Towards A Common Transport Policy

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Economics can be defined as the study of systems of allocation. Its goal is to find which systems are best able to allocate scarce resources so as to obtain maximal welfare. The purpose of this thesis is to examine the possible structures of systems which can be used to allocate transport facilities, based on an analysis of theoretical models and the history of transport policy in the UK and the European Union.

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Notes On This Edition

Only hard copies of the original paper now exist. This new edition has been created by scanning the first edition and processing the results using optical character recognition. The document was spell checked and the original layout of the thesis restored as best as possible on XeLaTeX on a Mac OS X system. Diagrams, tables and citations have all been recreated so they can be most easily read.

No intentional copy changes have been made. The aim has been to present the paper as it was originally delivered[1].

While my strong support on Ridley's position on climate change ([Ridley, 1996]) has not stood the test of time, the *bounded rationality* of even a government in dealing with the problem has, *viz.* the mad-rush to diesel (for fuel efficiency) and reversal (for air quality) shows how difficult it is to game markets.

If there is one lesson from this paper and subsequent history, it is, policy is just *difficult*.

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[1] Including my overuse of italics.

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Introduction

Economics can be defined as the study of systems of allocation. Its goal is to find which systems are best able to allocate scarce resources so as to obtain maximal welfare. The purpose of this thesis is to examine the possible Structures of systems which can be used to allocate transport facilities, based on an analysis of theoretical models and the history of transport policy in the UK and the European Union.

Historically, in Europe all transport systems have found themselves either under the sway of reams of regulation or actually under the direct ownership of a government. Even in a liberal country such as Britain, all road building is still carried out by the Highways Agency; also once they have been built, the roads are offered for general public access at zero cost. Why should transport be controlled so rigorously? The following extract explains the thinking behind such a policy:

> By deciding to build or improve an infrastructure the state is taking an option that decisively determines the development of individual modes of transport and the relationship between them. But infrastructure developments also have an indirect effect on other sectors: they affect energy consumption, road safety and the environment. They are also an important factor in the growth of the regional economy, especially in the peripheral areas, and in the integration of transport services as a whole [Stasinopoulos, 1995].

The desire of this dissertation is to ascertain if this thinking is valid. Certainly it seems that something must be done with the state of transport at the moment: Too many motor vehicles using too few suitable roads has given Britain the highest traffic density in the world and an acute economic and social problem. Furthermore congestion on city streets and bottle necks on major routes are only the most casual evidence of society's wasted time and resources [Rodgers, 1959].

The congestion costs to society are not small Taking into account petrol, oil consumption and wear and tear on engines, brakes and tyres, it has been calculated that every hour of delay due to traffic conditions adds 66% to the running cost per hour of light and medium vehicles and 47% of heavy vehicles over costs under light traffic conditions [Glanville, W and Smeed].

There is however no clear answer as to how transport systems should be set up so as to sufficiently and efficiently meet demand. In Continental Europe, the tendency is to have more control than we have in Britain. Button identifies two broad schools of thought about transport policy within the European Community. Countries, such as Germany and France, tend to favour a *social service philosophy* with transport seen as subservient to wider economic objectives

and rigidly controlled to achieve these wider aims. Other countries, such as the Netherlands, Eire, Denmark and the UK, argue for a *commercial philosophy* with the free market determining both capacity and price: the UK particularly is seen as an extreme liberal. This difference in philosophy has lead to a desire to solve the problems in transport in radically different ways [Button, 1993].

In the social service philosophy, transport demand is exogenously given - based on the needs of other industries. The job of a welfare maximising government is simply to ensure the lowest possible cost of transport. There are two possibilities that can be followed here: the government can provide the services itself, or it can arrange for the private sector to provide the explicitly required service. In this latter ease the government provides a set of infrastructure and then allows licensed access to it. These licences are known *franchises*. Both effectively imply *quantity regulation*. The need for government control of infrastructure comes from its long term nature and large development costs giving its owners monopolistic powers; this is discussed further in chapter 5.

Believers in the commercial philosophy argue that this system however is sub-optimal for two reasons: Firstly, the system removes competition by its requirements of licences to operate; secondly, market forces are quicker than governments at reacting to changes in demand and at taking advantage of new technologies. The commercial philosophy argues that any restrictions on competition is had when not needed. Following Baumol's 1982 paper, they argue that transport markets only need to be *contestable* in order to stop monopolistic abuse. That is to say, should an incumbent firm ever try to gain monopoly rents, a new firm will move into the market and compete these away and leave the market as soon as they no longer exist. This is known as *hit and run* competition. If a government can make a market contestable then the market will allocate resources far more efficiently than an institution ever could [Baumol, 1982].

Nevertheless, the commercial philosophy does not ban all regulation. It accepts that some control of *quality* is required. In an openly competing market, there is a strong pressure to cut costs. Safety costs money. There is a risk that cutting corners will lead to injury or loss of life. Under the common law, the old maxim of *caveat emptor*, or buyer beware, is the rule. This cannot be so in modern transport for two reasons: Firstly, if for example a lorry which had been sub standardly maintained were to lose control on a motorway, it is likely that not only the driver and owner will lose out as a result of the crash as it could well involve innocent third parties; secondly from the invention of steam ships onwards, owing to the difficulty in understanding the technology involved it has become next to impossible for a buyer of haulage services to easily inspect the quality of the hauliers equipment. Base technical standards are thus needed to stop unscrupulous service providers taking advantage.

The need for quality regulation was first shown following the nineteenth century Navigation Acts. In the 1850s, the merchant fleet was seen as much as a national asset as the Royal Navy. The Navigation Acts tore away this mercantilist view and opened trading to the free market. This saw the beginning of the age of *coffin ships*. These were unseaworthy ships sent out by owners knowing that if they sank they could easily claim on the insurance. Standards were appalling. A near equivalent to this still exists in the market for flags of convenience, whereby ships owners register wherever safety standards are lowest. There is, however, a problem with quality regulation: it increases the costs of entry into a market and thus lowers its contestabitity, consequently increasing the chances of monopolistic abuse.

During the course of this dissertation, four possible reasons for having state control of the provision of transport services are considered. In chapter 2, the very nature of knowledge and decision making are analysed. The chapter opens by looking at ways of defining rationality in decision making. It then takes an overview of the debate between the rationalist and empiricist philosophical schools of thought. The argument then moves on to take account of the

existentialist view: any useful knowledge requires faith. This is then emphasised by taking an example from game theory showing how faith is required to achieve an optimal outcome when *free riding* is possible. The chapter notes that if faith is lacking intervention may be of benefit, and concludes that it is this fact and not the nature of knowledge that could possibly be an argument for state intervention.

In chapter 3, the argument for regulation to control externalities that occur when there is a divergence between the social and private costs of an action is considered. This is a most notable argument in the environmental debate. The core of the issue is the problem of common-pool property: any resource that is owned by the many will, without proper control, be liable to overuse. The road system is owned by the country as a whole, and is thus free at the point of use: its common pool nature is one of the principle causes of its congestion. The chapter studies whether direct government intervention would be of use to control these sorts of problems and decides that there are even more problems with government intervention. It concludes that improved property rights must be at the centre of any solution.

There is a widely held belief that there is a direct connection between a region's wealth and its infrastructure provision. Chapter 4 argues that this is only true when comparing areas that have no infrastructure and those that have an advanced infrastructure. Across most of Europe, this is not the case: Infrastructure is mostly of a reasonable quality. Most regionally based infrastructure problems are bottlenecks in already well developed areas. Governments should thus not use regional development to justify intervention. In fact it seems that previous intervention, including the European High Speed Train Network is drawing in funds that would otherwise have gone to periphery areas causing greater disparities.

So far, we have found only one real argument for government intervention in the transport industry - that of bad faith. The profile of British experiences in chapter 5 finds another: Monopoly abuse. Infrastructure investment is long term, allowing those that build it incontestable control over its access. This happened with the railways. The chapter details the general trend towards controlling this by regulation, but leaving ownership to privately owned industry. This policy changed after the Second World War, and the chapter looks at the subsequent collapse of the public transport sector under Treasury imposed spending limits. The chapter closes with a look at the results of the current deregulation and privatisation programmes being conducted.

In the penultimate chapter, chapter 6. the focus switches to the development of the Common Transport Policy to date. The purpose is to discover if previous developments will shed any light on the future direction of the policy. In truth, it seems that the common transport policy has been plagued by indecision over which philosophical framework to adopt with a divide opening between the views of the Commission and the Council. The EU has mixed and matched measures to little overall effect. More recently the direction of the measures has become increasingly commercially based however divergent national attitudes remain.

In the final chapter, chapter 7, a possible solution, that takes advantage of recent advances in information technology, is offered. Its philosophical roots come from both camps of thought: it acknowledges that demand must be limited as transport infrastructure is a limited resource as its value drops with increasing consumption (congestion). Nonetheless it seeks to obtain as much competition in both pricing and new ideas as possible. Its basis lies in tradable permits on routes, with new routes becoming the property of the finder for a limited period and then control returns to a permit based system (as in the patent system). Finally the dissertation closes with some thoughts on areas of future research.

2

Towards a model of knowledge

This chapter examines whether philosophy offers any theoretical reasons, based on the nature of knowledge and decision making for choosing a dirigiste economic system over a market driven approach. The core of the argument lies in the difference between the rationalist and empiricist schools of thought. The rationalists believe that there are innate rules of optimality to be found in nature. A state which finds these rules can use them to increase society's welfare. The empiricists believe that all human knowledge must be both sensed and considered. What we learn is based on our own individual interpretations, which themselves are not fixed in time, and thus governments should not try to intervene in the actions of the individual.

Existentialists, argue further that faith is required as well as valid interpretation for any knowledge of true value to be found. The chapter then finds an example in game theory where participants have incentives to work against the optimal solution that would arise with shared good faith. It concludes that where these counter-incentives occur and good faith cannot be relied upon, there is valid cause for state intervention.

Before exploring this philosophical debate it is worth mentioning that all of these philosophies believe in the ability of agents to make a rational choice based on the data available and current taboos. The arguments in this chapter focus only on the quality and availability of the data that the agents can possess. There is a second debate about whether any human can truly make a rational utility maximising choice which will be briefly outlined before proceeding into the core of the chapter.

