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## Conference Paper

# Ex post analysis of the regional impacts of major infrastructure: the Channel Tunnel 10 years on

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## **Ex post analysis of the regional impacts of major infrastructure: the Channel Tunnel 10 years on.**

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### **1. Introduction**

The regional impact of transport infrastructure investment has achieved considerable attention across Europe in recent years. The construction of major bridges and tunnels to overcome natural barriers and the development of the trans-European networks has led to large volumes of research on the likely economic impacts of such investment on neighbouring regions. Most of these studies are ex ante studies undertaken as part of the decision process into the investment, either on the part of the project promoter or the affected regions. At the same time there has been a continuation of interest in the broader question of the wider economic benefits arising from transport improvements at a more aggregate level; whether and under what circumstances such benefits do arise, and if so how they can be incorporated in any evaluation. As a recent study by Flyvbjerg et al (2003) has shown, the claims made for the returns on major projects have tended to be exaggerated, both in terms of underestimates of likely costs and overestimates of potential direct traffic benefits. This paper provides a relatively rare example of an ex post study of what impacts one of the major recent infrastructure projects has had on the local and regional economy by looking at the experience of the Channel Tunnel after its first ten years of operation.

The paper reviews the methodological issues in carrying out an ex post study and assembles evidence related to traffic, labour market, investment and development impacts compared to the ex ante expectations. The main methodological issue is in establishing the counter-factual position of how the regional economy would have developed in the absence of the tunnel. A substantial volume of traffic would have continued to have passed through the region's ports using the ferries which would have required continuing investment over this period. This has been a period also in which major changes have occurred in the EU economy with the move to completion of a Single Market. Many of the driving forces of the regional economy come from the adjacent London metropolitan region. The approach adopted has been to examine trends in the regional economy relative to those in the wider regional and national economies in both the UK and France. There are two basic questions: to what extent would traffic have continued to grow at the rate experienced in the absence of the

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<sup>1</sup> This paper is based on material from a research project funded by Eurotunnel and Kent County Council. The current paper contains the views of the authors and should not be taken as representing the views or policies of either Eurotunnel or Kent County Council. We are grateful to a large number of individuals that have assisted us in this study, in particular Daniel O'Donoghue, Cheryl Mvula, and officials of Kent County Council, Locate in Kent, and Eurotunnel.

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tunnel infrastructure; and has tunnel related traffic had a differential impact on the local economy from a similar volume of ferry traffic?

The paper examines the volume and structure of traffic and compares these with ex ante traffic forecasts; trends in the local labour markets in terms of the growth of job opportunities, occupational structure and the evolution of unemployment; investment (including foreign investment) in the regional economy; and the development and execution of plans for physical development in the region. The paper concludes that although much has changed in the region following the completion of the tunnel, it is difficult to identify a significant difference in the aggregate performance relative to the wider regional and national experiences. Essentially, the improvement of transport infrastructure has enabled the regions to be more integrated into their wider regions and experience a similar economic performance, but whether this has led to a better performance is more difficult to determine.

## **2. Background and methodology**

### *2.1 Background and approach*

Assessing and evaluating the wider impacts which can be attributed to new transport infrastructure or improved transport services poses many problems. Even where such changes are large and provide possible connections which did not hitherto exist it cannot be automatically assumed that there will be more than minor impacts. Whilst ex ante analysis of such projects has been problematic, there has been little or no development of ex post studies to assess what the impacts have been. The tenth anniversary of the tunnel's opening provides a useful opportunity to reflect on the changes which have happened, assess the determinants of these changes and explore what future changes may occur. This is not just as a check on the accuracy of previous forecasts, but also as means of understanding where supporting policies and actions have been beneficial, or could have been more effective, and where such policies could be improved in the future.

The decision to construct the Channel Tunnel, raised many questions of the impacts on the neighbouring regions of Kent and Nord-Pas de Calais, on the UK and France more generally and indeed on the European Union as a whole (see Holliday et al, 1991 for a full discussion). A large number of studies were carried out in the period between the announcement of construction and the completion of the tunnel and its opening for service in 1994. These showed a variety of possible impacts, but the common consensus was that the impacts on the immediate regions would be limited since they would suffer from the potential loss of employment in the competing port and ferry services and from the reduced need for services to support traffic transferring onto such services. There would be direct benefits from the creation of the new services, but often these may be expected to accrue more to locations more distant from the tunnel. There could also be indirect and induced benefits arising from both the objective improvements in accessibility and the perceived improvement in the relative locations of the adjacent regions which could be seen as less remote and peripheral.

Undertaking a study of ex post impacts is however just as fraught as an ex ante study. Although it is possible to document the changes which have happened since the

opening of the tunnel, ascribing these to the tunnel in a period which has seen many other changes in the economy is more difficult. Since the commencement of construction in 1987 we have witnessed the moves to complete the Single European Market by the removal of remaining barriers to trade, but also of duty-free sales on intra-EU movements, as well as the opening up of the EU to the east following the collapse of the Berlin Wall in 1989 and the enlargement of the EU in May 2004. The introduction of the Euro for 12 of the EU member states has also had an impact on the development of trade. However, the economies of the EU did not continue to grow as was expected in 1987. Changing policies towards transport, with the privatisation of the rail network in the UK, the growth of low-cost airlines and moves towards a wider introduction of road user charging, especially for trucks, have also had impacts on the growth and pattern of traffic.

We have established a broad methodology to identify and classify the various impacts of the Tunnel on the Kent economy, but most of the report concentrates on the documentation of changes in the Kent economy since the mid-1980s. In order to document this more effectively most of the work so far has concentrated on the Channel Corridor (Shepway, Ashford and Maidstone) and Dover where we would expect to find most of the impacts (Fig. 1), but we are also monitoring changes in Kent and Medway as a whole and, for reference, with the South East England region.

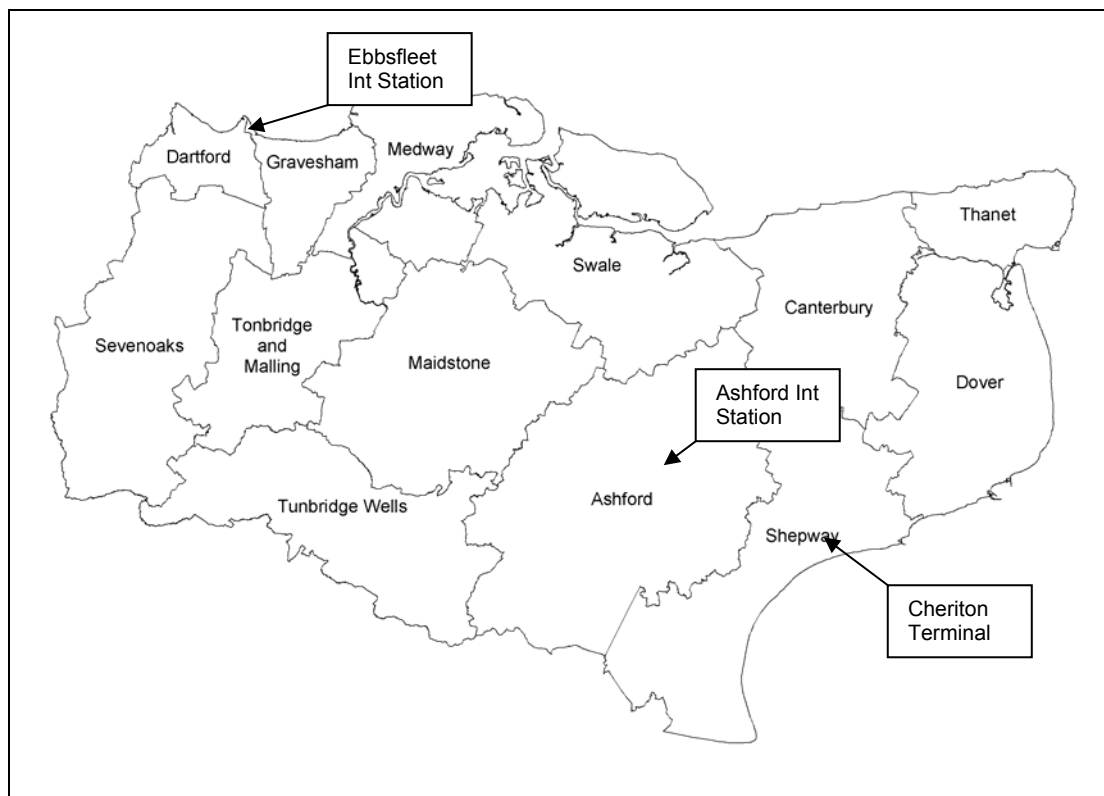


Figure 1. Administrative Districts of Kent and Medway

## 2.2 Methodology

In seeking to model the effects of the Channel Tunnel the first task has been to define the nature and extent of the project itself. Although the project can be defined narrowly as the Tunnel system itself and its terminals at Cheriton and Fréthun, the Tunnel is part of both the road and rail networks linking the UK, France and Belgium. Thus there is a broader possible definition which encompasses the complementary rail

facilities which have been provided as terminals (in the UK at Ashford, Waterloo, and in the future at Ebbsfleet, Stratford and St Pancras) and railway track (CTRL) which would not have been developed without the Tunnel itself plus those parts of the French LGV high speed rail network and those parts of the road systems which have been developed to cater for through UK-continent traffic. We also need to distinguish between the project as the provision of fixed infrastructure and the project as the development of new services using that infrastructure.

