University of the West of England
BRISTOL

Mid Essex Economic Futures

Brentwood Borough Council

Chelmsford Borough Council

Braintree District Council

Maldon District Council

University of the West of England
BRISTOL

The Mid-Essex Economic Futures Assessment

Submitted to:

Braintree District Council, Brentwood District Council, Chelmsford Borough Council, and Maldon District Council and

March 2006

University of the West of England, Bristol
Frenchay Campus,
Coldharbour Lane,
Bristol
BS16 1QY

APPENDIX 2: ECONOMETRIC ANALYSIS 150

1. Terms of reference

In October 2005, Chelmsford Borough Council, Maldon District Council, Brentwood District Council and Braintree District Council (referred to subsequently as the Mid Essex Councils) retained the University of the West of England, Bristol to undertake an appraisal of the local economy and provide an assessment of the future out look. More specifically, the following were to be provided:

- An audit of the strengths and weaknesses of the sub-regional economy and consideration of future opportunities and threats;
- An examination of the relationship between projected employment growth and housing provision as envisaged in the East of England Draft Economic Strategy and Regional Spatial Strategy;
- Projections of employment land requirements
- Consideration of the current and future influence of London on the Mid Essex economy and issues of competitiveness with other sections of the London Arc;
- An assessment of the economic impact of Stansted Airport expansion and continuing development along the M11 corridor;
- Discussion of the opportunities offered by the regeneration of the Thames and Haven Gateways;
- An examination of the contribution of small businesses in various sectors and districts and the adequacy of provisions for support;
- The impact of recent transport infrastructure investment;
- Consideration of a number of other issues including the influence of land and property markets, education and skills and the outlook for town centre retailing.

The team conducting this research are Professor Martin Boddy and Dr. Ian Smith form the Faculty of the built Environment and Dr. Donald Webber, Peter Cullen and Anthony Plumridge from the Local Economy Research Unit, Bristol Business School. Any enquiries concerning this report should be addressed to Anthony Plumridge.

2. Executive Summary

2.1. Productivity

Productivity is a major concern for the region, not least because the East of England Development Agency (EEDA) considered a target for 2021 of moving into the top 20 EU regions in terms of productivity per resident[1]. It is also considered that a high level of productivity enhances competitiveness and underpins an economy's ability to generate high living standards for employees and residents. In this report, productivity is explored in two ways:

- looking at the productivity of Essex as a whole
- investigating the productivity of individual firms in Mid Essex

Essex productivity levels are at around the average for the UK as a whole, ranked 72 out of 133 areas.[2] The East of England is currently 28th in the EU regional productivity rankings. Breaking into the top 20 EU regions would have required moving between the South East region, currently in position 22 in the EU and 2nd in the UK and London, currently in 5th position in the EU and top in the UK. Clearly Essex could not have continued to languish at 72 out of 133 county areas if the region was to have climbed to 2nd. out of the12 UK regions. If the region still wishes to significantly increase productivity, Mid Essex will need to improve its ranking.

In the light of the above, it is important to be able to assess productivity in the four Council areas of Mid Essex and suggest what can be done to make improvements. We were able to access data on the productivity and other features of a sample of some 270 firms in Mid Essex and compare them with firms in the rest of the UK, the East of England as a whole and a number of nearby competing areas. Our findings were as follows:

- Firms in all four Council areas were around the average for the UK as a whole

[1] This is measured by calculating the value of all goods and services produced in the region and subtracting the value of all associated purchases of supplies and services imported into the region. The result, known as Gross Value Added (GVA) is then divided by the number of residents to give productivity per resident.

[2] NUTS3 areas, the smallest area for which reliable data is regularly available. The rankings here are based on 2002 data.

- There is a unique advantage in locating in the London arc – firms are 8% more productive than might otherwise be expected.
- There is a unique disadvantage associated with location in the Norwich area firms are 13% less productive than might otherwise be expected.
- In Mid Essex, **Brentwood** firms appear most productive, followed by **Chelmsford, Braintree** and then **Maldon**. However the differences between the four Council areas are not significant.

There are some clear indications as to what would improve the average productivity of firms in Mid Essex:

- Increasing the skills of those currently employed or self-employed.
- Increasing investment in new technology
- Encouraging high productivity firms to locate in the area. Construction, financial services and property firms have the highest level of productivity in Mid Essex. American owned firms also have high productivity.

There are also measures that would help to achieve the regional target of increasing the productivity per resident:

- Increase the proportion of the population economically active and increase employment to match.
- Decrease the proportion of employees commuting out of the area to work.

2.2. Employment

An important focus of this assessment is future employment patterns in Mid Essex. To a significant extent, any forecast of future employment will be based on an understanding of the current structure and recent trends. Table 2.21 below summarises the composition of employment in 2003, broken down by 9 major sectors.

Table 2.2.1 Employment – 9 sector composition

Employment % 2003	Braintree	Brentwood	Chelmsford	Maldon
Agriculture support/fishing and forestry	2.2	0.6	2.1	4.6
Mining and extraction	0.1	0.0	0.2	0.1
Manufacturing	17.7	9.3	7.7	17.3
Utilities	0.1	0.2	0.6	1.9
Construction	7.2	7.5	6.7	9.9
Distribution	24.6	24.2	23.8	25.4
Transport	4.0	5.7	4.6	3.7
Financial & business services	17.8	28.2	22.1	15.6
Government, Health, Education etc.	26.3	24.3	32.3	21.6
Total	100.0	100.0	100.0	100.0

Source: NOMIS

There is a clear difference between **Braintree and Maldon**, strong in manufacturing and weak in financial and business services, and **Brentwood and Chelmsford** where the reverse is the case. This is likely to reflect the need for lower value added activities within manufacturing to be located where premises costs are lower.

The four Council areas have shown remarkable employment growth over the last five years, well above the UK average:

Table 2.2.2 Employment growth 1998 - 2003

	Total employment 2003	Employment growth	Employment growth %
Braintree	48280	7314	17.9
Brentwood	30414	4092	15.5
Chelmsford	79071	16064	25.5
Maldon	19279	3703	23.8

Source: NOMIS

In order to forecast future employment growth, it is helpful to identify those sectors that have been most responsible for increases in jobs in recent years. It is also desirable to break down employment into more sectors than the nine shown in Table 2.2.1. In most of our work we have used 30 sectors. Table 2.2.3 below shows those sectors where employment has increased most. They are ranked according to the number of additional jobs between 1998 and 2003 in Mid Essex as a whole.

Table 2.2.3 Additional employment 1998 to 2003

Sector	Braintree	Brentwood	Chelmsford	Maldon	Mid Essex
Other business activities[3]	2772	1206	2726	894	7598
Education	1136	816	2658	580	5190
Construction	800	435	2533	855	4623
Hotels and restaurants	590	590	1823	369	3372
Retail trade	1535	-72.0	973	675	3111
Health and social work	936	1042	754	118	2850
Post and telecommunications	769	769	547	-18	2067
Public sector	166	-422.0	1803	64	1611
High tech services	187	129	972	156	1444
Financial Services	409	-590.0	1423	-80	1162

Source: NOMIS

The pattern of job increases is broadly similar across all four Council areas but there are some differences, most obvious being the decline in Financial Services, the Public Sector and Retail in **Brentwood**.

It would be misleading just to consider the expanding sectors. Table 2.2.4 below shows those sectors where employment has declined in Mid Essex.

Table 2.2.4 Reductions in employment 1998 to 2003

Sector	Braintree	Brentwood	Chelmsford	Maldon	Mid Essex
High tech manufacturing	-1068	-117	-451	-207	-1843
Wholesale trade	104	27	-953	-21	-843
Transport manufacture	-265	-217	-74	-95	-651
Transport	-300	-375	292	-116	-499
Utilities	1	-377	-126	18	-484
Publishing, printing and media	-305	130.0	-181	-8	-364
Manufacture of metals	-310	-54	-80	163	-281

Source: NOMIS

One unusual factor about employment in Mid Essex is the importance of small firms, especially in **Braintree and Maldon**. In Great Britain as a whole, small firms (up to 10 employees) account for over 83% of the number of firms but less than 21% of employment. **Maldon** exhibits the most stark contrast with GB. The smallest firms accounted for 34% of employment as opposed to just 21% in GB in

[3] Other Business Activities comprises business and professional services.

2003. In **Braintree**, the share of employment accounted for by the largest firms (more than 200 employees) is very low, barely 15% compared with 30% for GB.

2.3. Labour Market

Analysis of data on the labour market suggests the following:

- Mid-Essex has a tight labour market with high employment rates and low unemployment rates.
- There is evidence of higher than average self-employment rates especially in the northern and eastern part of sub-region.
- There appears to be a problem in retaining young workers.
- The indigenous labour force is relatively well qualified (especially in south of sub-region) but the workplace population is relatively unqualified. This is evidence of a skills mismatch and the absence of the 'knowledge economy'.
- With the exception of **Brentwood**, the sub-region has relatively high levels of containment for the workplace population although there are high levels of out-commuting especially for more highly qualified labour.
- Working from home has been on the increase, in particular within **Chelmsford and Braintree** – working from home accounts for around 10% of the working age population in employment.
- Relative to the South East Region, the Mid-Essex area seems not to have an affordability issue when seen in relation to the earnings of residents and current mortgage rates. This is driven by the fact that large numbers of workers commute into London where average earnings are significantly higher than for the labour force that works in Mid-Essex. For resident workers who also work in the Mid-Essex sub-region, housing affordability issues are much more acute.

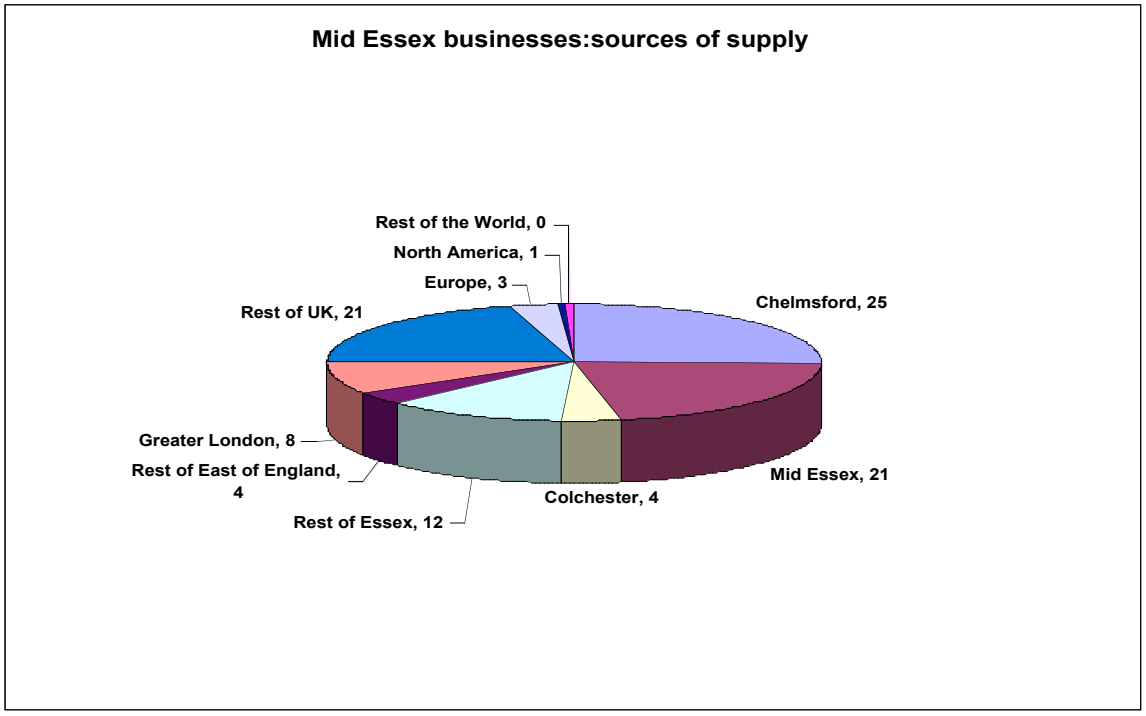
2.4. The location of markets and sources of supply.

2.4.1. Sources of Supply

In order to decide on development options under a sustainability agenda, it is important to understand the geographical distribution of business markets and supply chains. Further, an essential characteristic of the local economy is the extent to which it is self-contained as opposed to being part of a wider economy dependent on the rest of the region or the UK. This will determine the degree of dependence on outside factors for employment and income growth and the extent to which attempts to stimulate these will bring benefits to the sub-region rather than being dissipated over a much wider area.

To measure the pattern of business links, a representative sample of some 150 businesses were surveyed to identify the source area for supplies and services and the location of their main markets. The findings from the survey are summarized in the two charts below.

Chart 2.4.1 Location of sources of supply



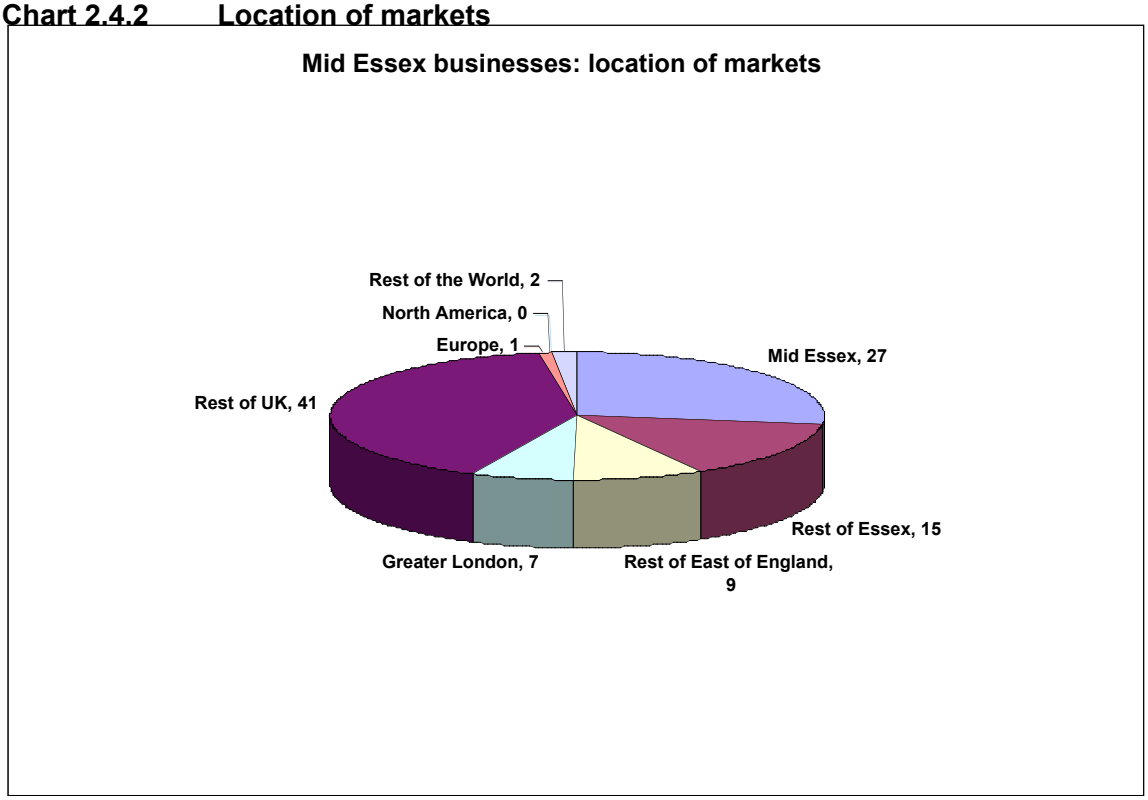
Source: Business Survey

The chart shows the predominantly local nature of supply chains: Mid Essex firms obtained some 62% of services and supplies from Essex based suppliers and 46% from within Mid-Essex itself. This represents a relatively high level of self-containment. Beyond the County, twice the value of supplies came from Greater London than from the rest of the East of England region. Supplies obtained direct from overseas (rather than through a locally based importer) were insignificant.

2.4.2. The location of Markets

Markets were more dispersed than sources of supply, as can be see from Chart 2.4.2. below. Even so, Essex accounted for over 40% of sales, a surprisingly high figure compared with other regions. London was not an important source of business for local firms, although indirectly the capital is likely to be more critical to the prosperity of Mid Essex than the figures suggest. Some sales may be to other local firms, but these firms might sell to a London market. Export markets were insignificant as a direct source of sales

Chart 2.4.2 Location of markets



Source: Business survey

2.5. Employment land use in Mid Essex

- Within the sub-region, **Chelmsford** is the most important centre for office and retail space in this period with Braintree the most important centre for factory space.
- The sub-region splits between **Chelmsford and Brentwood,** where office and retail space dominate the stock of commercial premises both in terms of the number of properties and in terms of floor space, and **Braintree and Maldon,** where it is factory floor space dominates the existing stock.
- The key trends for the period 2000-04 suggest that significant amounts of office space have been developed in **Chelmsford** whilst change in retail floor space has concentrated in **Brentwood**. In addition there has been a significant growth in warehouse and distribution space in **Chelmsford**. **Maldon** has experienced some large increases in office space in percentage terms but this remain relatively small in terms of the amount of floor space recorded.
- In terms of availability, the current market situation appears to be one where there is enough office space for expected demands over the next few years. However the market for industrial space incorporating distribution, warehousing and factory units is relatively tight especially in connection to start up units.
- In the period 2000-04, **Chelmsford** has been the location that has experienced highest levels of development control pressure and in which the highest number of schemes have been completed. This pressure has been highest in relation to industrial (B2-B8) and major retail scheme development.
- **Braintree** is the local authority area with the highest level of planning applications outstanding suggesting that there are blockages in the development process in the north of the sub-region.
- Overall development pressure appears to be aimed at rural areas rather than the existing urban areas but developers are experiencing difficulty in converting planning applications into development within rural areas of the sub-region.

- Property agents consider that there is a shortage of land for development in the area. This is most likely to be linked to warehouse and distribution development since there appears to be sufficient office space available.
- Property agents tend to look to the expansion of Stansted Airport and the state of the London economy as gauges to the economic prosperity of mid-Essex.

2.6. Strengths and Weaknesses

The main strengths of Mid Essex include

- An environment offering residents a good quality of life
- A diverse and broadly based economy, with strong representation of growing sectors
- Proximity to London
- Proximity to appealing recreational landscapes
- Proximity to Stansted
- A well qualified residential labour force
- High rates of business formation
- A strong small firm sector
- A university in Chelmsford
- A good record of inward investment
- Competitiveness with the rest of the London arc.

The main weaknesses include

- A perceived shortage of development land and distribution space
- Increasing congestion
- A large proportion of residents with the highest skills commute out of the region to work.
- There is a tendency for young people to leave the area, especially graduates.

2.7. Forecasts and Aspirations

There is an important distinction between a forecast, the most likely outcome at some future date, and an aspiration, such as the East of England regional target of being in the top 20 EU regions in terms of Gross Value Added per resident by 2021. In the employment forecast in this report, we consider a "Business as Usual " (BAU) forecast, the most likely employment outcome in 2021 assuming no change in policy and a continuation of long established trends. The tendency of the national economy to maintain a long run growth rate of some 2.5% provides a basis for such a forecast.

Although reliable actual figures for employment in the four Council areas are not available for 2004 and 2005 at the time of writing, they are available for the region as a whole. These show the growth in employment easing in 2004 and coming to an end in 2005. In our BUA forecast, it is assumed that Mid Essex districts follow a similar trend. It is also assumed that there is no employment growth in 2006. Two consultants have recently provided forecasts for Essex[4] and the region as a whole[5]. The growth rate in our BUA forecast is based on these studies but updated to take into account actual employment to 2005 and the assumption of no growth in 2006. The forecast is summarized below:

Table 2.7.1 Business As Usual employment forecast

Employment	2001	2005	2021	2021-2001	2021-2005
Braintree	45029	49981	53309	8281	3328
Brentwood	29157	31084	33153	3996	2070
Chelmsford	69761	81841	87290	17529	5449
Maldon	18587	20357	21713	3126	1356
Total	162534	183263	195466	32932	12203

Source: ARUP 2002, Bone Wells 2002, NOMIS, ONS, author's calculations

The BUA forecast does not take into account opportunities and threats that might well affect employment growth over the fifteen years. These are considered below. The impact of these factors and a policy of encouraging employment growth are taken into account in the Enhanced Growth (EG) forecast provided in the conclusion to this Summary.

[4] ARUP for Essex County Council and Southend, November 2002. This gives employment forecasts to from 2001 to 2015 for all District Councils in Essex.

[5] Bone Wells Ltd. for the East of England region, October 2002. This gives employment forecasts to from 2001 to 2021 for all sub-regions as a whole.

2.8. Opportunities and Threats

The BUA forecast does not take into account opportunities and threats that might well affect employment growth over the fifteen years. These are considered below.

2.8.1. High growth sectors

Past trends and future projections suggest that the following sectors will grow relative to the rest of the local economy:

- Construction
- Education
- Financial Services
- High tech services
- Other Business Services
- Post and telecommunications
- Retail
- Transport
- Health and Social Work

The way in which enhanced growth in these sectors is used as a basis for an enhanced growth employment and employment land forecast is described in the Conclusion below.

2.8.2. Economic drivers and infrastructure developments

Interviews with key leaders and property agents rated the importance of a number of factors in influencing the future of the Mid Essex economy. The Olympics and the expansion of Stansted airport were seen as major influences while Thames Gateway, Haven Gateway and Crossrail were not. Accordingly, detail studies were undertaken of the two major factors.

Stansted is considered to have an impact on Mid Essex in three ways:

- Excellent access to Europe will make surrounding commercial centres attractive locations for UK headquarters of Europe focused businesses. Within Mid Essex, this will affect Chelmsford and Braintree in particular.
- An important distribution corridor between Stansted and Haven Gateway will attract businesses making extensive use of air and sea freight.

- There may be some increase in demand for modestly priced overnight accommodation reflecting the dominance of low cost airlines using Stansted.

The Olympics are not considered likely to have a profound effect on the Mid-Essex economy. Any development that is stimulated in Mid Essex will have to be warranted by subsequent uses. There is likely to increased demand in the Construction sector in the years up to 2012.

Although Haven Gateway was not considered a major economic driver for Mid Essex, it is likely to further increase pressure on the construction sector, certainly up to 2016.

2.8.3. Environment and sustainability

Environmental constraints suggest policies of encouraging residents to work near to where they live and encouraging businesses to source supplies and market products locally.

2.8.4. Labour and skills

The tendencies for young workers to move out of the area and for those with higher skills to commute to London contribute to a tight labour market. There is a need to provide more highly paid and knowledge intensive employment to reduce these tendencies.

2.8.5. Inward investment and employment land

The rapid growth in employment in recent years has resulted in labour and employment land shortages which threaten to discourage further inward investment.

2.8.6. Housing and infrastructure

If it proves difficult to generate jobs which appeal to commuters, housing provision will have to expand to keep pace with employment growth.

There is increasing evidence of traffic congestion. Enhanced employment growth will only be achieved if infrastructure and public transport are improved in parallel.

2.8.7. Social and cultural issues

It is important that Mid Essex provides the social and cultural capital that will encourage young well qualifed people to stay in the area, that will engender the atmosphere conducive to thriving enterprise, especially in knowledge intensive, new technology and creative sectors and will provide the setting that encourages well paid commuters to stay in the area to work

2.9 Conclusions

Exploiting opportunities and avoiding threats should lead to enhanced employment growth. Following the approach taken by other consultants, we have modified the BUA forecast to arrive at an enhanced growth forecast. This EG forecast reflects the following factors:

- Faster growth in key sectors
- Even greater expansion in Construction up to 2012
- **Braintree** and **Chelmsford** employment growing faster than the rest of Mid Essex due to Stansted expansion.

The EG forecast is as follows:

Table 2.9.1 Enhanced Growth forecast

Employment	2001	2005	2021	2021-2001	2021-2005
Braintree	45029	49981	59904	14876	9923
Brentwood	29157	31084	33299	4142	2215
Chelmsford	69761	81841	93643	23882	11802
Maldon	18587	20357	22109	3523	1752
Total	162534	183263	208956	46422	25693

This represents a considerable increase in employment in 2021 than anticipated for Mid Essex in the regional Enhanced Growth employment projections. They suggests some 17,000 additional jobs for Chelmsford, Maldon and Brentwood in 2021 compared with 2001. We project some 32,000 additional jobs for these districts. However, some 16,000 of these were created between 2001 and 2005. Thus there is a closer match between the forecasts in terms of additional jobs created between 2005 and 2021.

Providing an adequate labour supply will necessitate the following:

- Increasing the employment rates of the existing population (especially in relation to economic activity rates);
- Reducing commuting out of the sub-region;
- Increasing commuting into the sub-region; and,
- Increasing the working age population through in-migration (and the house-building that follows in the wake of such a policy).

A range of additional employment land projections have been estimated, depending on the intensity of land use. The central estimates under the EG forecast suggest that only **Brentwood** will encounter difficulties in providing adequate land. However, if land use is not intensive and the employment densities resemble typical greenfield rather than urban development patterns, then **Braintree** and **Chelmsford** will need to find more than three times more employment land than envisaged in the County Structure Plan.

3. The state of the economy of Mid Essex

3.1. Introduction

To provide answers in response to the brief, a number of approaches were taken to collecting information about the local economies of the four Mid Essex Councils. Initially a review of relevant previous consultants reports was undertaken, including those that underpinned the Regional Economic Strategy and Regional Spatial Strategy. Standard sources of local economic data were used to build a profile of the local economy. The Business Data Linking Project (BDL) facility provided by the Office for National Statistics was used to examine the performance and characteristics of Mid-Essex businesses and to compare these with businesses in other areas and the East of England and the UK as a whole. A sample of Mid Essex businesses were surveyed to investigate the extent to which the local economy is self-contained as opposed to being part of a wider economy dependent on London or the economy of the East of England. Interviews were conducted with key private and public sector leaders to gauge their perspective on the strength and weaknesses of the local economy. Finally, given the focus of the project on employment land, local property agents were interviewed to determine the availability of suitable land or premises for businesses considering moving into Mid Essex and local businesses seeking premises for start-up or expansion.

3.2. Productivity

The EEDA at one time adopted a target for 2021 of moving into the top 20 EU regions in terms of GVA per resident (residence-based productivity). This aspiration underlines the importance of considering the productivity of Mid-Essex. Unfortunately, data on productivity is not available at district level and that available at county and regional level is notoriously unreliable.[6] As a result, we have undertaken an analysis of productivity in Mid Essex using the Business Data Linking Project (BDL) provided by the Office for National Statistics (ONS).

The BDL brings together a range of firm level variables for nearly all large firms and a sample of small businesses in the UK. These are identified by postcode and this enables precise information about businesses in an area to be extracted and analysed. The BDL has been used to examine the performance and characteristics of Mid-Essex businesses and compare these with businesses in the East of England and the UK as a whole.
Other geographical comparisons are also made, such as with firms In the London Arc, Cambridge sub-region, Haven Gateway, Stansted/M11 corridor, Norwich sub-region, Bedford and Luton Growth areas and the Thames Gateway.

The use of econometric analysis allows us to identify the differences in business performance attributable to factors such as (i) capital stock per worker, (ii) the size and quality of the labour force, (iii) industrial differences, (iv) spatial factors, such as distance from major markets and (v) other factors including the character of business units. A full account of this methodology and our findings are given in Appendix 2.

Before discussing the results of this work, the implications of the regional productivity target are considered.

3.2.1. Mid Essex and the regional productivity target.

The East of England region was ranked 28th amongst the regions of the EU in terms of productivity in 2002 on the basis of Eurostat data. To climb into the top

[6] See Boddy et al, The Productivity Challenge, SWRDA, 2005

20 regions, the East of England needed to overtake the South East, which was ranked 22nd. The only UK region in the EU top 20 was London, ranked 5th. Although this productivity target has been dropped, improving productivity remains a central objective of all UK regions.

There are four basic ways of improving residence-based productivity in an area[7]. They are:

- Increase the productivity of those currently employed or self-employed by enhancing their skills.
- Increase firm productivity by increasing the proportion of high productivity firms in the area through investment in new technology in existing firms, through attracting inward investment by high productivity firms and by investing in infrastructure.
- Increase the proportion of the population economically active and increase employment to match.
- Decrease the proportion of employees commuting out of the area to work.

Given the constrained long term growth rate of the UK (see 4.1.1 below), it is difficult to see how the movement up the EU productivity rank by a UK region can be achieved without the movement down by one or more other UK regions, unless the UK as a whole can improve productivity relative to the EU. However, the latter has not proved possible to date, in spite of a number of policy initiatives in recent years. For Mid Essex, this also suggests a target of moving up the productivity league table. Owing to the limited data available, it is only possible to explore relative productivities at the NUTS 3 area level. The productivity league table of these areas in 2002 is given in Table 3.2.1 below. Essex CC is highlighted in pink and is in position 72 out of the 133 NUTS 3 areas of the UK. Other areas in the region are highlighted in orange while those in the South East region are highlighted in yellow. In order for the East of England to move ahead of the South East, Essex CC probably needs to climb up to around position 40, ahead of Brighton and Hove and Hampshire, a challenging prospect.

[7] For a detailed discussion of the determinants of productivity, see Boddy et al (2005)

Table 3.2.1 NUTS 3 areas ranked by productivity, 2002

	NUTS 3 Area	GVA/head 2002						
1	Inner London - West	66728	51	Plymouth	13806	101	East Riding of Yorkshire	10757
2	Berkshire	25178	52	North and North East Li	13801	102	Greater Manchester North	10753
3	Swindon	24113	53	Liverpool	13776	103	Orkney Islands	10716
4	Edinburgh, City of	24016	54	Inverclyde, E Renfrewsh	13624	104	Bridgend and Neath Port T	10454
5	Milton Keynes	22139	55	Suffolk	13328	105	Gwynedd	10431
6	Belfast	22123	56	Bedfordshire CC	13257	106	East Merseyside	10415
7	Bristol City of	21513	57	Leicestershire CC and F	13200	107	Durham CC	10400
8	Surrey	20689	58	Shetland Islands	13197	108	Outer Belfast	10367
9	Glasgow City	20575	59	Outer London - South	13151	109	Scottish Borders	10345
10	Aberdeen City, etc	20234	60	Falkirk	13106	110	South Teesside	10344
11	Nottingham	20113	61	Walsall and Wolverham	13025	111	Medway	10326
12	Inner London - East	19770	62	Lancashire CC	12992	112	West Cumbria	10319
13	Hertfordshire	19443	63	North Yorkshire CC	12917	113	Torbay	10293
14	Derby	19195	64	Calderdale, Kirklees and	12853	114	Outer London - E&NE	10253
15	Oxfordshire	18928	65	Bradford	12832	115	Barnsley, Doncaster and R	10239
16	Outer London -W&NW	18586	66	Perth & Kinross and Stir	12801	116	Sefton	10152
17	Leeds	18305	67	Dudley and Sandwell	12754	117	E&N Ayrshire etc	10043
18	Buckinghamshire CC	18148	68	Kent CC	12753	118	Conwy and Denbighshire	10001
19	York	17882	69	Angus and Dundee City	12737	119	Northumberland	9986
20	Greater Manchester South	17665	70	Southend-on-Sea	12709	120	Eilean Siar (Western Isles)	9961
21	Cardiff and Vale of Glamorgan	17484	71	Swansea	12610	121	Lochaber, Skye etc	9948
22	Portsmouth	17440	72	Essex CC	12539	122	Central Valleys	9911
23	Solihull	17291	73	Sunderland	12530	123	North of Northern Ireland	9801
24	Cheshire CC	17212	74	Somerset	12528	124	West and South of Norther	9549
25	Halton and Warrington	17190	75	South Lanarkshire	12500	125	Cornwall and Isles of Scilly	9525
26	Peterborough	16941	76	Worcestershire	12424	126	Isle of Wight	9522
27	Leicester	16921	77	Thurrock	12377	127	East Lothian and Midlothia	9518
28	Southampton	16727	78	Stoke-on-Trent	12180	128	E&W Dunbartonshire,Hele	9246
29	Birmingham	16466	79	Blackburn with Darwen	12151	129	Wirral	9232
30	N&NE Somerset, S Gloucestershi	16348	80	East Cumbria	12140	130	Gwent Valleys	9122
31	West Sussex	16265	81	South and West Derbys	12076	131	South West Wales	9067
32	Northamptonshire	16188	82	Hartlepool and Stockton	12019	132	Caithness & Sutherland et	9004
33	Cambridgeshire CC	16186	83	Devon CC	11883	133	Isle of Anglesey	8133
34	Gloucestershire	15940	84	Herefordshire County of	11875			
35	Warwickshire	15886	85	Norfolk	11856			
36	Coventry	15606	86	Inverness etc	11819			
37	Luton	15464	87	East of Northern Ireland	11582			
38	West Lothian	15301	88	Staffordshire CC	11513			
39	Darlington	15176	89	Dumfries and Galloway	11476			
40	Bournemouth and Poole	15114	90	North Nottinghamshire	11436			
41	Monmouthshire and Newport	14890	91	Shropshire CC	11343			
42	Brighton and Hove	14879	92	Lincolnshire	11289			
43	Hampshire CC	14808	93	Dorset CC	11262			
44	Flintshire and Wrexham	14654	94	Powys	11254			
45	Telford and Wrekin	14340	95	North Lanarkshire	11088			
46	South Ayrshire	14277	96	East Derbyshire	10958			
47	Tyneside	14002	97	Blackpool	10943			
48	Kingston upon Hull, City of	13932	98	Clackmannanshire and	10884			
49	Wiltshire CC	13861	99	South Nottinghamshire	10793			
50	Sheffield	13835	100	East Sussex CC	10758			

Source: Eurostat

3.2.2. Overall productivity in Mid Essex from the BDL

Tables 3.2.2 and 3.2.3 present the ranks of the Mid Essex (Braintree, Brentwood, Chelmsford and Maldon) in terms of various criteria. This is for illustrative purposes, as in terms of statistical significance none of the areas are significantly different (more or less productive, for example) than each other. In the first three columns, the Council areas are ranked according to productivity, the capital/output ratio and the size of the workforce; these results are generated from the authors' estimates using the 2002 ARD data set. The remaining six columns employ Census data for 2001.

Brentwood appears to have the most productive firms, the highest capital/labour ratio and the largest firms measured by the average size of all firms' workforce. Brentwood has the highest educated workforce with the greatest proportion of the resident population having been educated up to the NVQ 4/5 level. It also has the highest proportion of the workforce which are retirees. To increase their productivity further, firms in Brentwood could be encouraged to increase their capitalisation. The local government could focus on encouraging more workers to increase their personal level of human capital.

Braintree appears to have a relatively low productivity level, the lowest capital/labour ratio and the least number of retirees. Braintree also is the *Mid Essex area* that has the highest proportion or workers with no qualifications and also the highest unemployment rate. Based on this simple analysis, local government should focus on encouraging the local residents to increase their skills and education and emphasise the benefits of being in work, perhaps by promoting the 'any job can be a stepping stone to a better job' attitude.

Chelmsford appears to have firms which have the smallest average workforce and the least amount of self-employed resident workers. It does have the smallest percentage of workers with no qualifications, although this appears to reflect an abundance of medium-skilled workers as Chelmsford does not possess the greatest proportion of high-skilled workers; this honour goes to Brentwood. Increasingly the level of educational attainment of the local workforce may well increase firm productivity in Chelmsford.

Maldon appears to have the lowest productivity rate (recalling that this is not statistically different from the other three Council areas). Maldon also has the highest proportion of part-time workers and the highest proportion of self-employed workers. Policy recommendations based on this data would include encouraging residents to invest time to increase their education and skills. Increasing the proportion of employees that work full time may well increase efficiency and therefore productivity; however a more in-depth analysis may well illustrate that part-time work is a characteristic associated with the industrial structure of the area. A more in-depth analysis of productivity, that takes into consideration a wide range of factors, is therefore necessary. This is presented in the next section on econometric results.

Table 3.2.2: Descriptive statistics

	Productivity of firms[1]	Capital / Labour ratio within firms[1]	Size of firm' workforce[1]	P/T workers / area's workforce[2]	Self-employment / area's workforce[2]
1 (highest)	Brentwood	Brentwood	Brentwood	Maldon	Maldon
2	Chelmsford	Maldon	Maldon	Braintree	Braintree
3	Braintree	Chelmsford	Braintree	Chelmsford	Brentwood
4 (lowest)	Maldon	Braintree	Chelmsford	Brentwood	Chelmsford

Notes: [1] implies sourced from ONS firm level data source. [2] implies sourced from Census data. None of areas are significantly statistically different from each other

Table 3.2.3: Descriptive statistics

	Unemployment / workforce[2]	Retired / workforce[2]	No qualifications / workforce[2]	High quals / workforce[2]
1 (highest)	Braintree	Brentwood	Braintree	Brentwood
2	Maldon	Maldon	Maldon	Chelmsford
3	Chelmsford	Chelmsford	Brentwood	Maldon
4 (lowest)	Brentwood	Braintree	Chelmsford	Braintree

Notes: [1] implies sourced from ONS firm level data source. [2] implies sourced from Census data. None of areas are significantly statistically different from each other

3.2.3. Econometric results: how does Mid Essex productivity compare with other areas

Before we progress to report the econometric results of our analysis, it is important to emphasize that the effects reported in this report are approximations. The econometric method of analysis estimates relationships within a confidence interval. When we report such an impact as being significant, we mean we are confident that there is such an impact (e.g. productivity

increases with capital) but we are less confident on the exact magnitude of the impact. In part this is because it varies across the business cycle and we do not have sufficient data to be more accurate.

Once the size of the each firm's workforce and the amount of each firm's capital stock has been taken into account **we find that firms in *Mid Essex* are not statistically different in terms of productivity than firms across the rest of the UK**. In other words, the productivity of firms is no higher or lower than other firms across the UK once we take into account the size of the workforce employed in the firm and each firm's amount of capital stock. The coefficient for *Mid Essex* is positive but the magnitude of this is not statistically different from zero and could have occurred by chance.

We re-estimate the model for only those firms located in the South East and East regions of the UK; we include the size of the workforce and the amount of capital for each firm as before. Once again we identify that **the productivity of firms in Mid Essex is no different to that for other firms across this smaller, geographical area.**

We re-estimate the model in the same way as is detailed above, but this time only focusing on the *Comparison area*. The *Comparison area* comprises Mid Essex (Braintree, Brentwood, Chelmsford and Maldon), the London Arc, Cambridge Sub-region, Haven Gateway, Stansted, M11 Corridor, Norwich, Bedford and Thames. **Again we find that firms in *Mid Essex* are no different in terms of productivity from firms in the rest of the *Comparison area*.**

Incidentally, we do find some evidence to suggest that firms in the London Arc are more productive and firms in Norwich are less productive. More research could identify why this is the case.

3.2.4. Econometric results: significant determinants of productivity

In the above results there is evidence to suggest that increasing the size of the workforce and the amount of capital increases firm productivity throughout our estimations. This indicates stability and therefore confidence in our results. There is a non-linear effect of the size of the workforce on firm productivity; results suggest that the effect of increasing the size of the workforce on productivity is greater for smaller firms than for larger firms. The opposite results apply for capital: increasing the amount of capital within each firm increases the productivity of the firm at an increasing rate.

Secondly, there is an indication that improving the educational background of the local labour force will increase the productivity of firms. This is the case across the whole of the UK and applies to medium (NVQ 1-3) and high (NVQ 4/5) skills.

Third, and drawing from the results for the whole of the UK, the results suggest that if we increase the number of employees by 1% then output will rise by approximately 0.67% - and because this is less than 1% it will reduce ***labour*** productivity. Similarly increasing capital by 1% increases GVAFC (and indeed labour productivity itself) by almost 0.19%.

Fourth, peripherality is a factor that reduces productivity; this result applies across the UK, across the South East and East regions and for the Comparison area but not for firms within Mid Essex. This may well be capturing the agglomeration economies that exist within London and which reduce monotonically with distance from the core of London. Alternatively it could be indicating that agglomeration economies are less important for firms in Mid Essex. However, this interpretation is speculation. Distance to the core of markets does not appear to be an important contributory factor in determining the productivity level of firms in Mid Essex and therefore there is no evidence here to suggest that a policy to reduce travel time from other locations should be a priority.

3.2.5. Econometric results: The most productive sectors

First, when the regressions are estimated for the whole of the UK, it appears that firms in Mid Essex that operate in the construction industry are significantly more productive that the average UK construction firm.

Second, the same finding is identified for education: it appears that firms in the education industry in Mid Essex are significantly more productive that the average UK education firm.

Third, when these results are estimated for the South East and East region, the same results are identified for education: it appears that firms in the education industry in Mid Essex are significantly more productive that the average South East and East region education establishment. (The small number of observations for educational firms in the *Comparison area* precludes a comparative analysis).

Fourth, when the *Comparison area* is analysed in isolation, it appears that catering significantly reduces the average productivity level for Mid Essex.

Fifth, when we examine the results for the whole of the UK they suggest that if we increase the number of employees by 1% then output will rise by most in the finance industries, and the least in catering.

Sixth, the construction and education sectors appear to be the most under capitalised, and increasing the amount of capital in these industries would increase productivity by the greatest amount

3.2.6. Some policy suggestions for increasing productivity

Firstly, ownership appears to be important, and this is in accordance with the majority of the economics literature. The results suggest that US multinationals

are the most productive, followed by the non-UK/US multinationals (the control variable), then the UK multinational and finally non-multinationals. These results stand across the whole of the UK. With respect to Mid Essex, we find that the result for the US multinational is statistically significant. The councils of Mid Essex should attempt to attract US multinationals if they wish to increase the average productivity levels of firms in their area.

Secondly, there is evidence to suggest that firms with a high proportion of full-time workers are much more productive than others. This is consistent across the entire set of results. This does not mean part-time working is inefficient, simply that our data on employment records the number of workers both full-time and part-time workers and that firms with higher proportions of full-time to part-time workers have the benefit of more hours of work per employee. It might also be capturing other characteristics that are unique to part-time workers (such as child-care constraints) or imposed characteristics of working in certain industries (e.g. shift work or bar opening hours).

Thirdly, firms in the catering sector appear to be relatively unproductive. Firms that are relatively more productive are those that operate in the construction, finance and real estate sectors. If a council wishes to increase their average productivity rate, then they could focus on encouraging firms that operate in the finance, construction or real estate sectors to locate to their area.

3.2.7. Mid Essex productivity

The striking conclusion from this part of our work is that Mid Essex is an area where firms can achieve levels of productivity just as high as in other areas of the UK, including high productivity areas as revealed from the NUTS 3 data above such as in the South East. Although the econometric analysis suggests ways in which the productivity of firms in Mid Essex might be further increased, the overall conclusion must be that other factors need to be addressed to help the region improve residence based productivity such as increasing activity rates and employment and reducing the proportion of the workforce commuting out.

However, there is another important conclusion related to this. The healthy productivity of Mid Essex firms means that the area has a healthy level of competitiveness, which in turn means that the area is well placed to continue to attract inward investment, nurture expanding businesses and thereby increase employment.

3.3. Employment

3.3.1. Structure of employment by sector

A profile of employment in Mid Essex broken down by sector provides an essential baseline for forecasting future employment and employment land requirements. Data on the number of workplace jobs is available through NOMIS by sector. It was decided to use 30 sectors as the basis for analysis as this is detailed enough to reveal useful information about sector strengths in the local economy but not so detailed as to yield an unmanageable number of sectors, some of which would contain so few firms that data confidentiality issues might arise.

A number of academic sources and official reports[8] allude to the importance of certain knowledge-intensive sectors in driving productivity and growth. Accordingly the sector breakdown includes two groups of knowledge intensive sectors: high-tech manufacturing and high-tech services. These are made up as follows:

Table 3.3.1: Knowledge intensive sectors

[8] See for example European Commission Enterprise Directorate-General, 2003 European Innovation Scoreboard:Technical Paper No 1, Indicators and Definitions

High-tech Manufacture

29 : Manufacture of machinery and equipment not elsewhere classified
30 : Manufacture of office machinery and computers
31 : Manufacture of electrical machinery and apparatus not elsewhere classified
32 : Manufacture of radio, television and communication equipment and apparatus
33 : Manufacture of medical, precision and optical instruments, watches and clocks

High-tech services

72 : Computer and related activites
73 : Research and development

The employment structure within the Mid Essex council areas is given below with the knowledge intensive sectors highlighted:

Table 3.3.2 Employment by sector 2003

% of total employment by sector 2003	Braintree	Brentwood	Chelmsford	Maldon
Agriculture support/fishing and forestry	0.46	0.14	0.40	0.98
Mining and extraction	0.08	0.00	0.23	0.10
Food & beverage manufacturing	2.36	0.44	1.62	0.68
Manufacture of clothing and textiles	0.23	0.07	0.04	0.16
Manufacture of natural products	1.42	0.36	0.64	0.89
Publishing, printing and media	1.16	1.71	0.70	3.48
Manufacture of chemicals & non metallic materials	2.57	1.86	0.60	1.89
Manufacture of metals	4.65	0.82	0.78	2.70
High tech manufacturing	4.57	0.91	3.03	5.52
Transport manufacture	0.08	3.00	0.16	0.91
Manufacture of furniture etc.	1.00	0.19	0.23	1.71
Recycling	0.01	0.01	0.02	0.02
Utilities	0.08	0.21	0.62	1.99
Construction	7.31	7.49	6.78	10.25
Motor sales and services	2.64	2.48	2.36	2.87
Wholesale trade	4.78	4.05	2.80	4.13
Retail trade	12.39	9.67	12.53	11.85
Hotels and restaurants	5.26	8.09	6.52	7.52
Transport	3.30	2.13	1.67	3.09
Post and telecommunications	0.77	3.56	3.00	0.72
Financial services	2.17	7.79	7.05	1.57
Real estate activities	1.15	1.83	1.44	2.21
Renting of machinery and equipment	0.49	1.69	0.56	0.67
High tech services	1.37	2.84	2.96	1.80
Other business activities	12.95	14.21	10.42	9.95
Public sector	4.49	1.80	8.51	2.72
Education	7.63	7.95	10.45	6.35
Health and social work	9.98	9.34	10.14	8.17
Waste services	0.07	0.82	0.32	0.12
Tourism	3.15	3.07	2.26	3.77
Other service activities	1.46	1.48	1.18	1.23
Total	100.00	100.00	100.00	100.00

Source: NOMIS

Maldon and **Braintree** appear to be relatively strong in high tech manufacturing while **Chelmsford** and **Brentwood** are relatively strong in high tech services.

This suggests that Maldon and Braintree are attractive locations for knowledge intensive manufacturing and may well be resilient to the ongoing steady decline in the manufacturing sector in the UK as a whole. Similarly, Chelmsford and Brentwood are attractive for knowledge intensive services and may well continue to do so.

To make sense of this picture it is helpful to look at each of the Mid Essex Council areas separately. Tables A1, A2, A3 and A4 in the appendix rank the sectors according to size. These show an overall similarity in structure but with some telling differences. The importance of the high-tech sectors in each of the Council areas has been referred to above.

The top five sectors in each area are clear from Tables A1, A2, A3 and A4. The **retail sector** is the largest sector in the economies of **Chelmsford** and **Maldon**, although it accounts for a similar proportion of employment in Braintree where it is the second largest sector. **Brentwood** is less important as a centre of retail employment compared with Chelmsford but retailing is the second largest sector here as well. **Other business activities** are the largest source of employment in **Braintree** and **Brentwood** and the third largest in **Chelmsford** and **Maldon**. This is a diverse sector including professional firms, corporate headquarter activities, business services such as advertising and consultancy, cleaning services and call centres. **Construction** in **Maldon** and **Education** in **Chelmsford** are the second largest sectors in those economies. The latter is accounted for by the presence of Anglia Ruskin University in the city while in **Maldon**, the presence of roof truss and access equipment supply businesses covering a national market is part of the explanation. In addition, it may be that the supply of redundant farm buildings on the Dengie has attracted construction businesses. **Construction** is the fifth most important sector in **Braintree**. **Education** is the fourth largest sector in **Braintree** and fifth in **Brentwood**. **Health and social work** represent the third largest sectors in **Braintree** and **Brentwood** and the fourth in **Chelmsford** and **Maldon**. However, the percentage of employment accounted for by this sector in Chelmsford is the highest of Mid Essex. **Hotels and Restaurants** represent the fourth largest sector in **Brentwood** and the fifth largest in **Maldon**. They are important in the other two areas but do not quite

make it into the top five. The **public sector** is the fifth largest employer in **Chelmsford** with both Borough and County Council offices located there. All four economies are relatively diverse with the top five sectors accounting for only around 50% of employment. There is not much to choose between the four economies in this respect although Maldon is slightly more diverse with the top five sectors accounting for less than 48% of employment.