Rationality	Explanation Type	Form of Perscription
Instrumental	Intentional	Consequentialist
Procedural	Functional	Rights Based
Expressive	True Interest	Rights Based

Table 2.1: Taxonomy of rationality, explanation, and perscription

In Table 2.1 [Hargeaves-Heap, 1989] breaks up the concept of rationality into three possible forms. In instrumental rationality, an agent is defined by a well-behaved set of preferences and takes actions so as to satisfy these preferences best. Although it is the model used by neo-classicists, as it guarantees pareto-efficiency in the general equilibrium model, it is too simple. A better model is that of procedural rationality, which distances actions from ends: the individual follows norms, recipes and visions for action. There are two possible reasons for this. One put forward by Herbert Simon states that owing to the *bounded rationality* of humans, agents are unable to make the optimising calculations and so resort to rules of thumb [Simon,

1982].

However, there is a long history in the social sciences of rules being created by those in a society that represent expected behaviour of citizens within that society. These need not be rational rules of thumb. A final more likely model is expressive rationality. This reflects individual agents concerns of making sense of the world: the optimal solution is *what is right*. Preferences are thus not fixed, and may even change during actions sought to attain them [Hargeaves-Heap, 1989].

Assuming for the time being that humans can be rational, on what basis can knowledge be acquired to make these decisions? Rationalism is the *view appealing to reason as a source of knowledge or justification* [Lacey, 1959]. The grandfather of rationalist philosophy is Plato. As Plato looked at the world he noticed that he had grouped similar objects together: many slightly different animals he considered horses. He wondered why this was and decided that there must be an idea horse that existed of which all physical horses were poor imitations [Gaarder, 1995].

Plato extended this into his *Theory of Ideas*. This is a world containing all the eternal and immutable patterns of nature. He then argued that as people are both body (physical) and soul (eternal idea) they can exist in both realms, thus agreeing with Socrates that *true insight comes from within*. However although all humans can survey the realm of ideas, he notes that many choose not to. He illustrates this with the *Myth of the Cave:*

> Imagine some people living in an underground cave. They sit with their backs to the mouth of the cave with their hands and their feet bound in such a way that they can only look at the back wall of the cave. Behind them is a high wall, and behind that wall pass human-like creatures, holding up various figures above the top of the wall. Because there is a fire behind these figures, they cast flickering shadows on the back wall of the cave. So the only thing that the dwellers can see is this shadow play. They have been sitting in this position since they were born so, they think these shadows are all there is. Imagine now that one of the cave dwellers manages to free themselves from their bonds. The first thing he asks himself is where all these shadows come from [Plato, 1901].

As the dweller breaks free - becomes a philosopher - they see the true splendour of the world as it really is. No longer seeing only shadows, they are free to make decisions based on an objective reality. By adding another concept, that of decency: *He who knows what is right, will do what is right*, it becomes obvious that the masses should be lead by the enlightened. This line of thinking can easily be taken as an argument for a dirigiste, institutionalist economic system.

The continental rationalists of this seventeenth century took up the belief that there are immutable truths common to all mankind. However the idea of a world of ideas was rejected, in fact anything which could now be proved by reason was to be removed from thought. Descartes set up his philosophical framework based on some simple resolutions:

> The first was never to accept anything for true which I did not clearly know to be such; that is to say, carefully to avoid precipitancy and prejudice, and to comprise nothing more in my judgement than what was presented to my mind so clearly and distinctly as to exclude all ground of doubt [Descartes, 1637].

Thus if everything was to be doubted, how was he to build up a useful framework? All he knew was that he doubted, but to doubt requires thought. To be able to think requires a thinking being, and a thinking being must by its very nature exist. Cogito ergo sum. This form of argument was to bc the basis for all rationalist thought. From these simple beginnings the *truth*, no matter how complex, could be build up.

A second rationalist was Barach Spinoza. He believed that God entwined himself into creation, as nature. As well as creating the laws of nature as scientists now understand them, he also created the laws of moral behaviour, *ethics*. This set of rules of living was the *inner cause* of all that happens. To grow to our full potential we must he free to develop our innate abilities [Spinoza, 1677].

Having discussed the rationalist position, the opposing theoretical model, that of empiricism shall now be introduced. It will then be shown how it leads to a position where a market based economic system is preferable. In much the same way as the rationalists built on the work of Plato, the empiricists built on the work of Aristotle. Aristotle believed, for instance, that rather than recognising an animal as a horse because it was close to the idea of an innate idea horse, we only classify it as such because we have seen several horses before and have grouped all animals that look like this together. As John Locke put it many centuries later, the human mind at birth is *as bare and empty as a blackboard before the teacher arrives* [Locke, 1689].

Locke, however. went further, differentiating between *sensed data* and *reflected data*. By reflected data, he meant what we actually perceive, after it has been subconsciously altered by our mind to fit our world view. If we were to see a man floating in the air, we would assume it was a trick as it would not fit into our previous pattern of the world. A child might not be so shocked as their world view might not yet include gravity. As this means that we will necessarily ignore new, but valid information, Locke argued that any concept we hold that cannot be based on the original sensed data should be thrown away [Pojman, 1991].

> It is therefore the *actual receiving* of ideas from without that gives us notice of the existence of other things, and makes us know, that something doth exist at that time without us, which causes that idea in us; though perhaps we neither know nor consider how it does it [Locke, 1689].

Hume went further than Locke in arguing that our entire belief in cause leading to effect, is not valid as it is based on an idea rather than an impression, or sensed data [Hume, 1748]. His maxim, *who knows what new ideas are waiting to be thought of*, is especially appropriate in transport. Since Hume's time we have moved from horse and carriage through to mechanised transport and aviation.

Do the differences between the two philosophical systems matter? There are two problems affecting our use of a rationalist philosophy. How do we deal with changing views overtime and rationalism's inability to answer *real* questions. Everyone expects the sun to rise tomorrow. Rationalists would try to show why by logical argument. Empiricists would simply state that it is likely to as it always bas until now. Nonetheless they would make one addendum: Previous history, although a good indicator is no guarantee. This concept of change is an essential part of the philosophy of Hegel. Hegel believed in a dynamic logic whereby *there were no eternal truths, no timeless reason. The only fixed point philosophy can hold on to is history itself* [Hegel, 1817].

> The history of thought - or of reason - is like a river. The thoughts that are washed along with the current of past tradition, as well as the material conditions prevailing at the time, help to determine how you think. You can never claim that any particular thought is correct forever and ever. But thought can be correct from where you stand [Gaarder, 1995].

In the mid-nineteenth century a new philosophical movement began, that of the existentialists. Led by Kierkegaard, they believed that rather than searching for *the truth*, time should be spent looking for each person's truth, *id est* what is meaningful to them. He reacted violently against Hegel's concentration on condensing individual's lives and thoughts into an amorphous block of human knowledge:

> While the ponderous Sir Professor explains the entire mystery of life, he has in distraction forgotten his own name; that he is a man, neither more nor less, not a fantastic three eighths of a paragraph.

Kierkegaard believed that the fundamental questions of life can only be approached through faith, *exempli gratia*: whether someone is trustworthy. Things that we can know through reason, or knowledge, are according to Kierkegaard totally unimportant. *Eight plus four equals twelve.* We can be absolutely certain of this. That is an example of the sort of reasoned truth that every philosopher from Descartes onwards has aimed towards. Truths like this are both objective and general. They are however almost totally immaterial to each man's existence [Kierkegaard, 1844].

	Co-operate	**Defect**
Co-operate	1, 1	-1, 2
Defect	2, -1	0,0

Table 2.2: Prisoners' Dilema Game

We are now left with a model with individuals sensing their world. However, as this next example shows, some questions can be solved by following *predetermined* rules if all players adhere to them. A simple form of rationalism can improve on otherwise sub-optimal solutions that occur when actors do not act in good faith. Consider the game known as the prisoners dilemma with the payoffs shown in Table 2.2. A real life example would be:

> Should I attach a pollution control mechanism to my car or not? I would like to see a reduction in pollution, but there is no point attaching a pollution control device to my car if others do not, as my effort alone makes no impression on the pollution problem. Equally, there is no point in attaching a device myself if the others do, because I can enjoy the pollution improvement without any cost to myself. Each individual thinking likewise produces the polluted atmosphere [Hargeaves-Heap, 1989].

There are two ways to fix this problem. Following Kierkegaard, we could have *faith* in one another and collectively decide to do what is beneficial. Unfortunately, a quick look at the progress being made towards meeting the Rio Summit's controls on emissions of greenhouse gases shows that governments are far keener to see others cut emissions than they are. A second solution involves, an external authority finding this moral hazard and having the power remove it by legislating a requirement for a pollution control mechanism. It is thus possible to show the advantages of an institutional arrangement when people can obtain a free ride.

Despite the philosophical arguments against the existence of the rationalists innate rules made by the empiricists, we have found an example of where institutional arrangements are required to get the best result for society. Notwithstanding the arguments against a completely rationalist system. we must lay a second argument against the empiricist philosophy: although there might not be innate rules present at birth, society can generate, and for a finite period, hold them. Defending these rules whilst they hold can be considered as important as defending eternal truths. The example above presupposes a belief that pollution needs to be reduced. This might not be innate, but that does not make the rule any less important. Once these rules have been formulated the rationalist state lead by *the learned* implementing them becomes reasonable. However, society as a set of individuals must keep studying empirically the results, altering the rules that they choose to govern themselves, as both circumstances and preferences change.

In conclusion, a combined philosophy is pointed to. The existentialist's are correct that rationalism with its innate rules will not answer personally important questions. However there are

some philosophically trivial questions that affect peoples daily lives that could be better dealt with by state intervention. The fact that we feel we have innate rules on how these should be dealt with implies that we must have formulated our own from sensed information. Hume argues that these might not be valid; Hegel that they will almost certainly change; however if they feel important at the time, there is an argument for their implementation. Game theory shows that individuals can have counter-incentives which stop them from doing what they know is right. We thus need a system based on the rationalist, institutionalist model of Plato to stop this. Nevertheless, we must remember that the rules are sensed, and should be constantly monitored to see if they remain valid for the majority of the population.

