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Employment projections for London by sector and trend-based projections by borough

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1 Introduction

This working paper presents the GLA's new medium term trend-based forecasts for employment in London, disaggregated by sector using the new Standard Industrial Classification (SIC 2007) and by borough and based on Workforce Jobs statistics. (Workforce Jobs = Employees (from ONS business surveys) plus Self Employed (from Labour Force Statistics)). Unlike previous employment projections, the borough historic trends and projections presented in this working paper represent employees only and do not include the self employed. The self employed data at the borough level was considered to be unreliable for reasons explained below.

These forecasts replace those published in Working Paper 38[1] (November 2009).

Last revised in 2003[2], the Standard Industrial Classification is the UK version of an internationally accepted system of classifying businesses by their types of economic activity. SIC 2007 is the first major revision since SIC 1992 and is discussed further in Section 2.

It is important to note that these borough forecasts are not the ones that would be used for a Replacement London Plan. The forecasts that were used for the recent Replacement London Plan (July 2011) use the trend-based methodology but in addition compare ('triangulate') the results with forecasts for transport accessibility and for workplace capacity. The iteration of the forecasts generates new employment projections, according to a set of (borough-specific) rules which identifies which of the three forecasts dominates (see Working Paper 39 (November 2009)). There is no statutory timetable for the preparation of a Replacement London Plan. Were there to be a change of Mayor at May's election, a Replacement Plan is likely. But if there is no change, a Replacement Plan is unlikely. However in the latter case there could be an 'alteration' which would require a full 'triangulated' set of employment forecasts: the Mayor is statutorily required to review his spatial development strategy "from time to time".

The last year of data in the forecasts in Working Paper 38 (henceforth WP38) was 2007. Now we have three more years of data from which to construct the forecasts: the last year of data is 2010.[3]

Aside from the change to SIC 2007, there has been a further statistical change. The latest years of the ONS workforce jobs series are now benchmarked to the new Business Register and Employment Survey (BRES).[4] BRES replaces the Annual Business Inquiry part 1 (ABI/1).

[1] GLA Economics, Working Paper 38, Employment projections for London by sector and trend-based projections by borough by Jonathan Hoffman, Justin Ram and Elizabeth Smart, November 2009

[2] The 2003 changes (like the 1997 changes) were not full-scale revisions. The ONS comments that they were "responses to user demand for additional detail at the subclass level together with some minor renumbering and revisions." On 9 October 1990 the European Council of Ministers passed a regulation to introduce a new statistical classification of economic activities in the European Communities (NACE Rev 1). In January 2003, a minor revision of NACE Rev.1, NACE Rev. 1.1, was published followed by a major revision, NACE Rev. 2, effective from 1 January 2008.

[3] The Borough historic data end in 2009; 2010 is a forecast

[4] For a description of BRES and an analysis of the implications for London of the move to BRES, see Smart, Elizabeth (2011) "The New Business Register Employment Survey: Changes in London's Jobs, 2008 and 2009 Compared", Current Issues Note 30, GLA Economics

An important objective of the new BRES survey is to improve the quality of regional estimates. BRES collects information from businesses at the local unit level rather than at the reporting unit level. The advantage of BRES is that it takes a 'bottom-up' approach rather than the 'top-down' approach of previous surveys - which then relied on apportionment to distribute jobs to the regions.

It is therefore important to remember that the latest years of data (which use results benchmarked to BRES) have to account for these two changes in the statistics - the first, the change in SIC and the second, the survey change. The change in surveys from ABI/1 to BRES creates some discontinuity in the data. ONS estimates that in 2008 BRES gives an estimate of employment in London that is 84,000 higher than the estimates obtained from ABI/1[5]. However, this discontinuity has been accounted for in the employee jobs component of the ONS workforce jobs series, used for the basis of these forecasts.

Although the ONS London workforce jobs series provides a SIC 2007 series back to 1996, with the employee jobs component back to 1981, there is no single consolidated series which provides all the elements needed for GLA forecasting. The published data need to be adjusted, eg for additional SIC categories, breaks in the series and for borough data. In the past the data was bought in from an external consultant, most recently Experian. But we now do this in-house, thanks to the ONS London Statistical Support team who now work more closely with GLA Economics. This is preferable since it enables us to calibrate various methods of adjusting the back series and then deciding what is best.

The historic data that we use to construct the trend-based projections in this paper go back to 1984. The data we used in WP38 began in 1971. The reason we start the dataset later is that although basic mappings exist, there is no standard agreed "Transformation Matrix" to transform data in SIC 1968 into SIC 1980. At this stage, rather than make a large number of assumptions to estimate a Matrix, or use less robust methods, we opted to start the dataset later than in WP38. This gives us a dataset which we fully understand and in our view these advantages more than outweigh any disadvantage from the shortening of the dataset by 13 years.

At the aggregate London level we have historic data for the self-employed on a SIC 2007 basis. But at borough level we have severe doubts about the usefulness of a workplace based measure of self-employment and also practically speaking 'self-employed' from 1984 to 1991 is only available at the inner/outer London level. Therefore for the Boroughs we are now only projecting employee numbers, and not total employment (employees plus self employed).

The next section describes the changes to the historical data since the previous forecasts. The third section sets out the London-wide forecasts. Sections 4 and 5 set out the sector and borough forecasts.

The economic theory that underpins the forecasts is set out in Appendix C of Working Paper 20[6]. Essentially, it is based upon standard models of economic growth.

[5] See Current Issues Note 30, GLA Economics (op cit)
[6] GLA Economics, Working Paper 20, Employment projections for London by sector and borough, by Benny Spooner and Ellie Cooper, Volterra Consulting, February 2007.

2 Changes to the historical data

Forecasts are only as good as the data on which they are based. The data have been revised compared to those used in WP38. In turn, those data were revised compared with those used in the forecasts published in WP20 and these were revised compared with the data published in 2005, in WP14. Table 1 shows these revisions.

All historic data was assembled within the GLA. This contrasts with the 2009 forecasting exercise when the data was supplied to the GLA by Experian Business Strategies (EBS). (The exceptions are the numbers in bold. These are the contemporaneous forecasts of years for which data subsequently became available. They are included to show the accuracy of previous GLA forecasts).

We use a trend-based approach to forecasting; the exact methodology is described in Appendix C of WP20. This means that (by shifting the forecast line up or down) forecast errors change subsequent forecasts, even if the forecasting equation remains unchanged. Revisions to historic data and forecast errors both alter the trends on which the new forecasts are based. Appreciating data revisions and forecast errors is therefore of major importance in understanding the forecasts – and why they change.

Table 1: Total London Employment – new, previous and revised data

Employment ('000s)	Current GLA 2011 data	EBS data (2009)	Previous EBS data (2006)	Previous EBS data (2005)	GLA difference to 2009	% difference (2009 - 11)
1971		4,566	4,566	4,721		
1972		4,534	4,534	4,712		
1973		4,517	4,517	4,681		
1974		4,427	4,427	4,580		
1975		4,360	4,360	4,479		
1976		4,269	4,269	4,369		
1977		4,220	4,220	4,295		
1978		4,267	4,260	4,348		
1979		4,325	4,315	4,369		
1980		4,301	4,291	4,293		
1981		4,189	4,175	4,136		
1982		4,099	4,081	4,041		
1983		4,071	4,052	4,012		
1984	4,094	4,124	4,104	4,064	-30	-0.7%
1985	4,126	4,152	4,130	4,090	-26	-0.6%
1986	4,085	4,134	4,112	4,073	-49	-1.2%
1987	4,183	4,204	4,181	4,141	-21	-0.5%
1988	4,262	4,291	4,267	4,227	-29	-0.7%
1989	4,282	4,292	4,267	4,229	-10	-0.2%
1990	4,211	4,224	4,200	4,162	-13	-0.3%
1991	4,012	4,004	3,982	3,942	8	0.2%
1992	3,858	3,851	3,829	3,768	7	0.2%
1993	3,803	3,800	3,778	3,740	3	0.1%
1994	3,897	3,907	3,880	3,845	-10	-0.3%
1995	3,960	3,954	3,924	3,896	6	0.2%
1996	3,934	4,004	3,969	3,946	-70	-1.7%
1997	4,070	4,115	4,088	4,056	-46	-1.1%
1998	4,263	4,285	4,252	4,194	-22	-0.5%
1999	4,426	4,401	4,375	4,336	25	0.6%
2000	4,598	4,566	4,539	4,509	32	0.7%
2001	4,619	4,586	4,552	4,546	33	0.7%
2002	4,546	4,506	4,483	4,448	40	0.9%
2003	4,577	4,526	4,516	4,480	51	1.1%
2004	4,556	4,500	4,488	**4,521**	56	1.2%
2005	4,658	4,588	**4,545**	**4,562**	70	1.5%
2006	4,709	4,632	**4,587**	**4,603**	77	1.7%
2007	4,759	4,676	**4,631**	**4,645**	83	1.8%
2008	4,903	**4,706**	**4,674**	**4,687**	**197**	**4.2%**
2009	4,803	**4,736**	**4,718**	**4,730**	**67**	**1.4%**
2010	4,837	**4,767**	**4,763**	**4,773**	**70**	**1.5%**

Table 1 shows that despite the move to SIC 2007 and the switch from external to internal preparation of the historic data, the latter have not been greatly revised, though they have been revised by more than was the case in the 2009 projection exercise. For the years 1984 to 2002, revisions are for the most part below 1 per cent in magnitude, with the exception of 1986 (1.2 per cent), 1996 (1.7 per cent) and 1997 (1.1 per cent). For the 2003-2007 years however the revisions are all over 1 per cent (but below 2 per cent) with the new data all

higher than the previous data. The maximum revision is 83,000 in 2007[7]. These are pleasingly small revisions considering the major changes in the method of data preparation.

From SIC 2003 to SIC 2007[8]

In WP38 we used a 12 sector breakdown – see Table 2.

But SIC 2007 allows us both to use sector categories which are more relevant to London and to use a 'higher resolution' of sectors: we now use 16 sectors. The main innovations in SIC 2007 were the new section J, "Information and Communication" and the breakdown of "Business Services" into three categories that are highly relevant to London.

Table 2 shows a broad level mapping of the SIC 2003 categories used in WP 38 into the SIC 2007 categories we use now.

Table 2: GLA SIC categories

SIC 2007 GLA Sectors	SIC 2003 GLA Sectors
Primary & utilities	Primary & utilities
Manufacturing	Manufacturing
Construction	Construction
Wholesale	Wholesale
Retail	Retail
Transportation and Storage	Transport & communications
Accommodation and food service activities	Hotels & restaurants
Financial and insurance activities	Financial services
Information and Communication	Business services
Professional, scientific and technical services and real estate	
Administrative and support service activities	
Public admin and defence	Public admin
Education	Health & education
Health	
Arts, entertainment and recreation	
Other services	Other services

Most of the new categories introduced by SIC 2007 relate to service activities. This is significant for London as many of its jobs are service sector based. For example Real Estate and Professional and Administrative Service activities have almost three times as many divisions under SIC 2007. Business activities (Section K under SIC 2003), which make up a large proportion of London's employee jobs, has moved to several areas in SIC 2007 including Sections L (Real Estate Activities), M (Professional, Scientific and Technical Activities) and N (Administration and Support Services). Section M includes legal and accounting activities, head office activities, management consultancy, architectural and

[7] For the year 2008 the move to BRES from ABI/1 yielded an estimate of London's employment that is 84,000 higher – see "The new Business Register Employment Survey: Changes in London's jobs, 2008 and 2009 compared", Current Issues Note 30, GLA Economics.

[8] See also "UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007) – Structure and explanatory notes", Office For National Statistics, 2009

engineering activities, scientific research and development, advertising and market research, other professional, scientific and technical activities and veterinary activities.

Some of the business activities from Section K of SIC 2003 have also moved to Sections S (Other service activities) and J (Information and communication) in SIC 2007. Section J in SIC 2007 also includes publishing, film, broadcasting and news agencies in addition to telecoms and computer related activities. The sale of fuel is now considered a retail activity (in SIC 2003 it was part of motor trade), and recycling has moved from manufacturing to water supply and sewerage and waste management.

Table 3 sets out the growth rates obtained from the previous and revised data for London GVA. We tabulate growth rates (as opposed to levels) so that the numbers can be compared through time.

Previously, this data was also supplied to the GLA by EBS. This year we use data provided by the ONS. We use workplace-based current price GVA data deflated by the national GVA deflator to derive constant price GVA data for London for the years 1989 to 2009. For the years prior to 1989, we estimate (backcast) the data using the UK GVA growth rates from the ONS. An estimate of 2010 is also calculated using UK GVA growth rates.

Almost all revisions have the effect of boosting growth, by an average of 0.6 percentage points. However, two years - 1984 and 1989 - have the largest revisions of 3.3 percentage point and 4.1 percentage points respectively. If data points from these two outlier years are removed, the average growth rate in percentage points comes down from 0.6 to 0.3.

Table 3: London GVA growth – previous and revised data[9]

GVA (% change)	On 2006 data	On 2009 data	On current data (2011)	Change (06-09) (% points)	Change (09-11) (% points)
1984	0.2	0.4	3.7	0.2	3.3
1985	2.9	3	2.7	0.1	-0.3
1986	4.3	4.4	3.6	0.1	-0.8
1987	4.1	4.1	4.0	0	-0.1
1988	4.7	4.8	4.6	0.1	-0.2
1989	0.7	0.9	5.0	0.2	4.1
1990	-0.2	-0.1	0.7	0.1	0.8
1991	-3.4	-3.4	-2.5	0	0.9
1992	-1.5	-1.5	-0.4	0	1.1
1993	2.3	2.3	2.9	0	0.6
1994	5.1	5.1	3.4	0	-1.7
1995	2.6	2.7	2.0	0.1	-0.7
1996	2.1	2.2	3.9	0.1	1.7
1997	3.2	3.6	4.9	0.4	1.3
1998	5.6	5.9	6.2	0.3	0.3
1999	5.3	6.1	6.2	0.8	0.1
2000	5.6	6.6	5.6	1	-1.0
2001	1.4	2.1	1.5	0.7	-0.6
2002	-0.5	-0.7	1.4	-0.2	2.1
2003	1.4	2.7	4.1	1.3	1.4
2004	2.8	3	3.4	0.2	0.4
2005	2.8	3.3	3.8	0.5	0.5
2006		4.1	3.7		-0.4
2007		4.1	4.7		0.6
2008			1.9		
2009			-4.4		
2010			1.3		
Average GVA growth 1984-2010 (%):			2.9		

[9] Due to data availability, the GVA growth rate used for 2010 is the growth rate of UK GVA and not specifically the growth rate for London's GVA.

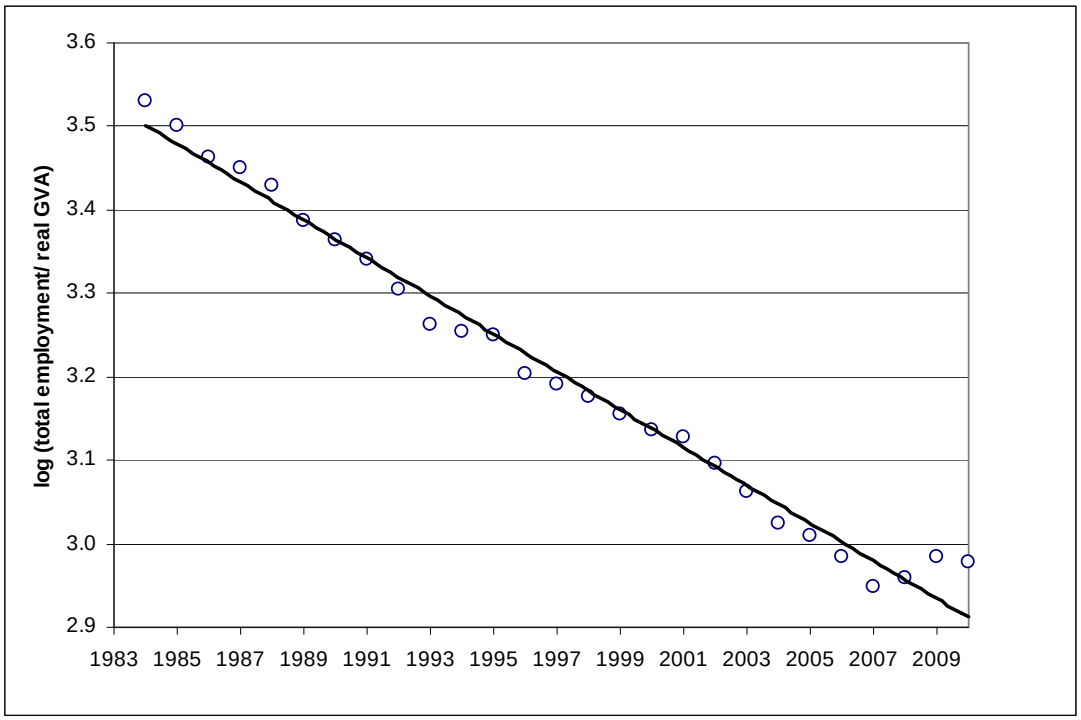
Data used in forecasts

As the most recently available employment data covers the period 1984-2010 we use the entire data set to give us the maximum number of data points on which to base our forecasts. For GVA we take the most recently supplied numbers from 1984 onwards, adjusting them accordingly for the correct prices.

3 Total London employment forecasts

We start by reviewing the overall London employment forecast, looking at the ratio of employment to output – the inverse of productivity. This is shown in Figure 1 as a logged ratio. On such a chart, the negative gradient is equal to output growth that would be required to maintain stable employment. That is to say, if the gradient is approximately -1.6, output growth of 1.6 per cent would be required to maintain stable employment.

Figure 1: Log of total employment as a proportion of total output in London (1984-2010)[10]



Source: GLA Economics

Overlaid on the chart is a fitted local regression curve, highlighting the historic trend. The majority of the points, particularly those since 1985, appear close to the trend. In the years 2004 -2008 the relationship moved below the trend line as productivity grew strongly during the prolonged upturn (there had been no recession since 1990/91 and productivity had risen without interruption). But in 2008 as the financial crisis intensified, output began to fall faster than employment and productivity started to fall (by 1.1 per cent) as the recession took hold. In 2009 London's output fell surprisingly sharply, by 4.4 per cent. This was more than twice the rate of decline of employment (2.0 per cent) so productivity again fell, by 2.4 per cent.

[10] Due to data availability, the GVA growth rate used for 2010 is the growth rate of UK GVA and not specifically the growth rate for London's GVA.

The message from Figure 1 is in the slope of the line, which shows the rate of decrease of the number of employees needed to produce a unit of output (the inverse of the rate of productivity increase). It suggests an annual rate of 2.2 per cent of productivity gain. Another way of saying this is that London's GVA has to increase by 2.2 per cent annually to keep employment constant. If the growth rate falls below this, employment will fall; if it rises above 2.2 per cent, employment will rise.

In WP20, the forecast was constructed by dividing the future into the 'medium term' and the 'long term' and using the medium term historic trend to forecast the former and the long term historic trend to forecast the latter. This generated a medium term productivity forecast of an increase of 1.56 per cent per year and a long term productivity forecast of 1.62 per cent per year. In WP38 we took the view that the historic medium and long term trends were so similar that we would use the long term trend throughout the forecast. A second reason for this was that we were not convinced that the 2004-2007 productivity surge marked a change in trend. So we 'de-emphasised' the surge as much as possible by using the long term trend throughout the forecast.