The second set of issues concerns the nature of the impacts. This study seeks to combine two conventional approaches: investment impact studies and transport impact studies. In the first of these it is usual to distinguish the **direct effects** of a project (the project's own generation of employment and household incomes) from the **indirect effects** (in enterprises supplying the project with goods and services) and from **induced effects** (the economic multipliers in employment and incomes arising from the spending of incomes arising from direct and indirect effects). Transport impact studies conventionally focus on the two traffic effects of a new facility: **diversion of traffic** to a new facility and thus away from any pre-existing facilities, and **generation of traffic** as productive activities and households respond to changes in generalised costs occasioned by the new facility.

In studying the impact of the Channel Tunnel these various effects are seen to be inter-related. **Traffic diversion** may itself have **direct** (negative effects) as the loss of traffic to the new facility results in reduced revenues, employment and incomes in the existing facilities. These effects will be even more acute if the competition from the new facilities results in classic competitive behaviour (price cutting and reduction in labour costs) by operators through the pre-existing facilities. Similarly it is evident that **traffic generation** may also include the new establishment or inward re-location of productive activities or households responding to the changes in generalised costs.

This discussion introduces the temporal and spatial dimensions of impacts. In the temporal dimension some effects become evident at an early stage in the project (for example the employment arising from initial construction and early phases of operation) but others may be delayed for some years or even decades. In addition there is a distinction between impacts which are short lived (construction employment) and those which are quasi-permanent (employment in operation). In the spatial dimension a similar distinction must be made between those effects which are localised (usually close to the new facility or associated developments) and those which are felt at a regional or national scale

The last feature of the model which needs to be identified is that many of the statistical series which might be expected to show evidence of impacts reflect more than one of the processes identified and may indeed reflect changes in macro-economic conditions which would have occurred without the project. So, for example, any changes in the aggregate flows of road freight vehicles on the tunnel shuttles will include traffic diverted from a variety of alternative routes and modes, traffic generated by short run responses to changes in costs, longer term traffic generation and changes in volumes due to the increased volumes of international trade between the UK and the Republic of Ireland on one hand and the rest of Europe. Similarly changes in employment in the immediate locality of the tunnel terminals will include changes due to direct effects, indirect effects, traffic diversion and traffic generation

as well as changes due to the performance of the national economy. It is also evident that statistics collected for quite different reasons will seldom permit the researcher to separate out the individual elements which go to make up aggregate changes.

The overall approach is summarised in Figure 2 which shows the broad structure within which our analysis has been conducted and identifies a series of sub-models which examine specific aspects of this.

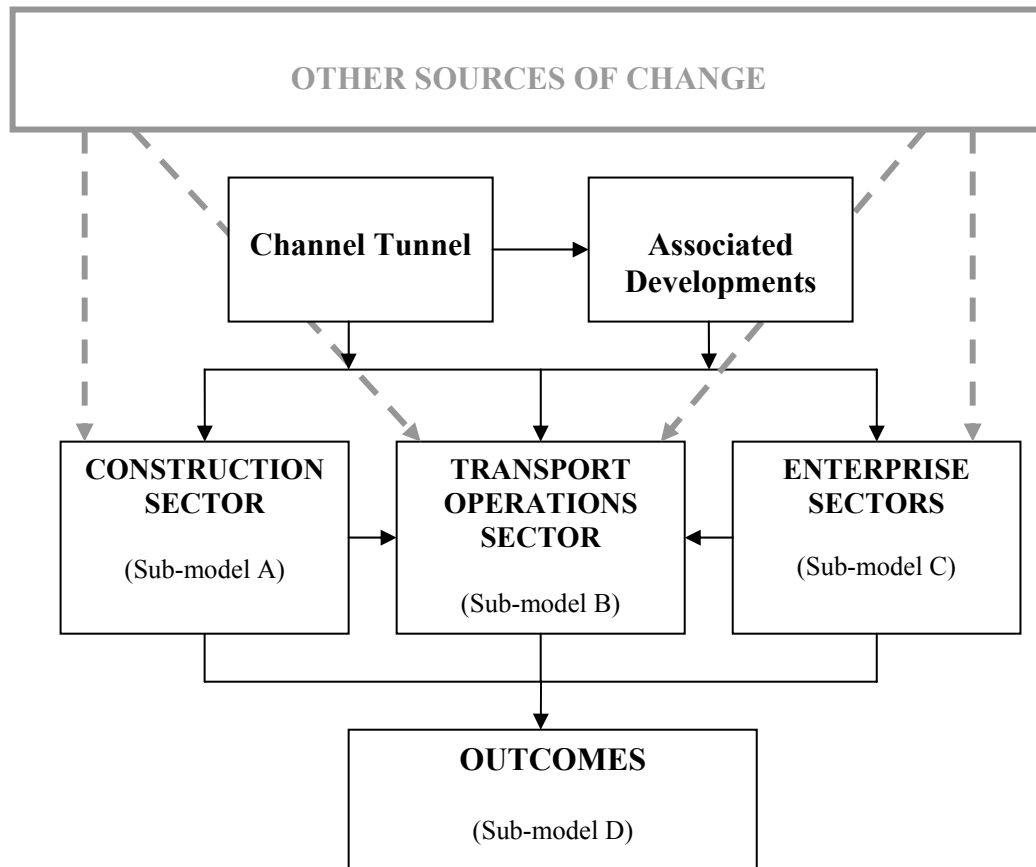


Figure 2 Overall Model Structure

We have developed four sub-models which deal in turn with: the *construction* impacts; the *transport operations* impacts; the *wider economic* impacts on enterprises in the region; and a fourth sub-model which takes outcomes from first three and identifies both the *additive* effects of changes (for example by employment sector) and also the *induced and multiplier* effects on household incomes, GVA, in-migration, housing construction, and the provision of services.

In this paper we can only give an overview of the main changes we have identified. It is also clear that ten years is a relatively short time to expect all the impacts of such a major project to have an impact and thus we have also tried to look forward to assess how much some of the major drivers of change will themselves change over the next ten to fifteen years.

### **3. Economic and demographic change in Kent 1980 to 2004**

#### *3.1 Actual changes*

In this section we present economic and demographic change in Kent as a reference point backcloth against which to view the changes which may be more specifically related to the Channel Tunnel and its associated projects. The second purpose is more speculative. We use this to assess if there is any evidence that there have been any changes in the time series for the Channel corridor that might be interpreted in such a way. There is also a brief account of the various planning and regeneration initiatives which have occurred in relevant parts of Kent and which may also be seen to have been influenced by expectations related to the Tunnel.

It is evident that Kent has shared in the overall population growth of South East England. Within the Channel corridor growth has been greatest in Maidstone and to a lesser extent Ashford, but this growth seems to be paralleled in other parts of Kent which are within easy commuting distance of Central London and the M25. It is difficult therefore to discern any demographic impact of the Channel Tunnel. Similarly employment change generally reflected the national and regional cyclical patterns, but within Kent there were some marked differences in the levels of employment (though less difference in the pattern over time) with stronger performances in West Kent and weaker performances in the areas more remote from London (for example Thanet). Within the Channel corridor there was evidence of expanding employment in Maidstone, but reductions in employment in Dover (associated with the loss of jobs in both the shipping industry and coal mining). Similar results can be obtained from the assessment of changes in per capita GVA. Overall it seems that there is no evidence that the Channel Tunnel and associated projects have generated demographic or economic changes which set the Channel Tunnel corridor apart from the rest of Kent.

Local development also depends heavily on land-use planning. Planning authorities have a dual role: on the one hand they have the power to zone land uses through the mechanism of local plans, on the other they are able to respond to applications by landowners and from potential developers for planning permission to develop specific sites. These two processes are not entirely independent because most specific applications are made in the knowledge of the local plan and the planners' knowledge of developers' aspirations will influence the local plan. The attitude of planning authorities in Kent to the Channel Tunnel project has been very mixed. On the one hand a number of authorities were hostile or at best defensive because they were aware of the possible negative impacts especially in terms of employment, traffic and environmental damage. So for example many of the responses within Dover and Shepway were of this type and the County Council too was aware of public concern in relation to the alignments chosen for the Channel Tunnel Rail Link. A second type of response can be described as constructively defensive as authorities accepted the main elements of the Channel Tunnel project and were concerned to ensure that additional measures were put in place to benefit their districts or to safeguard against perceived harmful impacts. So for example Shepway, after initial hostility, pressed hard for exits and links from the Cheriton terminal into Folkestone and Ashford pressed hard for the location of the International Passenger Station. Thirdly, there were various organisations which viewed the project positively overall but recognised that significant additional effort and investment would be necessary if the potential

benefits of the Tunnel were to be maximised: this was true of the Kent County Council for much of the period, though it added the additional concern of seeking to ensure that areas remote from the Channel corridor and the new rail links were not unnecessarily disadvantaged. This need for additional effort, co-ordination and investment was also recognised by organisations like Locate in Kent and the Kent Tourism Initiative, and similar approaches have been evident in Ashford and (though only in recent years) by Shepway.

