

1.2 HOW DOES TRANSPORT CONTRIBUTE TO THE PERFORMANCE OF THE ECONOMY?

Headlines:

- Transport impacts on the economy in a number of different ways. These can be assessed through a series of micro economic drivers of growth: business efficiency, investment and innovation; agglomeration economies; labour markets; competition; trade; and globally mobile activity.
- Such impacts are made by improvements to the speed, cost, reliability, network coverage, comfort or safety of the journey.
- While conventional cost benefit appraisal techniques, especially the valuation of journey time savings, capture an important part of expected gains to GDP, until recently the scale of many of these micro drivers has been little explored. Some can also influence the rate of change as well as the level of GDP, and hence are extremely important.
- The fact that the UK has an existing established transport network suggests transport improvements are most likely to deliver for the economy when responding both to signals of underlying transport demand exceeding capacity, manifest through congestion, and to signs of growth and productivity, manifest, for example, through high wages and land prices.
- The service sector and international trade are of growing economic importance to the UK. This points to the need for a responsive transport policy to meet the requirements of congested and growing urban areas which benefit from deep labour markets, as well as facilitating the trade of goods and services through key ports and airports.
- It is essential for transport policy and appraisal to recognise and consider the full range of transport impacts on the economy. Appraisal frameworks must continue to develop, seeking to capture economic, social and environmental impacts to allow sensible prioritisation of policies that will support government objectives or goals.

INTRODUCTION

A micro approach is crucial to guide policy

2.1 The previous chapter explored the overall relationship between transport and the performance of the economy. Although understanding this big picture is important, the analysis provides little insight into the actual economic mechanisms through which transport contributes to economic success. A better understanding of this relationship is essential to inform strategy and transport appraisal and thereby help policy makers determine the most effective and appropriate policy interventions.

2.2 This chapter seeks to explore the different ways in which transport can contribute to the performance of the economy by:

- (i) exploring the nature and type of journeys that are important to different users;
- (ii) introducing a set of 'micro economic drivers' for analysing how improvements to the quality of these journeys can support productivity;
- (iii) considering the scale of these benefits and the extent to which they are captured in current transport appraisal; and
- (iv) identifying the nature and type of journeys that are most likely to support productivity over the next 30 years.

TRANSPORT USERS AND THEIR REQUIREMENTS

2.3 A useful starting point for understanding how transport impacts on the economy is to examine the users of the transport network and their requirements. This helps build a picture of how users respond to specific transport interventions and consequently impact on the drivers of productivity, and wider welfare.

2.4 For the purpose of this Study transport users have been split into four broad categories: business travel, freight traffic, commuter travel, and non-work/leisure travel. Business, freight and commuter transport are economically important because of their direct contribution to GDP, for instance, through investment and labour markets. Extending the analysis to broader well-being (economic welfare) reflects the fact that journeys made by all users are important, including non-work/leisure travel, which contributes directly to people's quality of life and ultimately to GDP.

Users' requirements from the transport network

2.5 The evidence is very clear that users want several things from the transport system, placing different weights on their relative importance. The key characteristics that transport improvements can influence are: cost, speed or journey time, reliability, network coverage, comfort, safety and security.

Costs and journey time

2.6 The most obvious and direct benefit of an improvement in transport is a reduction in the time spent travelling. The benefit of a transport improvement with regard to time savings is the value of the time that becomes available to do things that could not be done whilst travelling, and for business this translates directly into a reduction in costs and/or an increase in output.¹

2.7 Transport costs typically account for 4-5 per cent of total input costs for firms but form a much higher share for some.² However, despite what may be seen as a small share of firms' total input costs, for many, transport remains necessary to their operation. Poor transport can therefore have a disproportionate impact on firms' variable costs and their profit margins. Reducing the cost and time that businesses spend on travel could bring significant gains for individual firms.

Reliability

2.8 In addition to the importance of costs and journey time, journey reliability also matters.³ This is supported by survey evidence and economic analysis.⁴ Travellers and business want to know not only whether a particular journey will take 30 minutes on average but whether it will take 30 minutes every day, rather than 30 minutes most days and 60

¹ The monetary value of these time savings form the practical foundation of the appraisal of benefits to specific transport schemes, see <http://www.webtag.org.uk>. It is also worthwhile noting that small improvements to journey time savings are just as valuable as much larger scale improvements in journey times, see *Value of travel time savings in the UK, report to DfT*, Mackie, Wardman, Fowkes, Whela, Nellthrop and Bates, 2003.

² UK Input Output Analyses, Office for National Statistics.

³ For road schemes, the variability (the standard deviation) around the average journey time is used as a measure of reliability. Reliability is expressed in terms of minutes and can be valued in money terms along with travel time savings. The available evidence suggests that the value car users place on a one-minute change in the standard deviation of their travel time is equal to approximately 80 per cent of the value they place on reducing their travel time by one minute. In contrast, the available evidence suggests that the value to goods traffic of a one-minute change in the standard deviation of their travel time is equal to about 120 per cent of the value they place on a one-minute reduction in their travel time. See: *Value of Reliability in Transport, [Provisional values for the Netherlands based on expert opinions]*, TR-240-AW, June 2005.

⁴ *Note of Freight Scheme Benefits*, Fowkes, A.S, Institute of Transport Studies, 2005, paper prepared for the Department of Transport. In addition, reliability was a key factor reflected in comments from stakeholders received by, and published alongside, this Study.

minutes once a week.⁵ It is estimated that for motorway widening schemes the total value of reliability benefits are in the order of an additional 50 per cent above the value of total time savings benefits.⁶ Emerging evidence from the Netherlands suggest that this percentage could be higher for public transport schemes.⁷

Figure 2.1: The importance of reliability

Journey reliability is becoming an increasingly important requirement for many transport users. The significance of reliability increases as transport systems become more congested, as it deteriorates disproportionately as congestion increases.

- **Reliability is particularly important to certain business sectors, such as those dealing in perishable goods or those that rely upon Just In Time (JIT) delivery. The rapid growth of the express delivery sector in the UK in recent years demonstrates the importance that some businesses attach to predictable and time-critical deliveries. A CBI survey noted that 84 per cent of new economy firms would be very badly affected if next day delivery services to or from the UK were no longer available, with 93 per cent saying that orders would be lost because of longer delivery times.^a**
- **Freight movement more generally could be better managed through improved reliability, which would allow reductions in inventories and optimisation of vehicle use.**
- **Reliability is also highly valued by business travellers and commuters. The CBI's 2005 survey found that 47 per cent of companies depended upon a significant number of staff commuting long distances and could therefore lose significant working time if transport links were unreliable.^b Predictable transport services are important to commuters as well, whose quality of life can be adversely affected by irregular journeys and the stress of being late. Business travellers also value completing their journey reliably, as planned, and for this reason many airlines and train operating companies market their services based on punctuality.**

^a *The business of transport*, CBI, 2005.

^b *The business of transport*, CBI, 2005.