This time we have reverted to using half of the medium term trend and half of the long term trend to predict the productivity forecast. This comes out at 1.9 per cent per annum compared to 1.8 per cent in WP38. Our projected output growth rate is 2.5 per cent. The implied growth rate of employment is therefore 0.6 per cent per annum.

4 London sector employment forecasts

As previously noted this year the historic data used for the forecasts is supplied in-house by the ONS London Statistical Support team who work closely with GLA Economics.

Taking each of the sectors in turn, we identify breaks in the historic trend of employment per unit of output (in fact we look at the log of employment per unit of output). Charts showing the data are in Appendix A. Depending on the characteristics of the historic trend, we identify a year from which we feel the trend up until 2010 best represents the likely future trend. In several cases we take the average of two trends, where it is felt that this might provide better forecasts.

Previously we opted to determine employment in the sector "Business Services" as the residual between the sum of employment in all other sectors and the total for London forecast as above. This was because of its strong historic growth trend: if we had simply extrapolated its growth, by 2031 business services would have accounted for 40 per cent of total employment - clearly implausible. However, in the current exercise SIC 2007 allows us to disaggregate the business services sector, removing the need for us to forecast it as a residual. To reconcile our sector forecasts with our total London forecast, we simply constrain our sector forecasts to the London total using the sector forecast proportions. This is not unusual since this is the same methodology used previously to project industrial sectors each year into the future.

Table 4: Summary of trends used for sector based forecasts

Sector	Trend for forecast to 2036	Output growth required for stable employment	Long-term employment growth with output growth at 2.5% PA
Primary and utilities	from 1984 to 2010	6.3%	-3.6%
Manufacturing	from 1984 to 2010	8.2%	-5.3%
Construction	¾ trend from 1984 to 1999 ¼ trend from 1999 to 2010	2.7%	-0.2
Wholesale	from 1984 to 1996	4.5%	-1.9%
Retail	½ trend from 1984 to 2008 ½ trend from 2008 to 2010	2.5%	0.1%
Accommodation and food services	from 1984 to 2010	3.9%	-1.3%
Transport & storage	from 1984 to 2010	1.2%	1.3%
Information and communication	from 1984 to 2010	1.0%	1.5%
Financial and insurance services	½ trend from 1984 to 1996 ½ trend from 1996 to 2010	3.0%	-0.5%
Professional, scientific and technical services and real estate	from 1984 to 2010	0.75%	1.8%
Administrative and support service activities	¾ trend from 1984 to 1998 ¼ trend from 1991 to 2007	1.0%	1.5%
Public admin and defence	¾ trend from 1984 to 2001 ¼ trend from 2001 to 2010	3.5%	-0.9%
Education	½ trend from 1984 to 1995 ½ trend from 1995 to 2010	1.9%	0.6%
Health	¾ trend from 1984 to 1999 ¼ trend from 1999 to 2010	2.2%	0.4%
Arts, entertainment and recreation	½ trend from 1984 to 1996 ½ trend from 1996 to 2010	1.7%	0.8%
Other Services	½ trend from 1984 to 1996 ½ trend from 1996 to 2010	1.4%	1.2%
Total employment	½ trend from 1984 to 2002 ½ trend from 2002 to 2010	1.9%	0.5%

Table 4 shows which trends have been identified for use in forecasting each of the 16 sectors up to 2036, along with the associated growth forecasts. Assuming long-term output growth at 2.5 per cent, 'Professional, scientific and technical services and real estate' is set to be the fastest growing sector with growth of 1.8 per cent. Previously in WP38 'Other Services' had the highest growth rate of 3.7 per cent. However, since WP 38 we have further disaggregated the sectors from 12 to 16 sectors so that many of the services contained within the category 'other sectors' have been clearly identified and now reside under other headings such as 'professional and scientific services'. The other relatively fast growing sectors are 'Information and communication' and 'Administrative and support services' both with growth rates of 1.5 per cent, followed by 'Transport and storage' with a growth rate of 1.3 per cent. The trend based employment projections presented in Working Paper 38 showed then that two sectors did not require positive overall output growth in order for their employment to grow. These were business services and other services. However, this year, due to revised historic data, further disaggregation in the historic data set and the general decline in the labour market, there are no sectors that will maintain stable employment

without positive output growth. See the third column of Table 4: all sectors except 'Professional, scientific and technical services and real estate' require output growth of at least 1 per cent to maintain stable employment.

As in our previous employment projections, the sectors where employment is set to decline most rapidly are 'primary and utilities' and 'manufacturing', down an annual 3.6 per cent and 5.3 per cent respectively.

With these growth rates calculated, we can produce the revised sectoral employment forecasts, as presented in Table 5. The growth rates of employment are somewhat less than those presented in WP38, primarily due to reasons outlined above (note that comparability is anyway limited, due to the SIC changes).

Employment in 'primary and utilities' is set to fall by 15,000 for the period 2010 to 2031, compared to a decline of 14,000 for the same period in WP38.

The projected fall in 'manufacturing' employment – which has been on a downward trend – is now 89,000. Previously it was down 110,000.

The decline in 'construction' employment is considerably lower at 11,000 instead of down 54,000. This reflects upward revisions in the historical data for the construction sector.

Employment in the 'wholesale' sector is seen as falling by 59,000 through the forecast period 2010-2031 versus down by 21,000 in WP38. This reflects a fall in wholesale employment in the recent history which produces a stronger downward trend.

Employment in 'retail' is expected to increase by 7,000 compared to an increase of 31,000 in WP38[11].

Employment in the 'accommodation and food services' sector is projected to grow by 100,000 compared to projected growth of 212,000 in 'hotels and restaurants' employment in WP38. The downward shift in expected growth again reflects a downturn in employment in recent years which produces a flatter trend.

Employment in the 'transport and storage' sector is forecast to fall by 63,000 from 2010 to 2031; in WP38 employment in the 'transport, storage and communication' sector (SIC 2003) was down by 35,000 during this period.

Employment in the 'financial and insurance services' sector is set to decrease by 38,000 from 2010 to 2031. This compares with an increase of 3,000 in 'financial services' employment (which included insurance) for the same period in WP38.

Employment in the new category 'professional, scientific and technical services and real estate' is set to rise by 301,000 from 2010 to 2031 and 384,000 for the period 2010 to

[11] We don't expect that there will be significant productivity gains in retail and have therefore chosen a forecast trend which produces a flat employment projection outlook for retail.

2036. (This category includes 'real estate' (section L)[12] and 'professional, scientific and technical activities' (section M, covering activities that require a high degree of training and make specialised knowledge and skills available to users).

Employment in the new sector category which did not exist for WP38, 'administrative and support services', is set to rise by 229,000 from 2010 to 2036. This sector covers activities which support general business operations and do not focus on the transfer of specialised knowledge.

The sector 'public administration and defence' is set to see a decline of 56,000 over the forecast period, as employment in the public sector continues to be constrained. For the period 2010 to 2031, the decline is 45,000. This is little different from the 48,000 decline projected in WP38.

Previously 'health and education' were combined into a single sector. This year they have been disaggregated. Employment in 'education' is set to rise by 54,000 over the forecast period 2010 – 2036. Employment in the 'health' sector is also due to rise - by 46,000 - over the period 2010 to 2036[13].

To compare these results with those in WP38 we can aggregate the "Health" and the "Education" employment projections. The rise for combined employment is set to be 88,000 in 2010 - 2031 compared to the 48,000 that was projected in WP38. This is due to stronger historic employment in both sectors in the years immediately preceding the projections and therefore a greater starting value.

'Arts, entertainment and recreation' is a new sector in SIC 2007 (section R). In WP38 it was subsumed in 'Other Services'. We project an employment rise of 41,000 over the entire forecast period 2010 to 2036.

"Other Services" (Section S in SIC 2007) is set to increase by 48,000 over the forecast period.

The WP38 sector 'Other Services' was much bigger. It included section O ('Other community, social and personal service activities') as well as Sections R and S ('arts entertainment and recreation' and 'other service activities'). Note, though, that the new SIC 2007 section J ('Information and Communication') includes some jobs which were previously in SIC 2003's section O.

Therefore in WP38 the employment increase in 'Other services' was significantly higher. This year because the historical data has been further disaggregated, 'Other services' only accounts on average for 3 per cent of total employment over the historical period 1984 to 2010 and the entire forecast period to 2036 compared to 9 per cent of total employment in WP38 over the historical period 1984 to 2007 and forecast period to 2031.

[12] Real estate services account for only 12 per cent of employment in the 'Professional, scientific, technical services and real estate' sector.

[13] There were anomalies between BRES employment health data and government (PSE) reported health data for 2009 and 2010. The BRES data seemed to be much higher than what we would expect. We therefore smoothed our historic trend in the latter years to correct the anomaly.

Table 5: London sectoral employment: history 2008-2010; forecasts 2011-2036, assuming output growth of 2.5 per cent per annum

GVA growth = 2.5% (000s)	Primary & utilities	Manufacturing	Construction	Wholesale	Retail	Transportation and Storage	Accommodation and food service activities	Information and Communication	Financial and insurance activities	Professional, Scientific, Technical activities and Real estate
2008	32	157	276	198	425	282	327	355	362	669
2009	28	131	261	192	413	277	314	336	349	669
2010	28	131	251	180	401	262	323	360	365	672
2011	27	123	248	175	397	256	323	361	360	676
2012	26	117	248	172	398	253	328	368	358	690
2013	25	111	248	169	399	250	333	374	357	704
2014	24	105	248	166	400	248	338	380	356	717
2015	23	100	248	163	401	245	343	386	355	731
2016	22	95	247	160	402	242	348	393	353	745
2017	22	90	247	157	403	239	353	399	352	760
2018	21	85	247	155	404	236	358	405	351	774
2019	20	81	247	152	404	234	363	412	349	788
2020	20	76	246	149	405	231	368	418	347	803
2021	19	72	246	146	406	228	373	425	346	818
2022	18	69	246	144	406	225	378	431	344	833
2023	18	65	245	141	406	222	383	438	342	848
2024	17	62	245	138	407	219	388	444	341	863
2025	16	58	244	136	407	216	393	451	339	878
2026	16	55	244	133	407	214	398	458	337	894
2027	15	52	243	131	408	211	403	464	335	909
2028	15	49	242	128	408	208	408	471	333	925
2029	14	47	242	126	408	205	413	478	331	941
2030	14	44	241	123	408	202	418	484	329	957
2031	13	42	240	121	408	199	423	491	327	973
2032	13	40	240	118	408	197	428	498	325	989
2033	12	38	239	116	407	194	433	505	323	1,006
2034	12	35	238	114	407	191	438	512	321	1,022
2035	11	34	237	111	407	188	443	519	319	1,039
2036	11	32	236	109	407	186	448	526	317	1,056

Table 5 (cont.): London sectoral employment: history 2008-2010; forecasts 2011-2036, assuming output growth of 2.5 per cent per annum

GVA growth = 2.5% (000s)	Administrative and support service activities	Public Admin and defence	Education	Health	Arts, entertainment and recreation	Other services	All sectors
2008	491	235	318	450	180	145	4,903
2009	456	245	345	460	156	136	4,803
2010	490	257	341	472	168	137	4,837
2011	492	252	339	469	167	137	4,803
2012	501	250	342	472	169	139	4,831
2013	509	248	345	474	171	141	4,859
2014	518	247	347	477	173	143	4,887
2015	526	245	350	480	175	145	4,915
2016	535	243	353	482	176	146	4,944
2017	544	241	355	484	178	148	4,973
2018	553	239	358	487	180	150	5,002
2019	561	237	360	489	182	152	5,031
2020	570	235	362	491	183	154	5,060
2021	579	233	365	494	185	156	5,089
2022	588	231	367	496	187	158	5,119
2023	597	229	369	498	188	160	5,149
2024	606	227	372	500	190	162	5,179
2025	615	225	374	501	192	164	5,209
2026	624	223	376	503	193	165	5,239
2027	634	220	378	505	195	167	5,270
2028	643	218	380	507	196	169	5,300
2029	652	216	382	508	198	171	5,331
2030	662	214	384	510	200	173	5,362
2031	671	212	386	511	201	175	5,393
2032	680	210	388	513	203	177	5,425
2033	690	208	390	514	204	179	5,456
2034	699	205	392	516	206	181	5,488
2035	709	203	393	517	207	182	5,520
2036	719	201	395	518	209	184	5,552

4.5 Sensitivity testing

In order to see the sensitivity of the results to changes in the growth and productivity assumptions we ran two alterative scenarios. The first was a stronger growth/stronger productivity scenario. The trend annual growth rate was set at 2.9 per cent (the average growth rate 1984-2010) and the rate of growth of productivity was set at 2.2 per cent (the rate implied by using the same medium and long term trends as in WP38). The former increases employment, the latter reduces it. The net result was employment of 5.708 million in 2036 – that is, 2.8 per cent higher than under the 'central scenario'.

We also ran a stronger productivity scenario, setting annual productivity growth at 2.2 per cent. This resulted in employment of 5.138 million in 2036 - that is, 7.5 per cent lower than under the 'central scenario'.

5 London borough employee forecasts

This section sets out our updated trend-based borough employment forecasts.

It is important to note that these borough forecasts are not the ones cited in eg, the London Plan and used elsewhere in the GLA group. This requires an additional step. These borough forecasts are compared with forecasts for transport accessibility and for workplace capacity. This process generates new employment projections, according to a set of (borough-specific) rules (see Working Paper 18, October 2006, and Working Paper 39: Borough employment projections to 2031).

Our methodology is dictated by the availability of the statistics. At borough level we only forecast employees – not the self-employed. This is because we have doubts about the usefulness of a workplace-based measure of self-employed at the borough level – in any case from 1984-1991 data for self-employed is only available for Inner/Outer London and so would need to be estimated. In addition there are no sectoral Workforce Jobs employee data for the Boroughs.

We therefore look just at the totals for employment in the boroughs.

To make the forecasts, we calculate a whole period (1981-2009) trend for each time-series examined. We then inspect each series to see if there was a visible change in the trend. If there was, we calculate a partial trend starting from the year when the change in trend occurred, and make use of this sub-period trend as well as the whole period trend in the projection.

Finally, we calculate the actual forecast employment levels by rescaling each forecast year so that the proportions summed over the boroughs total one. We then multiply each borough's share by the forecast total London employee for the years in the future (2011 to 2036) to arrive at the forecast employee levels by borough. (This step constrains the sum of the borough forecasts to equal the total London sector employee forecasts). A separate model, similar to that described in Section 3, was constructed to forecast employees only at the London sector level. This model insured that our total employee forecast was consistent with the total employment projections in Section 3. The total all sectors employee projections produced by the third model for the period 2011 to 2036 were used to constrain the borough employee forecast for each future year.

We now describe in detail the construction of the short and long-term forecast growth of proportions within each borough. Plots of time-series referred to can be found in Appendix B. All references to employee growth refer to employee growth relative to the rest of London. Table 6 gives the trend based forecasts for each of the 33 boroughs.

Barking: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to fall by 14,000, a bigger fall than we had in WP38 for all employment (-2,000)

Barnet: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 8,000, a smaller rise than we had in WP38 for all employment (26,000).

Bexley: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 4,000, a larger rise than we had in WP38 for all employment (0).

Brent: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to fall by 12,000, a slightly bigger fall than we had in WP38 for all employment (-5,000).

Bromley: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 13,000, a bigger rise than we had in WP38 for all employment (9,000).

Camden: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 36,000, a slightly smaller rise than we had in WP38 for all employment (41,000).

City: We decided to place 100% of the weight on a medium-term trend, starting in 1989. Between 2010 and 2031 the number of employees is projected to rise by 25,000, a smaller rise than we had in WP38 for all employment (52,000).

Croydon: We decided to place 50% of the weight on the long-term trend, starting in 1981, and 50% on a medium-term trend, starting in 1996. Between 2010 and 2031 the number of employees is projected to fall by 17,000, a marginally smaller fall than we had in WP38 for all employment (-18,000).

Ealing: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to fall by 11,000, an identical fall to that in WP38 (for all employment).

Enfield: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to fall by 4,000. In WP38 we projected a small rise (2,000).

Greenwich: We decided to place 50% of the weight on the long-term trend, starting in 1981, and 50% on a medium-term trend, starting in 1994. Between 2010 and 2031 the number of employees is projected to rise by 1,000, a smaller rise than we had in WP38 for all employment (10,000).

Hackney: We decided to place 100% of the weight on the medium-term trend, starting in 1986. Between 2010 and 2031 the number of employees is projected to rise by 1,000, a smaller rise than we had in WP38 for all employment (12,000).

Hammersmith and Fulham: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 36,000, a smaller rise than we had in WP38 for all employment (57,000).

Haringey: We decided to place 50% of the weight on the long-term trend, starting in 1981, and 50% on a medium-term trend, starting in 1996. Between 2010 and 2031 the number of employees is projected to fall by 4,000. In WP38 we projected a rise of the same magnitude (4,000).

Harrow: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 4,000, a slightly smaller rise than we had in WP38 for all employment (9000).

Havering: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 4,000, a smaller rise than we had in WP38 for all employment (11,000).

Hillingdon: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 37,000, a smaller rise than we had in WP38 for all employment (64,000).

Hounslow: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 15,000. In WP38 by contrast we projected a small fall (-4000).

Islington: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 61,000, a similar rise to that we projected in WP38 for all employment (67,000).

Kensington and Chelsea: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 19,000, a smaller rise than we had in WP38 for all employment (32,000).

Kingston: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 5,000, a slightly smaller rise than we projected in WP38 for all employment (9,000).

Lambeth: We decided to place 50% of the weight on the long-term trend, starting in 1981, and 50% on a medium-term trend, starting in 1996. Between 2010 and 2031 the number of employees is projected to rise by 3,000. In WP38 we projected a fall, for all employment (-12,000).

Lewisham: We decided to place 50% of the weight on the long-term trend, starting in 1981, and 50% on a medium-term trend, starting in 1996. Between 2010 and 2031 the number of employees is projected to fall by 1,000. In WP38 by contrast we projected a rise (16,000).

Merton: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 7,000, a slightly bigger rise than we had in WP38 for all employment (3,000).

Newham: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 6,000, a marginally bigger rise than we had in WP38 for all employment (5,000).

Redbridge: We decided to place 50% of the weight on the long-term trend, starting in 1981, and 50% on a medium-term trend, starting in 1996. Between 2010 and 2031 the number of employees is projected to rise by 4,000, a bigger rise than we had in WP38 for all employment (0).

Richmond: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 9,000, a smaller rise than we had in WP38 for all employment (25,000).

Southwark: We decided to place 50% of the weight on the long-term trend, starting in 1981, and 50% on a medium-term trend, starting in 2004. Between 2010 and 2031 the number of employees is projected to rise by 82,000, a bigger rise than we had in WP38 for all employment (63,000).

Sutton: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 3,000, a slightly smaller rise than we had in WP38 for all employment (6,000)

Tower Hamlets: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 168,000, a bigger rise than we had in WP38 for all employment (126,000).

Waltham Forest: We decided to place 100% of the weight on the long-term trend, back to 1981. Between 2010 and 2031 the number of employees is projected to rise by 3,000. In WP38 we projected - for all employment – a small fall (-4,000).