Table 1 shows the allocation of floor space (m<sup>2</sup>) of land for ‘employment uses’ in the period 1991 – 2001, and the net completed floor space in the same period. It will be evident from this table that the allocations were modest, but also that there was no great pressure for planning permissions in the Channel Corridor (the percentage of the allocated space completed ranged from only 1% in Shepway, through 20% in Maidstone and 25% in Ashford to 63% in Dover. The last column of table 1 also shows that allocations 2001-2011 are similarly modest.

*Table 1 Planning Allocations (m<sup>2</sup>) 1991 – 2011 in the Channel Corridor*

	<b>1991 – 2001 Structure Plan allocations</b>	<b>1991 – 2001 net completions</b>	<b>2001 – 2011 allocations</b>
<b>Ashford</b>	430	107 (25%)	310
<b>Dover</b>	300	190 (63%)	228
<b>Maidstone</b>	150	30 (20%)	96
<b>Shepway</b>	150	2 (1%)	110
<b>Total</b>	1030	329 (32%)	744
<b>Kent</b>	3330	1003 (30%)	2956

### 3.2 Expected changes

A number of studies were undertaken in the period from the announcement of the project through to the completion of the construction of which the most significant was the *Kent Impact Study* (CTJCC, 1987, and see Vickerman, 1994a, 1994b for a more detailed discussion of these studies). We summarise these here in terms of the expected impacts on the three main sectors of operation: construction, transport operations and other enterprises.

#### 3.2.1 Construction

Construction is one of the main direct impacts of any large project and should be able to be predicted fairly accurately. The peak in construction employment on the UK side (there was a significant construction effort also on the French side which we do not consider in detail here) was predicted to be during 1990 at just fewer than 4,000. The Kent Impact Study (KIS) also recognised the role of improvements in the supporting infrastructure which would generate further construction sector employment throughout the county over a longer time span. However, whilst much of the construction workforce would be concentrated in Dover and Shepway,



construction workers, especially those with specific skills are traditionally very mobile and would not necessarily be local. Nevertheless, it was recognised that there would be significant laying-off of skilled and unskilled manual workers with the completion of the Tunnel and it was thought there would be a need for training programmes, advice and counselling for redeployment of these workers.

### 3.2.2 Transport operations

The Tunnel was expected to have a considerable effect on the cross Channel market. The KIS predicted that the Tunnel would increase the size of total market by creating new traffic and offer an additional alternative mode rather than being just replacing the ferries as in other fixed link projects. Following initial losses, ferry traffic was projected to continue to increase as the market increased. Employment would not however follow the same path as the ferries would need to reduce the considerable overmanning in order to be able to compete, such that the initial large losses would be followed by only modest recovery of ferry-related employment.

Initial projections of future passenger traffic were for passenger numbers for the tunnel at 29.1 million and 39.5 million for 1993 and 2003 respectively, out of a total passenger market of 64.3 million and 88.1 million for each year. The impact on freight traffic was expected to be much less than on passenger traffic, with the tunnel taking 14.8 million tonnes in 1993 and 21.1 million tonnes in 2003 out of a total market of 84.4 and 122.6 million tonnes respectively.

Early forecasts recognised that the size of the short-sea market would depend on the pricing strategies adopted by the tunnel and the ferries. Only with significant price cutting from the fare levels realised before the tunnel would the market be able to grow significantly enough to provide sufficient traffic for both sets of operators. This would seriously reduce yields and lead to longer term problems: a reduction in the number of ferry operators and problems for Eurotunnel in servicing its debt. The reduction in ferry services would lead to a concentration in services on a single port, Dover, although some of the smaller ports were thought to be able to continue to compete in niche markets such as longer sea routes to more distant continental ports, unaccompanied freight etc.

The estimated loss in ferry related employment was initially predicted to be in the range of 6,660 and 4,300 by 1993 and (following traffic growth) 6,600 to 4,100 by 2003. This was later revised upwards to nearly 7500 jobs in the period 1991-1994 alone. The Tunnel clearly needs far lower employment levels to deal with the same volume of traffic and employment in Kent was forecast to be around 3,250 in 1993 and 3,800 by 2003.

### 3.2.3 Enterprises in other sectors

The KIS identified a number of sectors that would be principally affected by the existence of the Channel Tunnel and associated infrastructure within Kent: tourism, retailing, manufacturing, wholesalers and road haulage. The Tunnel was expected to promote growth in these sectors in Kent for varying reasons and to generate additional indirect and induced employment within the county. The KIS predicted a secondary employment effect of 13,000 -14,000 jobs by 1995 in Kent.

Later revisions reduced some of these rather optimistic figures. For example, projected new tourism related employment was reduced from in the range 2,000 to 3,000 to around 500 new jobs after taking account of displacements and relocations of accommodation as well as visitors diverted away from Kent to France for short breaks. Similarly the initial predictions of up to 5000 new jobs in Kent by 1996 due to infrastructure improvements were later revised to a figure of around 2750.

#### 4. Assessing the Impact of the Tunnel

##### 4.1 Construction Impact

The construction impact needs to take account of both the construction of the Channel Tunnel itself, its immediate ancillary activities and the associated developments of roads, railways etc. Despite its size the construction of the Channel Tunnel was short term and localised, while the associated developments are less localised and spread over a longer time period with the high-speed rail link not due for completion until 2007. Major construction projects, even if geographically specific involve many firms which are national or international contractors and sub-contractors, who will have recruited at least some of their labour force (especially the most specialised) from outside the region (transient employment effect). It is therefore feasible to say that there are very few, if any, long term *induced* effects of the construction associated with the Tunnel.

The employment impact of tunnel construction peaked in 1990, though with a much larger labour force than originally anticipated (8,300 plus 1,827 people employed by sub-contractors), only some 35% of whom were from within Kent in 1990. The impact of the tunnel and then of later construction on the CTRL high-speed rail line can be seen in Figure 3

For Kent as a whole there was a fall in construction employment of 23% from 1991 to 1995 in Kent, followed by subsequent growth of 29% between 1995 – 1998 and 12% 1998 – 2001. The 2001 figure was 12% higher than in 1991.

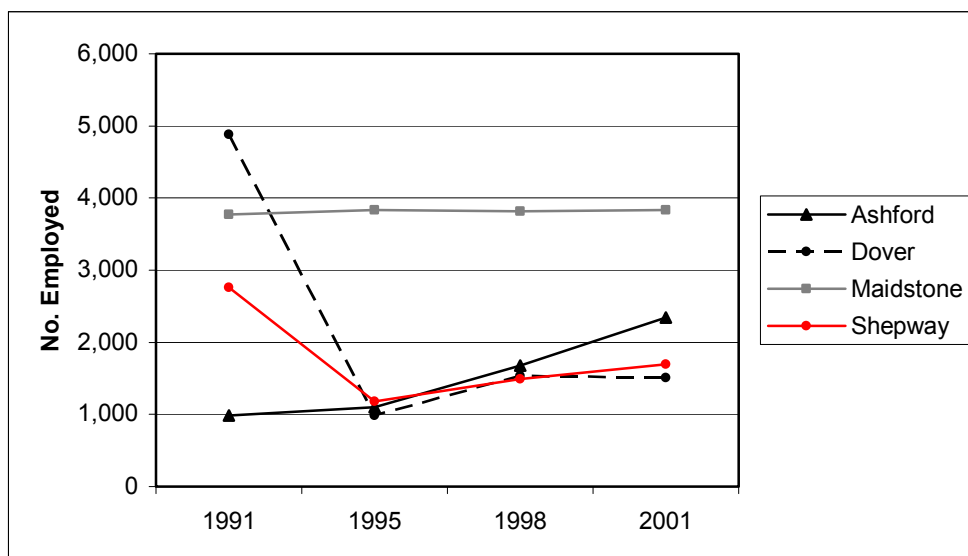


Figure 3: Construction Employment in the Channel Corridor (1991 – 2001)

#### 4.2 Transport sector impacts

Cross-Channel traffic has been growing rapidly over a long period before the construction of the Channel Tunnel. In the period immediately prior to the Tunnel's opening, following a slight fall in numbers from 1986 to 1988 associated with strikes there was an increase in passenger numbers of 55% between 1988 and 1994. This increase continued after the Tunnel's opening as part of a general increase in travel between the UK and continental Europe. UK residents make up approximately 80% of cross-Channel travellers and the market for passenger travel to continental Europe from the UK increased by over 61% between 1993 and 2002, and that to Near Europe (the major market within which the Tunnel competes) by over 43%. Figure 4 shows data for total passenger traffic through the tunnel and via the ferries for the period since 1995, the first full year of Tunnel operation. .