2.9 Congestion on the network, failure to maintain assets⁸ and incidents can all affect the reliability of a journey. Figure 2.2 shows that between 29-52 per cent of road freight journey legs are delayed mainly due to congestion. For business, if materials or workers do not arrive on time, this can create bottlenecks and delays to production processes or result in the loss of perishable goods and service contracts. In today's low inventory world, stocks and lead times are often so low that distribution and production systems are highly vulnerable to even small delays. As a result, unreliability can also cost business in terms of contingency measures that need to be put in place. These include building slack capacity into the supply chain, hiring additional drivers, or holding 'buffer stocks'.

⁵ The vast majority of schemes have some beneficial impact on reliability. However, that value will vary considerably across schemes. On road schemes the value of reliability benefits will, amongst other things, be a function of the level of incidents that occur in the study area without the scheme in place and the extent to which the scheme helps to reduce those incidents. For instance, a scheme designed primarily to reduce the number of accidents on a route would be expected to have quite significant reliability benefits.

⁶ In the past, it has proven difficult to empirically distinguish the value users apply to reliability to that attributable to journey time savings. *Uncovering the Distribution of Motorists' Preferences for Travel Time Reliability*, Small, Winston and Yan, 2005, *Econometrica*, found that reliability accounts for roughly one-third of the attraction of using the tolled Californian Express Ways, during peak times.

⁷ See: *The Value of Reliability in Transport: Provisional values for the Netherlands based on expert opinions*, Ministerie van Verkeer en Waterstaat, 2005.

⁸ This includes both vehicle standards and infrastructure conditions.

Figure 2.2: Incidents of traffic related road delays for various freight sectors, 2002-2006

Sector	Year	Number of journey legs	Per cent delayed	Per cent delays due mainly to congestion
Food retailers	2002	11115	33	34
Other food firms	2002	4137	18	29
Non-food retailers	2002	6411	19	52
Pallet networks	2004	833	35	34
Builders' merchants	2006	478	7	34

Source: Analysis of DfT commissioned transport KPI surveys for the Eddington Study by Prof. A McKinnon. For further information on KPI surveys see: <http://www.freightbestpractice.org.uk/pubsub.aspx?SectionID=5>.

Network coverage also matters **2.10** Users also value the network coverage or connectivity that a transport system offers. Without network connectivity, many journeys that matter for the economy simply could not happen. Network connectivity not only allows people and goods to get to destinations more quickly but also opens up opportunities for new destinations and new combinations of journeys, which may previously have been too costly and/or lengthy. These are known as network benefits from transport. These are likely to be extremely important where parts of the network are acting as hubs, e.g. airports, freight distribution centres, mainline train station interchanges, and access to major ports. The value of network connectivity can be illustrated, for example, by the weight that travellers attach to accessing Heathrow airport. The airport offers high frequency flights and connections to key business destinations globally but also acts as a 'hub and spoke' network through the choice of onward journeys on offer. This is reflected in the value of air slots at Heathrow.

As does comfort **2.11** Journey comfort also matters. Comfort allows business passengers to work whilst travelling and is reflected in business paying considerably higher prices for first class travel. Commuter and non-work/leisure travellers also value comfort, and quality enhancements can significantly improve the attractiveness of travel. Uncomfortable travel conditions manifest, for example, through severe overcrowding, may stop people from travelling or result in travel at different times or by different mode.⁹ For commuters, travelling under crowded conditions can ultimately impact on their productivity level at work.

Safety and security are also important **2.12** The safety and security of travel is also valued by travellers. Accidents or terrorist attacks on the transport network can cause severe injury and loss of life. As well as the direct social costs, there are costs to the economy through the loss of output from workers and potential adverse effects on the reliability of journeys because of the disruption to the network. In the UK road casualties cost the economy an estimated £2.5 billion or 0.22 per cent in lost GDP in 2004.¹⁰

⁹ For an example of the effect quality can have on public transport, in this case buses, see: *London bus services: A Review of demand and costs*, TAS consultancy for DfT, June 2006.

¹⁰ Analysis undertaken by the Eddington team based upon DfT's standard evaluation of casualty prevention. For more information see: http://www.webtag.org.uk/webdocuments/3_Expert/4_Safety_Objective/3.4.1.htm and http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/divisionhomepage/030763.hcsp.

WHERE CAN TRANSPORT MAKE A DIFFERENCE: THE MICRO DRIVERS

2.13 As the previous section explored, the key characteristics that users value are: journey time, reliability, cost, connectivity, comfort, safety and security. When users experience an improvement or worsening of these characteristics, these feed through to impact on productivity and growth.

Micro drivers 2.14 Figure 2.3 below introduces a framework for analysing these economic benefits through a series of micro drivers of productivity. The Study has identified the following seven micro drivers of productivity that transport can influence:

- (1) business efficiency;
- (2) business investment and innovation;
- (3) clusters/agglomerations;
- (4) labour market;
- (5) competition;
- (6) domestic and international trade; and
- (7) globally mobile activity.

2.15 Transport, of course, contributes to social and environmental goals, which ultimately impact on GDP and welfare. The importance of this impact is discussed later in this chapter.

2.16 This section considers for each microeconomic driver its importance to GDP and how significant this impact may be. Detailed appraisal techniques and methods are critical here. A high proportion of expected benefits from a transport intervention accrue in the form of journey time savings to users.¹¹ These are well researched, and long standing.

2.17 Where such journey time savings are of work time, i.e. savings mainly to business and freight, there is an equivalent gain in GDP. Although the valuation of such savings continue to remain the most robust indication of likely GDP returns from transport improvements, actual gains can be greater if there are positive spillovers to other parts of the economy including business, capital and labour markets, as highlighted in Figure 2.3. Furthermore, where such changes stimulate innovation, this can also impact on how quickly the economy grows (i.e. the growth rate of GDP). And of course, as illustrated in Figure 1.2, Chapter 1.1, there are of course wider impacts on society and welfare, which a GDP measure alone cannot capture.