Wandsworth: We decided to place 50% of the weight on the long-term trend, starting in 1981, and 50% on a medium-term trend, starting in 1996. Between 2010 and 2031 the number of employees is projected to rise by 13,000, a slightly smaller rise than we had in WP38, for all employment (16,000).

Westminster: We decided to place 25% of the weight on the long-term trend, starting in 1981, and 75% on a medium-term trend, starting in 1990. Between 2010 and 2031 the number of employees is projected to rise by 27,000, a smaller rise than we had in WP38 for all employment (75,000).

Table 6: London borough employees forecasts: history 2008-2009; forecast 2010-2036

GVA Growth = 2.5% pa (000s)	Barking	Barnet	Bexley	Brent	Bromley	Camden	City	Croydon	Ealing	Enfield	Greenwich	Hackney	Hammersmith	Haringey	Harrow	Havering	Hillingdon
2008	46	113	65	95	106	283	328	131	114	94	69	83	121	62	68	73	190
2009	44	113	64	93	104	281	324	121	106	93	68	85	118	60	65	72	181
2010	43	113	64	92	104	283	325	121	106	93	68	85	119	60	65	72	183
2011	42	113	64	92	105	284	326	120	105	93	68	85	121	59	65	72	185
2012	41	114	65	91	105	286	328	119	105	93	68	86	123	59	65	73	186
2013	41	114	65	90	106	288	329	118	104	93	68	86	124	59	66	73	188
2014	40	115	65	90	107	290	330	117	104	92	68	86	126	59	66	73	190
2015	39	115	65	89	107	292	332	117	103	92	68	86	127	59	66	73	192
2016	38	116	66	89	108	293	333	116	103	92	68	86	129	59	66	73	194
2017	38	116	66	88	109	295	334	115	102	92	69	86	131	59	66	74	195
2018	37	116	66	88	109	297	335	114	102	92	69	86	132	59	67	74	197
2019	36	117	66	87	110	299	337	113	101	92	69	86	134	58	67	74	199
2020	36	117	66	86	110	301	338	113	101	91	69	86	135	58	67	74	201
2021	35	117	67	86	111	302	339	112	100	91	69	86	137	58	67	74	202
2022	35	118	67	85	112	304	340	111	100	91	69	86	139	58	68	75	204
2023	34	118	67	85	112	306	341	110	99	91	69	86	141	58	68	75	206
2024	33	118	67	84	113	307	342	109	99	91	69	86	142	58	68	75	208
2025	33	119	67	83	113	309	344	108	98	91	69	86	144	58	68	75	210
2026	32	119	67	83	114	311	345	108	98	90	69	86	146	57	68	75	211
2027	31	120	68	82	114	313	346	107	97	90	69	86	147	57	69	76	213
2028	31	120	68	82	115	314	347	106	96	90	69	86	149	57	69	76	215
2029	30	120	68	81	116	316	348	105	96	90	69	86	151	57	69	76	217
2030	30	120	68	80	116	318	349	104	95	89	69	86	153	57	69	76	219
2031	29	121	68	80	117	319	350	104	95	89	69	86	155	56	69	76	220
2032	29	121	68	79	117	321	351	103	94	89	69	86	156	56	69	76	222
2033	28	121	69	79	118	322	352	102	94	89	69	86	158	56	70	76	224
2034	28	122	69	78	118	324	353	101	93	89	69	86	160	56	70	77	226
2035	27	122	69	77	119	326	354	100	92	88	69	86	162	56	70	77	227
2036	27	122	69	77	119	327	355	99	92	88	69	86	164	56	70	77	229

Table 6 (cont.): London borough employees forecasts: history 2008-2009; forecast 2010-2036

GVA Growth = 2.5% pa (000s)	Hounslow	Islington	Kensington	Kingston	Lambeth	Lewisham	Merton	Newham	Redbridge	Richmond	Southwark	Sutton	Tower Hamlets	Waltham Forest	Wandsworth	Westminster	Total
2008	123	192	114	77	128	62	67	72	66	73	178	62	208	57	109	618	4,248
2009	122	183	110	76	127	59	65	73	65	68	175	64	205	54	103	607	4,148
2010	123	185	111	76	128	59	65	74	65	69	178	64	211	54	104	609	4,171
2011	124	188	112	77	128	59	66	74	66	69	181	64	217	54	105	611	4,195
2012	125	191	113	77	128	59	66	74	66	70	185	64	223	55	105	612	4,219
2013	125	193	114	77	128	59	66	75	66	70	188	64	230	55	106	614	4,243
2014	126	196	115	78	129	59	67	75	66	70	192	65	236	55	106	615	4,268
2015	127	199	116	78	129	59	67	75	66	71	195	65	243	55	107	617	4,292
2016	128	202	117	78	129	59	67	76	67	71	199	65	250	55	108	618	4,316
2017	128	204	117	78	129	59	68	76	67	72	203	65	257	55	108	620	4,341
2018	129	207	118	79	129	59	68	76	67	72	206	65	265	55	109	621	4,366
2019	130	210	119	79	130	59	68	77	67	73	210	65	272	56	110	623	4,391
2020	130	213	120	79	130	59	69	77	67	73	214	65	280	56	110	624	4,416
2021	131	216	121	79	130	58	69	77	67	74	218	66	288	56	111	625	4,441
2022	132	218	122	80	130	58	69	78	68	74	222	66	296	56	111	627	4,467
2023	133	221	123	80	130	58	70	78	68	75	226	66	304	56	112	628	4,492
2024	133	224	124	80	131	58	70	78	68	75	230	66	313	56	113	629	4,518
2025	134	227	124	80	131	58	70	79	68	76	234	66	322	56	113	630	4,544
2026	135	230	125	80	131	58	71	79	68	76	238	66	331	56	114	631	4,570
2027	135	233	126	81	131	58	71	79	68	77	243	66	340	56	114	633	4,596
2028	136	236	127	81	131	58	71	80	68	77	247	66	349	56	115	634	4,622
2029	137	239	128	81	131	58	72	80	69	78	251	66	359	57	116	635	4,649
2030	137	242	129	81	131	58	72	80	69	78	256	66	369	57	116	635	4,675
2031	138	246	130	81	131	58	72	80	69	78	260	67	379	57	117	636	4,702
2032	139	249	130	82	131	58	72	81	69	79	265	67	389	57	117	637	4,729
2033	139	252	131	82	132	58	73	81	69	79	269	67	400	57	118	638	4,756
2034	140	255	132	82	132	57	73	81	69	80	274	67	411	57	118	639	4,783
2035	140	258	133	82	132	57	73	82	69	80	279	67	422	57	119	640	4,811
2036	141	261	134	82	132	57	73	82	69	81	284	67	434	57	119	640	4,838

Appendix A: Historic sectoral employment charts

Figure A1: Log of Primary and Utilities employment as a proportion of total output in London, 1984-2010

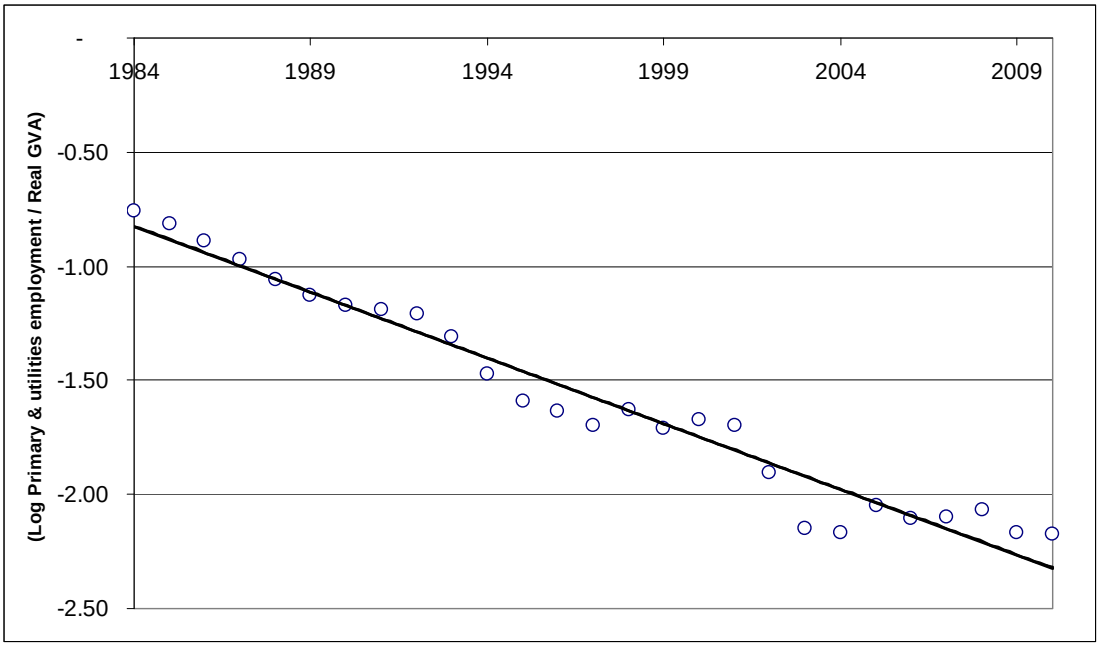


Figure A2: Log of manufacturing employment as a proportion of total output in London, 1984-2010

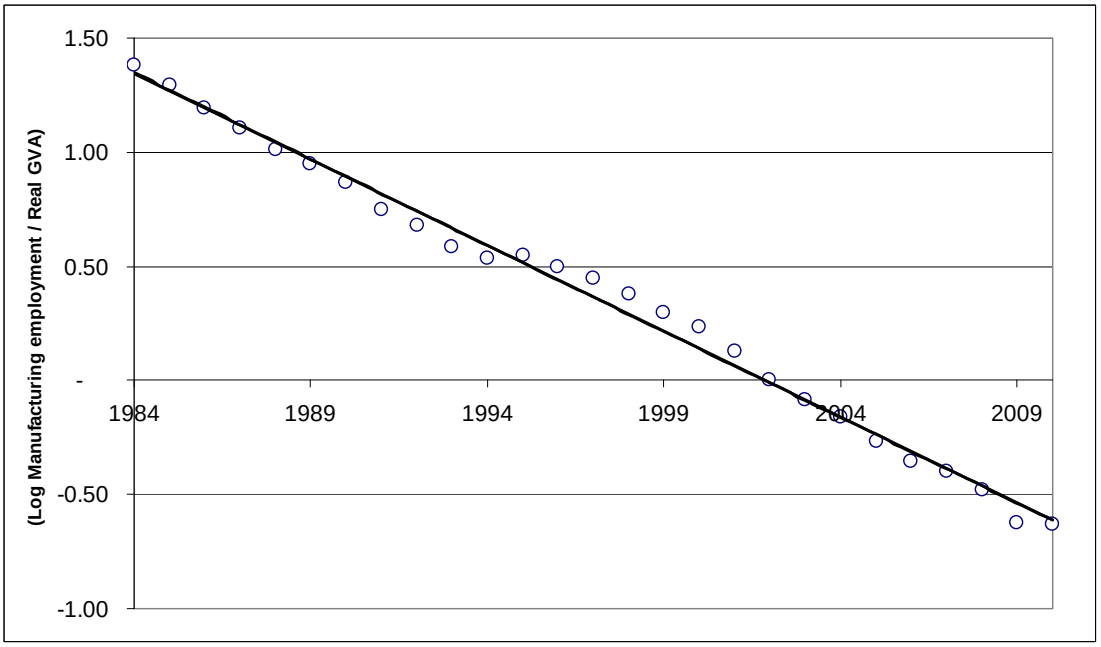


Figure A3: Log of Construction employment as a proportion of total output in London, 1984-2010

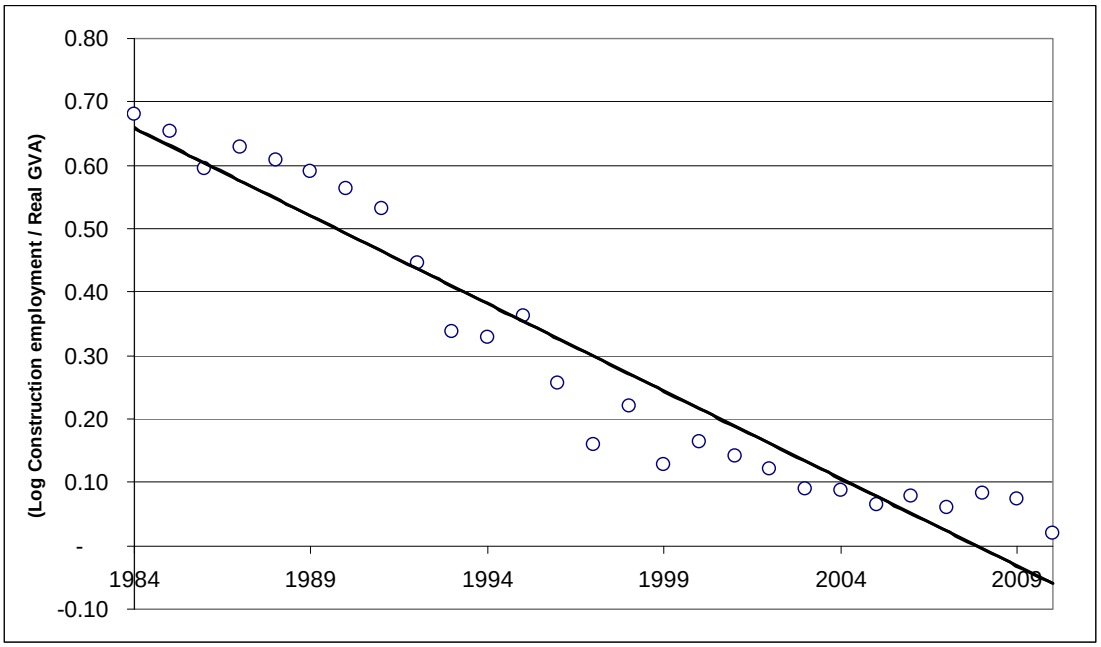


Figure A4: Log of Wholesale employment as a proportion of total output in London, 1984-2010

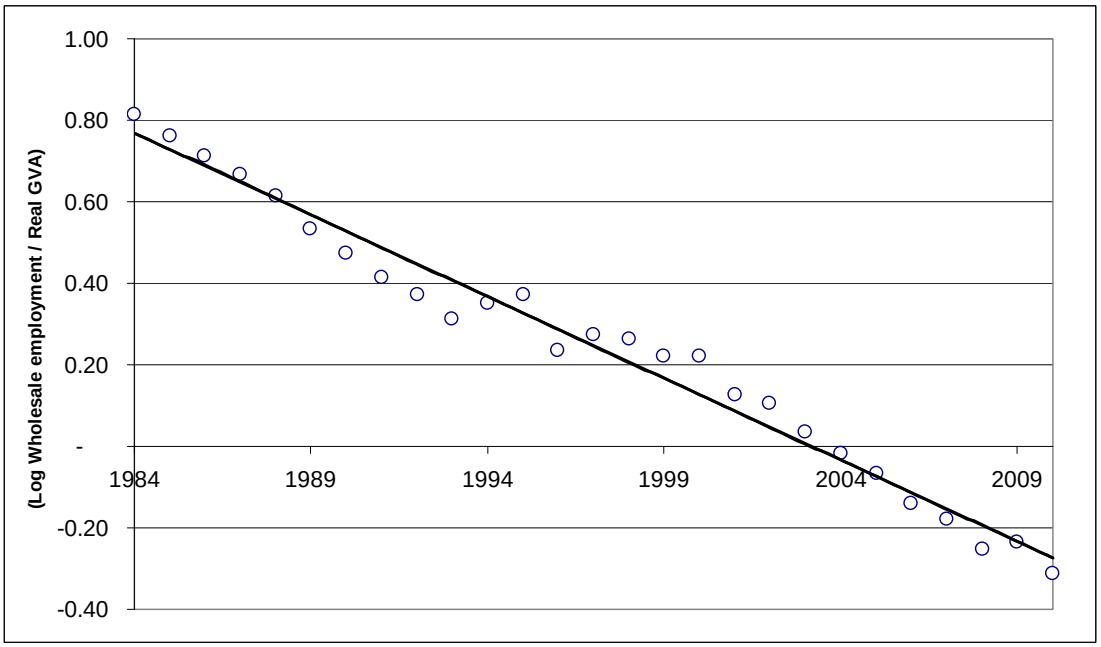


Figure A5: Log of Retail employment as a proportion of total output in London, 1984-2010

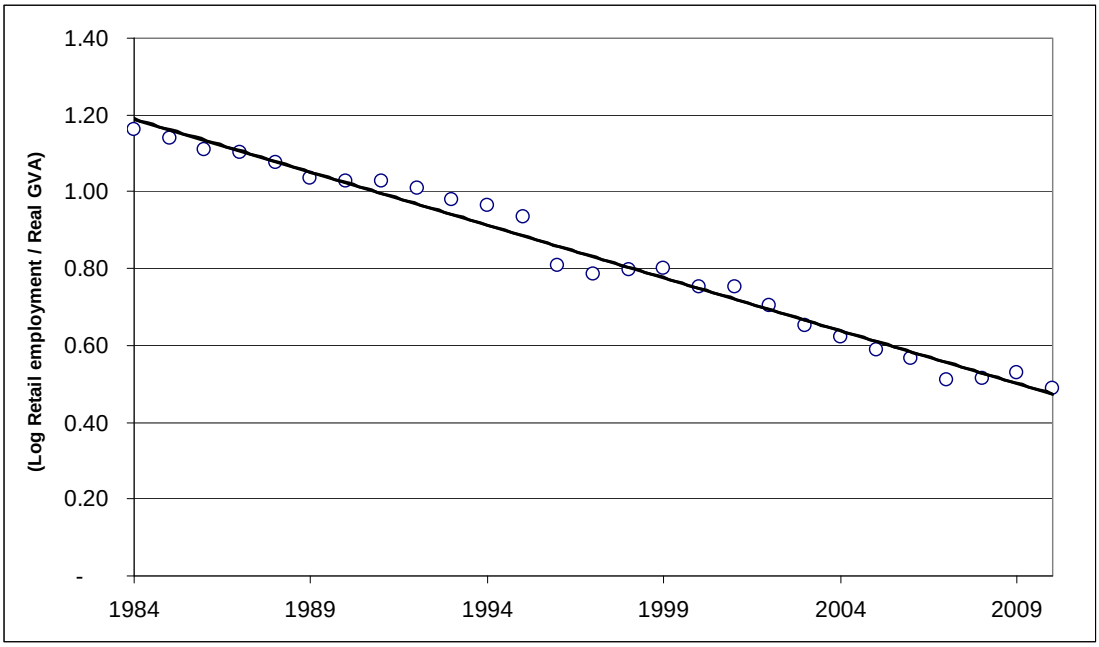


Figure A6: Log of Transportation and Storage employment as a proportion of total output in London, 1984-2010