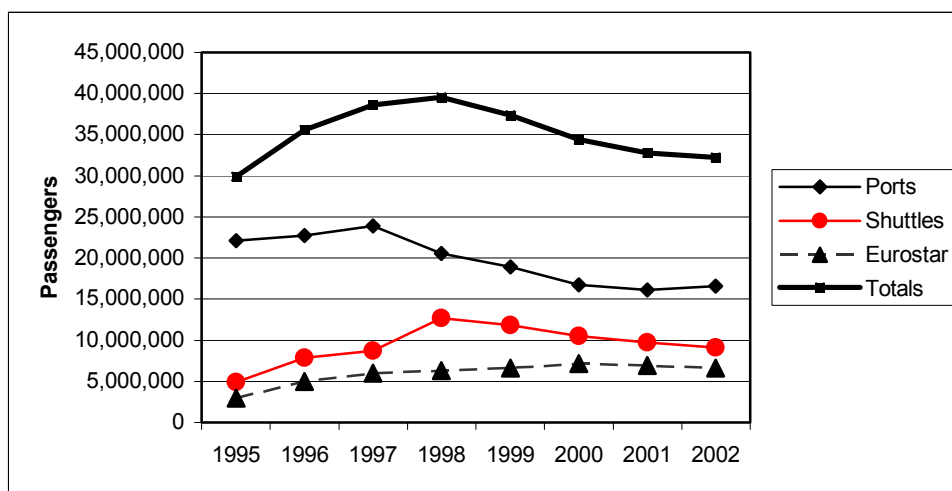


Figure 4: Cross Channel Passenger Traffic 1995-2002

Sources: KCC Tables from: Dover Harbour Board, Eurotunnel, Cruise and Ferry Info, Hoverspeed, Port Ramsgate..

The opening of The Channel Tunnel and the establishment and success of low cost airlines in the UK has led to increased competition for cross-channel travel. It might be expected that this would result in a change in the relative market shares of operators of the various modes of transport including air, sea and tunnel. To estimate the share of the cross-Channel market held by Eurotunnel we have used data from the International Passenger Survey, which provides passenger numbers by UK Port of origin and country of destination. This data can be used to examine how the passenger numbers as a share of the total market have changed over time. The data presented here does not identify traffic by through Eurostar trains separately. Here original forecast of between 13 and 16 million passengers per year have been seen to be wildly ambitious, Eurostar has managed barely 6 million passengers per year, although there has been a significant upturn in traffic following the opening of the first stage of the UK high-speed line in 2003 which improved reliability.

The ex-ante predicted market share of the Tunnel was estimated at 25 – 35% of the market for passenger travel to the Continent. Figure 5 shows the percentage shares of the main Passenger Ports (Ferries, Tunnel and Airports) in London and South East

England for travel to and from the EU, 1993 to 2002. This shows that the Channel Tunnel gained a substantial share of the market between 1994 and 1998 when it peaked at 18%, however, from 1998 the market share of the Tunnel decreased by over 3%. The market share held by the Kent Ports fell continuously from 1994 onwards. There was significant growth in the market share of Stansted Airport from 1995 onwards: a result of the increasing popularity of low-cost airlines flying directly and cheaply to EU destinations. The market shares of Heathrow and Gatwick have been declining since 1993 though Gatwick experienced a slight increase from 1999 onwards.

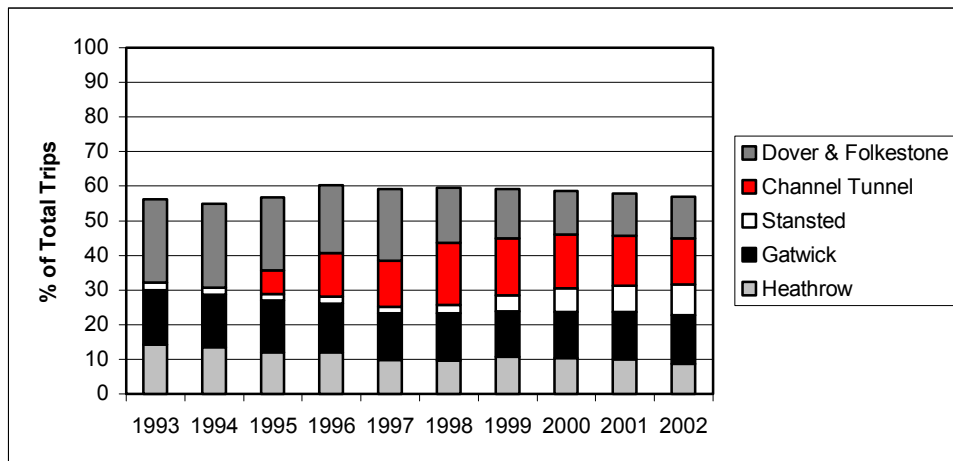


Figure 5: Travel to the EU (excluding Ireland) - Market Share of Main SE Ports (1993 – 2002)

Source: IPS, UK Residents, Travel Trends

The S.E Ports have a larger share of the market to ‘near Europe’ countries (Belgium, France, Germany and the Netherlands) and the Channel Tunnel has a much larger share of this market, peaking at 33% in 1998 (Figure 6).

The reduction in traffic, and Tunnel market share, since 1998 is a product of a number of factors. The loss of duty-free privileges for cross-Channel travellers led to a reduction in the motivation for much day-trip traffic and was also associated with an increase in fares. The growth of low-cost airlines brought alternative destinations within easy reach, especially for those living to the north and west of London with easy access to airports such as Stansted and Luton. Safety and security concerns may also have led to a reduction in discretionary trip making.

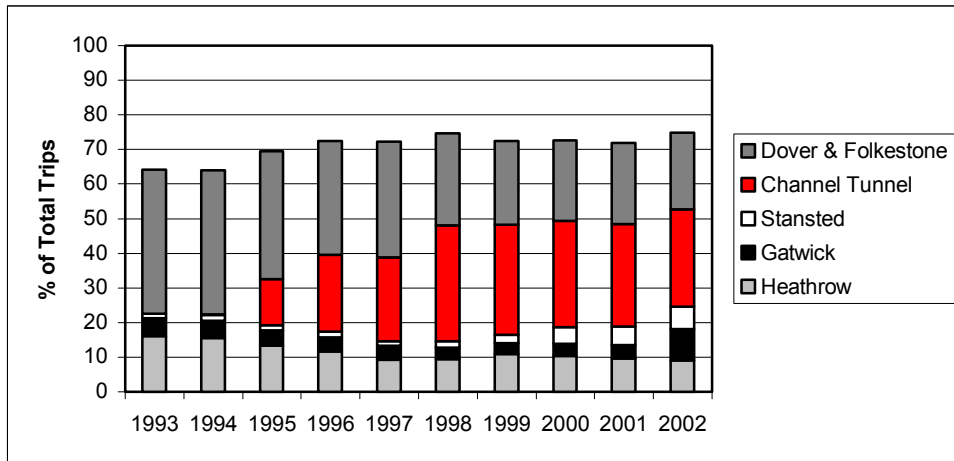


Figure 6: Travel to Near EU - Market Share of Main SE Ports (1993 – 2002)

Source: IPS, Travel Trends

Turning to freight traffic, the international movement of goods to and from the UK is dominated by road transport. The opening of the Channel Tunnel provided for the easy movement of freight by train for the first time and it was forecast that a market of around 6 million tonnes a years was available. It was thought that the tunnel would find it more difficult to compete with the ferries for road freight traffic and that a market share of around 18% for the tunnel was likely. Total ro-ro traffic grew from 51.8 million tonnes in 1991 to 78.4 million tonnes in 1999. In fact by 1999 the tunnel had secured some 25% of the traffic through Channel ports, with the share of Dover having reduced from 60% in 1993 to 50% in 1999, but this implied a concentration of traffic on the shortest sea route (Dover-Calais plus tunnel) of well over 75%. This reflects a major shift in an increasing traffic.