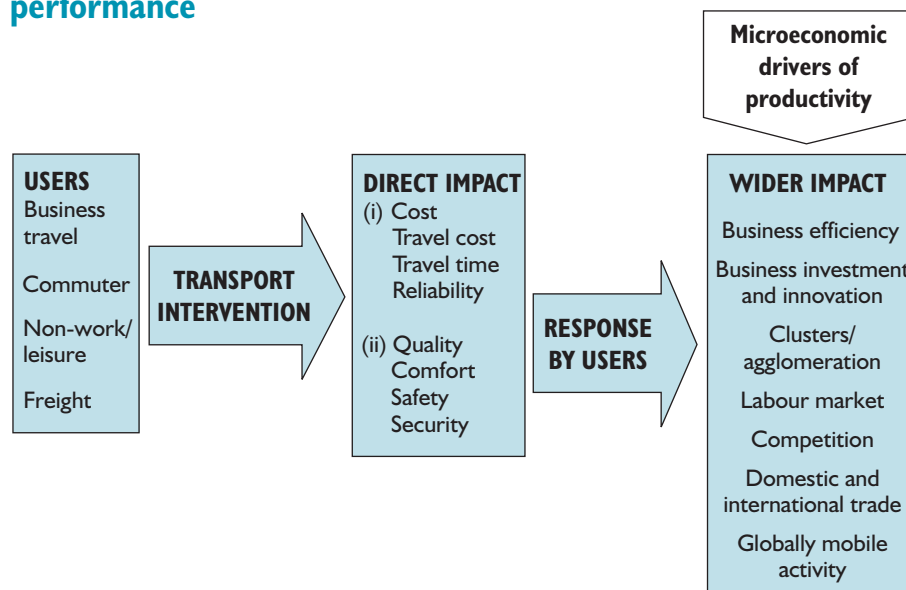
2.18 The theoretical arguments for many of the additional economic drivers set out in Figure 3 are strong. In practice, quantifying the impact on GDP is difficult. However, there has been real progress in transport appraisal in recent months¹². In addition, the Study has sought to increase the depth of current understanding in many areas through new research and modelling,¹³ but also widening this debate to territory previously unexplored in appraisal (not least because of its obvious complexity, such as trade and global activity impacts).

¹¹ These have been well researched and form the bedrock of transport appraisal. For more information see DfT guidance: www.dft.gov.uk/stellent/groups/dft_econappr/documents/sectionhomepage/dft_econappr_page.hcsp.

¹² The Transport Innovation Fund (TIF) programme, launched in 2004, has begun to factor estimates of the contribution of some of these other drivers into transport appraisal.

¹³ For example, see *Transport and Labour Market Linkages*, Gibbons and Machin, 2006; and *Agglomerations in the UK and the Role of Transport Policy*, Eddington Study, 2006, published alongside this report.

Figure 2.3: Links between transport and economic performance



Source: Eddington Study.

(i) Supporting business efficiency

Business efficiency 2.19 Transport improvements that deliver time, cost and journey reliability savings, particularly for business and freight traffic, can significantly contribute to GDP through an increase in overall cost savings for business. This is especially true where such transport improvements are targeted at congested routes, predominantly used by business and freight. It should be noted that these efficiency gains to business are manifestations of the initial time savings from transport improvements and are captured in appraisal.

2.20 As an illustrative example, a 5 per cent reduction in travel time for all business travel on the road network in Great Britain could generate cost savings to business in the region of £2.5 billion per annum, equivalent to some 0.2 per cent of GDP.¹⁴ Including the potential reliability benefits could considerably increase this number. However, in practice, this change in journey time represents a large-scale improvement, and costs of delivering it, although difficult to estimate, could be substantial. New technologies and policies, such as road pricing, may make realising such gains feasible and cost effective in the future.

(ii) Supporting business investment and innovation

Business investment and economies of scale 2.21 Where direct savings to business lead to a higher rate of business investment there could also be productivity benefits. It could also allow business to benefit from economies of scale – producing more units of goods and services, on a larger scale, at lower cost.

2.22 Economies of scale from transport can also be obtained by freight through the carrying of greater loads. Regulatory changes and supporting infrastructure investment, such as strengthening bridges or expanding loading gauges on the rail network, that enable freight companies to consolidate loads, can reduce companies' operating costs as it allows them to

¹⁴ This assumes that business journey savings are valued at £30 per hour, as is the standard approach set out in the guidance issued by the DfT.

move the same amount of goods whilst running fewer vehicles for fewer kilometres. This can also result in notable environmental benefits from reduced emissions, as can be seen from figure 2.4 with the example of the 2001 increase in maximum truck weight to 44 tonnes.

Figure 2.4: Estimated savings from the increase in maximum truck weight to 44 tonnes, 2001-2003

	2001	2002	2003
Reduction in annual truck kms (million)	53	104	134
Saving in vehicle operating costs (£ million, 2004 prices)	44	85	110
Fuel saving (million litres)	20.1	39.1	50.6
Reduction in emissions (tonnes)			
Carbon dioxide	53800	104800	135700
Nitrogen oxide	351	684	884
Particulates	12.5	24.4	31.5

Source: *The economic and environmental benefits of increasing maximum truck weight: the British experience*, Prof. A McKinnon, 2005

Innovation 2.23 Such cost savings could also increase the volume of innovative activity, and encourage greater research and development, which although difficult to measure can impact on the growth rate of the economy.

2.24 One area where transport may have an impact on productivity is in the logistics of distribution. The UK, alongside the US, is at the forefront of innovation in this sector. Many businesses in the UK operate just-in-time inventory controls. Under ‘Just In Time’ (JIT), firms do not hold ‘buffer’ inventories of critical sub-components or spare parts but instead require their suppliers to deliver to a strict timetable to fit in with their production runs or, in the case of retail, re-stocking requirements. It is estimated that JIT practices have contributed to a fall of over 20 per cent in the inventory-output ratio in the UK over the last 20 years, saving UK companies over £6 billion a year.¹⁵

(iii) Supporting productivity through the enhancement of clusters and agglomerations

2.25 The concentration or clustering of firms and workers, typically in urban areas or industrial locations, are known as agglomerations. Agglomerations can be observed in all shapes and sizes. They are observed in large, diverse urban areas, for example London, New York, Paris, or in industrial clusters, for example the ceramics industry in the West Midlands. They can occur within an area, for example the science and technology cluster centred at Cambridge, or can be linear in form, for example, the clustering of European headquarters along the M4 corridor.

Sources of productivity benefits 2.26 Interactions between firms and individuals in such environments allow the sharing of knowledge and the development of new ideas. They also offer individuals a greater choice of jobs and business access to a larger pool of applicants. These interactions can generate productivity benefits; see Figure 2.5 below.

¹⁵ *The economic impact of express carriers for UK PLC*, Oxford Economic Forecasting and Mott McDonald, 2006. Transport no doubt played a role in this. A fifth of firms reported in a 1996 survey that they were able to cut inventory levels and access new markets as a result of transport improvements, see: *Transport infrastructure, business cost and business location*, Ernst & Young, 1996.