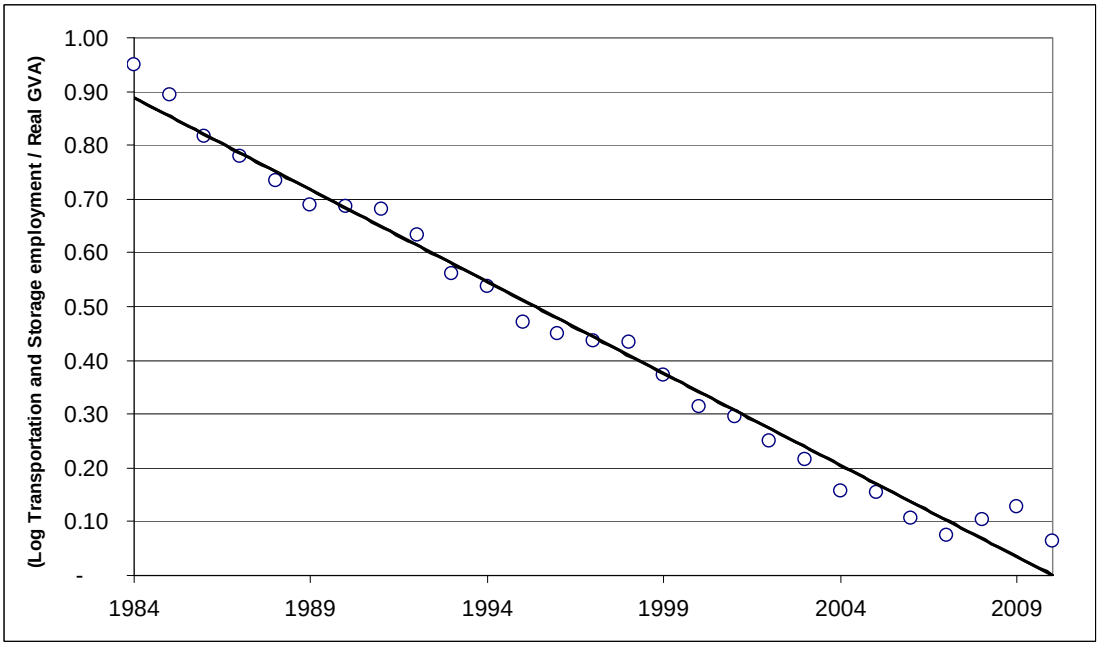


Figure A7: Log of Accommodation and food service activities employment as a proportion of total output in London, 1984-2010

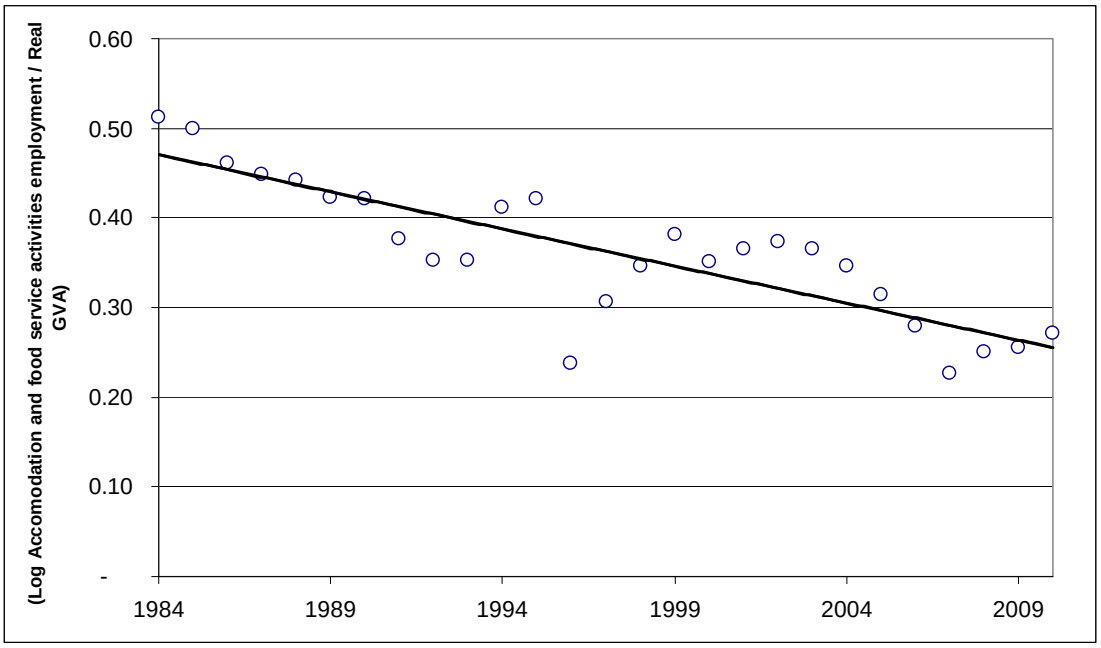


Figure A8: Log of Information and Communication employment as a proportion of total output in London, 1984-2010

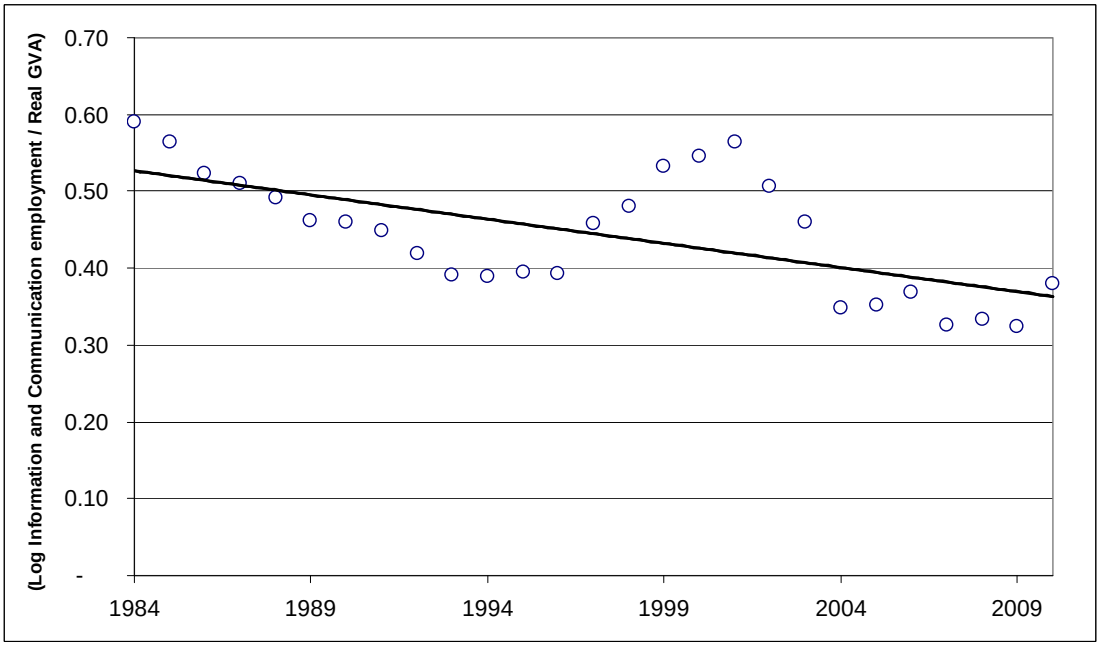


Figure A9: Log of Financial and insurance activities employment as a proportion of total output in London, 1984-2010

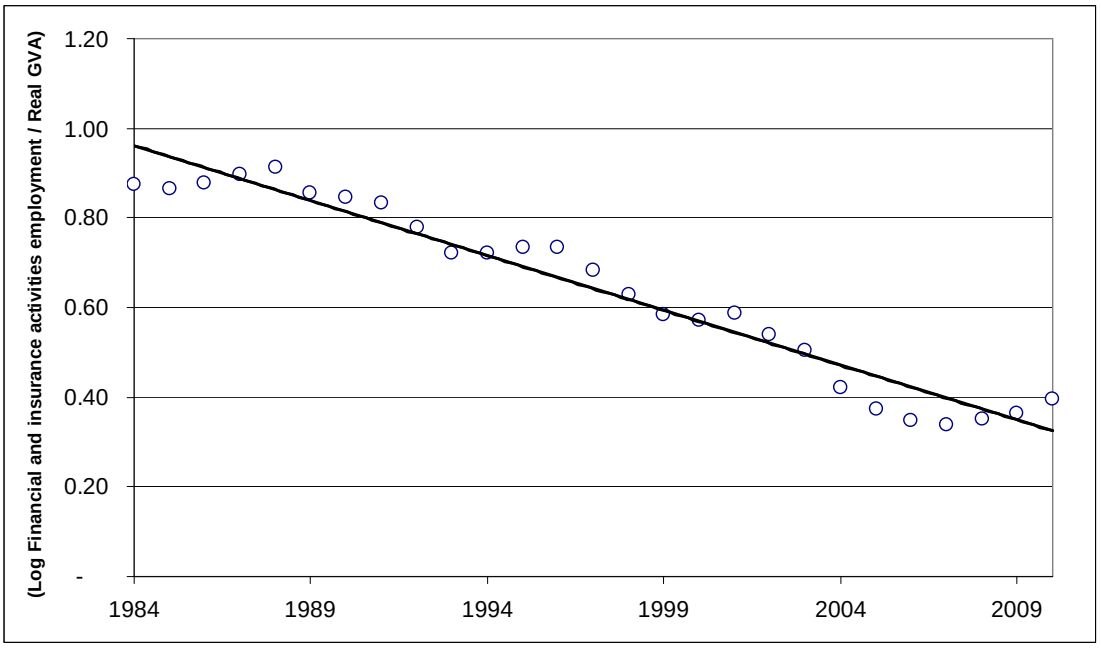


Figure A10: Log of Real estate, scientific and technical activities employment as a proportion of total output in London, 1984-2010

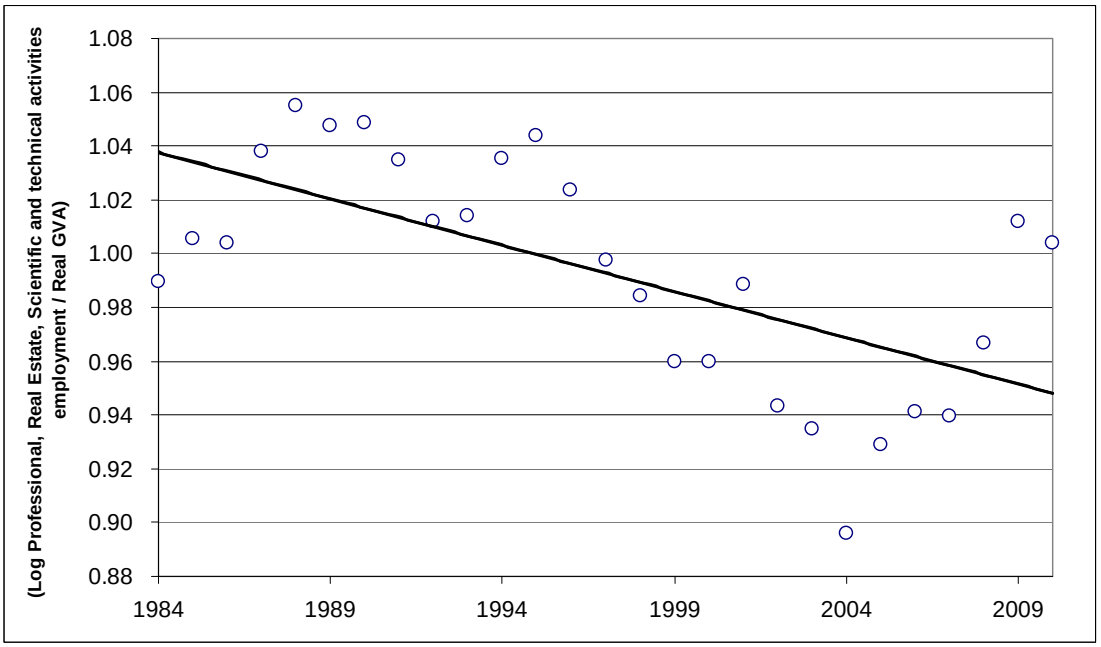


Figure A11: Log of Administrative and support service activities employment as a proportion of total output in London, 1984-2010

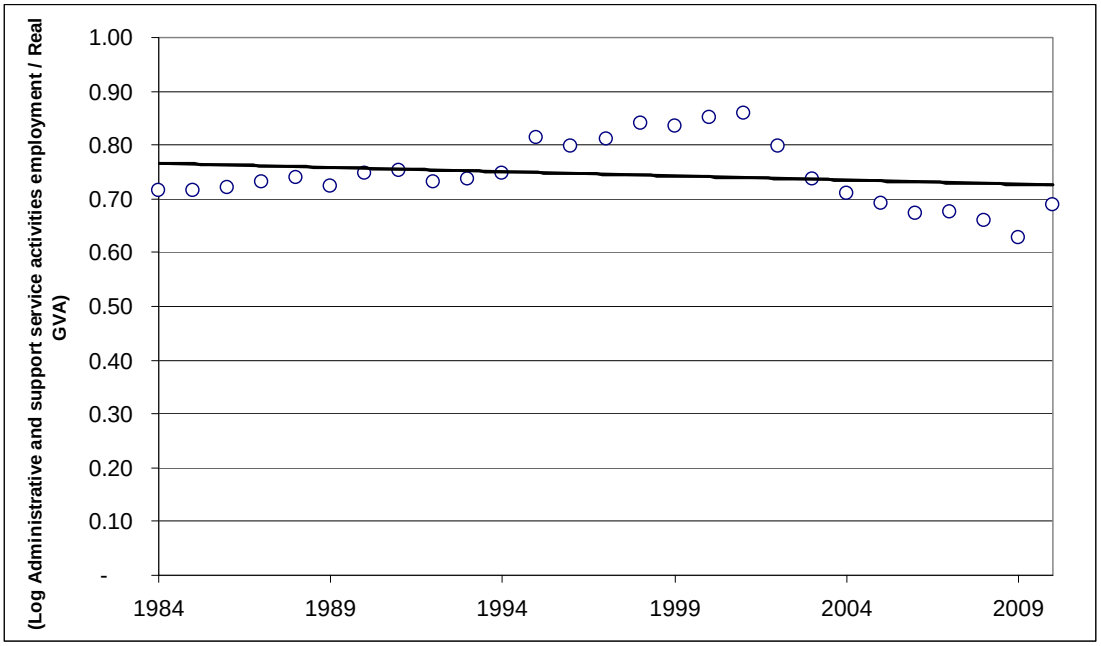


Figure A12: Log of Public admin and defence employment as a proportion of total output in London, 1984-2010

13 Public Admin and defence

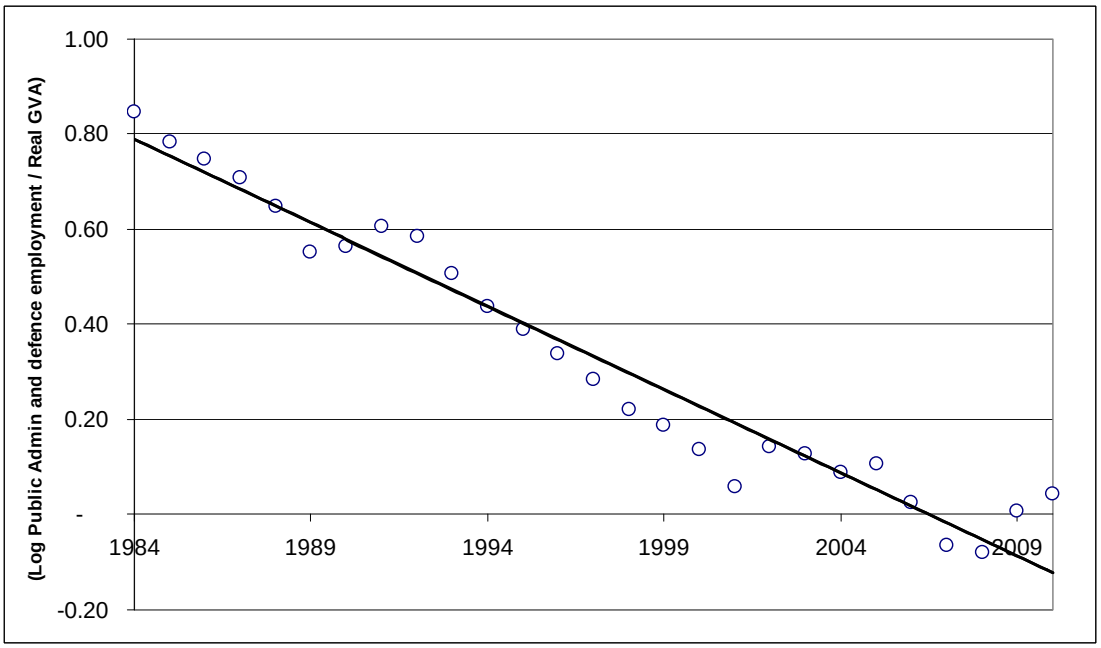


Figure A13: Log of Education employment as a proportion of total output in London, 1984-2010

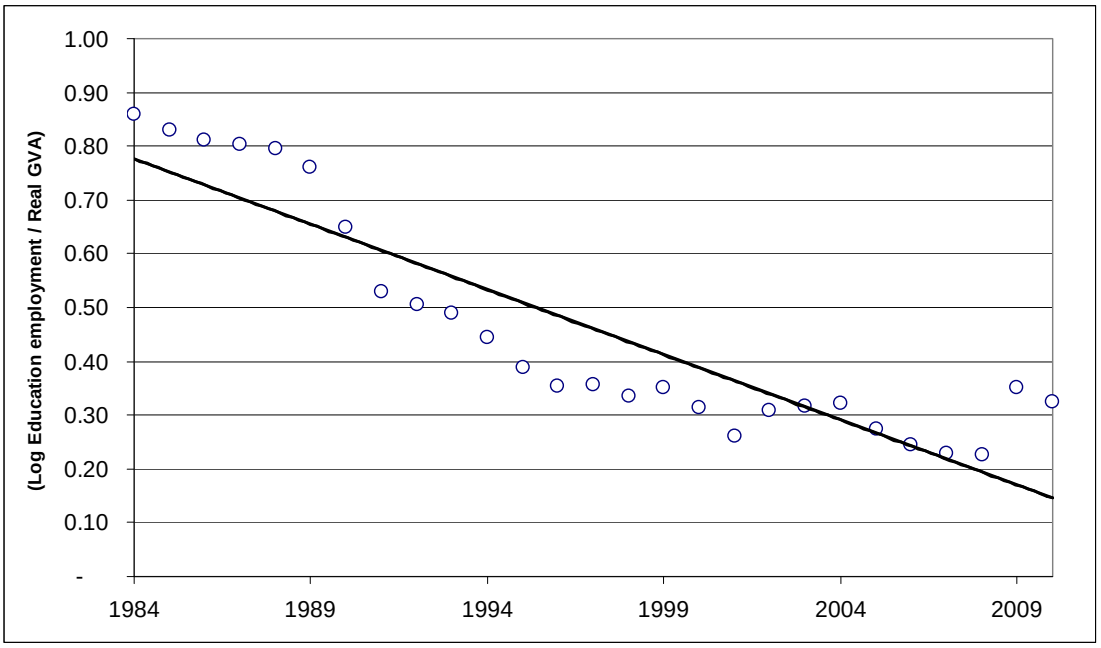


Figure A14: Log of Health employment as a proportion of total output in London, 1984-2010