A further indication of dependence and diversity is given by Table 3.3.3 below. The 30 sectors are grouped into just nine major sectors. The dependence on the public sector for employment in all four areas is apparent. Manufacturing is particularly strong in Maldon and Braintree. There appears to be an increase in dependence on financial and business services the closer the area is to London.

Table 3.3.3 Employment by sector 2003: 9sectors

Employment % 2003	Braintree	Brentwood	Chelmsford	Maldon
Agriculture support/fishing and forestry	2.2	0.6	2.1	4.6
Mining and extraction	0.1	0.0	0.2	0.1
Manufacturing	17.7	9.3	7.7	17.3
Utilities	0.1	0.2	0.6	1.9
Construction	7.2	7.5	6.7	9.9
Distribution	24.6	24.2	23.8	25.4
Transport	4.0	5.7	4.6	3.7
Financial & business services	17.8	28.2	22.1	15.6
Government, Health, Education etc.	26.3	24.3	32.3	21.6
Total	100.0	100.0	100.0	100.0

Source: NOMIS

The discussion of the composition of employment by sector above gives some valuable insights into the four local economies. To be able to evaluate whether the profile is typical or unusual, it is necessary to make comparison with the national economy as a whole.

3.3.2. Comparison with Great Britain

The most convenient way to show how the sector profile is different from that of the country as a whole is by calculating Location Quotients (LQ). These are calculated as follows:

$$\text{LQ} = \frac{\text{Proportion of district employment accounted for by sector}}{\text{Proportion of national employment accounted for by sector}}$$

A LQ of 1.0 for a sector shows that the percentage of total employment accounted for by the sector in the local area is the same as for the GB as a whole. A LQ of 0.5 means it is only half the size relative to GB as a whole and a value of 2.0 means it is double the size. Table 3.3.4 shows the LQs for the 30 sectors for each of the Council areas with values over 1.0 highlighted.

Table 3.3.4 Employment by sector: Location Quotients

Location Quotients for 2003	Braintree	Brentwood	Chelmsford	Maldon
Agriculture support/fishing and forestry	1.73	0.54	1.49	3.66
Mining and extraction	0.36	0.00	1.03	0.46
Food & beverage manufacturing	1.38	0.26	0.95	0.40
Manufacture of clothing and textiles	0.41	0.12	0.07	0.27
Manufacture of natural products	2.08	0.53	0.93	1.30
Publishing, printing and media	0.89	1.32	0.54	2.68
Manufacture - chemicals/non metallic	1.18	0.86	0.28	0.87
Manufacture of metals	2.83	0.50	0.47	1.64
High tech manufacturing	1.85	0.37	1.22	2.23
Transport manufacture	0.06	2.25	0.12	0.68
Manufacture of furniture etc.	1.37	0.26	0.32	2.34
Recycling	0.14	0.23	0.33	0.27
Utilities	0.18	0.46	1.37	4.39
Construction	1.64	1.68	1.52	2.30
Motor sales and services	1.24	1.16	1.11	1.35
Wholesale trade	1.11	0.94	0.65	0.96
Retail trade	1.07	0.84	1.08	1.03
Hotels and restaurants	0.77	1.18	0.95	1.10
Transport	0.82	0.53	0.42	0.77
Post and telecommunications	0.38	1.77	1.49	0.36
Financial services	0.51	1.84	1.67	0.37
Real estate activities	0.75	1.20	0.94	1.44
Renting of machinery and equipment	0.87	2.99	0.98	1.19
High tech services	0.60	1.24	1.30	0.79
Other business activities	1.15	1.26	0.92	0.88
Public sector	0.82	0.33	1.55	0.50
Education	0.84	0.88	1.15	0.70
Health and social work	0.87	0.82	0.89	0.71
Waste services	0.18	2.17	0.84	0.32
Tourism	0.88	0.86	0.63	1.06
Other service activities	1.17	1.19	0.95	0.99

Source: NOMIS

This gives a different picture of the strength of sectors to that discussed above. Here those sectors highlighted in yellow are those that employ a greater proportion of the workforce than they do in the nation as a whole. Only **construction** and **motor vehicle sales and services** meet this criteria in all four council areas. Both these activities are characterized by low land use intensity. As land values fall moving out from the London into the London Arc, then it becomes more profitable to establish businesses serving a London market. A number of **manufacturing** sectors are dis-proportionately strong in Braintree and Maldon, including **high-tech manufacturing. High-tech services** are strong in Brentwood and Chelmsford.

Once again, it is helpful to look at the four Council areas separately. Tables A5, A6, A7 and A8 in the appendix rank the sectors according to LQ value. It can be argued that those sectors with high LQs are those that have been particularly successful in the area and represent an important aspect of the economic strength of the area. On the other hand, it may just be chance that a relatively large employer has located in the area and distorted the sector employment profile. With this in mind, the following strongly represented sectors emerge, in addition to those mentioned above. The sectors with the high (over 1.5) LQs in **Braintree** were (in descending order) **manufacture of metals, manufacture of natural products, high tech manufacturing, agriculture support/fishing and forestry** and **construction**. Of these, only construction appeared in the five largest sectors. Of the other four large sectors, retail trade and other business activities have LQs marginally greater than one while health and social work and education have values marginally less than one. This signifies that there is nothing unusual about the dominance of these four sectors in accounting for employment in the district. It is only the size of the construction sector that is unusual. The other sectors with high LQs point to the success of Braintree as a location for manufacturing and the predominantly rural character of the district.

Brentwood has high LQs for **renting of machinery and equipment, transport manufacture, waste services, financial services, post and**

telecommunications and **construction.** None of these were one of the largest five sectors although financial services and construction were ranked sixth and seventh in size respectively, suggesting that Brentwood is unusual in having these sectors so strongly represented. The LQs of the largest five are all near one and thus there is nothing unusual about the strength of these sectors. The relatively large proportion of employment accounted for by transport manufacture is due to the presence of the Ford R&D operation in the district. Waste services and construction can be explained by the need for these activities to be close to the London market but on lower cost sites than would be available closer to the centre of the city. It is encouraging that **high tech services** are relatively strong with a LQ of 1.24.

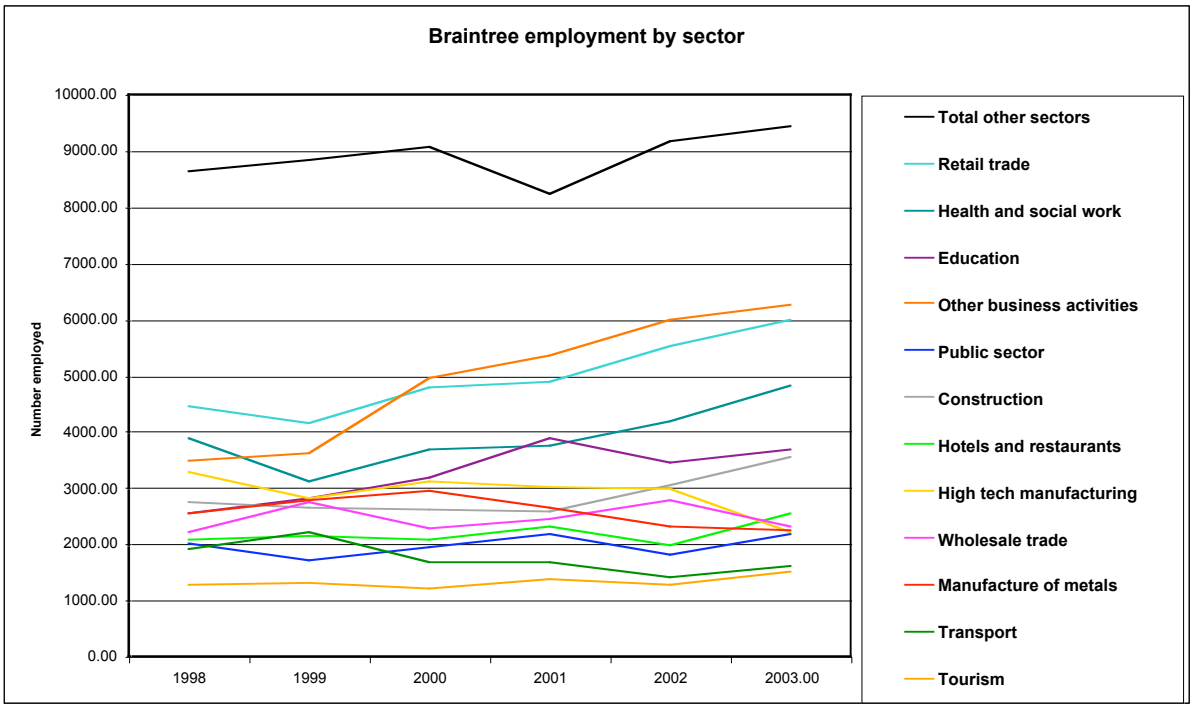
Chelmsford has high LQs in **post and telecommunications, agriculture support/fishing and forestry, construction, public sector** and **financial services.** Only the public sector also appears among the five largest sectors although, as in Brentwood, financial services and construction are sixth and seventh largest. The LQs of the four remaining largest sectors are all around one so there is nothing unusual about the strength of these sectors.

Maldon has high LQs in **utilities, agriculture support/fishing and forestry, publishing, printing and media, manufacture of furniture etc., construction, high tech manufacturing** and **manufacturing of metals.** Of these, only construction is one of the top five sectors although high-tech manufacturing is the seventh largest sector. Reasons for the strength of construction have already been discussed The manufacture of furniture, high-tech manufacturing and the manufacturing of metals may be associated with marine orientated markets within the district.

3.3.3. Recent employment growth

The charts below show the growth in employment in the largest twelve sectors between 1998 and 2003 for each area. The remaining sectors ("Total other sectors") are grouped together.

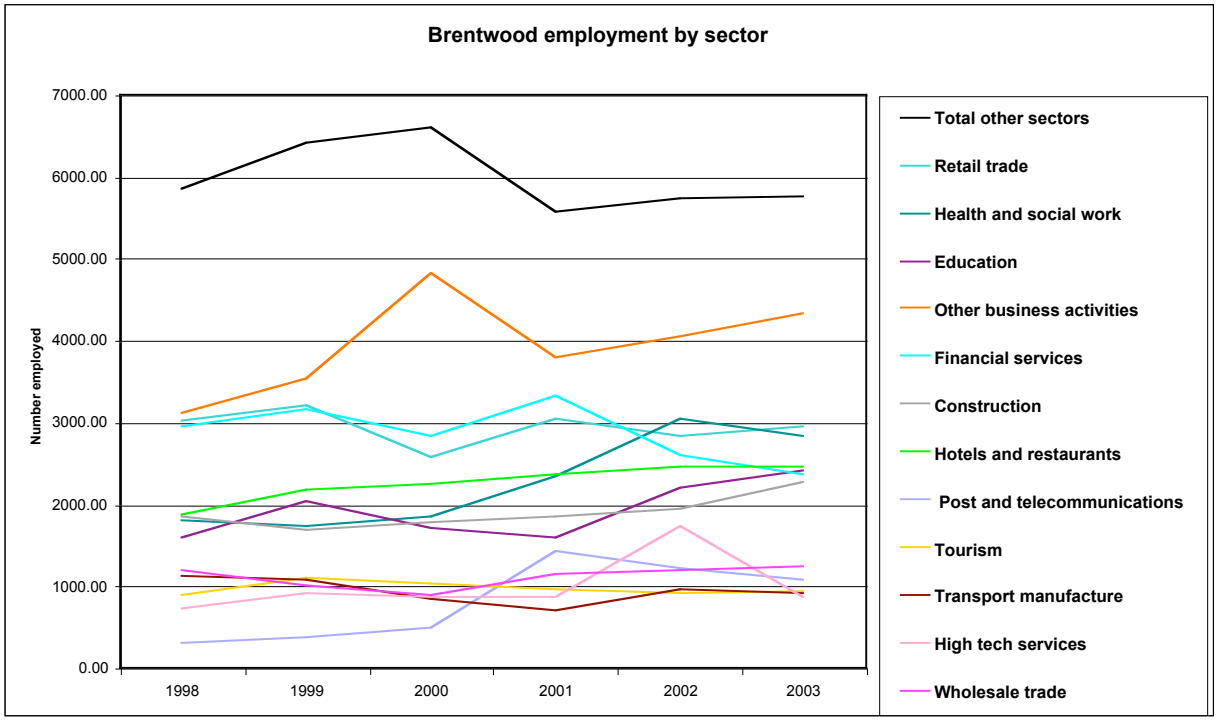
Chart 3.3.1 Numbers employed, Braintree: largest 12 sectors, 1998 to 2003



Source: NOMIS

The greatest contribution to **Braintree's** growth over the period has come from Other Business Activities. This sector moved up from third to first position in terms of size. Other sectors contributing to employment growth were, in order of importance, Retail, Health and Social Work, Education and Construction. There was some modest growth in the Hotels and restaurants and the public sector. There was also modest growth in the small sectors ("total other sectors"). Employment in High Tech Manufacturing declined significantly and moved down from fourth to seventh position in terms of size.

Chart 3.3.2 Numbers employed, Brentwood: largest 12 sectors, 1998 to 2003

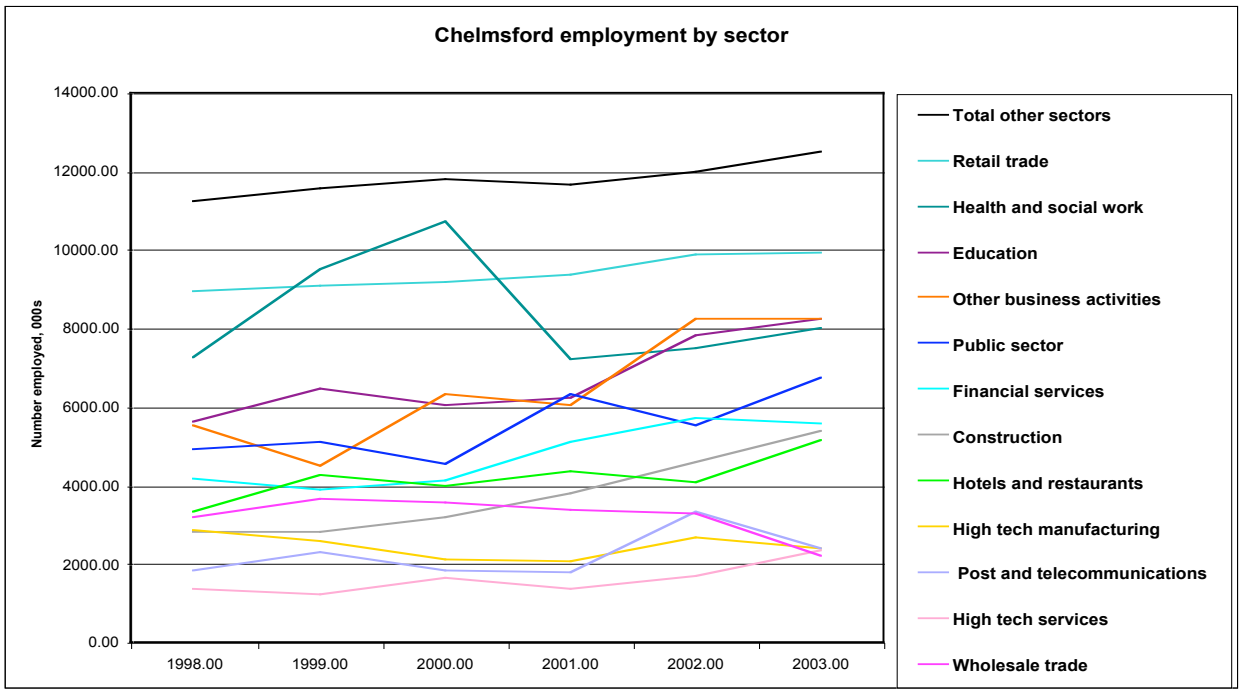


Source: NOMIS

Brentwood employment benefited most from expansion of "Other business activities" followed by Health and Social Work, Education, Hotels and Restaurants, Construction and Post and Telecommunications. The other major sectors showed little growth over the period. The same applied to the small sectors grouped together under "Total other sectors". Employment in Financial Services declined significantly over the period.

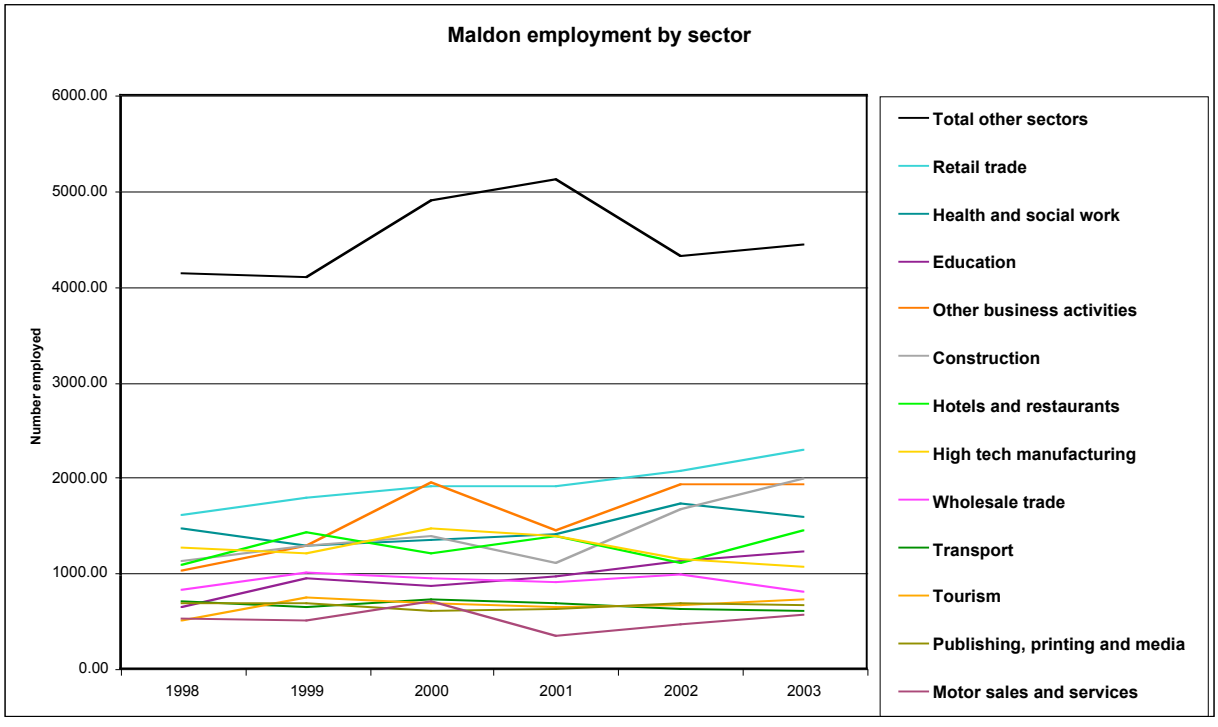
As can be seen in Chart 3.3.3 below, the major sectors in **Chelmsford** responsible for employment growth were, Retailing, Other Business Activities, Education, the Public Sector, Financial Services, Construction, Hotels and Restaurants and High Tech Services. Post and telecommunications made a small contribution. The Wholesale Trade and High Tech Manufacturing both showed decreasing employment.

Chart 3.3.3 Numbers employed, Chelmsford: largest 12 sectors, 1998 to 2003



Source: NOMIS

Chart 3.3.4 Numbers employed, Maldon: largest 12 sectors, 1998 to 2003



Source: NOMIS

Employment in **Maldon** grew over the period thanks to expansion in Retail Trade, Other Business Activities, Construction, Hotels and Restaurants and Education. There was some decline in High Tech Manufacturing employment.

A comparison of these trends with Great Britain will indicate which sectors are showing exceptional growth or decline and which merely reflect changes in line with the economy as a whole. **Table 3.3.5** below compares growth rates across the four areas in each sector with GB as a whole.

Table 3.3.5 Growth in employment by sector compared with G.B.

Sector employment growth 1998 - 2003 %	Braintree	Brentwood	Chelmsford	Maldon	GB
Agriculture support/fishing and forestry	2.08	5.88	1.88	0.43	0.10
Mining and extraction	4.38	-20.00	6.76	-7.50	-4.38
Food & beverage manufacturing	-2.82	6.47	5.37	-7.18	-1.94
Manufacture of clothing and textiles	-4.55	-12.63	-1.21	-13.18	-10.30
Manufacture of natural products	4.72	-3.80	-3.20	1.78	-4.21
Publishing, printing and media	-7.07	6.67	-4.93	-0.24	-1.46
Manufacture of chemicals & non metallics	5.67	37.76	-3.27	-0.94	-3.26
Manufacture of metals	-2.43	-3.58	-2.30	9.13	-4.21
High tech manufacturing	-6.52	-5.95	-3.17	-3.26	-5.58
Transport manufacture	-17.43	-3.84	-7.40	-7.04	-2.70
Manufacture of furniture etc.	-6.80	-6.27	1.28	-1.77	-1.68
Recycling	-	-	-6.36	-11.43	11.81
Utilities	0.53	-17.14	-4.09	0.99	-2.51
Construction	5.86	4.72	17.91	15.24	0.57
Motor sales and services	7.06	6.74	0.86	0.99	-0.75
Wholesale trade	0.94	0.45	-6.01	-0.51	-0.90
Retail trade	6.91	-0.48	2.18	8.39	2.47
Hotels and restaurants	4.47	6.31	10.95	6.83	2.38
Transport	-3.17	-7.33	5.69	-3.26	1.86
Post and telecommunications	1.76	49.14	6.00	-2.31	1.74
Financial services	12.76	-3.99	6.85	-4.19	0.93
Real estate activities	10.81	8.64	13.77	37.18	5.70
Renting of machinery and equipment	16.03	66.95	12.28	13.51	0.27
High tech services	7.87	3.51	14.18	16.34	4.81
Other business activities	15.94	7.74	9.89	17.46	2.48
Public sector	1.66	-8.71	7.32	2.78	0.48
Education	8.92	10.19	9.49	17.98	4.90
Health and social work	4.82	11.59	2.08	1.62	3.23
Waste services	-13.12	-3.55	10.12	-14.39	-1.50
Tourism	4.19	0.87	5.09	9.49	3.94
Other service activities	9.09	6.39	2.78	0.52	3.34

Negative growth rates are highlighted in **Table 3.3.5.** It is immediately apparent that reductions in employment were most common in the manufacturing sectors towards the upper half of the table. To see the exceptional changes that do not merely reflect the national picture, **Table 3.3.6** below shows the growth rates relative to GB as a whole.

Table 3.3.6 Growth in employment by sector relative to G.B.

Sector employment growth relative to GB 1998 - 2003 %	Braintree	Brentwood	Chelmsford	Maldon
Agriculture support/fishing and forestry	1.98	5.78	1.77	0.33
Mining and extraction	8.76	-15.62	11.15	-3.12
Food & beverage manufacturing	-0.88	8.41	7.31	-5.25
Manufacture of clothing and textiles	5.75	-2.33	9.09	-2.88
Manufacture of natural products	8.93	0.42	1.01	6.00
Publishing, printing and media	-5.61	8.12	-3.48	1.22
Manufacture of chemicals & non metallics	8.94	41.02	-0.01	2.32
Manufacture of metals	1.79	0.64	1.91	13.34
High tech manufacturing	-0.94	-0.38	2.41	2.32
Transport manufacture	-14.73	-1.14	-4.70	-4.33
Manufacture of furniture etc.	-5.12	-4.59	2.96	-0.09
Recycling	-	-	-18.17	-23.23
Utilities	3.04	-14.63	-1.58	3.50
Construction	5.29	4.15	17.34	14.67
Motor sales and services	7.82	7.49	1.61	1.74
Wholesale trade	1.84	1.35	-5.11	0.39
Retail trade	4.43	-2.95	-0.30	5.91
Hotels and restaurants	2.09	3.93	8.57	4.45
Transport	-5.03	-9.19	3.83	-5.12
Post and telecommunications	0.03	47.40	4.27	-4.04
Financial services	11.83	-4.92	5.92	-5.12
Real estate activities	5.11	2.94	8.07	31.48
Renting of machinery and equipment	15.76	66.68	12.01	13.24
High tech services	3.06	-1.30	9.37	11.52
Other business activities	13.46	5.27	7.41	14.98
Public sector	1.17	-9.19	6.84	2.30
Education	4.03	5.30	4.60	13.09
Health and social work	1.60	8.36	-1.15	-1.61
Waste services	-11.62	-2.05	11.62	-12.89
Tourism	0.25	-3.07	1.15	5.55
Other service activities	5.76	3.06	-0.56	-2.82

Source of for Tables 3.3.5 and 3.3.6: NOMIS

Table 3.3.6 allows the sectors that have shown exceptional growth or decline in the four areas to be identified. However, it does not indicate the significance of

these changes to the overall level of employment in each area. For example, at first sight, the decline in employment in Recycling in Chelmsford of over 18% relative to the UK sounds like very bad news until it is realised that it represents a decline from 17 to 15 employees in the entire sector! To identify the significance of changes in sector employment, **Tables A9, A10, A11 and A12** in the appendix show the changes in sector employment for each area ranked by sector size. Also shown in these tables is the extent to which each sector is dominated by large employers. This is significant as it is an indication of the risk of sudden significant decline in employment following the decision of such an employer to relocate. The authors have access to greater detail on the size of individual firms but are prevented from revealing this in the tables under data confidentiality undertakings. However, general comments on risk are made below where very large individual employers are present in a sector.

Braintree has demonstrated remarkable employment growth in Other Business Activities, way above the average for GB. This has clearly contributed more to growth than any other sector, as noted above. The growth in Retail, Education and Construction was also unusually strong. Health and Social Work, Hotels and Restaurants and the Public Sector only grew a little faster than GB. Employment in High Tech Manufacturing declined slightly more than GB. The only significant decline relative to GB was in Transport. Although well down the list in terms of size, Motor Sales and Services, Manufacture of Chemicals and Financial Services grew at an exceptional rate and thus contributed significantly to employment growth.

The only sectors where there is cause for concern about dominance by large firms is in the Public Sector and Food and Beverage Manufacture. However, these are relatively small sectors and the Braintree is not at high risk of significant employment loss from one or two large organisations.

Brentwood enjoyed exceptional growth in Health and Social Work, while Other Business Activities, Education, Hotels and Restaurants and Construction all showed strong growth relative to GB and, as noted above, were responsible for the bulk of the employment growth in the area. A few of the medium sized sectors showed such astounding growth that they also made a significant contribution to

employment growth. These were Post and Telecommunications, Manufacture of Chemicals and Renting of Machinery and Equipment. Retail and Financial Services did not share in the general growth evident in the rest of GB while Transport was the only sector responsible for a significant fall in employment.

In contrast to Braintree, Brentwood is much more at risk of the strategies of major employers. There are dominant employers in Post and Telecommunications, Transport, Manufacture of Chemicals etc., the Public Sector and Rental of Machinery and Equipment. There are also large employers in Retail, Health and Social Work, Education, Financial Services and Construction.

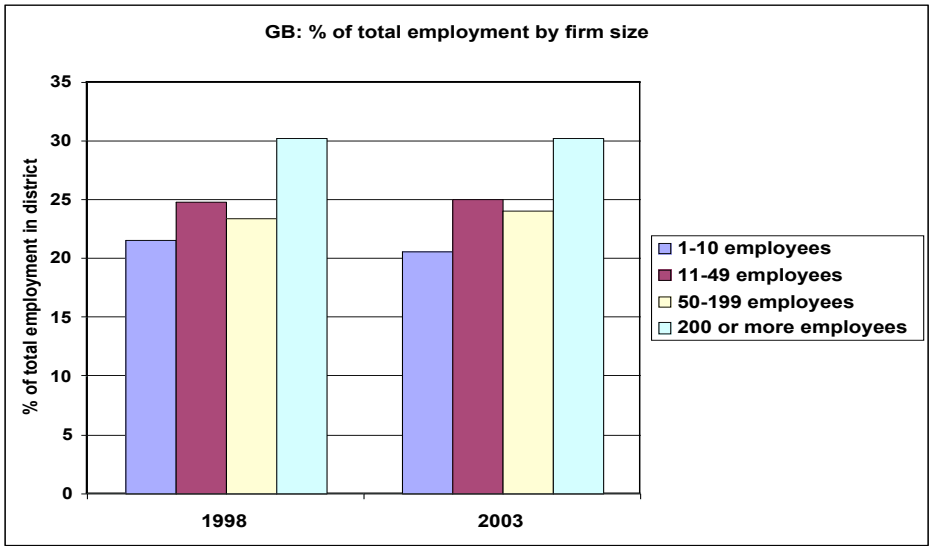
In **Chelmsford,** all the largest sectors except Retailing and Health and Social Work showed growth well in excess of GB as a whole, Construction, Hotels and Restaurants and High Tech Services particularly so. Although the local economy is diverse, High Tech Manufacturing, Post and Telecommunications and Food and Beverage Manufacturing are dominated by a few large firms and thus are a potential source of major reductions in employment.

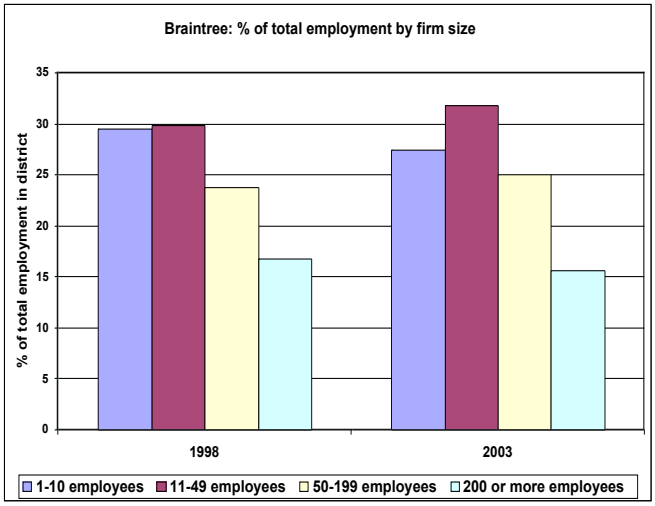
Maldon employment has benefited significantly from exceptional growth in Other Business Services and Construction. Well above average growth has also occurred in Education, Manufacture of Metals and Real Estate, although the latter two sectors are only of modest size in Maldon. Large employers are found in Retailing, Construction, Publishing and Media and Utilities. The disappearance of any one of these would offset the typical annual increase in employment in all other sectors.

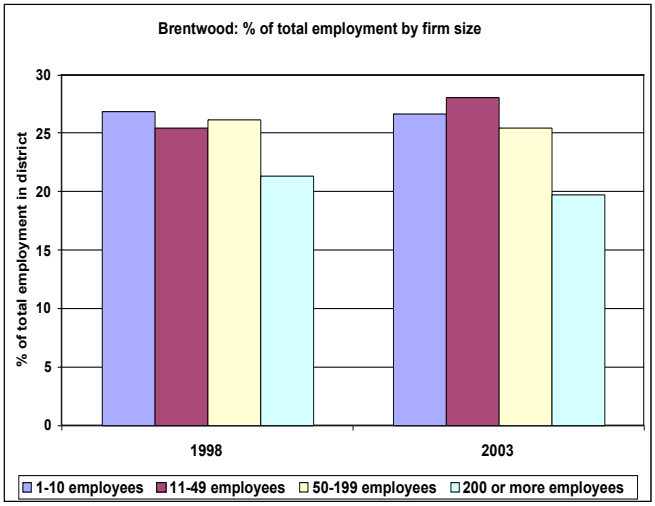
3.3.4. Employment growth by size of firm

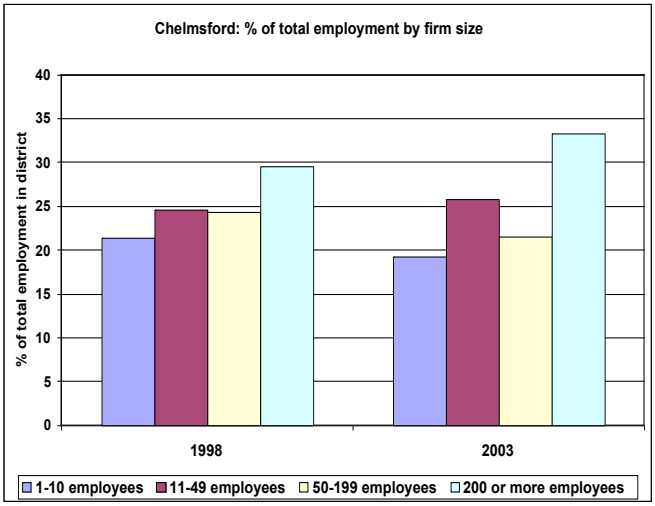
Chart 3.3.5 below compares the composition of employment by firm size in 1998 and 2003 in each of the four Council areas with GB as a whole. The latter shows a well known profile whereby large firms (200 employees and over) account for less than 0.7% of the number of firms but more than 30% of employment. Small firms (up to 10 employees) account for over 83% of the number of firms but less than 21% of employment.

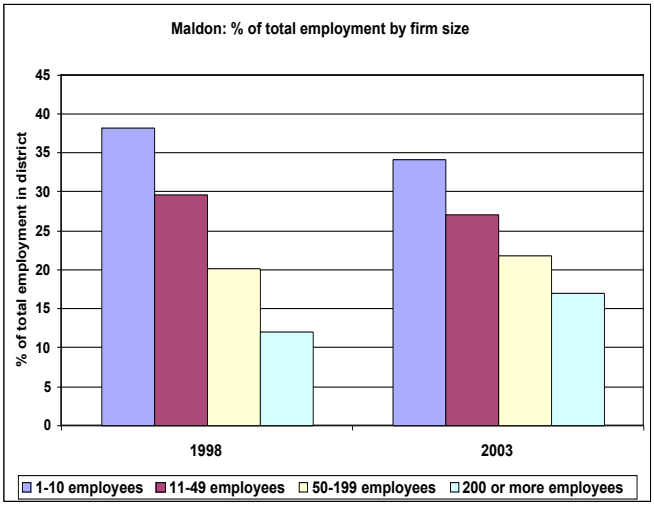
Chart 3.3.5 Employment by size of firm compared with G.B. 1998 & 2003











None of the four Council areas resemble the national picture exactly. **Chelmsford** is most like GB as a whole but the largest firms account for more employment while the smallest firms account for slightly less. The greatest difference lies in the scarcity of firms with between 50 and 199 employees. The share of these firms in employment fell between 1998 and 2003 while that of the largest firms increased. **Brentwood** differs from Chelmsford and the national picture in the relatively greater importance of small firms and the lesser importance of the largest firms in terms of share of employment. Over the five year period, the share of large firms has fallen while that of smaller firms, especially those with between 11 and 49 employees, has increased. In **Braintree**, the share of employment accounted for by the largest firms is even lower, barely 15% compared with 30% for GB. That for the smallest firms is similar to Brentwood but the share of smaller firms (11 to 49 employees) is much greater. There has been an increase in the proportion of employment accounted for by the middle sized firms over the last five years. **Maldon** exhibits the most stark contrast with GB. The smallest firms accounted for 34% of employment as opposed to just 21% in GB in 2003. The largest firms accounted for some 16% of employment compared with 30% for GB. However, although still very different from the national average, Maldon has moved closer to the GB profile over the last five years.

3.4. Labour Market

This section will consider the supply side dynamics of labour markets in the mid-Essex area. The characteristics of the working age population in an area underpin the likely nature of change in response to changes in labour demand (the creation of jobs and the premises in which people work). Measures of labour supply can be seen both as factors that might promote the growth of employment in an area (measures such as the level of qualifications in the labour force). But for the most part labour supply characteristics indicate the likely consequences of employment growth in terms of local residents taking up employment opportunities, demands for housing for in-migrants and the demand on transport infrastructure for commuting. The details of the methods underpinning the analysis are included in the appendices of the report.

3.4.1. Basic labour market characteristics for mid-Essex

The basic dimensions of the labour market relate to rates of employment, unemployment and economic activity. Table 3.4.1 sets out the basic characteristics for the mid-Essex area in comparison to England and Wales and to its regional context. These figures indicate that employment rates in mid-Essex are high in relation to the national average but on a par with the regional average for the East of England. Equally, economic activity rates are on a par with the East of England average but are lower than the national figure. However unemployment rates in the population of working age are low relative to both the region and England and Wales as a whole. Figures for the individual local authorities vary but the differences between them are insignificant in relation to the confidence limits put on this data.

Table 3.4.1: Labour market characteristics 2003/04

	employment rate		unemployment rate		economic inactivity rate	
	rate	confidence limits	rate	confidence limits	rate	confidence limits
England and Wales	74.4	0.2	4.9	0.1	21.8	0.2
London	69.3	0.6	7.1	0.4	25.4	0.6
East of England	78.6	0.7	3.8	0.3	18.3	0.6
Mid-Essex area	81.0	2.6	2.1	1.0	17.3	2.5
Braintree	81.7	4.4	2.0	*	16.7	4.3
Brentwood	80.1	7.5	!	!	19.1	7.4
Chelmsford	80.1	4.0	2.6	*	17.7	3.9
Maldon	82.5	6.9	!	!	15.7	6.6

Source: Local Labour Force Survey (NOMIS)

These figures for the whole population of working age conceal some interesting variability in relation to age and sex. Table 3.4.2 sets out employment rates by age and sex. These reveal that for most age groups aged 20 years and above employment rates for men in mid-Essex are significantly different from the national average indicating greater levels of the resident working age population in employment. Moreover, for men and women aged 35 to 49 years employment rates in the mid-Essex area are even more significantly different from (higher than) the East of England average. For women this is the only age band for which there appears to be significant differences to either rates for England and Wales or rates for the East of England.

Table 3.4.2: Employment rates by age and sex 2003/04

	England and Wales		East of England		mid-Essex area	
	rate	confidence limits	rate	confidence limits	Rate	confidence limits
men aged 16-19 years	48.9	1.1	55.5	3.9	56.9	15.5
men aged 20-24 years	73.7	1.0	84.5	2.9	91.0	8.6
men aged 25-34 years	87.9	0.5	91.7	1.4	89.9	6.3
men aged 35-49 years	88.8	0.3	92.4	1.0	95.9	3.1
men aged 50 - retirement age	71.5	0.5	76.4	1.8	82.4	6.4
women aged 16-19 years	51.1	1.1	57.6	4.0	59.5	20.5
women aged 20-24 years	64.8	1.0	71.4	3.6	68.4	16.4
women aged 25-34 years	71.2	0.6	73.8	2.1	71.8	9.4
women aged 35-49 years	75.3	0.4	77.3	1.5	84.4	5.4
women aged 50 - retirement age	66.7	0.6	70.8	2.2	67.6	8.9

Source: Local Labour Force Survey (NOMIS)

Table 3.4.3: Changes in labour market characteristics 1999-2004

	employment rate		unemployment rate		economic inactivity rate	
	1999/ 2000	2003/ 2004	1999/ 2000	2003/ 2004	1999/ 2000	2003/ 2004
England and Wales	74.0	74.4	5.9	4.9	21.4	21.8
London	70.9	69.3	7.3	7.1	23.5	25.4
East of England	77.3	78.6	4.3	3.8	19.2	18.3
Mid-Essex area	76.6	81.0	4.0	2.1	20.2	17.3
Braintree	75.2	81.7	#	2.0	20.1	16.7
Brentwood	76.3	80.1	#	!	20.2	19.1
Chelmsford	79.2	80.1	#	2.6	18.5	17.7
Maldon	72.2	82.5	#	!	25.8	15.7

Source: Local Labour Force Survey (NOMIS)

Table 3.4.3 above indicates changes in the labour supply over the most recent economic cycle. Although these figures are based on survey data and must be read with an eye on the confidence limits set out in Table 3.4.1 (for the 2003/04 data), the dynamic of the mid-Essex area is one of increasing employment rates, decreasing unemployment and decreasing economic inactivity. The figures for the individual local authorities suggest a more dramatic change in particular in relation to **Maldon** where employment rates seem to have increased by 10 percentage points as economic inactivity rates have plunged by a similar figure but the calculated rates for a small authority area such as Maldon may vary by as much as 6-7%.

Table 3.4.4 below sets out the change in the working age population for the period 1991-2001 in terms of age bands. The startling revelation of the table relates to the age group aged between 16 and 24 years. Here the area has seen a remarkable exodus of young people. For Mid Essex as a whole, the data suggests an 18% decrease in the resident population in this age band whereas overall there is an increase in the population aged between 16 years old and retirement. In percentage terms the decline in the 16-24 age group has been most significant in **Braintree** and **Brentwood.** Brentwood is the exception in mid-Essex with a loss of 3,500 residents of working age whilst other Councils experienced an increase in working age population. This increase was most marked in Braintree.

Table 3.4.4: Changes in working age population 1991-2001

total population	mid-Essex area Number	% change	Braintree Number	Brentwood Number	Chelmsford Number	Maldon Number
aged 16-74 (all people)	13,549	4.7%	9,247	-3,566	2,976	4,892
aged 16- retirement	10,417	4.2%	8,617	-3,589	1,534	3,855
aged 16-24	-9,128	-18.4%	-2,378	-2,627	-3,032	-1,091
aged 25-49	2,368	1.6%	3,948	-1,492	-1,082	994
aged 50-64	17,912	29.2%	7,293	322	5,947	4,350
aged 65-74	2,397	7.6%	384	231	1,143	639
resident population in employment						
aged 16-74 (all people)	12,592	6.7%	8,921	-1,780	1,571	3,880
aged 16- retirement	11,327	6.2%	8,487	-1,925	1,189	3,576
aged 16-24	-9,034	-28.8%	-2,125	-2,096	-4,065	-748
aged 25-49	6,827	5.9%	4,916	-421	914	1,418
aged 50-64	14,086	36.1%	5,929	609	4,497	3,051
aged 65-74	713	25.9%	201	128	225	159

Source: Census of Population 1991, 2001 (NOMIS)

Table 3.4.5: Changes in self-employment 1991-2001

	1991 No. residents who are self employed ('000s)	Self-employment rate	% self-employed who have employees	2001 No. residents who are self employed ('000s)	self-employment rate	% self-employed who have employees	% change in self-employm 1991-2001
England & Wales	2,840	7.8%	33.2%	3,114	8.3%	35.7%	9
East of England	319	8.7%	31.6%	359	9.2%	34.2%	12
London	396	8.0%	27.3%	475	9.0%	32.3%	19
mid-Essex area	27	9.4%	32.6%	31	10.1%	34.4%	13
Braintree	8	9.8%	31.4%	10	10.5%	33.4%	19
Brentwood	5	9.0%	36.9%	5	10.1%	35.8%	4
Chelmsford	9	8.2%	31.2%	10	9.0%	34.5%	12
Maldon	5	12.4%	33.1%	5	12.5%	34.8%	13

Source: Census of Population 1991, 2001 (NOMIS)

Self employment rates can be used as a gauge of indigenous entrepreneurship for an area. The residents of mid-Essex were slightly more likely than the national or regional average to be self-employed in both 1991 and 2001. There is some variation in the self-employment characteristics of the areas within mid-Essex. **Braintree** has seen an increase in self-employment on a par with the London economy although it is in **Maldon** that one sees the highest rates of self-employment. **Brentwood** is the local authority area where the self-employed are more likely to have employees but has seen very a growth rate in self-employment only half that of England and Wales as a whole and a quarter that of the London region.

Overall the dynamic of the labour market in mid-Essex points to an economically active population that is aging significantly but records high employment rates in the older age bands. The trend suggests a tightening labour market with low unemployment rates and the hidden unemployed amongst the economically inactive being drawn into the labour market. However the area clearly lacks attraction for young people who appear to be leaving the area in aggregate terms.

3.4.2: Skills and the mid-Essex labour market

Skills are an important measure of the quality of labour supply and can be measured in two ways. They can either be related to qualifications or they can be related to occupation (with any implicit gaining of qualifications and work-related experience).

Table 3.4.6: Qualifications in resident working age population, 2001

		location quotients for workers qualifications						
	% of workers in England and Wales	East of England	London	mid-Essex	Braintree	Brentwood	Chelmsford	Maldon
No Qualifications	23.2%	93.7	82.0	83.7	95.5	73.1	74.1	95.2
Level 1	18.6%	110.6	75.4	114.0	122.5	101.2	110.3	118.9
Level 2	21.2%	106.5	85.6	114.5	111.6	117.2	117.5	109.9
Level 3	9.3%	95.9	113.8	97.9	92.9	101.4	106.3	82.0
Level 4/5	21.1%	91.6	157.3	90.9	72.4	113.8	100.3	81.3
Other Qualifications/level unknown	6.6%	103.8	77.0	103.3	112.9	90.2	96.0	116.4

Source: Census of Population 2001 (ONS)

Notes:

The highest level of qualification variable uses both the educational and vocational qualifications question, and the professional qualifications question.

- No qualifications: No academic, vocational or professional qualifications.
- Level 1: 1+ 'O' levels/CSE/GCSE (any grade), NVQ level 1, Foundation GNVQ.
- Level 2: 5+ 'O' levels, 5+ CSEs (grade 1), 5+ GCSEs (grade A - C), School Certificate, 1+ 'A' levels/'AS' levels, NVQ level 2, Intermediate GNVQ or equivalents.
- Level 3: 2+ 'A' levels, 4+ 'AS' levels, Higher School Certificate, NVQ level 3, Advanced GNVQ or equivalents.
- Level 4/5: First degree, Higher Degree, NVQ levels 4 - 5, HNC, HND, Qualified Teacher Status, Qualified Medical Doctor, Qualified Dentist, Qualified Nurse, Midwife, Health Visitor or equivalents.
- Other qualifications/level unknown: Other qualifications (e.g. City and Guilds, RSA/OCR, BTEC/Edexcel), Other Professional Qualifications.

Table 3.4.6 above sets out the qualifications recorded in the resident working age population of mid-Essex in 2001. This has been noted in the form of a location quotient that records the proportion of the working age population with a given qualification level relative to the working age population of England and Wales as a whole. Thus if a particular cell records a value of 100 then the proportion of the working age population in that district is the same as the aggregate figure for England and Wales. If the cell records a value greater than 100 there is a higher proportion of qualified workers in that band than is the case nationally and the reverse is true if the cell records a value of under 100. Hence in mid-Essex there is an over-representation of workers with NVQ (National Vocational Qualifications) level 1 and 2 qualifications but an under-representation of workers with higher level qualifications. This is a pattern that reflects the East of England region but is the opposite from the profile of the London labour market.

Within Mid Essex, **Braintree** and **Maldon** show low representation of Level 3 and 4/5 qualifications among the residential workforce. **Brentwood** and **Chelmsford**, on the other hand, are at and above the UK average for these higher level skills.