3

'Wealth That Is For Free Is Valued By None'

Garrett Hardin used the phrase, *The tragedy of the commons*, to describe the fact that nobody looks after resources held in common. If one were to study common-pool properties all over the world, from street lamps and bus shelters through to fisheries and oil fields, we find all abused or over used: anything that is perceived to be free is valued by none[1] . Focusing on transport, a leading example is the public road network: As this is perceived to be free at the point of use, it has become congested beyond nearly all useful use. The purpose of this chapter is to consider whether a government should directly intervene to counter these negative externalities.

> Any public policy designed to intervene in the operation of the market is usually defended on one of three grounds. First, activities such as prostitution or gambling may be suppressed on the grounds that they are unethical. Second, a policy may be adopted to improve distribution of income. Finally, activities may be regulated on the ground that they entail inefficient allocation of resources [Cheung, 1978].

The question that must therefore be answered is do these externalities cause an inefficient allocation of resources. Although this chapter will be specifically dealing with negative externalities, it is important to remember that a project's externalities need not be negative. The Concorde supersonic airliner was heavily subsidised from tax funds on the grounds that aircraft production is an advanced technology industry that generates diffuse external benefits for other parts of the economy in *technological spin-offs*. Although there has been questioning of the value of this, see [Hartley, 1974], it cannot be doubted that there is some prestige in being the creator of the only supersonic airliner which draws in export orders, in much the same way as British business uses the Royal Yacht *Britannia* to illicit sales orders.

In deciding whether such positive intervention is a good use of resources we must look to see why the market did not encourage the creation of Concorde. The reason can be seen as a lack of well defined property rights over the spin-offs, leading to a free rider effect similar to that discussed in chapter 2: a few companies pay for the cost of research that leads to benefits enjoyed by many British companies.

When discussing negative externalities in transport, environmental issues invariably enter the forefront of discussion, The environment is an area subject to heavy lobbying with forthright statements made by both sides of the debate, for instance, *Road building will bring soaring traffic*

[1]The title of this chapter is a quote from [Gordon, 1954].

levels and pollution: in particular carbon dioxide. the main gas responsible for climate change [Whitelegg, 1994].

This chapter will now focus on looking at why polluters arc not controlled by the market mechanism. It looks at how externalities can arise when there is a divergence between social and private costs. Three examples are presented to illustrate these problems. Intervention is muted as a possible solution. However in each theoretical example a solution involving increased property rights is also shown to solve any problem that could be perceived. The final example includes the results of an empirical survey showing that this private solution is quite feasible in reality.

The chapter then moves on to present five reasons why improved property rights solutions are better than direct government intervention. These are: the lack of a theoretical limit on how far to regulate, the interference with working market mechanisms of control, the inability of a government and its associated bureaucracy to be impartial, the bounded rationality of governments and the lack of information available to a government including its lack of speed in adjusting to new information. The chapter closes by showing that rather than direct intervention, governments should intervene to increase property rights if they want to improve allocation in a world of scarce resources.

The classic method for explaining how environmental damage can be caused without economic repercussions is the example of the polluting factory with a smoky chimney, which was first referred to in *The Economics of Welfare* [Pigou, 1920]. The following version appears in [Cheung, 1978].

A factory produces one output from one input The number of input units are listed in column one of Table 3.1. Column two shows the marginal revenue (the extra income from producing one extra unit given the previous production) that the factory owner receives for each unit made. Column three represents the cost of production of producing that unit (for example labour costs). This has been assumed to be constant purely for simplicity. Column four shows the marginal gain, which is simply the difference between the two columns.

Thus, if three units were produced the revenue would be £26 + £24 + £22 = £72. The cost would be £12 + £12 + £12 = £36. The factory owner would thus receive £72 - £36 = £36. The economic model of rational man assumes that economic agents are constrained maximisers. Thus constrained by the cost of inputs, diminishing returns and the state of technology the most gain possible is £56, at eight units of production. Any rational entrepreneur would produce this many units.

Input	Marginal Revenue	Marginal Cost	Marginal Gain
0	0	0	0
1	26	12	14
2	24	12	12
3	22	12	10
4	20	12	8
5	18	12	6
6	16	12	4
7	14	12	2
8	12	12	0
9	10	12	-2
10	8	12	-4

Table 3.1: A production decision, private costs.

Pigou, however, notes that this factory is producing smoke which is affecting the surrounding community: The local residents are experiencing a loss of pleasure. There has been no contract drawn up between the factory owner and the residents, and so the cost of this pleasure loss is ignored in the first table. The costs are however listed in the second column of Table 3.2. We add these to the marginal costs of Table 3.1 to produce the total costs of column two. These total costs are then subtracted from the marginal revenues shown in the previous table to calculate society's gain which is shown in column three.

Input	Pollution Costs	Total Costs	Society's Profit
0	0	0	0
1	2	14	12
2	4	16	8
3	6	18	4
4	8	20	0
5	10	22	-4
6	12	24	-8
7	14	26	-12
8	16	28	-16
9	18	30	-20
10	20	32	-24

Table 3.2: A production decision, social costs.

The total social gain is a maximum of £12 + £8 + £4 = £24 at four units. However, the private entrepreneur desires to make eight It is clear from this example that where some contracting has been left out, a divergence can occur between private and social costs leading to *excess* pollution (By using the term excess, we imply a belief that society is willing to tolerate some pollution as long as it is adequately compensated).

How could this overproduction be corrected. A welfare economist of the Pigovian school would advocate one of: taxation, compulsory compensation to the neighbours, regulation of either the amount of shoe production or of pollution, or even the entire elimination of the factory. Any of which require a bureaucracy, backed up by a strong government: the rationalists of Plato's republic.

What is never advocated, is the more empirical solution. A government could inform the local community of their property rights concerning air free from pollution. Then allow easy access to courts of common law for those polluted, allowing them to sue for environmental damage. If pay outs become excessive (more than the social costs in the table) then the factory owner will start contracting in the social costs.

A second example where welfare economics advocates intervention to correct a divergence of private and social costs is that of two parallel roads:

> 'Suppose there are two roads ABD and ACD both from A to D. If left to itself, traffic would be so distributed that the *trouble* in driving a *representative* cart along each of the two roads would be equal. But, in some circumstances, it would be possible, by shifting a few carts from route B to route C, to greatly lessen the trouble of those still left on B, while only slightly increasing the trouble of driving along C. In these circumstances a rightly chosen level of differential taxation against road B would create an *artificial* situation superior to the *natural* one. But the measure of taxation must be rightly chosen' [Pigou, 1920].

To make use of this example, we must specify what is meant by *in some circumstances.* An example might be road C is broad, and so able to take much traffic, but poorly graded and surfaced, thus reducing maximum speed. Road B, might be much narrower, meaning bottlenecks of congestion can occur, but better graded allowing a quicker passage when free. Pigou's suggestion then works as moving traffic from road B to road C will remove the bottlenecks on B allowing use of the better road, whilst not increasing congestion much on road C. A definite improvement is thus introduced to pass the social costs of congestion onto the private users. This seems a definite case for government intervention.

However, the example implicitly assumes government intervention, for if the roads are *free* they must have been built and are now being run by the government. The situation is already artificial. As Professor F. H. Knight put it:

> The conclusion does in fact indicate what would happen if *no one owned the superior* road. But under private appropriation and self-seeking exploitation of the roads the course of events is very different. It is in fact the social function of ownership to prevent this excessive use of the superior road. Professor Pigou's logic in regard to the roads, as logic, is quite unexceptionable. Its weakness is one frequently met with in economic theorising, namely, that the assumptions diverge in essential respects from the facts of real economic situations ... If roads are assumed to be subject to private appropriation and exploitation, precisely the ideal situation which would be established by the imaginary tax will be brought about by ordinary economic motives [Knight, 1924].

Id est, if private ownership of the roads is established then the owner of the narrow road can charge for its use a toll representing its superiority over the second road, and in accordance with the theory of rent, the toll will exactly indicate the ideal tax. Again, we find that intervention is not needed if property rights arc allowed to be correctly asserted.

So far this chapter has advocated extending property rights as the method for connecting social and private costs. However, those advocating this method, have not wanted to fall into the trap that caught Pigou: making unrealistic assumptions. Therefore empirical studies have been undertaken to check that social costs can get written into private contracts. I present a final example of the failure of Pigou's divergent social cost analysis.

Pigou believed that tenant cultivation would be less efficient than owner cultivation. He had two reasons for this. *It is true that a tenant can claim compensation from his landlord for improvements on quitting but he knows his rent may be raised again." him on the strength of his improvements, and his compensation claim does not come into force unless he takes the extreme step of giving up his farm. Further, it is often found that towards the close of his tenancy, a farmer, in the natural and undisguised endeavour to get back as much capital as possible, takes so much out of the land that, for some years afterwards, the yield is markedly reduced.* However surveys in China have shown that:

> Contrary to the prevailing opinion that tenants do not farm as well as owners, a classification according to yields by different types of tenure, shows no significant variation in yields for most localities [Buck, 1937].

An investigation in 1934 showed that half of all leases were for a year, a quarter were for three to ten years, with the remaining leases being split evenly between long term and perpetual leases. Following Pigou's argument, the yields should vary significantly between the various lease types. Three surveys (1930, 1932 and 1936) show that the main determinant was land grades. Furthermore surveys have shown that tenants owned between sixty and seventy percent of the buildings on the property and ninety five percent of the fanning equipment It is obvious that Pigou's model just was not valid in real life. However unrealistic assumptions are not the only problems for those creating models of situations requiring intervention.