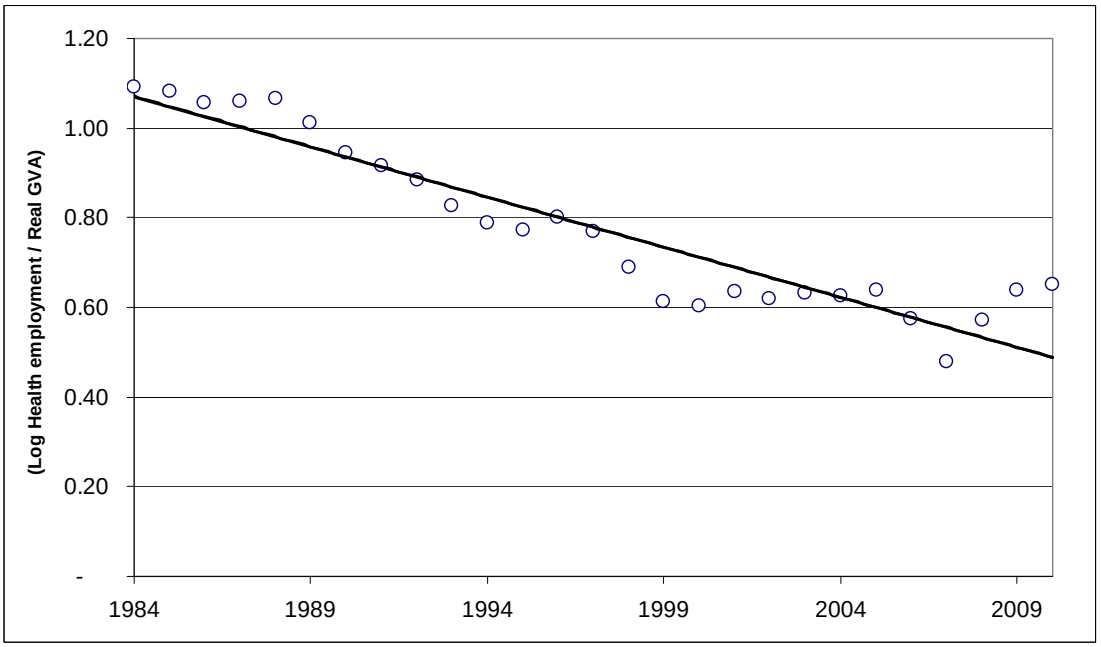


Figure A15: Log of Arts, entertainment and recreation employment as a proportion of total output in London, 1984-2010

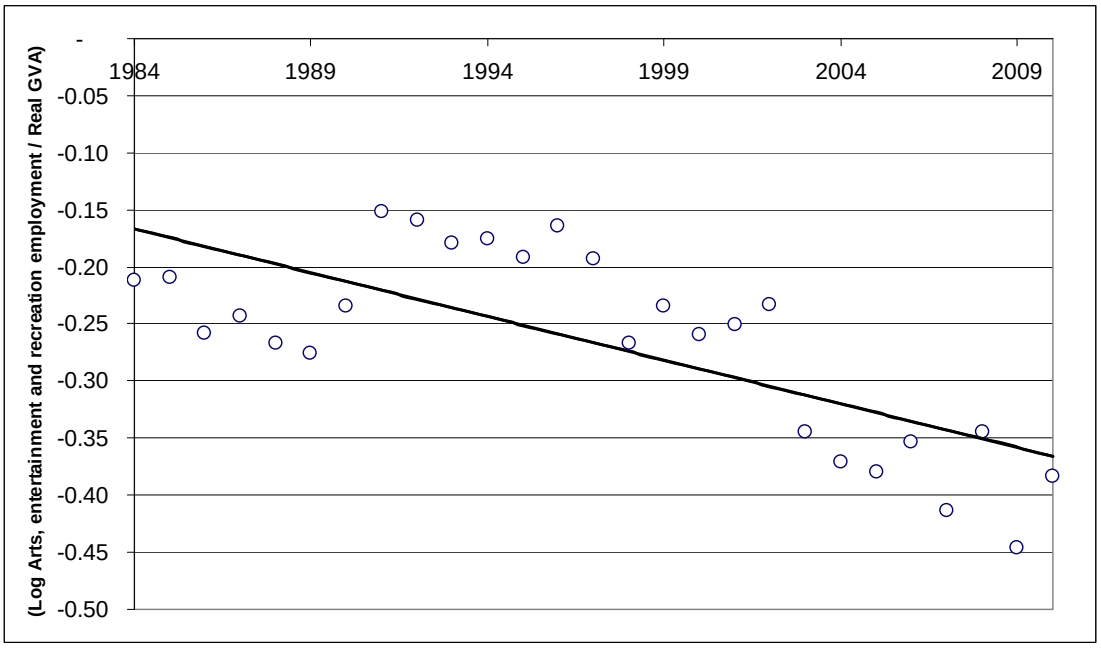
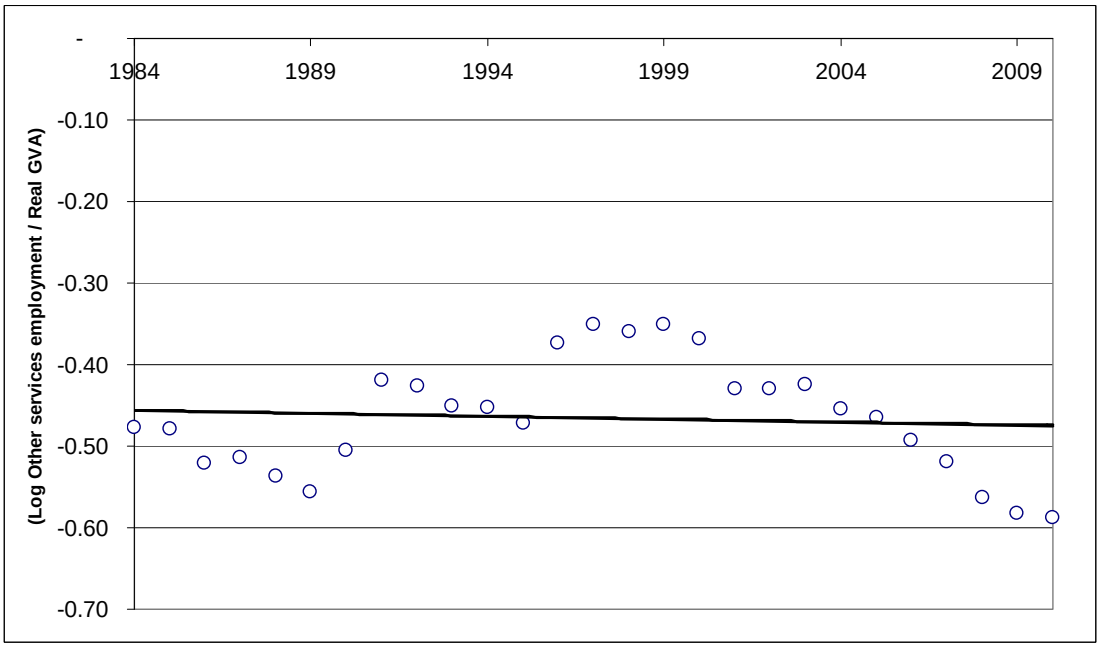
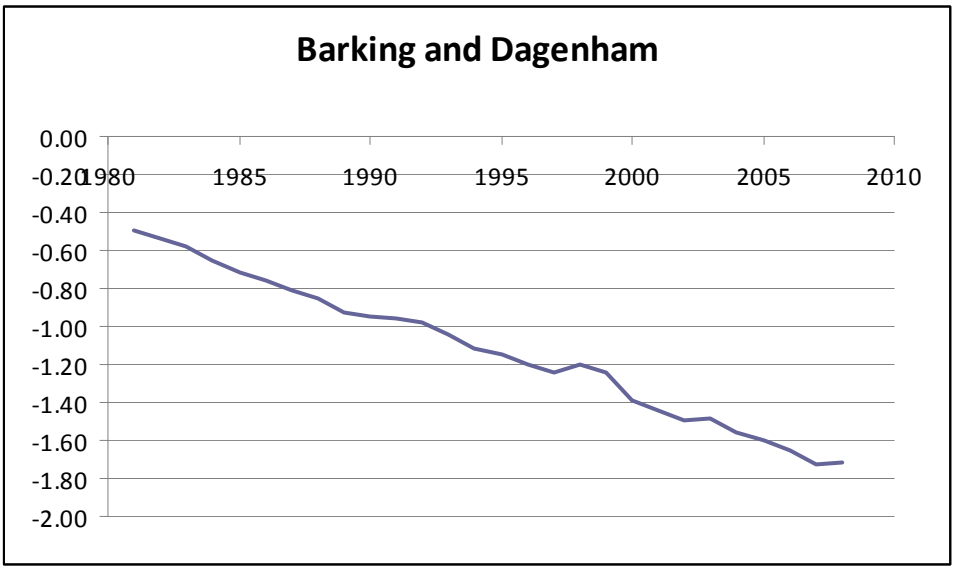


Figure A16: Log of Other Services employment as a proportion of total output in London, 1984-2010

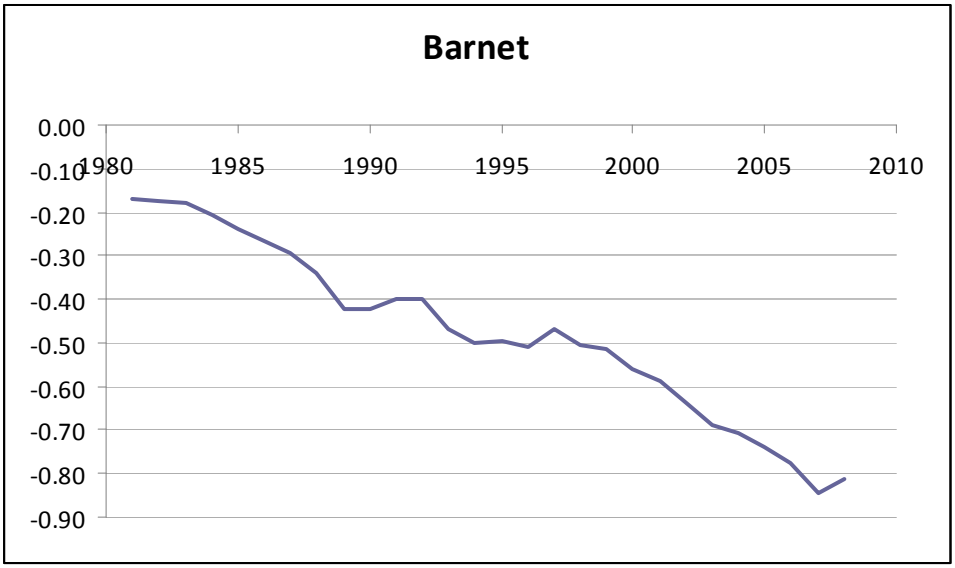


Appendix B: Historic employee trends by borough

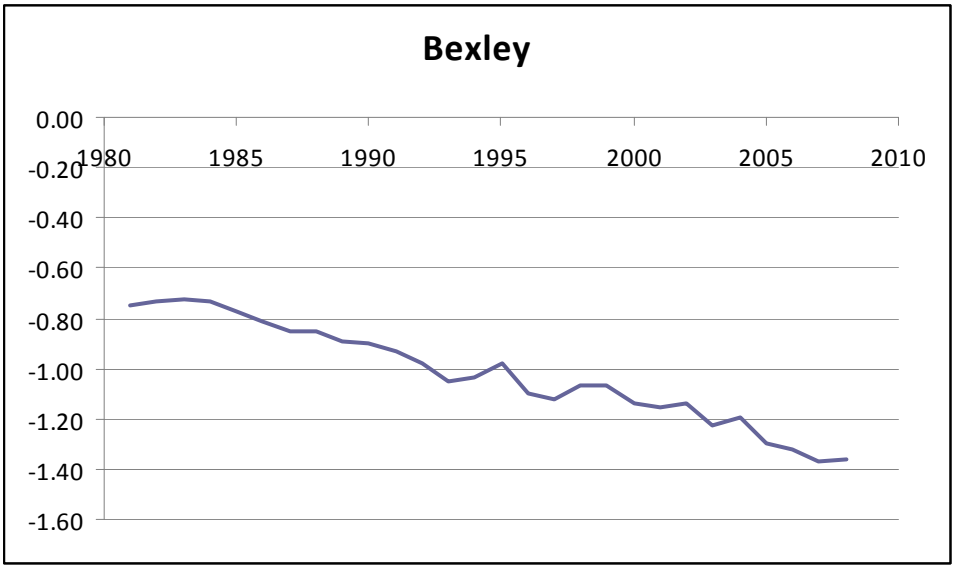
The plots below show the historic trends in borough employee proportions of total London employees in logs.



