuel excise, and a fixed annual registration charge. On 1 July 2000 the notional fuel charge was increased from 18 cents per litre to 20 cents per litre. Registration fees for heavier vehicles were also increased at this time. For example, registration fees for a 6-axle articulated truck increased from \$4,000 to \$4,300 per year and registration fees for a 9-axle B-double increased from \$5,750 to \$6,800. These changes removed the cross-subsidy paid by light trucks, which arose from the NRTC's first Determination on road user charges (NRTC 1999b).

The current regulations and standards also seek to reduce the extent to which the use of heavy vehicles results in damage to road-related infrastructure, including road pavements and bridges, and to recover the costs of that damage. Currently this is achieved by prescriptive regulations pertaining to:

- vehicle configurations;
- vehicle mass, including gross mass limits, the axle spacing mass schedules and axle group mass limits; and
- dimensions, such as length, width, height and rear overhang.

The regulations are intended to limit the amount of damage heavy vehicles imposes on the road network. However, the prescriptive nature of the regulations means that they are very blunt instruments. The NRTC and Austroads are currently in the process of reviewing Australia's prescriptive regulations for heavy vehicles with a view to developing alternative performance-based regulations (see NRTC (2000a) and Chapter 5).

In this regard, after a review of suspensions available for heavy vehicles, most State and Territory governments have agreed to increase the mass limit of trucks and buses fitted with 'road-friendly' suspensions (NRTC 2000c).³ The main requirements for the higher limits are:

- road-friendly certification — suspensions must be certified as meeting specified performance standards to ensure effective load sharing and damping to contain pavement wear;
- mass management accreditation — operators seeking the higher mass limits for tri-axle vehicles in their fleet will need to be accredited as a participant in the Mass Management module of the National Heavy Vehicle Accreditation Scheme (see accreditation-based compliance below); and
- route compliance and overloading — operators of higher mass limits vehicles must ensure that their vehicles operate only on approved routes and comply with relevant mass limits; and
- vehicle identification and registration — vehicle operators and drivers must be able to provide evidence to enforcement officers that the vehicle is eligible to operate at the higher mass limits.

4.2.3 Air and noise pollution

The current regulations governing heavy vehicles also aim to reduce heavy vehicle air and noise pollution and spills of dangerous goods.

Once again, rather than seek to measure the actual emissions made by individual vehicles when they are operating, and charge for the damage this inflicts on the environment, the regulations instead seek to limit those emissions. In the case of noise and emissions, standards specify the maximum amount of noise and emissions standards with which new heavy vehicles must comply. The manufacturers have freedom to use a range of technologies in order to comply with these standards. In this sense, the standards are performance-based rather than prescriptive. For example, the Australian Design Rules (ADR) set emission standards that vehicles must comply with, prior to their supply to the Australian market.

Australia's current ADRs covering emissions from heavy vehicles draw on previous generations of European and USA emission standards. The ADR sets limits for key diesel pollutants measured using a standard test cycle. This standard is consistent with a European Union standard known as Euro I, which sets maximum test cycle emission limits for nitrogen oxides, hydrocarbons, carbon monoxide and particulates. Manufacturers are free to use any engine and emission control technology that will achieve these or lower emission levels. The Commonwealth Government has announced a staged introduction of more stringent limits on emissions from new vehicles supplied in 2002–03 and beyond. The new ADRs set maximum test cycle limits on emissions from diesel, petrol, liquefied petroleum gas (LPG) and natural

³ All States and Territories except NSW and ACT have implemented the new limits on selected routes. The Commonwealth has also granted the increases to vehicles in the Federal Interstate Registration Scheme on nominated routes, including routes in NSW.

gas vehicles. By 2006 Australia's emission standards will be closer to those operating internationally.

Australia has also set emission standards for vehicles currently in-service. Again, this is a performance-based standard that used a specified drive cycle and sets emission limits.

An important practical constraint on a Government's ability to reduce pollution and (road damage and safety) is the nature of the existing road infrastructure and the performance of the existing vehicle fleet.

Both roads and vehicles have relatively long economic lives, and this tends to reduce the extent to which it is possible to improve the overall efficiency and equity of road transport by altering the current regulations. Although it is technically possible to modify the existing vehicle fleet and the current road network to suit changes in standards, the costs of those modifications would be prohibitive. For this reason, changes in vehicle standards usually only apply to vehicles constructed after a certain date and why the fleet is only progressively upgraded to provide improved standards.

4.2.4 Road safety

Australian governments have in place a range of rules, regulations, standards and programs aimed at improving road safety including:

- the Australian Design Rules which, among other things, outline the design and performance requirements for the safety of road vehicles and trailers first supplied to the market;
- Australian Road Rules and traffic regulations, including regulations:
 - requiring drivers to pass a driving test before obtaining a driver's licence and linking the continued holding of the licence to a demerit points system;
 - setting maximum blood alcohol concentrations;
 - setting speed limits;
 - requiring the fitting of speed limiters to heavy vehicles;
 - requiring compulsory wearing of seat belts in passenger motor vehicles;
 - setting out which road users have right of way;
- education and awareness programs such as the National Route 39 Driver Fatigue Strategy;
- regulations relating to the mass and loading of heavy vehicles and combinations;
- regulations relating to the transport of dangerous goods;
- fatigue management rules including those relating to working hours for road transport drivers; and
- the 'three strikes and you're out' regulations which sanction the registered owners of heavy vehicles which are regularly detected speeding. The ultimate sanction under this arrangement is suspension of vehicle registration.

Virtually all of these safety-related rules and regulations cover all vehicles and drivers with access to the road network. However, some are specifically aimed at heavy vehicles and particularly, freight vehicles. It should also be noted that many of the regulations are highly prescriptive, providing little opportunity for operator flexibility. Driver-fatigue regulation is a case in point and is discussed in more detail below.

Driver fatigue regulation

In 1998, a significant step towards a national approach to the management of driver fatigue and the regulation of driving hours regulation was implemented. The reforms aimed to remove inconsistency in the prescriptive state regulations. However, the new driving hours regulations remain highly prescriptive. Under the regulations a driver:

- can work for a maximum of 14 hours (which includes a maximum of twelve hours of work driving) in a 24 hour period; but
- can work no more than 72 hours in a seven day period; and
- must keep a log book to prove compliance with the regulated hours regime.

The hours adopted in the national regulations were, in the main, based on existing limits rather than any research on driving hours and fatigue.

The national reforms also included a Transitional Fatigue Management Scheme (TFMS) and a pilot performance-based Fatigue Management Scheme.

The TFMS allows a trade off between longer driving hours⁴ and the introduction of certain fatigue management tools, such as driver education on fatigue. While the national driving rules are mandatory, the TFMS is a voluntary scheme. The TFMS allows greater flexibility within the bounds of the base scheme, in return for the demonstration of higher levels of driver and operator responsibility. Drivers and operators must apply for registration to the scheme. Registration is conditional on drivers obtaining a certification manual, undergoing a medical examination and undertaking a fatigue management driving course. Operators must make a commitment to manage driver fatigue and are required to train staff responsible for schedules, etc, to be appropriately trained in fatigue management.

As an alternative to the prescriptive regulation of hours of driving and work, the Queensland Department of Transport, with support from other road and enforcement agencies and the road transport industry through the Australian Trucking Association, has trialed a performance-based system of fatigue management regulation known as the Fatigue Management Program (FMP). The scheme, which is voluntary, requires that participating operators put in place an auditable system to manage driver fatigue. Operators accredited to the pilot scheme are not bound to follow the prescriptive national driving hours regulations. It is intended that Fatigue Management will become the third module of the National Heavy Vehicle Accreditation Scheme (see below).

The new national fatigue regulations are operating in Queensland, New South Wales, Victoria, Tasmania⁵ and South Australia. The 'national' fatigue regulations do not apply in Western Australia or the Northern Territory as a co-regulation occupational health and safety approach to fatigue management is used in those jurisdictions (see Chapter 5, section 5.3). The Western Australian and Northern Territory Codes only operate within their respective jurisdictions. If drivers operate inter-state they must, while inter-state, comply with the national prescribed hours fatigue regulation.

⁴ Drivers may work or drive for up to 14 hours in any 24-hour period. Drivers in a 14-day period can drive for no more than 144 hours. They must have at least six hours continuous rest in each 24 hours and must have at least two 24-hour rest periods in any 14 days.

⁵ Logbook records are not required in Tasmania.

4.2.5 Compliance and enforcement

Compliance

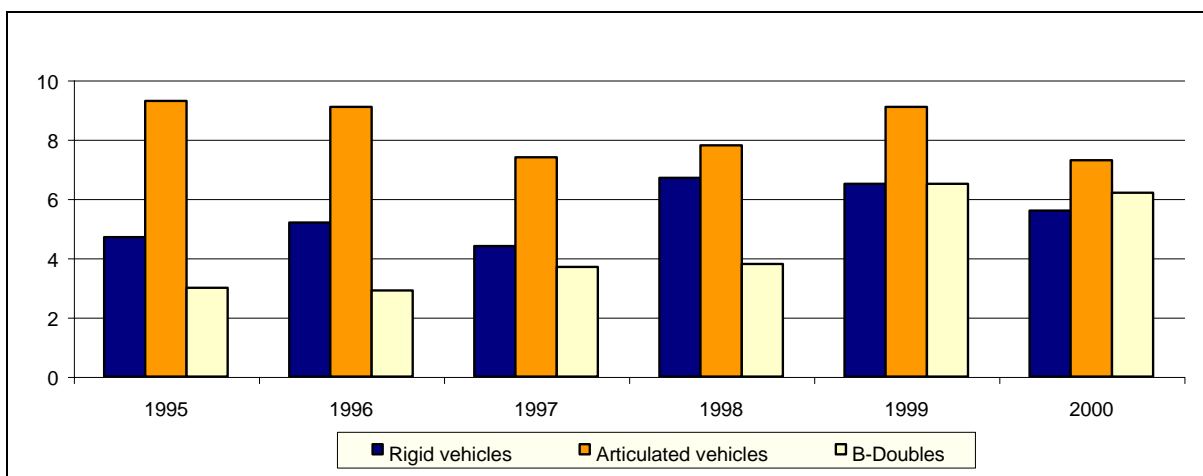
Little is known about the level of compliance with the current arrangements. However, it is clear the compliance is less than 100 per cent. Although available data suggests that the majority of the drivers in the road freight industry comply with speed, mass limits and blood alcohol road transport laws. However, a significant proportion of drivers do not comply with the law. For example:

- a 1996 survey commissioned by the NRTC found that between 0.5 per cent and 4 per cent of heavy vehicles exceeded 115km/h at Culway sites in New South Wales, Victoria and Northern Territory (NRTC 1996a); and
- a survey of trucks moving containers found that at least 5.2 per cent exceed their permitted gross mass. This figure may underestimate the actual level of overloading as some vehicles may have undertaken route diversions to avoid being surveyed.

A recently released study by the Victorian Road Freight Advisory Council (VRFAC 2000) found that in Victoria:

- a high percentage of trucks are driven at or below the speed limit. However, the report found that the percentage of trucks speeding has trended upwards since 1997. However, unpublished data provided by the VRFAC indicates that this upward trend had turned around in 2000 (figure 7);
- over 95 per cent of heavy vehicles operating in Victoria are operating within the legal mass limits. B-Doubles are more likely to exceed the legal mass limits than articulated and rigid vehicles. In 1999, around 5.5 per cent of B-Doubles were overloading. In the same year just over 3 per cent of articulated vehicles exceed their mass limits. However, these estimates should be treated as upper limits they do not take into account that some vehicles may have a permit to operate at a higher weight; and
- since 1990, none of the truck driver fatalities recorded a positive blood alcohol count (BAC). Over a similar period, 27 per cent all driver fatalities in Victoria had a BAC of over 0.05.

Figure 7: Percentage of heavy vehicles travelling above the 100km/h speed limit in Victoria



Source: VRFAC (2000) and VRFAC unpublished data for 2000.

On the other hand, there is evidence that a relatively high number of truck drivers fail to comply with fatigue related regulations:

- the Victorian Road Freight Advisory Council found that the incidence of drugs, other than alcohol, in truck driver fatalities in Victoria is high — just under 30 per cent of all truck driver fatalities in 1997/98 involved drugs. Until recently the incidence of drug-related fatalities has been higher among truck driver fatalities than the general driving population. However, in 1997/98 the incidence of drugs in fatalities was lower for the truck driver-group compared with all drivers (VRFAC 2000);
- a 1998 ATSB/NRTC survey of over 1,000 truck drivers found that breaking the road transport rules was commonplace for many drivers. The survey found that:
 - 57 per cent of drivers reported breaking working hours regulations on at least half their trips and 26 per cent reported breaking the working hours on every trip;
 - 31 per cent of drivers reported breaking the road rules on at least half of their trips; and
 - 22 per cent of drivers reported that they used stimulant drugs at least sometimes.

While these rates of non-compliance with fatigue related regulations are disturbing, it should be noted that they are no higher, and in some instances lower, than the rates of non-compliance in a similar driver survey conducted in 1991. As noted above, the current review of fatigue regulation is examining alternative approaches for managing fatigue in the road freight transport industry.

Enforcement

Police surveillance of driver behaviour and inspections and weighing of vehicles and the monitoring of driver log books are the main mechanisms for detecting non-compliance with, and the enforcement of, road transport law. This detection process is underpinned by the threat of sanctions — fines, drivers licence withdrawal and in some instances jail and, in the case of a breach of mass limits, load adjustment to achieve compliance.

Under the current system, the threat of being apprehended and ultimately sanctioned creates the incentive for road users to comply with the law. However, the threat of sanctions is unlikely to be effective if the probability of apprehension is low, especially when the financial gains from non-compliance are high.

Currently Australian transport authorities, other than the police, spend around \$60 million per year on the enforcement of road transport regulations. This equates to around \$5 per vehicle registered in 1999 or around \$124 per heavy vehicle registered in 1999. It is difficult to assess whether the level of resources currently allocated to enforcement is sufficiently high as Professor Freiberg (2000, p.13) notes:

In the road transport area, one has to ask the question whether our predominantly enforcement based system of law > detection > prosecution > conviction > sanction > enforcement has failed [if it has] because it is poor policy or because we never put sufficient police or inspectors on the road, on the weighbridges and in the depots or garages. Or whether the fines imposed were too few, too low or never collected. The resources question is, of course, a Pandora's box. There are never enough resources for anything. The question is always one of choosing between competing demands.

The large number of heavy vehicles on the road and the tight budgets in road transport enforcement agencies has led Australia's road transport agencies to consider enforcement

techniques which are not as heavily based on the detection model described by Professor Freiberg above.

4.3 Recent Developments

4.3.1 *Performance-based regulations*

As discussed in previous sections, Australia's road freight transport rules and regulations are predominantly prescriptive, relying on technical descriptions to specify the way government objectives are to be met. There is increasing concern among Australian governments that many of these prescriptive regulations are stifling innovations that could improve not only the productivity of road freight transport, but also road safety and infrastructure protection. As a consequence, the National Road Transport Commission and Austroads are currently developing a performance-based standards (PBS) approach to the regulation of heavy vehicles in Australia (see NRTC 2000a and Box 3).

The implementation of new performance-based standards for heavy vehicles has the potential to increase the industry's productivity by enabling heavy vehicle operators to achieve a better match between the performance of heavy vehicles and the performance of the roads on which they travel. The introduction of PBS for aspects of Australia's road transport industry is expected to:

- encourage innovation and cost savings by giving individual firms more freedom to find the best means of achieving the desired road safety and infrastructure protection outcomes;
- provide a better match between vehicles and roads;
- increase regulatory transparency by providing a more consistent and more rational regulatory approach;
- improve performance (by providing better controls on safety and infrastructure wear); and
- improve compliance levels by reducing compliance costs and allowing firms to develop alternative methods of achieving compliance.

Box 3: What is performance-based regulation?

Regulation can vary considerably in terms of how prescriptively it specifies its objective, and the manner in which the objective is to be achieved.

Principle-based regulation and standards are the least prescriptive — they specify the objectives in very general terms and provide each organisation with the maximum possible flexibility to determine how best to achieve those objectives. For example, a principle-based standard might specify that heavy vehicle operators need to take into account the impact that their vehicles have on road congestion, road safety, roads and the environment, in order to improve the efficiency and equity of the road transport system. Heavy vehicle operators would then have to determine the most efficient means of achieving those general objectives.

At the other extreme there are prescriptive standards that define the objective in such technical terms that there is little or no flexibility to determine how the standard is to be met. Currently heavy vehicle regulations specify the maximum length, width and height of heavy vehicles in order to limit the congestion costs, accident damage, and road damage arising from the use of heavy vehicles. For example, in Australia the maximum length of B-doubles is set at 25 metres. For example, existing prescriptive dimension regulations are illustrated in Figure A.

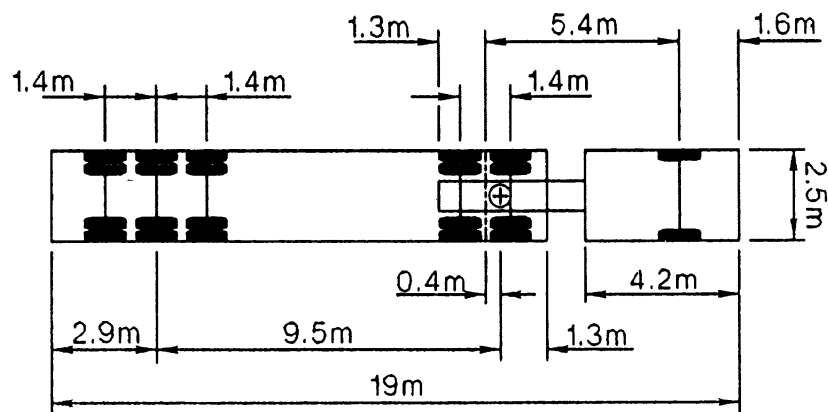


Figure A: Illustration of Prescriptive Dimension Regulations

By contrast, a performance standard that controls how much space the vehicle can take up in a low speed turn, low speed off-tracking or swept path requirements, is illustrated in Figure B. Whether a vehicle meets this standard will be strongly influenced by its dimensions, but may be achieved with a range of different combinations of dimensions and possibly other innovations.

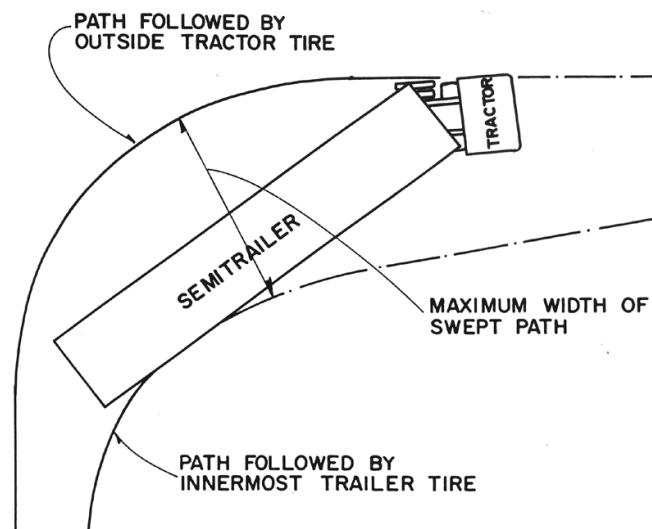


Figure B: Illustration of a Performance Standard

The technical nature of prescriptive regulations can some times lead to trade offs, which can reduce vehicle performance. For example, longer vehicles are generally more stable and therefore less likely to roll over, which suggests vehicles should be longer. But at the same, time longer vehicles are less likely to fit within tight corners, suggesting they should be shorter. On the other hand, the longer the vehicle, the more freight can be carried, and the higher its productivity.

Prescriptive standards or regulations can be very blunt instruments. For example, maximum speed limits are invariant to traffic conditions, weather and the time of day. Similarly, a truck operating at a mass limit of 42.5 tonnes or less is legal while the same truck operating with a mass limit of one kilo more, in theory at least, is illegal even though the additional damage imposed on the road may be minor. Prescriptive regulations, as a general rule, tend to constrain the incentive for, and ability of, heavy vehicle operations to be innovative and improve their productivity.

Performance-based standards are in between the principal-based and prescriptive extremes. A performance-based standard intended to protect road safety might prescribe how resistant the vehicle should be to rolling over when undertaking certain road manoeuvres, and then leave it up to heavy vehicle operators as to how best to construct vehicles to achieve that objective. Performance-based standards can vary considerably in the extent to which they are prescriptive. Thus performance-based standards define the objectives in a more precise and measurable manner than principle-based standards, but provide greater flexibility for the organisation to determine how best to achieve those objectives than prescriptive standards. The Office of Regulation Review points out that it should be possible to develop a performance-based standard for virtually all prescriptive standards and visa-versa.

Performance-based regulation can overcome some of the problems associated with prescriptive regulation. For example, performance-based regulation can:

- provide greater flexibility in the operation of a business;
- be less of a deterrent to the adoption of new technology;
- reduce government involvement in markets; and
- reduce businesses compliance and administration costs.

On the other hand, performance-based regulation, in some instances:

- can be resource intensive for small firms;
- create uncertainty regarding acceptable compliance;
- may be difficult to administer; and
- may be an unsuitable approach if outcomes are difficult to monitor.

The PBS approach currently being developed is being designed to counter, or minimise the problems as far as possible.

4.3.2 Compliance and enforcement

The development of new compliance and enforcement provisions is central to the NRTC's work program. This program of work includes a range of complementary compliance strategies that draw on privileges, incentives, education, training, communications and targeted enforcement. The approaches being introduced to improve compliance and enforcement include:

- accreditation-based compliance processes, which rely less on detection and more on performance and quality assurance;
- chain of responsibility, which encompasses all parties associated with a breach;
- risk based categorisation of offences and sanctions; and
- enhanced investigative powers for officers investigating road transport offences and improved evidentiary provisions.

Accreditation-based compliance (alternative compliance)

In November 1998, the Ministerial Council for Road Transport approved an NRTC recommendation for the introduction of a national accreditation-based compliance policy. Accreditation-based compliance is a term used to cover voluntary alternatives to the more conventional methods of enforcing road transport regulation. The arrangements aim to achieve efficiency improvements in road transport by placing the onus on operators to develop management and operating systems, which can be audited to assure authorities of compliance with the relevant aspects of road transport law.

The National Heavy Vehicle Accreditation Scheme (NHVAS) allows operators to choose modules of relevance to them. Membership⁶ of different NHVAS modules allows:

- reduced impact of conventional enforcement in return for demonstration of high levels of compliance by alternative means; and/or
- access to regulatory benefits (eg higher mass limits) on the basis that these benefits will not be abused.

Another advantage of accreditation under NHVAS is that transport operators will be able to demonstrate to their customers that they have high levels of compliance with the regulatory requirements covered by NHVAS modules.