This chapter will now go further and show that not only is the pigovian social cost argument deeply flawed, but that intervention has its own problems: Firstly we have the question of how far we allow intervention? The pigovian social cost argument, carried to its logical conclusion, can be deployed as an argument for government intervention in anything, and everything. Burton listed the following externalities met when walking down a street and ask whether we are to be charged for each hit of enjoyment, or remunerated for the suffering entailed, with each:

> The pleasing sight of a well kept garden. The noise of children playing. Exhaust fumes from passing cars. The jostle of the crowd. [Burton, 1937]

Although this is an obvious exaggeration, social cost theory provides us with no useful limit of how far to intervene. A second problem with government attempts to intervene has been the fact that they have stopped otherwise adequate market mechanisms from doing their job. Recourse to common law was the empirical method put forward to counteract the smoky chimney, however if the government decided to follow the intervention route for all pollution problems in a way similar to bow they have attempted to deal with river pollution then this is blocked: Nationalising that problem in effect created a polluters' charter. By creating the statutory National Rivers Authority with powers to prosecute excessive polluters, the government has removed the polluted's protection under common law. In the early fifties. several river polluters faced civil prosecutions for dumping their sewage. Now, provided these polluters obey their statutory duties to keep under certain limits, they are protected from any attempts at common law restitution.

A third problem with government intervention is that social cost theories expect the intervention to be done by a government that is not in itself an economic agent The government is meant to be an organisation purely representing the views of the electorate, having no views or desires of its own - the *pigovian eunuch.* This is however not true. Governments, are made up of politicians with their own utility functions, albeit constrained to some extent by occasional elections. The weakness of the pigovian eunuch assumption about political behaviour is reinforced by the fact that the bureaucrats who manage intervention agencies to correct market externalities have their own goals, independent of and separate from their political masters and the electorate.

> Power, prestige and income tend to be related to the size of the agency, thus bureaucrats have an incentive to expand the size of their budget allocation/agency. This will lead to *overcorrections* of externalities and an inefficient allocation of resources [Niskanen, 1973].

A fourth problem comes about from the fact that governments must accumulate large amounts of information. Owing to the *bounded rationality* of those who form a government, this quantity becomes too large to process. Two examples will now be presented showing a clear lack of thinking behind government decisions [Simon, 1982].

Since 1850, there has been a steady change in the level of carbon relative to hydrogen. in the fuels that the human race as a whole uses. The reason for this is that until 189O, the most common fuel was wood which at ninety-nine parts carbon to one part hydrogen is highly carbon dense. Next came coal at one part carbon to one part hydrogen, followed by oil which is approximately two parts hydrogen to one part carbon. Very recently, natural gas has taken over at approximately four parts hydrogen to one part carbon: Every switch towards hydrogen. This is beneficial as although the result of burning hydrogen (steam) is a far more potent greenhouse gas than the results of burning carbon (carbon dioxide), nature has a rather useful way of dealing with any excess steam in the atmosphere. lt rains. *Thus, in a hydrogen burning world, there will be no build up of greenhouse gases* [Ridley, 1996].

Have governments noticed this and decided to encourage hydrogen? The answer, it seems is no, the latest green scheme from the government involves planting trees for burning in new wood powered power stations. The scheme is claimed as green as the carbon dioxide released at burning has been taken out of the atmosphere in growing the tree. However, it will not reduce the currently high carbon dioxide. Instead the government could have better spent its money helping move third world countries from wood burning to gas burning power stations.

A second example of lack of government thinking comes in the shape of the Common Agricultural Policy. Owing to the advances in transport technology, it is now possible to eat South African avocados in winter, and there is no such thing as the strawberry season. Increasingly each country's agriculture can abandon the growing of staple food and exploit its comparative advantages leading to increased welfare. Not all governments are encouraging this:

> The Kenyan peasant will grow out-of-season manges-tout peas which he can sell for more Iowa maize and Danish bacon than he could ever grow himself. As in industry, specialisation is the path of the future. Only backward-looking governments, such as the European Commission, still preach self sufficiency in all crops and meats [Ridley, 1996].

A final problem with government intervention is that it even if a government had the ability to understand all the facts, it does not possess perfect information. Decisions are thus made wrongly; worse than this any government faced with fierce lobbying by special interest groups is unable to correct its mistake quickly. Markets realise their mistakes quicker as agents notice that their competitors are starting to make supernormal profits, and imitate the new practice.

The first example of lack of government knowledge is the argument over how long the fossil fuels will last: In 1974, the consensus of belief was that the world would effectively run out of oil before the end of the century. The one dissenter, a journalist called Norman Macrae was scoffed at. However *proven* reserves of oil arc now larger than ever before. Despite this fact, many millions have been ploughed into alternative fuel research that could have been delayed thus reducing the present value.

A connected issue is that of unleaded petrol. The massive and startling quick move to unleaded petrol is seen by many as a great example of what intervention does. However, in removing the lead, the fuels have become less potent and as efficiency has dropped. The lower efficiency has lead to other possibly equally dangerous pollutants are being emitted into the environment at a faster rate. The public was never told of this at the time.

> The Earth's climate is getting warmer. Man-made carbon dioxide is the main cause. The rate of warming is predicted to be faster than at any time in history. Computer models accurately mimic world climate. The effect of climate change on the ecology of the planet will be disastrous. Virtually all reputable scientists agree with these sentences.
>
> *All the above sentences are false* [Ridley, 1996].

The above quote is repeated from a review of John Emsley's book, 'The Global Warming Debate'. The book is a collection of essays, proving in painstaking and convincing detail that the effects of global warming have been, at best, overemphasised: According to balloon and satellite data, there is currently no significant warming effect Carbon dioxide levels in the atmosphere unexpectedly *fell* in the early nineties.

Yet, the public, and through the process of electoral control. legislators, still believe this to be a serious worry. This could have damaging implications to policy provision. How has this happened? The simple answer is that environmental pressure groups have continually pushed

for more environmental controls, based on data taken from only scientists who agree with them. This has combined with the fact that *now marketing executives have discovered how much humans innately hate change, and how potent a money raiser it is to tell the public that they can stop it* [Ridley, 1996]. So should all intervention be banned? No - governments can efficiently intervene if it is to increase property rights.

Within a fishery, there is a limit to the number offish which can he caught without destroying the stock. Thus, the chance to catch fish is not an infinitely expandable right One could view it as a share in a monopoly franchise. In New South Wales, the government did this and allocated shares to the members of a fishery based on past catches for free. These shares were fully transferable titles to a percentage of the years quota. set by the government Each successive year 2.5% of each fishers quota automatically returns to the government for sale. This pays for the scheme and allows for new entrants to encourage efficiency.

As the fishermen will see the quota, and thus their share fall if overfishing occurs, they have a built in incentive to monitor others (cheats lose a large proportion of their share). Now rather than relying on the government to do this, compliance costs are internalised and the cost of checking is carried by those that need to be checked.

A similar scheme could operate for a public road network. The government could set a quota for the number of car-miles that could be travelled on the motorways each month. Drivers could hold shares in this quota. Those that need to travel will be willing to pay an ever increasing price to increase their quotas. The money from sales will pay those that need to use roads less the cost of their public transport and for the inconvenience of having not being able to use their cars (less the cost of driving). Pollution and congestion are thus controlled, however the market sees to it that the neediest of travellers are those that get the largest share of the scarce resource.

In this chapter, the concept of an externality, where social cost diverges from private cost, needing intervention has been introduced. It has been shown that the these problems also have property rights solutions. Further it has been shown that some of these problems are only introduced owing to previous intervention and that the market would not have created them.

The chapter then went on to show some problems inherent in government intervention including the limits of intervention, the fact the intervention frequently stops correctly functioning market mechanisms, the questionable impartiality of members of government and its associated bureaucracy, the bounded rationality of government and the lack of information available including the slowness of response to it As with the chapter on philosophical models, a compromise solution has presented itself. Governments should intervene to encourage property rights. Agents, once presented with a share in a scarce resource, have more reason to protect it By giving wealth a price, it becomes valued by all.

4

Is Infrastructure Regional Cement?

It is widely thought that a modern infrastructure must be a prerequisite for economic development. This belief can be turned into an argument for state control of infrastructure development so as to avoid the occurrence of any regional disparities. Many large plans, both by the British government and the European Development Fund have been formulated based on such a supposition: An example of this is the *Barnes Plan* launched just after the Second World War. Its purpose was to introduce improvements to assist Development Areas in particular and industrial development generally [Rodgers, 1959].

However the nature of the relationship between infrastructure and regional development is not at all clearly understood and consequently the impacts of improvement to an existing stock are not easily assessed. This is especially so when trying to look at the impact of infrastructure developments when regions' infrastructure stocks are not vastly disparate.

This chapter finds that there are two main reasons put forward for boosted spending on infrastructure leading to better regional development. Firstly in areas of very poor infrastructure provision, an increase in spending can result in urbanisation and agglomeration which in themselves provide economics of scale and scope. A second reason is that by reducing transport costs, an economy will restructure itself geographically in order to take advantage of comparative advantages leading to a better allocation efficiency.

However, it goes on to note that current allocational inefficiencies are, however, not usually only caused by lacking infrastructure. Other factors are also in need of improvement. This has been shown empirically by the lack of movement by firms following infrastructure development. Firms claim that the labour force and incentives by regional agencies are more potent lures. The economies of urbanisation are limited. Congestion and other bottlenecks, it seems are more of a worry to firms than basic infrastructure provision. Furthermore infrastructure developments intended to link regions can in reality have perverse affects.

A sufficiently established infrastructure can provide any particular location with a productivity bonus. This can be caused by external economies of agglomeration and urbanisation which a good infrastructure facilitates. The high population density makes the supply of public goods services viable: These range from the provision of cheap utilities through to waste removal facilities. Also, allowing easy access between places of work and rest allows people to live further away from industrial areas increasing quality of life [Henderson, 1988].