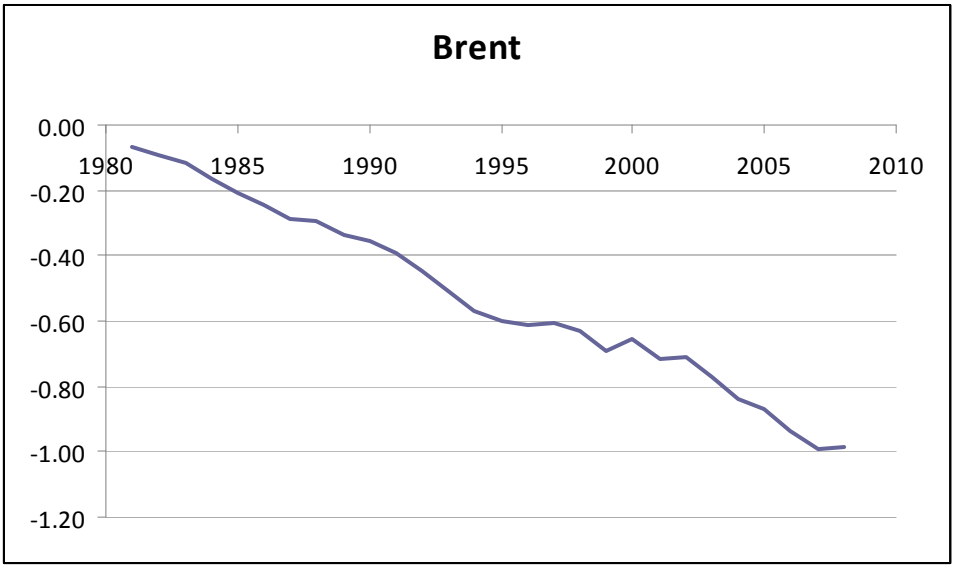
Overall Trend implied: -0.045



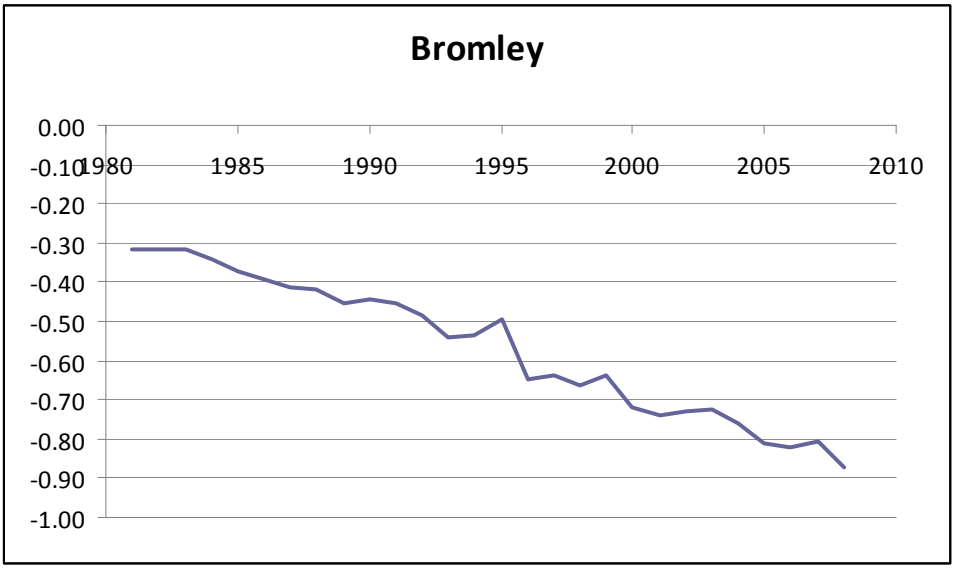
Overall Trend implied: -0.023



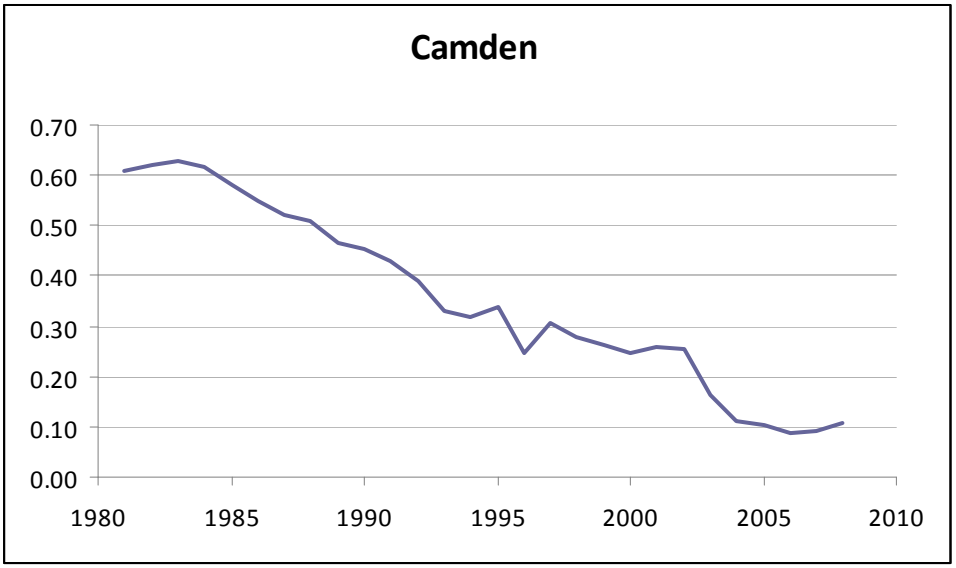
Overall Trend implied: -0.024



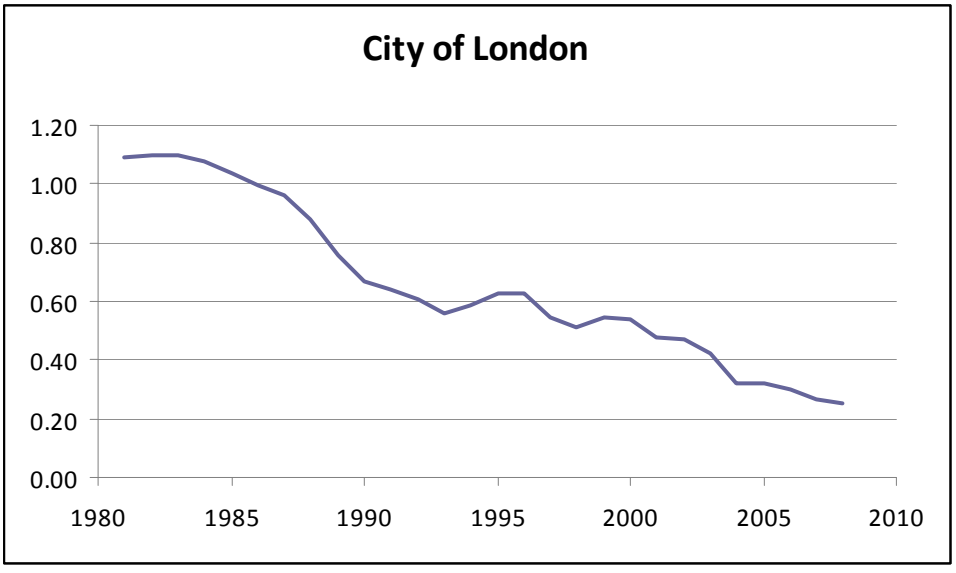
Overall Trend implied: -0.033



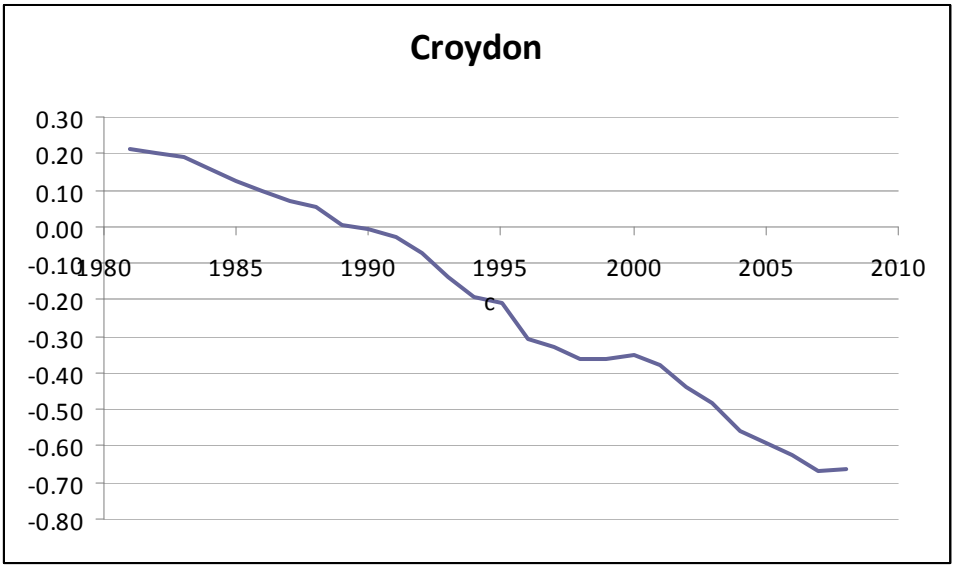
Overall Trend implied: -0.021



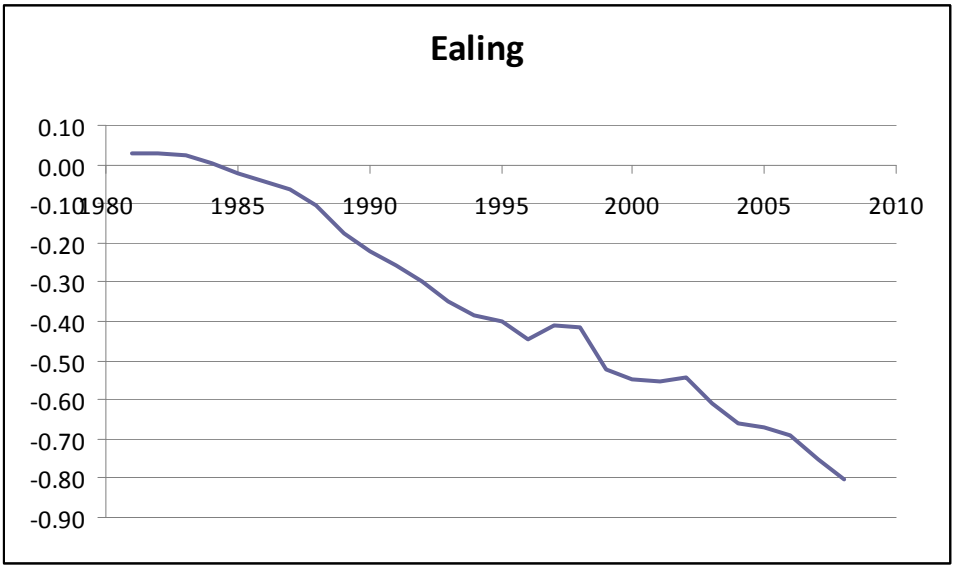
Overall Trend implied: -0.021



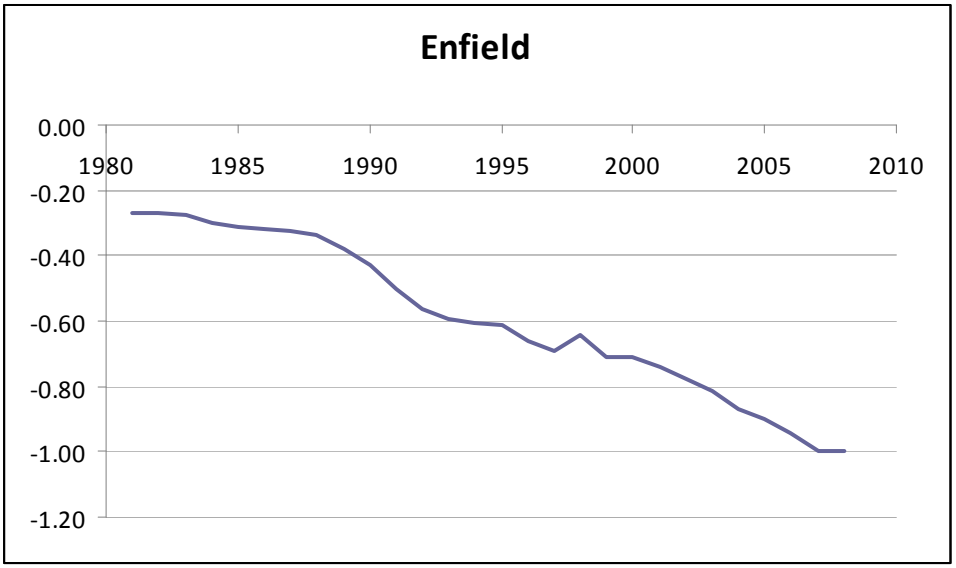
Overall Trend implied: -0.023



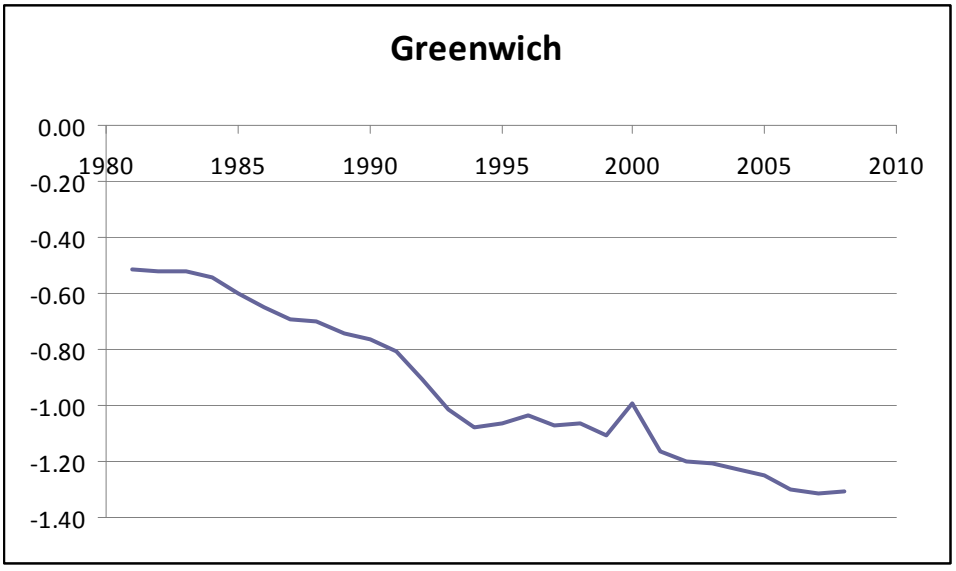
Overall Trend implied: -0.034



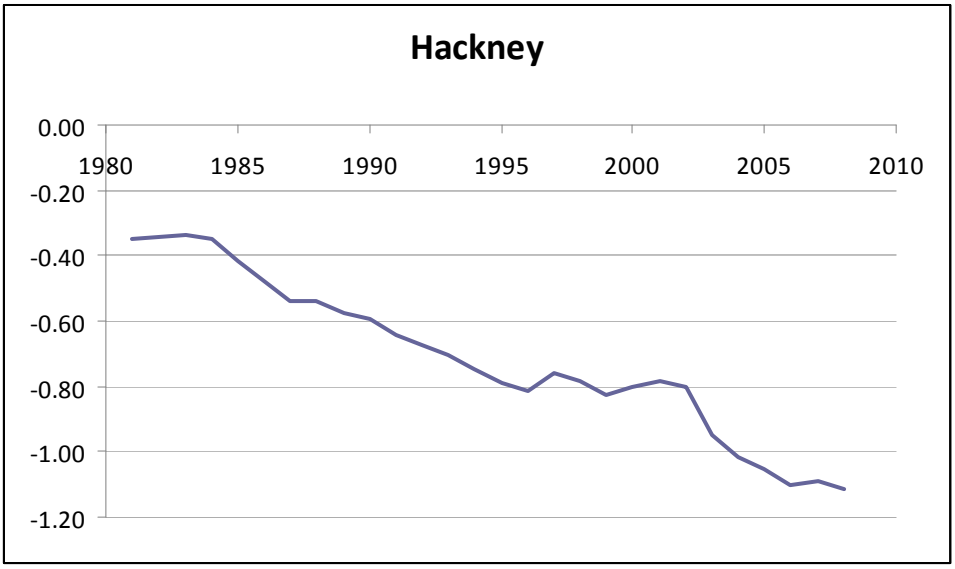
Overall Trend implied: -0.032



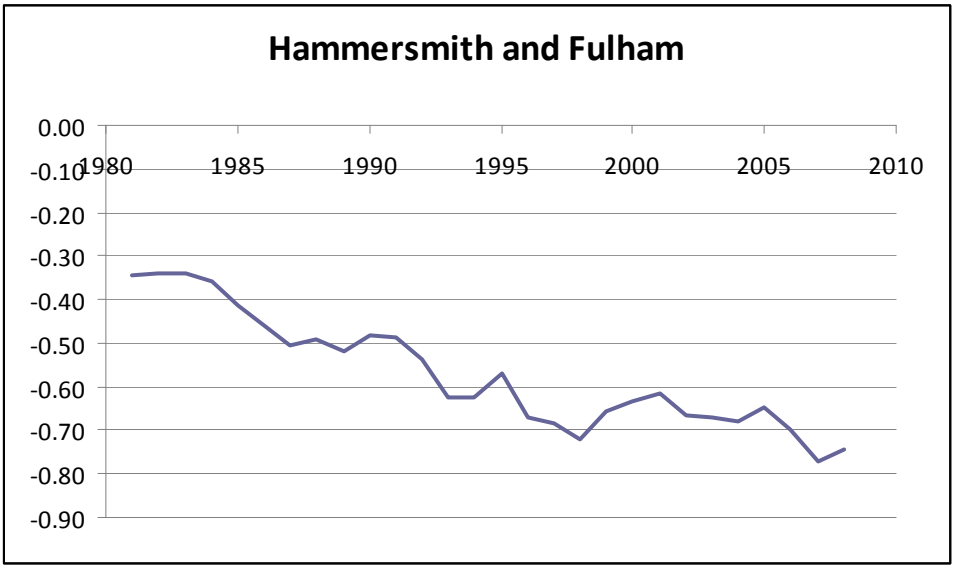
Overall Trend implied: -0.028



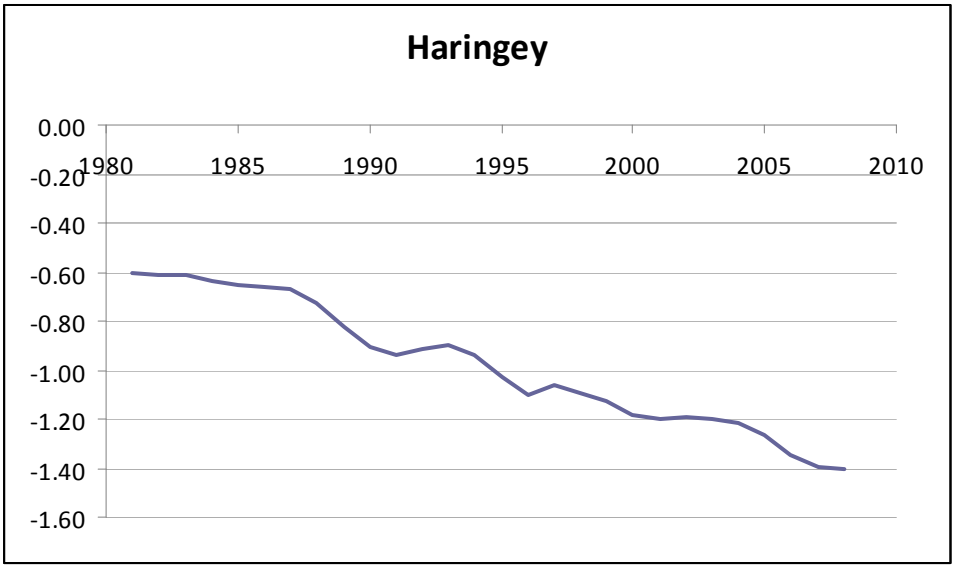
Overall Trend implied: -0.026