The NHVAS currently focuses on two compliance modules:

- **Mass Management** — The Mass Management module commenced as a pilot program in 1995 and was adopted as a national scheme in July 1999. Operators will be accredited to work with the scheme if an accrediting agency is satisfied that the applicant has in place a management and operating system that allows nominated drivers and nominated vehicles to comply and to demonstrate continuing compliance with determined mass limits;
- **Maintenance Management** — The Maintenance Management module became operational in July 1999. Operators will be accredited to work with the scheme if an accrediting agency is satisfied that the operator has in place, for its nominated vehicles, management and operating systems that allow the applicant to comply, and to demonstrate continuing compliance, with relevant standards prescribed in road transport laws.

A Fatigue Management module is under development and an environmental module is under consideration.

Accreditation-based compliance is incentives driven, it aims to:

- decrease participating operators' on-road compliance costs. For example, if an operator is accredited in maintenance management the heavy vehicles nominated under the scheme have a reduced incidence of on-road enforcement (including annual inspections required by some states). In addition to saving time and resources, operators are exempted from the annual inspection costs, which could be in the order of \$200 per vehicle;
- increase the potential for greater flexibility and innovation in achieving compliance; and
- increase participating operators' vehicle productivity by reducing the level of on road enforcement. For example, accredited operators will not be fully exempt from on-road enforcement, however, the level of on-road enforcement will be reduced. In the case of the Maintenance Management module, accredited operators would be exempt from annual inspections subject to an inspection of a sample of vehicles on entry to the system. Vehicles accredited under the Mass Management module will in most circumstances be waved through the weighbridge, producing a time saving.

Participants in the accreditation-based compliance scheme enjoy a reduced level of on-road enforcement. However, the accreditation process involves the regular audit of operators by a NHVAS certified auditor. A range of sanctions for operator non-compliance exists for each module. These sanctions are in addition to sanctions applying to other road users (eg fines

⁶ Entry to the Maintenance Management and Mass Management modules will be granted to any operator that applies for accreditation and who can demonstrate that he or she has a management system that will ensure that the standards and audit processes have been met through the conduct of a pre-entry audit (provided the accreditation fee is paid and the operator is accepted).

and licence cancellation). A hierarchy of sanctions applies, beginning with increased audits and surveillance and proceeding to counselling, formal warnings, variation of the terms and conditions of accreditation, suspension from the scheme and ultimately, cancellation of accreditation.

Chain of responsibility

Until recently, the sanctions were principally aimed at the driver of the vehicle. However, it is unlikely that sanctions imposed solely on the driver will achieve the desired outcome of enforcing compliance. This is because drivers are only one small aspect of the road freight logistics chain.

The chain of responsibility principle is a key element of the NRTC's work on improving industry compliance. It focuses on investigating, identifying and sanctioning all players within the supply chain that may have contributed to an on-road offence occurring. Chain of responsibility aims to ensure that all responsible parties in the logistics chain can be held accountable under the criminal law for their contribution to breaches of the road transport requirements.

Chain of responsibility provisions have so far been developed and endorsed for the following three areas of road transport law:

- dangerous goods regulation — a tightly specified chain of responsibility has been implemented in all jurisdictions. Packers, loaders, manufacturers, consignors, prime contractors, and drivers all have legal responsibilities under the regulation. These responsibilities correspond to each person's respective duties in loading and transporting dangerous goods. The extent of each person's liability reflects the extent of control over their respective duties. There have been reports of some successful enforcement actions that have been brought against operators and consignors;
- driving hours regulation — consignors, employers and drivers have obligations to ensure driving hours regulation is complied with. Chain of responsibility ('extended offences') have been included in 'national' provisions implemented in Queensland, New South Wales, Victoria, South Australia and (with modifications) Tasmania. These provisions place strict obligations on non-drivers within the logistics chain. However, the NRTC has received no reports of enforcement using those provisions (see below); and
- mass, dimension and load restraint regulation — responsibility is activity-based and covers persons involved in the consigning, packing, loading, carrying, driving or receiving of freight. The provisions recognise that the driver's role in a breach of a regulation, standard or rule for example, driving an overloaded truck may be relatively minor offence compared to, say, the operator or freight forwarder who may have been responsible for packing, or loading the vehicle. Chain of responsibility recognises the lines of accountability and the differences in bargaining power which are held by the various players in the road freight market. Although the national provisions are not yet in force, Queensland has recently taken successful action against a transport operator for mass breaches, in a prosecution brought under local legislation.⁷

⁷ The national chain of responsibility regulations covering mass, dimension and load restraint are currently being prepared by the NRTC and will be submitted to the Australian Transport Council in late 2001.

Chain of responsibility is expected to play an important role in the development of compliance culture in Australian road transport. It is expected to produce positive benefits in road safety, infrastructure protection, and competitive equity outcomes.

Chain of responsibility is a relatively new development. To date, there has been only limited enforcement emphasis on non-drivers in compliance with driving hours provisions. The reasons for this are yet to be fully clarified but could include:

- problems with the current evidentiary provisions and enforcement powers. These are currently being amended by the NRTC in conjunction with transport agencies; or
- insufficient resources in enforcement agencies to pursue off-road parties in the logistic chain; or
- insufficient information about off-road parties in the logistic chain.

Risk based categorisation of offences and sanctions

A range of responsive sanctions and penalties are being developed under the NRTC's compliance and enforcement work program. Policy developments in compliance and enforcement have included a draft penalty framework for severe risk heavy vehicle overloading. In addition, consideration is currently being given to the use of abatement and/or improvement notices in road transport law.

Comprehensive compliance and enforcement policies (including refined policies in relation to generally applicable sanctions and penalties) have been developed as part of the new heavy vehicle mass, dimension and load restraint regulations. A fundamental rationale for many of the offences, powers, sanctions and penalties put forward in the new policy is the seriousness of the risk or risks posed by a breach of the standards/requirements. Breaches have been categorised as minor risk, substantial risk or severe risk, depending on the nature and seriousness of each breach and the likelihood of their adverse consequences. This risk-based categorisation has influenced the enforcement actions that have been developed to apply when a breach is detected and, to a large extent, the sanctions and penalties that can be applied. Thus, different enforcement powers and sanctions have been linked to each of the breach categories, ranging in intrusiveness and harshness from minor risk breaches through to severe risk breaches.

Innovation in the sanctions being imposed in the mass, dimension and load restraint model legislation are the inclusion of a commercial benefits penalty to combat profits reaped from loading offences and court orders banning systematic or persistent offenders from the industry.

4.3.3 Review of national fatigue regulations

Since the national fatigue regulations have been enforced it has become clear that they contain some inconsistencies and could in some circumstances negatively impact on safety. It is generally recognised that the number of hours worked is a poor proxy for determining driver fatigue or the risk to safety. For example, the prescriptive nature of the regulated hours regime implies that if you drive for five minutes less than the specified maximum number of hours you are driving safely, but if you drive for five minutes more you are driving dangerously and breaking the law. Quality of rest and other factors such as the time of day and the nature of the rest taken as well as the overall health of the driver are all important determinants of driver fatigue. In addition the prescriptive nature of the regulation increases the risk that such maximum limits become the norm rather than the maximum. Further, it is

not clear that the regulations as they currently stand, are consistent with employers' OH&S duty of care. As a consequence of these types of concerns a review of the national regulations is taking place in conjunction with the NRTC Third Heavy Vehicle Reform Package.⁸

The review is multi-faceted and includes:

- technical reviews of the TFMS's operation and national driving hours legislation;
- evaluation and recommendations flowing from the FMP pilot;
- identification of napping strategies and development of guidelines for drivers;
- a trial of electronic log books
- reviews of driver fatigue monitoring devices; and
- review of fatigue management training and education.

Fatigue Expert Group

New Zealand's government is also currently undertaking a review of its policy on the management of driver fatigue. New Zealand's Road Safety Trust has joined with the NRTC and the ASTB to jointly commission a group of fatigue experts to provide advice on principles to be followed in regulatory approaches to the management of fatigue in drivers of heavy vehicles. The fatigue expert group was asked to examine the factors leading to fatigue and to develop options for the medium-term development of regulatory approaches to management of fatigue in drivers of heavy vehicles. The group released its discussion paper in March 2001 (FEG 2001). They noted that:

There are significant incentives in the social and economic profile of the transport industry for scheduling, trip planning and consequent driver practices that increase fatigue related risks. Competitive pressures, payment systems, contracting arrangements and even the unintended consequences of the current driving hours regime combine to create an environment in which fatigue has become an accepted part of industry practice.

The core of the group's model for understanding fatigue and its management 'is the need to provide adequate opportunities for restorative sleep and this is a fundamentally different orientation than prescribing limits to driving hours.' The group identified five critical factors or principles that should be incorporated in any regulatory options. These factors are summarised below:

- there should be ample opportunity for sleep, and time of day influences to be taken into account when scheduling breaks and off-duty periods. The group concluded that the minimum sleep requirement in a single 24-hour period is six consecutive hours of sleep (although the average required on a sustained basis is about seven to eight hours);
- the cumulative nature of fatigue and sleep loss means that schedules should permit two nights of unrestricted sleep on a regular basis (preferably weekly) to provide drivers with the opportunity to recuperate from the effects of accumulating sleep debt;
- the combination of risk factors associated with night driving should be recognised and addressed;

⁸ The objective of the review is to achieve "improvements in road safety and transport productivity through the development and implementation of policies and practices to assist in the management of fatigue in drivers of heavy vehicles".

- a 'safe' threshold for daily working time on a sustained basis will vary according to factors like time of day, but the upper limit is in the 12–14 hours range. While there should be flexibility in the time worked to accommodate longer trips, care must be taken to that long periods of work were not combined with risks associated with night driving and circadian low points⁹; and
- there should be ample opportunity for short breaks within working time countermeasures to fatigue and the boredom and monotony associated with some driving tasks.

4.4 Competition Policy and Road Freight Transport

Australian governments have, in the main, been reluctant to take industry-specific action to regulate anti-competitive actions, prices or input costs in a particular market. Rather, Australian governments have, in most instances, chosen to take more generic action to address concerns about the nature of competition in a market.¹⁰ The Trade Practices Act is the key tool for implementing this approach to competition policy.

The Trade Practices Act prohibits anti-competitive conduct and applies to virtually all businesses in Australia. In broad terms, it covers anti-competitive and unfair market practices, mergers or acquisitions of companies, product safety/liability, and third party access to facilities of national significance.

The promotion of competition and efficiency in business and greater choice for consumers (and businesses when they are purchasers) are the over-arching objectives of the legislation. The ACCC and its predecessor the Trade Practices Commission have used the provisions of the Trade Practices Act to counter price fixing behaviour in the freight transport industry (ACCC 2000).

In 1999 and 2000 the Act's unconscionable conduct provisions were strengthened in order to assist small businesses in their dealings with large businesses. These provisions are intended to prevent large businesses with a high degree of bargaining power from using unfair tactics or exerting undue pressure on smaller business. These have the potential to assist owner-drivers and other small subcontractors in the dealings with their prime contractors. The Australian Competition and Consumer Commission (ACCC 2000) is investigating a number of complaints regarding the way some larger trucking companies have conducted freight rate reviews with sub-contractors. It has been claimed that these companies have forced through GST savings without taking into account other cost factors, such as fuel costs increases, which have occurred since the last rate review. There are some circumstances where this behaviour may be considered unconscionable.

Because some of society's broader objectives cannot always be met by the operation of competitive markets, the Trade Practices Act provides for the exemption of certain activities, which would normally be, considered a restraint of trade. The ACCC has, for example:

⁹ All humans have an internal biological clock (sometimes known as a circadian cycle). This clock over the period of a day sends messages (for example changes in temperature) to our body. These messages in essence tell us when it is time to be asleep or rest (circadian low points) and when it is time to be awake and active. Australian and international research has found that the time of day has a important bearing on the level of risk associated with driving a vehicle. The highest risk levels are generally at the low points in the circadian cycle.

¹⁰ The main exceptions to this general approach are in markets such as telecommunications, electricity, gas and water and rail. These markets have traditionally been supplied by a statutory monopoly but are now progressively being opened up to competition.

- in 1997 authorised arrangements between CSR Ltd in Queensland and the owner-drivers of its concrete trucks which established terms and conditions of employment including cartage rates. The authorisation was considered in the public interest. The ACCC considered that there was potential for the owner-drivers to be the subject of undue wage discrimination. In addition, allowing owner-drivers to come together to negotiate would improve the fairness of the negotiating process, as well as some significant savings in transaction costs from one-on-one bargaining (ACCC 1997); and
- authorised codes of conduct which include some anti-competitive aspects so long as these aspects of the code are found to be in the public interest.

The road transport industry is currently in the process of developing a voluntary code of conduct to address industry concerns about the industry's culture, freight rates and safety. A sum of \$60,000 has been provided by the Commonwealth Government to help progress the code's development. Any anti-competitive aspects of the Code will need to be reviewed by the ACCC and, as is the case with all such codes, will only be authorised if they are considered in the public interest.

4.4.1 Entry and/or supply restrictions (economic regulation)

In Australia, the road freight market has very few regulatory barriers to entry or operation such as operator licences or price controls. Anyone holding a truck driver's licence can work as a driver in the industry. While anyone with sufficient capital to finance and register a truck can operate a road transport business on any route, with rates charged being determined by the market. The large number of operators currently in the industry is a testimony to the industry's limited barriers to entry. The situation was very different in the first sixty to seventy years of the last century.

Until the 1920s, virtually all medium and long-haul freight transport was undertaken by rail or sea. Road freight transport was primarily a short-haul urban industry, which mainly picked-up and delivered freight to or from rail sidings and ports. However, in the late 1920s and 1930s this began to change. Long and medium-haul road freight transport started to become a competitive threat to rail transport. This situation was unacceptable to state governments whose ailing railway operations were facing high and escalating deficits. Governments responded with a variety of regulations and taxes¹¹ including:

- discretionary licensing of road operators — which restricted the number of operators on routes;
- permits — which at least limited interstate road freight transport;
- imposition of road freight taxes and road use charges; and
- restrictions on the transport of certain commodities, particularly wheat and coal by road.

The enforcement of these 'economic' regulations and the level of the taxes and charges imposed varied between states. Frost (1997) notes that the level of regulatory enforcement often depended on the need for a backup to the more traditional freight transport modes. For example, during the Second World War when rail was operating at over capacity due to the sea lanes being disrupted and the short supply of vessels, governments encouraged freight

¹¹ The following discussion presents a brief background to the economic regulation of the road freight transport industry. For more detail on the history and the characters behind the growth and regulation of the long distance road transport industry see Jeffrey Frost's 1997 publication *They Came Like Waves: Long Distance Trucking in Australia* and also Chapter 3 of the National Road Freight Industry Inquiry (NRFII 1984).

transport by road. Similarly, governments encouraged road freight transport during rail and coal strikes. However, as soon as the respective crisis was over, the regulations were strictly enforced again.

Members of the road transport industry on various occasions had made representations to the High Court about the constitutional validity of the road transport regulations. The main argument to the Court being that the regulations created a barrier to trade between the states, which is illegal under the Commonwealth's Constitution. However, each case brought to the court failed. Finally, one case — Hughes and Vale Pty Ltd vs New South Wales — was appealed to the Privy Council. In 1954, the Council upheld the appeal on the grounds that discretionary licensing in relation to interstate trade was unconstitutional. The Council also found that the charges and taxes imposed by state governments on interstate freight were invalid, unless they directly related to road maintenance.

The Hughes and Vale case saw the end of the 'economic' regulation of the interstate road freight industry. Since that time, competition for interstate freight between road and rail and within the road freight industry has been vigorous. However, regulation of the road freight industry within the states continued for some time. The NRFII (1984) reports that South Australia, in 1965, was the first state to remove restrictions to intrastate competition. Victoria only lifted intrastate regulation in 1981 and Tasmania was the last state to lift intrastate regulation.

Recent proposals for entry requirements

The recent House of Representatives Standing Committee inquiry into managing fatigue in transport (the Neville Committee, Parliament of the Commonwealth of Australia, 2000) recommended that a national road transport operator accreditation scheme be developed if the industry had not adequately addressed the fatigue problem by mid 2002. The Committee's recommendation stated that:

If by mid-2002 there has not been an appreciable improvement in the way in which the road transport sector is addressing the problem of fatigue management, the Minister for Transport and Regional Services should seek Australian Transport Council approval for the development of a national operator accreditation scheme for the road transport sector. The accreditation scheme should:

- cover owner-drivers, fleet operators, freight forwarders, agents and brokers;
- incorporate training and standards for fatigue management and business management;
- be administered by a national heavy vehicle safety and accreditation agency.

The Committee did not specify how the accreditation arrangements would operate. If the Committee envisaged mandatory accreditation for all road transport operators, the proposed accreditation system could impose a barrier to entry and restrict competition in the road transport sector. The effectiveness of this barrier in limiting competition would depend on the degree of difficulty associated with obtaining accreditation.

The 1984 inquiry into the national road freight transport industry proposed the introduction of a mandatory entry requirement for road transport operators (NRFII 1984). The inquiry among other things recommended:

- the introduction of an operator licensing scheme, including the setting up of a licensing authority;
- the mandatory installation of tachographs on all trucks of 14 tonnes or more to assist the licensing authority monitor speed, engine revolution, distance travelled and elapsed time;

- the use of a standard industry trip document, which would show information not available from other sources including:
 - the time of starting the journey;
 - the delivery deadline; and
 - the load weight;
- the introduction of a voluntary training course for operators which is directed towards trucking business and management skills;
- the suspension or cancellation of an operator's licence where an operator has persistently failed to observe 'prescribed quality procedures'.

Under the proposed scheme all the industry participants, owner-drivers; fleet operators including ancillary operators and freight forwarders; agents and brokers which regularly operate trucks with a gross vehicle mass of 14 tonnes or more and travel more than 100 km from loading point to unloading point, would have to be licensed.

The proposed licence scheme was not intended to restrict competition in the industry, it was proposed that all businesses operating at the time the scheme was introduced would automatically receive a licence and all new entrants would successfully obtain a licence on the payment of a nominal fee. Rather, the licensing scheme was intended to be a mechanism for monitoring the behaviour of operators and extending the scope of responsibility. The inquiry report (NFRFII 1984, p.167) stated:

The basic objective [of the proposed scheme] is to extend the scope of responsibility for road safety so that it becomes a matter for which truck drivers (both employed and owner-drivers), fleet owners, freight forwarders, agents and brokers can each be called to account if their performance over a period is shown to be sub-standard.

In this sense, the arrangements proposed by the NFRFII would put in place a system that has the same objective as the chain of responsibility arrangements recently approved by the Australian Transport Council.

Should a form of mandatory accreditation be considered by policy makers its benefits and costs will need to be assessed and weighed up against other alternatives, including against fatigue and compliance reforms being undertaken by the NRTC. This is because mandatory accreditation, like any form of regulation, involves administrative, compliance and efficiency costs. Importantly, some forms of mandatory accreditation could place significant administration and auditing costs on road transport operators. For some small and medium businesses these costs could be onerous and could lead to unintended side effects on a segment of the industry which can least afford these additional costs.

4.5 Concluding Comments

Australia has an extensive body of regulation governing the community's use of the road network. Many of these regulations apply to all road users. For example, the Australian Road Rules and the Vehicle Standards which govern the construction and use of all vehicles. However, some are specific to the construction and use of heavy vehicles, for example, the Mass and Loading Regulations and the Restricted Access Vehicle Regulations.

A fundamental objective of these regulations is to improve the overall efficiency and equity of the road transport system by seeking to address a number of market failures associated with the use of roads. The regulations are also designed with a view to reducing the administrative and compliance costs that must be incurred to achieve government objectives.

It is important to note that Australia's heavy vehicle road transport regulations are undergoing a process of progressive reform. Initially reform focussed on developing a set of national rules and regulations. The magnitude of the task meant that many of the new national regulations are prescriptive and their effectiveness relies heavily on enforcement. Now that a system of uniform national regulations is in place, the reform process has taken or is taking steps to:

- replace or augment as many as possible of the prescriptive regulations with regulations that are more performance-based. An advantage of implementing a system of performance-based standards for heavy vehicles is that it allows for the development of more accurate proxies for the contributions of heavy vehicles to congestion, accidents, road infrastructure damage and pollution. In doing so, performance-based regulations will also give operators greater flexibility, thus creating opportunities for productivity improvements;
- put in place voluntary alternatives to conventional enforcement methods. These methods, which involve operator accreditation, aim to reduce compliance costs and increase flexibility and vehicle productivity; and
- recognise that enforcement should not stop with the heavy vehicle's driver. The introduction of chain of responsibility regulation (together with appropriate powers of officers and evidentiary provisions) recognises that, in many instances, the pressure to break the law comes from further up (or down) the logistics chain. Chain of responsibility has a key role to play in the development of a road transport compliance culture. In the case of the recently endorsed mass, dimension and load restraint regulations, the chain of responsibility provisions, once legislated, will be the first road transport regulations which make off-road parties accountable for loading breaches.

This new approach to regulating the road freight industry is still very much in its infancy. It is too early to assess how effective the new regulatory initiatives will be in improving road safety and improving compliance with road transport law.

Australia currently has no regulations governing access to the road freight industry or freight rates in the road freight market. Australia was one of the first countries to introduce such reforms. As outlined in the following chapter many other countries in the last decade or so have also removed this form of regulation to the benefit of road freight users.

However, recently, there has been a call to consider regulating entry to the industry through a system of accreditation. Unlike the market restrictions that were in place in the 1920s and 1930s, which were instigated to protect ailing rail freight services, the current call for accreditation focuses on potential deficiencies in the management of fatigue and the safety of the road freight market itself. The Neville Committee's accreditation recommendation arguably reflects problems with the prescriptive approach to regulating fatigue, which is currently under going a process of review and reform. It may be that the fatigue regulation reforms currently under way will be sufficient to address the Neville Committee concerns.

The reforms currently in progress in Australia, as well as the Neville Committee's call for consideration of accreditation demonstrates that a range of alternative approaches to the regulation of road transport are under consideration here in Australia. However, lessons can also be learned from overseas experience. To help identify alternatives and their effectiveness, the following chapter briefly reviews some other countries' experiences and approaches to regulating various aspects of the road freight industry.

5. SOME APPROACHES TO ROAD TRANSPORT REGULATION

A Government's role in addressing a market failure depends on the nature of the particular concern. In some instances, the magnitude of the problem and the risks to the community are so great that some form of explicit regulation or 'black letter law' is warranted. However, in some circumstances a more light-handed approach can be used to achieve a government's objective at a lower cost to the community. Some of these alternative approaches to overcoming market failures are known as 'grey letter law'.