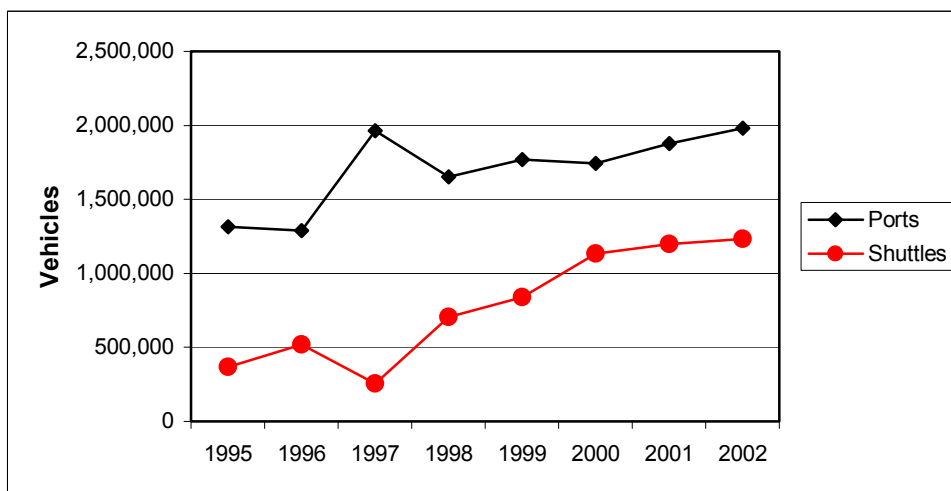


Figure 7: Cross Channel Freight Vehicle Numbers (1995 – 2002)

Sources: KCC Tables from: Dover Harbour Board, Eurotunnel, Cruise and Ferry Info, Hoverspeed, Port Ramsgate

Over the period 1993-99 there was a 55% increase in the number of road goods vehicles moving between the UK and continental Europe from 2.83 million to 4.38

million vehicles. The data show that the Tunnel gained a significant share (19%) of this market with the Dover Straits ferries taking a further 40%. Value data would show an even greater concentration on these routes given the time sensitivity and security characteristics of such traffic. Goods vehicle flows are shown in Figure 7.

Cross-Channel rail freight has not followed the same pattern and has failed to meet prior expectations. As shown in Figure 8, tonnages carried by train have decreased from a peak of 3.1 million tonnes in 1998, itself barely half of the original forecast for the tunnel's opening to under 1.5 million tonnes by 2002. This failure to meet expected levels of traffic results in part from the problems encountered by the train operators with security at the freight terminals in Europe (especially Fr  thun) and the penalties they incurred if they inadvertently carried illegal immigrants, but it also reflects the general failure of Europe's railways to respond to market pressures to improve service and provide genuine inter-operability in order to compete with road haulage.

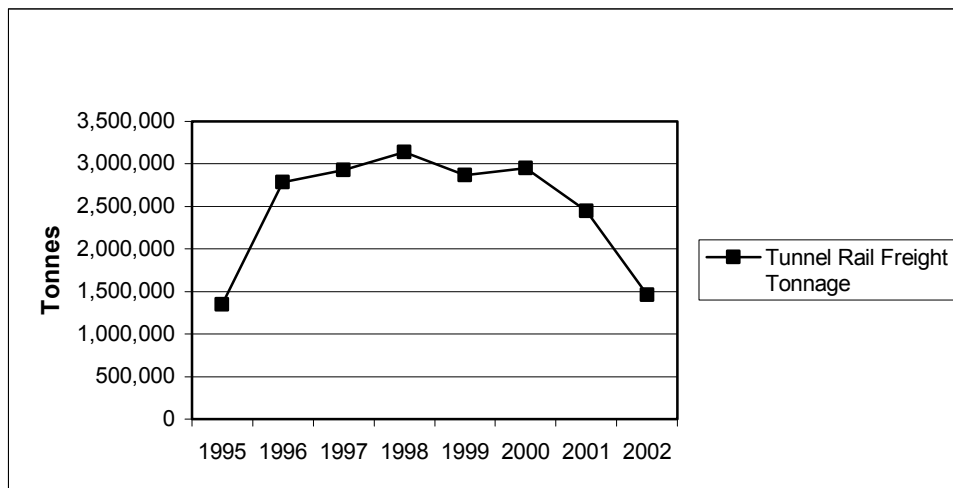


Figure 8: Cross Channel Rail Freight Tonnage (1995 – 2002)

Sources: KCC Tables from: Dover Harbour Board, Eurotunnel, Cruise and Ferry Info, Hoverspeed, Port Ramsgate

It was anticipated that the opening of the Channel Tunnel would result in additional traffic on Kent roads. It was therefore decided at an early stage to undertake certain road improvement schemes to cater for this additional traffic. The opening of the Channel Tunnel was also expected to divert both freight and passenger vehicles through the Cheriton Terminal, although the creation of through passenger and freight rail services should provide some relief. Traffic data shows increases in traffic on the approach roads to the tunnel (and Dover) although not out of proportion with the general increases in traffic on major routes in Kent. The failure of rail to take its predicted share of traffic has clearly had an impact on road traffic levels, but it is difficult to assess by how much as international traffic remains a relatively small part (perhaps 10-12%) of total road traffic on the major routes.

The impacts of this traffic on transport sector employment have been ambiguous. It was expected that there would be a large reduction in ferry and port related employment which would only be partly compensated by tunnel employment. Te

increase in traffic might be expected to have indirect and induced impacts on employment in the wider transport sector. In practice the job losses in the port and ferry industry have been greater and the compensating job creation smaller than forecast. Eurotunnel's UK employees peaked at just over 1500 in 2000, but this does not include the large numbers of sub-contractors, immigration, police and customs officials. If we just look at the change in port and ferry employment we can identify as loss of some 6000 jobs in Dover alone from 1991 to 2001 reducing its share of local employment from 18.4% to just 3.8%. This would have been catastrophic for the local economy if all the employment had been locally resident, but shift patterns on ferries led to a fairly wide distribution of residential locations. However, this loss came on top of the closure of the other major local industry coal mining at the same time.

#### 4.3 Impacts on other sectors

Turning to the wider influence of the Tunnel on the Kent Economy, the key issue is whether the Tunnel been successful in stimulating the expansion of indigenous firms and the attraction of new firms to locate in Kent. We have focused the analysis on the four specific sectors that were identified in the ex-ante studies: tourism, retailing, manufacturing and logistics and distribution

If we look first at new registrations of foreign firms in Kent, Figure 9 shows clearly a strong growth throughout the period, peaking in 2001. These figures, however, reflect national patterns in inward investment, with the peak being influenced by significant merger and acquisition activity. Of these some sixty are French companies that are geographically fairly evenly distributed between the Channel Corridor, North Kent (including Medway) and West Kent (for an earlier analysis see Collier and Vickerman, 2002). The highest employment by these French owned companies in Kent is in transport and storage (28%) followed by financial intermediation (27%) and manufacturing (25%).

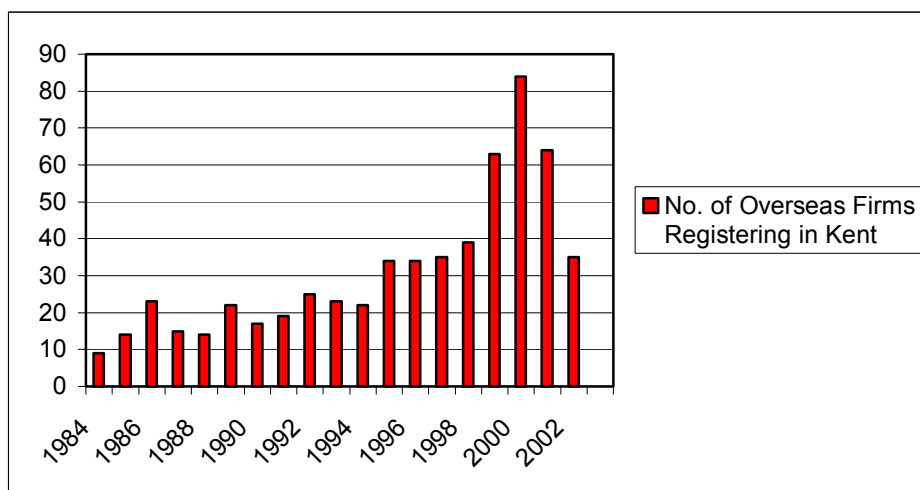


Figure 9: Overseas Companies in Kent by Year of Registration (1984 - 2002)

Source: SEEDA, taken from Experian Database, October 2003

Locate in Kent, the inward investment agency, maintains a database of companies recorded as successes, defined as “those companies that have received assistance from Locate in Kent during the year and decided to invest in the county”. Table 2 summarises these investments and the jobs created by country of origin for the period April 1997 to March 2002 in terms of the number of successes and jobs created.

*Table 2: LIK Projects and Jobs Created (1997 - 2003)*

<b>Country</b>	<b>Projects</b>	<b>Jobs</b>	<b>Country</b>	<b>Projects</b>	<b>Jobs</b>
UK	97	6,363	Iceland	1	260
USA	31	1,802	Finland	1	50
France	15	1,377	Denmark	1	30
Germany	7	486	Malaysia	1	30
Japan	5	329	South Africa	1	12
Spain	4	269	Argentina	1	10
Italy	3	29	Taiwan	1	10
Belgium	2	151	Canada	1	0
Korea	2	70	Switzerland	0	0
Austria	2	18	<b>Total</b>	<b>176</b>	<b>11,296</b>

*Source: Locate in Kent*

The majority of projects were expansions within Kent (36.93%) or expansions into Kent (28.98%), whilst genuine relocations only accounted for 15.91%. Of these companies, there is no outstanding number relocating, expanding or starting up in the Channel corridor or the area we would expect as a direct result of the Channel Tunnel. The most popular district for the location of companies appears to be Tonbridge and Malling in West Kent. Examination of the geographical distribution of the number of successful projects and jobs created by these companies has not revealed that the Channel Corridor districts have benefited any more than the rest of Kent in terms of investment. It is therefore difficult to identify any ‘Channel Tunnel effect’ in the data examined.