Table 3.4.7: Higher level qualifications in workplace population by industry, 2001

		location quotients for workers with NVQ 4/5 qualifications						
	% of workers with NVQ 4/5 in England and Wales	East of England	London	mid-Essex	Braintree	Brentwood	Chelmsford	Maldon
all people working within area week prior to census day	24.2%	85.4	157.9	78.3	59.2	90.9	90.9	58.7
A, B. Agriculture, hunting, forestry and fishing	10.2%	96.4	169.1	107.1	114.9	92.5	100.3	112.3
C, D, E. Mining and quarrying, manufacturing, and electricity, gas and water supply	17.4%	98.5	187.5	90.2	55.0	156.7	117.7	63.9
F. Construction	8.8%	83.7	149.5	89.2	72.6	83.6	117.9	59.7
G. Wholesale and retail trade, repairs	10.1%	81.9	194.5	71.4	60.1	83.2	78.2	60.5
H. Hotels and restaurants	9.1%	84.7	200.0	72.6	81.8	64.6	70.2	72.2
I. Transport, storage and communications	14.5%	87.4	164.1	71.7	41.7	95.7	80.0	47.0
J. Financial intermediation	27.0%	59.0	158.4	57.9	42.8	72.2	54.2	49.4
K. Real estate, renting and business activities	37.6%	84.5	138.1	68.4	56.1	76.7	73.6	57.8
L. Public administration and defence, social security	27.0%	87.2	138.1	86.7	85.0	80.7	88.1	92.5
M. Education	56.4%	96.3	111.1	92.4	83.8	97.0	96.1	88.1
N. Health and social work	38.3%	90.9	133.2	86.8	64.2	87.5	103.2	65.3
O, P, Q. Other	24.6%	75.3	171.1	58.8	48.6	59.7	67.1	49.1

Source: Census of Population 2001 (NOMIS)

Table 3.4.7 above outlines the level of qualifications and applies it to the industrial profile located in the mid-Essex area. The table is based on calculating the proportion of the workplace population in industrial sections that have qualifications to at least degree level or equivalent. These proportions are then calculated as location quotients relative to the proportion of qualified workers in the labour market of England and Wales as a whole such that a score of 100 means that the proportion of workers with NVQ level 4 or 5 qualifications equates to the national average. A score of over 100 indicates a higher proportion of skilled workers than the national average whilst a score under 100 indicates a lower proportion.

Thus Table 3.4.7 clearly indicates the highly qualified nature of the London labour force where all industries indicate a proportion of skilled workers over the national average. The picture of mid-Essex indicates a labour force that is relatively low proportions of skilled workers. This figure is much lower than the location quotient for qualified labour living in mid-Essex indicating that highly qualified workers may live in mid-Essex but they work elsewhere (mainly London). Breaking the figures down by industry and district, mid-Essex has a highly qualified workforce in agriculture, hunting, forestry and fishing but this accounts for very few jobs. Outside of agriculture the data suggests concentrations of highly qualified workers are present only with manufacturing in Brentwood (Ford) and within manufacturing, construction and health and social work in Chelmsford. Other than that the labour force is relatively poorly skilled. Thus within financial services, an industry that has grown in the area, the labour force records around 15% of workers with a degree or better whilst in London around 42% of workers have the same level of qualifications.

3.4.3: Commuting patterns within the mid-Essex labour market

Commuting patterns give a view on the spatial dynamic of labour supply in an area. The study of the daily movements of workers allows a view on the degree of mismatch between the working population living in an area and the workers who work in the same area.

Table 3.4.10 below indicates the patterns of commuting for the workplace population of mid-Essex. Levels of self-containment vary from the south to the north and east of the sub-region as one might expect given the economic influence of London. Thus only 45% of the workforce of Brentwood live in the district and relatively high levels of commuting from other parts of Essex (outside the mid-Essex sub-region) and outside the region. Both Braintree and Maldon record over 80% of workers commuting from within mid-Essex as a whole. Equally the Chelmsford labour force records nearly 80% self-containment of labour demand (Brentwood records around 57% self-containment by demand).

Table 3.4.10: Commuting in-flows by local authority area

Numbers of commuters	Braintree	Brentwood	Chelmsford	Maldon
Commuting within same district	37,585	14,853	47,244	15,096
Commuting between different districts in mid-Essex	3,795	3,968	12,437	2,803
Commuting from rest of Essex (post 97) to mid-Essex	5,469	5,790	9,506	1,836
Commuting from rest of region (East) to mid-Essex	2,597	2,599	3,141	376
Commuting from outside region to mid-Essex	1,021	5,501	3,447	344
Total workplace population within local authority area	50,467	32,711	75,775	20,455
Percentage of workplace population				
Commuting within same district	74.5%	45.4%	62.3%	73.8%
Commuting between different districts in mid-Essex	7.5%	12.1%	16.4%	13.7%
Commuting from rest of Essex (post 97) to mid-Essex	10.8%	17.7%	12.5%	9.0%
Commuting from rest of region (East) to mid-Essex	5.1%	7.9%	4.1%	1.8%
Commuting from outside region to mid-Essex	2.0%	16.8%	4.5%	1.7%

Source: Census of Population 2001 (ONS)

In discussing qualifications it was noted that out-commuting explains the differences in the skills profile of workers who live in mid-Essex and the skills profile of the labour force that works in mid-Essex. Table 3.4.11 below starts to give some sense to this idea as it records the commuting behaviour of residents of mid-Essex who are in employment. Braintree and Maldon show the highest levels of self-containment within the mid-Essex sub-region although Chelmsford

records the highest level of supply side self-containment within its district. Unsurprisingly levels of commuting to locations outside the region (principally London) are highest to the south of the region from Brentwood although 19% of employees living in Chelmsford commute to outside the East of England.

Table 3.4.11: Commuting out-flows by local authority area

Numbers of commuters	Braintree	Brentwood	Chelmsford	Maldon
Commuting within same district	37,585	14,853	47,244	15,096
Commuting between different districts in mid-Essex	8,698	1,625	6,471	6,209
Commuting from mid-Essex to the rest of Essex (post 97)	7,962	2,746	8,212	2,910
Commuting from mid-Essex to the rest of region (East)	4,242	1,331	3,003	988
Commuting from mid-Essex to outside region	7,603	12,368	15,163	3,587
Total resident population in employment within local authority area	66,090	32,923	80,093	28,790
Percentage of resident working population				
Commuting within same district	56.9%	45.1%	59.0%	52.4%
Commuting between different districts in mid-Essex	13.2%	4.9%	8.1%	21.6%
Commuting from mid-Essex to the rest of Essex (post 97)	12.0%	8.3%	10.3%	10.1%
Commuting from mid-Essex to the rest of region (East)	6.4%	4.0%	3.7%	3.4%
Commuting from mid-Essex to outside region	11.5%	37.6%	18.9%	12.5%

Source: Census of Population 2001 (ONS)

Table 3.4.12: Commuting in-flows for mid-Essex by occupation

percentage of workplace occupations who commutes:	Managers and Senior Officials	Professional occupations	Associate professional and technical occupations	Administrative and secretarial occupations	Skilled trades occupations	Personal service occupations	Sales and customer service occupations	Process, plant and machine operatives	Elementary occupations
within same LAD in mid-Essex	55.2%	53.6%	54.0%	62.6%	71.3%	76.3%	76.5%	64.0%	74.1%
different LAD within mid-Essex	14.1%	15.9%	16.9%	15.0%	9.7%	9.5%	9.5%	12.9%	8.7%
from other Essex CC (post 97) to mid-Essex	14.6%	15.7%	16.3%	13.1%	10.1%	9.7%	7.7%	12.8%	9.7%
from other East of England to mid-Essex	7.4%	6.8%	6.4%	4.0%	3.7%	2.4%	2.1%	5.5%	3.2%
outside East of England to mid-Essex	8.7%	8.0%	6.4%	5.2%	5.2%	2.2%	4.2%	4.7%	4.2%
total workplace population	27,386	18,814	23,535	25,835	23,183	12,967	12,809	13,681	21,198

Source: Census of Population 2001 (ONS)

Table 3.4.13: Commuting out-flows for mid-Essex by occupation

percentage of workplace occupations who commutes:	Managers and Senior Officials	Professional occupations	professional and technical occupations	Administrative and secretarial occupations	Skilled trades occupations	Personal service occupations	Sales and customer service occupations	Process, plant and machine operatives	Elementary occupations
within same LAD in mid-Essex	41.1%	42.9%	42.8%	51.4%	68.4%	75.4%	72.0%	61.1%	74.3%
from different LAD within mid-Essex	10.5%	12.7%	13.4%	12.3%	9.3%	9.4%	9.0%	12.3%	8.8%
from mid-Essex to other Essex CC (post 97)	11.2%	15.8%	11.5%	8.2%	9.3%	7.9%	8.4%	12.7%	8.4%
from mid-Essex to other East of England	6.9%	6.4%	4.9%	3.3%	3.3%	2.3%	3.7%	5.6%	2.8%
from mid-Essex to outside East of England	30.3%	22.3%	27.5%	24.9%	9.7%	5.0%	6.8%	8.2%	5.8%
total resident population in employment	36,779	23,546	29,738	31,477	24,168	13,110	13,592	14,332	21,154

Source: Census of Population 2001 (ONS)

The data on qualifications would suggest that there is a differential propensity to commute by level of qualification. It is self-evident and well known that workers on higher pay have the capacity and propensity to commute farther and that higher pay correlates with higher levels of qualification. This is borne out in Tables 3.4.12 and 3.4.13 above where commuting flows within, into and out of the mid-Essex sub-region are set out against occupation (a rough correlate of qualifications). In the case of white collar workers (managers, professional occupations, associate professional occupations and clerical staff) living in mid-Essex, between 20% and 30% of these workers commute outside of the region to work whereas for other workers only 5-10% commute outside the region. Any economic development strategy aimed at reducing commuting out of the sub-region would need to address the absence of higher skilled jobs in the area.

Table 3.4.14: Working from home 1991-2001

	1991		2001		
	number of residents who mainly work from home	% of residents in employment who work from home	number of residents who mainly work from home	% of residents in employment who work from home	% change in home working 1991-2001
England and Wales	1,041,590	4.9%	2,170,547	9.2%	108.4%
Eastern	110,910	4.8%	243,485	9.4%	119.5%
London	122,420	4.3%	285,935	8.6%	133.6%
mid-Essex area	8,420	4.5%	20,465	9.8%	143.1%
Braintree	2,490	4.5%	6,696	10.1%	168.9%
Brentwood	1,640	4.9%	3,197	9.7%	94.9%
Chelmsford	2,650	3.5%	7,178	8.9%	170.9%
Maldon	1,640	6.8%	3,394	11.7%	107.0%

Source: Census of Population 1991, 2001 (NOMIS)

Notes:

1. figures for working at home are based on the 10% sample from the 1991 Census of Population Special Workplace Statistics

Working from home has increased through the nineties. The trend in mid-Essex is similar to the broad national trend. It is currently unclear as to the likely impacts of working at home will have on employment land since workers who mainly work at home will also tend to have an employment base somewhere that they periodically will report back to. Working at home may be related to some forms of self-employment where the self-employed workers do not in turn have employees. This is an issue on which more research is required in order to understand its impact on employment land use planning.

Table 3.4.15: Average earnings in mid-Essex (basic weekly pay for full time workers), 2005

	workplace based		residence based	
	median basic weekly pay	mean basic weekly pay	median basic weekly pay	mean basic weekly pay
England and Wales	£394.8	£489.3	£395.6	£490.8
East of England	£386.8	£475.6	£413.0	£513.0
London	£525.4	£664.7	£498.3	£624.7
Braintree	£371.2	£447.8	£420.5	£528.9
Brentwood	£422.4	£525.2	£628.1	£740.3
Chelmsford	£402.5	£480.3	£477.0	£590.2
Maldon	£396.2	£458.6	£453.6	£538.1

Source: Annual Survey of Hours and Earnings (NOMIS)

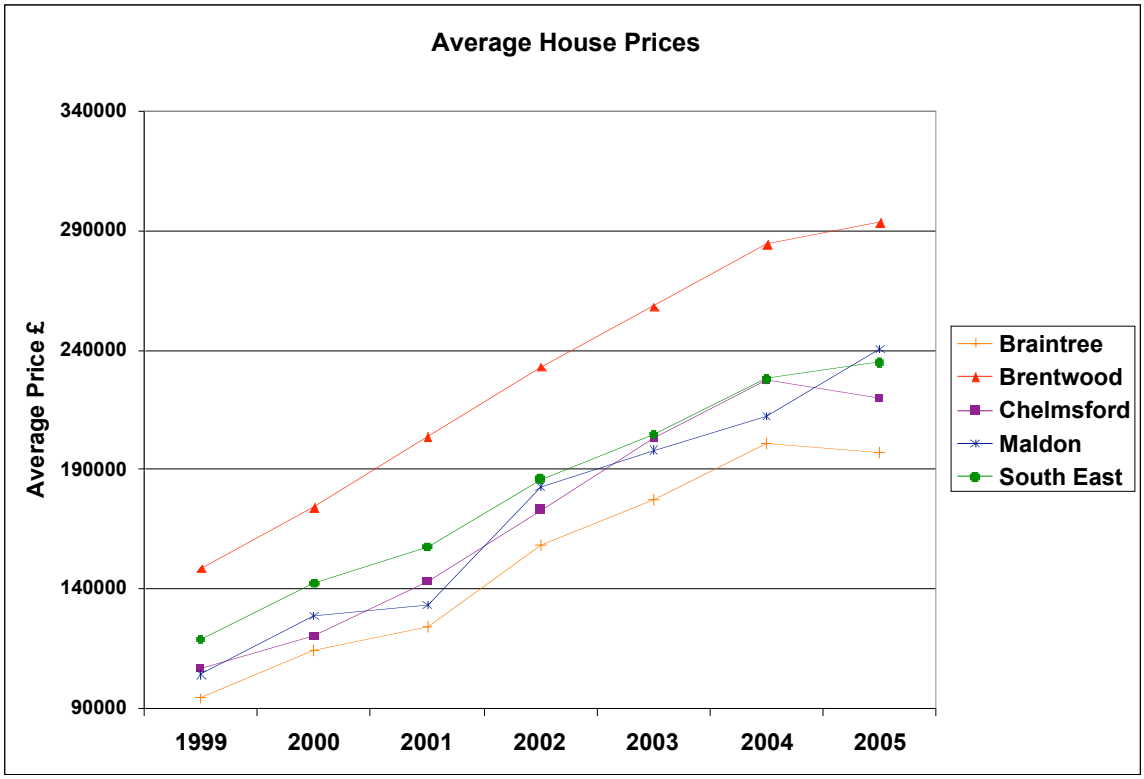
Given the nature of the commuting behaviour in mid-Essex, there is little surprise if one compares the average earnings of those who work in mid-Essex and those who live in mid-Essex but don't necessarily work in the sub-region. The comparison reveals that the average pay of those who are in employment (but don't necessarily work there) is significantly higher than for the workplace population of the area. In Brentwood this difference accounts for just over £200 a week reflecting the easy accessibility of highly paid work in London. Clearly this makes housing affordability issues particularly acute for workers who live and

work in Brentwood. For the other districts this difference is of the order of £50-£70 a week on median weekly pay and nearly £80-£100 on mean weekly pay. Within the sub-region these figures suggest a pay gradient to the north and east.

3.4.2. House Prices and Earnings

Housing affordability is an important factor in maintaining balanced communities and facilitating the availability of a wide range of skills to the local economy. As can be seen in Chart 3.4.1 below, in common with many other areas of the country, there was a dramatic increase in average house prices over the last five years. The South East region has been used as a comparator as Mid Essex is closer to it in its relationship to London and in economic structure than the East of England. On the basis of average house prices alone, **Brentwood** would seem to have the most serious problem with affordability with prices considerably above the average for the South East.

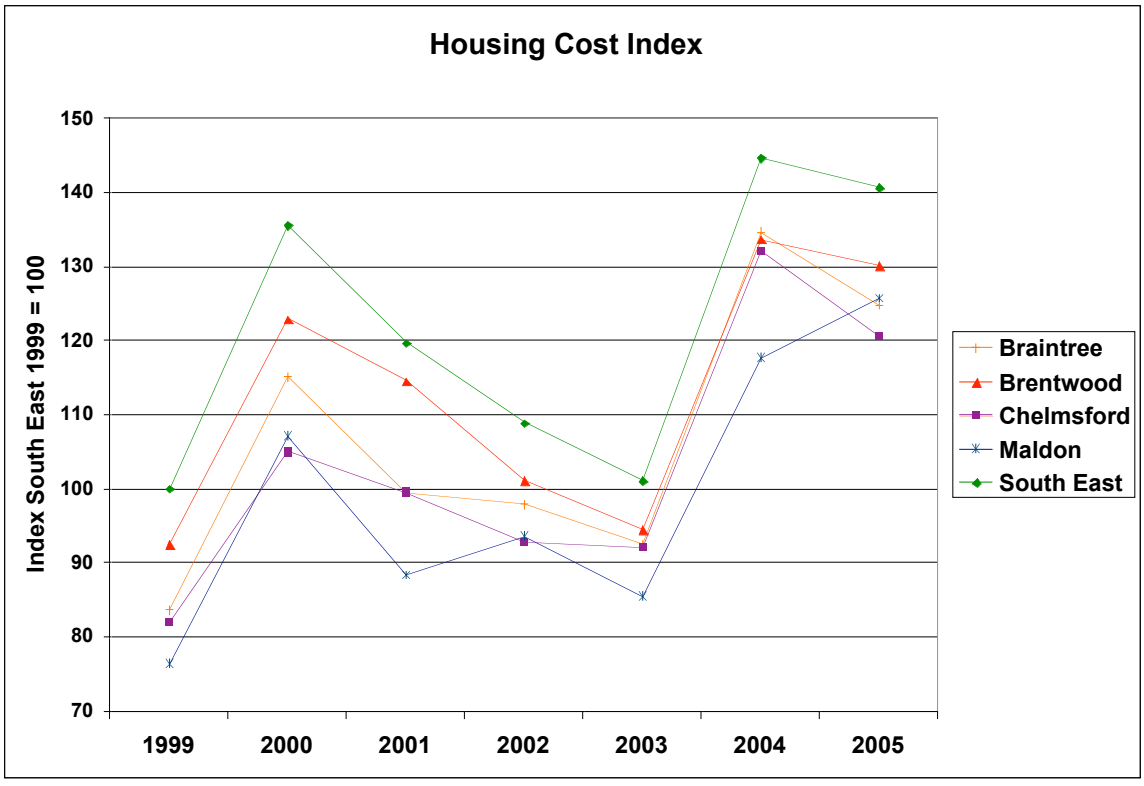
Chart 3.4.1



Source: Land Registry

However, house prices are only one element of owner occupier housing cost. **Chart 3.4.2** below shows a housing cost index which takes into account house prices but also earnings and mortgage rates. When these are taken into account, all four Council areas have housing costs well below the average for the South East. This is because the high level of resident's earnings in Brentwood more than compensates for the high house prices in the area. Further, the recent reductions in interest rates mean that housing costs are currently less than 10% higher than they were in 2000. Also, Land Registry data on transactions suggests that significant numbers of properties were being sold in 2005 at prices less than five times average annual earnings and thus affordable in the current mortgage market

Chart 3.4.2



Source: Land Registry, NOMIS, ONS.

This does not signify there is not a problem with the supply of affordable housing for lower paid employees. Even if they can service a mortgage, some first time

buyers will encounter difficulties in funding a deposit. It will be important for authorities to continue to monitor the availability of affordable homes and make sure an adequate supply of new affordable homes are built.

3.5. Location of markets and sources of supply

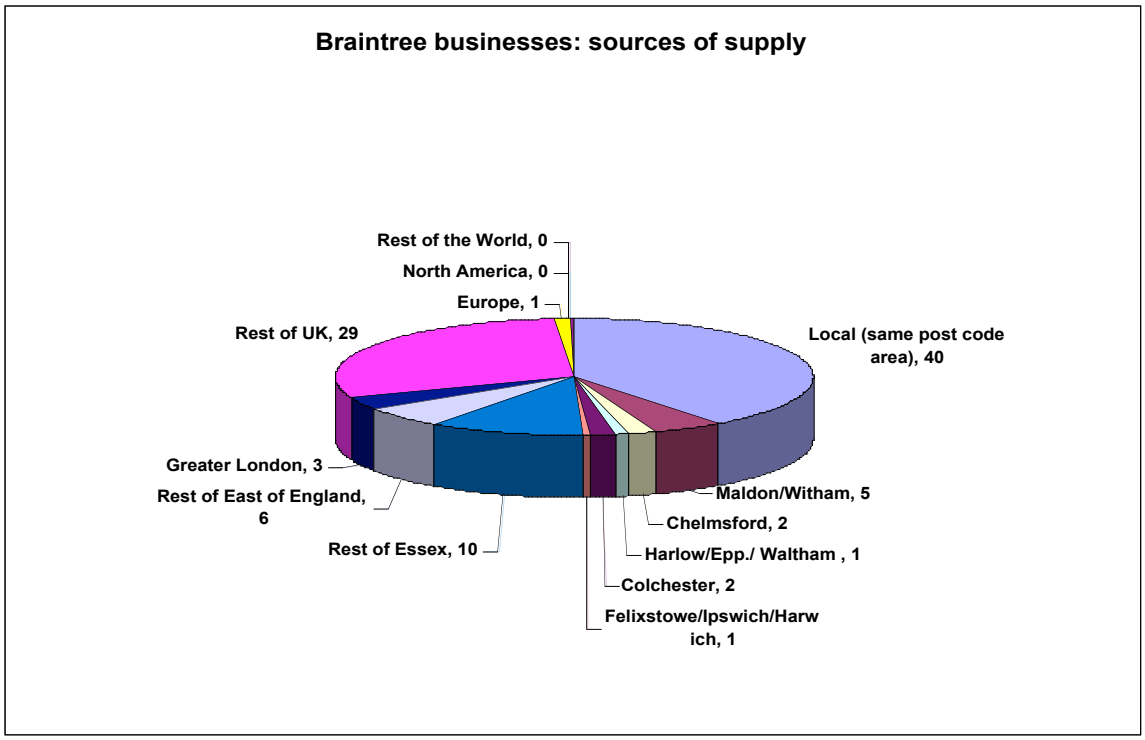
A number of issues of importance in this project relate to spatial factors such as the impact of road improvements, the influence of London, competition from other sectors of the London Arc and the proximity to airports and ports. Further, an essential characteristic of the Mid-Essex economy is the extent to which it is self-contained as opposed to being part of a wider economy dependent on London or the economy of the East of England. This will determine the degree of dependence on outside factors for employment and income growth and the extent to which attempts to stimulate these in Mid-Essex will bring benefits to the sub-region rather than being dissipated over a much wider area.

The methodology employed to survey businesses in the four Council areas to illuminate these issues and produce the results summarised in this section are given in Appendix 3. Detailed summaries of the responses from some 150 firms are tabulated and some of the more complex findings discussed. It is important to repeat here that the relatively small and imperfectly stratified sample of firms participating in the survey means that these findings must only be treated as indications of supply and market geographical patterns.

3.5.1. Sources of supply

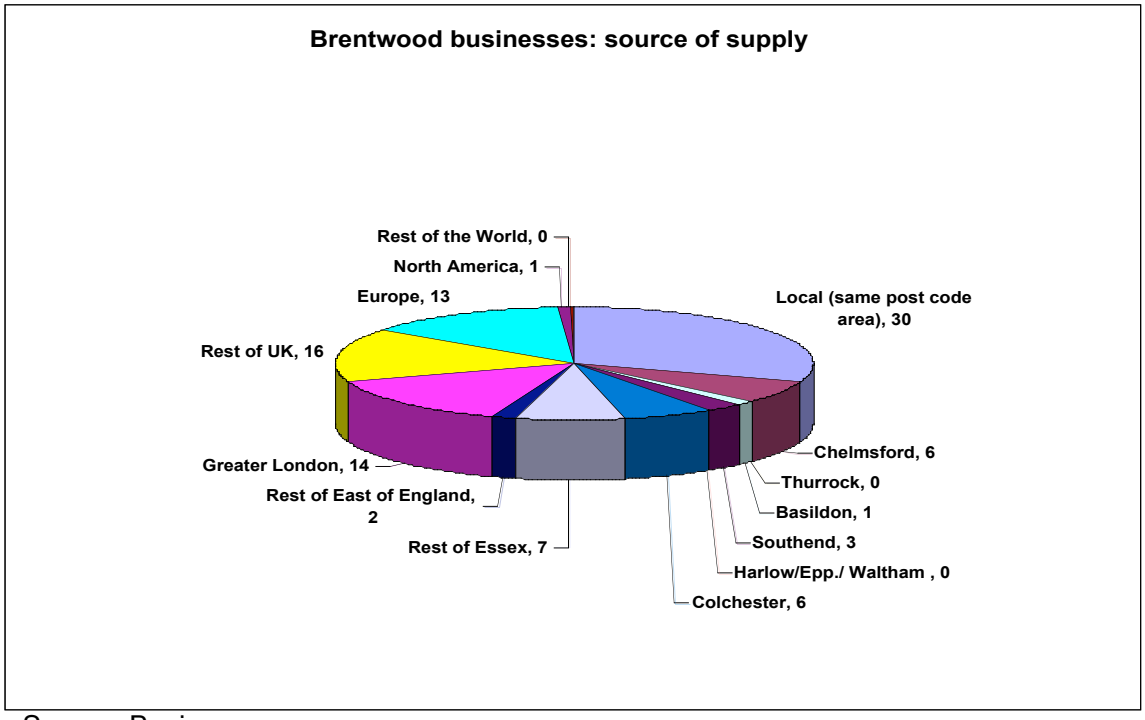
The geographical distribution of sources of supply of each of the Council areas is shown in the charts below. There are two general points worth emphasizing. First, the proportion of inputs sourced locally, within the sub-region and within Essex are surprisingly high, given the relatively small scale of commercial centres and the proximity to London. Mid Essex does seem to represent an area of inter-related economic activity. On the other hand, the East of England other than Essex is of little significance as a source of supply for firms in Mid Essex. The second point is that the role of London as a supply source falls off rapidly with distance and that of the rest of Essex, and to some extent, the rest of the region increases. The first two charts showing Braintree and Bentwood represent extremes and show these distance decay effects clearly.

Chart 3.5.1: Braintree supply linkages



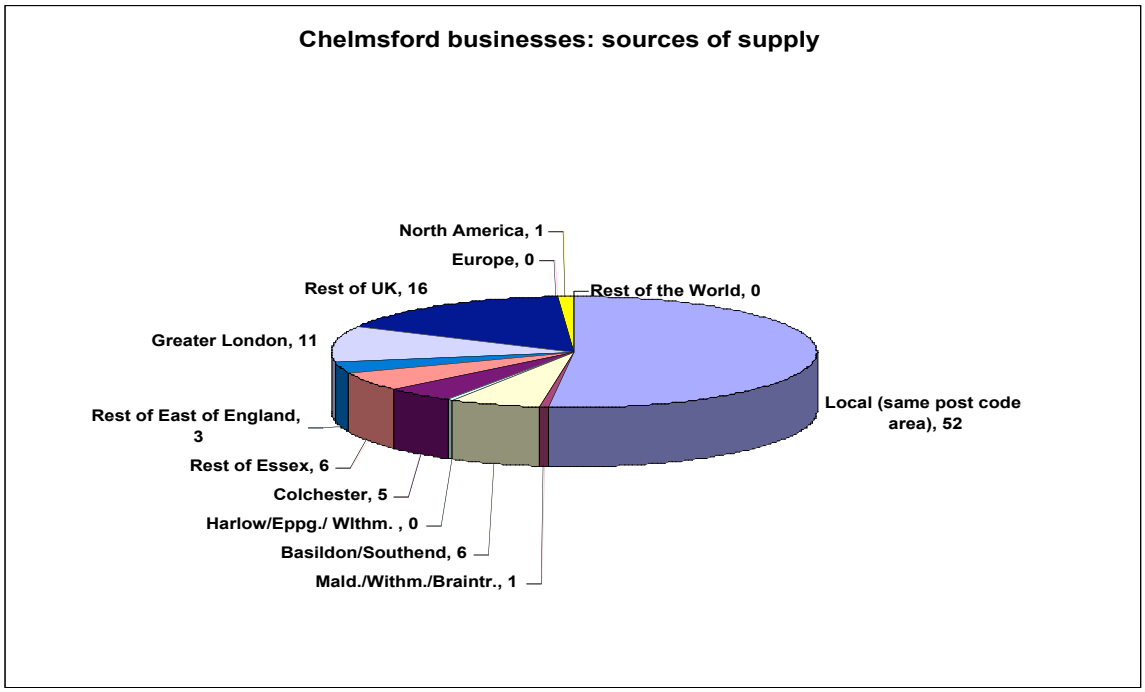
Source: Business survey

Chart 3.5.2: Brentwood supply linkages



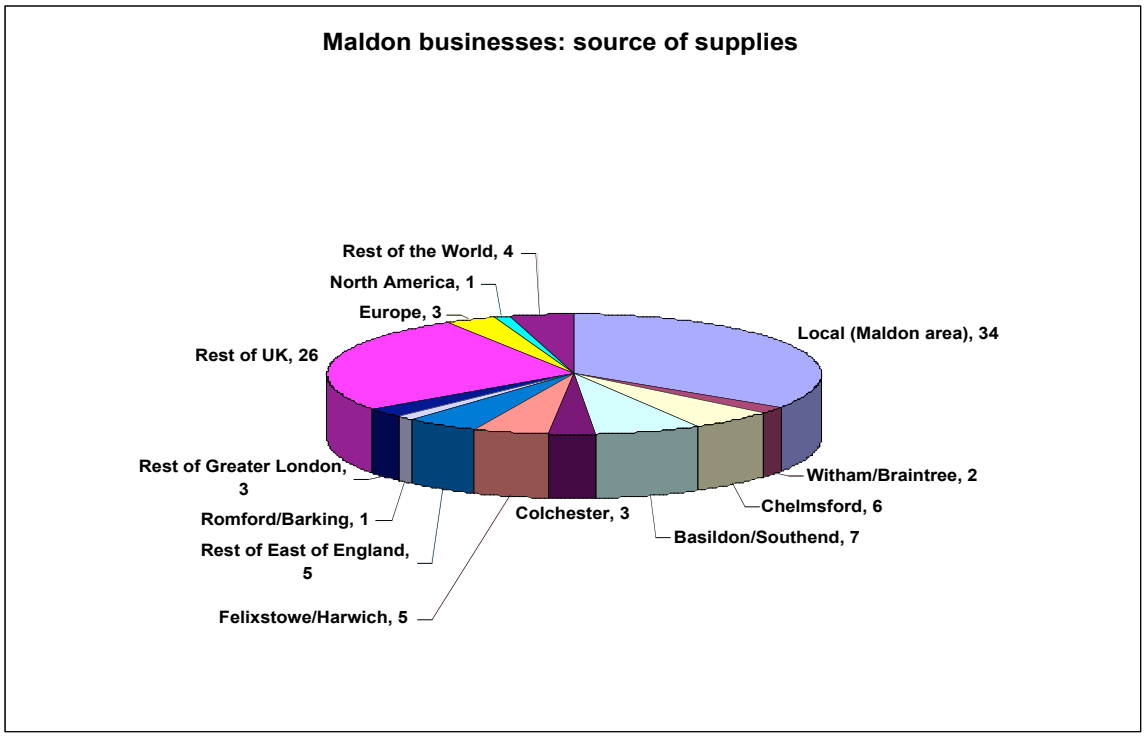
Source: Business survey

Chart 3.5.3: Chelmsford supply linkages



Source: Business survey

Chart 3.5.4: Maldon supply linkages



Source: Business survey

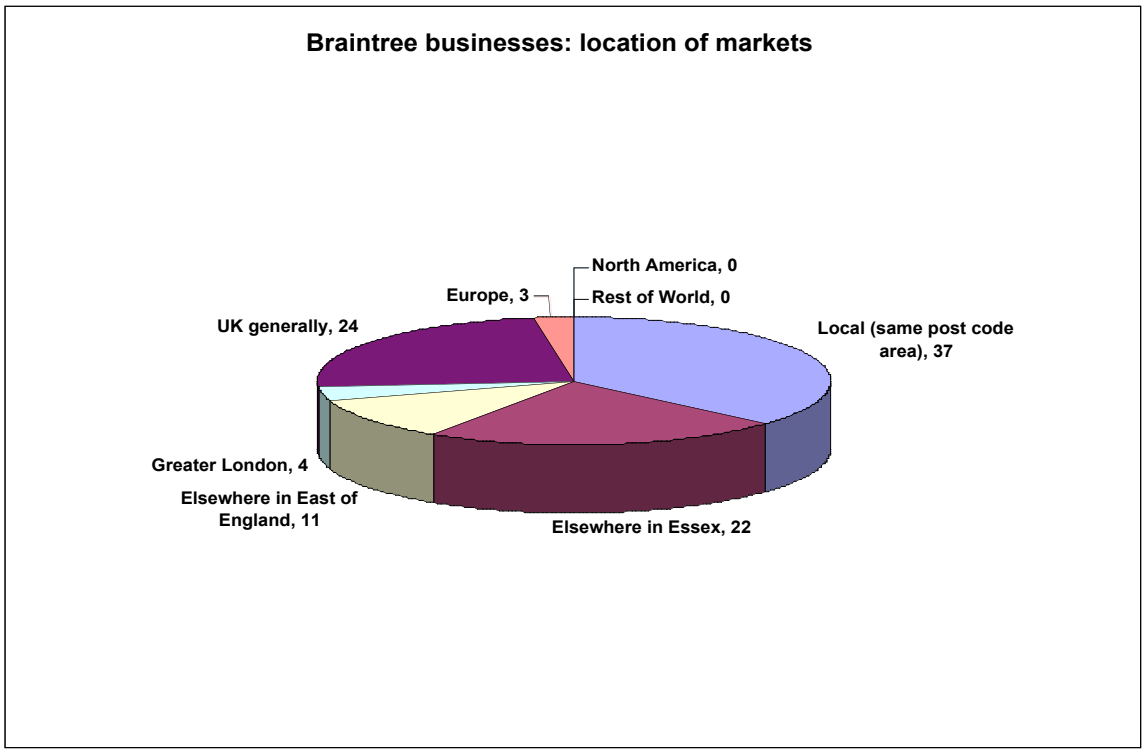
A comparison between **Maldon and Chemsford** in the charts above illustrates the influence of settlement size. Chelmsford is some four times larger than Maldon as a centre of employment. The range and diversity of business services and supplies is thus greater than Maldon can offer and this is reflected in the much higher proportion of supplies sourced locally. Colchester is only of a modest significance as a source of supply for Mid Essex firms and predominantly in machinery, equipment and office equipment, printing, packaging & office supplies and in advertising, consultancy & training services.

Only amongst **Maldon** businesses are overseas sources of supply significant, amounting to some 8% of the total expenditure. This may reflect the relatively greater importance of specialized manufacturing in the district and the need for such businesses to import components direct from suppliers. Generally, there will tend to be an under-reporting of supplies from overseas as these will usually be sourced through a UK based distributor

3.5.2. Location of markets

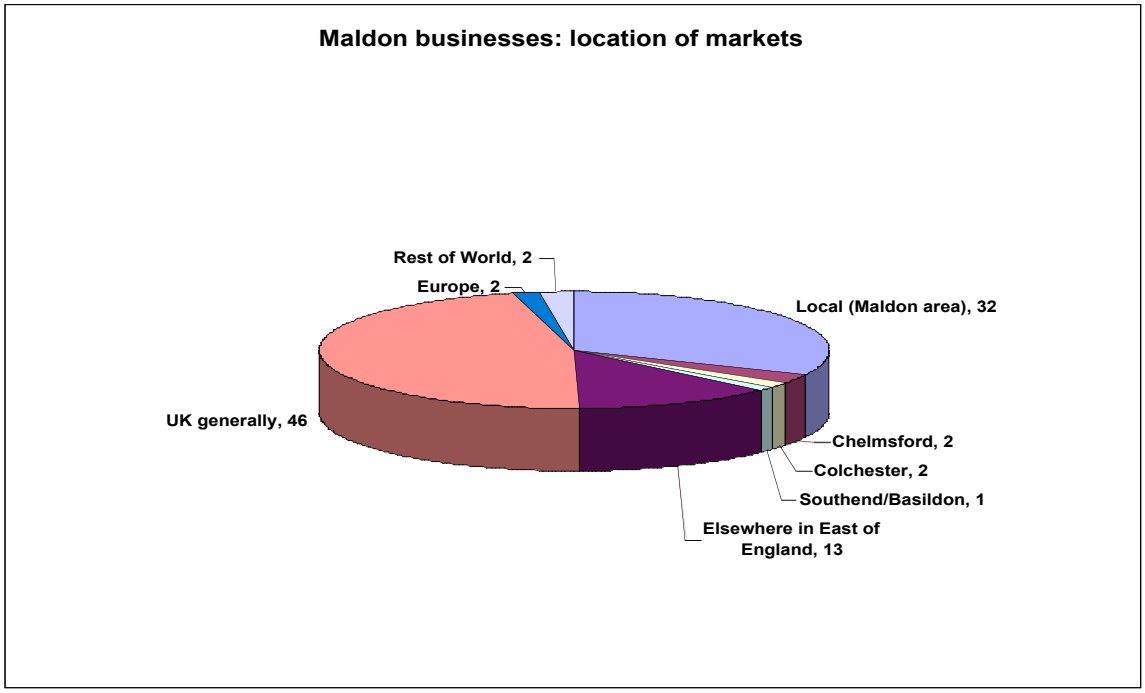
In contrast to supply links, market links are far less self-contained within the sub-region. However, two very different profiles emerge in the charts below. **Braintree** and to a slightly lesser extent, **Maldon**, are much more focused on a local and regional market. Braintree businesses sell 70% of their outputs within the East of England.

Chart 3.5.5: Braintree market linkages



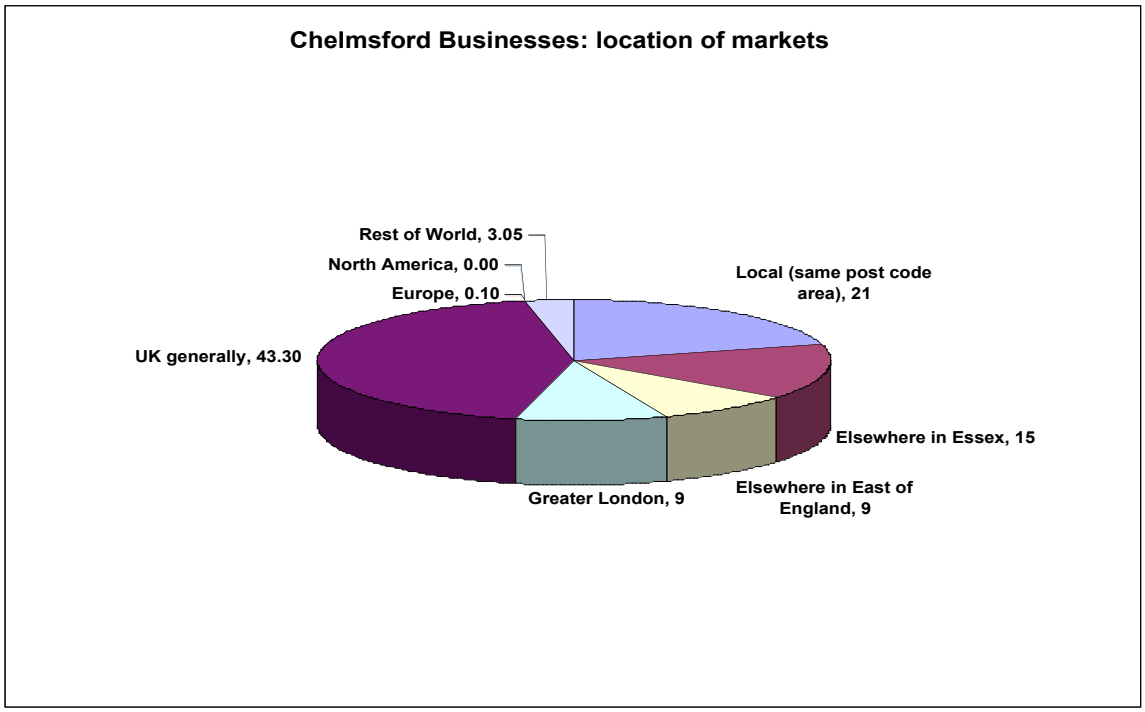
Source: Business Survey

Chart 3.5.6: Maldon market linkages



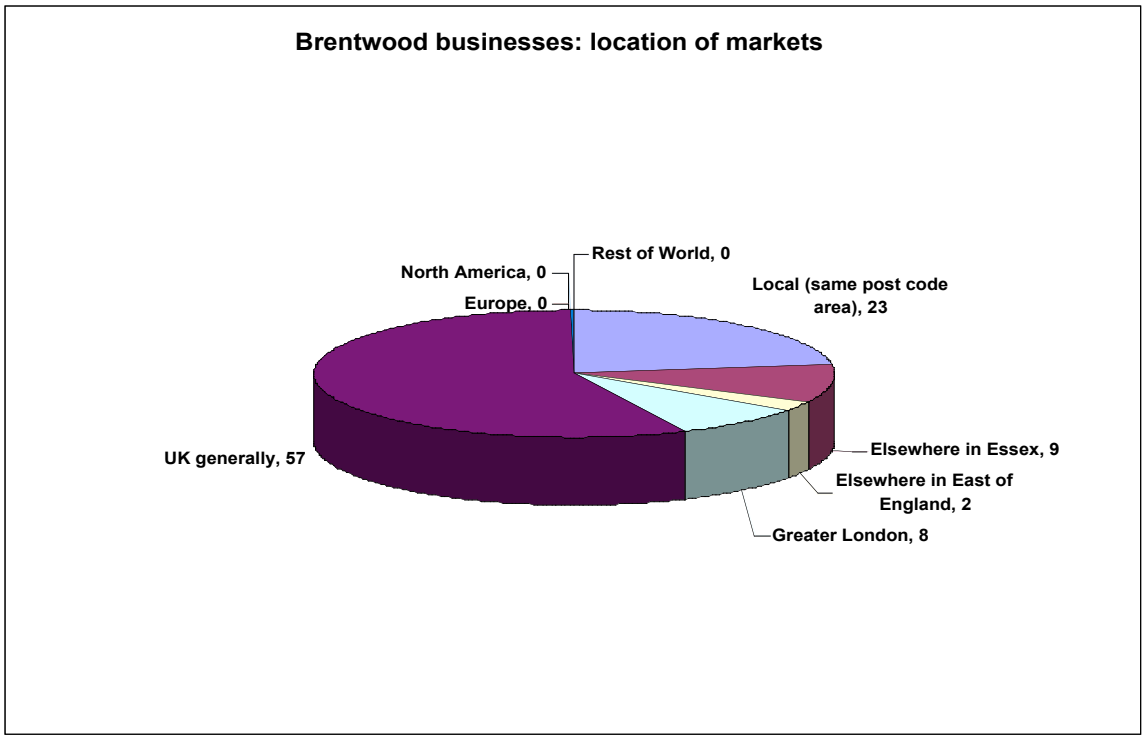
Source: Business Survey

Chart 3.5.7: Chelmsford market linkages



Source: Business Survey

Chart 3.5.8: Brentwood market linkages



Source: Business survey

In the charts above, **Brentwood** and to a slightly lesser extent **Chelmsford** are much more orientated to London and the rest of the UK. Brentwood firms sell 65% of their goods and services outside the East of England region.

There are two surprising features emerging from these results. One is the relative lack of importance of Greater London as a market. In no district does Greater London account for more than 9% of sales. The second is the insignificance of export markets, greatest in **Maldon** but amounting to just 4% of sales. As with supplies, the ultimate destination of outputs may be disguised through the existence of UK based intermediaries.

Further details and summary charts for Mid Essex as a whole will be found in Appendix 3.

3.6: Employment land use in mid-Essex

Economic land use covers both activities associated with the production of goods and services (offices and industrial premises) and with the consumption of goods and services (retail uses). It is difficult to get a good view on the state of employment land use and property development in local authority areas. The analysis is fraught with comparisons of data compiled under different classification systems related to the payment of business rates (the use of properties), the control of employment land uses under planning legislation and the way in which the property industry discusses the use of commercial buildings.

Here the theme will be outlined in relation to:

- The stock of premises in mid-Essex;
- The development control dynamic in the sub-region; and,
- The perspectives of key economic actors in the development and property industry who work in the sub-region.

3.6.1: Stock of premises in mid-Essex

Table 3.6.1 sets out the basic picture of commercial property in mid-Essex based on data from the Valuation Office (data collected for levying business rates). Within the mid-Essex area, **Braintree** and **Chelmsford** are the most important in terms of overall floor space with Chelmsford being the most significant locality for office and retail space and Braintree the most significant for factory and warehouse space. Looking at the stock of floor space within mid-Essex the overall pattern is similar to the East of England with factory floor space dominating the overall stock of bulk economic land uses but retail units dominating in terms of the numbers of hereditaments (taxable units with the administration rateable value). Within the mid-Essex area this pattern is generally repeated with the exception of floor space in **Brentwood** where office space is the single most important contributor and in **Maldon** where factory units are numerically more important than the other economic land uses. However the data suggests a basic north-south split in the sub-region where Braintree and Maldon might be classified as locations with a large stock of industrial premises

to the exclusion of other uses whilst in the south of the sub-region, the area might be characterised as an important location for office and retail uses.

Table 3.6.1: Stock of commercial property by floor space in mid-Essex, 2004

	bulk office space		bulk retail space		bulk factory space		bulk warehouse space	
	Floor space ('000s m2)	% of mid-Essex	Floor space ('000s m2)	% of mid-Essex	Floor space ('000s m2)	% of mid-Essex	Floor space ('000s m2)	% of mid-Essex
mid-Essex	617		739		1,400		882	
Braintree	118	19.1%	220	29.8%	644	46.0%	342	38.8%
Brentwood	169	27.4%	120	16.2%	123	8.8%	93	10.5%
Chelmsford	288	46.7%	325	44.0%	375	26.8%	318	36.1%
Maldon	42	6.8%	74	10.0%	258	18.4%	129	14.6%

Source: VOA/ODPM floor space statistics

Table 3.6.2: Pattern of commercial premises within local authority areas by floor space and number of hereditaments, 2004

	Bulk office space		bulk retail space		bulk factory		bulk warehouse	
	% of units	% of floor space	% of units	% of floor space	% of units	% of floor space	% of units	% of floor space
East of England	23.4%	15.6%	37.5%	19.8%	21.9%	35.9%	17.1%	28.7%
London	34.4%	39.9%	43.4%	22.6%	11.6%	15.4%	10.6%	22.2%
mid-Essex	22.7%	17.0%	35.1%	20.3%	25.8%	38.5%	16.3%	24.2%
Braintree	18.4%	8.9%	33.4%	16.6%	29.5%	48.6%	18.8%	25.8%
Brentwood	27.6%	33.5%	44.3%	23.8%	16.4%	24.4%	11.6%	18.4%
Chelmsford	25.7%	22.1%	36.0%	24.9%	22.9%	28.7%	15.4%	24.3%
Maldon	21.5%	8.3%	28.5%	14.7%	32.6%	51.3%	17.3%	25.6%

Source: VOA/ODPM floor space statistics

3.6.2: Trends in the stock of commercial premises in mid-Essex 2000-04

Table 3.6.3 outlines changes in the stocks of bulk office and bulk retail space for the period 2000-04. Change is indicated in relation to three dimensions: the number of property units (liable for business rates), the amount of floor space and the rateable value of the premises. The figures for mid-Essex suggest that over this period the amount of office floor space has increased by nearly 6% but the number of units have increased by 8.5% and the rateable value has only increased by 2%. Thus over this period the office stock appears to have decreased in terms of average size (the amount of floor space per unit) and in terms of value (the rateable value per unit of floor space). In absolute terms, **Chelmsford** experienced the largest growth in office space over this period although **Maldon** as the local authority area with the smallest stock of office space experienced the largest growth in percentage terms.