Numerous text books on regulation as well as government publications such as the Office of Regulation Review's *A Guide to Regulation* (ORR 1998) and the Victorian Office of Regulation Reform's *Regulatory Alternatives* report outline a wide range of measures that could, potentially, be used as alternatives to the current regulatory system. This chapter briefly describes some alternative approaches that could be used (or are used in other countries) to regulate various aspects of the road freight transport industry. In some instances the approaches discussed are substitutes, however in other instances they are complementary.

Measures that could feasibly be used to address government concern for a market failure in the market for road freight transport services include:

- performance-based regulation;
- licensing, including operator licensing and negative licensing;
- co-regulation and self regulation;
- education and training;
- improving compliance through increased or improved enforcement; and
- removal of legislative or other impediments.

5.1 Performance-Based Regulation

Many of Australia's road transport regulations are prescriptive, in the sense that they strictly prescribe the manner in which a regulation's objective is to be achieved. Performance-based regulation can often achieve the desired objectives of a regulation while at the same time increasing opportunities for innovation and productivity improvements. The NRTC in conjunction with Austroads is currently developing a performance-based standards (PBS) approach to the regulation of heavy vehicles in Australia (see Chapter 4).

Prescriptive regulation also dominates most aspects of road freight transport laws in other countries. For example, vehicle mass and dimensions are generally prescribed and the safety concerns associated with driver fatigue are dealt with by prescribing the maximum hours of work and driving.

However, Australia is not alone in seeing the need to move to more performance-based regulation. In some countries, in particular New Zealand, Canada and the USA, moves to implement more performance-based regulation are also under way. For example,

- Canada has developed stability-related performance measures to regulate the size and weight of heavy vehicles (NRTC 2000b). Canada's Alberta province is also developing a fatigue management program which will emphasise factors such as driver health and education, medical tests and scheduling;

- New Zealand has implemented some limited performance-based standards relating to vehicle stability and has also introduced performance-based codes of practice for the design of drawbars, load securing, brake performance and the designing of logging truck bolsters (NRTC 2000b); and
- the USA is undertaking a program of research to review the Federal Motor Carrier Safety Regulations with the aim of developing more uniform, cost-effective and performance-based regulations (FMCSA 1999).

The use of more performance-based regulation is an important step in improving regulatory outcomes. However as outlined in Box 3 (see Chapter 4), performance-based regulation can impose costs. Thus performance-based regulation will not always be the most appropriate solution to a problem. In some instances other responses could achieve the desired outcomes at a lower cost. The most appropriate form of a standard or regulation will vary with the circumstances. The Commonwealth Office of Regulation Review notes that factors relevant to choosing the best regulatory form include: the extent of risk, the severity of the problem, the nature of the industry, the need for flexibility or certainty in regulatory arrangements and the availability of resources. Thus the need for prescriptive or performance-based standards and regulations will vary from case to case.

5.2 Driver and Operator Licensing or Registration

The licensing of truck drivers and the registration or licensing of vehicles for road use is a common practice internationally. In Australia, if these requirements are satisfied businesses are free to operate in the freight transport industry and charge prices determined by the market.¹² However, in many other countries other restrictions on entry to the road freight industry are also in place.

Two distinct categories of road freight operator entry regulation are currently being used in other OECD (Organisation of Economic Co-operation and Development) countries¹³. The first category involves restrictions on market size and operation (some times known as economic regulation) and the second category involves regulation of operator quality through mechanisms such as licences or certificates which are sometimes linked to safety ratings. For this report this second category has been broadly classified as operator licensing.

5.2.1 Economic regulation

As a general rule, the use of economic regulation reflects either an historical interest in protecting the local rail industry from competition from road, or alternatively protecting the local road freight industry from foreign competition and/or protecting the local freight industry from 'cut-throat' competition (OECD 2000a).

The OECD (2001) reports that economic regulation of road freight transport has declined in significantly importance among member countries. The OECD's International Regulation Database indicates that in 1998, freight rates were regulated in some way in Japan, Italy and

¹² The requirements to be satisfied to obtain a heavy vehicle drivers licence in some other countries are discussed below in Section 5.5 Education and training.

¹³ The OECD brings together the following 30 countries: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, The Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

Greece. While in Netherlands, Portugal, Spain, Switzerland, Czech Republic, Hungary, Poland, Italy, Austria and Greece a professional body enforces pricing or entry regulations or guidelines (table 4). Only three OECD member countries (Finland, Mexico, Hungary) regulate inter-modal freight competition (table 4).

Table 4: Summary of regulatory constraints in road freight transport in OECD Countries, 1998

Constraint	OECD Countries
Rights of foreign firms constrained relative to domestic firms in some way	US, Germany, France, Italy, Canada, Mexico, Norway, Portugal, Sweden, Turkey, Hungary, Poland, Austria, Belgium, Greece, Switzerland
Complete prohibition of cabotage	France, Belgium, Mexico, Switzerland, Turkey, Hungary
Domestic carrier requirement for public traffic	Greece, Mexico, Norway, Hungary, Poland
Restrictions on the possibilities for foreign firm pick-up	US, France, Italy, Canada, Greece, Mexico, Norway, Sweden, Hungary
Criteria other than technical, financial and safety considered in granting a license, permit or concession	Germany, France, Italy, Austria, Belgium, Mexico, Norway, Spain, Sweden, Czech R., Korea, Poland
Professional body enforces pricing or entry regulations or guidelines	Netherlands, Portugal, Spain, Switzerland, Czech R., Hungary, Poland, Italy, Austria, Greece
Regulator can limit capacity in some way	Germany, Italy, Belgium, Greece, Spain, Czech R., Hungary, Korea, Poland
Public ownership or control in road freight	Germany, Belgium, Denmark, Finland, France, Australia, Norway, Czech R., Poland
Regulation can restrict the number of competitors in some way	Italy, Norway, Turkey, Czech R., Poland
Regulations prevent or constrain backhauling	Finland, Greece, Netherlands, Norway, Hungary
Regulations prevent or constrain private carriage	Finland, Greece, Mexico, Netherlands, Switzerland
Regulations prevent or constrain contract carriage	Mexico, Switzerland, Hungary
Regulations prevent or constrain intermodal operation	Finland, Mexico, Hungary
Prices regulated in some way	Japan, Italy, Greece
Competition law exemption for road freight in some form	US, Japan, Turkey (and the EC)
Competition agency not involved in enforcement	Switzerland, Greece

Source: OECD (2001).

While restrictions on domestic competition are becoming relatively rare among OECD member countries, restrictions on the operations of foreign trucking firms through cabotage and other restrictions are very common.

Australia has been at the forefront of the move to remove economic regulation in the road freight transport industry. (As discussed in Chapter 4, the Privy Council in 1954 found that the economic regulation of interstate vehicles by state government to be unconstitutional. This decision led to the end of economic regulation on interstate routes and eventually on all routes.)

The OECD reports that its members liberalisation of the road freight industry has been almost uniformly positive (OECD 2001, p. 25). Its review of deregulation in the road freight

transport sector of OECD member countries found that the move away from economic regulation and the liberalisation of the road freight transport sector has led to:

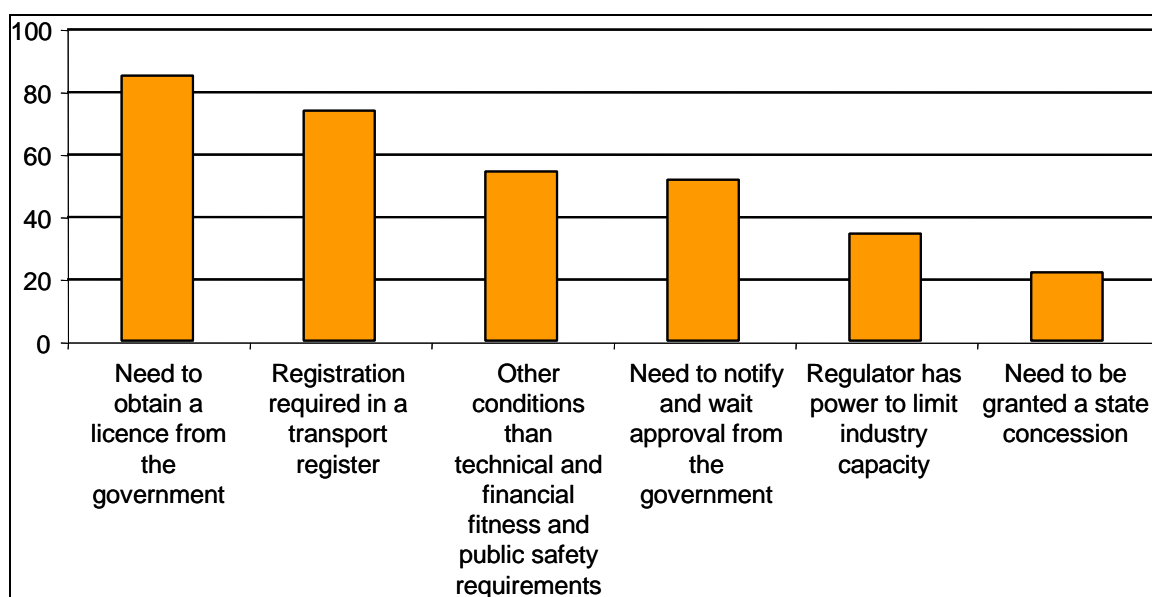
- reductions in freight rates — for example, freight rates declined by 15 per cent in France, by 12 to 25 per cent in the USA; and by 25 per cent in the UK and New Zealand;
- improvements in service quality;
- increases in productivity; and
- the development of innovative new services (OECD 2001 and 2000a).

5.2.2 Operator licensing

Operator licensing is intended to assist in overcoming market failures in the areas of road user charging and infrastructure access and externalities, particularly road safety. This section briefly describes the extent of operator licensing in OECD countries. The discussion relies extensively on two OECD reports (2001) and (2000a). The discussion is also based on more detailed case studies of the USA, Canada, the UK and New Zealand which are presented in Appendix 2.

In 1998 around eighty per cent of OECD countries required firms to obtain a permit, licence or certificate to set up a business supplying road freight services (figure 8).

Figure 8: Road freight entry regulations, 1998 (percentage of OECD countries)



Source: OECD 2000a.

In most OECD countries operator licences are required for hire and reward operators but are not necessary for ancillary (own account) operators. However in the UK, Mexico and Spain, ancillary operators must also obtain a licence or permit to operate their fleets. In New Zealand, ancillary operators must be licensed if they are operating vehicles with a gross-laden weight of 6000kgs or more. All European Union member states require their ancillary

operators to be licensed if they transport any freight for hire or reward.¹⁴ Canada has also recently implemented a National Safety Code that requires all freight transport operators, including ancillary operators, to have a safety fitness certificate before they can operate as motor carriers (Appendix 2).

In a majority of cases, operator licensing involves registration of the road freight transport operator in a transport register. In most countries the licensee has to demonstrate compliance with technical and safety, or financial fitness requirements specified by the regulator, these requirements could be considered as a means of regulating the 'quality' of operators.

The specific requirements necessary to comply with the operator licence conditions vary significantly between countries. For example, in the USA, motor carriers (transport operators, freight brokers and freight forwarders) that are subject to federal regulations must register with the Federal Department of Transport within 90 days of starting a service. To register, motor carriers must demonstrate that they have adequate insurance and have agents in all states in which they will operate. They must also register with every state through which they will travel in conducting their operations. Operators must also submit to a safety fitness rating process. A similar rating arrangement is currently being implemented in Canada. New Zealand, which also has a system of operator licensing, is currently considering whether it should introduce an Operator Safety Rating System to augment its licensing arrangements (Appendix 2).

In both the USA and Canada an operator's safety fitness rating is subject to audit through roadside inspections of vehicles and drivers' logs and through more detailed audits at the place of business. If the licensee is found to no longer comply with the safety rating, they may be prohibited from operating commercial motor vehicles outside their own state or province. In addition, in the USA a motor carrier with an 'unsatisfactory' safety rating is ineligible to contract or subcontract transportation services with Federal Government agencies. Appendix 2 outlines the specific areas reviewed in a safety rating in the USA and Canada.

In the UK and other European Union countries an operator must have a licence (an 'O' licence in the UK) before working in the road freight transport industry. Applicants must demonstrate they:

- are a person of good repute;
- have appropriate financial standing;
- are professionally competent or employ persons who are professionally competent;
- have suitable vehicle operating centres and maintenance facilities or arrangements; and
- have environmentally acceptable vehicle operating centres and vehicle maintenance facilities or arrangements.

In European Union countries the licence is held indefinitely, provided the conditions of the licence are not breached and the licence fees are paid on time (Appendix 2).

In the UK operator licensing restrictions are also used for environmental planning purposes. 'O' licence applicants must advertise in the local press that they are applying for a licence or a

¹⁴ The European Union is made up of the following fifteen member countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

variation of a licence and specify the specific location of the centre(s) where their vehicles will be garaged, maintained, etc. Local residents may make representations that the licence should not be granted on the grounds of noise, pollution, visual intrusion etc.

Benefits and costs of licensing operators for 'quality'

Licensing road freight operators for quality imposes another layer of compliance costs on businesses. The extent of these additional compliance costs will depend on the complexity of the licensing and safety rating processes, the nature of the information to be collected and assessed and the compliance effort required. The administrative costs for operators in the USA, Canada and the UK appears to be high as they are required to maintain a wide range of documents and databases. For example, in Canada a carrier must keep files for the current year and the previous four years pertaining to a wide range of areas including: the operator licence; each drivers employment, conviction and driving history; training undertaken by each driver; vehicle purchase and maintenance histories; and drivers logs (see Appendix 2 for a full listing of the records to be maintained).

The benefits will depend on the effectiveness of the licensing procedures in achieving their objectives. However, studies undertaken in the USA and the UK and reported below indicate that these licensing and safety rating arrangements do not necessarily improve compliance with safety regulations. The quality of the information databases and their accessibility to different jurisdictions and enforcement agencies as well as the level of resources and the reluctance to impose sanctions were factors that impeded the effectiveness of these arrangements.

Reviews of the USA's arrangements

A 1999 audit of the Office of Motor Carrier Safety program raised considerable doubt about the effectiveness of the program and its enforcement by Office of Motor Carriers (Office of Inspector General 1999). The Inspector General recommended major changes to the administration of the safety rating system as the arrangements in place did not ensure that motor carriers operated safely. The Inspector General found that the Motor Carrier Safety Program was not sufficiently effective in ensuring motor carriers (transport businesses) comply with federal safety regulations because:

- very few operators were actually rated — in 1998, nearly 72 per cent of the motor carrier population was unrated. Of those rated, 38 per cent were rated as unsatisfactory. The rating system allowed operators with less than satisfactory ratings to continue to operate for extended periods;
- the policies and procedures in place did not ensure that safety regulations were enforced. The report argued that emphasis of the program had shifted too far towards education and outreach which has little impact on businesses which persistently breach safety rules;
- available sanctions were not used to deter future non-compliance. Although safety investigators had authority to shut down motor carriers that posed an 'imminent hazard', the sanction was rarely used even though some carriers repeatedly breached safety regulations. (Over a period from 1995 to 1998 only 17 businesses were shut down even though 117 businesses were identified as high multiple significant breaches of the safety regulations);
- performance measures used by the Office of Motor Carriers did not focus on reducing the absolute number of fatalities involving commercial vehicle crashes. Fatalities involving

commercial vehicles had increased by 20 per cent between 1992 and 1997 and vehicle miles travelled had increased by 25 per cent;

- the database used to identify high-risk operators was incomplete and inaccurate and the data entry was not timely; and
- the priority needed for the safety program was difficult to achieve when its administration was the responsibility of an agency whose primary role was investment in road infrastructure (Appendix 2).

In addition to recommending significant changes to the administration, data collection and enforcement of the system, the Office of the Inspector General suggested a number of other actions be considered to improve truck safety. These included:

- increasing driver accountability;
- requiring that all trucks undergo an independent inspection at least once per year. Companies with good safety inspection process could be certified to inspect their own and perhaps businesses vehicles; and
- revising hours of service regulations to ensure they reflect the latest research on fatigue.

The Office of the Inspector General, in a separate report, also raised concerns about the effectiveness of the operation of the Commercial Drivers Licence program (Office of the Inspector General 2000). These arrangements are intended to lead to the disqualification of unsafe drivers. However, the Inspector General found that state agencies were failing to disqualify drivers as required under the program (see Appendix 2 for more detail).

Moses and Savage (1992) in an earlier review of effectiveness of the USA safety rating and enforcement system also expressed doubts about its effectiveness, even though they found that many of the operators found to have an unsatisfactory safety rating at an audit subsequently improved their accident performance. While this outcome is noteworthy, Moses and Savage believed that the auditing process had a relatively insignificant impact on safety in the road freight transport industry. There were two reasons for this finding. The first was that very few operators were actually audited. (The more recent audit by the Office of Inspector General found the low level of safety rating had continued.) Secondly, only five per cent of all operators audited were found to have unsatisfactory safety ratings and improved safety records for such a small number of operators had a negligible impact on the overall safety of the industry.

Importantly, Moses and Savage found that many of the areas investigated by safety rating auditors, such as financial responsibility, and many questions relating to maintenance, had little impact on road transport businesses' safety performance. Thus the need to prove compliance with these areas of investigation increased compliance costs without any impact on safety performance.

Moses and Savage (1992) concluded that a more targeted approach to auditing safety ratings could be more effective in improving the road transport industry's safety performance. They recommended that operators with high accident rates should be targeted for audit and these more targeted inspections should go hand-in-hand with higher penalties. However, as the Office of Inspector General found in the more recent reviews reported above, targeting high-risk operators requires effective enforcement and good up-to-date reliable databases. These issues are discussed further in sections 5.3 and 5.6.

Reforms are under way in the USA to better target high risk operators. Appendix 2 presents details of a new Performance and Registration Information Systems Management (PRISM) program which is intended to address some of the problems associated with the USA's safety rating program. The PRISM program is a complement to, rather than a substitute for, the Motor Carrier Safety Program. PRISM focuses more closely on high-risk operators with the assistance of an extensive computerised information database. The program uses screening and a safety auditing program to link vehicles, their operators and their compliance with road transport law. It aims to identify and where possible turn around, the safety performance of high-risk operators. If these attempts to improve an operator's safety fail then under the PRISM program the registration of an operator's vehicles can be suspended or revoked. This sanction is in addition to the unsatisfactory rating, which would also be imposed under the Motor Carrier Safety Program. A pilot study of the program suggests that PRISM will be more effective in targeting unsafe operators and in turning around their safety performance (see Appendix 2).

Concerns raised about the UK's arrangements

Despite the relatively strict 'O' licensing entry requirements in the UK, concerns have been raised about industry over-capacity and profitability, and the poor compliance levels of some operators with road transport law.

There is an ongoing debate about the level of excess capacity in the UK's road freight transport industry. Reflecting this concern, a member of the recently formed Commission for Integrated Transport has called for the British Government to provide grants to assist small haulier businesses to exit the industry. This call for grants is symptomatic of the level of concern about the profitability of some of the UK's smaller operators (Commercial Motor 2000, p. 32).

A random survey of heavy goods vehicles by one of the British Government's key enforcement agencies found relatively low levels of compliance with safety law. The survey found that:

- over 25 per cent of vehicles surveyed had faults that would warrant prohibition of the vehicle's use if repairs were not carried out; and
- 12 per cent of trucks checked had faults that were sufficiently serious to justify immediate removal from the road (UKDETR 1999).

In response to these concerns the UK government announced major changes to its approach to the enforcement of 'O' licensing conditions and heavy vehicle road transport regulations more generally. Key changes to the enforcement arrangements included:

- improvements in information databases;
- greater accessibility to these databases across enforcement agencies; and
- an increase in the level of enforcement effort which was to be funded through increases in 'O' licence fees (Appendix 2).

5.2.3 Operator registration (Negative licensing)

Negative licensing is a registration process that allows individuals or organisations to be excluded from operating in a particular industry or carrying out a particular industry function.

Negative licensing does not require an individual or business wishing to operate a road freight transport business to prove to a registration or licensing body that they comply with minimum industry standards, rules and regulations. Entry to the road freight transport industry is available to all businesses with the necessary funds to have access to licensed drivers and registered vehicles.

However, if a participant in the industry persistently fails to meet the minimum standards, the right to operate is lost. In this sense, negative licensing has a similar desired outcome to some forms of operator licensing, but has the benefit of not placing a substantial regulatory burden on the bulk of the industry.

Negative licensing is similar to the system of registration put forward by the NRFII in 1984. As outlined in section 4.9.1 the NRFII recommended the introduction of an 'operator licensing scheme'. Under the scheme, any business could obtain a licence on the payment of a nominal fee. The licensing system was merely a means of identifying industry participants rather than ensuring their compliance with minimum standards.

Negative licensing also has some similarities with the PRISM program currently being introduced in the USA, in the sense that high-risk operators are identified and if they fail to improve their performance, they lose their registration. On the other hand, a major difference between negative licensing and the PRISM system is that all operators subject to USA federal regulations are also periodically subjected to safety ratings and must meet certain criteria to operate in the industry.

While low compliance costs are the major advantage of negative licensing, there is also the potential for costs. Negative licensing, like operator licensing and safety rating systems, relies on individuals or businesses which persistently breach minimum standards to be quickly identified and removed from the industry. If this does not occur then the system fails to operate effectively. There is also a risk with negative licensing that an unsafe operator may enter the industry and cause significant harm before being identified as a high-risk operator. Negative licensing is therefore heavily reliant on effective enforcement. It is also heavily reliant on a good information system, which keeps track of all operators, their vehicles, their drivers and any breaches of the rules and regulations.

The difficulties associated with identifying and targeting high-risk offenders was recently pointed out by Professor Freiberg (2000, p.13). He noted:

Identification is difficult and sometimes wrong. High quality, accurate, reliable and up-to-date data bases are needed, but are rarely available. Past performance is not always a guide to future conduct and sometimes predictions can be very wrong. Secondly, the measure one can bring to bear may be limited either by law or resources. Intensive surveillance, monitoring, enforcement and escalating sanctions including shut down orders, are all proper measures, but they can leave the enforcement agency open to the risk of being caught unaware of the offender who suddenly appears from the 'safe' 80% or who just appears in the industry.

Of course these potential problems are not unique to negative licensing; they apply equally to any regulatory system which relies on the identification of high-risk operators. Similarly, the need for a good information system is not unique to negative licensing. It applies equally to many alternative forms of regulation, including operator licensing and accreditation systems.

5.3 Self-Regulation and Co-Regulation

Self-regulation and co-regulation (sometime called quasi-regulation) are towards the opposite end of the regulatory spectrum to explicit government regulation or ‘black letter law’ (Chapter 3, see Box 2.)

Self-regulation is a term that describes regulation imposed by industry and fully enforced by industry. Co-regulation is sometimes known as ‘grey letter law’. It is a term used to describe regulation that is implemented by an industry body or group in conjunction with some form of legislative backing or government support or endorsement. Codes of practice or codes of conduct are often a feature of co-regulation and self-regulation.