Tourist impacts depend both on visitors to Kent from outside and those stopping in Kent whilst en route to or from the Channel Ports or Tunnel. The Cross Channel Tourism Study recorded for 1999-2000 approximately 230,000 day-trips from the Continent to Kent and about 405,000 incoming trips (mostly from the near Continent) staying in Kent for one or more nights. Those whose main destination was Kent spent about £9.8 million on accommodation while those staying overnight while in transit spent about £6.4 million on accommodation. These relatively low figures reflected the fact that nearly half those staying in Kent were staying with friends or relatives. There is no reliable evidence of how many UK residents choose Kent for their holidays in order to make a day visit across the Channel. The figures for stays in Kent by United Kingdom residents en route to the Continent suggest that about 324,000 stayed for one or more nights en route, but the spending (about £6.6 million on accommodation) was again modest.

There is a long history of tourism in Kent that has left a considerable stock of hotel accommodation especially in seaside towns (including Dover and Folkestone) but there is a marked lack of modern high quality hotel accommodation. Although three new hotels have been built, several major sites have remained undeveloped. Cross-



Channel opportunities alone are not likely to be sufficient to guarantee a high level of hotel occupancy and that the area is too far from London and the M25 to be seen as an attractive location for other sorts of hotel business.

The evidence on employment in Kent presents a slightly more positive picture. Figure 10 shows that employment in SIC55 (Hotels and Restaurants) has increased significantly in all four Districts in the Channel Corridor since 1991 with especially vigorous growth since 1998 (Ashford up 86%, Dover 58%, Maidstone 47%, and Shepway 34%). Regional and national figures for the same time periods which showed much less marked increases in SIC55 employment between 1998 and 2001 (8% and 6% respectively), although the Ashford figure may be affected by population growth of 12.3% occasioned by rapid expansion in housing from 1991-2001.

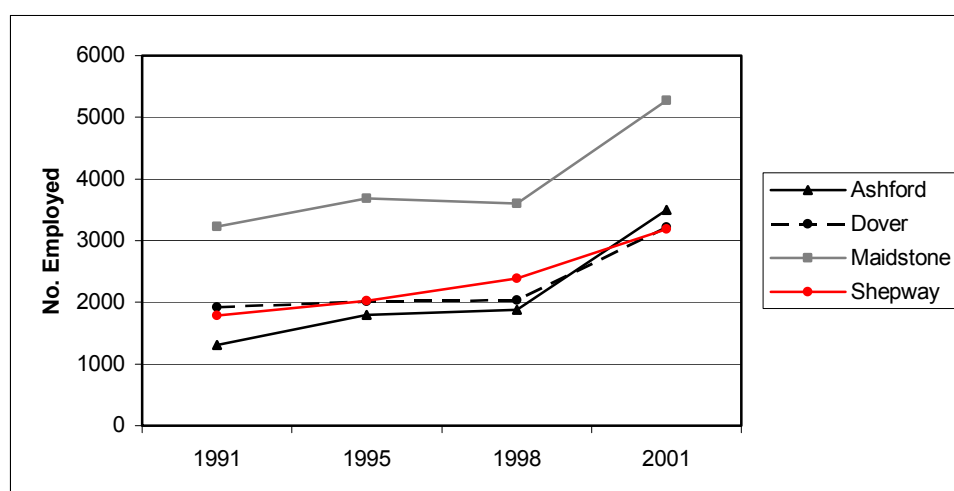


Figure 10: SIC 55 - Hotels & Restaurants Employment (1991 – 2001)

Source: NOMIS

Tourism would also affect the development of the retail sector in Kent. Increased volumes of tourism traffic would lead to retail spending and that some retail activities might attract cross Channel trips if the quality or price of goods offered in Kent was seen to be attractive, but it was recognised that Kent retail spending might also leak to the near continent if the quality and prices there were seen to be more attractive. Price differentials are affected not just by efficiency and quality, but also by differences in tax regimes between France and Belgium and the United Kingdom and changes in currency exchange rates between the pound and the Franc (to December 2001) and between the pound and the Euro (from January 2002). Sterling fell against the Euro from a rate of around 1.3 in 1994 to a low of 1.15 in 1996 before strengthening rapidly to a high of 1.63 in 2002. It remains at around 1.5. This makes French prices attractive to UK residents and UK prices unattractive to Eurozone residents.

The Transmanche Tourism Research Programme records some 4.455 million day trips in 1999 from the UK resulting in an estimated £350 million expenditure on shopping in Nord Pas de Calais. In the same year some 680,000 staying trips to Nord Pas de Calais resulted in an estimated £54 million of shopping expenditure. Some 38% of travellers saw shopping as their main purpose of the trip and 96% reported shopping activity during the trip. This suggests that in that year about £110 million of shopping

spending leaked out of Kent into Nord Pas de Calais and adjacent regions. In contrast the incoming flows were much smaller in volume: 430,000 visitors of whom only 7% of these saw shopping as a main purpose of visiting, though 63% reported some shopping activity. They were responsible for a total spend in Kent of about £49 million. In addition Kent received about £8 million of shopping expenditure from those passing through the county en route to a channel crossing.

In the light of these figures it is not surprising that in Kent there has been little investment in shopping facilities directly aimed at the cross Channel travellers. This contrasts strongly with the developments around Coquelles which have clearly been designed and managed to maximise their attraction for cross Channel shoppers. It seems that far from stimulating employment in retailing the expansion of cross channel activity has probably had a net negative effect on employment. Although employee numbers in retail trade have increased steadily over the period, total employment is largely consistent with the urban scale of each town and there are higher concentrations in Dartford (following the opening of Bluewater Shopping Centre), Canterbury, Thanet, Tunbridge Wells, Medway and Gravesham, all off the main Channel Corridor. Generally figures reflect the national trend of a steady increase in retailing (consistent with population growth) rather than exhibiting anything which might be called a Channel Tunnel effect.

The stimulation to manufacturing, a sector in long term national decline, was expected to be mixed according to the sub-sector. Kent had an under-representation of fast growing sectors and an over-representation of older declining industries. It was generally expected that the existence of the Channel Tunnel would stimulate growth in the more modern industries, including scientific instruments, medical equipment; office machinery and pharmaceuticals. Much of the benefit for manufacturing was expected to derive from the associated improvements to infrastructure, in particular to road and rail, leading to improved access to markets and improved availability of business services. The new infrastructure would provide additional opportunities for market expansion by opening up accessibility to European and deep sea markets, affecting business travel and movement of freight. However, only a small percentage of firms consider the savings in freight costs and time significant enough to consider changing location.

Generally most manufacturing firms based in Kent are small; nearly 60% of firms had five employees or less and only 21 firms (0.4%) had 500 or more. Although manufacturing remains an important sector in the Kent economy, we have no evidence that the Tunnel triggered an influx or growth in these firms. Employment figures are not substantially different to the national trend in the manufacturing industry. Although the figures for Great Britain show a general decline in manufacturing employment from 1991 to 2001, with a rise between 1995 and 1998, the figures for some of the Channel Corridor districts show that employment appears to be more resilient and overall manufacturing employment was higher in 2001 than it was in 1991 (Figure 11).