Table 3.6.3: Changes in the stock of bulk office and retail space 2000-04

	bulk office space			bulk retail space		
	% change in units	% change in floor space	% change in rateable value	% change in units	% change in floor space	% change in rateable value
East of England	8.6%	14.4%	11.4%	-1.8%	11.8%	0.9%
London	5.6%	8.0%	6.5%	-1.2%	2.2%	0.2%
mid-Essex	8.5%	5.8%	2.2%	-0.3%	8.8%	-1.2%
Braintree	7.0%	-1.7%	-6.4%	-0.6%	12.8%	-2.7%
Brentwood	4.6%	0.6%	-2.8%	-1.5%	18.8%	-4.8%
Chelmsford	6.5%	10.3%	8.2%	0.9%	2.5%	-0.2%
Maldon	21.4%	23.5%	14.6%	-0.8%	12.1%	4.2%

Source: VOA/ODPM floor space statistics

Table 3.6.4: Changes in the stock of factory and warehouse space 2000-04

	bulk factory space			bulk warehouse space		
	% change in units	% change in floor space	% change in rateable value	% change in units	% change in floor space	% change in rateable value
East of England	0.2%	-1.0%	-7.6%	5.1%	12.8%	13.0%
London	-6.9%	-14.5%	-15.8%	-0.7%	7.8%	6.1%
mid-Essex	4.6%	-1.6%	-1.5%	6.8%	19.0%	23.8%
Braintree	3.1%	3.2%	4.7%	5.4%	11.0%	12.5%
Brentwood	1.7%	-3.9%	-6.6%	0.6%	8.1%	5.4%
Chelmsford	2.2%	-10.7%	-10.9%	16.8%	35.3%	46.2%
Maldon	12.5%	2.8%	2.8%	-0.7%	15.2%	8.3%

Source: VOA/ODPM floor space statistics

On the whole the mid-Essex area has experienced a slight decline in the amount of factory space although some of this decline may have been the result of bulk factory premises being used for warehousing uses. However **Chelmsford** has experienced the steepest decline in factory floor space with a decline of over 10% in four years although the number of factory units liable for business rates has increased. One might interpret this as a decline in larger factory units and a rise in smaller units in lower value areas. Table 3.6.2 shows that a large proportion of **Maldon's** floor space is accounted for by factories and this showed steady growth between 2000 and 2004. During the same period, the rate of growth of rateable units has been four times the growth in floor space suggesting the rise of smaller units in the property stock of the area. The single most notable change in terms of industrial property is the growth of warehouse premises in **Chelmsford** where the growth rate for floor space is over one third in four years. This has been accompanied by a 46% increase in the rateable value of the premises and thus warehouse units in Chelmsford have become larger per unit and more valuable per unit of floor space.

Table 3.6.5: Changes in the rateable value per sq m of bulk commercial property

	bulk office		bulk retail		bulk factory		bulk warehouse	
	2000	2004	2000	2004	2000	2004	2000	2004
East of England	£87	£84	£105	£94	£31	£29	£35	£35
London	£183	£181	£150	£147	£42	£41	£50	£49
mid-Essex	£101	£98	£110	£100	£33	£33	£38	£40
Braintree	£78	£75	£104	£90	£32	£32	£33	£34
Brentwood	£124	£120	£113	£90	£42	£41	£48	£47
Chelmsford	£101	£99	£117	£114	£33	£33	£46	£50
Maldon	£72	£66	£87	£81	£30	£30	£29	£27

Source: VOA/ODPM floor space statistics

Table 3.6.5 takes the rateable value per square metre of floor space as a proxy for the average rental value of property in these areas. This data would suggest that the average rents in mid-Essex for office properties follow a north-south split with **Brentwood** and **Chelmsford** commanding the highest rental values. Property agents suggest that the headline rents for (new or re-furbished) B1 properties in Chelmsford or Brentwood lay in the region of £215-£275 per square metre in 2003.

The pattern of change in rateable values does not follow the neat north-south split identified in terms of the pattern of stock. In Braintree, Brentwood and Maldon average rateable values have declined in relation to both office and retail property between 2000-04 whilst factory and warehouse values have remained constant. Chelmsford values have remained stable with the exception of warehouse space where rateable values per unit of floor space have increased – this is the only increase recorded in mid-Essex.

Table 3.6.6: Intensity of employment land use 2000-04

	number of employees per 1000 m2 bulk floor space	
	2000	2004
East of England	43.1	41.3
mid-Essex	47.0	47.6
Braintree	35.2	36.2
Brentwood	59.4	59.1
Chelmsford	56.4	59.4
Maldon	40.8	35.5

Source: Annual Business Inquiry 2000, 2004, VOA/ODPM 2000, 2004

During this period the data suggests that there have been some intensification in the use of commercial properties in mid-Essex overall. It is difficult to equate jobs classified under the standard industrial classification system to specific types of premises as classified by the Valuation Office Agency (in relation to business rates) or in terms of the land use classes (used in development control). Table 3.6.6 however equates the total number of jobs in each area based on the Annual Business Inquiry and the total amount of bulk floor space in each area. This gives a global view on the intensity to which employers are using the total stock of floor space. The pattern across mid-Essex stresses the north-south split in the sub-region where more extensive land uses (industrial uses) dominate in the north of the sub-region whereas more intensive land uses (office use in particular) dominates in the south. Over the period 2000-04, the main changes to land use were recorded in **Chelmsford** where the intensity of land use appears to have increased although in **Maldon** the intensity of land use declined over this period. Clearly the intensity of land use is significant where one is trying to convert forecasts in the number of jobs into employment floor space and land allocations.

Table 3.6.7 gives some sense of the supply of available premises in mid-Essex. This can only be a snapshot as we only have one year's worth of data. Equally we do not have a consistent data source from which to measure the demand for employment land (over and above reports from individual property agents – see below). This limited picture we do have suggests that there is a relatively high

level of availability of office space on the market (in aggregate terms) across mid-Essex and in particular within **Chelmsford**. Within Chelmsford the reported take up of office space over the period 2000-03 varied between 3000-10000 square metres per year. Thus in raw terms there seems to be several year's worth of office space available in Chelmsford albeit one would need to temper this conclusion in relation to the quality of office space being sought.

The availability of industrial land appears to be tighter. In particular the Chelmsford Employment Land Review has signalled a concern that there are no available business start up units with under 50 square metres of space

Table 3.6.7: Availability rates for employment land use property 2005

	Office space			Industrial (factory & warehouse) space		
	Floor space , 2004 ('000s m2)	Advertised space , 2005 ('000s m2)	Availability rate	Floor space , 2004 ('000s m2)	Advertised space , 2005 ('000s m2)	Availability rate
mid-Essex	617	90	14.6%	2,282	156	6.8%
Braintree	118	10	8.5%	986	77	7.8%
Brentwood	169	22	13.0%	216	7	3.2%
Chelmsford	288	53	18.4%	693	37	5.3%
Maldon	42	5	11.9%	387	35	9.0%

Notes:

1. floor space figures come from VOA/ODPM statistics for 2004
2. advertised space figures come from Exdra property database cited in Chelmsford Borough Employment Land Review 2005 – figures relate to June 2005 and includes property that is both available for immediate for occupation and undeveloped employment land that is being advertised

3.6.3: Development pressure and allocations for employment land use

Development pressure can be measured in relation to the numbers of planning applications sought by developers as well as in relation to development completed. Whereas the monitoring of the stock of premises is systematically carried out through the use of rateable value data, the monitoring of administrative data through the development control process is not systematically monitored in mid-Essex.

Table 3.6.8: Planning applications for major commercial and residential development 2000-04

	number of major A2 and B1 applications per 1,000 office units 2000-04	number of major B2 & B8 applications per 1000 factory and warehouse units 2000-04	number of major A1 & A3 applications per 1000 retail units 2000-04	Major applications for dwellings per 10,000 dwellings 2000-04	listed building and conservation area applications per 10,000 dwellings 2000-04
East of England	121.7	63.6	117.0	144.7	85.3
mid-Essex	98.5	61.5	121.5	147.6	121.9
Braintree	104.8	76.7	99.1	120.0	196.0
Brentwood	85.5	45.4	60.3	109.7	64.9
Chelmsford	102.5	76.3	219.1	136.2	52.3
Maldon	93.7	20.0	31.5	283.1	206.9

Source: ODPM Development Control Statistics 2000-04, VOA/ODPM floor space statistics and Census of Population 2001.

Notes:

1. a major non-residential development is one that proposes over 1000 square metres of floor space or implicates a site of at least 1 hectare
2. a major residential development is one that involves the construction of 10 or more dwellings or implicates a site of at least 0.5 hectare.

In relation to development control applications, **Chelmsford** has been under the greatest pressure over the period 2000-04 in relation to office, industrial and retail applications. **Braintree** has been subject to similar levels of development control pressure in terms of office and industrial development but has not seen the levels of retail applications experienced in Chelmsford. Despite **Maldon** witnessing the highest growth in industrial premises (see Table 3.6.2) the local planning authority does not appear to have been subject to high levels of applications although the district is clearly under a great deal of pressure for major residential development.

Tables 3.6.9 and 3.6.10 suggest interpretations on how developers are reacting to receiving planning permission across mid-Essex. Table 3.6.9 outlines the state of outstanding planning permissions across the sub-region. These are planning permissions that have been granted but on which the developer has not acted. This would suggests that developments accounting for 512,000 square metres of floor space on just over 90 hectares of land are outstanding at the end of 2005 with the bulk of this development located in **Braintree**.

Table 3.6.9: Outstanding planning applications for use classes B1-B8, 2005

	outstanding schemes									
	schemes in urban areas					schemes in rural areas				
	No. schemes	Area (Ha)	Floor space ('000s m2)	number of units	density (m2 per Ha)	number of schemes	number of hectares	Floor space	number of units	density (m2 per Ha)
Mid-Essex	42	52.74	379.4	120	7,193	111	37.89	132.3	186	3,491
Braintree	18	39.4	324.3	58	8,233	52	15.6	53.7	70	3,443
Brentwood	8	4.3	9.1	24	2,141	21	4.7	44.2	57	9,489
Chelmsford	16	9.1	45.9	38	5,058	8	2.8	5.8	12	2,076
Maldon						30	14.8	28.5	47	1,923

Source: Essex County Council

Table 3.6.10: Completed development schemes for use classes B1-B8, 2005

	completed schemes									
	schemes in urban areas					schemes in rural areas				
	No. schemes	Area (Ha)	Floor space ('000s m2)	number of units	density (m2 per Ha)	number of schemes	number of hectares	Floor space	number of units	density (m2 per Ha)
Mid-Essex	9	7.55	36.5	14	4,829	40	10.12	24.3	84	2,397
Braintree						12	4.2	10.6	31	2,536
Brentwood	2	0.6	4.7	2	7,992	1	0.3	0.2	1	727
Chelmsford	7	7.0	31.7	12	4,560	13	1.4	6.0	36	4,183
Maldon						14	4.2	7.4	16	1,775

Source: Essex County Council

During 2005 some 61000 square metres of floor space on just over 17 hectares of land were completed. Around half of this development relating to use classes B1-B8 was located in urban **Chelmsford** with the rest completed in rural locations across the sub-region. Thus developers in Chelmsford have demonstrated a greater willingness or capacity to convert granted applications into something on the ground. It is notable that the schemes that have been completed have been far less successful in terms of development density. Whereas around 5000 square metres of floor space have been completed for each hectare of land on urban sites, only 2400 square metres of floor space has been yielded from each hectare of development land. Outstanding schemes have proposed higher levels of development per hectare both in urban and rural locations.

3.6.4: Perspective of the property and development industries in mid-Essex

A range of organisations, mainly commercial developers and property agents, involved in the mid-Essex regions were contacted. Most were very forthcoming and many had extremely useful views and ideas about the allocation and development of land in the area. Almost all information was gained via telephone

interviews with several respondents happy to discuss matters outside the immediate concerns of the questionnaire in great detail.

In terms of market trends over the past five years, all respondents noted a healthy demand for commercial property from businesses in a variety of sectors. Some respondents expressed a view that there is preference for buying rather than leasing premises and that this might be attributable to the difficulties of some firms' pension funds. One agent in **Braintree** emphasized the growing demand for premises suited to the needs of 'modern' business: high eaves, good communications infrastructure and flexible usage. Several agents indicated that there is a shortage of warehousing in the region and, with the development of Stansted and Haven Gateway, this is likely to be exacerbated.

Most agents were helping clients from outside Essex who wished to expand, or occasionally relocate, to the county. One **Chelmsford** agent stated that he thought that high rents and purchase prices were discouraging inward movement of business and, he thought, even encouraging some indigenous firms to look elsewhere: 'firms are moving from Chelmsford to other parts of Essex'.

In terms of the important characteristics that underpin the competitive edge of a location such as mid-Essex, all respondents agreed that the road access is extremely important and that it has been and that it continues to be a problem. Some felt the situation was improving particularly on the A120 that particularly affects traffic using Harwich. Others believed that congestion at busy times is acting as a disincentive to incomers. Rail transport was not generally thought to be of great importance in attracting business investment. Some opined that the expansion in the number of destinations served by Stansted Airport is having a positive impact on promoting the region to outside businesses, particularly those with branches/headquarters in other parts of Europe.

Mid-Essex is in a competitive market for business investment and undoubtedly the availability of land and property at affordable rates is crucial. Agents felt that land prices had risen rapidly in recent years, rents less so; but as yet not to the point where they were prohibitive, though much more growth might make them

so. One agent in **Braintree** felt that the town benefits from lower costs than **Chelmsford** (£3-4/m^2 – his figure). Another was far more pessimistic than the generality, believing that the differential between property prices and rents in the county and elsewhere (Norfolk and Bedford were cited) was sufficiently high to make several indigenous businesses consider relocation.

As with the businesses, property developers and agents were not aware that labour shortages exist to the degree that they are detrimental to attracting incoming firms, though again several report that their sub-region had 'full employment'. Problems resulting from difficult commuting seem of greater concern than the availability of suitably qualified staff. As above, congestion in town centres was mentioned several times, as was the difficulty encountered in getting to business parks – 'we need more public transport' (quote from a **Braintree** agent, but similar sentiments were raised by others).

All developers agreed that more land for commercial purposes is vital to the economic success of their locality (and presumably their businesses). Agents concurred with this point of view. Some were frustrated by the time taken to purchase and release land for development once sites had been identified. One recognised that this was not the fault of local authorities alone, stating: 'government streamlining is not working [….] increased bureaucracy is slowing things down'.

There was no consensus on the importance of the quality of the environment in attracting businesses to the region. Those that had a view felt that the area has a quality of environment that makes it attractive, or at least there are no major problems that might deter businesses looking to locate in mid-Essex.

No clear concerted views were expressed on the importance to incoming firms of networks and clusters. Most respondents thought they were of little or no importance; the few who felt they were important could not come up with concrete examples of where they had been a determining factor.

Social and cultural infrastructures also elicited no strong responses in favour or against the region's attractiveness. Most felt that the area had a quality of social infrastructure that made it attractive to incomers: a good balance of social and urban areas and housing, stable social mixes, sufficient cultural facilities locally and within easy reach in London. While these factors alone do not exert a large attractive force, an absence of them might discourage marginal or sceptical incomers. No respondent felt that a paucity of such infrastructure in mid-Essex was exerting a negative influence.

The only obstacle mentioned by a majority of respondents was the shortage of land for commercial development. In all locations this point was stated at least once, **Maldon** was the only location where agents seemed less than emphatic on this point as being of prime importance. One developer (Chelmsford) specifically mentioned the need for greenfield sites for commercial use rather than redevelopment of existing sites. Other issues that were raised included:

- Delays in approval of planning applications, this was mentioned by several agents and developers.
- Poor transport links – a general comment by one agent, not specific to any mode of transport or location (though the respondents' offices were in Chelmsford). Another **Chelmsford** agent cited traffic difficulties at Springfield Industrial Park as a problem requiring attention.
- A lack of reasonably priced housing for staff (raised by an agent in **Braintree**).

One thoughtful agent provided a comprehensive list of the obstacles he perceived, as well as some of the above, he listed a number if institutional problems including:

- Local resistance to infrastructure improvements
- A strong agricultural lobby restricting industrial and residential expansion
- Weak local government
- Weak delivery at local level of national government planning objectives

- Inadequate compensation for those deprived of their property (which is restricting the supply of land for commercial development)
- Too much local politics
- Not enough direction by central government.

When asked whether there was an appropriate set of premises and support services for business start ups, respondents suggested that things are not too bad in this respect, but more small premises would not go amiss. None of the respondents cited a lack of premises for small businesses as a major hindrance to start-up activity, but several concurred that more could be done if developing new firms is a specific aim of local authorities in mid-Essex. Many respondents stated they had no specialist knowledge of the support services available, those that did express an opinion felt they were adequate, though more could be done, no specific recommendations were offered.

In relation to the competitive capacity of mid-Essex to influence firms to locate or remain in the mid-Essex area, all respondents, except one, agreed that proximity to London was important or very important to the health and development of the local economy and attracting new businesses to the area. **Brentwood** and **Chelmsford** agents were particularly emphatic on this point (again with one exception). This was the most consistently important influence cited by our respondents.

The Thames Gateway was perceived as fairly important overall. There was a clear distinction between respondents in **Chelmsford** and **Brentwood**, who rated it as very important, and those in **Braintree**, who saw it as being of little importance; there was no clear view from Maldon respondents. The average rating was just over '3' (on a scale of 1 to 5 with '5' being the most important).

There was unanimous agreement that the expansion of Stansted airport is exerting a huge influence on decisions to locate in mid-Essex. Not surprisingly respondents in **Braintree** all rated its influence '5' ('Braintree is built on

Stansted') but even further afield agents gave it a very high 'score'; overall it averaged a '4.5'rating.

Our respondents failed to rate three infrastructure projects as influential: the Haven Gateway, the Cross-Rail project and the Olympic Games. In the case of the Haven Gateway our respondents had heard of the project but were not well informed as to its likely impacts and influence. The Cross-Rail project received the lowest ranking in terms of impact but again our respondents did not appear to be informed about the likely scope of the project and thus of any impacts that might be asserted in relation to it. As to the Olympic Games, our respondents were familiar with the project but were judged to be having no influence at present, unsurprisingly, but many expected that they would have an increasing impact over the next few years. When asked whether they thought the impact would be short to medium term (ie finish after the Games in 2012) or continue well after that date, our respondents were not certain of the likely impacts. These are three projects for which there may be scope to raise their profile within the property development industry in order to discuss potential impacts.

Overall, the rank order for the importance of the six factors in determining future economic prosperity was:

1. The expansion of Stansted airport
2. The state of the London economy
3. (joint 3rd) Preparation and development for the Olympic Games
4. (joint 3rd) The development of the Thames Gateway
5. The development of the Haven Gateway
6. The development of Crossrail.

When probed about potential trends over the next fifteen years, our respondents tended to be vague although those that had considered trends over this period suggested that they foresee change deriving from more firms moving out of London in search of cheaper property and reduced commuting costs.

A continuation of recent trends was envisaged, resulting in an increasingly service based and less manufacturing based local economy; given this, demand will be for more business park and warehousing facilities, rather than property primarily suited to manufacturing. This will also mean a change in skills demanded, with a greater need for professionals and staff with office skills, particularly in the area of financial services - several respondents predicted growth in this sector. One agent suggested that the area could become attractive to commuters not just to London but also 'other parts of the country'.

Although respondents were mainly commercial developers and agents, two or three talked about the benefits of bringing work to the local community and reducing demands on transport, particularly cutting down on commuting into London. In this case a balanced development of residential and commercial sites is necessary. One respondent, who appeared to have thought about this issue deeply, thought this was the ideal model for developing the area, but was rather sceptical about whether it could be achieved.

3.6.5: Employment land supply in mid-Essex

In relation to employment land use and supply in mid-Essex the following points are clear:

- Within the sub-region, Chelmsford is the most important centre for office and retail space in this period with Braintree the most important centre for factory space.
- The sub-region splits between **Chelmsford** and **Brentwood**, where office and retail space dominate the stock of commercial premises both in terms of the number of properties and in terms of floor space, and **Braintree** and **Maldon** where it factory floor space dominates the existing stock. This north-south split is reflected in the employment intensity of use and proxy rental values of commercial property.
- The key trends for the period 2000-04 suggest that significant amounts of office space have been developed in **Chelmsford** whilst change in retail floor space has concentrated in **Brentwood**. In addition there has been a significant growth in warehouse and distribution space in Chelmsford.

Maldon has experienced some large increases in office space in percentage terms but this remains relatively small in terms of the amount of floor space recorded.

- In terms of availability, the current market situation appears to be one where there is enough office space for expected demands over the next few years. However the market for industrial space incorporating distribution, warehousing and factory units is relatively tight especially in connection to start up units. Despite significant levels of warehouse development in **Chelmsford**, the rateable value per square metre (taken as a proxy measure for rental value) has increased suggesting on-going demand that has not been satisfied.
- In the period 2000-04, **Chelmsford** has been the location that has experienced highest levels of development control pressure and in which the highest number of schemes have been completed. This pressure has been highest in relation to industrial (B2-B8) and major retail scheme development.
- **Braintree** is the local authority area with the highest level of planning applications outstanding suggesting that there are blockages in the development process in the north of the sub-region.
- Overall development pressure appears to be aimed at rural areas rather than the existing urban areas but developers are experiencing difficulty in converting planning applications into development within rural areas of the sub-region.
- Property agents consider that there is a shortage of land for development in the area. This is most likely to be linked to warehouse and distribution development since there appears to be sufficient office space available.
- Property agents tend to look to the expansion of Stansted Airport and the state of the London economy as gauges to the economic prosperity of mid-Essex.

3.7 Strengths and Weaknesses

This section draws on the evidence base presented above and contained in the supporting appendices. It briefly summarises the key characteristics of the Mid Essex economy as a basis for looking forward. In particular, it draws on the interviews with key private and public sector leaders and property agents reported above and in Appendix 4.

3.7.1 Infrastructure

Interviews with key leaders revealed that transport in the region is seen as a constraint on efficiency maximization and may be hindering commercial development of the region. Businesses on industrial estates and business parks are reasonably content, though even here there were some complaints about congestion and a lack of public transport for staff. Organisations in town centres state that congestion and car parking are their biggest problems, public transport should be improved to the benefit of employees and clients.

The road infrastructure can be seen to influence the purchasing and marketing operations of businesses as revealed in the Business survey. An orientation south towards London can be seen for firms in Brentwood and Chelmsford and north east and west for Braintree firms.

The econometric analysis did not reveal any locational disadvantages for firms in Mid Essex compared with the UK, the region and nearby competing areas, suggesting that in 2002 at least, infrastructure did not hamper the operations of firms in the sub-region.

3.7.2 Premises

Business and property market related respondents agree that there is a continuing demand for expanding commercial activity in the region, both from existing and incoming organisations, and that the ability to maximize local benefits is heavily dependent on the availability of land. Most believe there is insufficient commercial land available for development at present. Once land for

commercial development is identified and allocated, planning procedures were considered time consuming and costly and they should be streamlined if possible. It is recognised that this is not entirely the responsibility of local authorities.

The sub-region splits between **Chelmsford** and **Brentwood** where office and retail space dominate the stock of commercial premises, both in terms of the number of properties and in terms of floor space, and **Braintree** and **Maldon** where it is factory uses that dominate the existing stock. This north-south split is reflected in the employment intensity of use and proxy rental values of commercial property.

In the period 2000-04, **Chelmsford** has been the location that has experienced highest levels of development control pressure and in which the highest number of schemes have been completed. This pressure has been highest in relation to warehouse and major retail scheme development. Braintree is the local authority area with the highest level of planning applications outstanding. Overall development pressure appears to be aimed at rural areas rather than the existing urban areas

3.7.3 Labour Supply, Skills and Knowledge Transfer

Analysis of data on the labour market suggests the following:

- Mid-Essex has a tight labour market with high employment rates and low unemployment rates.
- There is evidence of higher than average self-employment rates especially in the northern and eastern part of sub-region.
- There appears to be a problem in retaining young workers.
- The indigenous labour force is relatively well qualified (especially in south of sub-region) but the workplace population is relatively unqualified. This is evidence of a skills mismatch and the absence of the ‘knowledge economy’.

- With the exception of Brentwood the sub-region has relatively high levels of containment for the workplace population although there are high levels of out-commuting especially for more highly qualified labour.
- Working from home on the increase in particular within Chelmsford and Braintree – working from home accounts for around 10% of the working age population in employment.
- Relative to the South East Region, the mid-Essex area seems not to have an affordability issue when seen in relation to the earnings of residents and current mortgage rates. This is driven by the fact that large numbers of workers commute into London where average earnings are significantly higher than for the labour force that works in mid-Essex. For resident workers who also work in the mid-Essex sub-region, housing affordability issues are much more acute.

Interviews with key leaders partly support these points. However these suggested that finding staff with the required skills does not appear to be a great problem at present but with 'full employment', in parts of the region at least, there are potential difficulties in the future. Comments were made by one Maldon respondent on the unsuitability of the skills of school leavers in the area as a result of some of the decisions of schools to specialize. Ensuring a supply of labour with the appropriate skills to attract incoming firms is important if the region is to continue to prosper.

The importance of skills in increasing productivity emerges strongly from the econometric analysis. The most benefit would come from bringing skills to those with no qualifications although higher level skills were also an important driver of productivity.

The presence of ARU in Chelmsford is an important resource for taking advantage of the growth in knowledge intensive industries. This is both in terms of providing undergraduate, post graduate and professional training but also in terms of knowledge transfer through placements, Knowledge Transfer Partnerships and contracted research and consultancy. The University is

particularly active in supporting a growing cluster of e-media businesses in Mid Essex.

Graduate retention is low in the East of England compared with other regions, although there is evidence of "returners" coming back to the region after some years, often when starting a family[9]. To aid retention, it is important that the sub-region offers the most attractive quality of life for young professionals with an appropriate stock of cultural and social capital.

3.7.4. Inward Investment

To sustain the remarkable growth in employment in the sub-region it is important to continue to attract new businesses to the area. Property agents are heavily involved in this process and interviews pointed to a number of factors considered important in maintaining inward investment. There is an understandable tendency for such respondents always to see room for improvement. Their responses are summarised below:

- All agreed that the road access is extremely important and that it has been/is a problem. Some felt the situation was improving, particularly on the A120 which affects traffic using Harwich. Others believed that congestion at busy times is acting as a disincentive to incomers. Rail transport was not generally thought to be of great importance in attracting business investment. Some opined that the expansion in the number of destinations served by Stansted is having a positive impact on promoting the region to outside businesses, particularly those with branches/headquarters in other parts of Europe.

- Mid-Essex is in a competitive market for business investment and undoubtedly the availability of land and property at affordable rates is crucial. Agents felt that land prices had risen rapidly in recent years, rents less so; but as yet not to the point where they were prohibitive, though much more growth might make them so. One agent in Braintree felt that the town benefits from lower costs than Chelmsford (£3-4/m^2 – his figure). Another was far more

[9] See http://www.prospects.ac.uk For details follow link: Table 1

pessimistic than the generality, believing that the differential between property prices and rents in the county and elsewhere (Norfolk and Bedford were cited) was sufficiently high to make several indigenous businesses consider relocation.

- Property developers and agents were not aware that labour shortages exist to the degree that they are detrimental to attracting incoming firms, though again several report that their sub-region had ‘full employment’. Problems resulting from difficult commuting seem of greater concern than the availability of suitably qualified staff. As above, congestion in town centres was mentioned several times, as was the difficulty encountered in getting to business parks by public transport.

- All developers agreed that more land for commercial purposes is vital to the economic success of their locality (and presumably their businesses). Agents concurred with this point of view.

- There was no consensus on the importance of the quality of the environment in attracting businesses to the region. Those that had a view felt that the area has a quality of environment that makes it attractive, or at least there are no major problems that might deter businesses looking to locate in mid-Essex.

- Social and cultural infrastructures also elicited no strong responses in favour or against the region’s attractiveness. Most felt that the area had a quality of social infrastructure that made it attractive to incomers: a good balance of social and urban areas and housing, stable social mixes, sufficient cultural facilities locally and within easy reach in London. While these factors alone do not exert a large attractive force, an absence of them might discourage marginal or sceptical incomers. No respondent felt that a paucity of such infrastructure in mid-Essex was exerting a negative influence.

3.7.5. Key sectors

The sectors that are disproportionately strong in the four Council areas compared with the UK as a whole and those sectors that have shown the strongest growth are discussed in detail above. The key sectors on this basis are listed below:

- In **Braintree** the disproportionately strong sectors were (in descending order) Manufacture of Metals, Manufacture of Natural Products, High Tech Manufacturing, Agriculture Support, Fishing and Forestry and Construction. Remarkable employment growth has been demonstrated by Other Business Activities, way above the average for GB. This has clearly contributed more to growth than any other sector. The growth in Retail, Education and Construction was also unusually strong.

- **Brentwood** has disproportionate strength in Renting of Machinery and Equipment, Transport Manufacture, Waste Services, Financial Services, Post and Telecommunications and Construction. The district enjoyed exceptional growth in Health and Social Work, while Other Business Activities, Education, Hotels and Restaurants and Construction all showed strong growth relative to GB.

- In **Chelmsford** Post and Telecommunications, Agriculture Support/Fishing and Forestry, Construction, Public Sector and Financial Services are all disproportionately strong while Retailing, Other Business Activities, Education, the Public Sector, Financial Services, Construction, Hotels and Restaurants and High Tech Services were responsible for employment growth.

- **Maldon** employment is unusually high in Utilities, Agriculture Support/Fishing and Forestry, Publishing, Printing and Media, Manufacture of Furniture etc, Construction and High Tech Manufacturing. The District has benefited significantly from exceptional growth in Other Business Services and Construction. Well above average growth has also occurred in Education,

Manufacture of Metals and Real Estate, although the latter two sectors are only of modest size in Maldon

The outlook for the future in terms of growth sectors is discussed below.

3.7.6. Dependence on London

In the key leader interviews, the state of the London economy was seen as highly important to all respondents in the **Brentwood** and **Chelmsford** districts. **Maldon** and **Braintree** based organisations seemed generally indifferent, with the exception of leisure/tourism dependent businesses.

All property agent respondents, except one, agreed that proximity to London was important or very important to the health and development of the local economy and attracting new businesses to the area. **Brentwood** and **Chelmsford** agents were particularly emphatic on this point.

The Business Survey showed consistency with this difference in orientation between **Brentwood** and **Chelmsford** districts and **Maldon** and **Braintree**. In the case of sources of supply, firms in the former two districts obtained an average of 16% and 11% of their total supplies from London while the other two districts obtained just 3%. More crucial from the point of view of dependence is the location of markets. An average of 9% of sales was to London-based customers in the case of **Chelmsford**, 8% for **Brentwood** and just 3% for **Braintree**. However, although these figures are a good guide to the relative dependence on London, they understate the actual effective dependence. In the case of Chelmsford, 21% of sales are to other firms in the borough, and there is no reason to doubt that 9% of the sales of these will be dependant on London. A further 15% of sales are to customers in the remainder of Essex and again some of these would be dependant on London. Again, 46% of sales are to the rest of the UK and some of these customers will be dependant on London. Even so, it is unlikely that total effective direct dependence on London will exceed 20% in the case of Chelmsford businesses, still a low figure.

However, there is a further source of dependence for the Mid Essex economy as a whole. Commuting out of the region varied between 12% (Braintree) and 38% (Brentwood) of the employed residents for the four Council areas. It is highly likely that the majority of these travel to London to work where they typically enjoy higher earnings than those who stay in Mid Essex. In addition to this direct dependence on London for income, when these commuters spend locally, businesses are unlikely to classify such customers as other than local. The direct and indirect effective dependence of **Brentwood** on London for income may be more like 50% than the 8% indicated by the Business survey for business revenue. For **Chelmsford**, it is possibly around 30% but less than 20% for **Maldon** or **Braintree**.

3.7.7. Growing New Businesses

The disproportionate importance of small businesses in **Brentwood**, **Braintree** and especially **Maldon** compared with GB has been explored above. The smallest firms accounted for 34% of employment in Maldon as opposed to just 21% in GB in 2003. In **Chelmsford**, there is a relatively high proportion of medium sized firms.

Business formation is often tracked using VAT registrations. This is more precisely a measure of small business growth than formation. A comparison of the annual level of VAT registrations in each of the four Council areas with the England average is shown below.

Table 3.6.7: VAT registrations

VAT registration - comparative scores UK 1997 = 100

Year	Braintree	Brentwood	Chelmsford	Maldon	England
1997	113.56	124.21	118.89	126.63	100.00
1998	113.08	140.44	114.29	128.81	100.00
1999	106.78	126.39	108.96	122.03	96.37
2000	107.51	117.68	103.63	117.19	97.34
2001	105.08	120.10	92.25	117.43	91.04
2002	106.30	130.27	106.05	142.13	94.43
2003	121.07	120.82	113.08	131.23	100.73
2004	119.61	113.08	125.18	112.59	95.16

Source: OPDM

Brentwood and **Maldon** have averaged the highest rate over the period although **Braintree** and **Chelmsford** were ahead in 2004. Mid Essex as whole has been consistently well ahead of the England average. All this evidence points to a strength exhibited by Mid-Essex as an environment in which small businesses can prosper.

In the key leader and property agents survey, none of the respondents cited a lack of premises for small businesses as a major hindrance to start-up activity, but several concurred that more could be done if developing new firms is a specific aim of local authorities in mid-Essex. Many respondents stated they had no specialist knowledge of the support services available, those that did express an opinion felt they were adequate, though more could be done. No specific recommendations were offered.

The self-supporting nature of clusters of knowledge intensive small businesses features strongly in regional growth and competitiveness literature. The role of ARU in supporting an e-media cluster has been described above. There also appears to be a cluster of marine-orientated manufacturing and technical services emerging in the **Maldon** district.

3.7.8. Competitiveness with rest of London Arc

The econometric analysis shows that productivity of firms in Mid Essex is no different from those in proximate areas of the London ARC. This suggests that Mid Essex is on an equal competitive footing as a business location.

Further, the London Arc hardly registered as source of supply for business services or any other input in The Business Survey. Thus again, Mid Essex is well able to hold its own in competition with the Arc.

3.7.9. Role within national and regional economies

Mid Essex has a number of roles:

- An attractive area to live and bring up a family offering an excellent quality of life with good public services, buoyant employment opportunities and good access to London and other centres within the region. Fine recreational landscape and coastline within easy reach. Excellent access to a wide range of holiday destinations through Stansted
- A range of shopping and leisure opportunities both locally and within reasonable reach.
- A profitable location for a diverse range of businesses, supported by an excellent choice of business services and access to a sophisticated and well qualified labour force. A choice of different location/rental combinations within the sub-region, attractive to knowledge intensive activities. Good access to both sea and airfreight hubs to the North for high tech manufacturing and distribution.

4. The Future of the Mid Essex Economy

4.1. Forecasts and Aspirations

Forecasting is a notoriously challenging undertaking. The record of economic forecasting is hardly encouraging. The Treasury finds it difficult to forecast the growth of the UK economy just three years ahead. This project for the Mid Essex Councils requires us to look forward fifteen years and offer projections of employment and employment land usage. The following are just some of the factors that could have an impact on the UK economy that is very difficult to estimate:

- Technological change – 15 years ago the impact of the internet was not even considered
- Demographic change – inadequate allowance was made in forecasts for the increase in single person households and the extent of immigration
- Environmental constraints – although "The Limits to Growth" was published in 1974, it is only recently that sustainability considerations such as climate change have influenced future strategies
- The global economy – the rate at which the rapidly growing economies of India and China have started competing with Europe and North America in the service sector as well as manufacturing was not anticipated 15 years ago

In addition to these progressive processes of change there are more drastic events that could throw even the most far-sighted forecast:

- A highly resistant flu epidemic decimating population
- A terrorist attack resulting in extensive nuclear contamination
- A switching off of "the conveyor" causing the climate to resemble that of Siberia

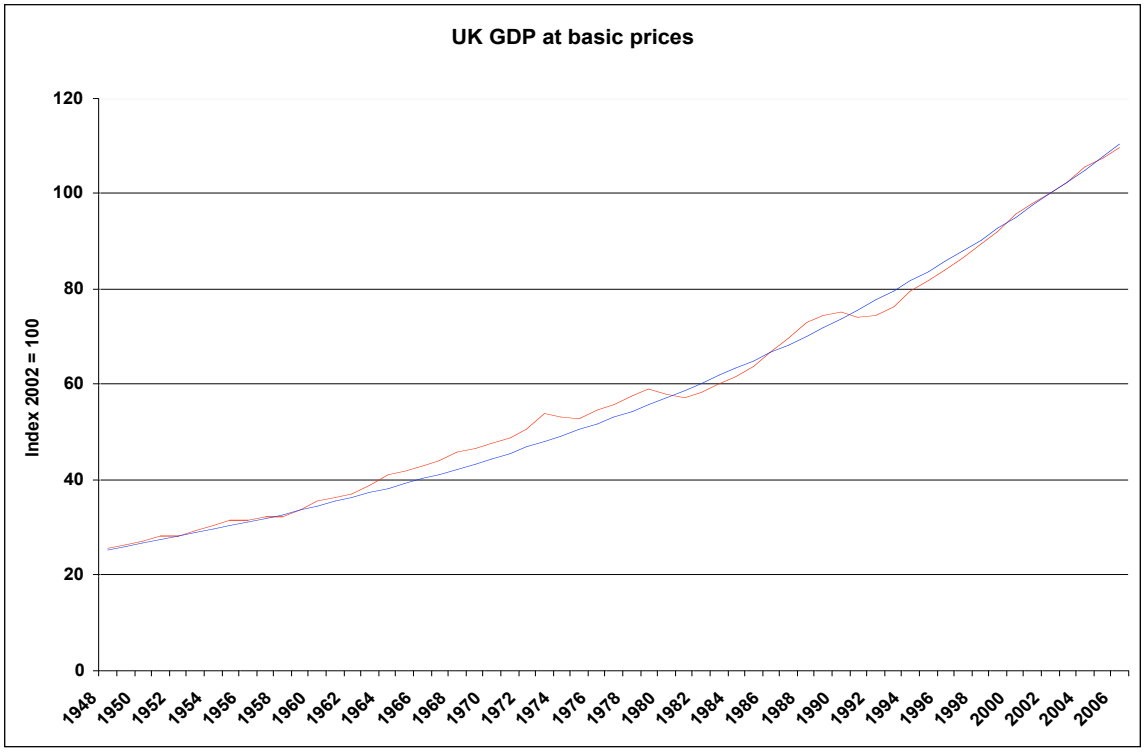
Given these unforeseeable and unpredictable factors, it might be considered that forecasting is pointless. There are two rational ways to proceed outlined below.

4.1.4. Business as Usual

Fortunately, there is one aspect of the performance of the UK economy over time which is far more predictable: the long run rate of growth of real GDP (the value of goods and services produced in the UK, corrected for the effects of inflation). The chart below shows the growth of the economy over the past 58 years, extended to

include a forecast for 2006. The path of real GDP is shown in red. We can see a rather irregular pattern of peaks and troughs in the growth caused by various factors such as government economic policies, volatile oil prices, housing and stock market bubbles and busts and the state of global markets. However, if we look at the average rate of growth over time, or the long run rate of growth, this remains relatively constant at around 2.5% p.a. This is represented by the blue line. This shows what the level of real GDP would be if the annual rate of growth was a steady 2.56%. In fact this long run growth rate has remained relatively constant at this rate since records began in 1760 in spite of world wars, epidemics, rapid global economic changes, technological revolutions and terrorist attacks!

Chart 4.1.1 UK economy – index of real GDP

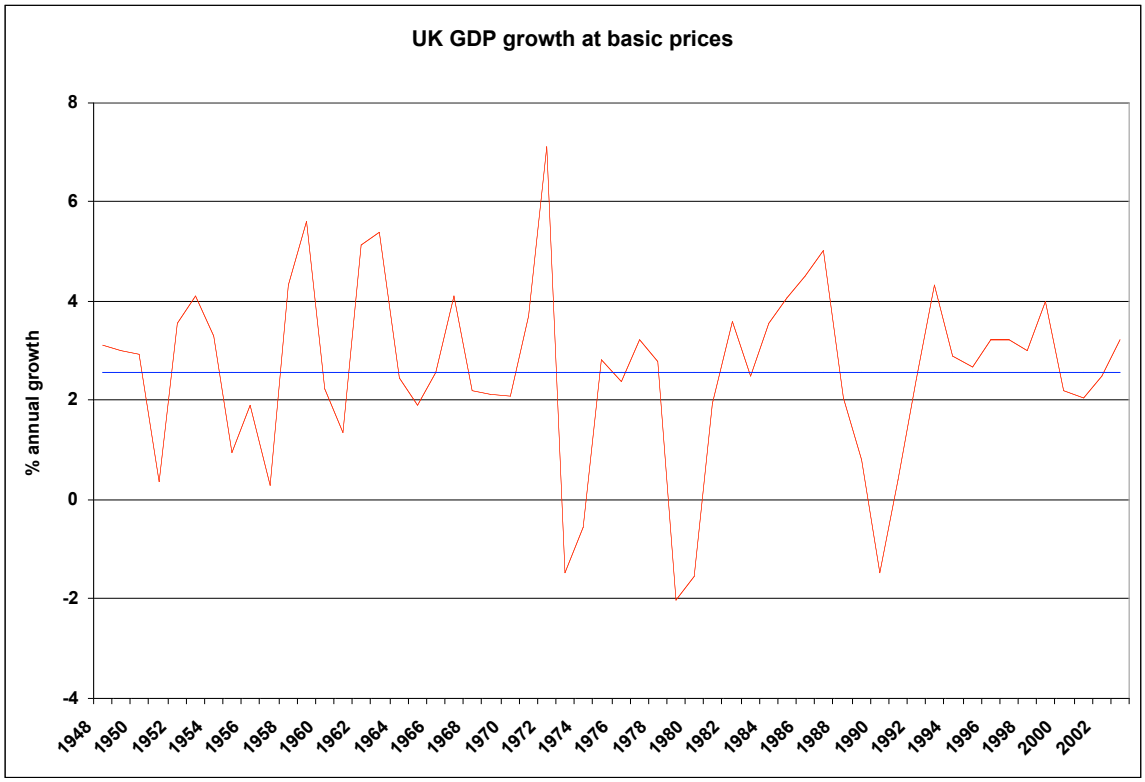


Source: ONS and author's calculations

This rather gentle picture is thrown into sharper focus if we plot the actual % annual real GDP growth rate, as in the chart below. This shows the regular "stop-go" cycles of the post war period, the deep recessions and booms of the 1970s and 1980s, followed by an altogether more stable period over the last 10 years.

The red line is the actual annual growth rate while the blue line represents the long run average rate of around 2.5%.

Chart 4.1.2 UK real GDP growth rate



Source: ONS and author's own calculations.

This long run stability offers one approach to forecasting. It is reasonable to assume that, over the next 15 years, the UK economy will experience an average rate of growth of 2.5% p.a. This allows the forecaster to be largely unconcerned about a number of short term or cyclical factors that give rise to the peaks and troughs that every 5 to 10 years such as government taxation and spending, housing and stock market effects and the state of the global economy. The reason for this is clear from the charts above. For example – a 15 year forecast made in 1985 for the year 2000 assuming a 2.5% growth rate would have been spot on. The violent fluctuations in the annual growth rate in the intervening years would have cancelled themselves out! Thus, in the current forecasting project, there is no need to pay much attention to the short term factors such as government economic policies, volatile oil prices, housing and stock market bubbles and busts and the

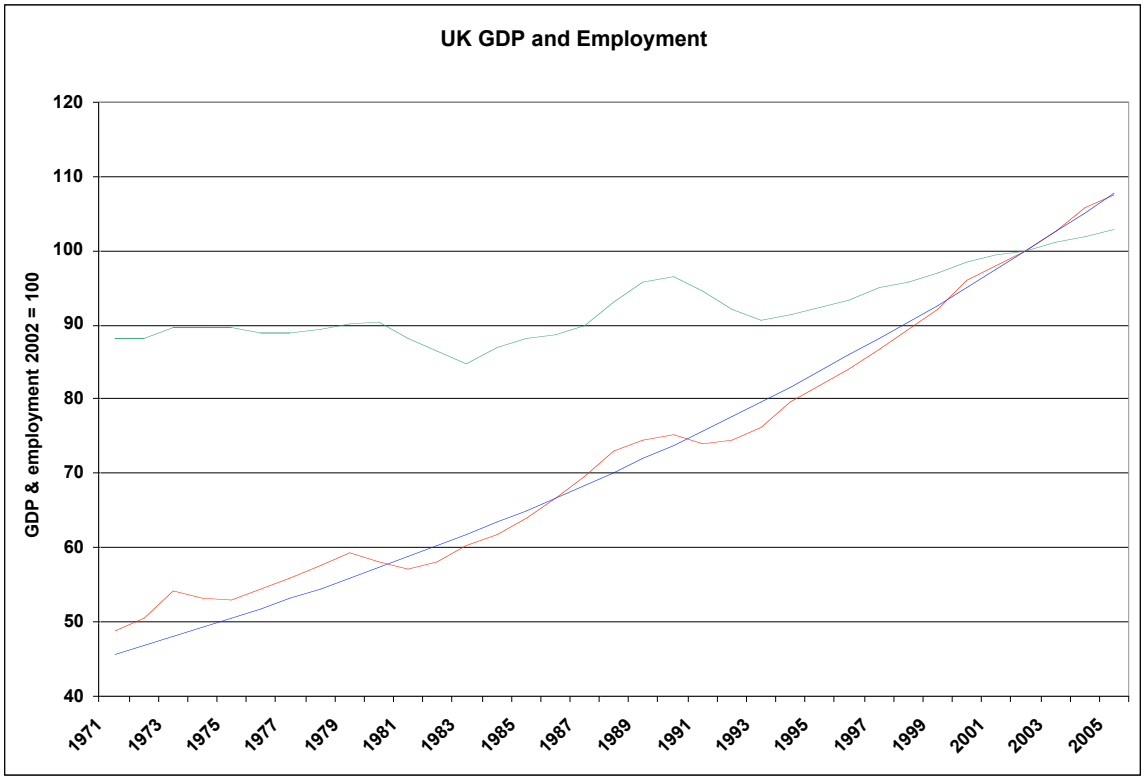
state of global markets. In this business as usual approach, the forecast is built on the assumption that the long run average growth rate of 2.5% will apply to the forthcoming 15 year period.

The next step is to take into account the fact that London and the South East (and adjacent areas such as Mid Essex) are likely to continue to grow faster than this national average. Then to arrive at employment growth, increases in productivity must be taken into account. In simple terms, the relationship is as follows:

Employment growth = GDP growth – productivity growth.

This relationship can be seen to be remarkably stable for the UK as a whole in the chart below. Employment, shown in green, reflects changes in real GDP but the growth trend is at a lower rate.

Chart 4.1.3 UK economy – index of real GDP and employment



Source: ONS and authors own calculations

4.1.5. Enhanced Growth

The second approach to forecasting is to recognise that Central Government, Regional Development Agencies and Local Authorities have the potential to influence growth rates by various initiatives such as improving infrastructure, enhancing labour force skills, supporting the establishment of new businesses and allocating sufficient land for development. In the present case, the EEDA had adopted a target for 2021 of moving into the top 20 EU regions in terms of GVA per resident (residence based productivity). The region was in 28th position in 2002. The *Draft Regional Economic Strategy (DRES)* put forward policies and targets which would have facilitated the meeting of the overall productivity target. This is referred to as the Enhanced Growth (EG) strategy. Although the productivity target has been formally dropped, EG remains as a means of maintaining and enhancing prosperity in the region.

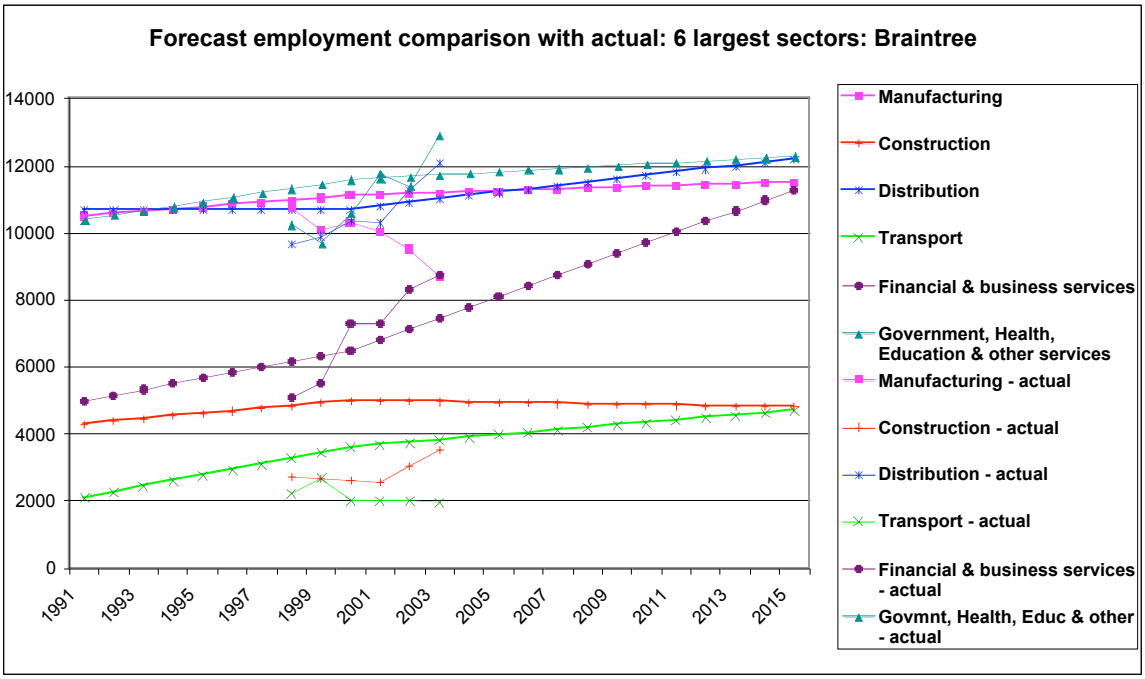
The relationship between productivity and the associated level of employment is a complex one. One way of enhancing residence based productivity is to switch employment from low productivity to high productivity sectors by encouraging the growth of the latter. Another way is to encourage the economically inactive to seek employment. A third strategy involves increasing productivity directly by enhancing workforce skills, encouraging the adoption of new technologies and improving communications infrastructure. Returning to the central focus of this project, the Enhanced Growth strategy implies higher employment growth than in the Business as Usual (BAU) forecast.