In practice, there is often not a clear delineation between co-regulation and self-regulation as government is sometimes involved at the periphery of a self-regulation scheme. This is because self-regulation schemes by their nature commonly involve some form of restraint of trade. In Australia’s case, any code which involves a restraint of trade must be approved by the ACCC as being in the public interest. In these circumstances, the self-regulation, once approved, technically becomes co-regulation.

Depending on the market and industry circumstances co-regulation and self-regulation can be effective alternatives to ‘black letter law’. These forms of regulation are likely to be most effective when there is:

- a strong industry association to monitor compliance with the regulation and enforce sanctions;
- a strong commonality of interest among industry participants; and
- little opportunity for ‘free riding’.¹⁵

Some of the potential benefits of this form of regulation include lower administration and compliance costs and greater flexibility, which can provide opportunities for innovative solutions to problems or the demands of technological change. An important disadvantage of some forms of co-regulation and self-regulation arrangements is that they can lead to a reduction in competition in the industry that may not necessarily be in the public interest.

Co-regulation is increasing in importance as a regulatory tool in Australia, particularly in areas such as occupational health and safety (see below).

Chapter 4 also drew attention to a voluntary code of conduct that is currently being developed by the road transport industry. This voluntary code is intended to operate ‘in front’ of the existing body of road transport and occupational health and safety law and is intended as a measure to help the industry address safety concerns. The status of the code is yet to be determined by industry and government.

5.3.1 *Quality assurance and accreditation schemes*

National Heavy Vehicles Accreditation Scheme (NHVAS) is an example of accreditation-based compliance (see Chapter 4). As noted earlier, membership of the scheme is voluntary and participating businesses are required to implement an accreditation program that, via audits, demonstrates the businesses’ compliance with certain aspects of road transport law. Operators have an incentive to enter the program as they enjoy reduced on-road enforcement.

¹⁵ ‘Free riding’ occurs if an operator benefits from the industry self-regulation or co-regulation but is not or cannot be compelled to comply with the regulation.

Canada's Alberta province operates a similar incentive scheme in tandem with its operator licensing and risk rating. The scheme, known as Partners in Compliance, is operated in a partnership with the Alberta Trucking Association. Membership of the program is restricted to operators that have demonstrated they have excellent safety programs in place. Membership allows operators to operate their business with only limited monitoring from government and police agencies.

Accreditation schemes are not new to the Australian road transport sector. For example, since the early 1990s the Australian Trucking Association, (previously the Road Transport Forum) has offered a voluntary industry accreditation program which is now known as TruckSafe. TruckSafe could be considered as a form of self-regulation. It provides a mechanism for industry participants to implement a safety accreditation process, which covers driver health, vehicle maintenance, management and training. Around 300 transport companies have enrolled in the TruckSafe scheme.

The recent House of Representatives Standing Committee inquiry into managing fatigue in transport commended the road transport industry's initiative in introducing an accreditation program. However, the Committee believed 'that the effectiveness of the TruckSafe program would be enhanced by the inclusion of driving hours, driver schedules and vehicle compliance in the TruckSafe audit process' (Parliament of the Commonwealth of Australia (2000), p. 69).

The House of Representatives Standing Committee's concern about fatigue in the road transport industry led it to recommend that if appreciable improvements in fatigue management had not been achieved by mid-2002 the government take action to introduce a national operator accreditation scheme.

The Committee's consideration of a national accreditation scheme may have been based on a view that industry initiated accreditation programs generally put most emphasis on improved outcomes for industry participants — customers, employees, shareholders — rather than the public at large. In other words, there is a chance that the market failures associated with the behaviour of participants in the road freight transport industry may not be sufficiently addressed by an industry developed voluntary scheme. It may also have been concerned that because the accreditation-based compliance scheme is voluntary, the higher-risk operators may self-select and remain out of the scheme.

On the other hand, it needs to be borne in mind that all accreditation schemes by their nature involve costs. The extent of the costs will depend on the design of the scheme, while the impacts will depend on the extent of any offsetting productivity benefits. For example, to be accredited each operator would need to put quality assurance and accreditation systems and controls in place and maintain records which are subject to periodic audit. Participation in an accreditation scheme could be costly for small operators, who form the bulk of the industry. The regulatory burden associated with a mandatory accreditation system could be quite large for some of the smaller operators in the road freight transport sector. If the costs of complying with mandatory accreditation arrangements are too high, as many have argued, some smaller operators may be forced to leave the industry, which could have a deleterious effect on competition.

The administration of a mandatory accreditation process also involves costs that would need to be factored into a benefit-cost analysis. For example, a national database of operators would need to be developed and maintained. These costs would need to be weighed against the benefits that mandatory accreditation might bring to the road transport industry. These net benefits would also need to be compared to the net benefits from alternative approaches, such

as those associated with voluntary accreditation-based compliance arrangements and the new chain of responsibility provisions.

5.3.2 Occupational health and safety codes of practice

Australia like most developed countries requires that workplaces, including road transport operators workplaces, comply with occupational health and safety (OH&S) requirements. Australian OH&S regulation applies a principle-based approach and comprises ‘umbrella’ legislation setting out a general duty of care and a means of demonstrating that these duties have been met. Codes of practice to manage safety concerns are becoming a common feature of OH&S regulation.

Some of the objectives of OH&S regulation, such as the provision of a safe working environment, are not unlike those of certain road transport regulations, particularly those associated with driver fatigue and the storage of dangerous goods.

However, in most Australian states, and in the many other countries the regulation of fatigue and other on-road safety issues is primarily, but not solely, in the domain of road transport law. For example, the management of fatigue risks is commonly through hours of work and driving regulations (see Chapter 4 for information on Australia's national fatigue regulation and Appendix 2 for information on the USA, the UK, Canada and NZ).

By contrast, the Western Australian and the Northern Territory Governments have chosen to manage truck driver fatigue under occupational health and safety legislation, rather than through road transport legislation. In Western Australia and the Northern Territory, road transport agencies in conjunction with industry stakeholders have implemented a system of co-regulation through the endorsement of industry Codes of Practice. These codes are implemented under the respective state and territory occupational health and safety legislation rather than under road transport regulation.

The Western Australian and Northern Territory Codes include operating standards as a guide to industry in the planning of schedules and rosters. The standards, which recognise the long distances that need to be travelled in these jurisdictions with little opportunity for effective rest breaks, offer some flexibility in the number of hours worked. Both Codes do not require the keeping of logbooks but emphasise the importance of sleep and the timing of work and rest. The Codes, which are voluntary, can be applied by each business in a way which best suits its individual needs. While drivers and businesses do not break the law by failing to follow the Code, they have the onus of proving that their procedures provide a similar level of safety as would occur if the Code was strictly complied with. In this sense, the Code is performance-based rather than prescriptive. These Codes are enforced by OH&S inspectors.

One difficulty with codes of this type is that both enforcement officers and operators seek certainty in knowing whether particular activities are permissible, resulting in pressures to move towards a more prescriptive outcome.

The different approaches to the regulation of road transport safety are in some part due to historical factors. For example, in Australia under-resourced OH&S agencies traditionally focused on industries and activities other than road transport, because there was already a body of law covering safety in road transport. However, it is also due to the nature of the safety issues of concern under OH&S and road transport law.

Under OH&S legislation, a business may be required to demonstrate that it has in place a safe system of work for its employees. The workplace may include a vehicle, irrespective of its

location. Under road transport law a vehicle must be operated in a manner which reduces safety risks for the driver, but also for other users of the road. In addition, OH&S regulation concentrates intensively on a management chain, but has difficulty going beyond this. In contrast the new chain of responsibility provisions currently being implemented in Australia (see Chapter 4) allows road transport regulators in Australia to prosecute consignors and others responsible for a safety violation.

Thus the objectives and coverage of road transport safety related laws are more wide ranging than OH&S.

In some instances there is overlap between the interests of the two bodies of regulation. Areas of joint interest for road and OH&S agencies include practices which take place off-road but which have implications for road safety outcomes. Possible examples include fatigue management, speed management, and use of drugs and alcohol.

Where there is overlap, the introduction of consistent regulation would reduce operator uncertainty and compliance and enforcement costs. This is a goal of the current review of fatigue (*Heavy Vehicle Driver Fatigue: Review of Regulatory Approach*). The review aims to produce consistency in fatigue regulation, both between jurisdictions and between OH&S and road transport requirements. It is proposed to achieve this by maintaining road transport regulation (in a more flexible form) in areas currently subject to this form of regulation, and supporting this by a fatigue code. Ideally, this code would be endorsed by both road transport and OH&S agencies and would be applied consistently in all jurisdictions, irrespective of whether their primary approach is through road transport or OH&S regulation.

While there is overlap in some areas of OH&S and road transport regulation, in other areas there is little. For example, some practices of road transport operators are of interest to OH&S agencies but have no impact on road safety outcomes. These include loading practices (unless they affect load security), noise and vibration (unless they affect on-road safety). In the case of vibration, for example, OH&S and road transport regulation will be interested in different factors and are likely to respond at different trigger points. Vehicle and cabin design and ergonomic factors are of interest to OH&S authorities when they reach a level causing discomfort or potential long-term health problems. Road transport regulators, on the other hand, may only consider regulatory action to be necessary if the problem reached a level where it had safety implications for the driver or other road users. For example, a low level of cabin vibration may contribute to driver stress and be of concern for OH&S, whereas a higher level of vibration would be required to threaten vehicle control to the extent of having safety implications. However, the issue would be clouded if it were considered that low levels of cabin vibration were a contributor to driver fatigue.

5.4 Education, Training and Minimum Skill Requirements

Information and education campaigns can sometimes be used as an alternative to regulation if the market failure being addressed arises because of imperfect information in a market. The Office of Regulation Review points out that this approach is most effective if the behaviour which needs to be changed arises out of ignorance on the part of one or more of the parties involved (ORR 1998).

There are a number of examples of where education campaigns have been used to address information imperfections in the market for road safety. Three relatively well known Australian examples are:

- the Victorian Accident Commission's shock advertising campaign which aimed to bring about a change in drivers' attitudes to drink driving and speeding;
- *driver reviver* education programs which aim to improve the community's awareness of driver fatigue and its management; and
- the use of road signage to inform drivers that they are about to enter a section of road with a high accident rate.

Education and training is also an important tool for improving compliance, particularly compliance with new road rules or road transport regulation. For example, off-road parties in Australia's new chain of responsibility provisions are receiving education and training to make them aware of their responsibilities.

Education and training, or alternatively, the setting of a minimum skill requirement, which may or may not be attained through education and training, can also be used to assign property rights to the road network or improve the safety of users of the road network. For example, the setting of a minimum skill requirement is used to award drivers licences in Australia and elsewhere.

In the UK and New Zealand minimum skill requirements must also be satisfied before an individual is given a licence to operate a road transport business.

In New Zealand an applicant for a transport service licence must supply evidence that they hold a Certificate of knowledge of law and practice. To obtain this certificate applicants must pass a core test as well as a specialist test relevant to the class of transport covered by the licence.

In the UK an operator licence ('O' licence) will only be awarded to a freight transport business if the licence holder or his or her employee has been awarded certificate proving their professional competence. Candidates for the certificate are examined on a core syllabus covering law, business and financial management and road safety as well as specialist syllabus. A road freight operator working internationally would be examined on the core syllabus as well as a UK road freight syllabus and an international syllabus (see Appendix 2).

5.4.1 Driver licensing standards and training

In all developed countries, potential drivers must demonstrate a minimum level of knowledge and a minimum level of driving skills before they are allowed to drive on the road network. Drivers are generally required to demonstrate that they have the physical and mental abilities to safely control a vehicle and comply with the road rules. Higher standards of driving skill are usually required by the licensing authority as the mass and dimension of vehicles increase.

Australia is currently implementing a National Driver Licensing scheme. This scheme establishes a six-tier licence classification structure, from car through to multi-combination vehicle licences. While the driver licensing scheme is a national one, licensing and the driver standards which are the basis of entry to (and expulsion from) the system, is the responsibility of state and territory authorities.

A recent review of the arrangements used by the states and territories to determine a person's competency to drive a motor vehicle found that:

There appears to be little uniformity in driver licence testing and assessment across Australia — no two systems are the same. Tests vary in duration, complexity, and scoring arrangements (NRTC 2000d, p.vi).

In regard to heavy vehicle licensing, the review, amongst other things, found that:

- all jurisdictions use theory/knowledge tests at learner permit/licence level — most are of written, multiple choice format;
- not all jurisdictions require separate theory tests for motorcycle or heavy vehicle class applicants; and
- all jurisdictions conduct on-road testing for all classes of heavy vehicle licence applicants. In some states, particularly those with accredited private providers such as NSW and Victoria, the licensing process is combined with a training program.

The USA and Canada have also experienced problems with a lack of standardisation in the licensing of drivers (and operators) across their states and provinces. In the USA, a commercial driver licence has been introduced which aims to limit drivers to one national licence, which is tested to a nationally agreed standard. Canada is also introducing a national safety code for operators and commercial drivers. However, at this stage, further work is required to ensure a national standard is in place (Appendix 2).

Virtually all countries use some form of driver assessment incorporating knowledge testing and practical on-road testing when awarding a drivers' licence. In some countries, governments are considering a greater role for training in the awarding of heavy vehicle drivers licences.

There are currently moves under way in Canada and the USA to introduce an apprenticeship system for commercial truck drivers. In Canada, the Alberta provincial government is developing a training curriculum for the road freight industry. The curriculum involves a year-long apprenticeship. The apprenticeship course will be voluntary. However, it is hoped that road freight businesses will recognise the benefits of employing highly trained drivers and pay them a premium for the additional training they have undertaken. This would in turn increase demand for the apprenticeship (Appendix 2).

In the USA the Government's Federal Motor Carrier Safety Administration has recently indicated that it plans to establish an apprentice permit and graduated licence procedures to improve the competence, performance and skills of commercial drivers (Appendix 2).

5.4.2 Effectiveness of driver licence training and testing

There is only limited information about the impact of driver licence testing on road safety. The information available indicates that on-road driving tests 'tend to screen out only the totally incompetent', as the tests are relatively basic and eventually most applicants will pass. On the other hand, research suggests that driving tests at least make applicants achieve the standard set by the test. Therefore making additional voluntary training available without raising the testing standards may have little impact on most drivers (NRTC 2000d).

The recent NRTC review of driver licensing requirements and performance standards noted that the skills required to obtain a truck or bus licence in Australia are lower than the skills necessary to secure employment in the road transport industry. Logic would lead one to conclude that novice heavy vehicle drivers may be motivated to seek out further skills and competencies through specialist training programs (NRTC 2000d). This finding is no doubt correct for most novice drivers. However, it should be borne in mind that there is no regulatory barrier in Australia that would prevent a novice, but licensed heavy vehicle driver, from purchasing or leasing their own truck and going into business on their own, without seeking additional training.

Some studies that have assessed the effectiveness of driving tests have observed that the best way to improve the level of training undertaken by drivers is to raise the skill requirements of the practical on-road test (NRTC 2000d). However, while this may increase the on-road skills of drivers it will do very little to improve the business and other skills necessary to run a successful road freight transport business.

5.5 Improving Compliance and Increasing or Improving Enforcement

Australia's approach to addressing market failures associated with the road transport industry primarily focuses on implementing and enforcing explicit regulation. Compliance with the law is crucial if this approach to address market failures in the road freight sector is to be effective.

The OECD in a recent report *Reducing the Risk of Policy Failure: Challenges for Regulatory Compliance* points to the following three categories of explanations for (non-) compliance:

- the degree to which the target group knows of and comprehends the rules;
- the degree to which the target group is willing to comply; and
- the degree to which the target group is able to comply with the rules.

The OECD (2000) argues that regulators must keep these considerations in mind when taking action to promote compliance. High compliance levels will be easier to achieve if good compliance outcomes are factored in at the regulatory design phase. To do this government must have a sophisticated view of factors such as:

- market characteristics;
- how organisations are structured and make decisions;
- the incentives which are likely to motivate compliance by individuals and organisations; and
- obstacles to compliance.

The OECD (2000, p. 8) also notes that:

To date, while many Member countries employ various kinds of risk and impact analysis methods, few conduct *ex ante* evaluation of compliance factor. ...

Monitoring compliance trends should also be a key part of *ex post* evaluation programs for *ex post* evaluation programs for existing regulations.

Regulation, no matter how well designed, can fail to achieve its objective if it is not effectively enforced. This point was raised by Professor Freiberg (2000) at the recent conference on smart compliance for the new millennium. He argued that it is illogical for road transport operators not to 'cut corners' in a regulatory system with a low enforcement environment. There are a number of ways that the enforcement can be improved including:

- creating incentives for regulated parties to prove their compliance with the law — Australia's voluntary accreditation-based compliance scheme (see Chapter 4) and Alberta's Partners in Compliance program both fit within this category of regulatory alternatives as they provide incentives for operators to comply with road transport law;
- creating a pyramid or hierarchy of enforcement strategies and sanctions (see OECD 2000b). For example, a regulator may have a number of sanction options ranging from persuasion to fines to harsher measures such as prison or prohibition from operating in the industry. Canada is implementing this approach through the Progressive Discipline

Program (see Appendix 2). Initially a road transport operator with less severe safety problems is issued a warning letter or notice to take action to improve safety performance. If performance does not sufficiently improve other sanctions are available with the ultimate sanction being an 'unsatisfactory' safety rating which prohibits the operator from running trucks on any highway;

- educating road transport authorities, the police and the judiciary on the objectives of the legislation they are enforcing to ensure consistent application of the law. As outlined in section 5.2, the USA's Office of Inspector General found that the various state jurisdictions failure to adequately enforce the rules and regulations relating the Commercial Drivers Licence and the Commercial Motor Carrier Safety rating system had a major negative impact on the effectiveness of these schemes. In Australia, the NRTC in conjunction with enforcement agencies has undertaken to develop national enforcement officer training competencies to ensure the nationally consistent application of the new compliance and enforcement provisions, including chain of responsibility. A national inspection manual is also being developed to assist in the enforcement of the heavy vehicle standards requirements;
- taking advantage of new technologies that can assist regulated parties to comply with the law or assist authorities to enforce the law. There are a range of technologies which are, or could be, used to improve compliance with or enforcement of the road transport law. These include:
 - tachographs, which are currently mandated in the UK and other European Union states. The primary objective behind mandating the use of tachographs in European Union states was to reduce fatigue related accidents. Tachographs, by recording the driving hours worked by commercial vehicle drivers, are a substitute for written log books. A review of the use of tachographs in the UK found that drivers initially resisted their introduction (NRTC 1996b). However, they are now considered as a valuable weapon as the tachograph helps them enforce driving hours regulations if employers or other parties in the supply chain put them under pressure to break the regulations and work longer hours. The review also found that inconsistencies in the application of driving hours rules in Britain and Europe was a problem for authorities and the industry. However, recent convergence of many road freight transport laws across the European Union is likely to have overcome this problem. Tampering with the devices was another problems identified in the 1996 review however new tamperproof digital tachographs are now available. The European Union has legislated to make the installation of digital tachographs mandatory on all new trucks by 2003;
 - introducing electronic vehicle inspection and fatigue detection devices. These technologies are currently being investigated in the USA, Canada and Australia; and
 - introducing other intelligent transport systems to assist drivers to comply with and road authorities to enforce the law;
- improving, coordinating or merging information databases to give enforcement authorities better access to information on drivers, vehicles, employers and perhaps other participants in the transport chain — the USA, Canada and the UK are all working to improve their national information databases and are also working to make them more accessible to enforcers;

- increasing the penalties for breaching road transport regulations. Becker (1968), in an article on crime and punishment, drew attention to the fact that if the probability of breaking the law and getting caught is low, then the penalties need to be extremely high. In Australia, the NRTC is developing a risk based categorisation of offences and related sanctions (see Chapter 4);
- increasing the level of resources, allocated to the enforcement;
- providing more appropriate powers for enforcement officers and providing effective evidentiary powers to facilitate effective court action. The compliance and enforcement legislation under development by the NRTC includes those provisions; and
- revising the roles or duties of enforcers. In many countries, including Australia, enforcement is the responsibility of more than one authority. For example, state road transport agencies may be responsible for enforcing rules and regulations relating to road infrastructure damage, while police may take prime responsibility for the enforcement of road safety regulation and OH&S inspectors may take prime responsibility for safety and the road transport terminal. Such a breakdown of enforcement roles may not necessarily be the most efficient method for achieving effective enforcement at least cost. An alternative approach used by New Zealand's Land Transport Safety Authority is the contracting out of its heavy vehicle on-road enforcement responsibilities to the police. Another option, which could feasibly improve enforcement is the cross-vesting of certain powers between OH&S enforcers and road transport enforcers.

There is no clear rule when, or if, any of these alternative approaches to improving enforcement should be used. In some instances, more than one, even all approaches may be warranted. Ultimately, the choice of measures will depend on the circumstances and on the benefits and costs.

It also needs to be borne in mind that increased enforcement effort or changing enforcement mechanisms will not be appropriate if the regulation being enforced is not suitably framed or properly designed to achieve its objective.

5.6 Identification of Other Legislative Impediments

When considering the need to implement a regulation, it is important to understand the source of the problem which the regulation is trying to address. It may be that impediments in other regulations or legislation are the cause of the problem. In this case, the best alternative may be to change, remove or improve enforcement of an existing regulation or law. This situation may apply to current concerns discussed in Chapters 3 and 4 about the level and management of driver fatigue and the unequal market power in the freight transport industry which can hinder the financial viability of some businesses.

Australia, like most other developed countries, has legislation in place to address occupational health and safety concerns such as driver fatigue and anti-competitive practices such as unconscionable conduct by large businesses. Before implementing additional regulation to address these problems, it is important that the regulators be aware why the existing laws are not adequately addressing the problem.

For example, in the case of Trade Practices law, the Commonwealth Government has strengthened its unconscionable conduct provisions to assist small businesses in their dealings with large businesses. As discussed in Chapter 4 these new provisions have the potential to assist owner-drivers and other small subcontractors in the dealings with their prime

contractors. These provisions should be fully tested before more heavy-handed regulation to deal with unconscionable conduct in the road freight transport sector is considered.

5.7 Concluding Comments

A wide range of approaches can be used to the regulation of the road freight industry. In some instances the regulatory approaches are substitutes for each other. For example, negative licensing could be a substitute for operator licensing. In other cases, the regulatory approaches are complementary. For example, all countries reviewed have regulations covering vehicle mass, speeding and driver fatigue and in many countries, including Australia, these regulations are complemented by education and training.

In some instances, ‘black letter law’, such as laws governing mass, dimension and load restraint, may be complemented by co-regulation (such as Australia’s voluntary accreditation program) or by education and training of drivers, transport operators or enforcement officers.