Figure 2.5: Productivity benefits of agglomerations

Most economic activity is concentrated in small areas of the country. This concentration or clustering of firms and workers, typically in urban areas or in industrial clusters, is known as an agglomeration. The existence and development of agglomerations can be driven by production benefits (firms are more productive and therefore choose to locate here) and/or consumption benefits (people prefer living here). Both benefits reflect some underlying scale economies, either in production or consumption, with transport improvements being a potential driver through reducing travel time and costs and bringing firms, workers and consumers closer together.^a

Economies of agglomerations:

- (i) **better matching of people to jobs and access to skilled labour, as a result of dense labour markets:** where firms need similar types of specialised skills, locating together increases the availability of skilled workers (either because the cluster attracts workers or as a result of local training institutions in the area). In a larger labour market, costs of searching are lower for both workers and firms (since potential matches occur more often) and the quality of each match is higher (for each vacancy, the chance of finding a ‘perfect’ match is better);
- (ii) **connection to suppliers and markets:** where firms are located in close proximity to each other there will be possibilities for specialist inputs to be provided to the group in a more efficient manner than if all the firms were dispersed. With a large choice of suppliers each firm can better select the specific type of input that is optimal for its particular production process;
- (iii) **information spillovers between firms:** for each interaction between firms there is a transfer of knowledge which benefits other firms. The closer the firms are to each other, the more interactions are expected; and

Consumption benefits:

- (iv) **People choosing to live in clusters can benefit from the wider range of non-work/leisure opportunities available. In particular, access to a greater choice of goods and services that can only be offered due to scale and are not available elsewhere, for example, a richer variety of ‘the arts’ is typically available in larger urban areas.**

^a The majority of the productivity benefits from agglomeration are already captured in transport appraisal through the value placed on time savings. However, the existence of agglomeration economies means that the actions of each individual firm impact on the productivity of all other firms in the agglomeration; these productivity effects on others are additional to appraisal and can be significant.

2.27 The key question to consider is what role transport can play in facilitating productivity benefits in agglomerations. The literature has been largely unsuccessful in answering this specific question.¹⁶ The Study’s assessment of the literature and subsequent analysis based on simulated models suggests that although transport alone cannot generate clusters, it can play an important role in facilitating their expansion by reducing travel time and costs, bringing firms, workers and consumers closer than otherwise would be the case.

¹⁶ However, recent work by Rice and Venables (2005) and Graham (2005) is usefully beginning to inform debate in this area; see: *Spatial determinants of Productivity: Analysis for the regions of Great Britain*, Rice and Venables, 2005, and *Wider economic benefits of transport improvements: link between agglomeration and productivity*, Graham, 2005. In addition, the Study has carried out its own analysis of the role of transport in supporting agglomerations, drawing on the techniques established by the above-mentioned studies. See *Agglomeration and the Role of Transport*, The Eddington Study, 2006, published alongside this Volume.

2.28 The analysis shows that not all firms and areas are equally agglomerated, and will therefore not benefit equally from a particular transport improvement. The contribution that transport can make to productivity is dependent on the characteristics of the industry, and how productive it is, as well as the existing density of the area. See Figure 2.6 below.

2.29 For some industries, typically manufacturing clusters, the productivity spillovers tend to be very local in nature, resulting primarily through engagement with similar, closely located firms to share suppliers and to access knowledge capital, such as universities.¹⁷ Where such transport links already exist, many of the benefits from additional improvements will be reflected in direct journey time savings to these sectors. Although the evidence is not conclusive, it points to transport having a limited role in generating additional productivity benefits in these sectors.¹⁸ This does not, however, rule out other policies such as skills or support for research and development, which may be more appropriate for these sectors.

Growing urban areas matter **2.30** Other industries, typically services, benefit from large, dense labour markets and proximity not just to similar firms but also to a variety of complementary firms. For example, financial and trading businesses make use of the insurance and legal services in the City of London.¹⁹ Evidence of agglomeration effects can be seen in the high property prices and wages paid in large urban areas, as well as the levels of congestion. Clearly, a firm would not wish to locate in such a high-cost location unless there were compensating productivity effects from doing so.

¹⁷ The literature refers to these as 'location economies'.

¹⁸ See *Agglomeration and the Role of Transport*, DfT and Eddington Study, 2006, published alongside this Study.

¹⁹ The literature refers to these as 'urbanisation economies'.

Figure 2.6: The potential role of transport in agglomerations in the UK

- Manufacturing sectors tend to cluster outside or away from urban areas and the strongest concentrations are contained within small areas. This would suggest that manufacturing agglomerations typically develop for reasons of ‘localisation’ economies. They are typically of small scale and rely on being within immediate vicinity of other, similar firms in order to benefit from knowledge spillovers and being near suppliers or close to particular types of knowledge capital such as universities.
- This could mean that the types of interventions that would support agglomeration in industrial clusters would be those that enable and encourage growth in employment in those clusters. Perhaps improving access to suppliers and customers, or to generate attraction to a specialised labour market, would be the most important transport interventions.
- However, a general policy of targeting transport interventions in industrial clusters to secure additional agglomeration benefits would be unlikely to deliver great benefits. Simulations indicate that it is difficult to predict which clusters would gain agglomeration benefits from transport investment. It is unclear whether this is because the evidence does not allow us to make such an assessment or whether alternative non-transport policies are more appropriate. As a result, clusters would have to be considered on an individual level in order to assess whether there might be impacts beyond those captured in appraisal through journey time savings.
- Services, on the other hand, tend to cluster in urban areas. This would suggest that service sectors that agglomerate typically do so because of urbanisation economies. They locate where high wages, land rents and congestion impose additional costs on their operations, but they reap the benefits from being close to large labour markets, and perhaps to sectors they have close links with.
- Concentration of similar industries within specific parts of urban areas (rather than being randomly spread across them) may suggest that they also benefit from being located in close proximity to similar firms. If this is the case, the type of transport interventions that would support service sector agglomeration would be those that encourage growth in the cluster as well as increasing the size of the labour market and facilitating business to business interactions. It may be that transport interventions concentrating on reducing congestion on commuter links in large urban areas, as well as improving transport for business travellers, would bring the largest agglomeration benefits.
- Simulations confirm that interventions in and around the largest conurbations in the UK are likely to see higher agglomeration benefits than elsewhere. In some cases, connectivity to other agglomerations through transport could be important, especially for urban areas trading and/or competing globally for international business (although, in practice, the impact is difficult to measure).

Source: *Agglomeration and the Role of Transport*, DfT and Eddington Study, 2006.

Productivity benefits can be large

2.31 The scale of productivity impacts from transport interventions is significant. As an illustration, a large scale, 10 per cent reduction in journey times for car travel across the country has the potential to raise national productivity by 1.12 per cent;²⁰ these would be additional to journey time savings and have been previously unmeasured in transport appraisal. As would be expected, the scale of returns is considerably lower than the returns

²⁰ *Spatial determinants of Productivity: Analysis for the regions of Great Britain*, Rice and Venables, 2005.

which the step changes in transport infrastructure have historically delivered, as illustrated in chapter 1.1.

2.32 Implementing this scale of improvement could be extremely costly, but, as mentioned above, new technologies and road pricing may be able to deliver net benefits. Some of these are explored further in Volume 3 of the Study. However, more targeted reductions in journey times and reliability improvements to tackle congestion around key labour catchment areas in the most productive clusters, could yield high gains and be worthy of consideration.