This project does not attempt to forecast employment from scratch. Instead recent employment forecasts are considered in the following section, including the forecast which forms the basis of the DRES and policy E2. These adopt a base year of 2001. As economic activity in Mid Essex has been buoyant in recent years, the actual employment growth from 2001 to the present is considered to assess the extent to which the forecasts appear realistic in relation to current employment levels.

4.1.6. Recent employment growth relative to forecasts

The ARUP forecast was published in autumn 2002, based on 2000 data, covers employment history from 1991 and projects forward to 2015**.** It provides figures for each Essex district and 9 sectors However, it is based on the old Annual Employment Survey rather than the Annual Business Inquiry, which is the basis for the data given in this report and for policy E2. The level of employment in the former is over-stated compared with the latter and it is difficult to reconcile the two. However, it is useful to consider how recent actual employment growth compares with this forecast. Chart 4.1.4 below picks out the largest 6 sectors from the ARUP forecast for Braintree. The historical data covering 1991 to 2000 has been smoothed to show the trend growth rate more clearly.

Chart 4.1.4 Braintree: comparison of sector employment forecasts

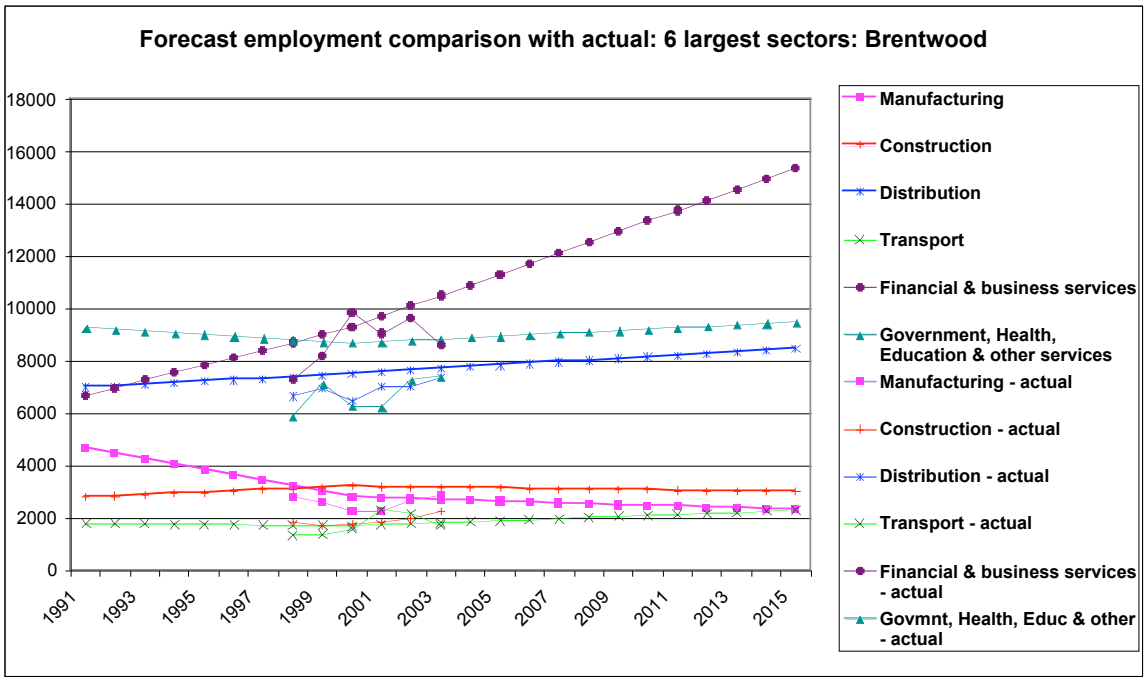


Source: ARUP 2002 and NOMIS

Braintree has a large manufacturing sector. The ARUP forecast envisaged slight growth. In contrast, actual employment in the sector fell sharply over the six years from 1998 to 2003. The public sector, Distribution and Financial and Business Services all grew much faster than the long run ARUP rate.

Brentwood's employment against the ARUP forecast is shown in Chart 4.1.5 below.

Chart 4.1.5 Brentwood: comparison of sector employment forecasts



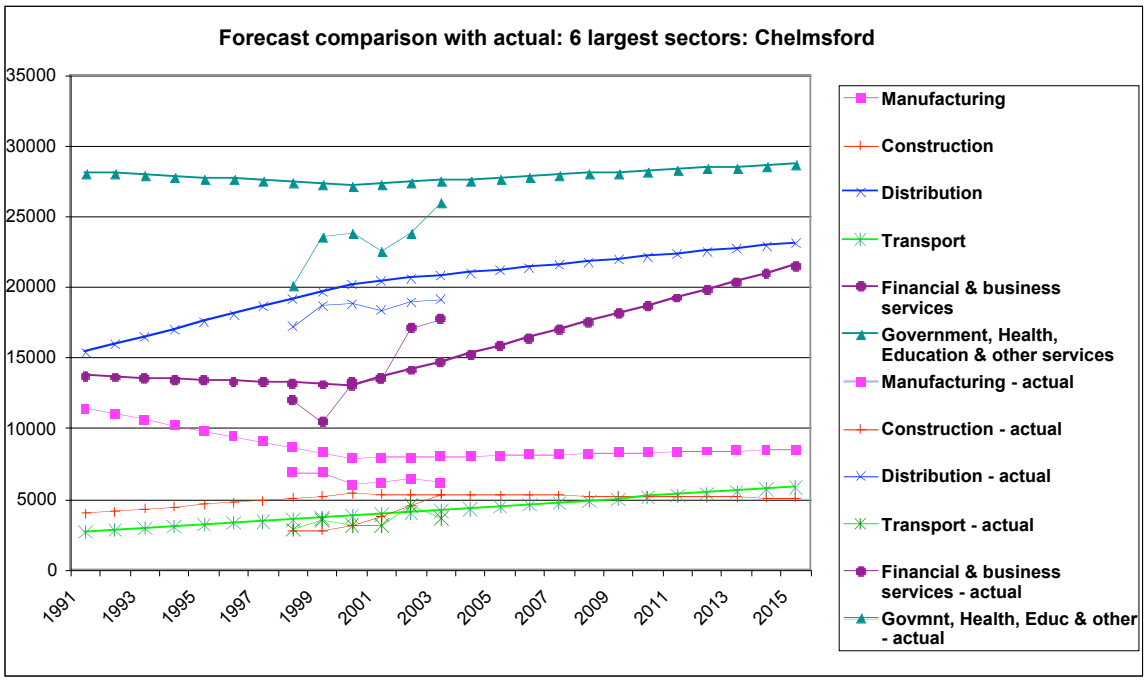
Source: ARUP 2002 and NOMIS

The anticipated growth in Financial and Business Services employment was achieved although actual year on year changes were very volatile. The increase in employment in the public sector and Financial and Business Services was greater than expected, the former markedly so.

Chelmsford's actual employment growth was much greater in the public sector, Financial and Business Services and Construction than the ARUP forecast anticipated. This is clear from Chart 4.1.6 below.

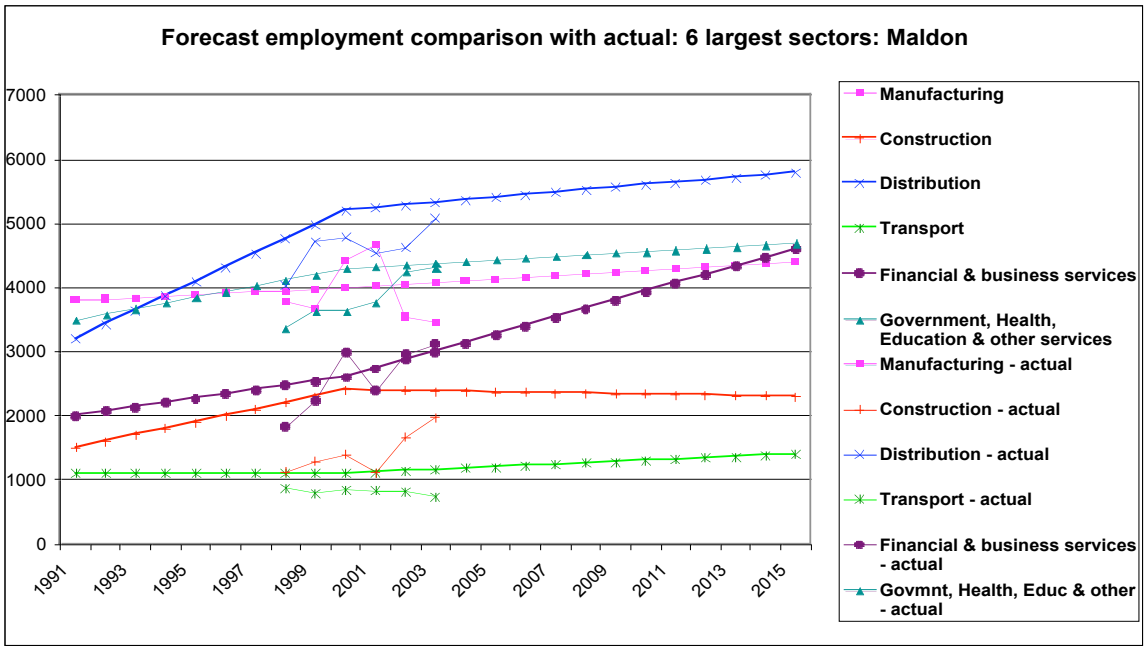
Chart 4.1.7 below shows that **Maldon** enjoyed employment growth well above ARUP's forecast rate in the public sector, Financial and Business Services, Construction and to a lesser extent, Distribution. As with Braintree, Manufacturing declined although modest growth was forecast in the longer term.

Chart 4.1.6 Chelmsford: comparison of sector employment forecasts



Source: ARUP 2002 and NOMIS

Chart 4.1.7 Maldon: comparison of sector employment forecasts



Source: ARUP 2002 and NOMIS

Common to all Council areas is a stark difference in some sectors between the projected growth rate and the actual growth in employment over the five years 1998 to 2003. It must be remembered that BAU forecasts show the anticipated long run growth and ignore short term fluctuations of the cyclical type shown in Chart 4.1.2 above.

The Bone Wells (BW) forecast was prepared in collaboration with Business Strategies Limited. This forecast forms the basis of the RES and thus policy E2. It was published in autumn 2002 based on 2001 data and projects forward to 2021. It only dis-aggregates to the Essex level and there is no explicit sector breakdown.

The employment projections can be compared directly with the historical data discussed in this report as both are based on the Annual Business Inquiry. Unlike the discussion based on the ARUP forecast above, this allows comparison between the current level of employment in 2005 and the level anticipated in policy E2 from the base year of 2001.

To achieve this comparison, two assumptions have been made. To bridge the gap between our historic data which runs to 2003, it is assumed that employment growth in Essex follows the East of England region until end 2005. This is a conservative assumption as the region has shown less growth between 1998 and 2003 than Mid Essex. The relevant growth rates are taken from **Table A13** in the appendix and are:

2003 to 2004: +1.5%

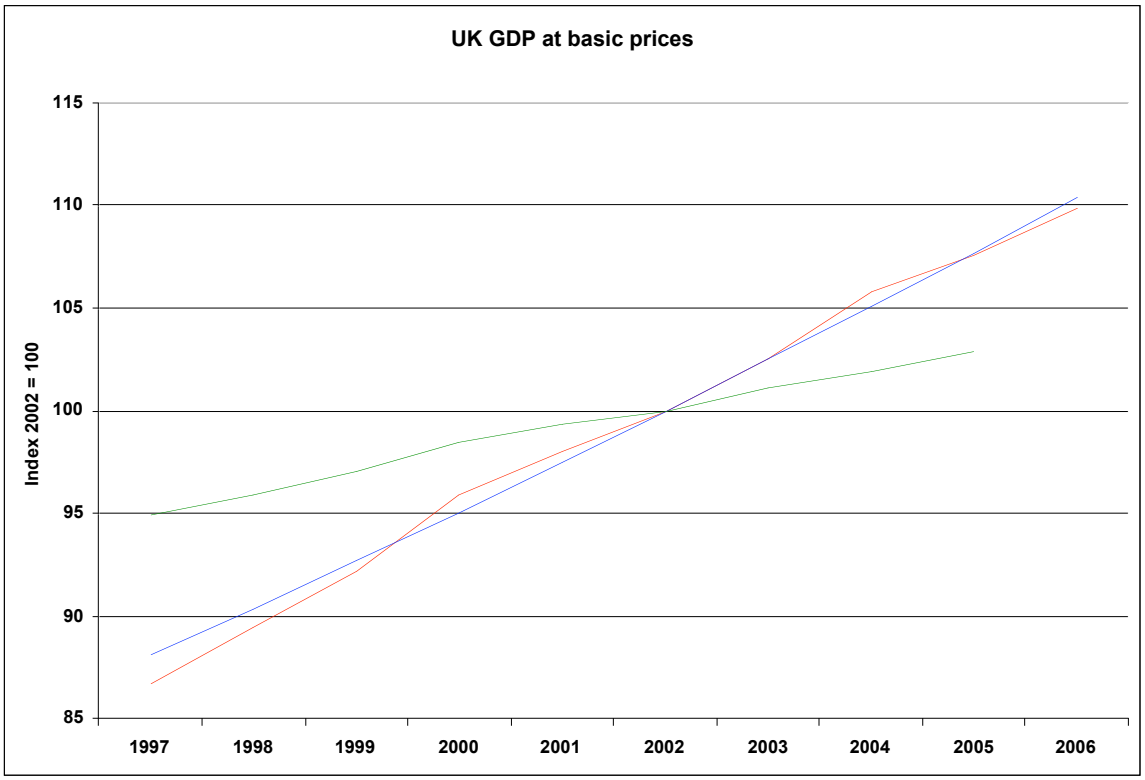
2004 to 2005: 0%

Our second assumption is made to dis-aggregate from the Essex level to the district level on the assumption that the four council areas maintain the 2003 share of Essex employment.

We have added a basic BAU forecast based on these estimates projecting forward from 2005 to 2021. To do this, we have continued with a conservative assumption that employment is flat until the end of 2006 and then grows at the Bone Wells BAU growth rate thereafter.

These rather conservative assumptions are justified by the possibility that the dramatic employment growth in some sectors in each of the four Council Areas is due to unusual cyclical factors. **Chart 4.1.8** below illustrates why this may be the case. As in Chart 4.1.3, the green line shows the lower rate of employment growth.

Chart 4.1.8 Index of UK GDP and employment 1997 to 2006 (fcst)

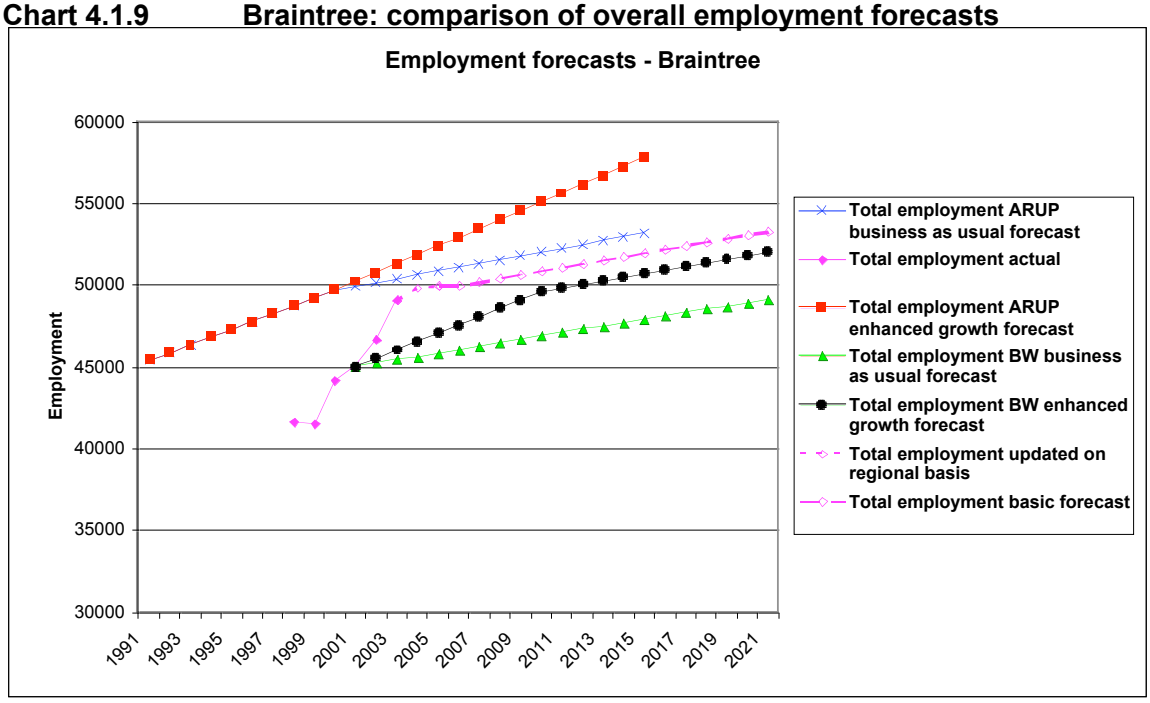


Source: ONS and author's calculations

A conservative assumption is given some justification by the fact that the UK economy fell below the long run rate of growth from 2004 onwards. If productivity growth remains the same, then the growth of employment is bound to fall.

Forecasts for the four Council areas derived from the two consultant's employment forecasts, both BAU and EG, are shown below. Given the different basis of the ARUP report, it should only be taken as an indication of growth rate, not employment level. Our own BAU forecast is shown in the charts. We will augment this with our own EG forecast after considering the opportunities and threats facing the Mid Essex economy.

Chart 4.1.9 Braintree: comparison of overall employment forecasts

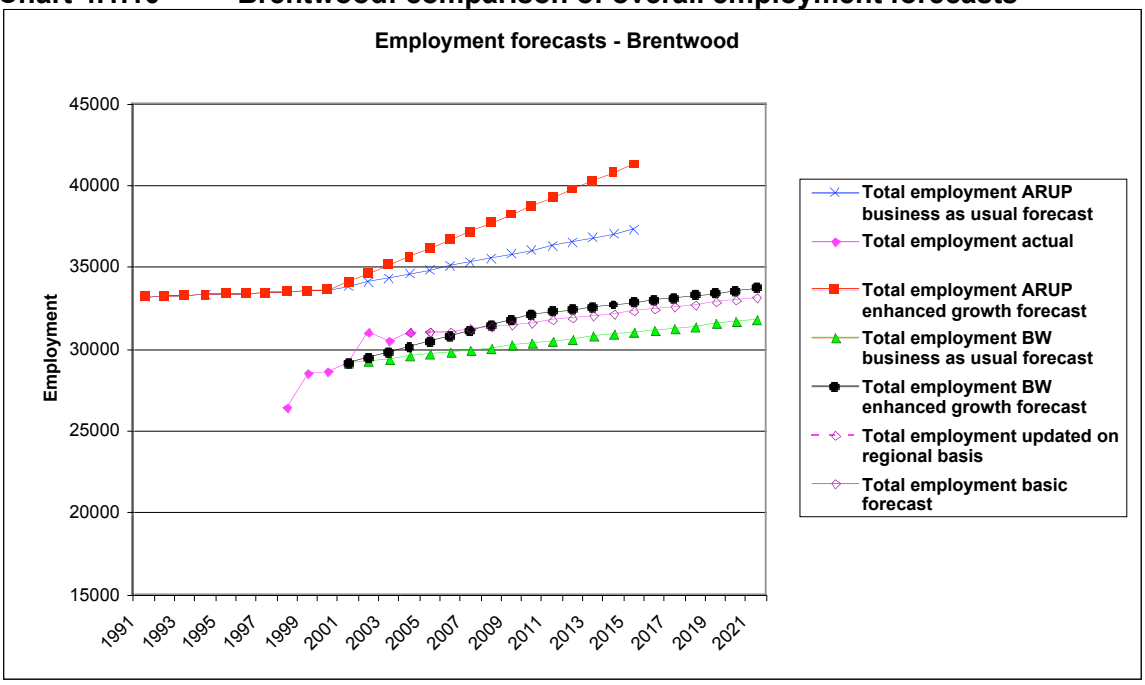


Source: ARUP 2002, Bone Wells 2002, NOMIS, ONS, author's calculations

Braintree has exhibited such remarkable employment growth up to 2004 that the BW forecast employment for 2021 under BAU has already been overtaken! Even the level of employment for 2011 under EG has already been attained. Our own basic BAU forecast shows that employment will exceed the BW EG forecast by some 2000 jobs in 2021. However, it is important to state again that BW did not provide separate forecasts for the four Council Areas, only for Essex as a whole. The growth paths shown as BW business as usual and BW enhanced growth in the Chart above are based on these Essex-wide forecasts. Nevertheless, as far as Braintree is concerned, the projection of employment under E2, even under EG21, is considered very pessimistic. The ARUP forecast implies very similar growth rates to BW, although the latter only maintains an enhanced rate until 2011 and then the BAU rate resumes.

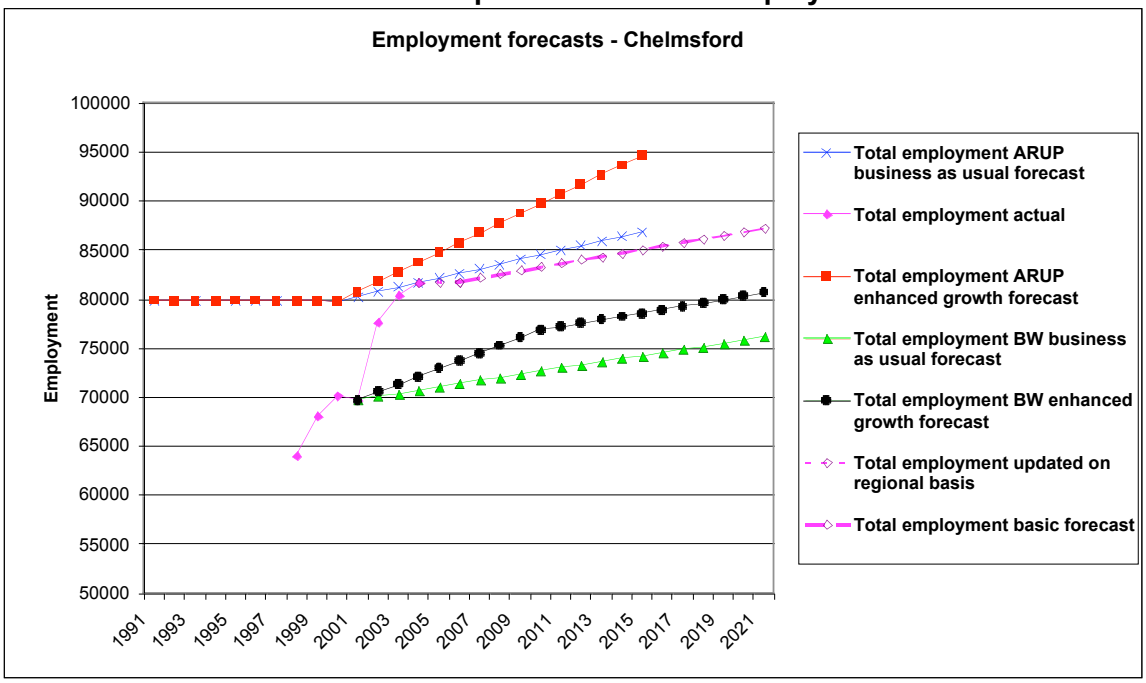
Brentwood, although not showing quite the dramatic expansion as Braintree, is already approaching the BW BAU 2021 forecast employment level. The ARUP forecast shows much higher growth rates for both BAU and EG. This is worth noting as ARUP provided a forecast specifically for each of the four Council areas while BW only forecast at county level.

Chart 4.1.10 Brentwood: comparison of overall employment forecasts



Source: ARUP 2002, Bone Wells 2002, NOMIS, ONS, author's calculations

Chart 4.1.11 Chelmsford: comparison of overall employment forecasts

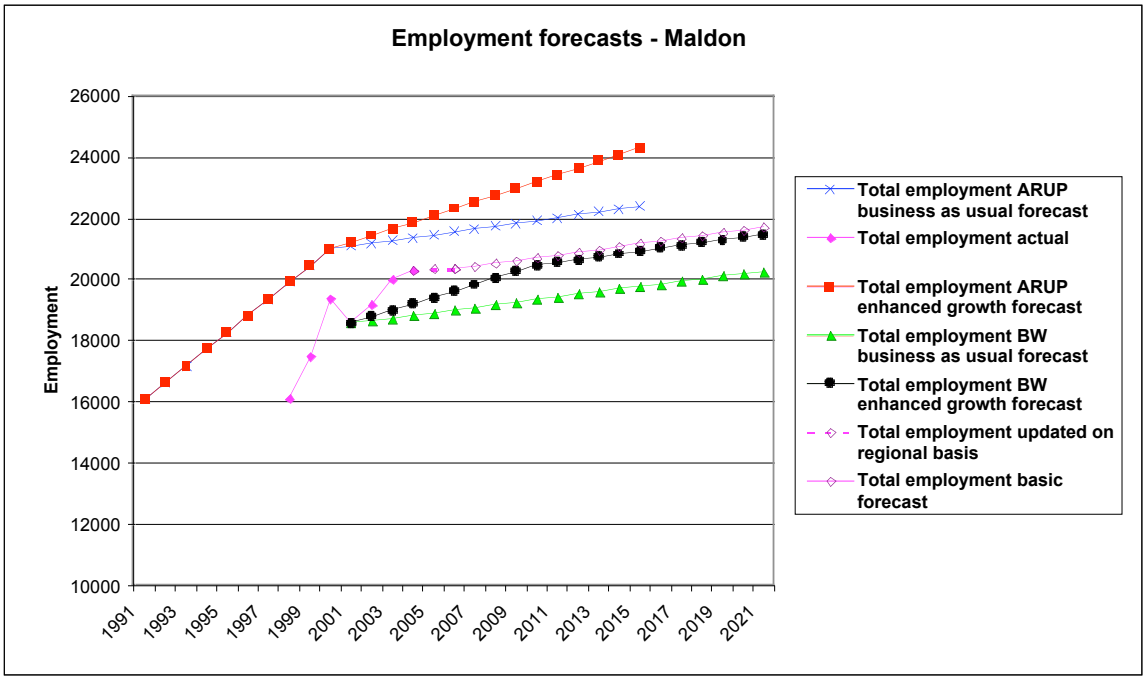


Source: ARUP 2002, Bone Wells 2002, NOMIS, ONS, author's calculations

Chelmsford has shown as dramatic an increase in employment between 1998 and 2003 as any of the four Council areas. This is shown in Chart 4.1.11 above. The number of jobs in the district has increased by over 25% during the five year period, overtaking the even the EG forecast for 2021! ARUP appears to have anticipated this growth rate to some extent as their EG forecast shows a steeper rise in employment than BW for Essex as a whole.

Maldon has also shown an exceptional increase, proportionally as great as that in Chelmsford. However, since only a small proportion of this expansion occurred after 2001 unlike the other three Council areas, the forecasts and policy E2 are perhaps less out of line with recent expansion in the case of Maldon than the other districts. Nevertheless, as Chart 4.1.12 below shows, the BAU forecast derived from BW has already been exceeded and the EG forecast looks distinctly unambitous.

Chart 4.1.1 Maldon: comparison of overall employment forecasts



Source: ARUP 2002, Bone Wells 2002, NOMIS, ONS, author's calculations

4.2. Opportunities and Threats

To go beyond the basic BAU forecast given above, it is important to consider what opportunities exist for achieving enhanced growth. It is important to bear in mind the likelihood that for one region to achieve enhanced growth or an enhanced residence based productivity target, another region will suffer lower growth or reduced productivity gains. There is thus considerable emerging competition between regions for the resources necessary to achieve such targets. The opportunities and threats facing Mid Essex in attempting to achieve enhanced growth and to contribute to an increase in the prosperity of the East of England region are discussed below.

4.2.1. High growth sectors

The sectors that have been responsible for recent employment growth in Mid Essex are:

- Other Business Activities
- Construction
- Education
- Hotels and Restaurants
- High Tech Services
- Health and Social Work
- Retail
- Public sector
- Financial services

There is of course no reason to assume that they will continue to show exceptional growth in future. The following sectors were considered likely to exhibit above average growth by ARUP in their EG forecast, assigning an extra 50% growth above the BAU scenario:

- Braintree – Financial and Business Services and Transport
- Brentwood – Financial and Business Services
- Chelmsford – Financial and Business Services, Distribution and Transport
- Maldon – Financial and Business Services

Bone Wells, forecasting for Essex as a whole consider the following sectors will show above average growth in their EG scenario.

- Business Services
- Communications
- Construction
- Education and Health
- Retail
- Transport
- Other Business and Financial Services

The sector classification used in this study is different to that used by ARUP and by Bone Wells. Nevertheless, it is possible to identify a considerable overlap between those sectors that have been responsible for historic growth and those identified as likely to enjoy enhanced growth by the consultants. In terms of the SIC sector classification used here, the following sectors are taken as the basis for an enhanced growth forecast in all four districts:

- Construction
- Education
- Financial Services
- High tech services
- Other Business Services
- Post and telecommunications
- Retail
- Transport
- Health and Social Work

The way in which enhanced growth in these sectors is used as a basis for an enhanced growth employment and employment land forecast is included in the conclusion below.

4.2.2. Economic drivers and infrastructure developments

In addition to the factors taken into account by the consultants in their forecasts, two key potential drivers have emerged which were not anticipated in 2002. One is the Olympics and the other is the expansion of Stansted. There was recognition of the importance of these in the key leader and property agent interviews.

Respondents were asked to rank these and a number of other potential major economic drivers with the following results:

Ranking by key leaders:

1 The state of the London economy
2= Preparation and development for the Olympic Games
2= The expansion of Stansted airport
4 The development of the Thames Gateway
5 The development of Crossrail
6 The development of the Haven Gateway

Ranking by property agents:

1 The expansion of Stansted airport
2 The state of the London economy
3= Preparation and development for the Olympic Games
3= The development of the Thames Gateway
5 The development of the Haven Gateway
6 The development of Crossrail

The growth development of London was taken into account by the consultants and the projections made below are based on this previous work. Given the perceived importance of Stansted and the Olympics, studies of these form part of the current work and are included as Appendix 5, Stansted and Appendix 6, The Olympics. A summary of the conclusions of these studies is given below.

Thames Gateway is planned as a balanced sustainable development and should not yield a net supply of labour or a source of employment outside Mid Essex. It is seen as a source of additional construction industry demand, and this is taken into account in the Enhanced Growth forecast below.

Haven Gateway is seen as creating the Eastern end of a “freight corridor” with Stansted to the West. It is felt that this will be of considerable attractiveness to importing and exporting businesses and this is factored in to the employment projections below.

4.2.3. The expansion of Stansted

The report in Appendix 4 reaches the following conclusions:

- BAA's plans for expansion of Stansted airport over the next 20-25 years have profound implications for the airport and its locality, including mid-Essex.

- A doubling of 2005 passenger throughput numbers by 2015 and, with a second runway, trebling, or more, by 2030 will mean an airport handling more passengers than Heathrow at the present time.

- Assuming growth of the current structure of users, Stansted will put substantial demands on:

    - Local labour markets
    - Transport infrastructure linking the airport to London, the Haven ports and other parts of southern England and the Midlands
    - Land in the immediate vicinity to allow new facilities to be built
    - Land in the environs to allow airport dependent business to locate and grow – Braintree and Chelmsford (along with towns outside Mid-Essex such as Bishop's Stortford and Harlow) seem most likely to be affected.

- Due to its different user structure (both airlines and their customers) when compared with the other two major London airports, the demands are likely to be different – fewer luxury hotels, conference facilities and business services, more 'travel lodge' type accommodation and medium to long term parking.

- Businesses located in Essex, Hertfordshire and Cambridgeshire will have far better links with their customers, suppliers and partners in other parts of the UK and Europe than those in other regions. Already Stansted serves nearly as many destinations as Heathrow - and more in Europe.

Stansted's expansion could make the area within 20-30 miles an even more attractive location for large businesses to locate their headquarters.

4.2.4. The Olympics

The report in Appendix 6 considers the impact of such sporting events for local economies. Clearly the impact will diminish sharply as the distance from the main sites increases. However, the enduring impact can be maximized by using the Games as a catalyst for improving or providing facilities which are viable subsequently for further events, conferences and for tourists and day visitors.

The actual financial effect of the Olympics on local economies is very difficult to predict. The reason for this is that there are three effects, which compound the effect of initial expenditure over time (referred to in the economics literature as a 'multiplier effect'). In brief, there are 'direct', 'indirect' and 'induced' income effects.

- Direct income effects refer to the money initially spent by investors and partners on the construction of facilities and supporting infrastructure, and expenditure by participants, spectators and tourists at the events themselves.
- Indirect income effects include the money spent by these groups of people on other activities, such as food and drink purchases in local restaurants, admission charges to museums to fill days when their chosen sport is not running, additional shopping expenditures, entertainment expenditures and trips to local areas of interest for leisure trips and sightseeing.
- Induced income effects include the expenditure by firms of their higher profits on further or new investments. These could increase efficiency and profitability and enhance the firm's ability to compete effectively in the future.

To obtain the greatest benefits from these income effects, the local economy should attempt to increase its profile in order to attract tourists (participants, spectators and sight-seers) into the area for the Games and most importantly,

subsequently. Policy makers and partners should also encourage investments in sustainable and productive infrastructure and improve the aesthetic appearance to attract a greater number of visitors during the Olympics and afterwards. Reducing outsourcing and increasing the consumption of locally produced goods will reduce the leakages from the local economy and stimulate greater local economic growth. The overall effect on the economy will depend on the extent of income retention in the local economy.

Therefore, bearing in mind that they should have sustainable and long-term effects on the local economy, the following policies could be considered to maximise the potential benefit from the Olympics:

- Invest in sustainable and efficient infrastructure
- Improve the aesthetic value of local areas
- Market the area as a place to visit
- Advertise the area as a good place to stay during the Olympics, especially for spectators (perhaps highlighting the quality of transportation links)
- Improve facilities for spectators, but bear in mind that these improvements need to be targeted towards the business sectors and the conference trade in future

4.2.5. Environment and sustainability

There are a wide range of views as to the possible constraints that the environment will place on economic development. At one extreme, there are those who believe in a “technical fix” or perhaps, more constructively, that new technologies will bring “win win” outcomes that both stimulate new industries and reduce the environmental impact of economic activity. Others see a need for a new emphasis on local production and consumption of goods and services, drastically reducing the need for travel and the transport of goods. For forecasting purposes, it is prudent to take a central position between these views.

There is one win – win policy that is implicit in the aim of achieving alignment between housing and employment policies: to reduce commuting. The environmental benefits of reducing commuting are clear. Less obvious is the benefit that would

accrue in helping the region to improve residence-based productivity . Less commuting and more employment within the region would increase the GVA generated.

A further and similar benefit would result from policies to assist firms to source supplies locally. Mid Essex is fairly successful in this respect already on the basis of the results of the Business Survey.

4.2.6. Labour and skills

The skills level for Mid Essex residents is adequate without being exceptional. Given the need to compete to attract businesses and enhance productivity, there is a threat inherent in being average.

However, the workplace qualifications are relatively low compared with the UK average, reflecting the tendency for the more highly skilled residents to work outside the area.

More disturbing is the high propensity for young people to leave the area, providing other economies with the benefit of the investment in their education, With graduates, there is evidence that a significant proportion will return in time. However it would be preferable to retain a high proportion of young skilled people in the area.

The labour market is tight and this and the lack of skills of those working in the area is a serious threat to increasing employment . One solution is to reduce commuting out, but it will be a challenge to tempt highly skilled well-paid commuters back into the Mid Essex workforce.

There is a high level of self-employment in mid Essex, which is an indicator of enterprise, especially where there are plenty of employment opportunities. Self employment is particularly high in Maldon. Working from home is also high in Maldon, and generally in Mid Essex the rate has increased strongly in recent years.

4.2.7. Inward investment and employment land

The tight labour market and the relative scarcity of certain types of premises, referred to in the section on employment land above are a reflection of the exceptional employment growth in recent years. However, now this is beginning to constitute a serious disincentive to inward investment. One of the main outputs of this report is the projection of employment land requirements. As stressed above, it is important that this is translated into usable commercial space as rapidly as possible.

4.2.8. Housing and infrastructure

Infrastructure provision has improved recently but is under increasing pressure, especially around Chelmsford. The development of Maldon and the Dengie is discouraged by poor access. The employment growth projected in the Conclusion below will only be achieved if infrastructure and public transport are improved in parallel.

Given the difficulty that may well be encountered in attracting out commuters to stay in Mid Essex to work, it may be necessary to maintain housing supply growth ahead of employment growth. Further, the provision of more affordable housing may help to discourage young well-qualified people from leaving Mid Essex.

4.2.9. Social and cultural issues

Following on from the comments above, it is important to encourage Mid Essex and especially Chelmsford to provide the social and cultural capital that will encourage young well qualified people to stay in the area, that will engender the atmosphere conducive to thriving enterprise, especially in knowledge intensive, new technology and creative sectors and will provide the setting that encourages well-paid commuters to stay in the area to work. This is a tall order, but Mid Essex has many assets that can be enhanced to achieve this such as Chelmsford's waterfront, Maldon's facilities for water sports and the attractive villages throughout the sub-region.

5. Conclusions: employment and employment land projections

The conclusions to the sections above describing the current structure of the Mid Essex economy and the future outlook are contained within the Executive Summary. Below, the enhanced growth employment and employment land projections are detailed and explained.

5.1. Employment projections

The BAU employment projections shown in Charts 4.1.9, 4.1.10, 4.1.11 and 4.1.12 are summarized in Table 5.1 below:

Table 5.1.1 Business AsUusual (BAU) employment projections

Employment	2001	2005	2021	2021-2001	2021-2005
Braintree	45029	49981	53309	8281	3328
Brentwood	29157	31084	33153	3996	2070
Chelmsford	69761	81841	87290	17529	5449
Maldon	18587	20357	21713	3126	1356
Total	162534	183263	195466	32932	12203

The Enhanced Growth projections are derived from the BAU projections as follows:

- Applying increased growth rates to certain key sectors
- Applying an overall uplift to employment in Braintree and to a lesser extent Chelmsford to reflect the impact of Stansted

The key sectors and growth uplifts are listed below:

- Construction + 75% to 2012, +50% thereafter
- Education + 50%
- Financial Services + 50%
- High tech services + 50%
- Other Business Services + 50%
- Post and telecommunications + 50%
- Retail + 50%
- Transport + 50%
- Health and Social Work + 50%

The enhanced uplift to Construction reflects the knock-on effects of increased construction activity associated with Thames Gateway and the Olympics.

There is little doubt that the expansion of Stansted will have wide ranging effects across most sectors of commercial centres well linked by road to the airport. There may well be a Haven Gateway/Stansted freight corridor effect. Thus an overall uplift of 10% is applied to Braintree and 5% to Chelmsford. Maldon and Brentwood are considered too remote to benefit.

A conservative assumption is made about employment growth during 2006. It is assumed that there is no growth during the year and growth only resumes during 2007.

The effect of these assumptions is as follows:

Table 5.1.2 Enhanced Growth employment projections

Employment	2001	2005	2021	2021-2001	2021-2005
Braintree	45029	49981	59904	14876	9923
Brentwood	29157	31084	33299	4142	2215
Chelmsford	69761	81841	93643	23882	11802
Maldon	18587	20357	22109	3523	1752
Total	162534	183263	208956	46422	25693

These figures are compared with those in Policy E2 in table 5.1.3:

Table 5.1.3 Employment projection comparisons

E2 employment targets (additional jobs)	2021 BAU	EG21	E2	MEEF BAU	MEEF EG	2001-5
Brentwood	6390	8330		3996	4142	1926
Chelmsford	4690	7970		17529	23882	12080
Maldon	80	840		3126	3523	1771
Totals	11160	17140	*9600*	24652	31546	15777

Abbreviations: MEEF – Mid Essex Economic Futures projections.

At first sight, our projections might appear excessively optimistic, apart from Brentwood. The real difference lies in the allowance for the exceptional

employment growth that occurred between 2001 and 2005. The “Regional” targets, 2021 BAU, EG21 and E2, represent additional jobs calculated from 2001. The MEEF projections use a similar methodology to that employed in the Bone Wells projections underlying the “Regional” targets but are applied to a baseline of 2005. If the growth that occurred between 2001 and 2005 is subtracted from the two MEEF projections, then they are comparable with 2021 BAU and EG21, bearing in mind that they cover 15 years as opposed to the 20 years covered by Bone Wells projections. The real outlier is E2. Furthermore the total of 9600 additional jobs includes part of the Cambridge sub-region and so is even less realistic for the three Mid Essex districts.

There is one further point. It could be argued that the MEEF projections are very pessimistic compared with the growth between 2001 and 2005. This may prove to be the case. However, initial indications are that there was no growth in 2005 following only modest growth in 2004. Thus the period of rapid growth has already come to an end. They are also some signs of capacity constraints being encountered in terms of labour supply, land availability and traffic congestion, especially in Chelmsford.

A breakdown of the BAU and EG employment forecasts by sector are given in Appendix 1 Tables A14 to A21.

5.2. Housing and employment alignment

The alignment of housing provision and employment growth is extremely difficult to achieve. It is also highly desirable on sustainability grounds. Roger Tym and Partners assessed the degree of alignment throughout the region in a study in 2004. A summary table from this study, based on the E2 projections, is given in Table 5.2.1 below. They considered an area referred to as ‘the rest of Essex’ that incorporated the districts of Chelmsford, Brentwood and Maldon. Braintree was included within the Cambridge sub-region. Their report suggested that the imbalance in labour between residents in employment and the workplace population for the rest of Essex would fall from 13,400 in 2001 to nearer 9,000 in 2021. It should be noted that this would not necessarily mean that commuting

would be reduced. It would also be necessary to reduce significantly the earnings gap that currently exists between the jobs located in mid-Essex and those located in London. The current commuting pattern for **Brentwood** (see Table 3.4.10 and 3.4.11) shows that despite there being numeric equivalency between the number of jobs in the district and the number of workers, only 45% of residents live and work in the same district.
Given that the current mid-Essex employment profile is dominated by relatively low qualified jobs and that in occupations associated with these low qualified jobs there is already a level of self-containment (see Tables 3.4.12 and 3.4.13), growth in similar types of activity is either likely to increase levels of in-commuting or increase the need for affordable housing under the business as usual scenario to a greater degree than is suggested by the Roger Tym report. These problems will be even more acute under an enhanced growth scenario.

The clear issue for economic development policy becomes one of creating employment that would impact on highly qualified workers resident in the mid-Essex sub-region where the current commuting deficit (in 2001) is of the order of 25,000 workers. There is equally the issue of creating employment that may impact on the out-migration of young workers aged 16-24 years (see Table 3.4.4) with the associated issues of getting young people onto the housing ladder within mid-Essex in the case that they can be tempted to stay.

The employment growth scenarios do create a series of complex issues for economic development policy-makers in mid-Essex. This is an area that does not have an immediately obvious spare army of labour since employment rates amongst men are very high and there is out-migration of younger workers. It has been suggested that some element of employment growth might be taken up by workers beyond the current retirement age as we look forward to better health to an older age. This would require economic development policies to support older people in the labour market and would require enlightened employers who could work with the assets that an older labour force would bring. Equally employment rates amongst younger women are at national average rates so there may be scope to encourage younger women into the labour force if the provision of facilities such as appropriately priced childcare can be stimulated.

Thus in summary there are four main approaches to tackling the increased labour demand (especially labour market deficits):

- Increase the employment rates of the existing population (especially in relation to economic activity rates);
- Reduce commuting out of the sub-region;
- Increase commuting into the sub-region; and,
- Increase the working age population through in-migration (and the house-building that follows in the wake of such a policy).

Each approach should be explored and an environmental sustainability assessment made in order to judge the most appropriate bundle of policies to adopt.

Table 5.2.1[10]

Rest of Essex

	2001		2021	Change
Dwellings	**120,828**		**140,128**	**19,300**
Vacant & 2nd Homes	3,431	2.84%	3,930	499
Occupied Dwellings	117,397		136,198	18,801
Shared Dwellings	**28**		**33**	**5**
'Individual Households'	117,369		136,165	18,796
Sharing Household	**151**		**177**	**26**
	-		-	
Households	**117,520**		**136,342**	**18,822**
Average Household Size	**2.40**		**2.15**	
Household Population Size	**281,923**		**293,378**	**11,455**
None Household Pop	3,377		4,426	1,049
	-		-	
	-		-	
Population	**285,300**		**297,804**	**12,504**
Economically Active	**146,659**		**151,743**	**5,084**
Economic Activity Rate	51%		51%	
Unemployed	4,232	2.9%	4,360	128
Resident Workers	**142,427**		**147,383**	**4,956**
	-		-	
	-		-	
	-		-	
Balance	**13,459**		**9,295**	**4,164**
Jobs less double jobbers	128,968		138,088	9,120
Jobs	**135,756**		**145,356**	**9,600**

[10] Taken from Roger Tym and Partners Alignment Study 2004

5.3. Employment land projections

Table 5.3.1: Employment (bulk uses) land use projections under a 'Business as Usual' scenario for 2005-2021

	lower bulk floor space projection ('000s m2)	upper bulk floor space projection ('000s m2)	lower projection assuming high urban density assumption (ha)	upper projection assuming high urban density assumption (ha)	lower projection converting floor space to area based on urban density (ha)	upper projection converting floor space to area based on urban density (ha)	lower projection converting floor space to area based on green field density (ha)	upper projection converting floor space to area based on green field density (ha)	employment land provision 1996-2011 in Essex Structure Plan
Braintree	92	222	12	28	19	46	38	92	80
Brentwood	35	138	4	17	7	29	15	58	1
Chelmsford	92	363	11	45	19	76	38	151	73
Maldon	38	90	5	11	8	19	16	38	21
Mid-Essex	256	814	32	102	53	169	107	339	175

Notes:

1. Lower limit on employment floor space assumes an employee density equal to current worker density (see Table 3.6.6)
2. Upper limit assumes 15 workers per 1000 m2
3. High urban density assumes 8000 m2 of floor space per hectare of employment land
4. Urban density assumes 4500 m2 of floor space per hectare of employment land
5. Green field density assumes 2400 m2 of floor space per hectare of employment land
6. Estimates for employment land include land use classes B1-B8 and A1-A5.

Table 5.3.2: Employment (bulk uses) land use projections under an 'Enhanced growth' scenario for 2005-2021

	lower bulk floor space projection ('000s m2)	upper bulk floor space projection ('000s m2)	lower projection assuming high urban density assumption (ha)	upper projection assuming high urban density assumption (ha)	lower projection converting floor space to area based on urban density (ha)	upper projection converting floor space to area based on urban density (ha)	lower projection converting floor space to area based on green field density (ha)	upper projection converting floor space to area based on green field density (ha)	employment land provision 1996-2011 in Essex Structure Plan
Braintree	274	662	34	83	57	138	114	276	80
Brentwood	37	148	5	18	8	31	16	62	1
Chelmsford	199	787	25	98	41	164	83	328	73
Maldon	49	117	6	15	10	24	21	49	21
Mid-Essex	540	1,713	67	214	112	357	225	714	175

Notes:

7. Lower limit on employment floor space assumes an employee density equal to current worker density (see Table 3.6.6)
8. Upper limit assumes 15 workers per 1000 m2
9. High urban density assumes 8000 m2 of floor space per hectare of employment land
10. Urban density assumes 4500 m2 of floor space per hectare of employment land
11. Green field density assumes 2400 m2 of floor space per hectare of employment land
12. Estimates for employment land include land use classes B1-B8 and A1-A5.