To varying degrees all of the regulatory approaches discussed in this chapter impose costs of one sort or another. In some instances, compliance and administration and enforcement costs would be substantial.

There are many similarities between regulatory approaches used in Australia and other countries. For example, virtually all countries license the driver and register the vehicle. (In the USA and in Canada’s Alberta province, consideration is also being given to introducing an apprenticeship system for commercial truck drivers.) However many countries go further than regulating the driver and the vehicle. Over 80 per cent of OECD countries also place an important focus of their regulation on the operator of the road transport business. In many countries, for example the USA, Canada, the UK and other European Union states the law implies, either directly or indirectly, that the responsibility for road safety resides with the operator of the road transport business.

Australia’s approach to the regulation of the industry has been, at least until recently, much more focused on the driver and the vehicle than in other countries. As discussed in the previous chapter, Australia, through the introduction of chain of responsibility regulation, is taking action to make the operator as well as others up and down the supply line responsible for road safety. It is worth while noting, however, that a 1999 review of the USA’s safety rating system suggested that consideration should be given to increasing driver accountability for the safety of the vehicle.

Australia’s system of road transport regulation is, in some respects, more light-handed than some other countries, particularly in the context of the regulation of the road transport operator. More heavy-handed approaches such as operator licensing and mandatory accreditation or risk-rating involve significant administration and compliance costs. Experience in other countries indicates that these types of approaches are intensive in information and resources. The databases necessary to effectively monitor operators and their drivers and vehicles are costly to develop and keep up to date. The quality of databases has been a major weakness of the operator licensing and safety rating arrangements in the USA.

Operator licensing, and safety rating systems and negative licensing all rely extensively on high-risk operators or drivers being identified before a fatality or safety breach occurs. These high-risk operators must either change their behaviour or be removed from the industry. If this does not occur then the system fails to operate effectively. In addition to good information systems these approaches require a substantial compliance and enforcement effort. Improving enforcement through greater resourcing of enforcement agencies and/or

improved information bases and computer systems is a growing trend in the USA, Canada and the UK. These approaches, like all forms of regulation, also require appropriate sanctions to be enforced.

Co-regulation and self-regulation are increasingly being considered as alternatives to more heavy-handed 'black letter law'. Australian road transport law has moved some small way in this direction with the introduction of voluntary accreditation arrangements and the use of codes of practice in the management of fatigue in the Northern Territory and Western Australia. Canada's Alberta province has also introduced a similar application of co-regulation as an adjunct to its mandatory safety rating system. However, in many instances these more light-hand approaches will only be effective when there are strong incentives to comply with regulation. This point can be demonstrated by recent experience in the USA. In that country the Office of the Inspector General found that switching the emphasis of the federal safety rating system from enforcement to education and partnering with business did little if anything to improve the safety record of those high risk businesses that persistently break the road transport law.

The following chapter draws together some implications of this review of regulatory approaches.

6. CONCLUSION

This review of approaches to regulating the road freight industry indicates that, in many respects, Australia is pursuing similar approaches to other countries. For example, Australia, like the a number of other countries, is:

- improving its enforcement, and education and training efforts;
- targeting high risk operators;
- adopting co-regulation in some instances;
- investigating ways of better managing driver fatigue; and
- moving to more performance-based regulation.

Australia, is also harmonising vehicle emission standards with international standards.

However, a major area of difference in regulatory approach is in the area of operator licensing, a common regulatory tool used in many countries other than Australia.

Around eighty per cent of OECD countries require road freight businesses to obtain a permit, licence or certificate to set up a business supplying road freight services. Operator licensing covers a range of regulatory approaches. At one extreme, operator licensing is a simple registration process with little or no barriers to entry. At the other extreme operator licensing is used for the economic regulation of the industry and involves significant restrictions on entry and the setting of freight rates.

The majority of OECD countries regulators are moving away from economic regulation which impacts on the price of freight services or the number or type of operators. In most countries the objective of operator licensing is to overcome or reduce market failures, particularly those which increase safety risks. It is not uncommon for the licensing arrangements to be linked to a quality assessment or safety rating. For example, in the USA and Canada the licensing process is linked to safety or risk ratings and audits of operators' facilities and records are an important component of the rating process. In the UK operator licensing requires applicants to satisfy minimum standards of good repute and knowledge of road transport law, operators must have suitable premises to garage and maintain vehicles and they are also subjected to regular audits.

The New Zealand Government is currently considering a proposal to introduce risk rating of operators. Currently, New Zealand's Transport Service Licence involves registration of the business and the persons in control of the business. The quality of New Zealand's operators is currently regulated by a licence requirement that at least one of the persons in control of the business must hold a Certificate of Knowledge of Law and Practice. In addition vehicles are subject to inspection every six months.

In some countries, for example New Zealand, the UK and European Union countries, the licensing system requires vehicles to be fitted with an instrument such as a tachograph to measure distance travelled for the purposes of levying a road user charge.

In some respects, Australia has taken a much more light-handed approach to the regulation of road freight activity. Businesses are free to operate in the road freight industry once they have registered their vehicles and has access to licensed drivers. In Australia, until recently road transport laws have been primarily enforced through on-road enforcement and, in some states,

vehicle inspections. However, the introduction of voluntary accreditation-based compliance arrangements, such as NHVAS, has placed a greater onus on operators to develop auditable management and operating systems which can be used to assure compliance with the relevant aspects of road transport law.

A key difference in Australia's approach to regulation is the new chain of responsibility provisions. In many countries, the ultimate responsibility for road safety resides with the operator of the road transport business. (The driver also has legal responsibilities but ultimately it is the operator's responsibility to ensure that the driver abides by the rules.) By contrast, Australia's new chain of responsibility provisions mean that all who bear responsibility for conduct which affects compliance with road transport law should be made accountable for failure to discharge that responsibility. This is an important development and moves Australia to the forefront of regulatory reform. This consultant is not aware of any other country that has taken responsibility for compliance with road transport laws beyond the driver and road transport operator.

Unfortunately, there is little available evidence to compare the effectiveness of operator licensing and safety ratings with Australia's new approach to improving compliance and road safety and road infrastructure use outcomes. Certainly, licensing and risk rating road freight operators imposes additional compliance costs on businesses and requires substantial public resources, both financial and human. The extent of the additional compliance costs will depend on the complexity of the licensing processes, the nature of the information to be collected and assessed and the compliance effort required. Importantly, in federal jurisdictions where the states rather than the national government have regulatory responsibility over road transport, the public resource costs and threats to the effectiveness of the system seem to be amplified. However, the difficulties in maintaining up to date national databases on operator and driver safety, which is a crucial component of a risk rating system, are not unique to federal systems. They also occur in the UK's unitary system.

The benefits of operator licensing for quality will depend on the effectiveness of the licensing procedures in achieving their objectives. Studies undertaken in the USA and the UK raise considerable doubts about the effectiveness of the systems operating in those countries. For example, in the USA in 1998 only 28 per cent of all operators had a safety rating. Importantly, 38 per cent of the carriers that were rated were rated as unsatisfactory and the majority of these continued to operate with out further safety checks.

In both the USA and the UK, the quality of the information systems used to monitor operators has been a major problem with the licensing scheme. Canada, which is also introducing a national safety rating system, is reported as having considerable difficulty in ensuring the consistent application of national standards across all its provinces. The quality of the enforcement effort has also been a major issue, particularly in the USA. For example, a 1999 review of the USA's Motor Carrier Safety Program found that very few operators were shut down even though some repeatedly breached safety regulations.

In Australia's case the voluntary nature of the new accreditation-based compliance arrangements means that businesses will only pursue this alternative if they believe that the benefits to their business exceed the accreditation scheme compliance costs. Importantly because accreditation-based compliance arrangements are voluntary they are likely to have a greater acceptance by business, which is likely to translate into higher levels of compliance.

Another feature of the arrangements is that the operator, rather than the government, bears all of the costs associated with audits to prove compliance. On the hand, because accreditation-

based compliance requires participating businesses to take greater responsibility for identifying, controlling and minimising risks in an auditable way it may be more difficult for small operators, who form the bulk of the industry, to take up.

The new chain of responsibility provisions should also assist in improving the compliance culture of the entire road freight supply chain and, by doing so, should reap benefits for safety and reduce damage to road infrastructure. However, as these new Australian arrangements are in their infancy it is too early to assess whether the benefits will actually be reaped. Ultimately the proof of the effectiveness of the new arrangements can only be determined once they have been operating for a period of time.

In regards to the safety objectives of road transport regulations, benchmarking heavy vehicle safety outcomes in different countries would be an important step in gaining a better understanding of the effectiveness of alternative regulatory regimes. Unfortunately benchmarking along these lines is not currently available and in Australia's case such benchmarking, for the next year or so, could only focus on the old regulatory regime. International benchmarking of road safety across all vehicle types indicates that Australia's road safety record measures up relatively well against most other OECD countries, which have data available for comparison (ATSB 2000).

While Australia's approach to regulating the road freight industry is somewhat different to the approach used in other countries, there is at this stage no evidence to indicate that the lack of any form of operator licensing for road freight has had a detrimental effect on road safety outcomes in Australia. It would appear to be good sense to follow the current regulatory reform path rather than switch to an entirely new regulatory approach like operator licensing. If governments did decide to pursue a form of mandatory operator licensing care should be taken to ensure that the benefits outweighed the costs. Importantly, government should also be certain that the considerable resources that would be required to put in place an effective form of operator licensing would not produce greater benefits if they were directed elsewhere.

REFERENCES

- Australian Bureau of Statistics 2000a, *Survey of Motor Vehicle Use, 12 Months Ended 31 July 1999*, Catalogue No. 9208.0, ABS, Canberra.
- 2000b, *Business Operations and Industry Performance, Australia*, Catalogue No. 8140.0, ABS, Canberra.
- Australian Competition and Consumer Commission (A.C.C.C.) 2000, Freight rates and the A.C.C.C., paper presented by Mr John Martin, Commissioner, at the NatRoad 2000 Annual Conference, Coping with Tax and Trucking, 18 August, Canberra.
- Australian Greenhouse Office 2001, *National Greenhouse Gas Inventory 1999*, Fact Sheet No. 3, <http://www.greenhouse.gov.au/inventory/facts/03.html>.
- Australian Transport Safety Bureau 2000, *Road Fatalities, Australia*, Monthly Bulletin, December.
- Austroads 1997, *RoadFacts 1996*, Austroads Inc.
- 2000, *RoadFacts 2000*, Austroads Inc.
- Becker, G. S. 1968, *Crime and Punishment: An Economic Approach*.
- Belzer, M. 2000, *Sweatshops on Wheels: Winners and Losers in Trucking Deregulation*, Oxford University Press, Oxford.
- Boadway, R. W. & Bruce, N. 1984, *Welfare Economics*, Basil Blackwell Inc., New York.
- Bureau of Industry Economics 1992, *Road Freight*, Research Report 46.
- 1995, *Issues in Infrastructure Pricing*, Research Report 69.
- Braeutigam, R. R. 1999, 'Learning about transport costs', in *Essays in Transportation Economics and Policy*, Brookings Institution Press.
- Bureau of Transport Economics 1999, *Trends in Trucks and Traffic*, Information Sheet 15.
- 2000, *Urban Congestion – The Implications for Greenhouse Gas Emissions*, Information Sheet 16.
- Bureau of Transport and Communications Economics 1993, *The Road Freight Transport Industry*, AGPS, Canberra.
- Commercial Motor 2000, 'Too many fish in the sea?' 7–13 December 2000.
- Coghlan, P. 2000, 'The principles of good regulation', in *Achieving Better Regulation of Services, Conference Proceedings*, Canberra 26–27 June 2000, conference jointly hosted by the Productivity Commission and the Australian National University.
- Cox, J. B. 1994 *Refocusing Road Reform*, prepared for the Business Council of Australia.
- Cox, J. B. & Meyrick, S. J. 1997, *Road Funding and Pricing Study*, report to the Australian Automobile Association.
- Fatigue Expert Group 2001, *Options for Regulatory Approach to Fatigue in Drivers of Heavy Vehicles in Australia and New Zealand*, Fatigue Experts comprising: Dawson, D. Feyer, A.-M., Gander, P., Hartley, L., Haworth, N. & Williamson, A.
- Federal Office of Road Safety 1999, *Road Fatalities, Australia: 1998 Statistical Summary*.

- Ffrost, J. 1997, *They Came Like Waves: Long-distance Trucking in Australia*, Kangaroo Press, East Roseville, New South Wales.
- Federal Motor Carrier Safety Administration 1999, *Research and Technology Program: Regulatory Evaluation and Reform*, <http://www.fmcsa.dot.gov/safetyprogs/research/Regeval.htm>
- Freiberg, A., 2000, 'Effective compliance and enforcement policies', in *Smart Compliance for the New Millennium Conference Papers*, Adelaide, 30–31 March 2000, National Road Transport Commission.
- Fruin, J. 2001, 'Results of the regulatory reform of the motor carrier industry in the United States', mimeo, September 1999, reported in Organisation for Economic Co-operation and Development 2001, *Competition Issues in Road Transport*, Directorate for Financial, Fiscal and Enterprise Affairs, Committee on Competition Law and Policy, DAFPE/CLP (2001) 10.
- Hensher, D. A., Battellino, H. C., Gee, J. L. & Daniels, R. F. 1991, *Long Distance Truck Drivers On-road Performance and Economic Reward*, CR 99, Department of Transport and Communications, Federal Office of Road Safety.
- Kahn, A. 1989, *The Economics of Regulation – Principles and Institutions*, 2nd edition, MIT Press, Massachusetts.
- Kloeden, C. N., McLean, A. J., Moore, V. M. & Ponte, G. 1997, *Travelling Speed and the Risk of Crash Involvement*, Australian Transport Safety Bureau Consultant Report 172.
- Land Transport Safety Authority, 2001, New Zealand Land Transport Safety Authority web site, <http://www.ltsa.govt.nz>
- Lowe, D. 1999, *The Transport Manager's and Operator's Handbook 1999*, 29th edition, Bell & Bain Limited, Glasgow.
- McLean, J. 1997, *A Comparison of Road and Transport Statistics for OECD Countries*, Working Document WD R97/045, ARRB Transport Research.
- Meyrick Associates 1994, *Road User Charges Discussion Paper*, report to the Business Council of Australia.
- Moses, L. N., & Savage, I. 1992, 'The effectiveness of motor carrier safety audits' *Accidents Anal. & Prev.* 25(5), pp. 479–496.
- 1997, 'A cost-benefit analysis of US motor carrier safety programs' *Journal of Transport Economics and Policy*, 31(1), pp. 51–67.
- Nix, F. P. 2000, *National Safety Code Standard #14 Description and Analysis of Procedures*, prepared for Road Safety and Motor Vehicle Regulations, Transport Canada on behalf of The Canadian Council of Motor Transport Administrators Project Group on Safety Rating.
- National Road Freight Industry Inquiry 1984, *Report of the National Road Freight Industry Inquiry* (chaired by T. E. May), AGPS, Canberra.
- National Road Transport Commission (NRTC) 1993, *Options for Improving Operator Performance*, Discussion paper, NRTC, Melbourne.
- 1996a, *Management of Speeding Heavy Vehicles*, Policy Proposal, NRTC, Melbourne.

- 1996b, *Use of Tachographs in the Enforcement of Truck Driving Hours: The British and European Experience*, Technical Working Paper No. 23, NRTC, Melbourne.
- 1998a, *Incidence of Grossly Overloaded Heavy Vehicles*, Technical Working Paper No. 32, NRTC, Melbourne.
- 1998b, *An Overview of Australian Road transport: Who Carries What Where?*, NRTC, Melbourne.
- 1999a, *Management of Speeding Heavy Vehicles*, Information Bulletin, NRTC, Melbourne.
- 1999b, *Updating Heavy Vehicle Charges: Regulatory Impact Statement*, NRTC, Melbourne.
- 2000a *Performance Based Standards Policy Framework for Heavy Vehicle Regulation*, Discussion Paper, NRTC, Melbourne.
- 2000b, *Specification of Performance Standards and Performance of the Heavy Vehicle Fleet*, (Performance Based Standards — NRTC/Austrroads Project A3 and A4), Discussion paper, NRTC, Melbourne.
- 2000c, *Higher Mass Limits for Heavy Vehicles with Road-Friendly Suspensions*, Information Bulletin, NRTC, Melbourne.
- 2000d, *Driver Licensing Requirements and Performance Standards: Including Driver and Rider Training*, Information paper, prepared By Dr Ron Christie, RCSE Services Pty Ltd.
- Organisation for Economic Co-operation and Development 2001, *Competition Issues in Road Transport*, Directorate for Financial, Fiscal and Enterprise Affairs, Committee on Competition Law and Policy, DAF/CLP (2001) 10, 22 May.
- 2000a, *Regulatory Reform in Road Freight and Retail Distribution*, Economics Department Working Papers No.255 by Olivier Boylaud, ECO/WKP(2000) 28, <http://www.oecd.org/eco/eco>.
- 2000b, *Reducing the Risk of Policy Failure: Challenges for Regulatory compliance*, <http://www.oecd.org/puma/regref/pubs/compliance.pdf>
- Office of Inspector General 1999, *Motor Carrier Safety Program: Federal Highway Administration*, Report Number TR-1999–091, Department of Transportation, United States of America.
- 2000, *Disqualifying Commercial Drivers*, Report Number MH-2000–106, Department of Transportation, United States of America.
- Office of Motor Carrier Safety 1999, *The Performance and Registration Information Systems Management (PRISM) Pilot Demonstration Project*, Publication no. MCRT-00-005.
- Office of Regulation Review 1998, *A Guide to Regulation*, Second edition, December, <http://www.pc.gov/orr>
- Parliament of the Commonwealth of Australia 2000, *Beyond the Midnight Oil: An Inquiry into Managing Fatigue in Transport* undertaken by the House of Representatives Standing Committee on Communications, Transport and the Arts, October, Canberra.

- Smith, K. 1999, 'Trucks and road trauma', *Proceedings of the Transportation 2000 AITPM International Conference The Travel Bug*, 7, 8 & 9 June 2000, Gold Coast, Queensland, pp. 221–232.
- Street, J. & Chow, G. 1997, The prospective cost-effectiveness of safety enforcement measures for the long-distance road transport industry in Australia: with observations from North American experiences, paper presented to 21st Australasian Transport Research Forum, Adelaide, September.
- Sweatman, P. F., Ogden, K. J. Haworth N., Vulcan, A. P. & Pearson R. A. 1990, *N.S.W. Heavy Vehicle Crash Study: Final Technical Report*, CR 92, Department of Transport and Communications, FORS, Canberra and Road Safety Bureau, N.S.W., cited by Street, J. & Chow, G. 1997, 21st Australasian Transport Research Forum, Adelaide.
- United Kingdom Department of the Environment, Transport and the Regions 1999, *Sustainable Distribution: A Strategy*, <http://www.detr.gov.uk/itwp/susdist/index.htm>.
- Victorian Road Freight Advisory Council 2000, *Performance Indicators for Commercial Vehicle Operations*.

APPENDIX 1: MARKET FAILURES AND ROAD FREIGHT TRANSPORT

This appendix uses the market failure framework outlined in Chapter 3 to examine whether there are any characteristics of the road freight industry or associated markets which could result in an unregulated market failing to achieve an outcome which maximises community welfare.

A1.1 Monopoly and market power

The on-road segment of the road freight industry is extremely competitive. It is characterised by:

- an absence of economies of scale — truck size is limited by the available vehicle technology, the dimensions of the road and also by regulation;
- many competing businesses, with different sized fleets - trucks operating in the hire and reward freight market comprise fleet operation divisions of freight forwarders; and small, medium and large fleet operators and owner drivers;
- relatively low capital costs — which facilitates entry to the market;
- limited specialisation;
- very few regulatory entry restrictions; and
- modal substitution for some services provided on some hauls.

Because of these characteristics, the market power of any individual road freight transport business is very low. The industry is at the opposite extreme to a natural monopoly. Given the highly competitive nature of the industry, it is not surprising to find that the profitability of many operators is low or negative (see Chapter 2).

There has been little recent research on the financial position of owner-drivers in the road transport market. However many participants in the market (for example the Transport Workers Union) argue that owner-drivers and small operators are working longer and harder for rates which are not commensurate with their costs.

While entry into the road transport market is relatively easy, there is a possibility that exit from the industry is not easy for some of the smaller fleet operators. The NRFII (1984) raised the possibility that barriers to exit could lead to disequilibrium between demand and supply of trucking services. The NFII noted:

The attachment of a significant proportion of LDODs [long-distance owner-drivers] to the industry in spite of low or negative returns strongly suggests that there are significant barriers to exit, especially the possibility of capital loss upon the sale of the vehicle, and the possible absence of alternative employment opportunities. A further barrier to exit may well be lifestyle considerations (NRFII 1984, p.44).

If these exit barriers are significant they could further reduce the market power of the on-road segment of the industry.

While the on-road segment of the road freight industry is highly competitive, there is evidence that some activities in the freight forwarding segment of the market could exhibit economies of scale which allow participants to enjoy some of market power.

The NRFII in 1984 stylised the structure and behaviour in the road freight forwarding business to explain how this market power arises. As the structure and behaviour has not changed substantially since that time, it which has been reproduced as Figure A1.1. The figure suggests a low threat of major entry to the freight forwarding market because, among other things, of the economies of scale and scope enjoyed by incumbents due to their network.

The NFRII also depicted low to limited bargaining power in the market that supplies trucking services for the LFTL freight market. This was particularly apparent in the market supplied by owner-drivers, but less so in the market supplied by unionised truck driver employees of freight forwarders.

Bargaining power for many users of freight forwarding services is also low. The NRFII stated:

Small-scale road freight operators have minimal bargaining power with major supplier groups to the industry... Line-haul operators' bargaining power in relation to major buyers of their services (ie. freight forwarders) is also negligible (NRFII 1984, p.41).

In its investigation of the freight forwarding industry, the NFII found no conclusive evidence of excessive profits, which should be symptomatic of a market that is exploiting its market power over buyers of its services. This finding was also supported by a 'marked absence of complaint to the Inquiry from transport users concerning forwarding' (NRFII 1984, p.39). This may be because the market does not have the level of scale economies necessary to fully exploit its market power. Studies of USA trucking businesses support the notion that less than full truckload freight operations show slight increasing returns to scale (see Braeutigam 1999).