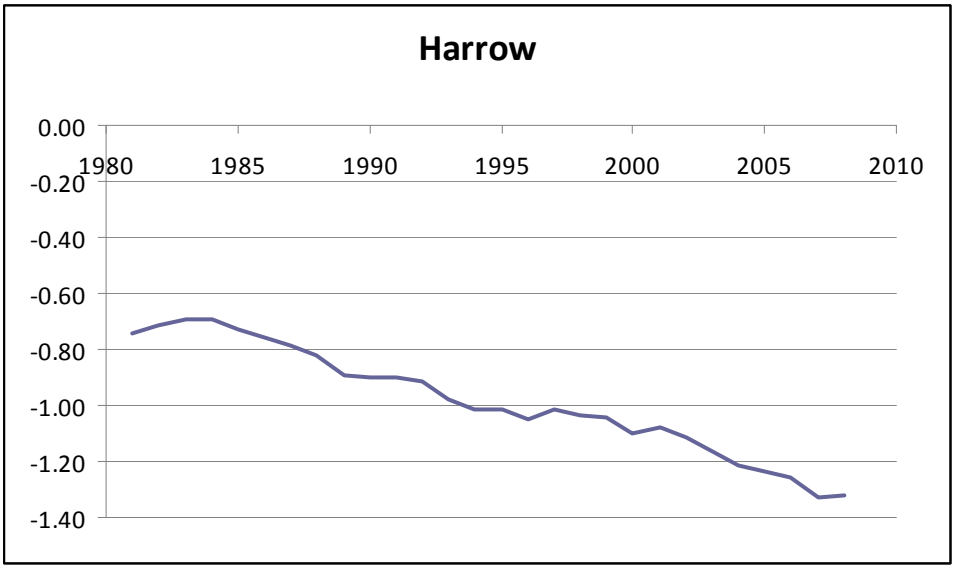
Overall Trend implied: -0.026



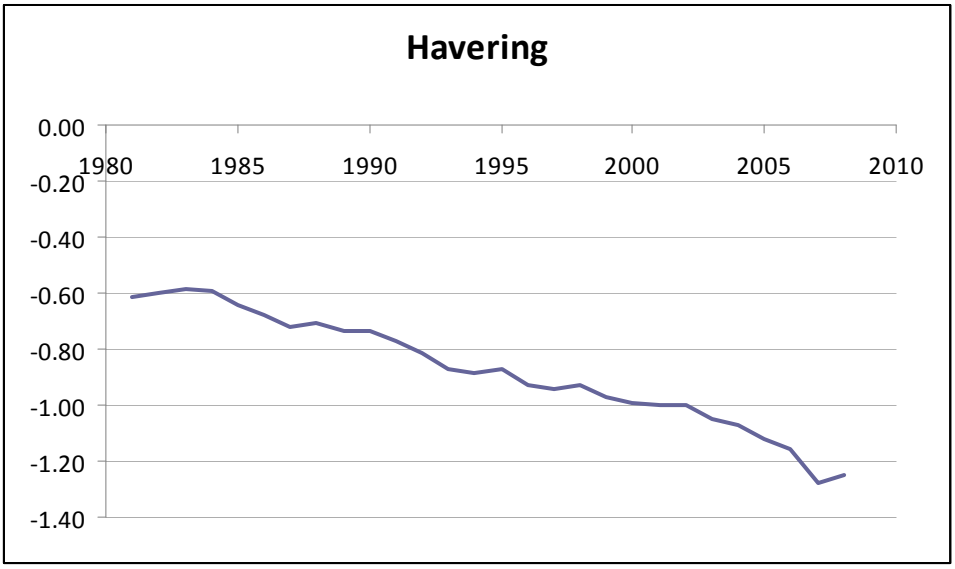
Overall Trend implied: -0.014



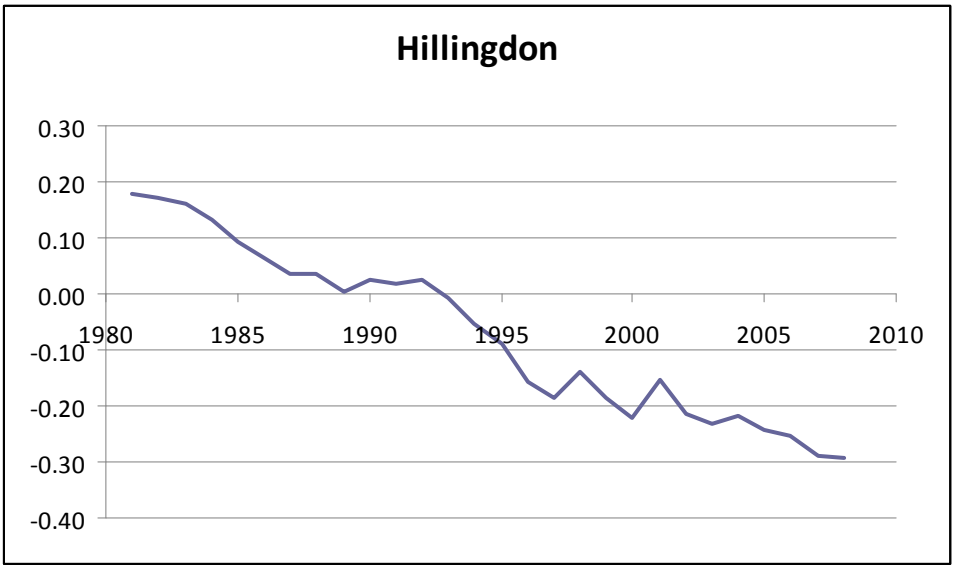
Overall Trend implied: -0.029



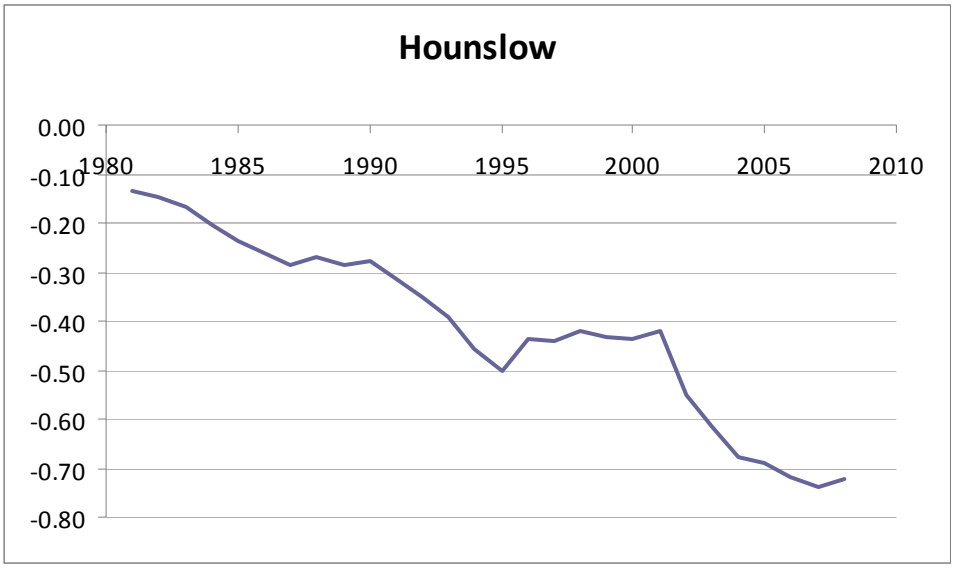
Overall Trend implied: -0.023



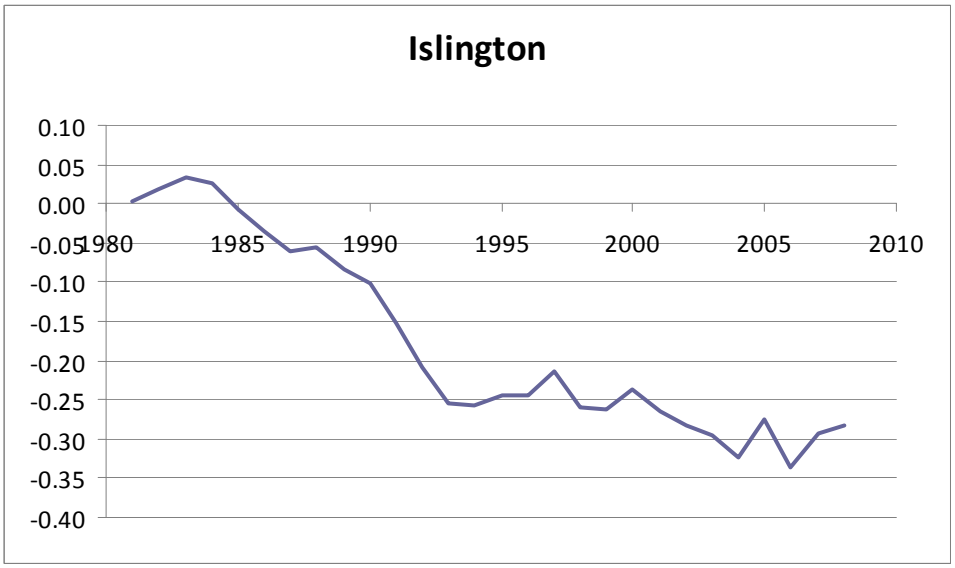
Overall Trend implied: -0.024



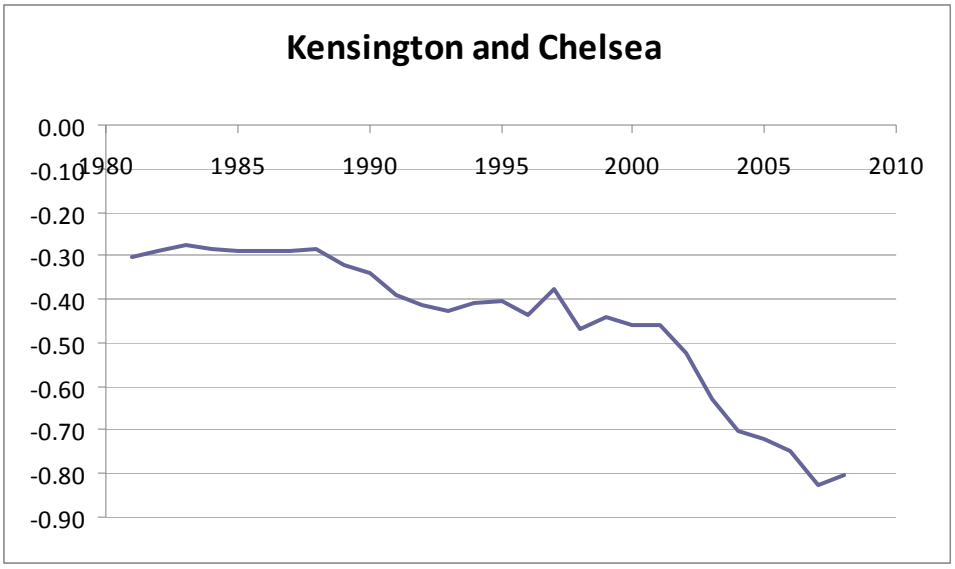
Overall Trend implied: -0.018



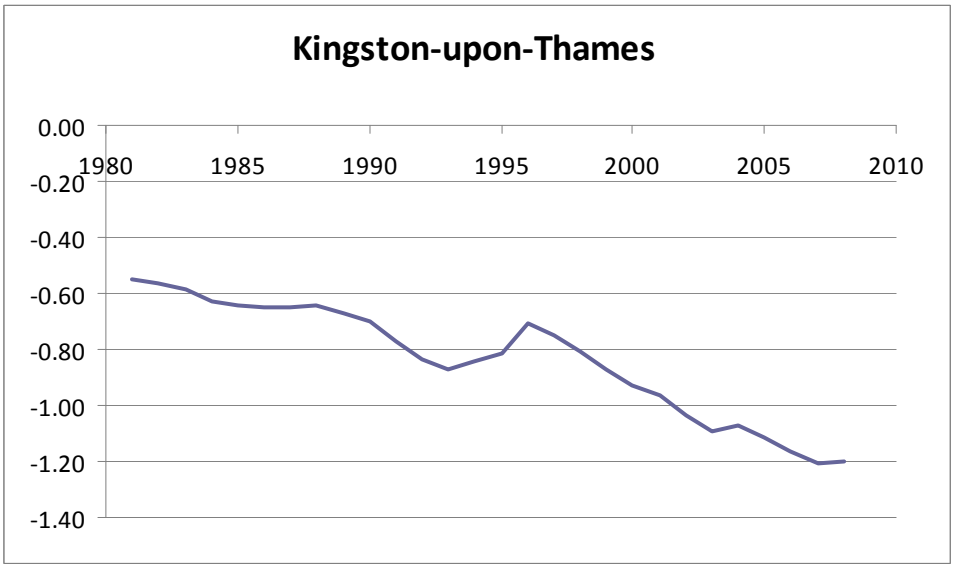
Overall Trend implied: -0.021



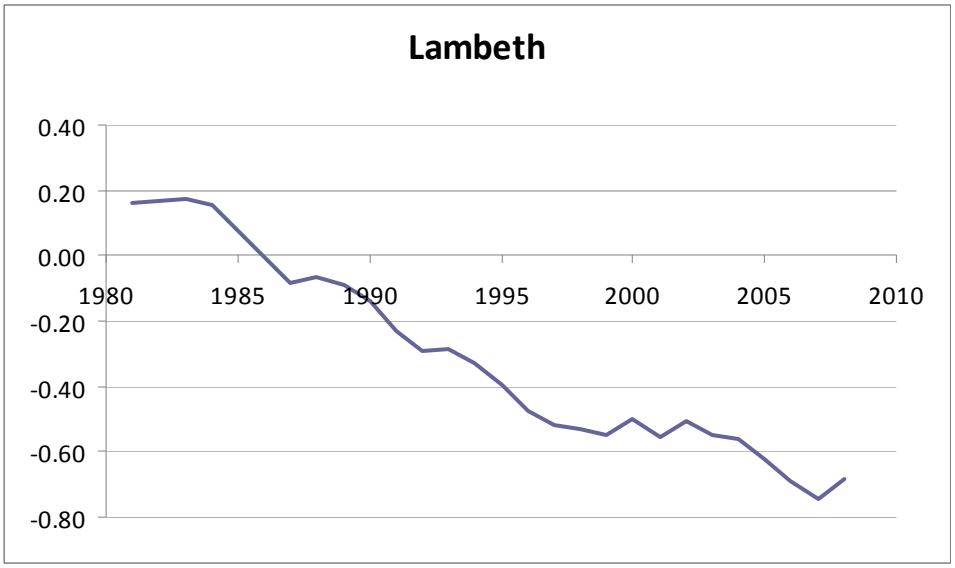
Overall Trend implied: -0.013



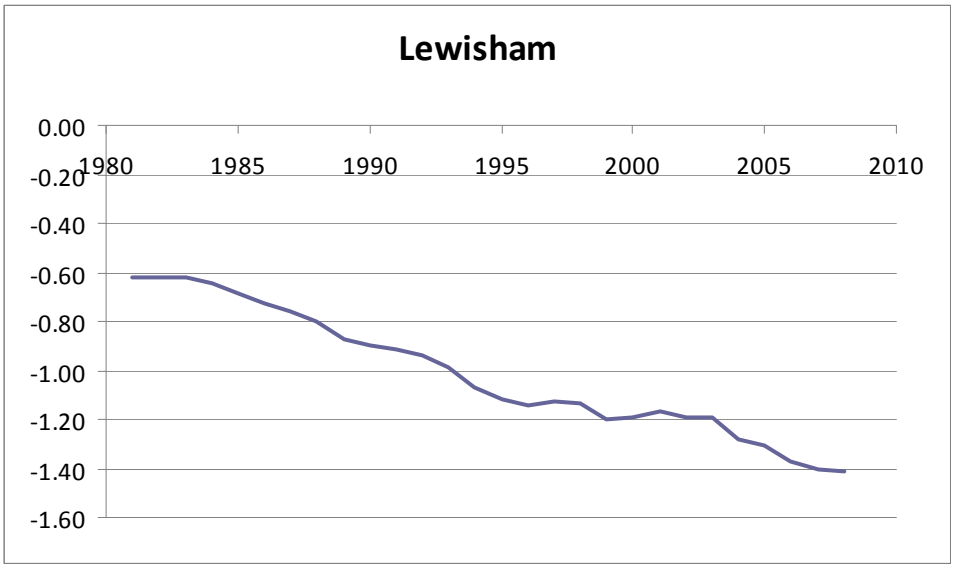
Overall Trend implied: -0.019



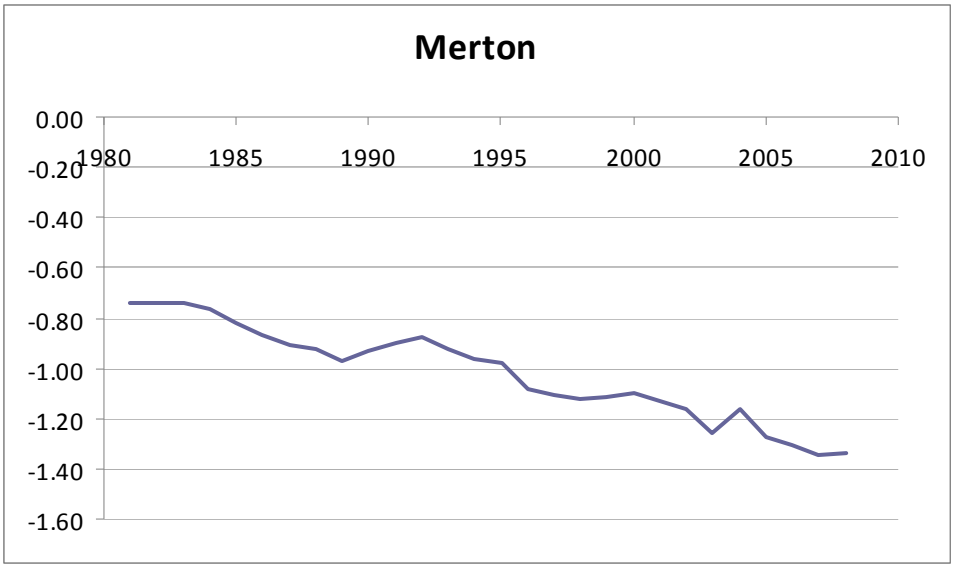
Overall Trend implied: -0.024



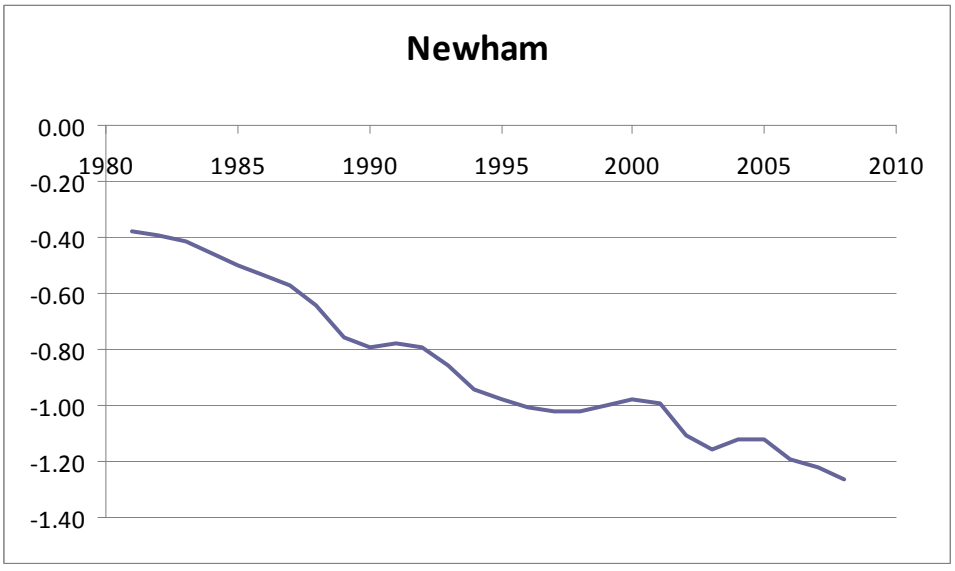
Overall Trend implied: -0.025



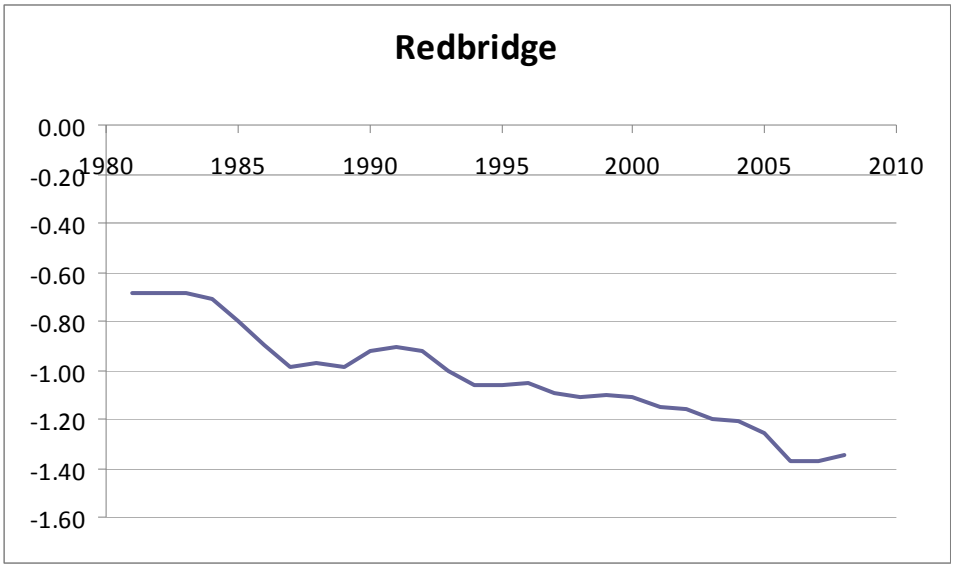