A second reason for increasing prosperity following infrastructure development would be from increased allocational efficiency as production is freed to relocate to areas of increased productivity, from which it had previously been barred by poor connections. This would show itself in

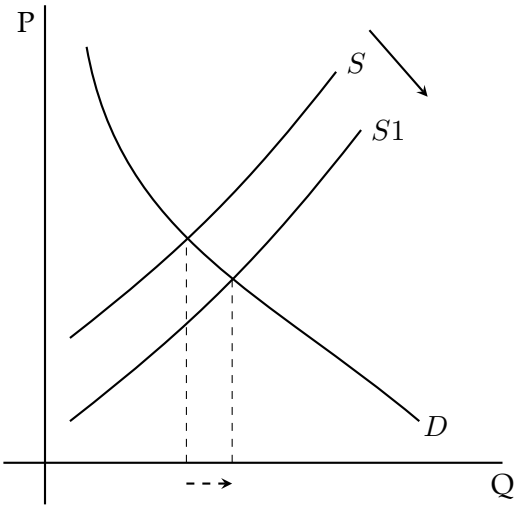

Figure 4.1: Benefits of Cheaper Transport

cheaper transport facilities lowering the overall cost of production. This will lead to increased profitability which can be represented by the shift in the supply curve from S to Sl in Figure 4.1. The figure shows that output will thus increase. There are three conditions that are required for this to be significant:

Firstly there have to be otherwise unemployed resources of the right kind to produce the extra output Secondly transport costs have to be a significant element of total production costs. Finally, the change in transport costs has to be significantly large. Empirical studies do not support these three assumptions. Areas with low levels of development are seldom in the situation of lacking good accessibility only; they have other disadvantages, *exempli gratia:* lack of suitable sites and skilled labour. Transport costs are only between five and ten percent of total production costs. The decrease in transport costs is only a small fraction of existing transport costs: loading times are equally significant [Parkinson, 1981]. Not only this, but the local growth has to be sufficiently strong to counter the fact that it is now also cheaper to transport good produced elsewhere to the markets around the infrastructure improvements [Chisholm and O'Sullivan, 1973].

Further empirical evidence suggests that attempts to encourage regional developments to obtain an equality of opportunity for all its citizens by encouraging growth in relatively backward areas arc flawed: business relocation's following infrastructure reconfigurations tend to be intra-regional rather than inter-regional [Parkinson, 1981]. A study of the effects of the building of the M62 by Leeds University showed that the vast majority of the traffic (about 90%) was simply reassigned from existing roads. The reduction in total production costs of those reassigned to this new motorway, was estimated to be about a third of a percent. This was deemed insignificant [Gwilliam and EJ, 1978]. A study by Geary and Thomas is more significant for those looking at infrastructures effects on adjoining regions of previously different properties. This looked at the development effect in Wales for the first three years after the opening of the Severn Bridge. It found little evidence of business location decisions being affected by the new infrastructure [Geary and Thomas, 1973].

Botham carried nut an analysis of the 1957-1972 trunk road programme. The results showed a relatively small (in the order of one hundred thousand jobs) redistribution. Also, other determinants of travel costs such as changes in fuel taxation and legislation on drivers' hours can be as significant as road improvements [Botham, 1980]. This is confirmed by a survey of firms (results shown in Table 4.1) carried out by the Department of Industry which finds firms more

concerned with labour availability and regional incentives [Maarquand, 1980].

Factor	Major	Minor	No Part
Labour Availability	69	25	7
Regional Incentives	64	25	12
Local Authority Aids	42	36	22
Transport Facilities	42	31	28
Access to Markets	32	25	43
Scarce Skills	18	33	49
Environment	17	33	50

Table 4.1: Factors affecting firms relocating in Assisted Areas 1972-1976.

There is some evidence that sites in the vicinity of motorway interchanges are in demand by developers, although it is contended that such developments can be at the expense of nearby inner city areas e.g. M4 and M25 interchanges with respect to Cardiff and London. This is shown in an increase in the level of rents demanded for the first few years after a new road is built. After this rents tend to revert to the regional average [Hillier Parker Research, 1979]. The increases in rents are however small compared to geographic distance from London:

> Of the factors considered, it seems that motorways, new towns, good accessibility and ports do not, by themselves, cause high rents. None of these factors compare with the dominating effect of London. Distance from London seems clearly to be the most important locational factor affecting industrial rents [Hillier Parker Research, 1980].

Given the lack of interest in basic infrastructure shown by commerce and the limited nature of resources available to a government there is a question of where to provide new infrastructure: provision in advance of demand for its use in certain lagging regions has to be weighed against the lack of provision in areas of real demand and immediate utilisation.

In a 1989 survey of the views of businesses by the Department of Transport, road transport and communications were put forward as being of paramount importance to the overwhelming majority of establishments surveyed. However the complaints were not from the NorthEast which has a sparse infrastructure base, but from the South-East. The main cause of this is the increasing number of bottlenecks blocking goods movements and causing problems for the labour forces attempts to travel to and from work in the morning [Department of Trade and Industry, 1989].

Vickerman confirms this analysis, referring to the the results of Biehl's analysis of the limiting effect on output played by poor infrastructure in the European Community [Biehl, 1991]. He found both over and under-utilisation. The two regions that showed the most obvious over utilisation of infrastructure are the south-east of England and the Nord-Pas de Calais region of France. This reinforces the view that regions with large amounts of infrastructure are as likely to suffer from infrastructure problems. The lesser developed regions often show under utilisation of infrastructure. This is likely to be the result of the heavy investment of the European Regional Development Fund in infrastructure in an attempt to bring behind regions in line with the rest of Europe [Vickerman, 1994].

Increased spending on infrastructure it seems can have a perverse effect on regional growth. An example of this is the High Speed Train Network being build across Europe. Recent, major strides in the development of high-speed rail services in Europe have caught the attention of

bureaucrats who saw one pan-European railway network as having huge integrative potentiaL Far-reaching plans have been made for a Europe-wide High Speed Train Network extending some 35.000 km including some 20,000 km of new dedicated track, and reaching all the current EU member states and eventually eastern Europe as well [Ross, 1994].

Expectations of High Speed Train Technology are high: One assumption is that rapid rail technologies will have a regenerative effect for the European rail industry, and more widely for overall transport networks via inter-modal linkages [EC Commission, 1990a]. A second reason for high expectations is the belief that the network will lead to an injection of capital and employment opportunities through regional development. A third belief is that the network will lead to harmonisation of goods and people carriers across the EU, following the underlying principle of the single market [Ross, 1994].

There is however a problem. Firstly, the experience of HST lines that are already operational is mixed. Although the French TGV operates at a fifteen percent profit and British Rail's Intercity network has been successfully privatised, Spain's Madrid-Seville AVE line has had far more mixed results. To be financial viable, HST lines need to cover medium distance travel (200-500 km) and serve large populations at each end, with high market demand and journey times under fours hours in order to keep competitive with airlines [Blum et al., 1992]. Such conditions exist in the Low Countries, France and Germany, but rapidly deteriorate in the peripheral regions. This is likely to lead to a two tier system of transport infrastructure. Worse, HSTs draw in valuable funds: Even in a rich country like France, the heavy costs of the TGV development have been widely blamed for the relative backwardness of its regional rail systems, particularly in the South [Vickerman and Flowerdeq, 1990].

In this chapter we have looked at the argument that infrastructure development can lead to large changes in regional growth, and that therefore infrastructure development should be controlled by the state. The two reasons for the association of regional growth and infrastructure, urbanisation and increased allocational efficiency, have been presented and shown to be of little empirical value. Firms have not moved and rents have changed little (after short term shifts) according to changes in infrastructure in remote regions.

In fact most complaints about infrastructure come from well developed areas which have grown so excessively densely populated that congestion and other bottlenecks have formed. Government intervention to improve backward regions prosperity can thus not be justified, indeed intervention in the form of the European High Speed Train Network has been shown to damage backward regions. Again the market should be left alone.

5

Monopolies And The British Experience

Britain has often taken the lead on commercial affairs ever since the industrial revolution. Since these earliest of times, the philosophy of the British has been one of laissez-faire, that is, non- intervention in the affairs of business by government. The work of Huskisson, Peel and Gladstone can be seen as the deliberate application of these principles to our commercial system.

However it was not just the principle of *laissez-faire* in itself as propounded by Adam Smith and McCulloch that led to a freeing np of the markets from government controL Of as much importance as ideology was the fact that liberalisation favoured the interests of the newly assertive mercantile and manufacturing classes from the time of the 1832 (Parliamentary) Reform Act [Taylor, 1972]. This meant that when the problems of monopoly power were highlighted by the railways, the government had no obvious ideological response. Firstly strict regulation, and then public ownership were tried. Both failed and Britain is currently deregulating and privatising in an attempt to regain lost efficiencies. The purpose of this chapter is to examine the results of the attempts to control monopoly power and current policy.

There is a lack of contestability in transport infrastructure owing to the time lags in development: As Sir Alastair Morton, former co-chairman of Eurotunnel put it, *Our generation must invest in the infrastructure for the next two generations* [Morton, 1996]. As well as a lack of contestability in terms of new development, there is also the problem of amalgamations removing any current competition, thus creating monopolies. In Britain this was commonplace, *Railway amalgamation is nearly as old as the introduction of steam locomotives on the railways of this country* [Simnett, 1923]. This led to abuses of power by the railways' owners in the nineteenth century:

> In a parliamentary speech James Morrisson, MP in 1836 complained that the community was exposed to serious ills from legislature conceding to private companies the powers required for making and working railways, unaccompanied by such conditions as were necessary to secure the public interest [Swift, 1995].

Figure 5.1 shows how it is possible for a company to abuse monopoly power. In a case of perfect competition, all producers charge a price *p1*, the long run average cost[1], per unit. To charge less than this would lead to bankruptcy, to charge more would lead to customers purchasing the good from a competitor. The supplier will choose to produce units until the cost of production equals the revenue received (AR). This is at quantity *q1*.

[1] As this is a constant, marginal costs and average costs are the same.

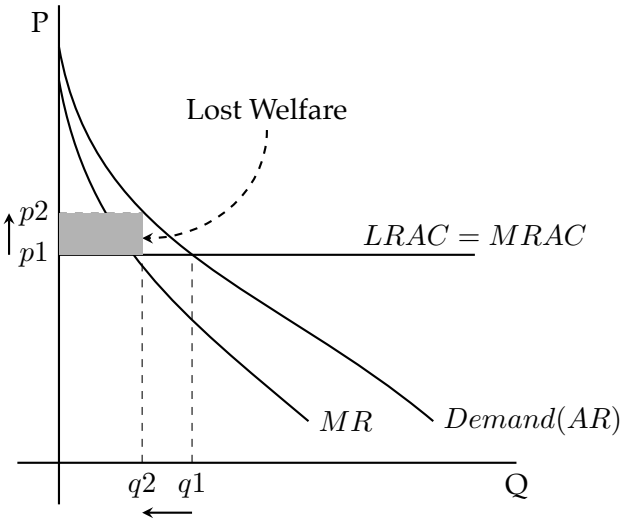

Figure 5.1: Welfare loss caused by monopoly abuse.