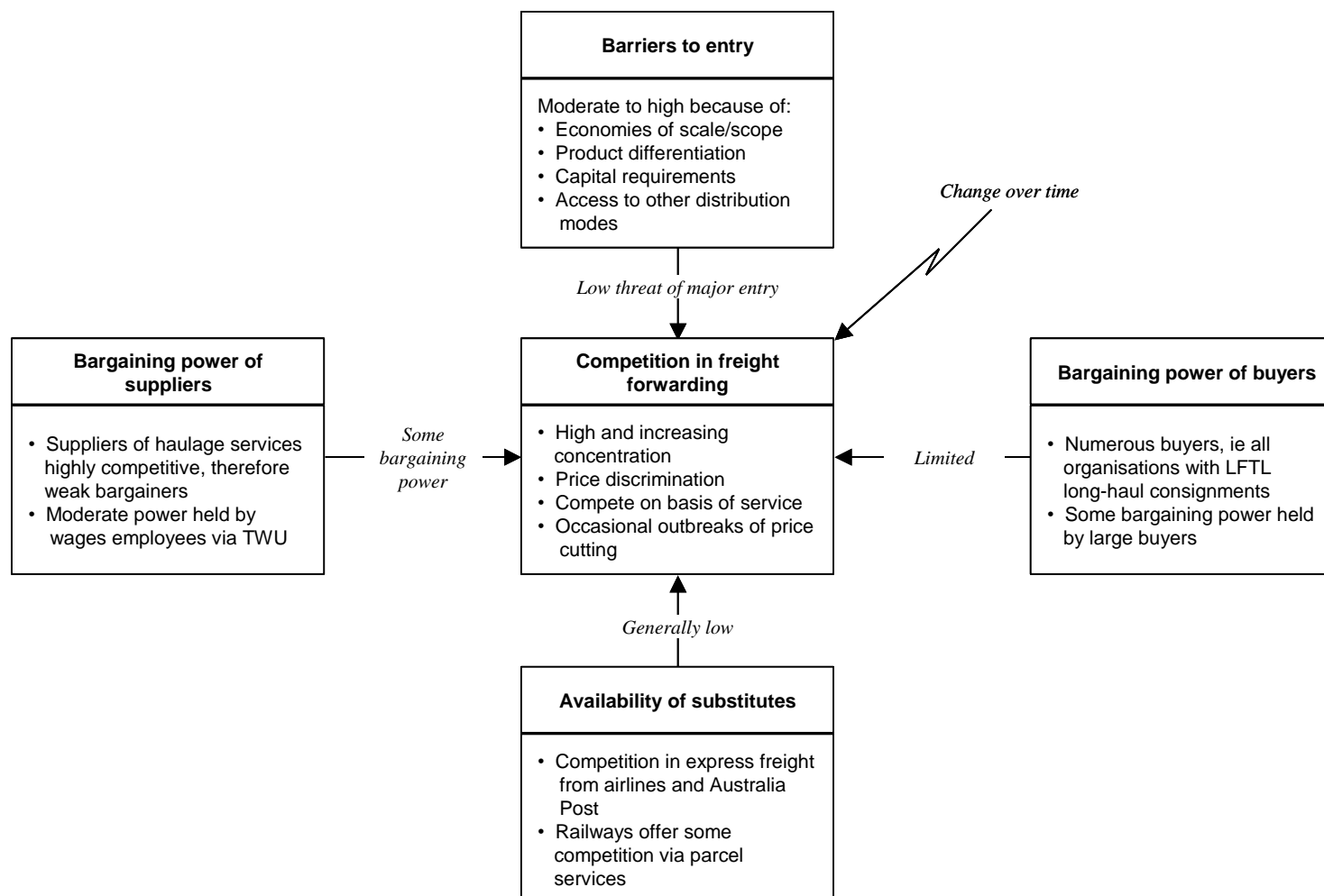
On the other hand, it needs to be borne in mind that the scale economies in freight forwarding are not large enough to maintain a monopoly or a duopoly. Market outcomes can often be efficient when there are only a few players, particularly if there are substitutes. The threat of entry by higher cost firms is another form of invisible competition that can affect outcomes.

A1.2 Property rights

In the case of stationary vehicles, it has been relatively easy to establish a system of enforceable property rights to space on road. Initially, this was achieved through the imposition of time limits on parking spaces, and the use of parking inspectors to monitor compliance with those time limits. The high transactions costs associated with this approach were reduced significantly through the introduction of technologies such as parking meters and boom gate parking.

By contrast, it has been much more difficult to establish a system of exclusive property rights for vehicles travelling on a road. Until recently, the transactions costs associated with defining, monitoring and enforcing an exclusive system of property rights for moving vehicles have been prohibitive in view of:

- the large number of road users and volume of traffic;
- the lack of effective technologies to monitor road use (eg the area of road being occupied by a particular vehicle at a particular point in time, the frequency of travel, routes taken, distances travelled etc). However, a number of recent advances in technology (tachographs, electronic vehicle tagging systems and global positing systems) are enabling more effective monitoring of vehicle location and distances travelled etc.; and

Figure A1.1: Structure and market behaviour in the freight forwarding market

Source: NRFII (1984).

- the manner in which most roads have been constructed, which makes it virtually impossible to physically prevent vehicles from using most of the road network.

As a result of these high transactions costs, road users do not have exclusive property rights to occupy a particular area of road at a particular time (ie 'private property' rights).

The practical difficulties associated with defining, monitoring and enforcing exclusive property rights in relation to road use reduce the efficiency and equity with which an unregulated road market for transport would operate. In particular, it would make it difficult for a private-sector road producer to recover the cost of their investment, and road users would fail to take into account the infrastructure wear costs, congestion costs and costs of accident damage they impose on other road users and the wider community.

The same factors that restrict the ability to define and enforce exclusive property rights relating to road use also restrict the ability to define and enforce property rights in relation to the road congestion and road safety. The quality of the environment is another example of common property since individuals do not have exclusive rights to clean air and water and a noise free environment.

While these property rights problems have important implications for the provision and use of roads they are not peculiar to road freight transport. Rather they apply to all users of the road system. For this reason more generic rather than road freight industry responses to these market failures should be considered.

A1.3 Public good characteristics of roads, road safety, and the environment

Public goods possess certain qualities that make the market mechanism an inefficient device for allocating resources to them.

Roads, road safety, and the environment all exhibit characteristics of a public good.

While the road network exhibits characteristics of a public good, it is not a pure public good. For example, while the cost of a vehicle using an uncrowded highway is very small, it is not zero, and it is possible, albeit costly, to exclude individuals from the right to use a road.

Road safety and the environment also have public goods characteristics. This is because the extent that the additional (marginal or incremental) costs associated with allowing one extra individual to enjoy the benefits of an improvement to road safety and the quality of the environment are very small, further it is difficult to exclude individuals from enjoying those benefits.

The public good nature of roads, road safety, and the environment means that an unregulated road transport market would tend to under-supply roads, and produce levels of road congestion, accident and environmental damage that are too high for society.

While these public good characteristics have important implications for the community they are not specific to road freight transport, rather they apply to most roads and have implications for all road users.

A1.4 Lack of information

Considerable uncertainty surrounds both the benefits and costs associated with providing road transport services to the community as a whole and to individual users. Similarly, road users

typically do not have information on the external costs that they impose on other road users and the community as a whole.

This uncertainty would not be a problem if efficient insurance markets existed so that both road suppliers and road users could insure against the risk that they have failed to accurately estimate the actual benefits and costs arising from their activities.

In reality, however, insurance markets tend to operate inefficiently due to the presence of asymmetric information. In particular, policyholders have access to much better information about their own activities than insurers.

For example, insurers have less information than policyholders on the probability that the policyholder will make a claim. Insurers generally do not have access to information on the actual probability that a policyholder will make a claim. Rather, they are only able to observe the average probability of policyholders to make a claim. As a result, high-risk policyholders are able to select insurance companies that charge premiums that are less than the expected net present value of the actual risks. Such ‘adverse selection’ reduces the efficiency with which insurance markets operate.

In addition, insurers have less information than policyholders on the ability of the policyholder to alter the magnitude of the insured risk. Insurers have difficulty monitoring the level of risk reducing activity undertaken by their policyholders. As a result, policyholders are often able to reduce their expenditure on such activity once they have purchased their insurance policies. Such ‘moral hazard’ also reduces the overall efficiency with which insurance markets operate. In some markets, people or businesses ‘club’ together to help reduce information problems. The road freight industry is a case in point. A large proportion of the industry has joined trucking associations to help them keep informed about developments in the market and in the regulation of the market.

A1.5 Externalities

The use of Australia’s roads can result in a number of external costs including:

- road congestion;
- accident damage, including costs associated with road fatalities and injuries;
- damage to road-related infrastructure (to the extent that it is not reflected in road-user charges); and
- environmental damage.

Like the property rights problems discussed above, these externalities are not solely related to the use of the roads by the road freight transport industry. Nonetheless it is worthwhile considering whether there are any particular aspects of the use of the roads by the industry that might be contributing to the magnitude and thus importance of these externalities for the community.

A1.5.1 Congestion costs

Congestion costs are incurred on a road when a vehicle using the road impedes the movement of another vehicle. Congestion costs arise because of the scarcity of road space — each road user imposes an external cost on other road users by reducing the total capacity of the road network. These congestion costs include the costs of time delays, the additional fuel used and the additional wear and tear on vehicles etc.

Each road user will bear some of the congestion costs arising from their road use. For example, a heavy vehicle operator will bear the cost of any delays to the delivery of the freight being carried by the vehicle using a congested road.

However, some of the congestion costs generated by a road user will also spill over onto other road users and the wider community. For example, the operator of a slow moving heavy vehicle will not bear the costs of the delays borne by faster road users queuing up behind that vehicle).

It is important to note that it is not the existence of road congestion and congestion costs that is the problem. Rather, the main problem is the risk that road users will fail to take into account all of the congestion costs arising from their use of the road network. Failure by road users to consider all of the costs they generate will result in the over use of the road network and levels of road congestion and congestion related accident damage that are higher than socially optimal.

Congestion costs can vary with the type of road, the location on the road, the time of day and even with the weather. However, in Australia the most significant congestion costs are incurred on metropolitan roads rather than in rural roads (Cox and Meyrick 1997). The Bureau of Transport Economics has found that the largest traffic congestion costs are incurred in Sydney, Melbourne and Brisbane, with areas closest to the central business district tending to have the highest congestion costs. The BTE (2000, p.2) estimates:

... a total cost of approximately 12.8 billion dollars per year due to traffic congestion in major Australian cities (with Sydney currently experiencing cost of around 6.0 billion dollars per annum, Melbourne 2.7, Brisbane 2.6, Adelaide 0.8, Perth 0.6 and Canberra 0.05).

While road freight transport makes some contribution to these costs the bulk of these urban congestions costs are due to passenger motor vehicles.

A1.5.2 Road safety

Virtually every human activity can at some stage lead to an accident; road freight transport is no exception. The BTE (2000) estimates that road crashes in 1996 (latest available estimates) cost Australia \$14,980 million. Those costs comprised:

- human costs (including the value of labour lost in the workplace and in the household, long term care, quality of life, legal and correction services, etc.) accounted for \$8,385 million (56 per cent);
- vehicle costs \$4,110 million (27 per cent); and
- other costs (including travel delays, and insurance administration) \$2,485 million (17 per cent).

Some of these road crash costs will be internalised by the driver responsible for an accident but other costs will be external. For example, a heavy vehicle owner/operator responsible for an accident will bear:

- the cost of any accident damage to his or her vehicle; and
- some of the costs of accident damage inflicted on other road users (eg the costs of claims for property and personal damages inflicted on other road users).

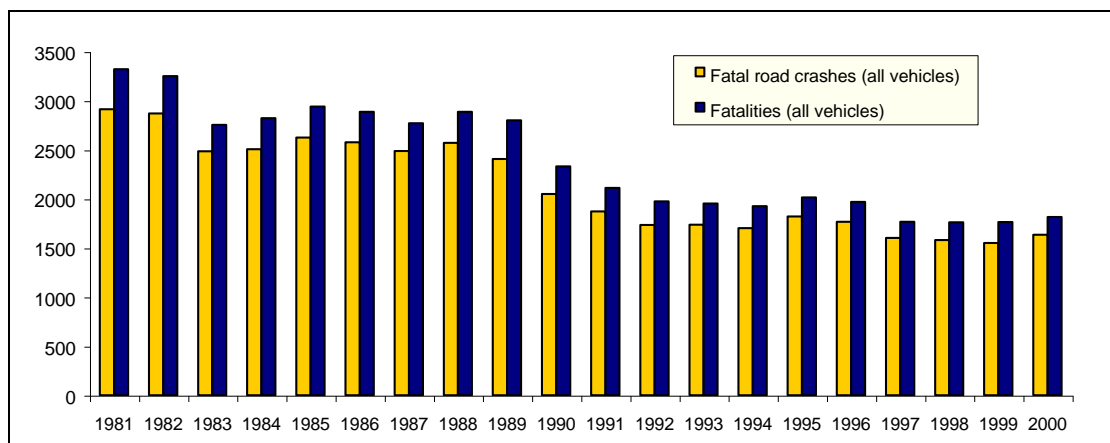
However, some of the accident costs generated will spill over onto other road users and the wider community. For example, a driver at fault will not bear the cost of:

- the cost of accident damage to other vehicles that is not recovered through insurance claims for damages;
- the loss of income that would otherwise have been earned by a fatally injured accident victim; or
- the costs of providing subsidised health care to road accident victims, which are borne by the wider community through higher rates of tax.

The total annual cost to the community of road accidents may have declined slightly since 1996 as the number of fatal accidents has declined slightly since that date.

Over the last two decades, there has been a significant reduction in the number of serious injury and fatalities. For example, in 1981, 3,321 people died on Australia's roads (figure A1.2). By the year 1999 fatalities had declined to 1,764. Over recent years the downward trend in road fatalities has levelled out and in 2000 road accident fatalities increased slightly, to 1817. As might be expected the number of fatal crashes has followed a similar trend to fatalities.

Figure A1.2: Number of fatalities and fatal road crashes, 1981-2000



Source: ATSB (2000)

The number of fatal crashes and fatalities involving articulated trucks has also declined significantly over the period 1981 to 2000 (see table A1.1). However, there is a well spread public perception that heavy vehicles, particularly freight transport vehicles, have a poor safety record and are involved in many fatal road crashes. Certainly, the proportion of fatal road crashes involving articulated trucks is much higher than their representation in the registered vehicle fleet. For example, in 1999 articulated trucks accounted for less than one per cent of registered vehicles but were involved in nearly 11 per cent of all fatalities.

Over the period from 1981 to 2000 articulated truck involvement in fatal accidents varied but ranged from 7.53 per cent in 1986 to 10.44 per cent in 1999, notably the three year period from 1988 to 1990 had involvement levels very close to this peak (table A1.1).

While articulated trucks are involved in a relatively large number of fatal accidents, it needs to be taken into account that, on average, articulated vehicles travel more kilometres per year than any other vehicle type. For example, in 1999, articulated trucks travelled an average of 85,900 km, in the same year buses travelled an average of 33,900 km and passenger motor vehicles (the largest vehicle class) travelled an average of 14,400 km (Chapter 2, table 1).

Table A1.1: Road fatalities and fatal crashes involving articulated trucks

Fatal crashes				Fatalities			
	All fatal road crashes	Fatal crashes involving articulated trucks	Per cent		Fatalities all vehicles	Fatalities involving articulated trucks	Per cent
1981	2914	236	8.10	1981	3321	n.a.	
1982	2872	251	8.74	1982	3252	n.a.	
1983	2485	216	8.69	1983	2755	n.a.	
1984	2508	232	9.25	1984	2822	n.a.	
1985	2627	218	8.30	1985	2941	n.a.	
1986	2577	194	7.53	1986	2888	232	8.03
1987	2487	199	8.00	1987	2772	243	8.77
1988	2572	260	10.11	1988	2887	320	11.08
1989	2406	250	10.39	1989	2801	335	11.96
1990	2050	205	10.00	1990	2331	263	11.28
1991	1874	156	8.32	1991	2113	183	8.66
1992	1736	154	8.87	1992	1974	181	9.17
1993	1737	171	9.84	1993	1953	204	10.45
1994	1702	151	8.87	1994	1928	179	9.28
1995	1822	165	9.06	1995	2017	199	9.87
1996	1768	161	9.11	1996	1970	194	9.85
1997	1603	146	9.11	1997	1768	171	9.67
1998	1580	151	9.56	1998	1763	179	10.15
1999	1552	162	10.44	1999	1764	189	10.71
2000	1634	160	9.79	2000	1817	196	10.79

Source: ATSB 2000.

Importantly, involvement in an accident does not necessarily imply fault. The Federal Office of Road Safety has found that the heavy vehicle driver is, in the majority of cases, not at fault. Car drivers are primarily responsible for five out of every six crashes involving an articulated truck and two out of every three crashes involving a rigid truck (FORS 1997). While their contribution may be smaller than their involvement with fatal accidents might imply, heavy vehicle drivers are nonetheless responsible for a proportion of fatal accidents and thus impose avoidable costs for the individuals involved and for Australia as a whole.

Heavy vehicle road accidents - contributing factors

A complex range of inter-related factors can contribute to a road accident involving heavy vehicles. They include the condition of the road; the condition of the vehicles; and a myriad of human factors including the health of road users and the risks some operators take in

overloading vehicles and on the road. Street and Chow (1997) point out that it is not very useful to assign a single fault or immediate cause to an accident, as an accident should be seen as a chain of critical events leading to a catastrophic outcome. Rather than assigning fault or blame they suggest a more useful approach is to consider what action could be taken by the various parties that could prevent a similar accident occurring in the future.

While Street's and Chow's point can not be discounted, Australian research indicates that fatigue and speed are two key factors that contribute to heavy vehicle crashes. The highly competitive nature of the road freight industry may create the incentive for drivers to take such risks.

Fatigue

Fatigue affects driver performance and is often accompanied by slower reactions and poor judgment. Importantly, when drivers are fatigued, regardless of the cause, they are often not fully aware of the degree of fatigue they are experiencing. As a consequence, fatigued drivers may underestimate the accident risk they are imposing on themselves and others.

The nature of the work associated with driving heavy vehicles can greatly increase the risk of being fatigued while driving. In part, this is due to the long distances to be travelled, the time sensitivity of many transport services and the need for many heavy vehicles to be driven throughout the night — a time when our biological clock tells us we should be sleeping. However, the reasons for driver fatigue are not solely within the control of the driver. Factors such as poor scheduling and/or rostering, loading and unloading procedures and work practices increase fatigue levels.

In 1998 the NRTC commissioned a survey of over one thousand drivers to assess their views and experience of fatigue. Some of the results from this survey and those of a similar survey conducted in 1991 are summarised in table A1.2.

Table A1.2: Truck driver surveys, 1991 and 1998

	1991	1998
Average hours worked last week	63 hours	55 hours
Worked greater than 72 hours last week	30%	23%
Fatigue is a substantial personal problem	35%	21%
Experience fatigue on at least half of all trips	46%	31%
Involved in an accident in the last year		12%
Most commonly reported contributors to fatigue		
- Dawn driving		59%
- Waiting to load and unload		56%
- Long driving hours		48%
- Poor road conditions		42%

Source: NRTC unpublished data.

Over 75 per cent of drivers in the 1998 survey considered that fatigue was a substantial problem for the industry. Just over 30 per cent of drivers reported that they experienced some level of fatigue on at least half of their trips. However, less than 25 per cent of drivers considered that fatigue was a substantial or major problem for them. By contrast, in a similar

survey conducted in 1991, 35 per cent of drivers reported that fatigue was a substantial personal problem.

Around 12 per cent of drivers surveyed in 1998 reported they had been involved in an accident in the past year. Drivers considered that their own level of fatigue was a contributing factor in 20 per cent of these accidents.

A number of other Australian studies have estimated the role of fatigue in heavy vehicle accidents. However, the fatigue estimates in these studies vary significantly. For example, Hartley (1997) estimated that fatigue was a contributing factor in 25 per cent of fatal truck crashes in Western Australia with the percentage increasing to 30 per cent in regional Western Australia. Sweatman et. al (1990) found that fatigue could have been a factor in up to 60 per cent of truck crashes in New South Wales. On the other hand, ASTB data from Coroner reports and police observations for the years 1990, 1992, 1994 and 1996 indicates that fatigue contributes to about 10 per cent of fatal crashes involving heavy vehicles. However, the fatigued driver is more likely to be the driver of the light vehicle — 58 per cent of fatigue cases — rather than the heavy vehicle driver — 42 per cent of fatigue cases (Smith 1999).

Speed

Excessive speed is another factor that can cause or contribute to accidents and the number of serious and fatal injuries on Australian roads. Survey's indicate that up to four per cent of heavy vehicles exceed the open road speed limit by 15km/h or more (NRTC 1999a).

The greater the speed on impact, the higher the probability of serious injury or fatality. For example, a study of casualty crashes in a 60 km/h zone found that nearly half of the 'free travelling' speed casualty crashes would probably have been avoided or reduced to non-casualty crashes, if none of the case vehicles had been travelling above the speed limit. Further, the risk of involvement in a casualty crash in a 60 km/hr zone is twice as great at 65 km/hr as it is at 60 km/hr, and four times as great at 70 km/hr (Kloeden, McLean, Moore and Ponte 1997).

A 1991 quantitative study into long distance truck drivers' on-road performance and economic reward found that the propensity to speed was closely linked to the level of economic rewards and the certainty of rewards paid to both owner-drivers and employers of drivers (Hensher, Battellino, Gee and Daniels (1991). The study found that:

- deviations from a fixed salary encourage increased risk-taking by drivers in order to help ensure that an acceptable level of total income (net of truck-related expenses) is earned;
- earnings uncertainty encourages drivers to put in place self-imposed tight schedules, which often leads to speeding. Many of these drivers take stimulants in order to extend the numbers of hours available to work and therefore increase earnings potential; and
- on-road performance, pill taking and self-imposition of schedules are not correlated with whether a driver is an owner-driver or an employee — a much more useful classification is the nature of the contract or economic reward drivers and their employers receive.

Competition

The findings of the Hensher, Battellino, Gee and Daniels (1991) study reported above suggest that the competitive nature of the road freight industry could be contributing to the number of accidents involving trucks. The highly competitive nature of the industry may create incentives for some drivers and their employers or contractors to 'cut corners' and take risks

(such as driving while fatigued, taking stimulants to counter fatigue and speeding) to increase their productivity.

The destructive nature of unfettered competition in the trucking industry has recently raised by Dr Michael Belzer (2000) in the context of the United States road freight industry. In his book *Sweatshop on Wheels*, Belzer argues that unregulated competition in the USA line-haul road transport market has driven down profits and wages at the expense of road safety. He argues that experienced truck drivers in the USA are leaving the industry because of low wage rates — he reports that most long-haul companies in the USA are experiencing 100 per cent turnover of drivers each year. He maintains that competition in the industry has forced truck drivers' wages down to close to the regulated minimum wage and that these drivers are 'forced' to work excessively long hours, which puts themselves and others at risk.

While the higher level of risk taking may be acceptable from the perspective of some drivers or operators it is likely to be unacceptable from a whole of community perspective. This is because taking such risks can impose significant costs on the driver and the truck owner but also on others in the community.