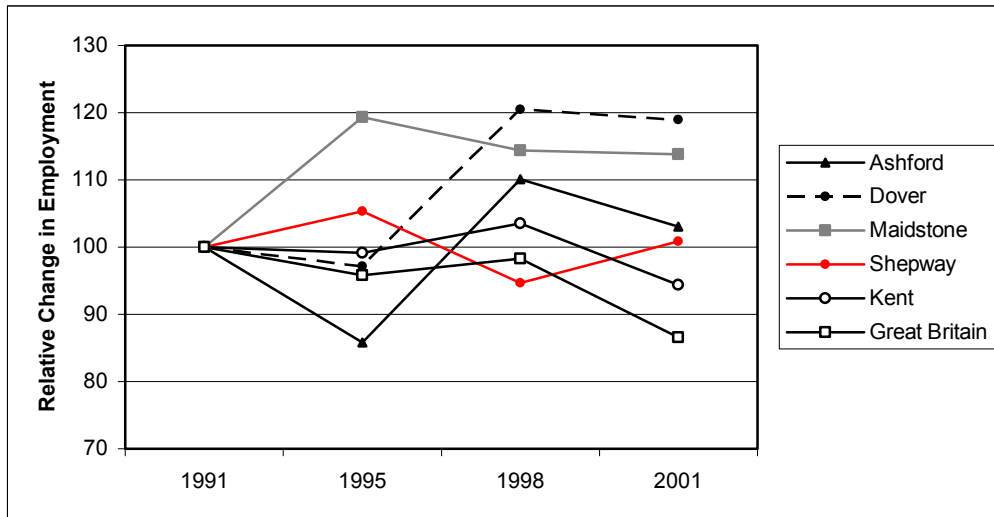
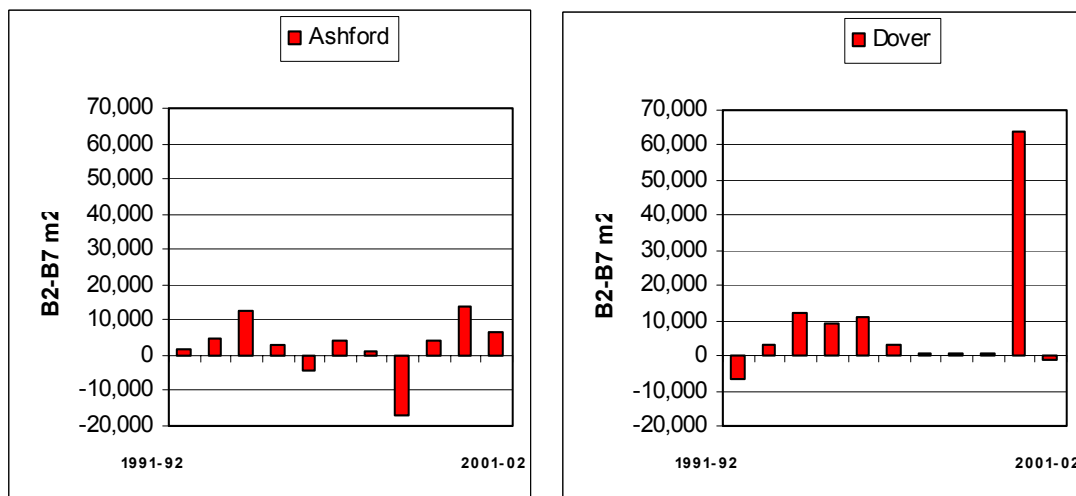


Figure 11: Relative change in manufacturing employment (1991 – 2001)

Source: Calculated using data from NOMIS, Base year: 1991=100

There has been a substantial increase in employment in pharmaceuticals employment with 2,638 jobs created between 1991 and 2001 in Dover due to the expansion of one major employer. Although this is balanced to some extent by a loss of 1195 jobs in this sector in Dartford. Employment in the manufacture of transport equipment (trains) rose substantially in Ashford between 1995 and 2001 although there was a fall of 39% in the number employed in this sector in the Kent region as a whole. In contrast employment in the manufacture of electrical machinery and apparatus has risen overall in Kent by over 50% over the 10 year period, but with no particular concentration in the Channel Corridor. Even larger was the growth (93%) in employment in the manufacture of medical/precision instruments, but this was almost entirely due to growth in Medway.

During the period there were also substantial losses of manufacturing floor space in all 4 districts and net figures are mixed for the area as a whole (Figure 12).



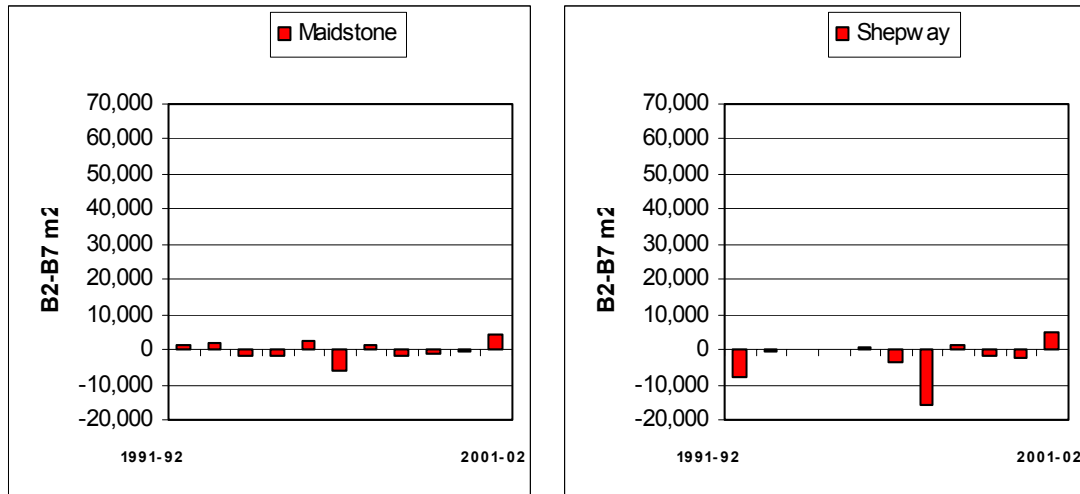


Figure 12: Net completions - General industry and manufacturing floor space (B2&B7) (1991-2002)

Source: KCC Employment Land Survey

Employment figures for SIC 6024 (freight transport by road) show only a 5% increase from 1991 to 2001 in Kent, well below the national increase of 26%, although here we could identify stronger growth in the Channel Corridor of between 61% and 180% albeit from low initial figures. In contrast the number of employees in cargo handling, storage and other transport activities fell dramatically, especially in Dover from 1991 to 1995, possibly related to the fall in border control activities in the Single European Market. Land use evidence for this sector (Figure 13) shows there was little activity until 1998, a brief flurry of activity from 1999 until 2001 and then a falling away of activity.

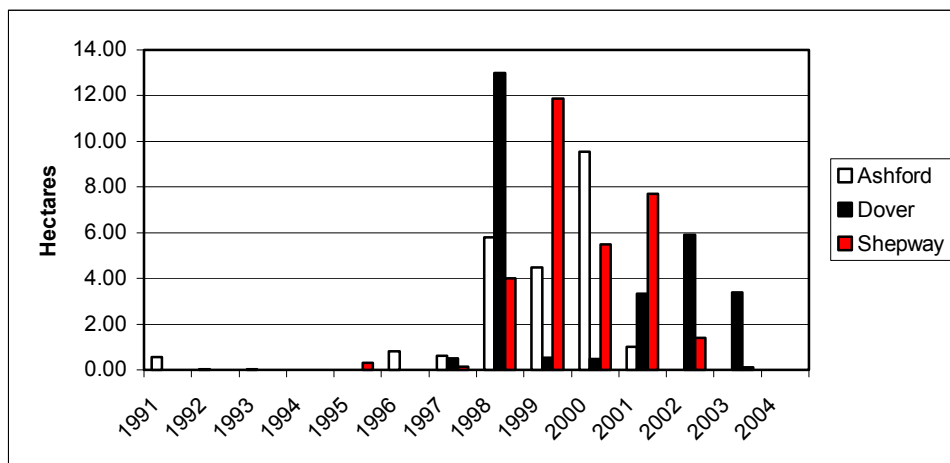


Figure 13: Hectares of B8 (Warehousing and Distribution) Land Granted Planning Permission (1991 – 2003)

Source: KCC

#### *4.4 Conclusions on impacts*

The simple conclusion to be drawn from the above discussion is that the opening of the Channel Tunnel has had little identifiable impact on any of the sectors which might be thought to benefit directly or indirectly from the tunnel. Whilst it is always difficult to create alternative histories of what would have happened otherwise, and it is arguable that without the tunnel Kent would have fared much worse than the national or regional performance given its location, it is difficult to form any view that the local economy has benefitted significantly from the tunnel. This is in line with a number of ex-ante studies (e.g. Vickerman, 1987; Fayman et al., 1995; Spiekermann and Wegener, 1997). What is more significant, however, is that by concentrating just on the most accessible corridor rather than the wider Kent region we have shown that this most favoured sub-region has also shown no overall tendency to perform better than the wider sub-regional or regional economy. There are other more important drivers to a region's performance than its accessibility.

### **5. Future Prospects**

It may be argued that 10 years is too short a time to see a major re-structuring and re-orientation of a local economy. This is especially true to the extent that one key element in the transport network, the Channel Tunnel Rail Link, will only be finally completed in 2007. The key point about this is that it will provide the opportunity for the acceleration of domestic rail services between London and Ashford and other towns in the less developed East Kent.

#### *5.1 Growth locations*

Two areas stand out as particular growth locations linked to the Tunnel: Ashford and Ebbsfleet. Ashford has been seen as a significant growth pole for many years. The reasons for this are partly linked to the Channel Tunnel in that the Kent Impact Study (1987) expected significant economic growth related both to the International Passenger Terminal and the Cheriton Tunnel-Terminal. In line with these expectations, large areas of land were designated for commercial, industrial and residential development.

These plans resulted in Ashford being seen as a location for future growth even when the Tunnel related developments failed to materialise on the scale expected. Substantial housing development occurred between 1990 and 2002 and when central government published plans for the expansion of housing in the South East England Region it identified Ashford as the site for a further 43, 000 housing units by 2030. The problem for Ashford has been that although housing developments has occurred (and significant development of services and retailing) there has been a much slower development of other activities and Ashford has developed its function mainly as a dormitory town for those working in Greater London, Maidstone and other parts of East Kent.