In the case of a monopoly, there is no competition and so it is possible to charge more for a good. To obtain maximum profits a supplier would wish to equate the cost of production of the last unit produced (marginal cost) with the revenue that it produces (marginal revenue). This occurs at the lower quantity *q2* at which supply the market will bear a higher cost, *p2*. The extra profit that a monopolist extracts is shaded in the figure. The problem with this situation, is not a political one of wealth redistribution: There is a loss to society in general. The welfare of consumers falls more than the gain taken by the monopolist. The triangle marked on the figure shows the welfare that is lost [Begg et al., 1994].

To control this the Railways Regulation Act of 1844 was passed. It was based on the principle that *the State should reserve to itself the right to control a possible excessive prosper, it yon the part of the railway companies, and take steps to protect the interests of the public at whose expense such prosperity might he gained.* It outlined two possible powers the government could use: it allowed for the nationalisation of railways companies if needed (that is to say dividends went never ten per cent); There was also the possibility of direct intervention. If a railway company paid a 10% dividend, or over, the Government was able to revise the company's rates, with the view apparently of bringing earnings below the ten per cent limit [Pratt, 1908].

> By the end of the century, Britain had been left with a railway industry comparable only to mining in the degree of its regulation, yet no less distinguishable from the railway systems of continental Europe by the extent to which construction and management control was still exclusively concentrated in the hands of private enterprise [Taylor, 1972].

There were however advantages to being a regulated industry: it gave the railways the authority to get a job done properly: The Eurostar trip was graphically described by President Mitterrand as *185 mph across northern France, 20 minutes through the tunnel and then time to admire the countryside as you trundle through Kent.* The first part of that trundle, Ashford to Tunbridge, is significantly faster than the second, on into London:

> In 1839 that wonderful early Victorian visionary, Isambard Kingdom BruneI, wrote to a friend who had just been hired to survey a railway from Redhill to Ashford and beyond. BruneI, who was already engaged on creating the Great Western Railway from Paddington to Bristol, said, *Survey it well, my friend, because one day it will link my railway with the Channel Tunnel which must be built.* Her Majesty the Queen, 155 years later, was joined by President Mitterrand in declaring the Channel Tunnel not

only build but open for business [Morton, 1996].

Despite the strong regulation of the railways to control monopolistic abuses, the British belief in *laissez-faire*, and thus not controlling economic agents choice of transport mode, has meant that there was no nineteenth century development of an integrated transport plan. Transport modes were left to compete in what was thought a free way: tolled roads competed with tolled railways. However this did not remain so. Tolled roads were disliked by the general populace and it is now the case that bar a few river crossings, all road transport in Britain is free at the point of use. This is one of the reasons that has led to an extraordinary strong favouring of road transport as shown in Table 5.2 [Department of Trade and Industry, 1989].

A second reason for the choice of road transport is that it allows an individual the freedom to undertake a journey whenever they want to wherever they want. It changes their lifestyle. Historically each change in the level of transport technology has been a facilitator of better lifestyles: the development of Victorian suburbs on the basis of rail or tram which allowed commuting to central city work sites or, more recently the development of large edge-of-town shopping complexes to which the car is often the only form of transport [Benwell, 1993]. Not only does a car affect the ability of people to have a better lifestyle, the car itself became an indicator of this better lifestyle, a status symboL Public transport was left to those that could not afford a car [Hibbs, 1993a].

A third reason for the increased use of the car can be traced back to the efforts made by the government in the twenties and thirties to reduce unemployment. The Trunk Road Reconstruction programme launched in 1924 had the explicit purpose increasing spending on roads, thus making them more accessible to the general public, in order to cut the otherwise increasing queues of the jobless [Rodgers, 1959].

	Road	**Rail**	**Air**	**Sea**
Very Important	95	8	24	27
Fairly Important	4	23	34	31
Not Important	1	69	42	42

Table 5.2: Business perceptions of the importance of transport modes

After the Second World War, the British people elected a government with a new ideological bent. It believed that the state should organise all economic activities that bad social repercussions. The railways, having an obvious effect on peoples lives, was bought. Despite the best intentions, this decision was one of the main reasons for the collapse of the public transport sector. From then on, transport and all heavy industry had to fight education, health care and social security for funding in Whitehall. At a moment of belt-tightening. it was obvious which would lose. The Treasury, believing correctly that its mission was to restrict government spending, took the line of least resistance to it. It cut investment.

This continued until 1979 when a new government was elected. It brought with it an absolute belief in the correct working of free markets, and was determined to move back to the traditional British practice of *laissez-faire*. Roads, considered to be the embodiment of individual liberty remained well funded, whilst railways and buses were dispossessed:

> While capital spending on the national road network in 1992 was set at around £2 billion a year, allowing for several major schemes at various locations to be developed, government expenditure on light railway schemes was rationed to £50 million. At that rate only one single line, not a network, can be added to a city every *three* years [Headicar, 1994].

The reminder of this chapter is spent looking at the results of the deregulation of bus services following the 1985 Transport Act and the privatisation of rail services under the 1993 Railways Act. The 1985 Transport Act was a watershed. Previous attempts to deregulate transport had restricted themselves to business and discretionary services. The Transport Act sought to deregulate and subsequently privatise all bus operations outside of London. The purpose was to create a more passenger responsive environment with greater flexibility and innovation in service design and delivery. Research has subsequently shown, however, that many bus operators were risk averse, preferring not to offer strong competition. Within a few years, this became more obvious as nationally based holding companies started buying up many of the smaller operations [Benwell, 1993].

An analysis of services finds a mixed appraisal. In some ways services have improved, with greater use of minibuses serving more bus stops nearer users. In metropolitan areas, between 56% and 100% of pre-deregulation mileage was registered as commercial. The structure of services has changed - typically peak, radial and some suburban services have increased, while evening, weekend and other services have been reduced. Public expenditure has fallen however fares have risen. In the period 1981-1991, bus fares rose 70% faster than motoring costs. This in turn has led to a reduction in the number of passengers [Oxford University Transport Studies Unit, 1987a].

This has had a disproportionate affect on the poorer families who tend to be the majority of bus users as they cannot afford cars. Although the number of people travelling since deregulation has not changed much, they are now travelling less often: walking journeys that they might have previously taken a bus for [Oxford University Transport Studies Unit, 1987b]. To try and find out what has happened this chapter will now look at the effects of deregulation on two specific towns: Oxford and Darlington.

Since deregulation, Oxford has seen an increase of a third in the number of bus passengers. This compares to the remainder of the country which has seen a similar decline. Some of the increase in usage can be attributed to the change in local council representatives in the same year as deregulation, and the subsequent subsidy increase. However, far more important were the new methods and technology brought to bear. The cause of the changes: *Competition*: As predicted in [Hibbs, 1982], a new firm entered the market using minibuses allowing more frequent service (up to every two minutes of the busiest routes) closer to customers houses. As well as providing more frequent services, they tested out new routes in order to find the current demand patterns and then combined this with impressive marketing: route branding, door-to-door timetable deliveries and pro-public transport children's books.

Darlington's view of the effects of competition are, unfortunately somewhat different. Rather than face competition by similar sized competitors, the local operators were fighting against a subsidiary of a large national company (Stagecoach). This allowed the subsidiary to offer loss-leaders in an attempt to gain market share. The competition turned nasty, with bus rerouting to pick up passengers just before a rival arrived. The town centre became congested beyond all use by lines of buses queuing to pick people up [Enoch, 1997].

However despite the removal of regulations, buses are still unable to work unencumbered. Buses not only have to fight other buses for road space, but also cars. As the roads are free at the point of use, they are massively over used: A survey of fourteen urban and interurban bus services in the North East, Midlands and London areas of England found that on average, running time is 30% higher during weekday peak hours than on Sundays. The range of extra time added was 6% to 67% [GBBT, 1996].

There is more of an effect than is immediately obvious. Bus companies must adjust timetables to take account of this variable running times; this can mean stopping and waiting at bus

stops on good days to keep to schedule. These slower journeys lead to higher fates which force more people into private transport [Higginson, 1997]. Also one bad journey caused by excessive congestion, making a traveller late for work will leave a long lasting distrust of public transport.

I shall now briefly attempt to draw some conclusions from the results of bus deregulation. Firstly competition is needed: it has brought the benefits of minibuses and less polluting vehicles. A second benefit was the route testing carried out in Oxford: making sure that the limited number of buses work the most needed routes. If buses are to compete with the liberty of a car, then the roads will have to be cleared of some of the more obvious examples of congestion, so allowing buses to run on time. Finally, competition should be fair. Loss leaders should be stopped, and deliberate attempts to steal passengers by cutting out part of a route (as happened in Darlington) should be banned. A way of stopping this might be the quota system mentioned in the chapter on social costs, and discussed further in the final chapter of this dissertation.

I now turn to look at the results of the 1993 Railways Act. In freeing up the railways the government's claimed objective was to extend the involvement of the private sector in the operation of the railways, ensure continuity of services, assure safety, and provide value for money [Government White Paper, 1992]. The government's belief was that efficiency would be improved as the natural consequence of the injection of private sector disciplines and exposure to the market for corporate control. Thus government involvement in decision making was reduced and the external financing limits set by the Treasury scrapped. Widening share ownership, encouraging employee share ownership and the increased attraction to managers of private sector power was to contribute to the desire to find all available efficiencies [Swift, 1995].