A1.5.3 Road infrastructure

The use of vehicles results in wear and damage to road infrastructure including road pavements, bridges, overpasses and underpasses, and other related structures such as gutters, median strips, traffic lights and signs. In many markets these costs would be covered by the price paid to use the service.

However, the characteristics of road infrastructure and the market for road services make it extremely difficult to charge prices which send appropriate signals for the use of the infrastructure and at the same time generate sufficient revenue to cover total costs.

There are a number of reasons for this situation. Firstly, roads are characterised by 'economies of scale' which can mean that pricing at marginal costs (which in economic theory is the basis of efficient pricing) will not recover total costs. Secondly roads as discussed above have common property and public goods characteristics which make it extremely difficult to charge users for the road services they enjoy.

A range of other factors also complicate road pricing. For example, road wear costs vary between vehicles. The road wear caused by a light motor vehicle such as a passenger motor car on a particular road will be considerably less than the damage caused by a fully loaded heavy vehicle travelling on the same road at around the same time.¹⁶ The wear and damage caused by vehicles will also be effected by the type of roads (the thicker and more durable road pavements the lower the costs associated with using the road) and other factors such as weather conditions.

In order to levy efficient road-user charges, the road owner needs to know the nature and extent of road use by each heavy vehicle and the social marginal costs (damage, congestion, pollution, etc.) arising from that road use. In practice, however, such information is not available.

¹⁶ The fourth power rule is one measure which is used to explain how pavement wear varies between types of vehicles. Under this rule, damage caused by vehicles in 'typical' road conditions will vary according to the fourth power of the axle load.

An external cost is imposed on society if the damage and wear associated with the use of the road network is not covered by road user charges. In the absence of some intervention this externality could lead to under investment in roads and over use of the road network by those users.

If the externality arising from pricing road infrastructure below marginal cost is significantly large the externality may negatively impact on the efficient allocation and use of resources in other segments of the freight transport market. These efficiency costs arise because freight road transport is sometimes a substitute for freight transport by rail or sea or air (see Chapter 2 figure 5).

The possibilities for substitution between modes will depend on a number of factors including: the size, weight and quantity of freight to be carried; the freight rate charged; and the service quality (reliability, timeliness etc.) of each mode. However, if road freight is not paying its fair share of the cost of road services inputs then there is a chance that modal choice will be distorted because road freight rates are lower than they might otherwise be. Thus there may be a case for some form of intervention to improve competitive neutrality across freight transport modes.

A1.5.4 Environmental damage

The use of motor vehicles results in environmental damage in the form of air pollution, noise pollution, spills of hazardous material and the disruption and destruction of wildlife. Of these, vehicle air and noise emissions are probably the most significant sources of environmental damage.

Pollutants arising from the use of motor vehicles include carbon monoxide, carbon dioxide, hydrocarbons, nitrogen oxides, sulphur dioxide, ozone and particulate matter (dust, smoke and soot). They contribute to varying extents to the community's health problems, and have a negative impact air quality in rural and urban areas.

Vehicle emissions are also threatening our climate through the global warming associated with the greenhouse effect. The road transport sector accounts for about 14.5 per cent of Australia's total net greenhouse gas emissions. Passenger motor vehicles (cars) are the largest contributor, accounting for 9.1 per cent of Australia's total emissions, while trucks and light commercial vehicles contribute around 5 per cent (Australian Greenhouse Office 2001).

The quantum of these road transport emissions, and the extent of their adverse effects on the environment, are influenced by a range of factors including:

- vehicle construction, particularly engine and exhaust design;
- the chemical composition of fuels;
- traffic conditions and driving behaviour;
- vehicle maintenance;
- road construction, particularly the proximity of roads carrying heavy vehicles to residential and business areas;
- building construction (air conditioning efficiency); and
- the weather.

Motor vehicles are also a significant source of noise pollution, which can interfere with the operation of businesses, and the quality of life of residents located near roads. The extent of vehicle noise pollution and its costs to the community depends on a number of factors, including:

- vehicle weight, construction, and operation;
- road construction;
- proximity of roads to other businesses and residents;
- building construction (some forms of sound insulation can significantly reduce the exposure of individuals to vehicle noise emissions);
- individual driving styles; and
- the sensitivity of individuals to the level or frequency of noise.

The complex relationship between vehicle use, construction and other variables makes it difficult to estimate the costs arising from an individual vehicle's noise emissions. Even if an accurate costing could be made the common property characteristics of the environment makes it extremely difficult to charge an individual for the emissions and noise made by their vehicle.

APPENDIX 2: REGULATORY APPROACHES IN SELECTED COUNTRIES

A2.1 United States of America

A2.1.1 Background

In the USA, responsibilities for the administration and enforcement of road transport rules and regulations are shared between federal and state governments. The federal government has responsibility for commercial motor carriers (both freight and passenger) which travel interstate or internationally and enforces the safety of motor carriers through its Motor Carrier Safety Program. State governments are responsible for intrastate operations of commercial motor carriers and the licensing of heavy vehicle drivers and the registration of vehicles.

Commercial drivers licence

All drivers of commercial motor vehicles (CMV) operating intrastate, interstate or internationally must hold a single valid Commercial Drivers Licence (CDL). Drivers who operate specialised CMVs, such as vehicles with double or triple trailers, tanks or carrying hazardous materials, must pass additional driving skills or knowledge tests.

A CDL information database has been set up to help licensing states assure that only one licence is issued to a driver and that drivers currently disqualified are prevented from obtaining a CDL. State governments are responsible for maintaining the CDL database and recording drivers' traffic infringements. Employers of heavy-vehicle drivers also have access to the database through their State's vehicle licensing agency.

If a holder of a CDL is convicted of any State or local traffic offence he or she must notify his/her employer(s) within 30 days. If a holder of a CDL is found to be driving under the influence of alcohol, other disqualifying drug or other controlled substance, he or she will be disqualified from driving. The CDL will be suspended for 60 days if the licence holder, while driving a CMV, is convicted of two serious traffic offences within three years. The suspension time is doubled if the licence holder, while driving a CMV, is convicted of three serious traffic offences with three years.

Effectiveness

A recent audit by the Office of Inspector General raised concerns about the effectiveness of the administration of the CDL sanctions (Office of Inspector General 2000).

The Inspector General found that the program had largely achieved its objective of limiting drivers to one CDL. However, some major problems with the arrangements were that:

- states were often not disqualifying drivers as required by law — in five of the ten states visited by the audit team, state officials did not use advice of serious convictions such as driving under the influence of alcohol or drugs, that had been received through the information database to disqualify drivers;
- many states were granting special licences to commercial drivers who posed a safety risk and were withholding convictions from drivers' records — seven of the ten states visited and fifteen states responding to a survey indicated they issued special licences or permits to allow drivers to effectively avoid disqualification;

- many states were ‘masking’ convictions — for example, a driver convicted of an offence may not have a conviction recorded on his or her driving record if he or she agreed to pay a fine and enrol in a defensive driving course or attend an education program; and
- a substantial amount of out-of-state traffic offences by commercial drivers were not recorded on the information database and/or transmitted to the licensing state in a timely manner.

The Inspector General concluded that these deficiencies could have been identified if audits by the responsible federal agency (now the FMCSA) had been of sufficient depth. The FMCSA has subsequently implemented a program to improve its auditing of the program. The Federal Government has also increased resources to state governments in order to improve the operation of their CDL programs.

Training

In its recently released Draft report *2010 Strategy: Saving Lives Through Safety, Innovation and Performance* (FMCSA 2001), the FMCSA announced plans to establish an apprentice permit and graduated licence procedures to improve the competence, performance and skills of commercial drivers. The FMCSA will also ‘assess methods for recruiting, selecting, training evaluating and retraining safe commercial drivers, including designing training standards to include instructor certification, and provide guidance to carriers on improved driver management’ (FMCSA 2001, p.10).

A2.1.2 Motor Carrier Safety Program

The Motor Carrier Safety Program is a federal program which sets up procedures and funding to determine and monitor the safety fitness of owners and operators of interstate commercial transport businesses. The program has a substantial level of state involvement, which is funded by the Federal Government through Motor Carrier Safety Assistance program grants. In 1999 grants to the states under the program totalled \$US90 million. In that year, a further \$US53 million in funding was required for the federal component of the Motor Carrier Safety Program.

Motor carrier safety ratings and compliance reviews are a key part of the program. Motor carriers are also subject to roadside inspections.

Operator licensing, safety ratings and reviews

Motor Carriers (freight transport operators, brokers and freight forwarders) subject to federal regulations must register with the Federal Department of Transport within 90 days of starting a service. Motor Carriers must also obtain a licence from the Federal Motor Carrier Safety Administration (FMCSA) (formerly the Office of Motor Carriers in the Federal Highway Administration (FHWA)).

To obtain a licence, motor carriers must among other things be insured and have agents in all states in which they will operate. Licence applicants must also register with every state through which they will travel in conducting their operations. However, under recent amendments to the regulations all newly formed motor carriers will be required to demonstrate their knowledge of safety regulations before operating in the sector, and will be subjected to a safety review within the first 18 months of operation.

The FMCSA and state authorities undertake roadside and on-site compliance reviews of motor carrier's compliance with the safety fitness standards set down in the Federal Motor Carrier Safety Regulations and the Hazardous Materials Regulations. The reviews may be instigated at the carrier's request for a change in safety rating or may be in response to a complaint or may be instigated as a result of identifying a poor safety record through the FMCSA's Inspection Selection System.

The compliance review includes an examination of the motor carrier's records and covers all or some of the following areas of operation:

- alcohol and controlled substance testing — motor carriers are required to randomly test drivers for alcohol and controlled substances, testing must also occur after an accident and prior to employment;
- hours of service — it is an offence to operate a motor vehicle when a driver's ability and/or alertness is impaired by fatigue, illness, or any other cause that makes it unsafe to begin (or continue) to drive a CMV. Prescribed hours of service rules apply to all motor carriers and drivers and all long and medium distance drivers must complete a daily log in their own hand writing for each 24-hour period. If the motor carrier has an automatic on-board recording device installed, this device can be used to record duty status. However, the driver must still maintain records of duty status in automated or written form for the previous seven consecutive days and the driver must sign hard copies of the driver's record of duty status.
- driver qualification — motor carriers must keep up-to-date qualification files for each regularly employed driver. This file includes:
 - the driver's employment application;
 - proof that the employer has investigated the employee's previous employment and driving records;
 - an annual review of the driver's driving record;
 - a certification from the driver of the number of type of convictions for breaches of the motor vehicle traffic laws during the previous 12 months;
 - a copy of the driver's CDL; and
 - proof that the driver has passed a medical examination in the last two years.
- vehicle inspection and maintenance — every motor carrier is required to have a qualified person systematically inspect, repair, and maintain all CMVs under its control. Motor carriers must keep records of vehicle inspection and maintenance. These records must be retained for one year at the location where the vehicle is garaged, and maintained for six months after the vehicle leaves the carrier's control (via sale, trade-in, or scrap). Reports from any roadside inspections must also be kept with the inspection and maintenance records. Drivers must complete a daily written post-trip inspection report which is to be reviewed by the next driver who must confirm that necessary repairs have been completed;
- financial responsibility — motor carriers must have sufficient insurance policies or surety bonds to satisfy the minimum public liability requirements;
- accidents — motor carriers are required to maintain an accident register containing information on the date and place of accident; driver's name; number of injuries and fatalities; any hazardous materials (other than fuel) released in the accident;
- compliance with hazardous materials regulations;

- compliance with other safety and transportation record keeping;
- roadside vehicle out-of-service rate.

After the review the motor carrier is awarded one of the following safety ratings:

- Satisfactory — the motor carrier is assessed as having adequate and functioning safety management controls in place to meet the prescribed safety fitness standard. The adequacy of safety management controls is assessed with reference to the size and type of operation of the particular motor carrier;
- Conditional — the motor carrier is assessed as having inadequate safety management controls in place;
- Unsatisfactory — the motor carrier does not have adequate safety management controls in place to ensure compliance with the safety fitness standards and this has resulted in breaches of the safety standard.

A motor carrier with an unsatisfactory rating must within a specified time improve its rating to at least conditional. If this rating is not awarded within the specified time, the carrier is prohibited from operating CMVs interstate or across national borders. In addition, a motor carrier with an 'unsatisfactory' safety rating is ineligible to contract or subcontract transportation services with Federal Government agencies.

Effectiveness of the Motor Carrier Safety program

A 1999 audit of the Office of Motor Carrier Safety program raised considerable doubt about the effectiveness of the program and its enforcement by Office of Motor Carriers in the FHWA (Office of Inspector General 1999). The Inspector General recommended major changes to the administration of the system as the safety rating system did not ensure motor carriers operated safely. The Inspector General found that:

- the Motor Carrier Safety Program was not sufficiently effective in ensuring motor carriers (transport businesses) comply with federal safety regulations because:
 - the policies and procedures in place did not ensure that safety regulations were enforced;
 - many violations of regulations found during compliance reviews did not result in enforcement. In instances when sanctions were imposed they were usually considerably less than the maximum;
 - the rating system allowed operators with less than satisfactory ratings to continue to operate for extended periods. Carriers rated with a less than a satisfactory rating continued to operate and very few carriers rated as less than satisfactory are subject to another compliance review. In 1998, nearly 72 per cent of the motor carrier population was unrated and 38 per cent of the carriers that were rated were rated as unsatisfactory;
 - performance measures used by the Department did not focus on reducing fatalities involving commercial vehicle crashes;
- there was insufficient data to identify all high-risk operators as the database:
 - was out of date and contained inaccurate and inconsistent data; and
 - did not identify the causes of crashes or the driver at fault.
- the priority needed for the safety program was difficult to achieve when its administration was the responsibility of an agency whose primary role is investment in road infrastructure.

Recent developments

The USA Government has followed the Inspector General's advice and moved the management of the Motor Carrier Safety Program away from the FHWA to an agency whose sole responsibility is commercial road transport safety, the FMCSA. The Government has also put in place a number of programs to improve aspects of the Motor Carrier Safety program. In addition it has announced a Federal program *2010 Strategy: Saving Lives Through Safety, Innovation and Performance* which aims to reduce the level of truck fatalities by 50 per cent within ten years. Initiatives to achieve this goal include:

- increased funding for enforcement including more funds for more vehicle and driver inspections and more motor carrier safety reviews;
- heavier fines against motor carriers who repeatedly violate safety regulations;
- research to develop and assess the effectiveness of technologies such as fatigue detection devices, collision warning systems, electronic braking systems etc; and
- improvements in information technology.

A2.1.3 The PRISM Program

In a response to a request from the USA Congress, the Department of Transport explored the potential for linking the commercial vehicle registration process to the motor carrier safety program. The objective being to:

- determine the safety fitness of the motor carrier prior to issuing licence plates; and
- cause the carrier to improve its safety performance through an improvement process and, where necessary, the application of registration sanctions.

The Performance and Registration Information Systems Management (PRISM) program aims to achieve these objects. Initially a pilot study of PRISM was undertaken in four US states between 1994 and 1997. The program was found to be effective and its state coverage has since been extended (OMCS 1999). PRISM involves eighteen states and more states are expected to join the program over the next few years.¹⁷

The PRISM program has two main elements:

- firstly it links Federal and state motor carrier safety information systems with the states motor vehicle registration and licensing systems. Under the program a heavy transport vehicle is not registered until the road transport operator responsible for the safety of the registered vehicle during the registration year is identified. Each carrier is identified through a USDOT number which must be displayed on each of its registered vehicles; and
- a Motor Carrier Safety Improvement Process (MCSIP). The MCSIP uses a computerised safety information data system in conjunction with roadside inspections and on-site reviews to monitor the on-road safety performance of vehicles and their operators. The process aims to identify high-risk carriers. Compliance reviews are primarily used for the highest-risk carriers. A warning letter is used as a performance improvement incentive for carriers with less severe safety problems. If performance does not sufficiently improve the registration of the operator's vehicles can be suspended or revoked.

Under the PRISM program, the registration of an operator's vehicles can be suspended or revoked. Whereas under the Motor Carrier Safety Program the major sanction is an

¹⁷ Over the next few years between four and five additional states are expected to join PRISM each year.

unsatisfactory rating, which prohibits the operator working inter-state. This sanction can also be imposed under the PRISM program as it is a complement to, rather than a substitute for, the Motor Carrier Safety Program.

A pilot study of the program was undertaken in four US states over the period from 1994 to 1997 (OMCS 1999). It is claimed that the program:

- improved the targeting of unsafe carriers for review;
- improved the performance of many unsafe carriers. (Although the pilot period was too short to determine changes in national crash rates there was some evidence that performance of many unsafe carriers improved. For example, of the 695 carriers which received warning letters under the program, 31 per cent demonstrated quantitative and qualitative improvements to the extent that they were released from the safety improvement program.);
- helped remove unsafe carriers from the road; and
- significantly improved the efficiency of existing regulatory and enforcement programs.

The PRISM program has continued to operate since the pilot program and at the end of 2000 involved eighteen states, with more expected to join the program in the future.

A2.2 Canada

A2.2.1 Background

Canada, like Australia and the USA, is a federation. The Government of Canada has the constitutional responsibility for regulating motor carriers (truck and bus) that operate between provinces and internationally, but the *Motor Vehicle Transport Act* (MVTA) delegates the authority to regulate these carriers to the thirteen provinces and territories.

Until 1988 the operation of Canada's extra-provincial road transport industry was subject to economic regulation. With the onset of deregulation approaching the Federal and provincial governments in 1986 agreed to implement a National Safety Code (NSC).

The NSC contains comprehensive standards addressing commercial vehicle operations. NSC standards are developed through committees made up of federal, provincial, territorial, industry and public interest representatives. These committees report to government through the Canadian Council of Motor Transport Administrators. The provincial and territorial governments implement the agreed standards.

Initially, the NSC covered sixteen standards which related to a wide range of safety-related areas including: hours of work; load security; driver licensing; roadside inspections standards; and NSC # 14 a safety fitness rating for new entrants. The focus on new entrants in NSC # 14 reflected the initial concern that deregulation would lead to an influx of less reputable operators.

However, governments eventually came to the view that all commercial vehicle operators, including operators of ancillary fleets, should be subject to an on-going fitness rating. As a result NSC #14 was deleted from the National Safety Code and the safety fitness rating and the issuing of safety fitness certificates, which give carrier their right to operate, became the responsibility of each jurisdiction. The criteria for determining the safety-fitness rating and the facility audit, which is an important component of the motor carriers rating process, varied

considerably across jurisdictions. As a consequence there was little consistency in rate setting across to the country's motor carrier operators.

National and international trade initiatives — in particular NAFTA and the federal and provincial government's agreement on internal trade, as well as calls from industry — led to moves to harmonise fitness rating standards.

Recent amendments to the MVTA have included the introduction of a national approach to safety ratings in the NSC. As a result of the amendments, provinces and territories whose safety compliance regimes are compatible with the NSC standards will be able to give an extra-provincial carrier a safety rating, and to issue to it a safety fitness certificate, under the authority of the Act. This safety fitness certificate will be recognised by other Canadian jurisdictions.

The amendments also allow a province or territory to apply sanctions to extra-provincial carriers for poor safety performance, including downgrading their ratings and revoking their safety fitness certificates and, thus, their right to operate.

A2.2.2 Commercial drivers licence

Drivers of heavy freight vehicles must have a commercial drivers licence which is awarded by at the provincial government level. Minimum requirements may vary slightly from province to province. However, as a general rule licence applicants must already have held a licence to drive a passenger motor vehicle before they can apply for a licence to drive a heavy vehicle. In Nova Scotia, for example, the minimum requirements for applicants wishing to obtain a licence to drive a semi-trailer are:

- age 19 years or older;
- one years experience with a class 5 (passenger motor vehicle) licence;
- successful completion of a written test for the vehicle class;
- provision of satisfactory medical and optical reports on application and periodically thereafter; and
- successful demonstration of driving ability in a semi-trailer or a tractor trailer combination.

Applicants must at a minimum satisfy the medical provisions of the National Safety Code. However, the province allocating the licence may also require drivers to meet additional health and safety requirements.

Training

There has been a reluctance in the Canadian provinces to mandate new (additional) training requirements as it is felt they could be too disruptive for an industry that is already experiencing driver shortages. However, some provinces are developing voluntary training programs. For example, Alberta is currently working with an industry council on the development of motor carrier industry training standards and training curriculum for commercial drivers. The training program involves a year-long apprenticeship for commercial drivers which includes:

- six weeks of classroom and in-cab training on all aspects of safety;
- six weeks of direct supervision in the cab of a working carrier; and

- over a period of 42 weeks the driver is progressively given more responsible driving duties under the close monitoring of a carrier trainer.

This apprenticeship will initially be an optional trade certification that will be open to drivers and carriers that wish to adopt a more rigorous and standardised driver-training program. A Professional Driver Licence will be awarded to drivers that have successfully completed the apprenticeship program.

Alberta regulators are hopeful that the demand for highly skilled drivers will likely result in a high demand for holders of the new professional drivers licence. It is hoped that these drivers be paid higher wages and be given better routes and/or work for better carriers and thereby result in more potential drivers taking this option.

While the apprenticeship is currently not a national standard, in cabin training is close to being becoming a national a national standard as an 'Earning Your Wheels' curriculum which was developed by the Canadian Trucking Human Resources Council includes in cabin training. This curriculum is now the recommended national standard.

A2.2.3 The Canadian National Safety Code and safety rating system

In 1992, a Canadian Task Force, which had been established to examine the issue of monitoring a motor carrier's on-going safety fitness, recommended the introduction of a national standard on safety rating. By 1995 a standard had been developed and by 1997 a safety-rating process for motor carriers known as Standard 14, 'Compliance Review — Safety Ratings' had been approved by Canada's Federal, provincial and territory governments.

Under the new arrangements, all motor carriers operating an ancillary or for-hire fleet of one or more commercial vehicles must apply for a safety rating in their base jurisdiction. Unless a motor carrier is rated as unsatisfactory it will be awarded a Safety Fitness Certificate which allows it to operate in the motor carrier industry

Under the NSC responsibility for motor carrier safety resides, first and foremost, with motor carrier management. In order to track safety performance, each jurisdiction is required to develop a carrier and driver profile system. This system records convictions, results of on-road inspections, reportable accidents and facility audits. The system is designed so that all offences incurred by drivers working for a motor carrier and as well as any defects in vehicles operated by or for that motor carrier are identified and assigned as being within the motor carrier's responsibility. Data is shared is currently shared across the jurisdictions. For example, the results of on-road inspections undertaken on vehicles based plated in another jurisdiction are passed on to the relevant jurisdiction. More extensive data sharing is expected to be in place towards the end of 2001 or in 2002.