2.33 The London cluster is the biggest agglomeration economy in the UK today. In London, there could be additional GDP benefits from agglomeration effects of 30 per cent over and above direct time savings of a transport intervention currently captured in appraisal. However, other cities, such as Manchester, Leeds and Edinburgh for example, also show strong signs of agglomeration economies, with additional benefits in the region an additional 10 per cent above journey time savings.²¹ These can stimulate innovation and impact on the growth rate and hence are extremely valuable. Transport can therefore be fundamental to the future success of major urban areas and their labour catchments, by facilitating business to business interactions and reducing congestion on commuter links.

2.34 However, transport interventions cannot indefinitely improve the growth of such clusters.²² Benefits from transport are expected to be greatest within travel to work areas. The productivity gains resulting from a transport improvement up to a 40-minute travel time for commuters by car are estimated at four times the value of that between 40 and 80 minutes and they virtually cease beyond this time.²³

Links to housing **2.35** The combination of housing and transport infrastructure is key to the success of agglomerations. For example, if there is insufficient housing capacity workers may choose to live further away and choose to commute longer distances with limited impact on agglomeration economies.

2.36 Over coming years, anticipated growth of the bigger urban areas is likely to be fed by increasing population and migration. Where additional housing is needed to support the continued success of a growing urban area, particularly to maintain and expand its labour market catchment, it is intuitive that in some circumstances new or improved transport connections will be needed to deliver potential agglomeration benefits. That is not to say that housing policy should simply drive transport needs: the importance of cost-effective policy-making applies here as in any other area. The location of new housing, its transport and other infrastructure requirements, all need to be planned together in order to maximise the available benefits. Again this is an area which needs a much improved evidence base in order to support robust decision-making.

²¹ DfT modelling on the basis of Dr. Dan Graham's work in this area, see: *Investigating the link between productivity and agglomeration for UK industries*, Graham, 2006, published alongside this report.

²² Modelling work shows that for most industries there are diminishing returns to productivity benefits from agglomerations. The exceptions are retailing, financial services, real estate, business and management consultancy, which are likely to be the biggest beneficiaries, see: *Wider economic benefits of transport improvements: link between agglomeration and productivity*, Graham, 2005.

²³ *Spatial determinants of Productivity: Analysis for the regions of Great Britain*, Rice and Venables, 2005.

²⁴ Benefits can persist for long periods of time and the characteristics of an urban area can impact on its growth for 20 years or more, see: *Growth in cities*, Glaeser, Kallal, Schienkman and Shleifer, *Journal of political economy*, 1992. In some cases, such as the City of London and New York, they can persist for much longer.

Agglomerations can support comparative advantage globally **2.37** Agglomeration economies, especially service clusters, are extremely valuable to the future growth and productivity of the UK economy. They can offer a unique environment and create ‘stickiness’, allowing sectors to remain competitive longer than they otherwise might, in a highly competitive global economy.²⁴ They can also stimulate further innovation and growth benefits, for instance, by attracting globally mobile activity, which is explored later in this chapter. Consideration of the role of transport (alongside housing policy) in supporting their growth is, therefore, strongly recommended.

(iv) Supporting the operation of the labour market

Transport impacts on workers’ decisions **2.38** Transport policy – whether it is related to transport speed, reliability or safety – is fundamental to the operation of the labour market. It influences people’s decisions to work, where to do so and how far to travel. It can also support labour market adjustment to globalisation. Yet despite these important connections, it is somewhat surprising that there is very little evidence on the precise contribution that transport makes in supporting labour markets.²⁵

2.39 Although transport improvements could encourage people to join the labour force, transport policy alone is unlikely to generate a large number of ‘new’ jobs.²⁶ For many groups, transport is one of a number of factors influencing their decision to work.

2.40 Transport costs can represent a much larger share of the income of lower income groups, and it may be these groups where the impacts may be perceived as greatest. But, for particular disadvantaged groups, such as low-skilled workers, other barriers, such as limited travel horizons and lack of appropriate skills, may be more relevant in determining employment rates.²⁷ Furthermore, even if these groups were attracted to work, limited housing capacity in parts of the country may act as a real constraint. Transport improvements often lead to an increase in house prices and rents in their near vicinity. However this very impact may mean that such groups can no longer afford to live in the area and move further away from the jobs.²⁸ As discussed above the coordination of transport policy with housing policy can be extremely valuable in securing GDP benefits.

But could be important for flexibility and efficiency of labour market **2.41** Although there is little evidence on the scale of contribution to GDP, the Study’s view is that transport interventions can play an important role in supporting the overall efficiency and flexibility of labour markets, through better matching of people and skills to jobs. For workers, faster commuting possibilities can permit easier transfer and increase the range over which they can search for jobs, whilst for employers it can improve the size and diversity of the pool of potential applicants.²⁹ These effects are important in large urban areas, as discussed in the previous section on agglomerations, but also in the more thinly populated labour markets of towns and rural communities, where local initiatives, such as fare reductions and demand-responsive public transport, have achieved some success in enabling disadvantaged groups to find employment.³⁰

²⁵ The Study commissioned some specific research in this area, see *Transport and Labour Market Linkages*, Gibbons and Machin, 2006.

²⁶ A transport improvement can reduce what economists refer to as the “reservation wage” or minimum wage necessary before individuals choose to participate in the labour market. For some disadvantaged groups, such as low skill workers, transport costs can represent a significant proportion of income.

²⁷ *Making the Connections: Final Report on Transport and Social Exclusion*, Social Exclusion Unit, 2003.

²⁸ See *Transport and Labour Market Linkages*, Gibbons and Machin, 2006, published alongside this report.

²⁹ *Employment and Rail Access: An Evaluation of the Wider Benefits of Transport Improvements*, Gibbons and Machin, 2003, which explores the Jubilee Line extension in London to illustrate that commuters are attracted to key transport modes.

³⁰ *Making the Connections: Final Report on Transport and Social Exclusion*, Social Exclusion Unit, Feb. 2003.

2.42 In some cases, labour markets in the UK extend between urban areas, for example, the development of commuter corridors between Leeds and Manchester, Birmingham and Coventry, and Edinburgh and Glasgow, though these still represent a small proportion of total commuters, for example, 1.4 per cent of commuting trips to Manchester originate in Liverpool, whilst 3.9 per cent of trips to Liverpool originate in Manchester.³¹ These flows are considerably lower than that observed for London where 16 per cent of the labour force commute from outside the region.³² However, transport enhancements may have the potential to support expansion of these labour catchments already in existence to the benefit of both areas. Again evidence on the scale of impact is absent, but there may be merit in exploring such transport interventions where commuter flows are heavy.