The provisions of the Railways Act included the creation of twenty-five new businesses which are to be passenger train operators. These are charged the costs of provision of infrastructure services. It is required that from these charges, the owner of the infrastructure (RailTrack) will obtain a reasonable return on assets required to make the infrastructure provision. The Act ensured that the rolling stock is in the hands of separate businesses, thus creating contestability in the service provider market by allowing easier market entry [Swift, 1995]. Various services were to be bundled together and auctioned by the franchising director. It should be noted that this is a different model from that being taken in Sweden where the train operators ask for the track access that they need to provide the services that they choose to provide [Glaister and Travers, 1993].

The annual subsidy that the government is to pay to train operators is set to fall from £2, 102 million to £926 million over the next six years. Over and above this, the franchises are committed by their franchise agreements to invest £1.5 billion in new rolling stock, new services across their networks, better security and advances in ticketing and information provision [Office of Passenger Rail Franchising, 1997a]. Having split British Rail, managers are now more able to focus on their specific part of the industry. For a Train Operating Company, that means customer focus: one TOC managing director claim that he expected to jump from the previous 30% of his time spent on customer service to the majority of his time [Salmon, 1996].

However many of the benefits of competition are not picked up on. Although, the franchises for lines were auctioned and the companies that own them could be theoretically taken over, the size of their owners makes this quite unlikely. Passengers often have no choice over which companies they travel on, as only one company holds a franchise to serve their town. This came about through a political rather than an economic decision:

To the extent that it is necessary to ensure the success of the first generation of franchises, on-track competition between operators of passenger services may have to be moderated for a

limited and specified period [Department of Transport, 1989].

A more suitable system would allow many operators access to the lines (in a way limited to stop the *bus wars* problems of Darlington) and allow passengers to choose the service they preferred: real competition. This has so far happened on only one set of services - those to Gatwick. Gatwick Express, Connex South Central and Thameslink operate a wide range of services in close competition. Here OPRAF has removed the requirement of inter-availability of train fares thus directly equating revenue with the number of customers. Following this decision prices in the route have remained constant while the number of services and the level of investment have increased. Gatwick Express have started running a service throughout the night for the first time [Office of Passenger Rail Franchising, 1997a].

Performance figures issued by the Office of Passenger Rail Franchising question the benefits of privatisation shown so far. They show that whilst railway operating performance for the first quarter of 1997 was broadly comparable with 1996, the annual averages present a more mixed picture. 14 Charter groups saw rises in reliability while 18 fell and 26 were static. For punctuality, 28 groups rose while 20 fell and 10 were static [Office of Passenger Rail Franchising, 1997b].

In this chapter we have seen that abuses of monopoly power have been possible and that this is a fair reason for regulation. It has also been noted that the traditional solution has been the regulation of industry whilst allowing it to remain in private hands. The one period of experimentation with national ownership resulted in the collapse of public transport leaving road transport the predominant form of mobility.

Deregulation of buses has resulted in competition which has improved the allocation of services, however the effects of over-competition from both other bus companies and cars have taken their toll. Control of both, in the form of limiting access to the roads under the guidance of a market based allocation system would encourage passengers back onto buses. This will lower pollution levels, free up the roads for those that really need to travel and in turn would allow better long term investment by bus companies leading to improved services.

The train service privatisation has yet to mature. Until public train operators can compete with each other over the same stretch of infrastructure, passengers will not be able to indicate the types of service they want. Until this happens, the consequent misallocation of resources is likely to continue.

6

Lessons from Europe

A unified transport system has long been considered crucial to the European integration process, warranting mention as early as the 1951 Treaty of Paris establishing the European Coal and Steel Community [Ross, 1994]. The 1957 Treaty of Rome (Article 3) called for the establishment of the Common Transport Policy. This was to include *common rules applicable to international transport to or from the territory of a Member State* (Article 75).

Transport was considered so important that it was one of only two economic sectors (along with agriculture) to be provided separate titles in the Rome Treaty. In fact, with agriculture contributing 3.4% and transport 7% to the Community's GDP, transport could be considered much more important than agriculture. In the Community, expenditure on transport is estimated to represent 11% of total private investment and 40% of public investment [Hitris, 1991]. The purpose of this chapter is to see if the history of the development of the Common Transport Policy can be used to indicate the likely model behind future legislation.

There is broad recognition among analysts that the European Union's high initial aims for the CTP have gone largely unrealised. The slow and uneven progress in transport mirrored related areas such as EU industrial policy, which has seen sectoral advancement but without any real overarching strategy or policy consensus. Most advances have been piecemeal:

> Even today, Europe's transport patchwork features railways with incompatible power and signalling systems, air services that are managed by 52 air traffic control centres with 20 different operating systems and 70 computer programming languages, and motorways that come to an abrupt end at frontiers [EU Commission, 1997].

Varying institutional policies have been partly to blame; whereas the European Commission and especially the Parliament realised the importance of the CTP at an early stage, the Member States via the Council of Ministers have been reluctant to follow through with Commission initiatives [Lindberg and Scheingold, 1973]. By the early 1980s, this foot-dragging led to Parliament's successful challenge of Council inaction before the European Court of Justice (Case 13/83).

Since then there has been more movement. The EU structural funds, including the new Cohesion fund, are targeted partly at large infrastructure projects designed to form the *Trans European Networks* which will link peripheral areas to the heart of Europe. Initially, funding was strictly limited: the 1991 budget earmarked just ECU 128m for the then current three year plan for financing twenty three transport infrastructure projects. The then Commissioner of Transport, Karel van Miert, admitted that this amount was less than what he thought would be the minimum needed [EC Commission, 1990b].

However, matters have since advanced rapidly with the EU expecting to spend ECU 1.8 billion[1] by 1999 building up 70,000 km of rail track, including 22,000 km of new and upgraded track for High Speed Trains; 15,000 km of new roads, nearly half in the regions on the outskirts of the Union; transport corridors and terminals; 267 airports of common interest and networks of inland waterways and sea ports [EU Commission, 1997].

Having provided an overview of the importance of the Common Transport Policy this chapter now turns to look at the development of transport industry in Europe. Transport history starts in pre- classical times with the amber routes from the Baltic through to the Mediterranean. With the coming of the great civilisations, huge fleets were created for the transport of food and soldiers allowing empires to be built. The Romans extended this with a network of roads spanning all their conquests. With the fall of the Roman Empire, the transport systems of Europe fell apart. Each time Continental Europe achieved peace it was not long until quarrels broke out which turned to war; there was certainly not enough time for reasonable transport systems to be built up,

Although there were those such as the Duke of Wellington who infamously argued that transport was a threat to the very fabric of society, the wealth available from empire building meant that whilst the rest of Europe had been embroiled in war, Britain sat on the edge of Europe increasingly trading and building the infrastructure required to sustain economic growth. After the Napoleonic wars ended there was a period of increased political and religious freedom which saw an upsurge in mobility across Europe. European nations saw how advanced Britain was an moved to quickly catch up.

When comparing the development of transport systems it should be remembered that Continental Europe is geographically very different to Britain. It has large inland waterways such as the Rhine and Danube. Its cities are very compact and are situated far away from each other, with few urbanised areas in between. Transport was therefore mainly required between these large cities and this suited bulk transportation in ships or by railway [Gwilliam, 1975].

There were not only geographical differences between the continent and Britain: there were also legal differences that have affected the evolution of the transport industry. Britain with its belief in individual freedom was ruled by the common law which aims only to limit people by banning what is against society. Most continental countries follow systems based on the Napoleonic civil code. These layout all that it is permissible for a countries' citizens to do. This legal difference can be traced back to the rift in philosophy between rationalists and empiricists discussed earlier in this thesis; for more analysis refer to [Hibbs, 1993b]. The cultural differences meant that on the continent strict control over transport development was the norm.

Although the Treaty of Rome's outline of a Common Transport Policy placed few specific restraints on members freedom in setting national policy, it aimed to set out the place for transport within a wider range of community policies, enunciating the general philosophy under which it was expected that the policy would he formulated. The transport title included articles 74-84 laying out a general framework, specific injunctions and some exemptions [Gwilliam, 1975]. The policy did not require any government control of infrastructure, pricing or industry entry criteria.

The general framework laid out that the Common Transport Policy should cover road, rail and inland water services with maritime and aviation services being covered whenever unanimity prevailed. The Council of Ministers was empowered to set the rules of international trade and the conditions for entry of non-resident carriers. The specific injunctions included a ban on discrimination by member states of other member states carriers, a ban on support tariffs and an agreement that frontier charges should reflect costs. So far this is best viewed as an attempt

[1] This will be in the form of payments for feasibility studies, loan guarantees and rate subsidies.

to create a deregulated market, however there were exemptions from the above: State subsidies were allowed for co-ordination of transport modes and to meet public service obligations. Also any measures concerning rates and conditions must take account of the circumstances of the carriers.

This chapter will now follow the development of the European Union's transport legislation. In 1960 the Commission recommended that certain trunk routes be declared of community importance. This was followed by the *Schaus memorandum* [EC Commission, 1961] which attempted to provide for a mechanism to transform the purely national transport systems into a genuinely international system. This was subsequently followed in 1962 by an action plan embodying the desire outlined by Schaus. It contained three objectives and three principles governing action:

> It was desired to remove any obstacles that transport might represent on the establishment of the common market for goods, the creation of healthy competition of the widest scope and the development of the transport system as a precursor to widened markets and greater international trade. To achieve this carriers were to be financially autonomous from governments and also subject to equal treatment in law. Users should have free choice of agency and mode. However investment in transport could be co-ordinated. It looked like the commercial philosophy of transport bad won over the Commission [Gwilliam, 1975].

The Council of Ministers would not accept this. A more conservative package deal was worked on and looked likely to become law until the French walk out in June 1965. There was then a period of much more restricted proposals. This included the tests for professional competence, the road haulage directive on common safety standards, the small number (originally 1200) of Community road haulage licences to replace the prevalent system of international bilateral agreements and a system of *pricing regulation* known as the *forked tariff*. Here the authorities would set upper and lower bounds (offset at 23% of the reference price) on haulage rates. The idea was that the upper limit would prevent monopoly exploitations whilst the lower rate would contain any tendency to wards excessive competition [Button, 1993]. The philosophy of the Council was thus still favouring a social service view of transport.