Ebbsfleet is a new development in North Kent based around a new international station on the CTRL. Ebbsfleet is likely to become the most attractive place in which to have an intermediate stop in terms of people accessing Eurostar services by road (there are 9000 new parking spaces planned for the Ebbsfleet station. A total of 150 ha of land has been designated for associated developments and outline planning

permission was granted in November 2002 for 790,000 sq m (8.5 million sq ft) of mixed-use development including employment, residential (there are plans for 3,200 new homes in the area), hotel and leisure facilities, supporting retail and community facilities together with transport infrastructure and open space. It is hoped that these developments will generate up to 20,000 jobs. Linked to Ebbsfleet is the development of the Eastern Quarry, a site of approximately 300 hectares with the capacity for over 7,000 new homes and 3 million square feet of office, leisure, shops and amenity facilities. The eastern quarry development is hoped to take the form of an urban village and is expected to generate 10,000 new jobs. The quarry is located between Ebbsfleet and Bluewater and is the largest single Kent Thameside development site. Kent Thameside is part of the Government's Thames Gateway regeneration strategy, a regional and national priority region for long term sustainable economic, social and environmental regeneration. This huge redevelopment in Kent Thameside is likely to provide a serious competitor for developments in the Channel Corridor.

### *5.2 Alternative Futures*

In this concluding section we examine a series of alternative influences on future development and examine their likely consequences on both the transport sector and on Kent from these developments. These developments are not mutually exclusive and different combinations of them will have significantly different implications for Kent. The developments are presented in 2 groups: developments in transport networks and markets; and changes in the wider social, economic and political context.

#### 5.2.1 Future transport sector changes and their impact

- Greater technical and operational integration of tunnel services with other networks leading to an increase in operating efficiency
- Implementation of the EU's 2nd and 3rd railway packages leading to greater potential for through freight services, and the entry of new operators, but also opening the tunnel to the open access regime.
- A shift in transport costs and regulation against road transport leading to a favourable move in the competitive position of rail for both freight and passenger services.
- Restructuring of Ferry operators from Dover – although it is an unlikely scenario that all ferry operations out of Dover would cease, there is scope for some restructuring of the industry although this may lead to instability in the market. This could have negative consequences both for traffic through Kent and for employment more generally.
- Financial restructuring of Eurotunnel leading to bankruptcy and foreclosure by the banks as major creditors. This would lead to a new management structure, but potentially a substantial reduction in the fixed costs due to the writing off of debt.
- Restructuring of Eurostar, due to continuing financial problems and competition from low cost airlines. Depending on the nature of any change this could have major impacts on the local economy.
- The impact of CTRL, especially on domestic services, has already been mentioned in the context of the growth of Ashford, but has important implications for the whole of East Kent and for potential integration across the Channel.
- Low-cost airlines have been cited as a major reason for problems of all cross-Channel operators, but this argument needs to be treated with caution as much of

the activity of such airlines has been in creating new markets which may be only partial substitutes for traditional cross-Channel traffic.

- The impact of road congestion, especially on the main approach corridors is a major source of concern because of the unpredictability of the delays which constitute a major cost to truck based freight.

### 5.2.2 Changes in the Broader Context

- Retail price differences across the Channel due mainly to tax differences and exchange rate changes may change with important impacts both on traffic levels (and the direction of flow) and on local retail activity.
- The intensification of security and illegal migrant precautions could have a significant long-term effect on short term, especially day trip, movements which constitute a large part of cross-Channel traffic with consequences for further integration.
- Integration of the cross-Channel housing and labour markets leading to an increase in commuting, currently only at very low levels compared with the moves across other intra-EU borders, could have a significant impact on both traffic levels and regional economic integration.
- An exogenous change in Kent's position in the UK economy could arise from the expansion of Ashford and Kent Thameside discussed above. However, Kent is likely to remain somewhat insulated from some of the other growth pressures on South East England by its geographical position to the east of London.

### 5.2.3 Assessing the likelihood of future scenarios

In tables 3 and 4 we have summarised three possible outcomes for each of the scenarios considered above, and assessed the likelihood of each outcome by giving each an alternate probability between 1 and 3, where 1 = high probability, 2 = moderate probability, and 3 = low probability.

The picture of the Tunnel and its future impact derived from tables 3 and 4, together with the information on growth centres in section 5.1 is as follows. In the transport context we expect some technical and managerial integration of Channel Tunnel operations with rail operations in the UK and mainland Europe. Such integration will be encouraged by the implementation of the EU's railway packages. We do not however believe that this will be underpinned by any decisive shift in policy towards rail transport.

As regards cross-Channel ferry services, we expect there to be some operator changes, but a continuing high level of service. Similarly we do not expect there to be any major change in the position of Eurotunnel – expecting the banks to continue to support it but restricting it from any major new initiatives or investments. Eurostar will, we expect, focus on the CTRL route St Pancras- Stratford- Ebbsfleet- Ashford and, at least in the medium term, seek to develop intermediate facilities at Ebbsfleet, in Europe it will focus, as at present, on the three major destinations (Brussels, Paris and Lille). All the surface operators will continue to face competition from vigorous low-cost airline operators, for at least part of the market. We see limited prospects of fully integrated through rail services despite the opportunities offered by St Pancras and CTRL. Finally, we expect the issue of road traffic congestion to pose a continuing problem for both the Channel Tunnel and other surface cross-Channel operators.

*Table 3: Transport Sector Issues – Future Outcomes and Probabilities*

<b>Issues</b>	<b>Possible Future Outcomes</b>	<b>Probabilities*</b>
<b>Technical and operational integration</b>	A: Integration greatly increased	2
	B: Some increased integration	1
	C: Integration unchanged	3
<b>Implementation of the EU's 2nd and 3rd railway packages</b>	A: Objectives fully achieved	3
	B: Some progress on objectives	1
	C: No change	2
<b>A shift in transport costs and regulation against road transport</b>	A: Major shift achieved	3
	B: Modest shift achieved	2
	C: Little change	1
<b>Restructuring of Ferry operators from Dover</b>	A: Most operators withdraw/reduce services	3
	B: Some operator turnover, services stable	1
	C: Ferry services stable and expanding	2
<b>Financial restructuring of Eurotunnel</b>	A: New operator after bankruptcy	3
	B: No real change	1
	C: Successful refinancing of Eurotunnel	2
<b>Restructuring of Eurostar</b>	A: Eurostar Expands services and intermediate stops using two London termini	3
	B: Eurostar Focuses on CTRL Route with intermediate stops	1
	C: Eurostar Focuses on limited continental destinations with minimum stops	2
<b>The impact of CTRL</b>	A: CTRL triggers integrated through services using Tunnel	2
	B: CTRL track used by Eurostar and rail franchise services only	1
	C: CTRL track used by Eurostar only	3
<b>The role of the low-cost airlines</b>	A: LCA's continue expansion including near continental destinations	1
	B: LCA's continue but with limited cross-Channel services	2
	C: LCA's marginalised in all relevant markets	3
<b>The impact of M25, M20, M2 congestion</b>	A: Congestion from rising traffic volumes and no investment	2
	B: Some investment relieves congestion	1
	C: Major investment in Thames crossing and motorway capacity	3

\* Probabilities: High = 1, Moderate = 2, Low = 3

*Table 4: Issues in a Broader Context – Future Outcomes and Probabilities*

<b>Issues</b>	<b>Possible Future Outcomes</b>	<b>Probabilities*</b>
<b>The differences in retail prices across the Channel</b>	A: Major differentials persist	3
	B: Some price differentials occur	1
	C: Price equalisation	2
<b>The intensification of security and illegal migrant precautions</b>	A: High security sensitivity persists	1
	B: Security concerns moderate	2
	C: Security concerns cease	3
<b>Integration of the cross-Channel housing and labour markets</b>	A: High levels of cross-Channel commuting	3
	B: Modest growth in cross-Channel commuting	2
	C: Cross-Channel commuting remains minimal	1
<b>A change in Kent's position in the UK economy</b>	A: Kent develops economic activities using locational advantage in relation to Europe	3
	B: Kent and Thames Gateway become economic growth areas within the SE Region	1
	C: Kent economy dominated by commuting and local services	2

\* Probabilities: High = 1, Moderate = 2, Low = 3



Looking at the wider context we see a number of tendencies which will limit the role and impact of the Tunnel. We believe that cross-Channel traffic will grow slowly because of the increasing convergence of prices, the perceived need to continue a high level of precautions against illegal migration and terrorist activity, and minimal growth in cross-Channel commuting. Expansion will therefore be dependent upon major economic change in areas served by the Tunnel and CTRL: the only likely area of growth seems to us to be Ebbsfleet and the Thames Gateway which will become a major economic growth pole for South East England but with only a subsidiary role in relation to Europe. We do not believe Ashford, Dover or Shepway will experience major economic growth, though Ashford may continue to expand as a dormitory area and local service centre.

In other words all the evidence from a period which might have seen major changes in the Kent economy points to an essential continuance of the status quo: a major transport infrastructure project does not necessarily change the economic fortunes of a region.

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