Responding to globalisation

2.43 In addition to supporting the efficient functioning of labour markets, especially on key commuter corridors, transport policy can also facilitate geographic and employment mobility in response to shifting economic activity.³³ To realise full benefits, policy needs to be designed with current and future labour market trends in mind; in particular, it needs to consider how trends could impact upon peak time traffic, when congestion is greatest.³⁴ These include:

- (i) increasing employment and participation driven by growth in part-time (26 per cent of all employees) and flexible working (18 per cent for men); together this leads to higher demand for commuting but at irregular times. Around 14 per cent of men and 8 per cent of women work from home and this seems likely to rise with technology-driven opportunities for e-working and tele-working;
- (ii) the continued growth in participation by women is likely to contribute to the growth in part-time workers and the number of dual-earner households. The latter may cause an increase in demand for jobs accessible to home/school for both workers and is likely to lead to higher average commuting distances; and
- (iii) expansion of low-skill service sector jobs, alongside expansion of high-skill jobs. This, in part, reflects the growth in workers providing services to high earners, for example, in domestic services and catering, and will increase the demand for commuting and work travel, as service providers must travel to where consumers are located.

(v) Competition

2.44 Competition is a key driver of economic growth. Improved accessibility and faster, more reliable journey times for passenger and freight traffic, can have a similar effect on the economy as a reduction in trade barriers and deliver growth benefits by exposing firms to greater competition.³⁵ Such transport improvements can allow businesses to trade over a wider, previously unattainable, area, access more suppliers and reach more potential customers. It can also offer consumers a greater choice of goods and services.³⁶

³¹ National Travel Survey, 2002, 2003 and 2004.

³² Office of National Statistics, 2001 census, see: www.statistics.gov.uk/census/.

³³ Labour market flexibility is characterised by a rapid deployment of labour between industries, occupations or regions, ensuring that any disturbance to the labour market is short lived. This could be achieved through a combination of adjustments in (i) wage flexibility; (ii) functional flexibility (acquiring and applying different skills); (iii) geographic labour mobility (migration or commuting); and (iv) employment flexibility (employers adapt working patterns to meet the demands of prospective employees, e.g. part-time and flexible working arrangements).

³⁴ For further details on these bullet points see: *Transport and Labour Market Linkages*, Gibbons and Machin, 2006.

³⁵ This can be either actual competition or 'potential competition' through the threat of a new entrant.

³⁶ Transport improvements can improve productivity by raising the market share of low cost firms, and increasing the incentives for superior firms to cut costs, see: *On the welfare effects and the political economy of competition-enhancing policies*, Aghion and Schankerman, 2004, cited in Crafts 2005.

Important for integration of markets **2.45** As explored in Chapter 1.1, transport has historically played an important role in opening up access to markets, driving down prices and increasing output, as well as stimulating innovation. The integration of markets globally suggests that transport will continue to remain important in retaining these competitive effects. But where transport connections already exist in mature economies like the UK, the contribution that transport improvements at the margin can make to competition, and therefore productivity, is difficult to measure.³⁷

Development of new markets **2.46** There are also wider qualitative impacts that are difficult to capture in GDP measurements. Transport infrastructure and investment have the potential not only to speed up connections already in existence but also to open up new ones. Many of these transport benefits arise from increases in the ‘connectivity’ between places and are not picked up in direct journey time valuations in transport appraisal.³⁸ A good illustration of this is the impact that the growth in low cost airlines has had in recent years on opening up new business and non-work/leisure destinations.

(vi) Domestic and international trade

2.47 The UK’s reliance on trade for its future prosperity continues to grow. International trade (average value of exports plus imports) currently represents some 28 per cent of UK GDP³⁹ and is forecast to grow over the next few decades. For the UK this means growth in the export of high value manufactures (typically through air freight) and services such as financial and business and tourism (typically passenger flows through air travel). This also means a greater volume and choice of imports of manufactured goods and raw materials through the ports.

International trade **2.48** Trade can directly contribute to productivity and growth. Export growth can enable firms to specialise and benefit from economies of scale. Import growth can stimulate further productivity gains through technological spillovers and increased innovation, as firms compete for custom at an international level. Transport improvements can help reduce costs and therefore barriers to trade, especially as globalisation creates increasingly diverse and far-reaching supply chains.

2.49 Although transport’s role in supporting trade may seem intuitive, there is little research evidence on the precise contribution that this makes to productivity and how such benefits can be captured through appraisal of individual transport schemes. However, indications are that this relationship is significant: falling transport costs over the forty years since 1960 have boosted international trade of goods by 10-17.5 per cent and are estimated to have raised UK GDP by 2.5-4.4 per cent.⁴⁰ The European Council of Transport Ministers cite airport and port infrastructure as one of the critical success factors for economic growth, business location decisions and tourism.⁴¹

³⁷ *The Standing Advisory Committee on Trunk Road Assessment (SACTRA) Report, 2001*, concluded that the competition effects from transport were difficult to measure and ambiguous.

³⁸ GDP measures fail to capture increases in the choice or variety of goods and services available, see Figure 1.1, chapter 1.1 for more details.

³⁹ *Balance of payments – The pink book*, ONS, 2006.

⁴⁰ Transport has accounted for 14 per cent of the increase in trade over the last 40 years, for further details see: *The Historical Significance of Transport for Economic Growth and Productivity*, Crafts and Leunig, 2005.

⁴¹ *Transport and International Trade, Conclusions of Round Table 131*, European Conference of Ministers of Transport, 2005.

2.50 However it is not just international gateways that matter. The quality of the domestic transport network is essential to allow the final transportation of goods and services to consumers and firms.

2.51 Despite significant reductions in costs over recent decades, transport costs continues to remain a significant hindrance to the level of trade,⁴² which further reductions in transport costs and/or increases in the speed of transport may help overcome. Half of all international trade (by tonnage) takes place between countries located within 3000 km of each other.⁴³

2.52 For some urban areas and their catchments, international links may be important. This is likely to be the case for urban areas trading globally and competing for foreign investment. Historically, this may have meant access to ports but for today's service economy, access to international airports is also important.

Domestic trade 2.53 There are also benefits to domestic trade. So, for many areas, domestic links between urban areas and their catchments are important. Specialisation supported by trade links is particularly strong for some urban areas and supports their economic success (e.g. Manchester, Leeds, Liverpool). In some cases, links to the economic capital (London) are important to benefit from gains to trade. For example, although there are direct productivity effects where financial services are clustered, effects on demand for ancillary services may be felt in selected urban areas well away from London, such as financial services in Leeds.⁴⁴

(vii) Globally mobile activity

Business, capital and labour increasingly mobile 2.54 Businesses, capital investment and labour are becoming globally mobile. Although there is a lack of quantitative evidence on the relationship between transport and globally mobile activity,⁴⁵ the survey evidence suggests that good transport links, both internationally and domestically, can be important in attracting, retaining and expanding such business activity in the UK. Surveys show that much commonality exists between the transport requirements of domestic and global firms.⁴⁶

2.55 Figure 2.7 below points to the particular importance of access to markets, international connectivity, skilled labour, and transport within urban areas, as key factors influencing business investment.⁴⁷ It can be argued that transport plays a role in all these areas.

⁴² By the 1990s distance was a 24 per cent greater obstacle to trade than it had been in the 1960s, see: *The puzzling persistence of the distance effect on bilateral trade*, Disdier and Head, 2004, cited in Crafts and Leunig, 2005.