The information from the carrier and driver profile system including the results of the facility audit, when available, are used to determine the motor carrier's safety rating. In determining a motor carrier's safety rating, the following factors are assigned an agreed weight, which is consistent with its relative severity and potential safety impact:

- reportable accidents incurred over the previous 24 months — unless it can be demonstrated that the carrier was in no way responsible for the accident. A carrier may appeal the inclusion of an accident where no charges are laid or are subsequently overturned;
- convictions and detentions over the previous 24 months relating to:

- driver licensing regulations;
- hours of work regulations;
- vehicle maintenance standards;
- load security of load standards;
- transport of dangerous goods regulations; and
- vehicle weights and dimensions limits.

Canada's national rating system has the following four categories:

- Satisfactory — the motor carrier's level of compliance is deemed acceptable, based on the information in the carrier and driver profile as well as the results of a facility audit;
- Satisfactory Unaudited — the motor carrier's level of compliance is deemed acceptable, based on the information in the carrier and driver profile only as compliance has not yet been verified through a facility audit. This rating is also given to motor carriers that are new to the industry that have satisfied entry conditions. Jurisdictions aim to conduct a facility audit of all new motor carriers within two years of the date of entry;
- Conditional — the motor carrier's level of compliance is deemed to be less than acceptable based on the information in the carrier and driver profile and/or based on the results of a facility audit; and
- Unsatisfactory — the motor carrier's level of compliance with safety standards and regulations is deemed as unacceptable because:
 - it is not properly insured; or
 - the motor carrier was previously rated as conditional and has not improved its safety performance within a predetermined period.

There is opportunity for a motor carrier to appeal both the conditional and unsatisfactory rating. However, if the unsatisfactory appeal fails then the motor carrier's authority to operate a motor carrier business is either cancelled or suspended. An operator wishing to re-enter the industry must apply for a Safety Fitness Certificate in the same manner as a new entrant. However, additional information may be required and if the certificate is granted the motor carrier will be safety rated as conditional.

Monitoring

All operators are routinely monitored for safety compliance. Vehicles are inspected at highway inspection stations and computerised carrier profiles are developed and monitored. In addition, operators on-highway and safety management activities are reviewed in considerable detail through a facility audit process.

To assist auditors undertake the facility audit, operators are required to maintain files for the current year and the previous four years pertaining to:

- drivers — the file must include:
 - each drivers completed application form;
 - current operator's licence;
 - each drivers employment history for three years prior to starting with current employer;
 - each drivers driving abstract (see Safety plan below);
 - a record of each drivers convictions relating to the operation of a motor vehicle;
 - a list of each drivers reportable collisions; and

- a list of training undertaken by each driver;
- vehicles — the file must include:
 - records of all inspections, repairs, lubrication and maintenance for each vehicle (including the nature of the inspection, the date and the odometer reading) — vehicles must follow a written maintenance and inspection program which is prepared by the carrier;
 - annual/semi annual safety inspections;
 - each vehicles unit number or serial number, year of manufacture and make of vehicle;
 - size of tyres;
 - record of any modification affecting gross vehicle weight;
 - record of manufacturer defect notices and subsequent corrective work; and
 - records of pre and post trip inspections;
- hours of service — the file must include a copy of daily log book information and supporting documents for each driver (records must be keep for a least six months a the carriers principle place of business);
- dangerous goods documentation; and
- safety plan and safety officer — the file must include a copy of the safety program that has been established and maintained by the carrier. The program must contain the following information:
 - identification of company guidelines to ensure compliance with safety laws;
 - designation of a Safety Officer;
 - clear directions explaining employee safety responsibilities;
 - procedures to train employees and evaluate their skills;
 - procedures to collect and maintain full records for each driver, including an annual driver abstract;
 - procedures to ensure all drivers are properly qualified.

Disciplinary program

A disciplinary program, which is triggered by points assigned when an operator is charged with an offence under the national safety code, is used to modify carriers unsafe behaviour. The form of action taken under the discipline program is determined by the number of demerit points collected by an operator compared to the operator's maximum permitted points. As outlined below the maximum points an individual operator can collect are determined with reference to its average fleet size:

Fleet size	Maximum points
1	16
10	42
15	49
25	63
40	81
60	104

Points are removed from the carrier profile two years after they are assigned. However, if an operator accumulates more than 40 per cent of its maximum points in a two year period action under the discipline program is triggered. There are four action trigger points:

- Notice of Practice action is taken when an operator accumulates more than 40 per cent of its maximum points - the operator is notified of a compliance problem and advised to take immediate action to develop and implement a plan to address the concerns;
- Compliance action is taken when an operator accumulates more than 65 per cent of its maximum points - the operator must provide a written plan of action to improve compliance. Performance measures are developed to indicate when and if the operator achieves a satisfactory level of compliance;
- Failure to Comply action is taken when an operator accumulates more than 85 per cent of its maximum points - a senior member of the operator's company must meet with government representatives. A conditional safety rating may at this point be imposed and the specific performance measures developed previously are discussed and time frames for improved are agreed upon. The agreement is documented and the operator must commit to achieving these goals; and
- Hearing Evaluation action is taken when an operator accumulates more than 100 per cent of its maximum points - the operator's senior representatives must meet with government officers and explain the failure to achieve safety compliance. A review is undertaken to determine whether the operator should be given an Unsatisfactory Safety Rating. If the operator's rating is changed to Unsatisfactory the license to operator a public vehicle on any highway is revoked.

A2.2.4 Implementation progress

The most recent target date for the introduction of the nationally consistent standard was December 2000. However, a review of the status quo in August 2000 found that this deadline would not be achieved as some provinces and territories did not have the necessary procedures in place while in others, there remained some significant deviations from the standard (Nix 2000). Nix proposed an action plan, which he suggests, builds on the idea of a regulatory laboratory. He recommended that all provinces that had not implemented the standard be encouraged to do so and that any significant deviations from the standard in the provinces and territories should be removed. However, Nix recognised that this move to greater consistency would take time to implement, which he considered created a window of opportunity for all rating systems to be monitored and evaluated. This evaluation process would be useful for fine tuning the national system as it is unlikely that a committee 'sitting around the table for several years would come up with the ideal design' (Nix 2000, p.iv).

A2.3 United Kingdom

A2.3.1 Background

The United Kingdom (UK) comprises England, Scotland, Wales and Northern Ireland. Responsibility for road transport law rests with the national government. The UK is a member of the European Union. Much of the its road freight transport laws are influenced by or interact with policy decisions of the European Union. For example, the UK's system of driver and operator licensing has been amended over recent years to be aligned with European Union requirements.

A2.3.2 Commercial drivers licences

All persons wishing to drive a motor vehicle in European Union member states must hold a drivers licence which shows an entitlement to drive the relevant vehicle category. All member states' national driving licences must be based on the European Community model as national licences are mutually recognised.

The driver's licence of persons wishing to drive a heavy freight transport vehicle must show that they have the relevant large goods vehicle vocational driving training. Employers of drivers are required to ensure that their drivers are correctly licensed.

All drivers of vehicles carrying goods for commercial or business purposes must comply with driving hours regulations. Drivers convicted of breaching the driving rules are fined or in the more serious cases imprisoned. Employers of drivers also risk prosecution and fines if a conviction occurs. In addition an employer's licence ('O' licence) could be revoked if the conviction is not notified to the licensing authorities.

A2.3.3 Operator licensing

In the UK an quality control system known as Operator Licensing system known as an 'O' licence provides the overriding regulatory control for most heavy road freight transport vehicles. Similar licensing controls apply to freight transport vehicles operating in other European Union member states (Lowe 1999).¹⁸

O Licensing is administered on the basis of eight traffic areas. Traffic Commissioners with quasi-judicial powers have responsibility for awarding or refusing vehicle users 'O' licences.¹⁹

The O licensing system was first introduced in 1968 as a single tier licensing system, which applied to both reward and hire operators and ancillary operators. Since then it has seen substantial change. The current system has the following three tiers of licences:

- *Restricted licence* which covers the international and national transport operations of ancillary operators who carry goods only in connection with their own trade or business;
- *Standard national transport operations licence*, which covers the national operations, of hire and reward operators. This licence also covers ancillary operators who also transport for hire and reward. The Standard national transport operations licence also covers the international transport of own goods by ancillary operators;
- *Standard national and international transport operations licence*, which covers hire and reward operators and ancillary operators who transport freight for hired and reward both nationally and internationally.

The Traffic Commissioner will grant an 'O' licence once he or she is satisfied that all conditions are satisfied. The Commissioner has the power to refuse an 'O' licence, but may alternatively grant an 'O' licence for a smaller number of vehicles or grant an 'O' licence with additional environmental conditions.

¹⁸ The following discussion of United Kingdom road freight transport regulation relies extensively on information reported in *The Transport Manager's and Operator's Handbook 1999* by David Lowe.

¹⁹ The vehicle user may be the business or the person that owns the vehicle or the business or person which hires the vehicle. In most instances the person that pays the wages of the driver is usually deemed the user of the vehicle.

The conditions that must be satisfied before an O licence is awarded vary slightly between the different licence categories. These conditions are summarised in tabular form and are explained in more detail in the following sections.

Applicant must:	Restricted	Standard	
		National	National & International
Be a fit and proper person	√		
Be a person of good repute		√	√
Have appropriate financial standing (b)	√	√	√
Be professionally competent or employ persons who are professionally competent in:			
- national operation		√	
- national and international operations			√
Have suitable vehicle operating centres and maintenance facilities or arrangements.	√	√	√
Have environmentally acceptable vehicle operating centres and vehicle maintenance facilities or arrangements.	√	√	√

Fit persons and persons of good repute

The Restricted licence and the Standard licences have slightly different conditions covering the fitness of a person to hold an 'O' licence. However, the different wording of the conditions reflects the fact that European Union provisions do not cover the Restricted licence where as the Standard licences must comply with European Union requirements for hire and reward businesses. Lowe (1999) points out that the requirements are basically the same.

Under the 'O' licence arrangements a person will be found to be not of good repute or not a fit person if he or she has been convicted of serious civil or road transport offences or has been repeatedly convicted of minor road traffic offences.

A licensed operator must notify the local traffic area office of all convictions. This information is maintained on a database and is used to determine whether the licensee continues to be of good repute.

Appropriate financial standing

Appropriate financial standing is not prescribed in terms of pounds Sterling per vehicle. However, an applicant must show that he or she has sufficient funds to maintain both physically and financially the licensed vehicles to a level that complies with fitness and safety standards. Applicants may be required to supply bank statements, references from bank managers, or a certificate of solvency from their accountant.

If an applicant wishes to have the licence cover vehicles, which are currently not owned or hired, he or she may need to supply evidence to show that they operator can be expected to have the finances necessary to maintain these additional vehicles to the necessary standards. This evidence could include business forecasts and trade growth trends.

Professional competence

Since 1978 people responsible for the operation of the vehicles in the UK's road freight and road passenger hire or reward transport sector must have proof that they are professionally competent. All holders of a Standard 'O' licence must either be professionally competent or employ a professionally competent person who on a day to day basis is responsible for the operation of the vehicles authorised under the licence.

In order to prove professional competence a person must hold either:

- Grandfather rights certificate — this certificate was awarded to transport managers and certain other people employed in 'responsible road transport employment' prior to 1975;
- a membership or exemption certificate from a recognised professional institute;
- a professional competence certificate issued by another European Union state; or
- a Royal Society of the Arts Certificate of Professional Competence — new entrants to the industry or people who fail to qualify via the grandfathering or exemption process must obtain their professional competence qualification by examination. The examination questions are multiple choice and have a pass mark of 85 per cent. Candidates are not required to study prior to the exam but may choose to attend a full-time or part-time course or undertake a course by correspondence or undertake private study using a home learning package.

The syllabus and examination is broken into modules and covers the following:

- Module A — a core module for all candidates covering Law, Business and Financial Management, and Road Safety;
- Module B — for candidates in road freight business covering Law, Road haulage business and financial management, Access to the Market, Technical standards and aspects of operation, and Road safety;
- Module C — for candidates in the passenger transport businesses;
- Module D — for international freight transport operators covering Law, Control of road haulage operations, Practice and formalities connected with international movements and operations, technical standards and road safety; and
- Module E — for international passenger transport operators (Lowe 1999).

Operating centres and maintenance facilities

Suitable operating centres must be sufficiently large to accommodate all the vehicles covered by the 'O' licence. The centres must cause no danger to the public. The suitability of premises is reviewed periodically - normally every five years.

Maintenance facilities or arrangements must also be considered as suitable for the number and type of vehicles. The 'O' licence applicant must be able to demonstrate to the satisfaction of the Traffic Commissioner that the vehicles covered by the licence can be kept in a safe and legal condition and be regularly maintained. Maintenance records and defect and inspection systems must be appropriate and generally include written driver defect reporting systems and wall charts for planning inspection and maintenance schedules.

The Traffic Commissioner will also assess whether the arrangements in place are sufficient to ensure that the regulations governing drivers' hours and record keeping, including tachograph records, are complied with.

Environment acceptability of operating centres and maintenance facilities relates to matters such as noise, vibration, fumes and visual intrusion. 'O' licence applicants must advertise in the local press that they are applying for a licence or a variation of a licence and specify the specific location of the operating centre(s). Local residents may make representations to the Traffic Commissioners, who are responsible for awarding licences, against applicants on environmental grounds.

Vehicles are specified under the 'O' licence

'O' licences may cover any number of vehicles in any number of operating centres, so long as they are within a 'Traffic Area' and satisfy the conditions of the licence. 'O' licences cover authorised vehicles, each vehicle covered by the 'O' licence is issued with a windscreen disk. Disks are coloured to differentiate between the types of licences issued and are not interchangeable between vehicles or between operators.

The Traffic Commissioner must be advised if a vehicle is sold or ceases to be used for some reason by the 'O' licence holder. Should a vehicle, for a period of more than three months, be moved to a new base or operating centre that is outside of the traffic area in which it is licensed the Traffic Commissioner must be advised. In these circumstances the vehicle must be removed from the original licence and specified on a licence in the new traffic area.

The Traffic Commissioner must also be advised if new vehicles are hired or purchased by the 'O' licence holder. These vehicles must either replace an existing vehicle, whose windscreen discs have been returned, or be covered by a vehicle margin in the original 'O' licence application. If an 'O' licence covered vehicles which the applicant at the time of application had not yet purchased or hired the Traffic Commissioner would take these vehicles into account when assessing finances and the suitability and environmental acceptability of vehicle operating centres and vehicle maintenance facilities or arrangements.

Responsibilities of an 'O' licence holder

A holder of an 'O' licence is responsible for the safe operation its business and vehicles on the road. The licence requires the holder amongst other things to:

- ensure its vehicles do not speed;
- ensure its vehicles are not overloaded;
- ensure that rules of driving hours are observed;
- ensure rules relating to tachographs are followed;
- ensure that each operating centre does not garage any more than the authorised number of vehicles;
- report vehicle defects and driver convictions promptly to the authorities; and
- keep proper records.

A2.3.4 Enforcement and effectiveness

Enforcement of the UK's road transport rules and regulations is undertaken by:

- the Vehicle Inspectorate testers who at designated locations carry out annual road-worthiness checks on heavy vehicles and check whether drivers meet the licensing requirements and comply with maximum weight requirements and driving hours limits;
- the police who carry out roadside checks; and
- Traffic Commissioners.

In the process of developing a strategy to improve the sustainability of the freight and passenger transport sector, the UK Government found there was a need for more effective enforcement of road transport regulation (UK DETR 1999). The following five measures were introduced to improve the effectiveness of the enforcement system:

- improved accessibility to information — information systems were to be modernised and information made available across the enforcement agencies. For example, computer based licensing information held in traffic area offices will be made available to vehicle inspectorate officers. In addition, vehicle inspectorate testers were to be given portable computers in order to check on the vehicle and driver records at the roadside;
- more effective deployment of personnel — for example the Vehicle Inspectorate is to target the more serious offences and defect which have the greatest impact on road safety;
- Improving enforcement funding regime — enforcement will be directly funded from licence fees which were to be increased;
- introducing more effective powers for enforcement officers; and
- encouraging best practice in the industry.

A2.4 New Zealand

A2.4.1 Background

New Zealand has a two-tier system of government, comprising the national government and local governments. Responsibility for the provision of roads is shared between these two tiers. However, the responsibility for making laws pertaining to use of those roads is held by the national government which has created the Land Transport Safety Authority (LTSA) as an independent authority responsible for promoting land transport safety.

The LTSA is primarily funded by road users. Sources of funding include:

- road-user charges paid by heavy vehicles;
- motor vehicle registration and licensing fees;
- excise duties levelled on fuels other than diesel;
- driver licence fees;
- transport licence fees; safety standards levies and fees;
- rail fees; and
- revenue from the sale of road safety materials.

New Zealand's road transport law is currently found in a large body of legislation and regulations, which the government is currently in the process of simplifying. For example, a number of key Acts have been restructured into a single *Land Transport Act 1998* and many regulations are currently being converted into land transport rules. The Land Transport Act's objectives are to:

- promote safe road-user behaviour and vehicle safety;
- provide for a system of rules governing road-user behaviour, the licensing of drivers, and technical aspects of land transport, and to recognise reciprocal obligations of persons involved;
- consolidate and amend various enactments relating to road safety and land transport;
- enable New Zealand to implement international agreements relating to road safety and land transport; and
- continue the operations of the Land Transport Safety Authority (LTSA 2001).

The key road transport regulations and rules are:

- Traffic Regulations which cover the rules of the road including vehicle requirements, loading and dimension requirements, equipment, signals and road signs;
- Driver Licensing Rules;
- Transport (Vehicle Registration and Licensing) Regulations;
- Transport (Vehicle Standards) Regulations, which cover the technical standards with which motor vehicles must comply in New Zealand;
- Land Transport (Offences and Penalties) Regulations;
- Land Transport Vehicle Standards Compliance Rules, which set down vehicle safety standards and fitness checks (LTSA 2001). In recent years New Zealand has accepted the standards set down by the countries which are the major sources of their vehicles — the United States, Japan, Australia and Europe.

These Rules and Regulations cover the driver, the vehicle and also the operator or the transport service business.

A2.4.2 The driver

Commercial drivers licence

New Zealand has a graduated driver-licensing system. Before obtaining a heavy-vehicle licence, drivers must either gain experience driving lighter vehicles, or demonstrate their competence by undertaking industry-based courses or assessments.

To obtain a heavy-vehicle class licence the applicant must:

- hold a learner licence for at least six months and then pass a practical test covering the appropriate vehicle class; or
- be assessed in the appropriate class against New Zealand Qualifications Authority unit standards by an assessor approved by the LTSA; or
- pass an approved training course for the vehicle class.

Every time a driver applies for or renews a heavy-vehicle driver licence they must supply a medical certificate to the LTSA. Drivers that have been issued with a certificate in the last five years need not obtain a new certificate if they are prepared to sign a health declaration. This declaration states that any adverse condition identified in the old certificate has not worsened; and that the driver has not been diagnosed with any other medical condition since the issuing of the certificate.

A.2.4.3 The freight transport operator

Transport Service Licence

An individual or company wishing to operate a freight, passenger, vehicle recovery, rental or rail service must obtain a Transport Service Licence. In the case of freight transport, all hire-and-reward freight service businesses, including light commercial and motorcycle courier services, must apply for a Transport Service Licence. In addition, businesses that use in-house freight vehicles for ancillary transport services must also apply for a licence if they are operating vehicles with a gross-laden weight of 6,000 kgs or more.

A road freight business wishing to apply for a Transport Service Licence must:

- supply evidence of a Certificate of Knowledge of Law and Practice (see below);
- supply details of the persons in control of the service; and
- pay a nominal application fee to the LTSA;.

A person convicted of operating an unlicensed transport service will be fined and vehicles used in the illegal service may be impounded for up to 90 days. Fines for a first offence may be as high as \$NZ10,000. Second or subsequent convictions attract a maximum fine of \$NZ25,000.

Certificate of Knowledge of Law and Practice

Applicants for a Certificate of Knowledge of Law and Practice must pass a ‘core’ test and a ‘specialist’ test relevant to the transport class covered by the Transport Service Licence they wish to apply for.

The ‘core’ test examines applicants’ knowledge of general transport industry laws and safety standards. The ‘specialist’ test examines applicants’ knowledge of rules and practices that apply to the particular class of transport service they wish to operate.

Applicants that have passed the ‘core’ test can obtain a Certificate of Knowledge of Law and Practice in more than one transport service class by passing the ‘specialist’ test for each class.

A2.4.4 The vehicle

Vehicle inspection, registration and licensing

With a few exceptions all vehicles operating on New Zealand’s road must be registered and must pay a licence fee.

Before being registered for use, all vehicles entering New Zealand must undergo a vehicle inspection and documentation check. This check ensures that they comply with approved standards and general safety requirements.

Once heavy vehicles are registered they are inspected every six months to ensure that they continue to comply with the safety standards. Vehicles, which pass the inspection, are awarded a Certificate of Fitness. This Certificate is the main proof of a vehicle's compliance with the road transport law.

A2.4.5 Recent developments

Operator Licensing/Safety Rating System under consideration

The New Zealand Transport Forum has recently called for the introduction of a comprehensive Operator Licensing/Safety Rating System (NZRTF 2000). The system, which has some similarity to the USA's licensing system, would risk rate road transport operators and identify high-risk operators. These operators would be given assistance to upgrade their safety rating. However, those who fail to improve would be the subjects of a formal assessment by an Industry/LTSA Licence Review Board. The Board would be responsible for assessing whether the operator should exit the industry and would be charged with the role of recommending or not recommending that the LTSA remove the operator's licence.

In an approach similar to Australia's accreditation-based compliance arrangements, the Forum also recommended that operators rated as performing to high safety standards should be rewarded for their efforts. The rewards would include less frequent Certificate of Fitness inspections and less intensive on-road enforcement by police.

The LTSA has recently put out an information sheet on a proposal to introduce an Operator Safety Rating System. The system would be based on the safety rating systems used in the USA and Canada. It is proposed that Safety performance would be measured against clearly defined standards. The following two levels of standards could operate:

- mandatory or minimum standards would be the current legal requirement;
- voluntary standards would be industry developed and would be over and above the legal requirements.

It is proposed that, as a starting point, the following six score categories be used to rank operators:

1. Superior
2. Good
3. Satisfactory
4. New Entrant
5. Conditional
6. Unsatisfactory

The top two rankings, superior and good, would only be assigned if an audit against the voluntary standards was favourable and the numeric on-road score was good. The new entrant rating would be a temporary rating until an operator had been in the industry long enough to build up sufficient on-road data or had been given a favourable audit.

The rating system would be incentives based. Possible incentives for the more highly rated operators could include:

- less frequent Certificate of Fitness inspections;
- reduced annual licensing fees;

- flexible driving

In the same way that highly ranked operators are rewarded poorer rated operators could be penalised.

A preferred policy document on operator licensing and risk rating is expected to be released by August 2001.