The conversion of jobs growth to employment land requires a number of assumptions. These assumptions are outlined in the notes to Tables 5.3.1 and 5.3.2 above. The tables also include the employment land allocations included in the Essex Structure Plan for 1996-2011. Under the business as usual (Table 5.3.1) the order of magnitude of employment land allocated in the Structure Plan for 1996-2011 would cover most business as usual scenarios in all the districts with the exception of **Brentwood** a district that experience particular problems with land allocation due to the tightly defined green belt.

Under the enhanced growth scenario (Table 5.3.2) the size of land allocation in the Essex Structure Plan would be able to meet much of the enhanced demand although if employment land were to be developed at low green field densities there would be a shortfall. Again in **Brentwood** the issue of employment land allocation under the enhanced growth scenario is extremely problematic unless firms in Brentwood were either able to use their existing premises more intensively

(although the area already records relatively intense employment land use) or were able to re-develop existing sites to squeeze more floor space onto existing land take. It is unclear as to the degree to which the district could satisfy employment growth projections by achieving these changes to employment land use.

Appendix 1: Tables

Table A1

Braintree - % of total employment by sector 2003	%
Other business activities	12.95
Retail trade	12.39
Health and social work	9.98
Education	7.63
Construction	7.31
Hotels and restaurants	5.26
Wholesale trade	4.78
Manufacture of metals	4.65
High tech manufacturing	4.57
Public sector	4.49
Transport	3.30
Tourism	3.15
Motor sales and services	2.64
Manufacture of chemicals & non metallic materials	2.57
Food & beverage manufacturing	2.36
Financial services	2.17
Other service activities	1.46
Manufacture of natural products	1.42
High tech services	1.37
Publishing, printing and media	1.16
Real estate activities	1.15
Manufacture of furniture etc.	1.00
Post and telecommunications	0.77
Renting of machinery and equipment	0.49
Agriculture support/fishing and forestry	0.46
Manufacture of clothing and textiles	0.23
Mining and extraction	0.08
Transport manufacture	0.08
Utilities	0.08
Waste services	0.07
Recycling	0.01
Total	100.00

Source: NOMIS

Table A2

Brentwood - % of total employment by sector 2003	%
Other business activities	14.21
Retail trade	9.67
Health and social work	9.34
Hotels and restaurants	8.09
Education	7.95
Financial services	7.79
Construction	7.49
Wholesale trade	4.05
Post and telecommunications	3.56
Tourism	3.07
Transport manufacture	3.00
High tech services	2.84
Motor sales and services	2.48
Transport	2.13
Manufacture of chemicals & non metallic materials	1.86
Real estate activities	1.83
Public sector	1.80
Publishing, printing and media	1.71
Renting of machinery and equipment	1.69
Other service activities	1.48
High tech manufacturing	0.91
Waste services	0.82
Manufacture of metals	0.82
Food & beverage manufacturing	0.44
Manufacture of natural products	0.36
Utilities	0.21
Manufacture of furniture etc.	0.19
Agriculture support/fishing and forestry	0.14
Manufacture of clothing and textiles	0.07
Recycling	0.01
Mining and extraction	0.00
Total	100.00

Source: NOMIS

Table A3

Chelmsford - % of total employment by sector 2003	%
Retail trade	12.53
Education	10.45
Other business activities	10.42
Health and social work	10.14
Public sector	8.51
Financial services	7.05
Construction	6.78
Hotels and restaurants	6.52
High tech manufacturing	3.03
Post and telecommunications	3.00
High tech services	2.96
Wholesale trade	2.80
Motor sales and services	2.36
Tourism	2.26
Transport	1.67
Food & beverage manufacturing	1.62
Real estate activities	1.44
Other service activities	1.18
Manufacture of metals	0.78
Publishing, printing and media	0.70
Manufacture of natural products	0.64
Utilities	0.62
Manufacture of chemicals & non metallic materials	0.60
Renting of machinery and equipment	0.56
Agriculture support/fishing and forestry	0.40
Waste services	0.32
Manufacture of furniture etc.	0.23
Mining and extraction	0.23
Transport manufacture	0.16
Manufacture of clothing and textiles	0.04
Recycling	0.02
Total	100.00

Source: NOMIS

Table A4

Maldon - % of total employment by sector 2003	%
Retail trade	11.85
Construction	10.25
Other business activities	9.95
Health and social work	8.17
Hotels and restaurants	7.52
Education	6.35
High tech manufacturing	5.52
Wholesale trade	4.13
Tourism	3.77
Publishing, printing and media	3.48
Transport	3.09
Motor sales and services	2.87
Public sector	2.72
Manufacture of metals	2.70
Real estate activities	2.21
Utilities	1.99
Manufacture of chemicals & non metallic materials	1.89
High tech services	1.80
Manufacture of furniture etc.	1.71
Financial services	1.57
Other service activities	1.23
Agriculture support/fishing and forestry	0.98
Transport manufacture	0.91
Manufacture of natural products	0.89
Post and telecommunications	0.72
Food & beverage manufacturing	0.68
Renting of machinery and equipment	0.67
Manufacture of clothing and textiles	0.16
Waste services	0.12
Mining and extraction	0.10
Recycling	0.02
Total	100.00

Source: NOMIS

Table A5

Location Quotients 2003	Braintree
Manufacture of metals	2.83
Manufacture of natural products	2.08
High tech manufacturing	1.85
Agriculture support/fishing and forestry	1.73
Construction	1.64
Food & beverage manufacturing	1.38
Manufacture of furniture etc.	1.37
Motor sales and services	1.24
Manufacture of chemicals & non metallic materials	1.18
Other service activities	1.17
Other business activities	1.15
Wholesale trade	1.11
Retail trade	1.07
Publishing, printing and media	0.89
Tourism	0.88
Health and social work	0.87
Renting of machinery and equipment	0.87
Education	0.84
Transport	0.82
Public sector	0.82
Hotels and restaurants	0.77
Real estate activities	0.75
High tech services	0.60
Financial services	0.51
Manufacture of clothing and textiles	0.41
Post and telecommunications	0.38
Mining and extraction	0.36
Utilities	0.18
Waste services	0.18
Recycling	0.14
Transport manufacture	0.06

Source:NOMIS

Table A6

Location Quotients 2003	Brentwood
Renting of machinery and equipment	2.99
Transport manufacture	2.25
Waste services	2.17
Financial services	1.84
Post and telecommunications	1.77
Construction	1.68
Publishing, printing and media	1.32
Other business activities	1.26
High tech services	1.24
Real estate activities	1.20
Other service activities	1.19
Hotels and restaurants	1.18
Motor sales and services	1.16
Wholesale trade	0.94
Education	0.88
Tourism	0.86
Manufacture of chemicals & non metallic materials	0.86
Retail trade	0.84
Health and social work	0.82
Agriculture support/fishing and forestry	0.54
Manufacture of natural products	0.53
Transport	0.53
Manufacture of metals	0.50
Utilities	0.46
High tech manufacturing	0.37
Public sector	0.33
Food & beverage manufacturing	0.26
Manufacture of furniture etc.	0.26
Recycling	0.23
Manufacture of clothing and textiles	0.12
Mining and extraction	0.00

Source:NOMIS

Table A7

Location Quotients 2003	Chelmsford
Financial services	1.67
Public sector	1.55
Construction	1.52
Agriculture support/fishing and forestry	1.49
Post and telecommunications	1.49
Utilities	1.37
High tech services	1.30
High tech manufacturing	1.22
Education	1.15
Motor sales and services	1.11
Retail trade	1.08
Mining and extraction	1.03
Renting of machinery and equipment	0.98
Hotels and restaurants	0.95
Other service activities	0.95
Food & beverage manufacturing	0.95
Real estate activities	0.94
Manufacture of natural products	0.93
Other business activities	0.92
Health and social work	0.89
Waste services	0.84
Wholesale trade	0.65
Tourism	0.63
Publishing, printing and media	0.54
Manufacture of metals	0.47
Transport	0.42
Recycling	0.33
Manufacture of furniture etc.	0.32
Manufacture of chemicals & non metallic materials	0.28
Transport manufacture	0.12
Manufacture of clothing and textiles	0.07

Source:NOMIS

Table A8

Location Quotients 2003	Maldon
Utilities	4.39
Agriculture support/fishing and forestry	3.66
Publishing, printing and media	2.68
Manufacture of furniture etc.	2.34
Construction	2.30
High tech manufacturing	2.23
Manufacture of metals	1.64
Real estate activities	1.44
Motor sales and services	1.35
Manufacture of natural products	1.30
Renting of machinery and equipment	1.19
Hotels and restaurants	1.10
Tourism	1.06
Retail trade	1.03
Other service activities	0.99
Wholesale trade	0.96
Other business activities	0.88
Manufacture of chemicals & non metallic materials	0.87
High tech services	0.79
Transport	0.77
Health and social work	0.71
Education	0.70
Transport manufacture	0.68
Public sector	0.50
Mining and extraction	0.46
Food & beverage manufacturing	0.40
Financial services	0.37
Post and telecommunications	0.36
Waste services	0.32
Manufacture of clothing and textiles	0.27
Recycling	0.27

Source:NOMIS

Table A9: Braintree

Braintree employment growth by sector relative to GB 1998 – 2003	Rel growth %	Employment	% in firms over 200
Other business activities	13.46	6250	32
Retail trade	4.43	5980	32
Health and social work	1.60	4817	4
Education	4.03	3682	9
Construction	5.29	3529	12
Hotels and restaurants	2.09	2538	0
Wholesale trade	1.84	2307	0
Manufacture of metals	1.79	2244	37
High tech manufacturing	-0.94	2208	9
Public sector	1.17	2168	33
Transport	-5.03	1593	0
Tourism	0.25	1519	0
Motor sales and services	7.82	1276	0
Manufacture of chemicals & non metallic materials	8.94	1240	0
Food & beverage manufacturing	-0.88	1139	61
Financial services	11.83	1050	0
Other service activities	5.76	704	0
Manufacture of natural products	8.93	686	32
High tech services	3.06	662	0
Publishing, printing and media	-5.61	558	0
Real estate activities	5.11	553	0
Manufacture of furniture etc.	-5.12	483	0
Post and telecommunications	0.03	370	0
Renting of machinery and equipment	15.76	236	0
Agriculture support/fishing and forestry	1.98	223	0
Manufacture of clothing and textiles	5.75	112	0
Mining and extraction	8.76	39	0
Transport manufacture	-14.73	39	0
Utilities	3.04	39	0
Waste services	-11.62	32	0
Recycling	-	4	0

Source: NOMIS

Table A10: Brentwood

Brentwood employment growth by sector relative to GB 1998 - 2003	Rel growth %	Employment	% in firms over 200
Other business activities	5.27	4321	6
Retail trade	-2.95	2940	20
Health and social work	8.36	2840	35
Hotels and restaurants	3.93	2461	0
Education	5.30	2417	13
Financial services	-4.92	2370	37
Construction	4.15	2279	21
Wholesale trade	1.35	1232	0
Post and telecommunications	47.40	1082	65
Tourism	-3.07	933	0
Transport manufacture	-1.14	912	99
High tech services	-1.30	863	0
Motor sales and services	7.49	754	0
Transport	-9.19	648	0
Manufacture of chemicals & non metallic materials	41.02	566	63
Real estate activities	2.94	557	0
Public sector	-9.19	547	42
Publishing, printing and media	8.12	520	0
Renting of machinery and equipment	66.68	513	58
Other service activities	3.06	450	0
High tech manufacturing	-0.38	276	0
Waste services	-2.05	250	0
Manufacture of metals	0.64	248	0
Food & beverage manufacturing	8.41	135	0
Manufacture of natural products	0.42	111	0
Utilities	-14.63	63	0
Manufacture of furniture etc.	-4.59	57	0
Agriculture support/fishing and forestry	5.78	44	0
Manufacture of clothing and textiles	-2.33	21	0
Recycling	-	4	0
Mining and extraction	-15.62	0	0

Source: NOMIS

Table A11: Chelmsford

Chelmsford employment growth by sector relative to GB 1998 - 2003	Rel growth %	Employment	% in firms over 200
Retail trade	-0.30	9910	38
Education	4.60	8259	47
Other business activities	7.41	8241	25
Health and social work	-1.15	8018	54
Public sector	6.84	6727	45
Financial services	5.92	5577	53
Construction	17.34	5362	9
Hotels and restaurants	8.57	5152	0
High tech manufacturing	2.41	2395	68
Post and telecommunications	4.27	2369	69
High tech services	9.37	2343	34
Wholesale trade	-5.11	2217	0
Motor sales and services	1.61	1867	0
Tourism	1.15	1784	0
Transport	3.83	1319	16
Food & beverage manufacturing	7.31	1280	87
Real estate activities	8.07	1138	0
Other service activities	-0.56	935	0
Manufacture of metals	1.91	615	0
Publishing, printing and media	-3.48	553	0
Manufacture of natural products	1.01	504	47
Utilities	-1.58	490	53
Manufacture of chemicals & non metallic materials	-0.01	475	0
Renting of machinery and equipment	12.01	439	0
Agriculture support/fishing and forestry	1.77	315	0
Waste services	11.62	250	0
Manufacture of furniture etc.	2.96	183	0
Mining and extraction	11.15	182	0
Transport manufacture	-4.70	126	0
Manufacture of clothing and textiles	9.09	31	0
Recycling	-18.17	15	0

Source: NOMIS

Table A12: Maldon

Maldon employment growth by sector relative to GB 1998 - 2003	Rel growth %	Employment	% in firms over 200
Retail trade	5.91	2285	35
Construction	14.67	1977	21
Other business activities	14.98	1918	15
Health and social work	-1.61	1576	16
Hotels and restaurants	4.45	1449	15
Education	13.09	1225	18
High tech manufacturing	2.32	1064	0
Wholesale trade	0.39	797	0
Tourism	5.55	727	28
Publishing, printing and media	1.22	671	76
Transport	-5.12	596	0
Motor sales and services	1.74	553	0
Public sector	2.30	524	0
Manufacture of metals	13.34	520	0
Real estate activities	31.48	426	0
Utilities	3.50	383	95
Manufacture of chemicals & non metallic materials	2.32	364	0
High tech services	11.52	347	0
Manufacture of furniture etc.	-0.09	329	0
Financial services	-5.12	302	0
Other service activities	-2.82	237	0
Agriculture support/fishing and forestry	0.33	188	0
Transport manufacture	-4.33	175	0
Manufacture of natural products	6.00	171	0
Post and telecommunications	-4.04	138	0
Food & beverage manufacturing	-5.25	132	0
Renting of machinery and equipment	13.24	129	0
Manufacture of clothing and textiles	-2.88	30	0
Waste services	-12.89	23	0
Mining and extraction	-3.12	20	0
Recycling	-23.23	3	0

Table A13

EMPLOYMENT

East

5 Employee jobs[1] by industry

(thousands), not seasonally adjusted

Standard Industrial Classification (1992)

SIC 1992 SECTION		All jobs (seasonally adjusted)	All jobs A-O	Agriculture Forestry & Fishing A,B	Mining Energy & Water Supplies Industries C,E	Manufacturing Industries D	Construction F	Service Industries G-K	Other Industries L-O
		1	2	3	4	5	6	7	8
All jobs	Jun 02	2,256	2,256	30	14	321	114	1,166	612
	Jun 03	2,297	2,296	30	13	305	118	1,191	639
	Jun 04	2,332	2,330	31	13	294	123	1,210	660
	Sep 04	2,343	2,341	34	13	293	130	1,212	660
	Dec 04	2,348	2,361	34	13	289	138	1,223	662
	Mar 05	2,346	2,337	35	13	288	136	1,210	656
	Jun 05	**2,337**	**2,336**	**33**	**13**	**284**	**133**	**1,213**	**659**
Change on quarter		*-9*							
Change %		*-0.4*							
Change on year		*6*	*6*	*3*	*0*	*-10*	*10*	*3*	*-1*
Change %		*0.2*	*0.3*	*8.7*	*0.0*	*-3.2*	*8.2*	*0.3*	*-0.1*

Table A14 Braintree: Business As Usual Forecast

Braintree	2005	2021	Change	Change %
Agriculture support/fishing and forestry	231	240	10	4.2
Mining and extraction	40	40	0	-0.1
Food & beverage manufacturing	1179	879	-300	-25.4
Manufacture of clothing and textiles	116	66	-50	-43.3
Manufacture of natural products	710	372	-338	-47.6
Publishing, printing and media	578	301	-277	-48.0
Manufacture of chemicals & non metallics	1284	1343	59	4.6
Manufacture of metals	2323	1218	-1105	-47.6
High tech manufacturing	2286	1442	-844	-36.9
Transport manufacture	40	40	0	0.0
Manufacture of furniture etc.	500	261	-239	-47.8
Recycling	4	4	0	0.0
Utilities	40	35	-6	-13.9
Construction	3653	4120	466	12.8
Motor sales and services	1321	1486	165	12.5
Wholesale trade	2388	2396	8	0.3
Retail trade	6191	7865	1674	27.0
Hotels and restaurants	2627	2986	359	13.7
Transport	1649	1494	-155	-9.4
Post and telecommunications	383	409	26	6.8
Financial services	1087	1402	315	29.0
Real estate activities	572	778	205	35.8
Renting of machinery and equipment	244	331	86	35.3
High tech services	685	868	182	26.6
Other business activities	6470	7679	1208	18.7
Public sector	2244	2285	41	1.8
Education	3812	4575	763	20.0
Health and social work	4987	5626	639	12.8
Waste services	33	19	-14	-42.8
Tourism	1573	1830	257	16.4
Other service activities	729	918	190	26.0
Total	**49981**	**53309**	**3328**	**6.7**

Table A15 Braintree: Enhanced Growth Forecast

Braintree	2005	2021	Change	Change %
Agriculture support/fishing and forestry	231	253	22	9.6
Mining and extraction	40	42	2	4.7
Food & beverage manufacturing	1179	894	-285	-24.1
Manufacture of clothing and textiles	116	65	-51	-43.9
Manufacture of natural products	710	365	-345	-48.6
Publishing, printing and media	578	295	-283	-49.0
Manufacture of chemicals & non metallics	1284	1414	130	10.1
Manufacture of metals	2323	1195	-1128	-48.6
High tech manufacturing	2286	1442	-843	-36.9
Transport manufacture	40	42	2	4.8
Manufacture of furniture etc.	500	256	-244	-48.8
Recycling	4	4	0	4.8
Utilities	40	36	-4	-11.1
Construction	3653	4727	1074	29.4
Motor sales and services	1321	1576	255	19.3
Wholesale trade	2388	2513	124	5.2
Retail trade	6191	9611	3421	55.3
Hotels and restaurants	2627	3170	542	20.6
Transport	1649	1469	-180	-10.9
Post and telecommunications	383	447	64	16.7
Financial services	1087	1730	643	59.2
Real estate activities	572	840	268	46.8
Renting of machinery and equipment	244	357	113	46.1
High tech services	685	1058	373	54.4
Other business activities	6470	8986	2516	38.9
Public sector	2244	2400	155	6.9
Education	3812	5392	1580	41.5
Health and social work	4987	6373	1387	27.8
Waste services	33	19	-14	-43.4
Tourism	1573	1947	375	23.8
Other service activities	729	985	256	35.1
Total	**49981**	**59904**	**9923**	**19.9**

Table A16 Brentwood: Business As Usual Forecast

Brentwood	2005	2021	Change	Change %
Agriculture support/fishing and forestry	45	50	5	11.8
Mining and extraction	0	0	0	0.0
Food & beverage manufacturing	138	150	12	8.8
Manufacture of clothing and textiles	21	14	-8	-35.4
Manufacture of natural products	113	61	-52	-45.8
Publishing, printing and media	531	586	54	10.2
Manufacture of chemicals & non metallics	578	352	-227	-39.2
Manufacture of metals	253	140	-114	-44.9
High tech manufacturing	282	116	-166	-59.0
Transport manufacture	932	618	-314	-33.7
Manufacture of furniture etc.	58	32	-27	-45.6
Recycling	4	4	0	0.0
Utilities	64	44	-20	-31.1
Construction	2329	2571	242	10.4
Motor sales and services	771	862	91	11.8
Wholesale trade	1259	1217	-42	-3.3
Retail trade	3005	3119	114	3.8
Hotels and restaurants	2515	2958	442	17.6
Transport	662	437	-225	-34.0
Post and telecommunications	1106	1180	74	6.7
Financial services	2422	2597	175	7.2
Real estate activities	569	634	64	11.3
Renting of machinery and equipment	524	530	5	1.0
High tech services	882	1030	148	16.8
Other business activities	4416	6152	1736	39.3
Public sector	559	559	0	0.0
Education	2470	2470	0	0.0
Health and social work	2903	2903	0	0.0
Waste services	256	174	-81	-31.9
Tourism	954	1043	90	9.4
Other service activities	460	551	91	19.9
Total	**31084**	**33154**	**2070**	**6.7**

Table A17 Brentwood: Enhanced Growth Forecast

Brentwood	2005	2021	Change	Change %
Agriculture support/fishing and forestry	45	48	3	7.7
Mining and extraction	0	0	0	0.0
Food & beverage manufacturing	138	145	7	4.8
Manufacture of clothing and textiles	21	13	-8	-37.8
Manufacture of natural products	113	59	-54	-47.8
Publishing, printing and media	531	564	33	6.1
Manufacture of chemicals & non metallics	578	339	-240	-41.5
Manufacture of metals	253	134	-119	-46.9
High tech manufacturing	282	111	-171	-60.5
Transport manufacture	932	595	-337	-36.2
Manufacture of furniture etc.	58	31	-28	-47.6
Recycling	4	4	0	-3.7
Utilities	64	43	-22	-33.7
Construction	2329	2626	297	12.7
Motor sales and services	771	830	59	7.7
Wholesale trade	1259	1172	-87	-6.9
Retail trade	3005	3060	55	1.8
Hotels and restaurants	2515	2847	332	13.2
Transport	662	340	-322	-48.6
Post and telecommunications	1106	1173	68	6.1
Financial services	2422	2589	167	6.9
Real estate activities	569	610	41	7.2
Renting of machinery and equipment	524	510	-14	-2.7
High tech services	882	1071	189	21.5
Other business activities	4416	6972	2555	57.9
Public sector	559	538	-21	-3.7
Education	2470	2378	-92	-3.7
Health and social work	2903	2794	-108	-3.7
Waste services	256	168	-88	-34.4
Tourism	954	1004	51	5.3
Other service activities	460	531	71	15.4
Total	**31084**	**33299**	**2215**	**7.1**

Table A18 Chelmsford: Business As Usual Forecast

Chelmsford	2005	2021	Change	Change %
Agriculture support/fishing and forestry	326	327	1	0.2
Mining and extraction	188	225	37	0.0
Food & beverage manufacturing	1325	988	-337	-25.4
Manufacture of clothing and textiles	32	13	-19	-58.9
Manufacture of natural products	522	296	-226	-43.3
Publishing, printing and media	572	352	-221	-38.6
Manufacture of chemicals & non metallics	492	299	-193	-39.3
Manufacture of metals	637	334	-303	-47.6
High tech manufacturing	2479	1048	-1430	-57.7
Transport manufacture	130	60	-70	-54.1
Manufacture of furniture etc.	189	184	-6	-3.0
Recycling	16	17	2	10.7
Utilities	507	346	-161	-31.7
Construction	5550	7817	2267	40.8
Motor sales and services	1932	1936	4	0.2
Wholesale trade	2295	1354	-941	-41.0
Retail trade	10257	11189	932	9.1
Hotels and restaurants	5332	6833	1500	28.1
Transport	1365	1572	206	15.1
Post and telecommunications	2452	2616	164	6.7
Financial services	5772	6675	902	15.6
Real estate activities	1178	1362	184	15.6
Renting of machinery and equipment	454	574	119	26.3
High tech services	2425	2901	476	19.6
Other business activities	8530	10403	1873	22.0
Public sector	6963	6963	0	0.0
Education	8548	8548	0	0.0
Health and social work	8299	8299	0	0.0
Waste services	259	487	229	88.3
Tourism	1846	2185	339	18.3
Other service activities	968	1085	117	12.1
Total	**81841**	**87288**	**5447**	**6.7**

Table A19 Chelmsford: Enhanced Growth Forecast

Chelmsford	2005	2021	Change	Change %
Agriculture support/fishing and forestry	326	332	6	1.7
Mining and extraction	188	230	42	0.0
Food & beverage manufacturing	1325	988	-337	-25.4
Manufacture of clothing and textiles	32	13	-19	-60.2
Manufacture of natural products	522	292	-230	-44.0
Publishing, printing and media	572	348	-224	-39.1
Manufacture of chemicals & non metallics	492	296	-196	-39.9
Manufacture of metals	637	328	-309	-48.5
High tech manufacturing	2479	1018	-1461	-58.9
Transport manufacture	130	58	-72	-55.2
Manufacture of furniture etc.	189	186	-3	-1.6
Recycling	16	18	2	13.0
Utilities	507	345	-162	-32.0
Construction	5550	9974	4424	79.7
Motor sales and services	1932	1966	34	1.7
Wholesale trade	2295	1338	-956	-41.7
Retail trade	10257	11941	1683	16.4
Hotels and restaurants	5332	7023	1691	31.7
Transport	1365	1729	364	26.7
Post and telecommunications	2452	2757	305	12.4
Financial services	5772	7362	1590	27.5
Real estate activities	1178	1393	215	18.3
Renting of machinery and equipment	454	589	135	29.7
High tech services	2425	3263	838	34.5
Other business activities	8530	11825	3295	38.6
Public sector	6963	7069	107	1.5
Education	8548	8679	131	1.5
Health and social work	8299	8426	127	1.5
Waste services	259	510	252	97.2
Tourism	1846	2237	391	21.2
Other service activities	968	1108	140	14.5
Total	**81841**	**93643**	**11802**	**14.4**

Table A20 Maldon: Business As Usual Forecast

Maldon	2005	2021	Change	Change %
Agriculture support/fishing and forestry	199	201	2	1.0
Mining and extraction	21	8	-13	0.0
Food & beverage manufacturing	139	69	-70	-50.4
Manufacture of clothing and textiles	32	5	-27	-84.6
Manufacture of natural products	181	150	-30	-16.8
Publishing, printing and media	709	569	-140	-19.8
Manufacture of chemicals & non metallics	384	279	-105	-27.3
Manufacture of metals	549	549	0	0.0
High tech manufacturing	1123	571	-553	-49.2
Transport manufacture	185	87	-97	-52.7
Manufacture of furniture etc.	347	268	-80	-23.0
Recycling	3	3	0	0.7
Utilities	404	404	0	0.0
Construction	2088	2800	712	34.1
Motor sales and services	584	586	3	0.4
Wholesale trade	842	757	-85	-10.1
Retail trade	2413	2647	234	9.7
Hotels and restaurants	1530	1817	287	18.7
Transport	629	566	-63	-10.0
Post and telecommunications	146	140	-6	-4.2
Financial services	319	249	-70	-21.8
Real estate activities	450	618	169	37.5
Renting of machinery and equipment	136	176	40	29.2
High tech services	366	502	135	36.9
Other business activities	2025	2856	831	41.0
Public sector	553	553	0	0.0
Education	1293	1293	0	0.0
Health and social work	1664	1664	0	0.0
Waste services	24	7	-17	-71.1
Tourism	768	985	218	28.4
Other service activities	250	333	83	33.2
Total	**20357**	**21714**	**1357**	**6.7**

Table A21 Maldon: Enhanced Growth Forecast

Maldon	2005	2021	Change	Change %
Agriculture support/fishing and forestry	199	193	-5	-2.5
Mining and extraction	21	8	-13	0.0
Food & beverage manufacturing	139	67	-73	-52.1
Manufacture of clothing and textiles	32	5	-27	-85.2
Manufacture of natural products	181	145	-36	-19.7
Publishing, printing and media	709	549	-160	-22.6
Manufacture of chemicals & non metallics	384	270	-115	-29.9
Manufacture of metals	549	530	-19	-3.5
High tech manufacturing	1123	550	-573	-51.0
Transport manufacture	185	84	-100	-54.4
Manufacture of furniture etc.	347	258	-89	-25.7
Recycling	3	3	0	-2.8
Utilities	404	390	-14	-3.5
Construction	2088	3213	1125	53.9
Motor sales and services	584	566	-18	-3.1
Wholesale trade	842	730	-112	-13.3
Retail trade	2413	2674	261	10.8
Hotels and restaurants	1530	1753	223	14.6
Transport	629	518	-111	-17.6
Post and telecommunications	146	132	-14	-9.6
Financial services	319	212	-107	-33.4
Real estate activities	450	597	147	32.6
Renting of machinery and equipment	136	170	34	24.6
High tech services	366	565	198	54.1
Other business activities	2025	3262	1237	61.1
Public sector	553	534	-19	-3.5
Education	1293	1248	-46	-3.5
Health and social work	1664	1605	-59	-3.5
Waste services	24	7	-18	-72.1
Tourism	768	951	183	23.8
Other service activities	250	321	71	28.5
Total	**20357**	**22109**	**1752**	**8.6**

Appendix 2: Econometric analysis

Introduction

1. Academic journals frequently present papers that provide evidence of spatial economic disparities; recent examples have focused on output, productivity and wages (Bernard *et al*., 2002; Porter, 2003), employment (Bernard *et al*., 2002; Porter, 2003) and quality of life (Srinivasan and Stewart, 2004). For instance, by examining data for 1986 and 1992 Bernard *et al*. (2002) find persistent differences in quality-adjusted relative wages across UK regions where the identified differences cannot be explained by idiosyncratic shocks to regions or business cycle fluctuations. Sub-regional analyses also exist and often focus on county or smaller geographical areas.

2. From a neo-classical perspective, often associated with the Solow (1956) and Swan (1956) models of economic growth, one would expect there to be greater investment in areas where the rates of return to investment are higher, and that this would reduce spatial disparities in output. However, one reason why economic convergence might not occur is that there are not diminishing rates of return to investment; in such circumstances, the incentive to invest in non-leading locations would neither experience high rates of growth that permit an economy to catch-up with leading areas nor accrue the expected relatively high levels of wages or profits.

3. If differences in technology and industrial structure are not present, as in some of the work by Barro (1989) and Barro and Sala-i-Martin (1990), asymmetries in tastes and preferences can account in permanent spatial productivity differentials.

4. Harris and Andrews (2000) examine the rates of return on plant and machinery across regions of the UK. Assuming the distribution had not already converged to its steady state (and that regional differences are not simply moving in an ergodic fashion around each region's steady state position), Harris and Andrews find limited evidence of convergence in the rates of return to investment and, instead, find evidence of some divergence. When identifying the determinants of the rates of return to investment in plant and machinery they find capital deepening can result in greater responses in peripheral areas while the impact of changes in labour's share in value-added on rates of return had no obvious spatial pattern.

5. Productivity is correlated with wages. Porter (2003) suggests that regional wage differences are dominated by the relative performance of the region while Esteban (1994) finds that regional disparities in productivity are the main reason for regional inequality in per capita income in the EU.

6. Webber and White (2005) model the evolution of average regional male manufacturing wages and forecast the steady state distribution for eleven regions of the UK. Braintree, Brentwood, Chelmsford and Maldon lie between the centres of East Anglia and the South East. Their results would suggest that the steady state wage (i.e. where time tends to infinity) for these areas is somewhere between 25% and 40% lower than the wage paid for employees who work in the centre of London.

7. The ability to attribute output and productivity disparities to specific factors is both problematic and controversial. This controversy stems from the fact that the influence and importance of various, often compounding, contributory factors evolves over time in a non-linear fashion that may or may not have some type of spatial-interdependence.

8. Aggregate studies of regional economies increasingly integrate statistically spatial interdependence. However, many such studies assume that spatial productivity differences result from identical, perfectly competitive firms responding homogeneously to economic forces of various kinds. The result is that aggregate models of local and regional economic behaviour are often inconsistent with the observed behaviour at the plant level. Failure or recognise plant heterogeneity obscures the individual processes that generate industrial or local / regional productivity change and the different mechanisms that influence those processes (Rigby and Essletzbichler, 2000).

9. Consequently, an in-depth analysis of inter-regional productivity differentials requires the analysis of firm level data and a set of hypotheses to test (see, for example, Boddy *et al*., 2005). We are able to analyse firm level data thanks to the availability of a data set that is available for use at (and only at) the Office of National Statistics; this data set is called the 'Annual Respondents Database' (ARD). We will return later to describe this data set in more detail, but first we turn to discuss the literature that seeks to explain productivity disparities from the perspective of the individual firm.

Explaining Regional Productivity Disparities – A Firm's Perspective

10. A large number of factors are often considered relevant in explaining disparities in regional productivity rates which may or may not be firm specific. Clearly the different available quantities and qualities of capital and labour will be influential in determining output. Other cited contributory factors in the academic theoretical and empirical literature, particularly from the small and medium sized firm (SME) perspective, include firm age and size, distance to the core of the market, the propensity to export, ownership and industry mix.

Capital Stock

11. A crucial variable in determining output and productivity is capital stock, and this is standard in the literature. Companies with more capital are able to produce more output. The commonest production function, and the one we will use, is the Cobb-Douglas production function. Theoretically the coefficients on labour and capital we estimate and report in the tables below should equate to the relative shares of labour and capital's earnings.

Labour Force and Skill Composition

12. Since the origins of modern economic growth theory, the quantity of the labour force has been employed as an important explanatory factor behind the change in the level and rate of output. Solow (1956) and Swan's (1956) neoclassical models both explicitly incorporate the raw quantity of the labour force. The reason is obvious:

greater quantities of raw labour permit more total time to be devoted to productive activity.

13. The failure of the neoclassical growth model to accurately account for changes in output was partially solved with the augmentation of their model(s) to incorporate human capital, and now much of the literature that attempts to account for differences in income and economic growth rates across economies frequently highlights the importance of skills (see, for instance, Barro (1991) and Mankiw *et al*. (1992)).

14. Policy can be oriented to improve the human capital base of an economy's labour force in two important ways: first, people can be encouraged to purposeful accumulation of knowledge (by going to university for example) and secondly, the act of work itself can improve efficiency via the process of learning-by-doing (apprenticeships); both are seen as contributing to improvements in productivity (see Romer (1986, 1990) and Lucas (1988) respectively). Other studies go further when they emphasis skills are an important determinant of innovative capacity (Nelson and Phelps, 1966; Aghion and Howitt, 1998).

15. Rice and Venables (2004) focus on income per worker in NUTS3 regions of Great Britain and, amongst other things, identify the importance of skills, which in this case is identified through the proportion of the economically active population who have either no formal qualifications or degree level qualifications. An increase in the former tends to reduce income per worker while the latter increases it. For income per worker they use gross value added (GVA).

16. When human capital is area-specific, as analysed by Buiter and Kletzer (1995), then there is room for disparities in output between areas that might be associated with disparities in the way education funding is spent. If labour were immobile then a local government would be more able to allocate funds to education to improve the skill base of the labour force to meet the demand for skilled labour by firms. However, as labour is increasingly mobile, perhaps brought on with improvements in transport and communication networks that allow easier access a variety of places including one's origin, then the likely return from educational investment is more uncertain.

17. In addition to the usual forces of capital and labour that are commonly employed in the literature on economic growth, other firm specific characteristics are important in influencing productivity and greater awareness of these factors could improve our understanding of local and regional economies and help to explain why spatial differences exist.

Firm Size

18. The size of the firm is often cited as an important factor in the SME literature. The reason for this is that the importance of certain factors change with the size of the firm; such factors include technologies and the employer-employee working relationship. Motives for running the company differ between firms of different sizes; for instance, a medium-sized company might not be motivated by increasing profits, instead it might be motivated by the prospect of increasing market share.

19. Barnes and Haskel (2002) analyse the job creation and job destruction impact of small manufacturing businesses using the ARD database. They conclude that large establishments (firms with at least 100 workers) account for around 62% of jobs destroyed whilst small establishments (firms with less than 100 workers) account for around 50% of jobs created. Through data comparison they conclude the role of small businesses in this respect is more important in the UK than in the US. As SMEs appear to be very important in the UK economy, the ability to improve productivity, increase market share or explore new potential markets is often stunted by a scarcity of resources to the firm. Johnson, Webber and Thomas (2006) find that SMEs are more likely to seek external business advice to foster greater output and market share if the firm is doing relatively well. The flip side is that firms that are doing less well, and are probably more in need of external business advice, are less likely to employ such advice. Such results are not found to vary with the age of the firm.

Export Propensity

20. Although there are many reasons to participate in foreign direct investment, there is uncertainty whether firms bring their higher productivity levels with them (often attributable to some 'internalisation advantage') or whether their higher levels of productivity are a result of their choice of production techniques implemented on arrival to a region. Merion (2004) finds evidence to support the hypothesis that firms involved in international markets will exhibit higher productivity levels than domestically focused firms because they face tougher competition to overcome the existing entry costs to foreign markets.

The Spatial Element

21. Public capital has been identified as a driving force behind convergence. Following Aschauer (1989) and Munell (1990), the role of public investment has been stressed as a crucial factor in increasing private capital productivity, which could in turn lead to higher growth rates. Accepting the proposition that per capita income growth is sustained by public capital and vice-versa (Barro, 1990), transportation links are an important factor for the choice of location as iceberg effects (i.e. costs proportional to distance) necessarily reduce profit margins.

22. Distances to major centres of demand, such as large conurbations, play an important role in shaping the (mainly domestic) demand driven growth stimulus to higher output quantities. If profit margins are not to be squeezed, or if we assume a zero-profit condition, then cost reductions must evolve in other areas that permit transportation costs to be offset; one source of cost advantage can be attributable to lower labour costs per unit of output or higher marginal products to labour. A model that incorporates a spatial element must naturally incorporate distance decay. Gravity-type models are often employed with this in mind.

23. More generally, McCann (1993) suggests producers solve the *logistics-costs-location production problem* when deciding on their optimal shipment frequency and their choice of production location. Over the long term, the profit-maximising location of production may differ if logistics costs are added to direct user travel costs and hence the optimal location will vary with industry and the bulkiness of goods.

Economic Mass

24. Business location is traditionally analysed within an economic framework where firms maximise profits subject to location-specific cost constraints, such as wage rates and access to transportation networks. Economic mass has been found to be important in determining the distribution of income per worker across NUTS3 regions of Great Britain by Rice and Venables (2004). By economic mass these authors mean the presence of a large population of working age within 80 minutes driving time. Their estimates suggest that doubling economic mass is associated with a 3.5% higher rate of productivity.

25. Weisbrod and Treyz (1998) note that productivity can be affected by many factors, including the level of technology and the quality and capacity of various supporting infrastructures, including transportation networks. They suggest that highway investments can improve productivity and lead to economic growth at the local level for local businesses in three distinct ways. First, it can reduce travel costs for serving existing trips; second, it can reduce inventory/logistic costs; and thirdly, it can increase operating scale and accessibility economies (and the faster growth of economies performing relatively poorly). Distance between *economic mass* can therefore be reduced by improvements in infrastructure which can result in the convergence of economies. Clearly these effects will vary with the ability to supply goods to the market and so improvements in highway infrastructure networks can reduce transportation costs effects and improve a firm's spatial competitiveness.

26. Empirical studies usually take a rather general approach to recognising the relative attractiveness of a geographical area as a determinant of inter-regional firm migration. Few studies have focused on financial indicators that lie outside the government inducements to lower the cost of capital outside core and leading areas. Of course, government policy to encourage industrial movement (through grants and subsidies) was not meant to boost profits *per se*, but rather to lower the user cost of capital. However, regional financial incentives that leak away into profits were deemed to be evidence of deadweight loss in the 1980s and a prime reason for abolishing automatic capital subsidies (Harris and Andrews, 2000).[11]

Ownership

27. Criscuolo and Martin (2003) use the ARD database to investigate the impact of foreign ownership on productivity. Using a Cobb-Douglas production function which includes capital and materials and where the dependent variable is real output they find strong evidence of a US productivity advantage where US firms are consistently more productive than other multinational enterprises (MNEs). Further, they find that MNEs *per se* have productivity advantages over other non-MNEs. These conclusions are consistent with those of others; see for example, Doms and Jensen (1998) and Griffith *et al*. (2004).

28. The higher rewards to higher skilled labour are examined at the regional and sectoral level in the UK by Driffield and Taylor (2000). They demonstrate that the entry by an

[11] MNEs' choice of location can be based on a number of contributory factors. At the regional level, Billington (1999) finds greater population density, lower unit labour costs and higher unemployment to be attractors to international firms.

MNE into a region increases the demand for skilled workers, thus increasing wage inequality. Technological spillovers then occur from foreign to domestic firms which increases the demand by domestic firms for skilled workers further contributing to aggregate wage inequality and skill upgrading. One problem with this and many studies like it, is that there is uncertainty whether the relative abundance of (or relatively low priced) skilled labour was initially stimulated to migrate by the MNE.

Business-Level Data Analysis:

29. Our analysis uses the Office of National Statistics 'Annual Respondents Database' (ARD), which brings together a wide range of data relating to individual business units (ONS, 2002). The major advantage of this data source is that it allows the relationship between a range of variables to be examined at the level of individual business units. These individual business units can be clustered according to location and then the local productivity rate can identified. It also allows various measures of productivity or competitiveness to be analysed at the level of these individual business units.

30. Having examined a range of possible contributory factors in determining differences in the levels and changes in spatial productivity, it is further worth mentioning that there is a large variation in productivity levels between plants in the same industry and the persistency of this variation (Baily *et al*., 1992; Bartelsman and Doms, 1997) which does not necessarily have an element of spatial dependence. Differential plant growth tends to raise productivity levels as more efficient plants increase their market share at the expense of less efficient plants (Rigby and Essletzbichler, 2000). To account for these spatial and between-firm variations in productivity necessarily mitigates the utilisation of a business level data analysis. The 'Annual Respondents Database' (ARD) permits such an analysis.

The ARD Database

31. There is a literature on spatial differences in productivity across the UK much of which has been made possible by the availability of the ARD database. Until 1997 this database only included the production sector. Response to questions is mandatory. The registrar is drawn from a variety of sources including historical records, tax returns and various surveys. It is a survey of firms biased towards the larger firms. Thus plants with employment below a certain level are sampled on a random basis and hence not every year. It does contain information on the number and location of plants or firms if they are multi-plant ones. But this does not extend to actual data relating to those plants. The data is collected at the enterprise level and then imputed in some manner in order to obtain data for plants. This presents a particular problem in terms of defining local and regional productivity for a multi-plant, multi-regional firm. We get around this problem by employing a dummy that has a value which is equal to one if an establishment has more than one plants within or across regions, and zero otherwise.

Background to Model

32. Much of the neo-classical literature on spatial convergence, mainly grounded on the work by Barro and Sala-i-Martin (1991), suggests a movement of the sample towards a steady state. Accepting that a steady state distribution may be due to omitted variable bias, including the role of structural change (Paci and Pigliaru, 1997), and that the primary source of distributional dynamics are asymmetries in a capital deepening process within each sector of the economy, allows us to move away from the typical neo-classical Solow-Swan type model and to move towards a more general model for estimation.

33. Spatial heterogeneity should be integrated into any model that is designed to capture the effects of various factors on productivity differentials across heterogeneous localities. For instance, differences in productivity across a sample of localities could merely illustrate differences in the sectoral mix of production; any policy implications obtained from the interpretation of coefficients on certain variables (such as improving the skill base of the local workforce) might be biased (and have, at best, a limited effect or, at worst, have an adverse effect) if such heterogeneities are omitted from the estimation procedures. Our modelling will capture the presence of unobservable heterogeneities that are attributable to local heterogeneities through the utilisation of location specific dummy variables; an array of these dummy variables will be utilised for a variety of areas that are described in more depth below.

34. In the 1990s, advances in the neo-classical theory of economic growth increasingly emphasised the importance of technological change. The definition of technological change is always vague and can be confusing, since most definitions of technological change do not make clear distinctions between the purposeful improvement in methods and technologies that are designed to improve the rate of increase of output and that of efficiency gains that might evolve from either the purposeful accumulation of knowledge or by learning-by-doing. Efficiency gains can be of several different types, including innovation, copying, experience, and can be geographically or sectorially biased. Rigby and Essletzbichler (2000) find, for the majority of US states, that the most important component of productivity growth is increasing efficiency within existing plants.

35. Shifts in market shares can often exert substantial changes in industrial productivity rates. The growth or contraction of sectors can stimulate the entry or exit of firms from an industry; these entry and exit behaviours artificially deteriorate or improve aggregate industry productivity statistics and hide underlying trends in industrial cycles.

The Model

36. Productivity differences are estimated using the following equation:

$$\ln(Y) = \beta_0 + \beta_1 \ln(K) + \beta_2 \ln(L) + \beta_3 (X) + \textbf{\textit{industry dummies}} + \textbf{\textit{area dummies}} + u$$

37. *K* is capital stock, *Y* is gross value added at factor cost (GVAFC), *L* is the size of the labour force, *X* denotes all other variables which may impact on output (e.g. ownership and spatial factors). Note, as indicated, we can also allow for spatial and industrial sector differences. *u* is an error term, which is the difference between what we would expect output to be based on (i.e. the right hand side variables) and what it actually is. *ln* denotes the natural log. This is a standard production function approach.

38. The area variables show the extent to which output in a specific area differs from the 'control area' in percentage terms (we choose this to be London in the regressions for the whole of the UK, as this area is generally believed to be the region of highest productivity) given the firm's industrial sector and the size of firms in the region.

39. Perhaps the key factor is what to include in *X*, i.e. the set of independent variables. To an extent this is dictated by the literature that has already been reviewed. We have seen that it has been suggested that multinationals are more efficient than non-multinationals and US multinationals are generally found to be more efficient other multinational firms. Location variables have also been found to be significant in determining productivity in particular, although not unambiguously, distance from London. Hence we will also include distance factors in terms of time; this can be impacted upon by economic policy.

40. Skill variables are found to be significant in many analyses – we will focus on skills in the district rather than at the firm. This is an important distinction with a policy lever in the control of the planning agency more than the firm.

41. We will also be including other variables in our analysis. Firstly, the ratio of full time workers to the total labour force. The employment variable reflects the number of workers. It is to be expected that the greater the proportion of these are employed only part time, then the lower will be output. We also include a variable for firms with multiple plants, whether entirely within a region or not. There may be additional transactions costs involved in organising multiple plants and we expect the impact of this variable to be negative.

The Data

42. This part of the analysis sets out to establish the determinants of productivity differentials across firms. The analysis uses the Office of National Statistics, 'Annual Respondents Database' which brings together a wide range of data relating to individual business units (ONS, 2002). The major advantage of this data source is that it permits the examination of the effect of a range of variables on productivity and competitiveness at the level of individual business unit. This represents a unique database of tens of thousands of firms. In order to access this it was necessary for us to travel to the ONS itself at Newport in South Wales or Pimlico in London.

43. To this database we needed to add spatial data. We needed data on distance of the firm from London and other major centres of population and also on the characteristics of the locality such as employment rate, local workers' educational

levels and data on other labour market characteristics. For the former we used the AA website which provided information at the district level to distance in time taken to travel by road to specified locations – for London we chose the Bank of England. For the other major population centres (Leeds, Birmingham, Glasgow and Manchester) we took distance from the council's postal code. Travel time data relate to 2005, but we assume that this has not changed significantly in recent years. For multi-plant firms, these figures represent the averages of all the firm's plants.

44. Other data problems were largely solved for us via the ONS. They have a database that codes firms according to ownership (e.g, a British firm) and whether or not the firm is a multinational. Data on capital stock (at 1995 prices) has recently been estimated from investment data and is available on the ONS database. The ARD database itself contains a wealth of information some of which we document in this report. All reported results are estimated with outliers excluded.