⁴³ *Transport and International Trade, Conclusion Of Round Table 131*, European Conference of Ministers of Transport, 2005. This is supported in the economic literature through gravity trade models, which show that doubling distances between trading areas halves the volume of trade.

⁴⁴ *Economic linkages across space, report for ODPM*, Coombes, Duranton, Overman and Venables, 2005.

⁴⁵ The Study found only one work that attempts to answer this question. *Infrastructure availability, foreign direct investment inflows, and their export-orientation: A cross-country exploration*, Kumar, 2001, shows that efficient physical infrastructure facilities, including transport, can improve the investment climate for foreign direct investment from multi-national corporations.

⁴⁶ UK Trade and Industry survey evidence – various presented to the Eddington Study.

⁴⁷ Good air transport links have been important in positioning London as the best city in Europe for business location for the last twelve consecutive years, with one quarter of Europe's largest companies basing their headquarters in the city.

Figure 2.7: Factors influencing European business location, 2006

Per cent of European senior executive respondents that perceive characteristics as ‘absolutely essential’ for business location^a

Factor	Overall	Consumer retail & industrial	Professional distribution	Services
Easy access to markets, customers and clients	63	61	63	64
Availability of qualified staff	59	61	52	61
Transport links with other cities and internationally	55	59	56	49
The quality of telecommunications	50	47	51	52
Cost of staff	36	39	39	31
Climate governments create for business with tax and financial incentives	31	35	27	28
Availability of office space	27	27	25	30
Value for money of office space	29	25	34	30
Languages spoken	27	24	21	34
Ease of travelling around and within city	26	23	25	30
The quality of life for employees	19	16	21	22
Freedom from pollution	15	16	15	15

Source: European Cities Monitor, Cushman and Wakefield, 2006.

It can be argued that transport plays a key role in the top three factors impacting on business location: market accessibility, access to qualified staff through supporting wider labour markets, and inter-regional and international transport links.

- some variation by sector: External transport links are more significant for the industrial sector, whilst transportation within cities is more important for the service sector;
- transport appears to be more influential on business location than direct financial incentives, suggesting that the gains from the latter are short lived; and
- perceptions of transport can influence business location decisions, suggesting that information dissemination on transport infrastructure could be an important determinant of Foreign Direct Investment (FDI) flows to the UK.

^a European cities monitor, Cushman and Wakefield, 2006.

Transport can support productivity spillovers **2.56** Again, although evidence is limited, international links can, in theory, facilitate productivity spillovers which can impact on the growth rate of the economy. International connections between the home company and its UK base can facilitate the transfer of knowledge and personnel. Domestically, quick and reliable links within an urban area can facilitate spillovers of knowledge, best practice and personnel, to the benefit of domestic firms.

2.57 These transport characteristics can be important facilitators of expansion for all businesses. However, there is merit in distinguishing the ‘globally’ mobile activity of domestic and foreign firms from other business investment for a number of reasons:

- flows of foreign direct investment, in particular, remain disproportionately important for the UK, which is the biggest beneficiary in Europe;⁴⁸
- global firms and workers, given their international opportunities, are more sensitive to locational factors, including transport and its contribution to quality of life factors;
- productivity spillovers from global firms can be of a higher order of magnitude than those from similar domestic firms, given their exposure to competition and technology advancements around the world; and
- the failure of transport policy to recognise this contribution could constrain international business expansion within the UK or result in relocation overseas at the expense of UK growth.

2.58 Gains from these missing benefits could be large. For example, the economic benefits of spillovers from foreign direct investment, although difficult to measure, can revolutionise sectors. One major firm's decision to locate in an area could attract other firms and develop the sector, but these effects will be missed by current appraisals.

CAPTURING THE RELATIONSHIP THROUGH TRANSPORT APPRAISAL

2.59 Transport can contribute to productivity and growth through its direct and wider impacts on the economy. It is essential to measure these impacts through detailed appraisal techniques to reflect, as far as possible, the full economic, environmental and social costs and benefits, in order to allow effective prioritisation of funding.

2.60 Transport appraisal has evolved considerably over the last 30 years. This is a complex area, with a developing evidence base. Internationally, the UK is at the forefront of thinking on appraisal and the measurement of transport's impact on the economy, and its impacts on society and the environment.

2.61 The measurement of direct time savings to users, which has been the bedrock of transport appraisal, capture a large proportion of the GDP benefits from transport. However, it is clear that traditional appraisal through time savings misses some important benefits of transport investment. In particular, policy to date has not fully appreciated the contribution of reliability of journey times, highly productive agglomerations, or transport's importance in facilitating extensive labour catchment areas in such places, and has been slow to recognise the critical importance of our international connections. There must be continued support for quantification of these impacts through modified transport appraisal.

2.62 Real progress is being made. Recent methodology developed for transport schemes competing for DfT's Transport Innovation Fund programme explicitly seeks to capture the economic gains through agglomerations and labour markets.⁴⁹

2.63 Valuable progress has also been made in the way appraisal captures environmental costs and benefits. These can be difficult to quantify and are often assessed in detail by experts in the field in qualitative terms. Increasingly though, as methods of appraisal develop, impacts are being assessed in monetary terms. Recognising the importance of environmental effects and the emerging valuation evidence, recent changes to the appraisal guidance introduced by DfT include the requirement for carbon emissions and noise impacts to be

⁴⁸ For more information on UK FDI flows see:

www.statistics.gov.uk/CCI/SearchRes.asp?term=Foreign+direct+investment.

⁴⁹ See *Transport, wider economic benefits and impacts on GDP*, DfT, July 2005.

assessed and presented in monetary terms. The importance of measuring, and where possible monetising, environmental costs and benefits is given even greater weight by the Stern Review of the economics of climate change. DfT will need to continue to develop and improve its appraisal methodology to meet this challenge.

2.64 As Figure 2.8 below highlights, there are strong arguments for looking at and strengthening appraisal of transport schemes in a number of areas, in addition to the environmental impacts discussed above, to reflect some of the evidence the Study has gathered on the potential contribution transport can make to productivity and growth.

Figure 2.8: Capturing the impacts of transport on the performance of the economy

The Study suggests that consideration should be given to the following issues in appraisal:

- **valuations of time savings:** Valuation of time based on local wages is essential to capture the true economic gain from a transport improvement in a particular region and to correct for the current anomaly between the calculation of costs and the calculations of benefits in appraisal;
- **freight valuations:** The full GDP benefits realised from freight traffic could be considerably higher than currently assumed, reflecting the wider impact of transport on business operations and logistics. There is a strong case for exploring whether the current valuation of freight time fully reflects the benefits to this sector;
- **reliability:** It is clear that the performance of the transport network in terms of reliability matters. Evidence seems to suggest that these are considerably higher than have been appreciated in the past. There is a strong case for reliability valuations to reflect developing evidence in this field;
- **agglomeration economies:** Thinking on transport's relationship with agglomeration economies is relatively new. There is very little literature that attempts to explain and measure this relationship, particularly in the context of service agglomerations. The UK is at the forefront of establishing techniques on how this relationship can be modelled. However, it is clear that there is merit in better understanding this relationship, not least because of the continuing importance of urban agglomerations to the future prosperity of the UK. The DfT's developing methodology on agglomeration economies should be applied to the appraisal of all transport schemes. This could increase the assessed value of schemes, especially in urban areas;
- **gains from trade:** The contribution of transport policy in supporting trade is not well understood or quantified. But it is clear that acknowledging this relationship, and quantifying its scale through appraisal, is pivotal to informing good transport policy, particularly around ports and airports, and their surface access. Gains from trade are not currently captured in appraisal. New research would need to be undertaken to consider how such gains could be captured; and
- **globally mobile activity:** Additional GDP gains are difficult to quantify for individual schemes, but analysis suggests that it will be important for transport policy to reflect this driver at relevant times.