The pace of change quickened a little in the seventies, with the *New Impetus.* A summit conference held in 1972 included regional development and environmental protection thus giving new objectives to the transport policy. At the same time the liberal arguments voiced in the Council by the Netherlands had been added to by the new member and extreme liberal, Britain. Although there were still regulations flowing from Brussels, the move towards deregulation had started. Directives were proposed to regulate haulage rates, conditions of carriage and even capacity through franchising. However, more liberal and quality, as opposed to quantity, regulations were included: limits on the weights and dimensions of road goods vehicles were set, the liberalisation of own-account transport, the harmonisation of the fiscal relationships between member states and their railways and the introduction of a common system of pricing of transport infrastructure were required and changes in the regulation of the community licences were passed. However, countries continued to keep as much control away from the commission as possible and at the end of the seventies 95% of all international haulage was carried out under bilateral arrangements rather than under EC issued licences [Swann, 1992].

The *Single Market* programme from 1986 saw a large number of changes in transport regulation. The measures that passed Council became increasingly more liberal. Nonetheless, there is a question as to whether this was a change of heart or an acknowledgement of the fact that by then three quarters of all goods (by weight) transported to the EU were taken by road hauliers and so franchising would have been hard to enforce even if desired. Quantity and pricing regulation started to fall away leaving only basic quality regulation which was harmonised

across Europe [TNT Express and CBl Initiative, 1990].

One of the most notable changes of the single market programme was the introduction of both *cabotage* and the *fifth freedom.* Cabotage is the ability of a haulier from one member state to carry out domestic haulage services in another member. In 1990, the UK was allotted 15,000 licences for its hauliers each lasting two months. Although a great opening up of the system, hauliers carrying out this kind of work often found themselves embroiled in bureaucracy as the regulations that apply come from both its home country *and* also from the country it is operating in. The fifth freedom is most often talked about in the air transport industry. It allows for a country from one member state flying to another country to stop off in a third country (a member state) and put down and pick up goods *en route.* Other EU regulations in the airline industry have seen the end of bilateral capacity setting and revenue sharing agreements, and the harmonisation of airline and route licensing criteria.

Shipping has since the end of the mercantilist age, traditionally been open to any ship who would take the cargo. As the countries of Europe build up their own fleets, this policy changed as they started to perceive unfair competition resulting from the market in *flags of convenience.* Various protective fiscal measures have been put forward to combat this. European plans for the railways have envisioned a pan-European infrastructure of high speed lines with franchises awarded for service providers. It will he interesting to see how the commission handles its ideal of free access to the lines.

Despite the progress that has been made in forming the Common Transport Policy, especially since the *single market reforms,* there is still some way to go. The reason for this is that there are evidently still divergent national attitudes to the place of transport in a modern economy. For instance, in Ireland access to public transport is seen as a welfare benefit with free travel available to the both the elderly and the infirm. These different attitudes can also be shown in the hindrance faced by many international projects, for instance the troubled Scanlink connection over the Øresund, but most strikingly in the case of the Channel Tunnel. Whereas the French railway operators (SNCF) had incorporated the Chunnel into wider plans for transport links in north Europe, the British spurned planning efforts, due to an ideological insistence that the market mechanism is the best means of allocating resources [Anderson, 1992]. Official support for a British HST link to the channel tunnel only came with the 1993 budget:

> The ridicule regularly directed at the government and at BR by the British media and public, while often overstated, is indicative of the decidedly hands-off approach of successive governments in rail policy, and provides a sobering, if somewhat atypical, example of parochial national attitudes which may never he overcome despite the EU's best efforts [Ross, 1994].

What now appears for all to see is that there was a large discrepancy between the ways the British and French Governments saw and understood the project. With hindsight, it seems that a much better understanding between the two governments of their respective goals, and a rapprochement between their respective philosophies, would have been highly desirable for the project to maximise its benefits both for our countries and for the investing community [Bérnard, 1994]. Although the Channel Tunnel can be viewed as an extreme case, it indicates some of the problems facing those that are trying to co-ordinate a Common Transport Policy. The future is likely to see a certain amount of further liberalisation. However until divergent national attitudes are dealt with, it is likely that this will be limited in its impact.

7

Conclusions

The purpose of this chapter is to offer a model for transport policy. The need for any policy comes out of the need to control monopoly power, infrastructure overuse leading to congestion and environmental problems caused by a lack of property rights. It also acknowledges that there can be a problem with over competition. The traditional method of control has been one of franchise, with varying levels of state control over the franchisee. This has ranged from siting of service provision, control over tariffs charged and even the limits on the quantity of services provided.

Although these restrictions on suppliers were introduced as measures to protect the travelling public, they have also restricted the options of those who wish to consume transport services. The model presented here aims to keep as many market forces as possible acting on suppliers. It is based on a system of tradable permits to offer services. It can easily bc applied to the supply of bus and train services. With some work, it might be possible to extend it to motorway traffic, however it is unlikely to work on all roads owing to the likely complexity of implementing such a scheme. The scheme will now be outlined for each of the transport modes

The franchise system of control has been a common thread in the railway industry. In Britain, the right to build a new train line required the passing of an Act of Parliament. Parliament, once it found that it had created a legalised monopoly then sought to protect the public interest through price regulation. A system of tradable permits removes the monopoly problem altogether. The transport infrastructure needs to be separated from the operating companies and also from train leasing companies (as has already been done in the UK). However, rather than offer one company the franchise right to run train services on any particular stretch of track, many companies should compete to offer transport services over the same lines.

The services on a line would be divided up into a number of daily time slots. For example, if three trains ran per hour, then three time slots representing one service per hour would be available. A company may now bid for any of these time slots. The highest bidder for any of these services acquires the right to run those particular services for a year. At the end of the year they must hand back a proportion of those service. These services are then re-auctioned, although the current holder would not be stopped from bidding to regain the services if they so desire.

They will however only bid for them if they are making a reasonable rent from the services they provide. For this to happen they must make customers happy, or the customers will have moved to another service provider on the same track, reducing the poor quality supplier's revenue. The handing back of a proportion of services is designed to allow competition to

enter the market should a companies standards fall: A newcomer need only hid a higher price for the services returned, lease the trains from the independent train leasing companies and is then free to provide a more efficient service, drawing customers from the established service providers. Market entry is now easy.

However, for a truly contestable market, *hit and run* competition must be possible. For this to happen, exit costs as well as entry costs must be kept to a minimum. This is the principle reason for allowing trading of the service provision permits[1]: once monopoly profits and poor service providers have been competed away, hit and run competitors may sell to those that have a competitive advantage and thus wish to stay in the industry.

Transport service consumers might not only benefit from the competition to provide basic services efficiently. Competing service providers could also offer varying levels of comfort and secondary products (buffet car, bar, newspaper provision) at different tariffs. The extra cost of these services would only be accepted if they were though useful by consumers. This will lead to efficient allocation of resources that will vary automatically as customers tastes vary.

A second benefit that comes from having permits that are tradable is that it allows better specialisation than the franchise system that is currently operating in the UK where services are sold pre-bundled. A hotelier who might have a competitive advantage when it comes to providing luxury sleeper services will find it far easier to purchase service provision permits on an open market, leaving regular train operators to service daylight transport where they excel.

The travelling public is also likely to benefit from better continuity of service. As an example, if a train operating company suffered from industrial action then it would be easy for the other companies operating upon the same line to run the lost services removing any need for an expensive operator of last resort. The same reasoning applies if owing to any financial difficulties a train operating company was forced into liquidation, or it it had its franchise removed for breech of contract for continual safety breaches or failure to run the correct number of services.

This chapter will now turn to look at the provision of bus services. Unlike the railway system where it is assumed that most routes have been built, bus companies can add geographically new services at wish and so this must be catered for in the model. All current routes should be mapped out and each time slot allotted a service provision permit. The number of buses thus offering services can thus be controlled to avoid the bus congestion problems the occurred in Darlington.

The permits will then be auctioned in a manner similar to the railway network, allowing competition to occur between service providers. If a company feels that it has found a new route, then it must submit this for approval. This will be a simple check to make sure that this is not really a route already provided. Once approved, as a reward for finding the new route, the company that found the route will be offered a six month monopoly on the route (this can be viewed as a mirror of the patent system) as an incentive to encourage ingenuity. After this period, the permit system will he introduced.

With the two modes so far discussed it is easy for cheats to be caught by the other permitted transport providers (who have a built in incentive to do this). In our third transport mode: road traffic, this is not as easy. Following the advances in information technology, checking of quota abuse for motorway users is becoming more feasible. Hauliers and other regular users could buy permits that allowed repeated (daily) access to the infrastructure. For more casual users permits to travel on the motorway could hc bought using a computer over a phone line. Here

[1]Basic checks on a company's financial and technical ability to run a train service can be conducted by a regulator before entry is allowed into the franchising process.

the system would have to differ: allowing only for immediate travel and no resale of permits. The main benefit of this system is the removal of congestion caused bottlenecks.

To avoid traffic simply being diverted onto minor roads, a system of fixed charges per journey would have to be implemented alongside the motorway quotas. This fixed charge will hopefully also shift consumers towards public transport as this becomes relatively cheaper. The author acknowledges that the state of technology is not quite available yet, and that strong efforts are going to be required to make sure all cars are fitted with the technology to make this possible. Nonetheless, some effort to charge at use for road transport is a prerequisite for providing sensible competition between transport modes, reduced congestion, and a rational consideration of the real cost of the journey about to be undertaken.

In this chapter, a model for regulating the transport industry through the use of tradable permits has been discussed. Much more work than is possible in a dissertation of this length is required before any such schemes could be put into operation. Research is required to look at how to choose the number of available time slots, both initially and also how to vary the number with the available traffic flows. Research is also needed into the costs of adding any necessary technology to road vehicles to allow for per use charging and some research into the elasticities of demand for car and public transport would provide a basis for setting a sensible fixed charge per road journey. The author hopes that the model that has been outlined in this chapter and the need for systems based upon these lines as shown by the previous chapters will provide a useful anchor point in the continuing debate about the future of the transport industry.

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