Data Problems: Identifying regional firms

45. The database presents a problem in that each firm has a unique postal address that can be linked to a specific region. However, multi-plant firms may be in different regions and then allocating to a specific region is clearly arbitrary. We approach this by creating a special variable representing all such multi-plant multi-region firms (This is indicated as *MFD1* in the regression outputs). The regional effects then relate purely to firms in their allocated region, i.e. either single plant firms or multi-plant firms entirely on one region.

46. In general, qualification data then relate solely to single location firms. For other firms it is assumed that *MFD1* picks up the effect. Regressions were also estimated for single plant firms and the results are consistent with those reported below. This qualification also relates to a small locality – the district or ward – which permits the analysis of the individual *Council areas*.

Initial data description

47. Tables 1a and 1b present the ranks of the Mid Essex (Braintree, Brentwood, Chelmsford and Maldon) in terms of various criteria. This is for illustrative purposes, as in terms of statistical significance none of the areas are significantly different (more or less productive, for example) than each other. Hence, there is very little difference between In the first three columns, the *Council areas* are ranked according to productivity, the capital/output ratio and the size of the workforce; these results are generated from the authors' estimates using the 2002 ARD data set. The remaining six columns employ Census data for 2001.

48. Brentwood appears to have the most productive firms, the highest capital/labour ratio and the largest firms measured by the average size of all firms' workforce. Brentwood has the highest educated workforce with the greatest proportion of the resident population having been educated up to the NVQ 4/5 level. It also has the highest proportion of the workforce which are retirees. To increase their productivity further, firms in Brentwood could be encouraged to increase their capitalisation. The local government could focus on encouraging more workers to increase their personal level of human capital.

49. Braintree appears to have a relatively low productivity level, the lowest capital/labour ratio and the least number of retirees. Braintree also is the *Mid Essex area* that has

the highest proportion or workers with no qualifications and also the highest unemployment rate. Based on this simple analysis, local government should focus on encouraging the local residents to increase their skills and education and emphasise the benefits of being in work, perhaps by promoting the 'any job can be a stepping stone to a better job' attitude.

50. Chelmsford appears to have firms which have the smallest average workforce and the least amount of self-employed resident workers. It does have the smallest percentage of workers with no qualifications, although this appears to reflect an abundance of medium-skilled workers as Chelmsford does not possess the greatest proportion of high-skilled workers; this honour goes to Brentwood. Increasingly the level of educational attainment of the local workforce may well increase firm productivity in Chelmsford.

51. Maldon appears to have the lowest productivity rate (recalling that this is not statistically different from the other three *Council areas*). Maldon also has the highest proportion of part-time workers and the highest proportion of self-employed workers. Policy recommendations based on this data would include encouraging residents to invest time to increase their education and skills. Increasing the proportion of employees that work full time may well increase efficiency and therefore productivity; however a more in-depth analysis may well illustrate that part-time work is a characteristic associated with the industrial structure of the area. A more in-depth analysis of productivity, that takes into consideration a wide range of factors, is therefore necessary. This is presented in the next section on econometric results.

Table 1a: Descriptive statistics

	Productivity of firms[1]	Capital / Labour ratio within firms[1]	Size of firm' workforce[1]	P/T workers / area's workforce[2]	Self-employment / area's workforce[2]
1 (highest)	Brentwood	Brentwood	Brentwood	Maldon	Maldon
2	Chelmsford	Maldon	Maldon	Braintree	Braintree
3	Braintree	Chelmsford	Braintree	Chelmsford	Brentwood
4 (lowest)	Maldon	Braintree	Chelmsford	Brentwood	Chelmsford

Notes: [1] implies sourced from ONS firm level data source. [2] implies sourced from Census data. None of areas are significantly statistically different from each other

Table 1b: Descriptive statistics

	Unemployment / workforce[2]	Retired / workforce[2]	No qualifications / workforce[2]	High quals / workforce[2]
1 (highest)	Braintree	Brentwood	Braintree	Brentwood
2	Maldon	Maldon	Maldon	Chelmsford
3	Chelmsford	Chelmsford	Brentwood	Maldon
4 (lowest)	Brentwood	Braintree	Chelmsford	Braintree

Notes: [1] implies sourced from ONS firm level data source. [2] implies sourced from Census data. None of areas are significantly statistically different from each other

Econometric Results

52. Before we progress to report the econometric results of our analysis, it is important to emphasise that the effects reported in this report are approximations. The science of econometrics is such that estimates impact within a confidence interval. When we report such an impact as being significant, we mean we are confident that there is such an impact (e.g. productivity increases with capital) but we are less confident on the exact magnitude of the impact. In part this is because it varies across the business cycle and we do not have sufficient data to be more accurate.

53. At this point it may be valid to note that our results are dependent upon the accurate reporting of information. To the extent that some industries may be more prone to tax evasion and shadow economy activity, this may bias our results.

Basic Regression Results – Initial Comparisons

54. In this section we summarize the basic regression results of Cobb-Douglas production function models which contain three important sets of variables: the size of the workforce for each firm, the amount of capital employed in the firm and a variable called *Keyareas*, which takes a value equal to one if the firm is located in Braintree, Brentwood, Chelmsford or Maldon and a value equal to zero otherwise. This 'dummy variable' captures the effect of locating in the *Council areas* on firm productivity.

55. The employment and capital stock variables may possess a non-linear relationship with productivity and so they are included in squared terms to account for quadratic effects – i.e. increasing the workforce by 10% might have different effects depending on the initial size of the workforce (e.g. there may be a different effect on productivity if the number of workers in the firm increases from 10 to 11 or from 100 to 110). These results are presented in Table 2.

56. We first present estimates to capture the effect of location on productivity, and more precisely, we assess whether firm' productivity is any different if it is located *in Mid Essex*. Once the size of the each firm's workforce and the amount of each firm's capital stock has been taken into account we find that firms in *Mid Essex* are not statistically different in terms of productivity than firms across the rest of the UK. In other words, the productivity of firms is no higher or lower than other firms across the UK once we take into account the size of the workforce employed in the firm and each firm's amount of capital stock. The coefficient for *Mid Essex* is positive but the magnitude of this coefficient is not statistically different from zero and could have occurred by chance.

57. We reestimate the model for only those firms located in the South East and East regions of the UK; we include the size of the workforce and the amount of capital for each firm as before. Once again we identify that the productivity of firms in Mid Essex is no different to that for other firms across this smaller, geographical area. The negative sign and the magnitude of this coefficient have occurred by chance and we cannot say with traditional levels of statistical confidence that the magnitude (and sign) of this variable's coefficient is statically different from zero.

58. We re-estimate the model in the same way as is detailed above, but this time only focusing on the *Comparison area*. The *Comparison area* is comprised of the Mid Essex (Braintree, Brentwood, Chelmsford and Maldon), the London Arc, Cambridge Sub-region, Haven Gateway, Stansted, M11 Corridor, Norwich, Bedford and Thames. Again we find that firms in *Mid Essex* are no different in terms of productivity from firms in the rest of the *Comparison area*.

Table 2: Cobb-Douglas models

	1	2	3	4	5	6	7	8
	For all of UK	**For all of SE & E**	**For Comparison Area**	**For Mid Essex**	**For all of UK**	**For all of SE & E**	**For Comparison area**	**For all of SE & E**
n	40490	7891	2762	271	40490	7891	2762	7891
Employment	0.742***	0.741***	0.768***	0.731***	0.742***	0.744***	0.776***	0.744***
Employment^2	-0.005***	-0.010***	-0.009**	-0.009	-0.005***	-0.010***	-0.010**	-0.010***
Capital stock	0.165***	0.135***	0.132***	0.001	0.165***	0.133***	0.128***	0.133***
Capital stock^2	0.009***	0.013***	0.012***	0.025***	0.009***	0.013***	0.012***	0.013***
London Arc	–	–	–	–	0.082***	0.001	0.028	0.001
Cambridge Sub-Region	–	–	–	–	-0.029	-0.092**	-0.114	-0.097**
Haven Gateway	–	–	–	–	0.027	-0.033	-0.072	-0.031
Stansted	–	–	–	–	0.039	-0.006	-	0.003
M11 Corridor	–	–	–	–	0.078*	0.034	0.081	0.031
Norwich	–	–	–	–	-0.128***	-0.224***	-0.233***	-0.223***
Bedford	–	–	–	–	0.067	0.037	-	0.038
Thames	–	–	–	–	0.062	0.002	0.020	0.022
Keyareas	0.059	-0.038	0.059	–	0.049	-0.026	0.016	–
Braintree	–	–	–	–	–	–	–	0.014
Brentwood	–	–	–	–	–	–	–	0.092
Chelmsford	–	–	–	–	–	–	–	-0.118
Maldon	–	–	–	–	–	–	–	-0.043
F statistic	56664.96***	8660.53***	4134.97***	499.95***	21804.28***	3362.40***	1911.64***	2733.33***
R^2	0.880	0.841	0.884	0.881	0.880	0.814	0.885	0.842
Root MSE	0.817	0.845	0.835	0.862	0.816	0.843	0.830	0.843

59. In the above results there is evidence to suggest that increasing the size of the workforce and the amount of capital increases firm productivity throughout out estimations. This indicates stability and therefore confidence in our results. There is a non-linear effect of the size of the workforce on firm productivity; results suggest that the effect of increasing the size of the workforce on productivity is greater for smaller firms than for larger firms. The opposite results apply for capital: increasing the amount of capital within each firm increases the productivity of the firm at an increasing rate.

60. We reestimate the results for only those firms in the *Mid Essex*, i.e. only for those firms located in Braintree, Brentwood, Chelmsford or Maldon. The relatively small sample size of 271 is probably the reason why the statistical significance of Employment^2 and Capital Stock falls below traditional levels of statistical significance. Nevertheless, the results consistently suggest that increasing the size of the workforce and the amount of capital stock for each firm will increase the productivity of the firm.

Basic Regression Results – Comparisons across the Comparison area

61. The second set of results presented in Table 2 – those presented in columns 5-8 – include dummy variables that capture the effect of being in any of the other specified areas. Across columns 5-7 we find that, relative to the whole of the UK, relative to the South East and East, and relative to other firms within the *Comparison area*, firms in the *Mid Essex* are no more and no less productive than the average firm in those areas.

62. Incidentally, we do find some evidence to suggest that firms in the London Arc are more productive and firms in Norwich are less productive. More research could identify why this is the case.

63. In column 8 of Table 2 we reestimate the model for the whole of the South East and East regions, but this time we replace the dummy variable for *Keyareas* with identifiers for each of these four Council areas. In line with the results presented above, there is no evidence to suggest that firms in these areas are any more or less productive than other firms if we take into consideration the size of the firm's workforce and the firm's amount of capital stock.

A Closer Look

64. The results presented in Table 2 and discussed above are based on the smallest and most traditional theoretical, economic perspective. The results are consistent and relatively stable. However, the model should be developed to include a range of other factors that could be affecting firm productivity. Such variables are also more useful for policy formation.

65. Table 3 presents a set of econometric estimates that build on the results presented in Table 2, but this time include a range of other explanatory variables. The explanatory variables included in Table 3 include the ratio of full-time to part-time workers employed in each firm (*Full Time Ratio* and *Full Time Ratio*^{2}, the latter is included as the effect on productivity may be non-linear), the educational background of the area's residents (*Medium qualifications, Medium qualifications*^{2}*, High Qualifications* and *High Qualifications*^{2}), a variable designed to capture peripherality (*Average time to core cities*), firm ownership (*UK multinational, US multinational* and *non-multinational*), *population density*, whether the firm is privately owned (*Private firm*), the industry in which the firm operates (*Construction, Wholesale/retail,*

Catering, Transport, Finance, Real estate, Education and Manufacturing) and a dummy variable that captures the effect of a firm being either a multi-regional or multi-plant firm (or both, *MFD1*). Several of these variables are conducive to policy formation.

66. We first present the results for all of the UK firms, and identify that firms in the *Mid Essex* are not statistically different from other firms across the whole of the UK. The magnitude of the employment variable appears to be lower than previously presented. The reason for this is that there is probably that some omitted variable bias was present in the results presented in Table 2 above: i.e. the effect of, say, education might have been captured by the employment variable in Table 2.

67. Although the results suggest that firms in *Mid Essex* are not statistically more or less productive than the other firms across the UK, the results presented in this Table 3 do indicate areas where investment could take place to increase the productivity of firms. Interpretation of the results of the whole of Table 3 can be summarized as follows:

68. First, there is an indication that improving the educational background of the local labour force will increase the productivity of firms. This is the case across the whole of the UK and applies to medium (NVQ 1-3) and high (NVQ 4/5) skills.

69. Second, and drawing from the results for the whole of the UK, the results suggest that if we increase the number of employees by 1% then output will rise by approximately 0.67% - and because this is less than 1% it will reduce ***labour*** productivity. Similarly increasing capital by 1% increases GVAFC (and indeed labour productivity itself) by almost 0.19%.

70. Third, peripherality is a factor that reduces productivity; this result applies across the UK, across the South East and East regions and for the Comparison area but not for firms within Mid Essex. This may well be capturing the agglomeration economies that exist within London and which reduce monotonically with distance from the core of London. Alternatively it could be indicating that agglomeration economies are less important for firms in *Mid Essex*. However, this interpretation is speculation. Distance to the core of markets does not appear to be an important contributory factor in determining the productivity level of firms in *Mid Essex* and therefore there is no evidence here to suggest that policy to affect distance in time from other locations should be a priority.

Table 3: Firm level results

	For all of UK	For all of SE & E	For Comparison area	For Key Areas
n	31236	6548	2344	226
Employment	0.671***	0.651***	0.682***	0.566***
Employment^2	0.004***	0.004	0.002	-0.002
Capital stock	0.190***	0.193***	0.206***	0.007
Capital stock^2	0.005***	0.006***	0.004	0.023**
Full time ratio	1.151***	1.376***	0.873***	1.523**
Full time ratio^2	-0.396***	-0.705***	-0.160	-0.873
No qualifications *(Control Variable)*	–	–	–	–
Medium qualifications	0.823*	0.228	0.675	-8.002
Medium qualifications^2	0.334	-0.153	0.695	-1.432
High qualifications	0.381***	0.220	-0.046	-4.254
High qualifications^2	0.078**	0.033	-0.009	-1.329
Average time to core cities	-0.051***	-0.084***	-0.112***	0.026
MFD1	0.076***	–	0.008	-0.0322
Llunit	-0.045***	-0.044	0.019	0.019
Llunit^2	0.001	0.002	-0.008	-0.025
UK Multinational	-0.026	-0.112**	-0.045	-0.016
US multinational	0.065**	0.026	-0.051	0.788**
Non-multinational	-0.151***	-0.262***	-0.147**	-0.306
Non-UK / US Multinational (*Control Variable*)	–	–	–	–
Population density	0.010***	-0.002	0.004	0.007
Private firm	0.190***	0.205***	0.178*	-0.089
Construction	0.454***	0.436***	0.453***	0.721**
Wholesale/retail	0.338***	0.375***	0.358***	0.498*
Catering	-0.265***	-0.262***	-0.188**	-0.329
Transport	0.155***	0.217***	0.209***	0.514*
Finance	0.661***	0.635***	0.646***	0.643
Real Estate	0.397***	0.392***	0.418***	0.618**
Education	0.072**	0.158***	0.168	0.695**
Manufacturing	0.065***	0.119***	0.097	0.264
Other Industries (*Control Variable*)	–	–	–	–
Key areas	0.025	-0.011	-0.009	–
Braintree	–	–	–	0.344
Brentwood	–	–	–	0.423
Chelmsford	–	–	–	0.283
Maldon	–	–	–	-0.046
F statistic	9751.08***	1509.89***	750.66***	151.58***
R^2	0.907	0.868	0.902	0.922
Root MSE	0.682	0.728	0.726	0.693

71. Fourth, ownership appears to be important, and this is in accordance with the majority of the economics literature. The results suggest that US multinationals are the most productive, followed by the non-UK/US multinationals (the control variable), then the UK multinational and finally non-multinationals. These results stand across

the whole of the UK. With respect to *Mid Essex*, we find that the result for the US multinational is statistically significant. The councils of Mid Essex should attempt to attract US multinationals if they wish to increase the average productivity levels of firms in their area.

72. Fifth, there is evidence to suggest that firms with a high proportion of full-time workers are much more productive than others. This is consistent across the entire set of results. This does not mean part-time working is inefficient, simply that our data on employment records the number of workers both full-time and part-time workers and that firms with higher proportions of full-time to part-time workers operate in more productive firms. It might be capturing other characteristics that are unique of part-time workers (such as child-care constraints) or imposed characteristics of working in certain industries (e.g. shift work or bar opening hours).

73. The final column of Table 3 is a reestimation of the previous model, but this time excludes the group dummy variable for *Keyareas* and, instead, the four Council areas are inserted with their own respective identifier. The results are broadly similar. Encouraging a US multinational company to locate to a *Mid Essex area* would greatly increase the average productivity of the area; encouraging firms to increase their proportion of the workforce that works full time would also increase productivity.

74. There is another important factor that impacts on firm productivity. The industry in which the firm operates will influence productivity because of the different needs and incentives to update technology and to improve productive processes. In general, technological improvements in the catering and transportation industries might be fewer and of a smaller magnitude than they might be for finance and manufacturing firms. Industries dummies are therefore included in the estimations. These dummies are interpreted relative to firms in “other sectors”, i.e. firms that operate in industries not classified by these dummies (this includes, for instance, community, social work, power, etc.).

75. Firms in the catering sector appear to be relatively unproductive. Firms that are relatively more productive are those that operate in the construction, finance and real estate sectors. If a council wishes to increase their average productivity rate, then they could focus on encouraging firms that operate in the finance, construction or real estate sectors to locate to their area.

76. Tables 4, 5 and 6 show further sets of regressions. These correspond to industry specific regression results for all of the UK, for the South East and East regions, and for the *Comparison area* respectively. The important thing to look for in these results is consistency. Several points are important to draw from these results.

Table 4: Firm level results within industry regressions, relative to all UK areas.

	Construction	Wholesale / Retail	Catering	Transport	Finance	Real Estate	Education	Manufacturing
n	1575	9166	2113	1845	627	5863	954	5586
Employment	0.653***	0.724***	0.511***	0.704***	0.923***	0.677***	0.832***	0.733***
Employment^2	0.006	-0.006**	0.021***	0.015***	-0.002	0.001	-0.025**	0.004
Capital stock	0.248***	0.188***	-0.008	0.188***	0.149*	0.128***	0.413***	0.105**
Capital stock^2	0.003	0.008***	0.020***	-0.002	-0.001	0.009***	-0.013	0.008***
Full time ratio	0.194	1.052***	1.562***	0.924***	0.561	1.461***	2.044***	0.941***
Full time ratio^2	0.052	-0.314***	-1.030***	-0.201	-0.075	-0.693***	-1.111***	-0.216
No qualifications	-	-	-	-	-	-	-	-
Medium qualifications	-0.654	-0.175	0.649	2.416	-0.440	1.870**	-1.174	0.842
Medium qualifications^2	-0.466	-0.376	0.282	1.423	-0.750	1.304**	-1.068	0.136
High qualifications	0.712	0.642**	0.775	-0.172	1.409	-0.677**	-0.304	1.032***
High qualifications^2	0.227	0.162**	0.182	-0.061	0.416	-0.264***	-0.157	0.260***
Average time to core cities	-0.003	-0.063***	-0.018	-0.050	-0.134**	-0.038**	-0.080	-0.044**
Multi-firm dummy	0.111	0.105***	-0.044	0.091	0.008	0.069*	0.053	0.026
Llunit	-0.046	-0.111***	-0.023	-0.127**	-0.068	0.047*	-0.085	-0.063**
Llunit^2	-0.002	0.011**	-0.014*	0.005	0.006	-0.011*	0.026	0.013*
UK non-multinational	0.116*	-0.050	0.272**	-0.039	0.026	-0.038	-0.615	0.012
US multinational	0.197**	0.092	0.083	-0.001	0.118	0.052	-1.006***	0.055
Non US-multinational	-0.001	-0.157***	0.042	-0.214***	-0.132	-0.137**	-0.640*	-0.101***
Non-UK / US Multinational (*Control Variable*)	–	–	–	–	–	–	–	–
Population density	0.029**	0.010	-0.023*	0.006	0.016	0.012	0.051**	0.007
Private firm	0.240***	-0.031	0.381***	0.173	-0.091	-0.043	-0.098*	-0.210
Keyareas	0.215*	0.032	-0.241	0.107	0.118	0.089	0.496**	0.029
F statistic	1332.74***	4085.45***	987.05***	926.33***	345.74***	2292.99***	-	1617.02***
R^2	0.936	0.891	0.891	0.913	0.905	0.898	0.854	0.891
Root MSE	0.591	0.704	0.663	0.667	0.753	0.726	0.656	0.572

Table 5: Firm level results within industry regressions, relative to firms in the South East and East regions.

	Construction	Wholesale / Retail	Catering	Transport	Finance	Real Estate	Education	Manufacturing
n	369	1995	402	367	136	1395	313	809
Employment	0.669***	0.662***	0.483***	0.632***	1.221***	0.673***	0.689***	0.797***
Employment^2	0.005	0.007	0.025	0.027*	-0.039	-0.008	-0.002	-0.002
Capital stock	0.157***	0.275***	-0.371**	0.243**	-0.228	0.094*	0.593**	0.040
Capital stock^2	0.011**	-0.001	0.051***	-0.003	0.024*	0.014***	-0.028	0.013**
Full time ratio	0.401	1.306***	1.655***	1.175	1.960	1.348***	3.197***	1.478**
Full time ratio^2	-0.177	-0.635***	-1.354***	-0.468	-1.137	-0.739***	2.385**	-0.698
No qualifications	-	-	-	-	-	-	-	-
Medium qualifications	6.912	3.671	5.257	12.539	-1.461	6.242	-15.767	-3.298
Medium qualifications^2	5.847	1.882	3.796	9.599	-2.929	4.603	-11.036	-2.737
High qualifications	-1.321	0.500	0.512	0.074	3.183	-1.482	-0.541	0.835
High qualifications^2	-0.392	0.101	0.180	0.025	0.764	-0.468*	-0.166	0.205
Average time to core cities	-0.170	-0.054	0.088	-0.137	0.135	-0.139*	-0.148	-0.046
Llunit	-0.288	-0.100	-0.658***	0.780***	-3.082	0.090	-0.075	0.174*
Llunit^2	-0.009	-0.018	0.239*	-0.591***	2.545	-0.001	0.054	-0.100**
UK non-multinational	-0.049	-0.156**	0.211	0.071	-0.066	-0.122	-1.520***	0.042
US multinational	-	0.129	-	-0.385*	-	0.196	-	-0.060
Non US-multinational	-0.028	-0.294***	0.013	-0.139	-0.356	-0.260**	-1.493***	0.016
Non-UK / US Multinational (*Control Variable*)	–	–	–	–	–	–	–	–
Population density	0.029	-0.012	0.001	0.006	0.091	-0.014	0.030	0.010
Private firm	0.405**	-0.601*	0.263	0.212	0.373	-0.120	-0.008	-0.761
Keyareas	0.084	-0.004	-0.083	0.136	0.126	0.048	0.302**	0.040
F statistic	196.49***	616.46***	-	-	71.52***	422.18***	-	347.63***
R^2	0.891	0.845	0.791	0.880	0.876	0.851	0.869	0.900
Root MSE	0.645	0.744	0.677	0.713	0.768	0.782	0.590	0.557

Table 6: Firm level results within industry regressions, relative to firms in Comparison area.

	Construction	Wholesale / Retail	Catering	Transport	Finance	Real Estate	Education	Manufacturing
n	128	744	125	194	< 100	444	< 100	349
Employment	0.692***	0.753***	0.552***	0.788***	-	0.634***	-	0.844***
Employment^2	-0.001	-0.003	0.018	0.003	-	0.001	-	-0.016
Capital stock	0.263***	0.230***	0.231	0.088	-	0.141	-	0.063
Capital stock^2	0.001	0.004	-0.001	0.010	-	0.009	-	0.012
Full time ratio	-0.460	0.678*	2.041**	0.084	-	1.309**	-	-0.071
Full time ratio^2	0.899	-0.087	-1.626**	0.882	-	-0.633	-	0.731
No qualifications	-	-	-	-	-	-	-	-
Medium qualifications	2.652	7.114	12.293	-25.797	-	-1.481	-	0.711
Medium qualifications^2	-2.276	5.278	9.170	-17.747	-	-0.202	-	0.087
High qualifications	1.067	-0.363	0.867	0.402	-	-0.618	-	0.392
High qualifications^2	0.311	-0.112	0.212	0.117	-	-0.192	-	0.138
Average time to core cities	-0.064	-0.084	0.113	-0.167	-	-0.194*	-	-0.081
Multi-firm dummy	0.373	-0.080	0.659	0.156	-	0.176	-	0.010
Llunit	-0.553***	-0.054	0.039	-0.283	-	0.126	-	0.029
Llunit^2	0.128**	-0.008	0.027	0.022	-	-0.021	-	0.026
UK non-multinational	0.020	-0.165	-0.487	-0.397	-	0.048	-	0.232*
US multinational	-	-0.434*	-	-0.414	-	0.478*	-	0.162
Non US-multinational	-0.182	-0.026**	-0.609	-0.405*	-	-0.139	-	0.125
Non-UK / US Multinational (*Control Variable*)	–	–	–	–	–	–	–	–
Population density	0.047	-0.012	0.011	-0.072	-	0.061	-	0.001
Private firm	0.120	-	0.159	0.423	-	-0.429**	-	-1.075**
Keyareas	0.254	0.128	-0.554*	0.138	-	-0.113	-	0.101
F statistic	125.97***	381.83***	-	155.46***	-	227.75***	-	139.46***
R^2	0.934	0.883	0.888	0.918	-	0.894	-	0.900
Root MSE	0.649	0.744	0.726	0.718	-	0.799	-	0.581

77. First, when the regressions are estimated for the whole of the UK, it appears that firms inMid Essex that operate in the construction industry are significantly more productive that the average UK construction firm.

78. Second, the same finding is identified for education: it appears that firms in the education industry in *Mid Essex areas* are significantly more productive that the average UK education firm.

79. Third, when these results are estimated for the South East and East region, the same results is identified for education: it appears that firms in the education industry in *Mid Essex areas* are significantly more productive that the average South East and East region education establishment. (The small number of observations for educational firms in the *Comparison area* precludes a comparative analysis).

80. Fourth, when the *Comparison area* is analysed in isolation, it appears that catering significantly reduce the average productivity level forMid Essex.

81. Fifth, when we examine the results for the whole of the UK they suggest that if we increase the number of employees by 1% then output will rise by most in the finance industries, and the least in catering.

82. Sixth, the construction and education sectors appear to be the most under capitalised, and increasing the amount of capital in these industries would increase productivity by the greatest amount.

Bibliography

Aghion, P. and Howitt, P. (1998) *Endogenous Growth Theory*, MIT Press, Cambridge Mass. U.S.

Aschauer, D. (1989) “Is public expenditure productive?”, *Journal of Monetary Economics*, vol. 23, pp. 177-200

Barnes, M. and Haskel, J. E. (2002) “Job creation, job destruction and the contribution of small businesses: Evidence for UK manufacturing”, Ceribra Working paper, Queens College, London.

Barro, R. J. (1989) “A cross-country study of growth, saving and government”, *NBER working paper*, no. 2855

Barro, R. J. (1990) “Government spending in a simple model of endogenous growth”, *Journal of Political Economy*, vol. 98(5), pp. 103-125

Barro, R. J. (1991) “Economic growth in a cross-section of countries”, *Quarterly Journal of Economics*, vol. 105, pp. 407-443

Barro, R. J. and Sala-i-Martin, X. (1990) “Economic growth and convergence across the United States”, *NBER working paper*, 3419

Barro, R. J. and Sala-i-Martin, X. (1991) “Convergence across states and regions”, *Brookings Papers on Economic Activity*, vol. 1, pp. 107-182

Bartelsman, E. and Doms, M. (1997) “Understanding Productivity: Lessons from Longitudinal Microdata”, *Journal of Economic Literature*, vol. **38**.

Bernard, A. B., Redding, S. J., Schott, P. K. and Simpson, H. (2002) “Factor price equalisation in the UK?”, *Amos Tuck School of Business at Dartmouth College working paper*, 02-15.

Billington, S. (1999) “The Location of Foreign Direct Investment”, *Applied Economics* vol. 31(1), pp. 65-76

Blackburn, J. T. (1991) *Time-Based Competition: The Next Battleground in Manufacturing*, Business One Irwin: Homewood, Illinois

Buiter, W. H. and Kletzer, K. M. (1993) “Permanent international productivity growth differentials in an integrated global economy”, *Scandinavian Journal of Economics*, vol. 95(4), pp. 467-493

Buiter, W. H. and Kletzer, K. M. (1995) “Capital mobility, fiscal policy and growth under self-financing of human capital formation”, *Canadian Journal of Economics*, vol. 28, pp. s163-s194

Criscuolo, C. and Martin, R. (2003) “Multinationals, foreign ownership and US productivity leadership: Evidence from the UK”, *Paper presented at the Royal Economic Society Annual Conference*.

de la Croix, D. and Montfort, P. (2000) “Education funding and regional convergence”, *Journal of Population Economics*, vol. 13, pp. 403-424

Doms, M. E. and Jensen, J. B. (1998) “Comparing wages, skills and productivity between domestically and foreign owned manufacturing establishments in the United States”. In Lipsey, R. E., Baldwin, R. E. and Richardson, J. D. (eds.) *Geography and Ownership as Bases for Economic Accounting*, University of Chicago Press, Chicago, pp. 235-258.

Driffield, N. and Taylor, K. (2000) “FDI and the labour market: A review of the evidence and policy implications”, *Oxford Review of Economic Policy*, vol. 16(3), pp. 90-103

Esteban, J. (1994) “La desigualdad interregional en Europa y en España: Description y analysis”. In *Crecimiento y convergencia regional en España y Europa*, vol. 2, Instituto de Analisis Económico-CSIC y Fundación de Economia Analytica, Barcelona

Girma, S., Greenaway, D. and Wakelin, K. (2001) “Who Benefits from Foreign Direct Investment in the UK?”, *Scottish Journal of Political Economy*, vol. 48(2), pp. 119-133

Griffith, R., Reading, S. and Simpson, H. (2004) “Foreign ownership and productivity: New evidence from the service sector and the R&D lab”, *Oxford Review of Economic Policy*, vol. 20, pp. 440-456

H M Treasury (2001) *Productivity in the UK: 3 – The Regional Dimension*, H M Treasury, London

Harris, R. I. D. and Andrews, B. P. (2000) “Rates of return on plant and machinery in the regions of the UK, 1968-1991”, *Scottish Journal of Political Economy*, vol. 47(3), pp. 304-324.

Lucas, R. (1988), “On the mechanics of economic development”, *Journal of Monetary Economics*, vol. 22(1), pp. 3-42

Mankiw, N. G., Romer, D. and Weil, D. N. (1992) “A Contribution to the Empirics of Economic Growth”, *Quarterly Journal of Economics* 107, 407-437.

McCann, P. (1993) “The logistics-cost location-production problem”, *Journal of Regional Science*, vol. 33(4), pp. 503-516

Munell, A. (1990) “How does public investment affect regional economic performance?”, *New England Economic Review*, pp. 11-32

Nelson, R. R. and Phelps, E. S. (1966) “Investment in Humans, Technological Diffusion and Economic Growth”, *American Economic Review* 56(2), 69-82.

Office of National Statistics (2002) Annual Respondents Database, *Office of National Statistics*, London

Paci, R. and Pigliaru, F. (1997) “Structural change and convergence: An Italian regional perspective”, *Structural Change and Economic Dynamics*, vol. 8, pp. 297-318

Porter, M. E. (2003) “The economic performance of regions”, *Regional Studies*, vol. 37(6&7), pp. 549-578

Rice, P. and Venables, A. J. (2004) “Spatial determinants of productivity: Analysis for the regions of Great Britain”, *CEP discussion paper*, 642.

Rigby, D. L. and Essletzbichler, J. (2000) “Impacts of industry mix, technological change, selection and plant entry/exit on regional productivity growth”, *Regional Studies*, vol. 34(4), pp. 333-342

Romer, P. M. (1986) “Increasing returns and long-run growth”, *Journal of Political Economy*, vol. 94(5), pp. 1002-1037

Romer, P. M. (1990) “Endogenous technical change”, *Journal of Political Economy*, vol. 98, pp. s71-s102

Solow R.M. (1956) “A Contribution to the Theory of Economic Growth”, *Quarterly Journal of Economics*, 70, 65-94.

Srinivasan, S. and Stewart, G. (2004) “The quality of life in England and Wales”, *Oxford Bulletin of Economics and Statistics*, vol. 66(1), pp. 1-22

Swan, T.W. (1956) “Economic Growth and Capital Accumulation”, *Economic Record*, 32, 334-61

Webber, D. J. and White, P. (2005) “Convergence towards a steady state distribution”, *UWE working paper*, 05-03.

Weisbrod, G. and Treyz, F. (1998) “Productivity and accessibility: Bridging project-specific and macroeconomic analyses of transportation investments”, *Journal of Transportation and Statistics*, vol. 1(3)

Appendix 3: Location of markets and sources of supply

1. Methodology

Sampling

Firms were selected at random from the business directories supplied by each of the Councils. A quota system was used to ensure that the sample was representative by firm size and by 30 sectors. A total of 308 firms were contacted by telephone during the period from November 2005 to January 2006. A suitable respondent was identified and then a matrix questionnaire sent by post, fax or e-mail according to the preferences of the respondent. Some 308 firms were contacted and 151 useable questionnaires returned. No attempt was made to maintain the original quota balance in the responses received. However there was an acceptable distribution by size and by a three sector dimension: retail, service and manufacturing. However, the small sample out of a universe of some 14,000 firms and the limited stratification requires the results to be regarded as indicative.

The questionnaires were drawn up in consultation with each of the four Councils and differ slightly in terms of supply source and market location areas. A typical questionnaire is shown below. No attempt was made to gather data on the value of transactions in each supply category. Respondents were only asked to allocate a proportion of total expenditure to each geographical source area. Attempting to obtain further value detail would be onerous for respondents and severely reduce the response rate. This was not seen as a problem given the limited objectives of the survey: to identify the extent to which Mid Essex acted as a source of supply for inputs and a market for outputs for firms in the sub-region and to identify competitor commercial centres within and outside the region. For this purpose the proportion of the total number of links was considered an adequate indicator of the importance of a source area for each of the supply categories.

No attempt was made to provide respondents with area definitions. There may have been some confusion concerning the extent of Greater London or indeed the East of England. The manual analysis of questionnaires gave an insight into certain misleading responses concerning the location of sources of supply. For example, sometimes respondents whose business dealt with the local branch of a national or internationally based supplier gave the head office location, even if the account was not operated from there. Extreme examples in previous surveys of this type are the attribution of banking services to Edinburgh in the case of the Royal Bank of Scotland and to Hong Kong in the case of HSBC. Further, it must be remembered that respondents would tend to identify the immediate source of supply rather than the ultimate source of the product or service. This accounts for the very low apparent penetration of imported goods int o Mid-Essex.

Data analysis

The responses were weighted according to the stated employment of the respondent firm. Not all respondents broke down total expenditure by area. If the questionnaire was acceptable in other respects, the proportion accounted for by each area of the total number of sources across all such respondents was taken instead.

MID ESSEX ECONOMIC FUTURES: HELPING TO BUILD BUSINESS IN MALDON

Q1 Please give first part of your postcode (e.g. CM 9) _____ **Q 2 Number of employees** _____

Q3 Your main business activity: **Retail** _____ **Service** _____ **Manufacturing** _____

Q4 Length of time in locality
Please complete as applicable

Years in present location: _____

Postcode of previous location: _____

Q5 – SUPPLIES AND SERVICES
Please indicate from where you obtain the following supplies & services as relevant. Tick more than one area if appropriate

Supply/Service / **Source area**	Banking, accounts & legal	Advertising, consultancy & training services	Distribution & transport	Printing, packaging & office supplies	Machinery and equipment /office equipment	Raw materials/ purchased components	Goods for resale	% of total spend
Local (Maldon area)								
Witham/Braintree								
Chelmsford								
Basildon/ Southend								
Colchester								
Felixstowe/ Ipswich/Harwich								
Rest of East of England								
Romford/Barking								
Rest of Greater London								
Rest of UK								
Europe								
North America								
Rest of the World								

Q6 - MARKETS
Please indicate the proportion of sales accounted for by each market for your product.

Area	**% of turnover**	**Area**	**% of turnover**
Local (Maldon area)		Elsewhere in East of England	
Chelmsford		UK generally	
Colchester		Europe	
Southend/Basildon		Rest of World	

Q7 – Networks
Please indicate location of any other business or group of businesses with which you co-operate _____

Many thanks for your assistance in completing this questionnaire

2. General Results

Tabulations of the results for each Council area are included at the end of this section. There are some general conclusions that can be drawn which appear to apply to all four areas.

2.1. Supply links

In each of the four Council areas, sources of supply from within the sub-region accounted for 36% of expenditure in the case of Brentwood, the lowest, to 53% for Chelmsford, the highest. This is consistent with previous surveys of this type where self-containment varies with settlement size and remoteness. The sub-regional economy is surprisingly self-contained in terms of sources of supply, given the relatively small size of each settlement and the proximity of London. Supplies sourced from the rest of Essex ranged from 14% in the case of Braintree to 17% for both Brentwood and Chelmsford. Thus between 53% and 70% of expenditure on supplies is contained within Essex, a high figure, for a county adjacent to London. As might be expected, London is a significant source of supply for Brentwood accounting for 14% of expenditure, falling to 11% for Chelmsford and right down to 3% for Braintree and Maldon. This is a clear distance decay effect.

Looking further afield, the rest of the East of England region merely accounted for 2% of expenditure for Brentwood rising to 6% for Braintree. This indicates the fragmented nature of the region and reflects the polycentric geography of the East of England. The rest of the UK is a more significant source of supply the greater the distance to London. Supplies from elsewhere in the UK account for 16% for Brentwood businesses rising to 29% in the case of Braintree. Directly imported supplies are significant only in the case of Maldon. This may be accounted for by the relatively large specialized manufacturing sector in the district.

Charts showing supply and market links are included towards the end of this section. If we consider the four Council areas together, we see a geographical pattern of supply which is in between the extremes described above. Some 45% of supplies are obtained within the sub-region and 62% within Essex.

2.2. The Mid-Essex Economy – market links

In contrast to supply links, market links are far less self-contained within the sub-region. However, two very different profiles emerge. Braintree and to a slightly lesser extent, Maldon, are much more focused on a local and regional market while Brentwood and to a slightly lesser extent Chelmsford are much more orientated to London and the rest of the UK. Braintree businesses sell 70% of their output within the east of England. Brentwood firms, at the other extreme, sell 65% of their goods and services outside the region. One surprising feature is the relative lack of importance of Greater London as a market. In no district does Greater London account for more than 9% of sales.

Once again, taking the four Councils together, the location of markets is an average of these extremes.

2.3. Variation in supply links according to type of input.

The most spatially dispersed business inputs were *raw materials and purchased components* and *goods for resale* were the inputs most likely to be sourced globally.

These categories probably accounted for a larger proportion of total expenditure by businesses than any others. These are direct cost items while most of the other categories are business services and are overhead items. It would have been advantageous to have subdivided the category into raw materials, components and packaging materials.

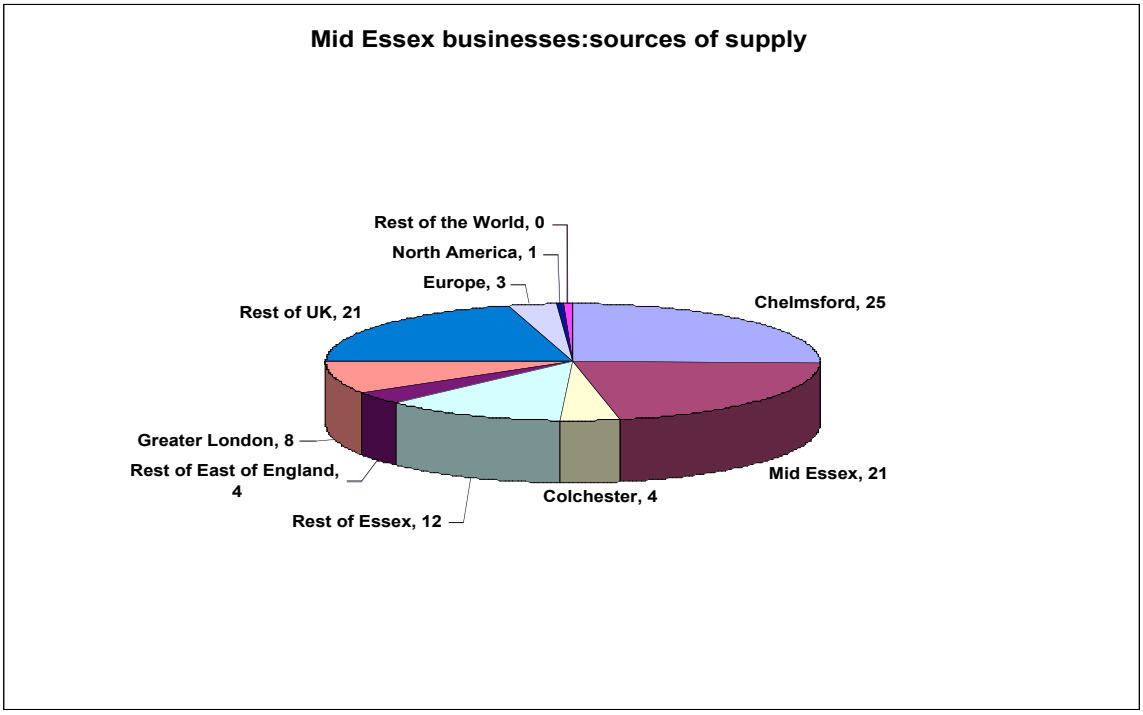
The spatial dispersion of these supply links probably reflects the relative ease with which these physical inputs can be precisely specified, competitively sourced and efficiently transported without the need for frequent face to face meetings.

Distribution and transport together with *Machinery, equipment and office equipment* were the second most widely dispersed inputs reflecting the wide dispersal of markets. There is little advantage in using a local carrier when distributing nationally or internationally and some machinery is specialized and not available locally.

Advertising, Consultancy and Training Services and *Banking and Finance, Accounts and Legal* were both sourced locally to a very great extent. Both require a considerable amount of face to face interaction between supplier and client.

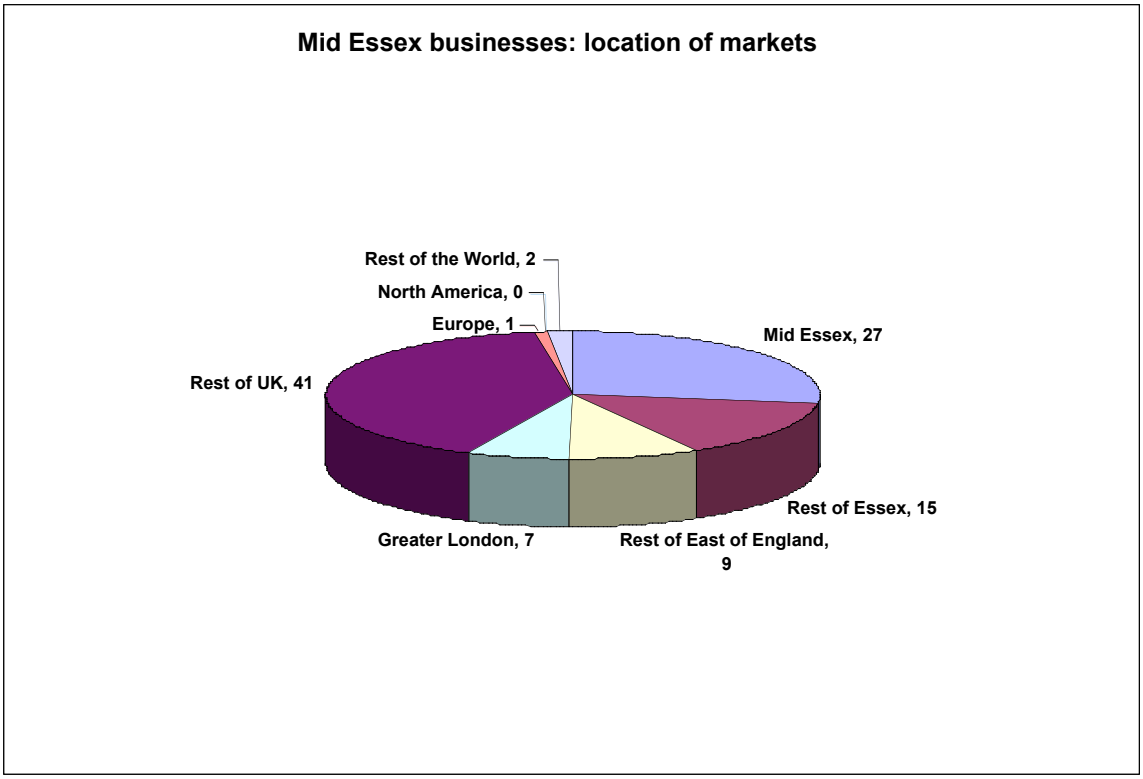
Printing and office supplies covers two rather different inputs, both offering advantages if sourced locally and this was predominantly the case. Printing of promotional material and administrative documentation requires detail briefing and proof checking where face to face communication is valuable. Office supplies typically require very short lead times and local suppliers are best placed to achieve this.