Beyond appraisal 2.65 However, it is also important for policy makers to be aware that scheme by scheme appraisal can undervalue the GDP benefits. Quantifying some of the wider productivity impacts from transport can be extremely difficult, as it can be for environmental costs and benefits.

2.66 Appraisal techniques can also fail to capture fully network-wide benefits that may result. For example, a transport improvement such as a bus or rail interchange may unlock access to the wider transport network for onward journeys. Some transport investment may have long-term network impacts in the sense that their full benefits will only accrue when future complementary network investments also take place.⁵⁰ Similarly new investments may have unexpected benefits if they augment the effects of past improvements – e.g. by reaching a ‘tipping point’ at which a journey becomes feasible at all or in a given time.

2.67 Although full appraisal of individual schemes is an essential and necessary component of transport strategy, it can never be a perfect science: some of the productivity and growth impacts of transport interventions, which are often so valuable, are almost impossible to capture through scheme-by-scheme appraisal. At the macro level it is important for transport strategy to recognise these long-term impacts even if they cannot be captured in appraisal. This will allow policy makers to be smarter about prioritising transport spending targeted at productivity growth, as well as understanding the cost in terms of lost benefits of delaying or not taking action.

TARGETED TRANSPORT INVESTMENT CAN DELIVER FOR GROWTH

2.68 Transport policy can contribute to a number of different Government objectives – economic, social and environmental. The microeconomic drivers framework set out in this chapter is a helpful policy tool for developing hypotheses on where transport improvements are most likely to deliver on the first of these, alongside full recognition of environmental and social impacts.

2.69 Where resources are limited and there is a need for prioritisation it is logical to begin with identifying cost-effective transport interventions in areas which are expected to yield the greatest contributions to sustainable economic performance in the UK. The microeconomic framework can be important both for informing option generation and for improving detailed cost benefit analysis. However, it is also important to consider the future dynamics of the UK economy. Economic change is likely to see different aspects of the relationship become more or less fundamental.

2.70 The UK economy is changing rapidly, and is likely to continue to do so in the face of the ever-shifting dynamics of the world economy. Over recent decades, the UK economy has increasingly specialised in services and high-value manufacturing, reflecting its comparative advantage in the ‘knowledge-economy’.⁵¹ Looking forward, globalisation will continue to shape the structure of the UK economy towards these sectors. As the economy develops, so will the demands on the transport system: aspects that were vital ten years ago may be all but obsolete in ten years’ time. In that light, the following areas may prove to be of growing significance in the future.

⁵⁰ This implies that current investments can also have a positive impact on the appraisal of certain future investments.

⁵¹ *Long term global economic challenges and opportunities for Europe*, HMT, Budget 2005.

Areas of growing significance

Urban areas and their labour catchment 2.71 Agglomerations in urban areas are becoming significant growth centres. The expectation is that urban areas will be central to the services economy and valuable sources of productivity growth. Such areas are likely to demonstrate the typical characteristics of rapid economic growth: high congestion; high wages; and high land prices.

2.72 It seems clear that transport networks will continue to play an increasingly crucial role in supporting the success of these urban agglomerations: enabling commuting journeys to support deep labour markets; facilitating rapid business to business contacts; and providing international connections to support the export of high productivity services.

Importance of ports and airports 2.73 The consequence of this specialisation in services and high-value manufacturing, will be an increased reliance on imported food, low-end manufactured goods and raw materials. Adequate capacity, particularly at international airports and for containers at ports, will be necessary, even with the full environmental costs reflected in prices, to support the growth that is likely in trade. These will need to be accessible and well connected through effective rail and road surface links, essential for getting goods and services to the consumer market. Inferior infrastructure or inefficient gateways could significantly reduce international trade.⁵²

Quality of life 2.74 Although firm evidence is absent, leading world academics, such as Paul Krugman, note that the attractiveness of a place could become a pivotal factor in influencing location choices in a world where labour, capital and business are all mobile. Quality of life and non-work/leisure travel are therefore important considerations. Furthermore transport may improve the desirability of urban areas and their catchments to potential incoming migrant workers and foreign investors.

Role of transport in the future 2.75 Looking forward, it seems likely that the transport system will play an increasingly important role in supporting the UK economy in the following ways:

- supporting deep labour markets and business to business connections in agglomerated urban areas; such commuter and intra-urban networks can provide considerable economic value and flexibility. Furthermore, the failure of transport to respond to signals of growth potential from existing agglomerations could choke off these clusters before they develop fully;
- providing international connectivity for services exporters, through aviation capacity and better surface connections;
- enabling the import of food, manufactured goods and raw materials, for which ports and internal distribution and logistics networks are critical;
- ensuring pricing mechanisms are in place so that transport users pay the full external costs of their journeys, including environmental costs; and
- contributing to quality of life factors which will ultimately influence migration and investment decisions.

⁵² *Port efficiency, maritime transport costs and bilateral trade*, Clark, Dollar and Micco, 2004, cited in Crafts and Leunig, 2005.

Where transport does not deliver for growth

2.76 Logically this analysis implies that in some areas additional transport investment is not necessary to sustain growth. This is entirely natural. For a mature transport network, existing provision is likely to be sufficient in most places. Areas with adequate transport capacity will continue to succeed without requiring significant increases in transport provision. In areas where economic performance is relatively weak, transport will only ever be part of the answer.

2.77 At any given time, the transport needs of individual places are likely to be different and it would, therefore, be sensible to invest more in some places than others. Prioritisation of investment in the areas where transport is most likely to deliver for growth can quite possibly mean doing things differently in some areas and scaling back investment in others. Seeking to generate the greatest returns from transport through targeted investment in specific areas, whilst reflecting environmental and social objectives, is the best way of securing prosperity for wider society.

CONCLUSIONS

2.78 This chapter has set out a framework for assessing transport's contribution to economic growth through a number of micro economic drivers. It offers an indication of what types of interventions, and where, may deliver for growth. The next chapter explores further how the conclusions reached in this and the previous chapter can inform a transport strategy aimed at supporting the development of the UK economy in the future.