Chart 1: Mid Essex supplies



Source: Business survey

Chart 2: Mid Essex markets



Source: Business survey

BRAINTREE

Total sample: 59 firms **Retail: 5** **Service: 39** **Manufacturing: 15**

0-10 employees: 47 **11-49 employees: 9** **50-199 employees: 1** **Over 200 employees: 2**

SUPPLIES AND SERVICES: % of links and % of total expenditure

Supply/Service / Source area	Banking, accounts & legal	Advertising, consultancy & training services	Distribution & transport	Printing, packaging & office supplies	Machinery and equipment /office equipment	Raw materials/ purchased components	Goods for resale	Sub-Contract	% of total spend
Local (same post code area)	6.81	5.19	6.69	2.77	5.42	0.81	4.73	3.81	39.71
Maldon/Witham	1.15	0.58	0.58	0.46	0.12	0.23	0.58	0.69	4.72
Chelmsford	0.12	0.46	0.69	1.38	0.12	0.12	0.58	0.00	2.00
Harlow/Epping/ Waltham	0.00	0.12	0.12	0.00	0.00	0.00	0.58	0.69	0.75
Colchester	0.12	1.61	0.23	0.00	0.46	0.23	0.81	0.12	1.79
Felixstowe/ Ipswich/Harwich	0.00	0.23	0.23	0.12	0.12	0.00	0.46	0.00	0.58
Rest of Essex	0.00	3.92	0.23	0.35	0.35	0.81	0.92	4.38	10.33
Rest of East of England	0.00	0.00	0.12	3.46	0.35	0.69	0.92	0.58	5.97
Greater London	0.23	0.58	0.12	0.00	1.27	0.46	1.15	0.12	3.42
Rest of UK	6.34	4.15	3.46	3.69	4.84	1.50	1.73	0.23	29.36
Europe	0.00	0.00	0.00	0.00	0.00	0.81	1.15	0.00	0.98
North America	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.23
Rest of the World	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.17

MARKETS

% of sales turnover

Area	% of turnover	Area	% of turnover
Local (same post code area)	36.71	UK generally	23.73
Elsewhere in Essex	22.36	Europe	2.53
Elsewhere in East of England	10.97	North America	0.00
Greater London	3.69	Rest of World	0.00

NETWORKS: responses: "Local": 5 "London": 2 "Essex": 5 "UK": 4

BRENTWOOD

Total sample: 32 firms **Retail:7** **Service: 24** **Manufacturing: 1**

0-10 employees: 25 **11-49 employees: 5** **50-199 employees: 2** **Over 200 employees: 0**

SUPPLIES AND SERVICES: % of links and % of total expenditure

Supply/Service / Source area	Banking, accounts & legal	Advertising, consultancy & training services	Distribution & transport	Printing, packaging & office supplies	Machinery and equipment /office equipment	Raw materials/ purchased components	Goods for resale	% of total spend
Local (same post code area)	3.76	2.51	1.25	10.03	0.94	0.63	0.63	30.26
Chelmsford	6.90	0.94	0.31	0.63	0.63	0.31	0.63	6.45
Thurrock	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Basildon	0.31	0.63	0.00	0.00	0.00	0.00	0.00	1.11
Southend	0.00	0.63	0.00	0.00	0.63	0.00	0.31	2.69
Harlow/Epping/ Waltham	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Colchester	0.00	0.31	0.00	0.94	1.25	0.00	0.00	6.03
Rest of Essex	0.63	0.00	5.64	0.00	0.63	0.31	0.31	7.26
Rest of East of England	0.63	0.63	0.00	0.63	0.94	0.31	0.63	1.88
Greater London	5.96	6.90	0.00	0.00	0.31	0.63	0.31	14.06
Rest of UK	0.00	1.25	0.94	6.90	1.57	0.94	1.25	15.66
Europe	0.00	0.31	0.31	5.64	5.64	6.90	6.27	13.49
North America	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.79
Rest of the World	0.00	0.00	0.00	0.00	0.00	0.63	0.00	0.31

MARKETS

% of sales turnover

Area	% of turnover	Area	% of turnover
Local (same post code area)	22.91	UK generally	56.70
Elsewhere in Essex	9.31	Europe	0.20
Elsewhere in East of England	2.43	North America	0.14
Greater London	8.30	Rest of World	0.00

NETWORKS: responses: "Local": 3 "London": 2 "Essex": 2 "Europe": 1 "Norwich": 1

CHELMSFORD

Total sample: 42 firms **Retail:8** **Service: 32** **Manufacturing: 2**

0-10 employees: 36 **11-49 employees: 4** **50-199 employees: 1** **Over 200 employees: 1**

SUPPLIES AND SERVICES: % of links and % of total expenditure

Supply/Service / Source area	Banking, accounts & legal	Advertising, consultancy & training services	Distribution & transport	Printing, packaging & office supplies	Machinery and equipment /office equipment	Raw materials/ purchased components	Goods for resale	% of total spend
Local (same post code area)	7.07	7.58	2.02	17.17	8.59	1.52	1.01	51.65
Maldon/Witham/ Braintree	0.51	0.00	0.00	0.51	0.00	0.00	0.00	0.51
Basildon/ Southend	2.53	6.57	1.01	0.00	0.51	0.00	0.51	6.28
Harlow/Epping/ Waltham	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.31
Colchester	0.51	5.05	0.00	0.51	0.00	0.00	0.51	4.60
Rest of Essex	0.00	5.56	0.00	0.51	1.01	0.51	0.51	5.64
Rest of East of England	0.00	0.51	0.00	0.51	1.01	0.00	0.51	2.87
Greater London	0.00	6.57	1.52	0.51	0.51	1.52	0.51	10.63
Rest of UK	1.01	1.01	0.51	1.52	3.54	3.54	2.02	16.43
Europe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
North America	0.00	0.00	0.00	0.00	0.00	0.51	0.51	1.09
Rest of the World	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MARKETS

% of sales turnover

Area	% of turnover	Area	% of turnover
Local (same post code area)	20.96	UK generally	43.30
Elsewhere in Essex	14.62	Europe	0.10
Elsewhere in East of England	8.58	North America	0.00
Greater London	9.39	Rest of World	3.05

NETWORKS: responses: "Local": 3 **"London": 2** **"Essex": 3** **"UK": 1** **"SW": 1**

MALDON

Total sample: 18 firms **Retail: 2** **Service: 8** **Manufacturing: 8**

0-10 employees: 14 **11-49 employees: 3** **50-199 employees: 1** **Over 200 employees: 0**

SUPPLIES AND SERVICES: % of links and % of total expenditure

Supply/Service / Source area	Banking, accounts & legal	Advertising, consultancy & training services	Distribution & transport	Printing, packaging & office supplies	Machinery and equipment /office equipment	Raw materials/ purchased components	Goods for resale	% of total spend
Local (Maldon area)	6.03	2.16	3.02	7.76	3.02	0.86	0.43	34.15
Witham/Braintree	0.43	0.43	2.16	0.86	0.00	0.00	0.00	1.94
Chelmsford	2.59	2.16	1.29	3.45	1.72	0.00	0.00	5.60
Basildon/ Southend	0.86	0.43	0.00	0.43	0.00	1.72	0.43	6.91
Colchester	1.29	0.86	0.00	2.16	0.43	0.00	0.43	3.11
Felixstowe/ Ipswich/Harwich	0.00	0.43	0.00	0.00	0.00	0.43	0.43	4.87
Rest of East of England	2.16	0.43	0.86	0.43	1.29	0.00	0.43	4.92
Romford/Barking	0.00	0.43	0.00	0.00	0.00	0.43	0.86	1.07
Rest of Greater London	0.43	2.59	0.43	0.43	0.43	0.00	0.86	2.59
Rest of UK	0.86	1.29	1.29	1.29	6.03	6.03	5.60	26.32
Europe	0.00	0.43	0.43	0.00	0.43	1.72	3.02	3.33
North America	0.00	0.43	0.43	0.00	0.00	0.00	1.29	1.08
Rest of the World	0.00	0.43	0.43	0.00	2.16	2.16	3.02	4.09

MARKETS

% of sales turnover

Area	% of turnover	Area	% of turnover
Local (Maldon area)	32.04	Elsewhere in East of England	12.85
Chelmsford	2.32	UK generally	46.39
Colchester	1.50	Europe	1.69
Southend/Basildon	1.00	Rest of World	2.19

NETWORKS: 2 responses: “World” and “Local”

Appendix 4 Key leader interviews

Data Collection

Names and details of thirty 'key' contacts in the region were obtained from various sources. They were involved in a spread of economic activities located within mid-Essex and broadly fell in to the following categories.

- Public Sector
  - Health and Education
  - Business Support

- Private Sector
  - Major Companies
  - Business Property Development
  - Property Agents
    - ♣ Commercial
    - ♣ Residential

All named individuals were initially contacted by telephone, though, with the exception of property agents, the number of conversations was relatively few. Many named individuals, or their subordinates, requested the questionnaire by email, and in each case this request was complied with. Where a conversation was not possible, contact was attempted again and emails were followed up with a reminder. Generally, collecting the data proved far more difficult and time-consuming than anticipated (or hoped), but in the end sufficient responses were elicited to allow the following analysis to be undertaken and conclusions drawn.

A particular problem area was the Public Service (Health and Education) sector. I think that the reasons for this poor level of response can be summarised as follows:

- Chief executives, or equivalent, appear to be very difficult to contact directly, even more so than their private sector colleagues, they seem to be well protected from outside contact by their staff.

- Deputies and other staff with thoughts and knowledge that might have helped the survey seemed reluctant to answer even our basic questionnaire.

- In cases where contact was established, the respondent pointed out that most of the organisations they represent (hospitals, colleges) had little say in their location and some of the issues raised by the questionnaire were not particularly relevant to them. I was sympathetic to this view and usually changed the approach to ask them 'what they would like from their local authorities in an ideal world'.

Summary of Information Gathered From Public Sector and Business Organisations Based in the Mid-Essex Region

Most of the organisations contacted appeared reasonably content with their current location, though several felt that there was a potential or existing constraint on growth due to the restricted availability of land locally. Two stated that they were seriously considering a move away from the region because of the lack of space available for expansion, but a few others implied that they saw moving as a possibility if conveniently located land at a reasonable price was not made available.

Service industry organisations in/near to the centre of towns consistently mentioned the problem of congestion and parking difficulties, particularly in Chelmsford. There is obviously a trade-off between the convenience and cost of a central location. Organisations that require a large number of staff, customers, or are people-based (education and training for example), appear prepared to put up with the nuisance of congestion, parking, etc. (though it does not stop them complaining about it) as they receive the benefits of convenience and proximity to public transport nexus. Chelmsford received criticism from one source for its public transport, even in the town centre.

One of the respondents, representing an organisation that depends heavily on tourists and business clients from around the UK and abroad, felt that local authorities could better publicise Essex and its attractions, and even its location within the UK.

Manufacturing organisations were invariably located on the outskirts of the towns surveyed and generally appeared happy with their location. Several felt that they would be aided by a more flexible and quicker approach to planning proposals and applications for changes to land use. For example, some firms explicitly stated that they would like to expand or consolidate on their existing site but were frustrated by slow planning procedures, release of packets of land for commercial use and development of infrastructure. Similar sentiments were also expounded by property businesses – see next section. Several recognised that the cause of such difficulties was not solely the responsibility of local authorities and that central government has to accept part of the blame and help solve the problem. One organisation in Maldon pointed out that it has obtained the land it requires for expansion but is finding the local authority's attitude to its development 'uncooperative'.

Responses to the Influence of Specific Factors on the Business/Local Economy

1. Factors Affecting Attractiveness of Current Location

Organisations were asked how the following factors rated, on a scale of 1 to 5, in importance at their current location:

- Availability of Staff with Higher Level Skills
- Availability of Staff with Basic Skills
- Road Access
- Access to Air Transport
- Access to Sea Transport

No organisations reported problems in finding staff with either higher level or basic skills. Some organisations train their own staff, and they too appear to be able to find the personnel they require for training. A few respondents stated that 'the area has full employment' but (maybe surprisingly) none really see recruitment as a major problem, or

labour costs as a disincentive to locating in the region. The average importance rating was a little over '4' in both categories.

As noted above, several organisations located in or near town centres cite congestion as a problem and thus road access is a negative influence on their current location. Chelmsford based businesses all mentioned the problem of car parking in the town centre. Manufacturing businesses also complained about road access; the A12 was something of a *bête noir* to some, but it was admitted that the situation is improving and thus helping in the delivery and distribution of products to and from the region with the rest of the country and Channel ports. Sub-regional roads (to and from industrial estates for example) were also deemed a negative factor by some. The average importance rating was about '3'.

Few indicated that air or sea transport were of much importance in their choice of location, though there was a strong awareness of the implications of growth at Stansted airport and its influence on the region – see next section. There was a clear distinction between some organisations (generally smaller and service based) that see sea transport, and to a lesser extent air transport, as 'not important' and manufacturers who rated both as strong influences in favour of their current location, thus an average score is not very helpful.

2. Factors Affecting Local Economic Prosperity

Organisations were asked to quantify, on a scale of 1 to 5, the following factors' influence on local economic prosperity:

1 The state of the London economy
2 The development of the Thames Gateway
3 The development of the Haven Gateway
4 Preparation and development for the Olympic Games
5 The expansion of Stansted airport
6 The development of Crossrail

Unsurprisingly, there were clear geographical splits in the responses to these questions and also sectoral differences, with service based organisations finding some factors more important and manufacturers others.
The state of the London economy is seen as highly important to all respondents in the Brentwood and Chelmsford districts. Maldon and Braintree based organisations seemed generally indifferent, with the exception of leisure/tourism dependent businesses.

The Thames Gateway development was seen a 'fairly important' (in the range 3-4) by most respondents, again organisations located closest (Brentwood, Chelmsford) rated it most highly. Organisations in Maldon also saw the development as having a positive impact upon them, though less strongly. Braintree based organisations perceived little importance, positive or negative.

The Haven Gateway development was not seen as particularly important by any respondents, though several had little cognisance and had to have it explained. Where there was knowledge and an opinion (though nobody rated it higher than '3', and most lower), it was generally manufacturing businesses.

The Olympic Games was perceived as important or very important, particularly by organisations in and around Chelmsford. Manufacturers did not seem particularly interested, seeing it as a one-off event – one did raise the possible negative impact of congestion in the run-up to the event and during it. Service industries in the private sector believed/hoped it would lead to long-term benefits for the region, and thus their businesses.

There was widespread knowledge of the plans to expand Stansted airport, unsurprising as most organisations were surveyed shortly after BAA's plan for a second runway at the airport were made public. Almost all rated its importance in the range 3-4; there were no '5' ratings, except in Braintree, and the only '1' categories were from Maldon, though even here one organisation rated its importance '4'.

Crossrail was not seen as important, all but one organisation rated it '1' or '2'. However, few respondents had knowledge of the details of the project and several had not heard of it at all. Later contacts generally seemed a little more aware, it was at the time that debate on the project was going on in Parliament. Of the six factors it was clearly the lowest rated in terms of importance to local prosperity.

Overall, the rank order for the importance of the six factors in determining future economic prosperity was.

1 The state of the London economy
2= Preparation and development for the Olympic Games
2= The expansion of Stansted airport
4 The development of the Thames Gateway
5 The development of Crossrail
6 The development of the Haven Gateway

Summary of Information Gathered From Organisations Involved in the Mid-Essex Property Market

A range of organisations, mainly commercial developers and property agents, involved in the mid-Essex regions were contacted. Most were very forthcoming and many had extremely useful views and ideas about the allocation and development of land in the area. Almost all information was gained via telephone interviews with several respondents happy to discuss matters outside the immediate concerns of the questionnaire in great detail. I will summarise responses to each question in turn.

1. *Over the last five years, has there been any change in the number and profile of organisations seeking premises in the Chelmsford/Maldon/ Braintree/Brentwood area (please indicate trends as accurately as possible)?*

All noted a healthy demand for commercial property from businesses in a variety of sectors, some expressed that there is preference for buying rather than leasing premises. It was suggested that this might be attributable to the difficulties of some firms' pension funds. One agent in Braintree emphasized the growing demand for premises suited to the needs of 'modern' business: high eaves, good communications infrastructure and flexible usage. Several indicated that there is a shortage of warehousing in the region and, with the development of Stansted and Haven Gateway, this is likely to be exacerbated.

Most agents were helping clients from outside Essex who wished to expand, or occasionally relocate, to the county. One Chelmsford agent stated that he thought that high rents and purchase prices were discouraging inward movement of business and, he thought, even encouraging some indigenous firms to look elsewhere: 'firms are moving from Chelmsford to other parts of Essex'.

2. *What are the most important characteristics of a potential location in attracting incoming organizations (please give rank order or comments)?*

    2.1. Access road/rail/air
    2.2. Affordable property rents and values
    2.3. Labour/skills supply
    2.4. Space for further expansion
    2.5. Quality environment
    2.6. Networks/clusters of linked businesses
    2.7. Social/cultural infrastructure

2.1 All agreed that the road access is extremely important and that it has been/is a problem. Some felt the situation was improving particularly on the A120 which particularly affects traffic using Harwich. Others believed that congestion at busy times is acting as a disincentive to incomers. Rail transport was not generally thought to be of great importance in attracting business investment. Some opined that the expansion in the number of destinations served by Stansted is having a positive impact on promoting the region to outside businesses, particularly those with branches/headquarters in other parts of Europe.

2.2 Mid-Essex is in a competitive market for business investment and undoubtedly the availability of land and property at affordable rates is crucial. Agents felt that land prices had risen rapidly in recent years, rents less so; but as yet not to the point where they were prohibitive, though much more growth might make them so. One agent in Braintree felt that the town benefits from lower costs than Chelmsford (£3-4/m^2 – his figure). Another was far more pessimistic than the generality, believing that the differential between property prices and rents in the county and elsewhere (Norfolk and Bedford were cited) was sufficiently high to make several indigenous businesses consider relocation.

2.3 As with the businesses, property developers and agents were not aware that labour shortages exist to the degree that they are detrimental to attracting incoming firms, though again several report that their sub-region had 'full employment'. Problems resulting from difficult commuting seem of greater concern than the availability of suitably qualified staff. As above, congestion in town centres was mentioned several times, as was the difficulty encountered in getting to business parks – 'we need more public transport' (quote from a Braintree agent, but similar sentiments were raised by others).

2.4 All developers agreed that more land for commercial purposes is vital to the economic success of their locality (and presumably their businesses). Agents concurred with this point of view. Some were frustrated by the time taken to purchase and release land for development once sites had been identified. One recognised that this was not the fault of local authorities alone, stating: 'government streamlining is not working….increased bureaucracy is slowing things down'.

2.5 There was no consensus on the importance of the quality of the environment in attracting businesses to the region. Those that had a view felt that the area has a quality of environment that makes it attractive, or at least there are no major problems that might deter businesses looking to locate in mid-Essex.

2.6 No clear concerted views were expressed on the importance to incoming firms of networks and clusters. Most respondents thought they were of little or no importance; the few who felt they were important could not come up with concrete examples of where they had been a determining factor.

2.7 Social and cultural infrastructures also elicited no strong responses in favour or against the region's attractiveness. Most felt that the area had a quality of social infrastructure that made it attractive to incomers: a good balance of social and urban areas and housing, stable social mixes, sufficient cultural facilities locally and within easy reach in London. While these factors alone do not exert a large attractive force, an absence of them might discourage marginal or sceptical incomers. No respondent

felt that a paucity of such infrastructure in mid-Essex was exerting a negative influence.

3. *What do you perceive as obstacles to continued economic expansion in the Chelmsford/Maldon/Braintree/Brentwood area and priority needs for improvement?*

The only obstacle mentioned by a majority of respondents was the shortage of land for commercial development, confirming answers to question 1. In all locations this point was stated at least once, Maldon was the only location where agents seemed less than emphatic on this point as being of prime importance. One developer (Chelmsford) specifically mentioned the need for greenfield sites for commercial use rather than redevelopment of existing sites. Other issues that were raised:

- Delays in approval of planning applications, this was mentioned by several agents and developers.
- Poor transport links – a general comment by one agent, not specific to any mode of transport or location (though the respondents' offices were in Chelmsford). Another Chelmsford agent cited traffic difficulties at Springfield Industrial Park as a problem requiring attention.
- A lack of reasonably priced housing for staff (raised by an agent in Braintree).

One thoughtful agent provided a comprehensive list of the obstacles he perceived, as well as some of the above, he listed a number if institutional problems including:

- Local resistance to infrastructure improvements
- A strong agricultural lobby restricting industrial and residential expansion
- Weak local government
- Weak delivery at local level of national government planning objectives
- Inadequate compensation for those deprived of their property (which is restricting the supply of land for commercial development)
- Too much local politics
- Not enough direction by central government.

4. *Do appropriate premises and support services exist in Chelmsford/Maldon/Braintree/Brentwood area for business start ups?*

A summary of all responses suggests that things are not too bad in this respect, but more small premises would not go amiss. None of the respondents cited a lack of premises for small businesses as a major hindrance to start-up activity, but several concurred that more could be done if developing new firms is a specific aim of local authorities in mid-Essex. Many respondents stated they had no specialist knowledge of the support services available, those that did express an opinion felt they were adequate, though more could be done, no specific recommendations were offered.

5. *On a scale of 1 to 5, 5 being the greatest, how do you rate the following as influences on the decision of firms to locate in or remain in the Chelmsford/Maldon/Braintree/Brentwood area.*

   5.1. Proximity to London
   5.2. The development of Thames Gateway
   5.3. The development of Haven Gateway

5.4. Preparation and development for the Olympic Games
5.5. The expansion of Stansted
5.6. The development of Crossrail

These are the same questions asked of business organisations and, as there, a geographical influence on the answers given was discernible.

All respondents, except one, agreed that proximity to London was important or very important to the health and development of the local economy and attracting new businesses to the area. Brentwood and Chelmsford agents were particularly emphatic on this point (again with one exception). The average importance rating was almost '4'.

The Thames Gateway was perceived as fairly important overall. There was a clear distinction between respondents in Chelmsford and Brentwood, who rated it as very important, and those in Braintree, who saw it as being of little importance; there was no clear view from Maldon respondents. The average rating was just over '3'.

The Haven Gateway was not given a high rating except by two agents, one in Braintree, another in Chelmsford, who thought it 'important'. Although all respondents seemed aware of the project, I got the feeling that some were not cognisant of its schedule and implications for the region. It could be that the project needs wider publicity and agents require more information about the opportunities it presents.

The Olympic Games were having no influence at present, unsurprisingly, but many expected that they would have an increasing impact over the next few years. When asked whether they thought the impact would be short to medium term (ie finish after the Games in 2012) or continue well after that date, there was uncertainty, but I got the impression that it was something that all were thinking about carefully.

There was unanimous agreement that the expansion of Stansted airport is exerting a huge influence on decisions to locate in mid-Essex. Not surprisingly respondents in Braintree all rated its influence '5' ('Braintree is built on Stansted') but even further afield agents gave it a very high 'score'; overall it averaged a '4.5'rating.

Crossrail received the lowest overall ranking. As with the Haven Gateway, I feel this may have been in part down to ignorance of the project, several respondents clearly did not know what it entails and a few had not even heard of it. Two agents in Chelmsford were the only respondents to rate it above '2'; they were the same ones as knew most about the Thames and Haven Gateways and rated those two factors most highly, so again it might be appropriate for local authorities to inform business in their area about this project and its implications.

Overall, the rank order for the importance of the six factors in determining future economic prosperity was.

3 The expansion of Stansted airport
4 The state of the London economy
3= Preparation and development for the Olympic Games
3= The development of the Thames Gateway
7 The development of the Haven Gateway
8 The development of Crossrail

6. *Looking forward fifteen years, what do you see as the major changes in the profile of firms in Chelmsford/Maldon/Braintree/Brentwood area*

   6.1. in terms of sector/activity
   6.2. in terms of employment/skills

Answers were generally rather disappointing, vague and unconsidered. The time frame was perhaps rather too long for most respondents to give informed answers. Those that made a useful contribution suggested that they foresee change deriving from more firms moving out of London in search of cheaper property and reduced commuting costs.

A continuation of recent trends was envisaged, resulting in an increasingly service based and less manufacturing based local economy; given this, demand will be for more business park and warehousing facilities, rather than property primarily suited to manufacturing. This will also mean a change in skills demanded, with a greater need for professionals and staff with office skills, particularly in the area of financial services - several respondents predicted growth in this sector. One agent suggested that the area could become attractive to commuters not just to London but also 'other parts of the country'.

Although respondents were mainly commercial developers and agents, two or three talked about the benefits of bringing work to the local community and reducing demands on transport, particularly cutting down on commuting into London. In this case a balanced development of residential and commercial sites is necessary. One respondent, who appeared to have thought about this issue deeply, thought this was the ideal model for developing the area, but was rather sceptical about whether it could be achieved.

Conclusions

- Business and property market related respondents agree that there is a continuing demand for expanding commercial activity in the region, both from existing and incoming organisations, and that the ability to maximize local benefits is heavily dependent on the availability of land. Most believe there is insufficient commercial land available for development at present.

- Once land for commercial development is identified and allocated, planning procedures are time consuming and costly, they should be streamlined if possible. It is recognised that this is not entirely the fault/responsibility of local authorities.

- Transport in the region is a constraint on efficiency maximization and may be hindering commercial development of the region. Businesses on industrial estates and business parks are reasonably content, though even here there were some complaints about congestion and a lack of public transport for staff. Organisations in town centres state that congestion and car parking are their biggest problems, public transport should be improved to the benefit of employees and clients.

- The drift away from a diverse economy based on agriculture, manufacturing and service industry to one increasingly dependent on the service sector is clearly observable and likely to continue.

- Finding staff with the required skills does not appear to be a great problem at present but with 'full employment', in parts of the region at least, and the changes in economic structure noted above, there are potential difficulties in the future. Ensuring a supply of labour with the appropriate skills to attract incoming firms is important if the region is to continue to prosper.

- It is recognised that building an economy less dependent on commuting, particularly into London, would bring various benefits to the region. To achieve it would require a coordination of policy between various authorities, some who support the principle are also sceptical that it can be achieved.

- Of the six factors enumerated as likely to have an impact on the mid-Essex economy in the next few years, the most important by far were judged to be: the performance of the London economy (particularly in the south of the region) and expansion of Stansted airport (particularly in the north of the region). The Olympic Games and development of the Thames Gateway are perceived as being next in importance and of least importance the Haven Gateway and Crossrail projects, though it should be noted that respondents' knowledge of the last two was significantly less than of the other four.

Appendix 5

THE PROPOSED EXPANSION OF STANSTED AIRPORT AND THE MID-ESSEX REGION

Although lying outside the mid-Essex region, in Uttesford District Council's area, Stansted airport is of a magnitude that gives it an economic importance outside its immediate vicinity. If the expansion plans proposed by the British Airports Authority (BAA) reach fruition then it will undoubtedly have an impact on the mid-Essex region in terms of:

- employment and labour markets
- economic activity in ancillary businesses drawn to the airport
- demands on local infrastructure
- the local environment.

In December 2005, BAA produced its consultation document[12] as a precursor to submitting formal planning applications for the chosen option for expansion in 2006. The plan is that, following the application, a public enquiry would ensue in 2008 and the earliest that a second runway, on which the later - and major - part of the expansion rests, could be operational is 2013. It is not the intention of this report to replicate BAA's or summarise work, but rather to interpret some of the plans within it in terms of their impact on the airport and the surrounding area. If Stansted expands as forecast in the BAA Consultation Document, it will result in an airport that, by 2030, is handling more passengers and as much cargo as Heathrow (currently the UK's busiest airport by some distance) does at present. It may be tempting to assume a 'Heathrow in Essex' scenario, but I will also point out why I believe Stansted (2030) will be different in its impact and structure, even if it is similar in size to present day Heathrow.

Stansted and the other London airports

Stansted airport is located three miles to the east of Bishop's Stortford, around 12 miles from the centre of Braintree, 15 miles from Chelmsford, 18 miles from Brentwood and 19 miles from Maldon. As 'London's Third Airport' it has an importance far beyond that of most UK regional airports, it is Britain's fourth busiest in terms of passenger numbers. The M11 motorway and Stansted-Liverpool Street rail link mean that much of the airport's traffic passes through, or close to, the mid-Essex region but contributes little economically, however, with further expansion, that could change.

Stansted has a forty five year history as a commercial airport, its location made it an attractive location for expansion early on (White Papers in 1961 and 1964 recommended that it should become one of Britain's four major airports); environmental concerns however precluded various plans. By the mid 1970s Stansted was dealing with around 300000 passengers per year and also building up its business handling cargo flights. It was the 1990s however that really saw the airport become a major nexus for passenger services; prompted by increasing congestion at Heathrow and Gatwick and the fact that costs were considerably lower than those at the other two London airports, which made it highly attractive to the emerging, and rapidly growing, low-cost airlines.

[12] See 'Stansted Generation 2: December 2005 Consultation' available in hard copy or online from the BAA website.

In terms of infrastructure, Stansted has a 3048m runway, shorter than Heathrow and Gatwick, but adequate for all modern commercial aircraft, 65 aircraft stands, one main terminal building linked to four aprons plus a business/general aviation terminal and a cargo handling area. The runway is around 1500m longer than London City and 900m longer than Luton[13]. This makes the airport the smallest of the three BAA operated London airports, but it is also the one with the greatest potential for expansion. As noted above, road and rail links are very good, the airport has a direct link to Junction 8 of the M11 and a railway station at the main terminal building, though expansion on the proposed scale will put heavy demands on them and upgrading will be required.

The main constraint on large scale expansion at Stansted is runway capacity, while the runway is adequate for current aircraft, ultimately it can only cope with so many movements and the key to growth beyond that is a second runway. In 2005 Stansted handled about 178000 movements[14], equating to 488 per day or 27 per hour, assuming an 18 hour operating day. Gatwick, the UK's busiest single runway airport, dealt with about 245000 movements (671/day, 37/hour) and Heathrow, with two runways, 470000 movements (1288/day, 71/hour – obviously half those numbers per runway).

Thus a 37% increase in aircraft movements on Stansted's 2005 figure would take it up to the same level of traffic as present day Gatwick; significant growth beyond that would appear to necessitate the building of a second runway. BAA believes that the current runway will allow up to 35m passenger per year to be handled, an increase of 59% on 2005 numbers. Heathrow is currently limited to 480000 aircraft movements (about 68m passengers) annually, which is not far off its full capacity given its current infrastructure and operating constraints. The throughput of passengers will continue to grow as larger aircraft operate on more routes and Terminal 5 opens, scheduled for 2008. Further large scale growth depends upon the planned third runway and extra terminal buildings proposed by 2030. In short, there is plenty of scope for growth at Stansted if the demand exists, and the expectation is that both passenger and freight air transport will grow faster than the general economy for the next 20-25 years at least.

In response to the Government's White Paper, 'The Future of Air Transport' (2003), on the 9th December 2005 the BAA announced a three month consultation in preparation for the decision on which of its alternatives for building a second runway and expanding Stansted to pursue. Four different options are under consideration and, assuming the second runway is forthcoming, the aim is to create an airport capable of processing up to 76 million passengers a year by 2030.

In 2005 Stansted handled just under 22 million passengers and existing plans forecast that figure rising to 35 million by 2015, ie without the second runway. Phase 1 of the proposed expansion plan sees this increasing to 50 million passengers per year by the

[13] Luton, or 'London Luton' as it calls itself, is in some ways Stansted's nearest rival in terms of the airlines and other customers it attracts. It is not owned by BAA and its scope for major expansion is severely constrained by various factors. London City attract a very different sort of traffic, almost exclusively short haul scheduled business flights, it also has very limited scope for expansion for various reasons.

[14] Note that a 'movement' is either a take-off or landing, thus a normal service counts as two movements.

same date, two years after a second runway could become operational. With the second runway, a further 50% increase would occur over the following 15 years.

The BAA Consultation Document states that with a second runway Stansted could handle somewhere between 465000 and 550000 aircraft movements, equating to 63-76 million passengers. Between 120 and 145 new aircraft stands will also be required. At the lower end of the range, 90% would be passenger flights and 6.5% cargo flights at the higher end 92% passenger flights and 5.5% cargo flights[15]. The main constraint on which end of the range will be achieved is the mode of operation with two runways: using one for landing and the other for departing aircraft allows a higher density of traffic to be handled than using each runway for both purposes ('mixed mode').

If growth proceeds as forecast by the proposed plan, by 2015 Stansted will be 50% busier than present day Gatwick and by 2030 10% busier than present day Heathrow in passenger terms. A simple table for comparison is shown below. The 2015 data assume planned passenger numbers (50m), an infrastructure constraint of 250000 annual movements (ie one runway) and pro-rata growth in staff, check-in desks and retail outlets. The 2030 data assume 76m passengers 480000 aircraft movements (ie the same as present day Heathrow) and, again, pro-rata growth in other variables.

[15] The remainder being general aviation (mainly business aircraft), military movements and technical/ refueling stops, etc

	STN (2005)	STN (2015)	STN (2030)	LHR (2005)	LGW (2005)
Aircraft Movements	177700	250000*	550000	469560	245000
Passengers	21700000	50000000	76000000	67700000	32000000
Cargo (tonnes)	235000		1200000	1300000	216000
Staff	10600 (1000)	24400 (2300)	37100 (3500)	68000 (4500)	25000 (2000)
Check-in desks	125	276*	438*	531	318
Retail Space (sqm)	10000	23000*	35000*	48000	37000

Notes: STN (2005) = Stansted 2005 data
STN (2015) = Stansted 2015 planned data for passengers - others estimated pro-rata
STN (2030) = Stansted 2030 planned data for passengers - others estimated pro-rata
LHR (2005) = Heathrow 2005 data
LGW (2005) = Gatwick 2005 data
Staff data relate to all staff working on site (airlines, handling, maintenance, retailing, etc), the figure in brackets to those directly employed by BAA. They do not include airport dependent off-site jobs: it is estimated that another 100000 people throughout the UK have Heathrow dependent jobs, many will be within a 20 mile radius.

Source: STN (2005), LHR (2005) & LGW (2005), BAA Facts and Figures
STN (2015) & STN (2030), BAA Stansted Generation 2 December 2005 Consultation Document & pro-rata estimates (*)

The impact of Stansted's growth on its environs

If the BAA's plans, or even something approximating to them, reach fruition, it is obvious that Stansted's economic influence will spread, and certainly into the mid-Essex region. For reasons discussed below, the airport may not require as many staff as the present day Heathrow, but it will certainly put significant demands on the region's labour market, it is hard to see the requirement being much less than present day Gatwick at the very least, ie a doubling to trebling in employment numbers – perhaps 15000-20000 extra jobs.

A second important economic factor attributable to an expanded Stansted airport will be demands on local infrastructure. As noted, the basic means of transporting people and cargo to and from the airport is already in place: the rail link and M11 motorway. However, an airport processing three to four times the present number of passengers will certainly put huge demands on the local infrastructure and in particular links with London. Heathrow and Gatwick also have dedicated rail links and motorway junctions (Heathrow has an underground service too), yet at busy times congestion is heavy. Whilst Stansted has reasonably good links with London, and Cambridge, transport to

other parts of the country are limited and if the airport is to grow as proposed these will certainly have to improve.

If air cargo increases as predicted, BAA is forecasting approximately 400% growth by 2030, then road freight traffic in the area is likely to increase markedly. Almost 1m tonnes of extra freight will have to find its way to or from Stansted. Given plans for expansion of the Haven Gateway, traffic between Stansted and the ports of Harwich and Felixstowe could be expected to rise, putting further pressure on the A120 and A12/A14 trunk roads.

The expanded airport will offer businesses located within a 20-30 mile radius better links with customers, suppliers and other facilities with the firm. Arguably Stansted already offers a better range of services to other parts of Europe (particularly regions outside major cities and conurbations) than the two major London airports; they are certainly much cheaper services on the whole. The region could become a favourable location for larger businesses with strong internal and/or external links around Europe.

Other demands that are likely to be felt in the mid-Essex area, particularly Braintree and Chelmsford are:

- Hotels and other overnight accommodation
- Off airport car parking
- Ancillary Services: catering, haulage, services for the airport.

The impact of such growth on the local environment is beyond the scope of this report, but clearly a doubling or tripling of the number of flights will raise questions about the effects on the local population and natural environment[16]. Compared to Heathrow (particularly) and Gatwick, Stansted is in a relatively rural location and its runway is aligned North-East to South-West (230˚/50˚), which with prevailing winds normally means aircraft approaching to the west of Thaxsted and departing to the east and south of Bishops Stortford; though when the wind comes from the east or north this will be reserved. The second runway will be parallel to the existing runway and probably to its east[17] by between 2.3 and 2.5km, which will mean arriving and departing aircraft following roughly the same path to the present, though with some tracking to the east of current flight paths (or with Option D a little to the west).

All options for a new runway will require the construction of a new terminal building, 40000m^2 is envisaged, additional aircraft parking and gates, the demand for land for expansion will be considerable. Depending on which option goes forward and whether the runways are used in segregated (ie one for landing, one for departures) or mixed mode the demand will be for land will be between 480 and 686 hectares. BAAs preferred option will need 524 (segregated mode) or 627 (mixed mode) hectares. Further details can be found the BAA Consultation Document.

Why Stansted is different to London's other two major airports

[16] For details of the various proposals for sites for the new runway, see BAA's 'Stansted Generation 2: December 2005 Consultation' document. This contains much detailed information of the expansion plans and noise contours for the four proposed options.

[17] Three of the four options proposed by BAA, including the preferred option, put the second runway to the east of the existing runway, one (Option D) to the North West.

Above I have made some assumptions that over the next twenty years or so Stansted will become similar to Gatwick and then, with the second runway, Heathrow today. Certainly expansion on the proposed plan's scale has considerable implications for the airport and its environs, but it should be noted that present Stansted's market is very different to that of the other two airports, and this accounts to a large degree for its recent rapid growth.

The main airlines using Stansted are 'low-cost' carriers such as Ryanair and easyJet (plus many others). Heathrow has no such airlines (though some, such as BMI, claim to offer similar prices) and Gatwick a few operating alongside the majority of 'traditional' carriers and charter operators. Low-cost airlines are businesses that have expanded very rapidly over the past 10 years[18], taking their preferred airports, including Stansted, with them. In January 2006 easyJet served 25 destinations and Ryanair 88 destinations from Stansted; Ryanair alone accounted for over half of all the destinations served by the airport.

At present, Heathrow has no charter airlines or specifically low-cost airlines, Gatwick's traffic is split 70% scheduled (including a minority of low-cost services) and 30% charter services. As noted above, Stansted is dominated by low-cost carriers, with a few charter and traditional scheduled airlines; also a few ad hoc charter and general aviation flights. There are also fewer transfer passengers than at the other two airports.

The growth and success of these two airlines over the past ten years is unarguable and without them Stansted would not be the size it is today. There is little evidence to suggest that low-cost airlines do not have considerable scope for further expansion, though whether it will be at the same rate as the past decade is debatable. They do however attract a different type of customer, generally one who is more price sensitive and less likely to spend money on other services such as hotels, taxis and more expensive food outlets. The proportion of business travellers using Stansted was 18.7% in mid-2005, a rather lower figure than Gatwick, and certainly Heathrow. The BAA gives a breakdown of the passenger social group profiles at the three main London airports.

Table 2: Profile of passengers using the three BAA London airports (%ge)

	AB	C1	C2	DE
Heathrow	47	43	7	3
Gatwick	45	36	14	5
Stansted	39	43	12	6

Source: BAA Facts and Figures

The structure of services emanating from Stansted is also different to the other two major airports. Stansted currently serves over 170 destinations, compared to Gatwick's 210 and Heathrow's 190, but a larger proportion of Stansted's are short haul (flights up to about 2 hours, ie serving western and central Europe). The low cost airlines have built their businesses on such routes, often to cities or airports not previously served. This allows heavy usage of their aircraft, short turn round times and standardisation of aircraft

[18] In 1995, Ryanair at a fleet of 10 aircraft, in 2005 it was over 80 and rising, its staff rose from 440 to 2300 over the same period. EasyJet was only established in late 1995 with two aircraft and 100 staff, by 2005 it had 90 aircraft and 3200 employees (Flight International)

fleets, all allowing the economics of the business to work. They tend to use aircraft in the 150-200 passenger capacity category: Ryanair for example standardises on the Boeing 737-800 series and easyJet is transferring its fleet from Boeing 737 to Airbus A319 aircraft, other low cost airlines almost invariably use similar equipment. This is important because the other two London airports attract far more wide body, or larger, aircraft with two to three times the capacity. Thus, at Stansted, more aircraft movements are required to move the same number of people. Countering this, low-cost airlines generally achieve higher densities than traditional carriers. Overall though it seems reasonable to conclude that the estimates of aircraft movements in table 1 may be underestimates if the passenger estimates are fulfilled.

The staff figures may be overestimates as low-cost airlines use their staff more intensively and flexibly than traditional airlines. Low cost airlines also utilise labour-saving technology wherever possible (most can only be booked online for example) to reduce labour costs. It is quite possible that over the next ten years the traditional check-in desk will disappear; in some cases it already has for passengers with hand baggage, and luggage for the hold can be dropped off at a manned desk. Security issues remain the biggest barrier to large scale reduction of labour at airports, but it is not unforeseeable that at least some these could be evaded.

It is possible that low-cost airlines over the next 20 years could move to larger aircraft and long-haul routes[19]. However, this would require a change in their business strategy which, as noted above, allows them to benefit from economies of scale and standardisation. In the past, airlines that attempted this have often failed (Laker in the 1970s is still a relevant example) and the classic successful low-cost operator, South West Airlines in the USA (on which model Ryanair based much of its strategy), has never attempted expansion of this type.

Assuming that Stansted remains an airport dominated by low-cost carriers on short haul routes there is no reason to expect that the sort of facilities that have grown up at and around Heathrow (numerous large luxury class hotels, business centres, etc) will proliferate in the same magnitude.

Conclusions

- BAA's plans for expansion of Stansted airport over the next 20-25 years have profound implications for the airport and its locality, including mid-Essex.
- A doubling of 2005 passenger throughput numbers by 2015 and, with a second runway, trebling, or more, by 2030 will mean an airport handling more passengers than Heathrow at the present time.
- Assuming growth of the current structure of users, Stansted will put substantial demands on:
    - Local labour markets

[19] In the Consultation document, BAA states that it believes that in 2030 around 3m passengers a year (ie 4-4.5% of the total) at Stansted could be travelling by Airbus A380 – the most capacious passenger aircraft presently flying (though not yet in airline service). This would be about 7500 A380 movements per year (20/day) assuming 400 passengers per flight, ie 70-80% capacity depending on seating layout.

  - Transport infrastructure linking the airport to London, the Haven ports and other parts of southern England and the Midlands
  - Land in the immediate vicinity to allow new facilities to be built
  - Land in the environs to allow airport dependent business to locate and grow – Braintree and Chelmsford (along with towns outside mid-Essex such as Bishop's Stortford and Harlow) seem most likely to be affected.

- Due to its different user structure (both airlines and their customers) when compared with the other two major London airports, the demands are likely to be different – fewer luxury hotels, conference facilities and business services, more 'travel lodge' type accommodation and medium to long term parking.

- Businesses located in Essex, Hertfordshire and Cambridgeshire will have far better links with their customers, suppliers and partners in other parts of the UK and Europe than those in other regions. Already Stansted serves nearly as many destinations as Heathrow - and more in Europe. Stansted's expansion could make the area within 20-30 miles an even more attractive location for large businesses to locate their headquarters.

Appendix 6

THE ECONOMIC IMPACT OF THE OLYMPICS

Hosting major sporting events were thought to cost governments millions. For example, the 1976 Summer Olympics, which were held in Montreal, lost £692m while the 1972 Summer Olympics, held in Munich, lost £178m. However, the 1984 Summer Olympics, held in Los Angeles, provided evidence of possible financial success: they made a profit of £216m. That is when academics and researchers began to investigate and better understand the broader economic benefits of staging major sport events and when potential World cities increased their competitiveness to host these events.

Nevertheless, it is usual for the host-city authorities to lose money even though the city itself benefits greatly in terms of additional aggregate demand (Mules and Faulkner, 1996). For instance, the Brisbane World Masters Games of 1994 increased gross state product by Aus$50.6m even though Brisbane suffered a financial loss of Aus$2.8m. Hence the public sector is normally required to participate in staging the events and to incur losses so that the benefits accrue to the local economy.

This is a new area for academic research so we don't yet know, for example, the economic impact of the 6 Nations Rugby Tournament, Wimbledon, the FA Cup final, the Open Golf Championship, Oxford/Cambridge boat race, Grand National and International Football matches on local economic growth or the spillover effects on local firm' productivity. Nevertheless, Sheffield, Glasgow and Birmingham have adapted an economic strategy based on attracting major sporting events to their areas to act as a catalyst to stimulate economic regeneration. For example, Sheffield held the World Student Games in 1991 (which made a loss of £10m), but the infrastructure and facilities created for those games have been used in the running of over 300 events, including EURO96 (which made a local profit of £5.8m on its own) and the 1996 World Masters Swimming Championship (with £3.6m spent on accommodation alone). Hence, in the long run, the initial investment necessary to host major sporting events may be worth the short-run economic losses.

We can not judge the economic success of a major sporting success on a purely profit/loss basis. Costs include:

- Investments in infrastructure,
- Investments in other new facilities,
- Investments in local areas (to, for instance, improve the aesthetic attractiveness)
- Investments in new hotels (which can be used later as conference venues).

The first three costs are usually provided by local government.

It is most important not to consider these investments as a single, one-off investment. These improvements in infrastructure would have efficiency gains for years in the future. New facilities could attract *tourists* and *locals* to them. Additional expenditure is generated in the local economy by *participants* and by *spectators*. There is additional tourism related activity. Furthermore, people watch the event and they go to see other non-sporting events and therefore spend other money on other local facilities.

Aesthetic improvements attract new people into the area, either for leisure activities (which often require them to spend money) or for residence (which increases the demand for houses and potentially increases the amount of local tax revenue). New, or improvements to, hotels places greater emphasis on other providers of accommodation to improve their own service quality. Moreover, new hotels can also lead

to the provision of more and better conference facilities which attract a further section of society to the area – *workers*.

Benefits to the local economy include:

- Raising the profile or re-imaging the local area (Roche, 1992) [Worldwide Marketing of the area is possible with the Olympics]
- Higher incomes generated from tourists,
- Higher incomes generated from participants,
- Possibility of repeat visitations by tourists (or their friends through word-of-mouth),
- Urban regeneration and/or tourist development plans.

The important concept here is that some facilities remain after the event has happened. The Olympics therefore provide an opportunity to 'push through' infrastructural investments that would otherwise by delayed or given a lower priority. Hence, justification for hosting major sporting events is usually in terms of long-term economic and social regeneration (Mules and Faulkner, 1996).

The local councils of Braintree, Brentwood, Chelmsford and Maldon would therefore be wise to invest in areas that could be important drivers of future economic growth. Elsewhere in this document there is evidence that the catering sector significantly reduces the average productivity of Braintree, Brentwood, Chelmsford and Maldon. An improvement in the capital stock of the firms in the catering sector may well increase their productivity and reduce the relative productivity differential for the catering sector.

The actual financial effect of the Olympics on local economies is, however, very difficult to predict. The reason for this is that there are three effects, which compound the effect of initial expenditure over time (coming refereed to in the economics literature as a 'multiplier effect'. In brief, there are 'direct', 'indirect' and 'induced' income effects.

- Direct income effects refer to the money initially spent by investors, participants, spectators and tourists at the events themselves.
- Indirect income effects include the money spent by these groups of people on other activities, such as food and drink purchases in local restaurants, admission charges to museums to fill days when their chosen sport is not running, additional shopping expenditures, entertainment expenditures and trips to local areas of interest for leisure trips and sightseeing.
- Induced income effects include the expenditure by firms of their higher profits on further or new investments. These could increase efficiency and profitability and enhance the firm's ability to compete effectively in the future.

To obtain the greatest benefits from these income effects, the local economy should attempt to increase its profile in order to attract tourists (participants, spectators and sight-seers) into the area. It should also encourage investments in sustainable and productive infrastructure and improve the aesthetic appearance to attract a greater population. Reducing outsourcing and increasing the consumption of locally produced goods will reduce the leakages from the local economy and stimulate greater local economic growth. The overall effect on the economy will depend on the extent of income retention in the local economy.

A further aspect that is not always considered in economic analyses of the effect of sporting events is the increased willingness of spectators and others to participate in sporting activities. Participation in sporting activities can also be seen as an investment

decision as a fitter and more agile employee is likely to be a more productive worker. Higher quality local sporting facilities are likely to be in higher demand.

Criticisms in the economics literature of attempts to cream-off the benefits of major sporting events stem from a number of factors:

- Investments in facilities that are only for temporary use
- Higher taxes or adverse effects on poorer sections of society

However, the main problem with the effects of major sporting events on the local economy can be exemplified by Jones (2005), who stated

> "no academic study has found any evidence of a beneficial impact on medium or long term economic growth or employment generation as a consequence of stadium construction or hosting a major event"

He puts this down to the inability to accurately measure direct, indirect and induced expenditures, the lack of conceptual clarity of the links between various factors (such as media coverage and investments or future tourism generation) and because major sporting events actually fill only a very small part of the whole economy (though he is not necessarily suggesting that this small part is insignificant). For instance, EURO96 is understood to have attracted 280,000 overseas visitors who spent about £120m in the 8 host cities (Dobson *et al*., 1997). The total amount of money spent in host cities (including GB residents) totalled £195m, but this is only estimated to an addition to economic growth of 0.1%, which is 25% of the total economic growth over the 3 month period. The impact depends on: number of competitors, length of stay of competitors, number of spectators and the length of stay of spectators, as well as each and every person marginal propensity to consume.

Therefore, bearing in mind that they should have sustainable and long-term effects on the local economy, the following policies could be considered to maximise the potential benefit from the Olympics:

- Invest in sustainable and efficient infrastructure
- Improve the aesthetic value of local areas
- Market the area as a place to visit
- Advertise the area as a good place to stay during the Olympics, especially for spectators (perhaps highlighting the quality of transportation links)
- Improve facilities for spectators, but bear in mind that these improvements can be targeted towards the business sectors and the conference trade in future

Bibliography:

Jones, C. (2005) "The potential Economic Return to Stadia and Major Sporting Events", paper presented at the Regional Studies Association conference on *The Regeneration Game: The Impact of the Olympics and Sport on Local and Regional Economies*, Arsenal Football Ground, London, UK, Wednesday 14th December.

Mules, T. and Faulkner, B. (1996) "An Economic Perspective on Special Events", *Tourism Economics* Vol. 2(2), pp. 107-17.

Roche, M. (1992) "Mega-Events and Micro-Modernization: on the Sociology of the New Urban Tourism", *British Journal of Sociology*, Vol. 43(4).