Overall Trend implied: -0.027



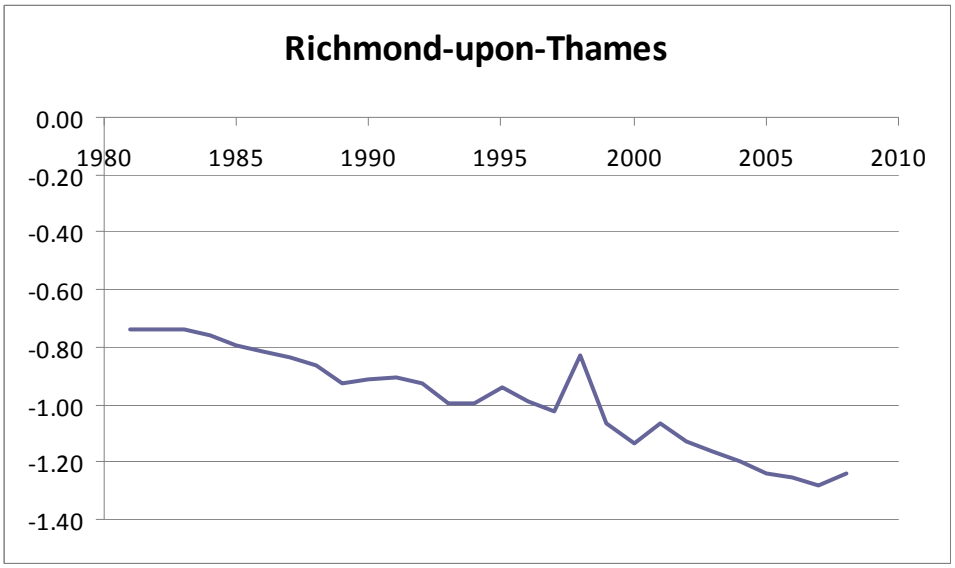
Overall Trend implied: -0.022



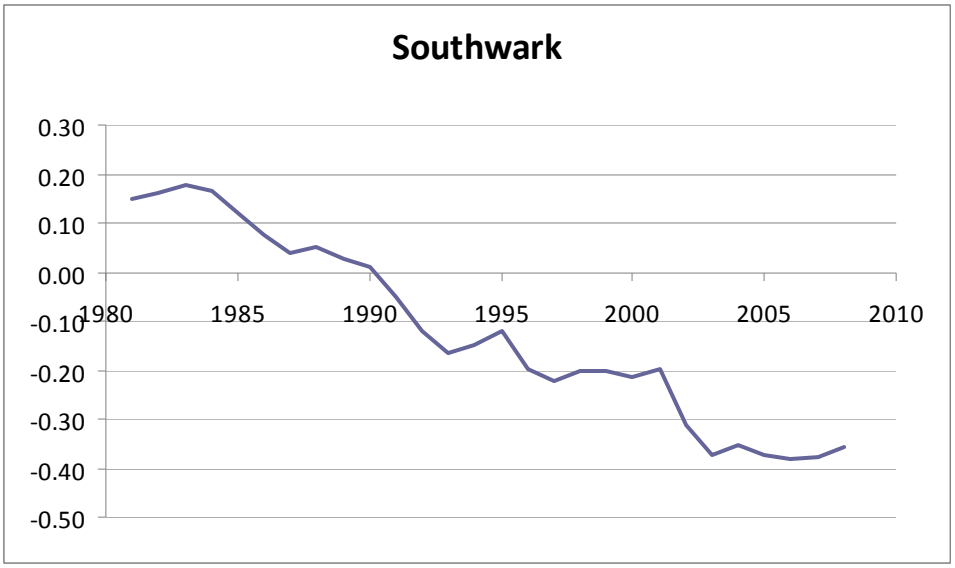
Overall Trend implied: -0.022



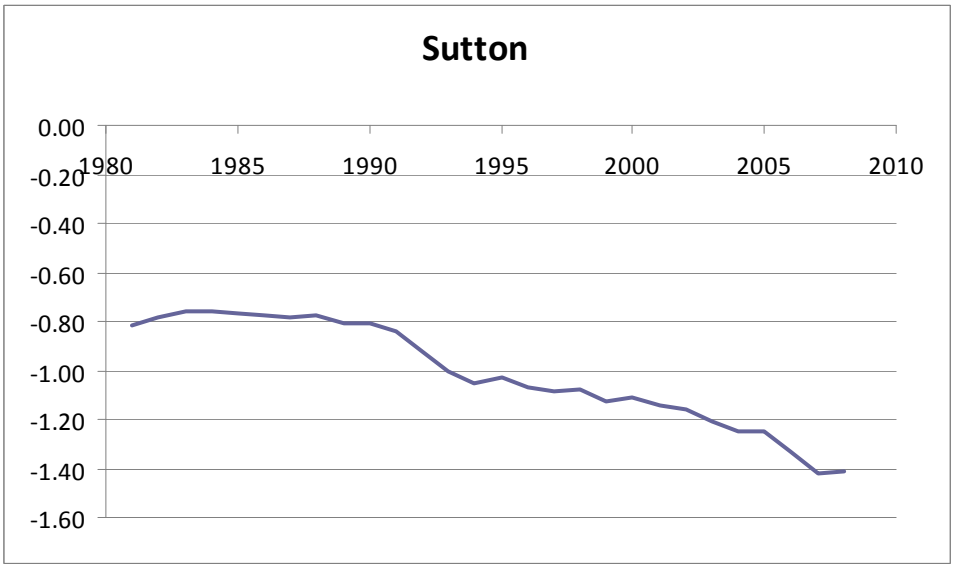
Overall Trend implied: -0.024



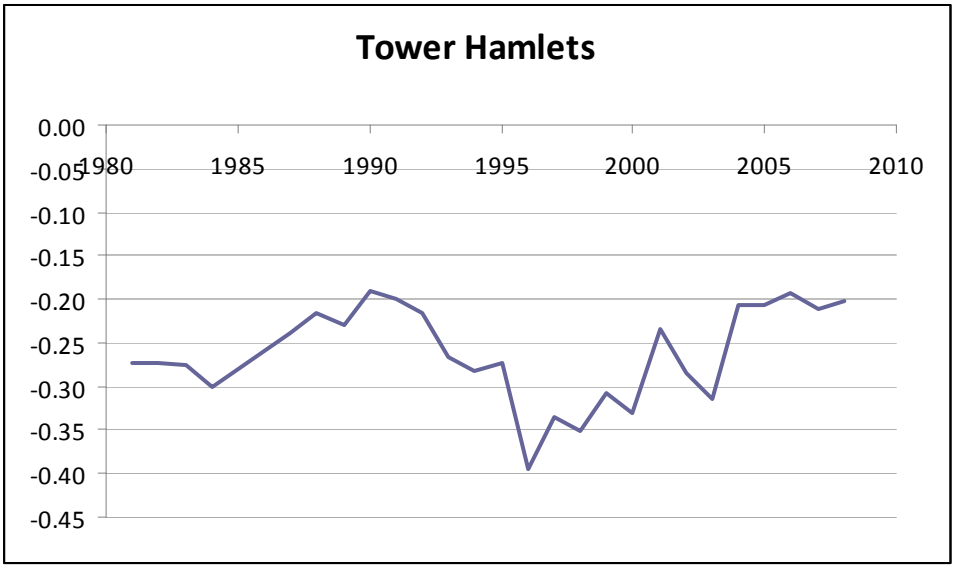
Overall Trend implied: -0.020



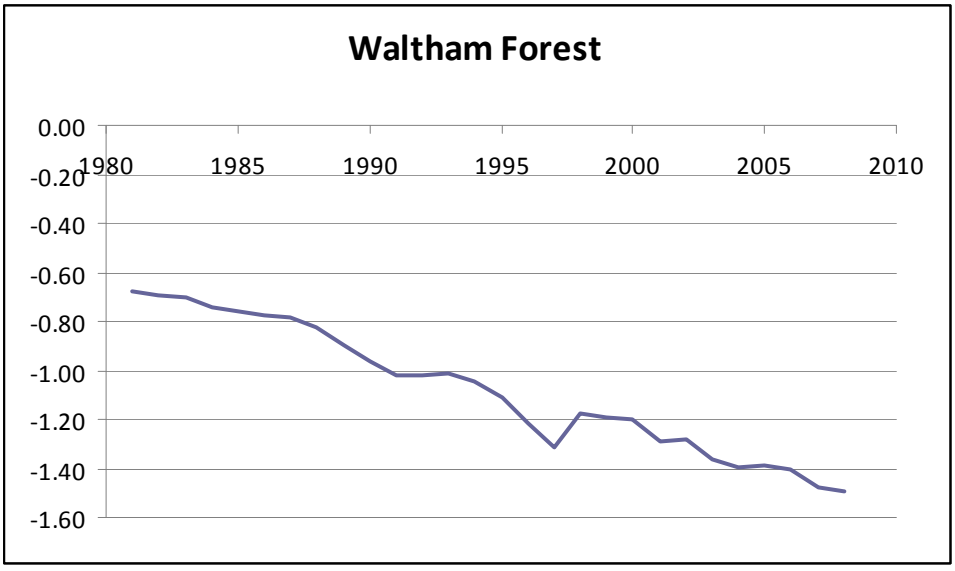
Overall Trend implied: -0.008



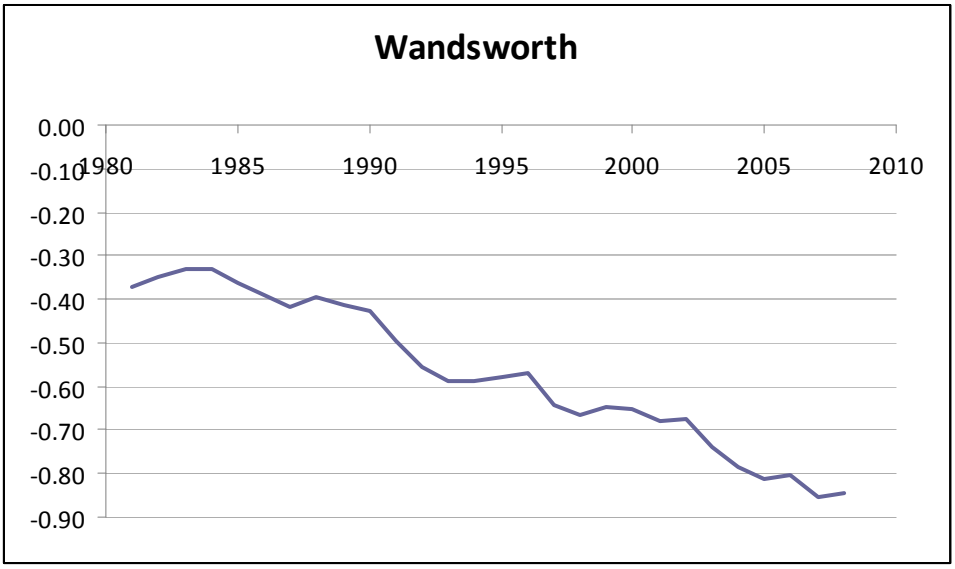
Overall Trend implied: -0.025



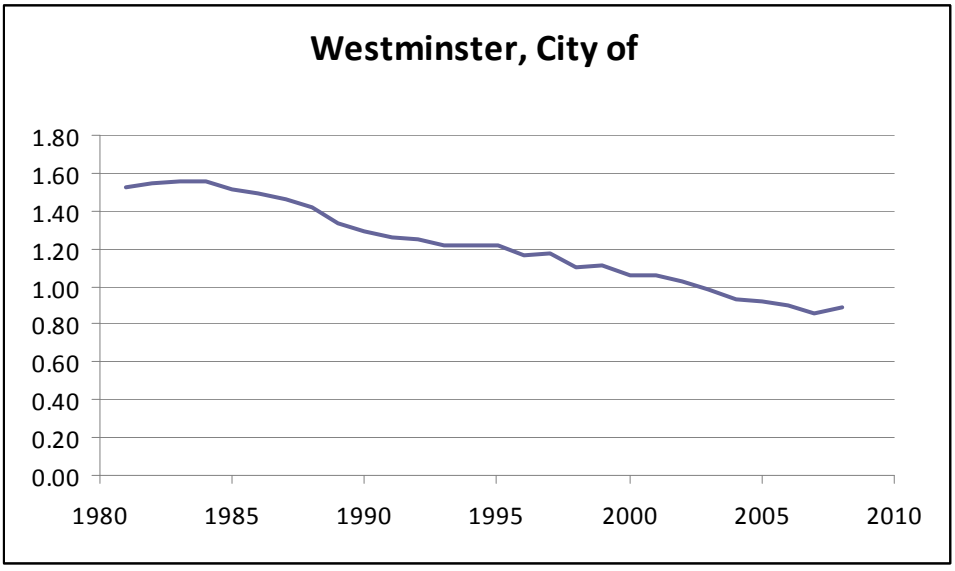
Overall Trend implied: -0.001



Overall Trend implied: -0.024

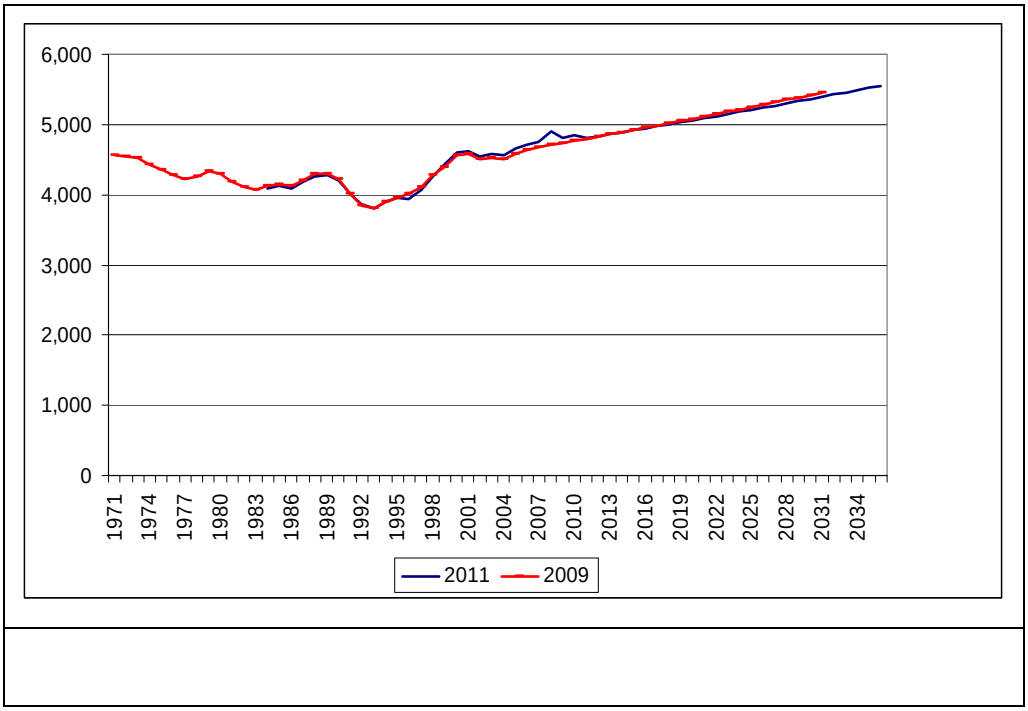


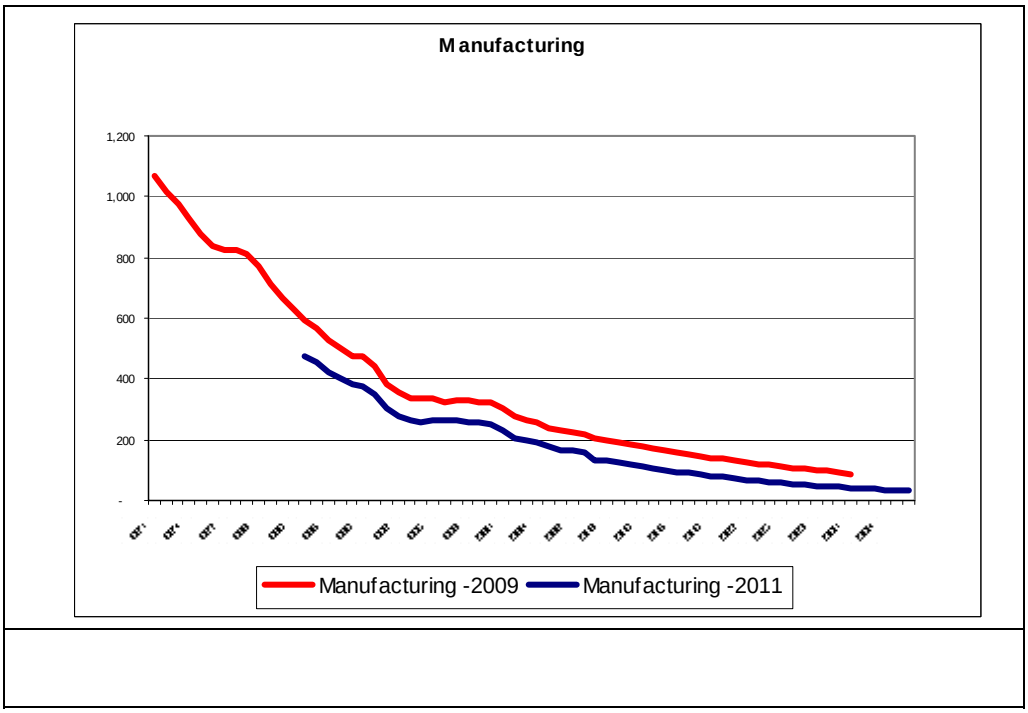
Overall Trend implied: -0.021

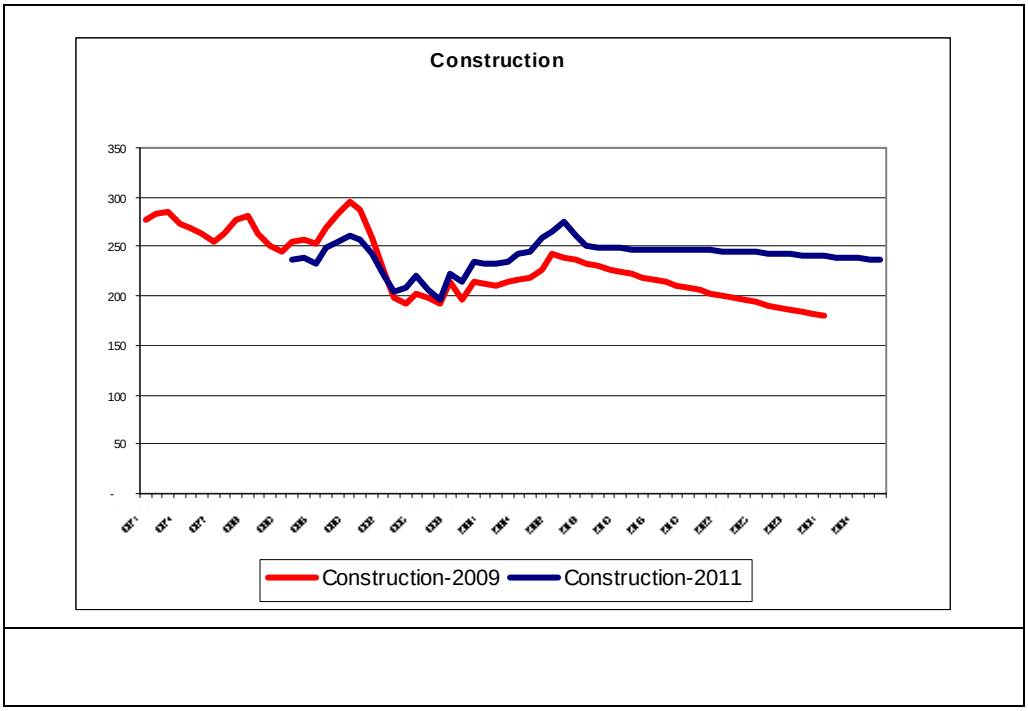


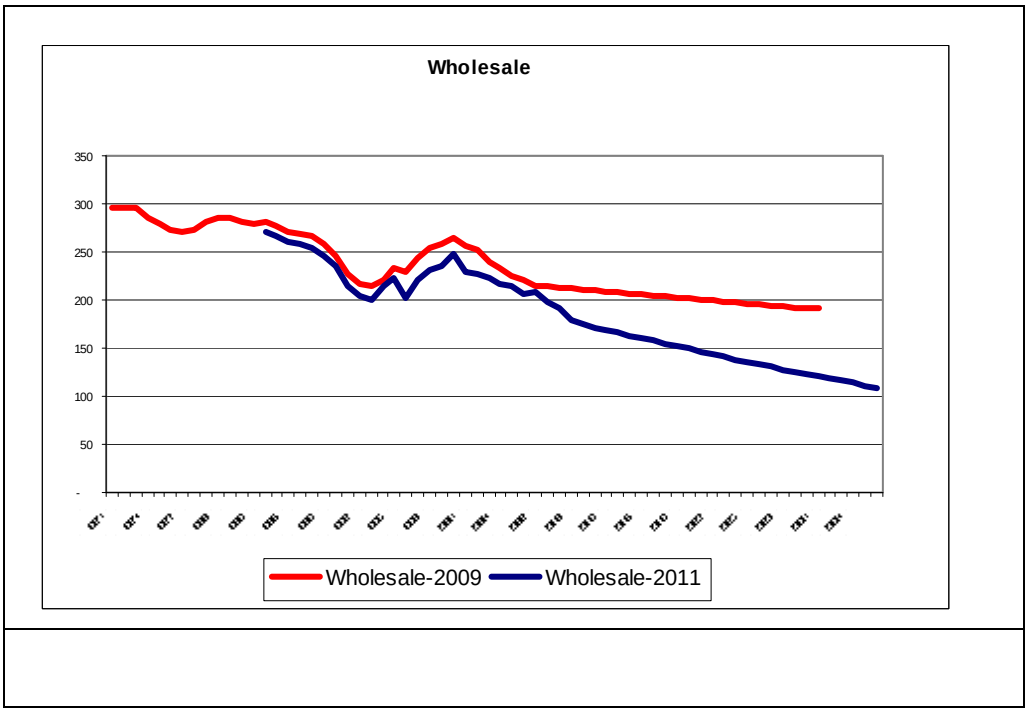
Overall Trend implied: -0.024

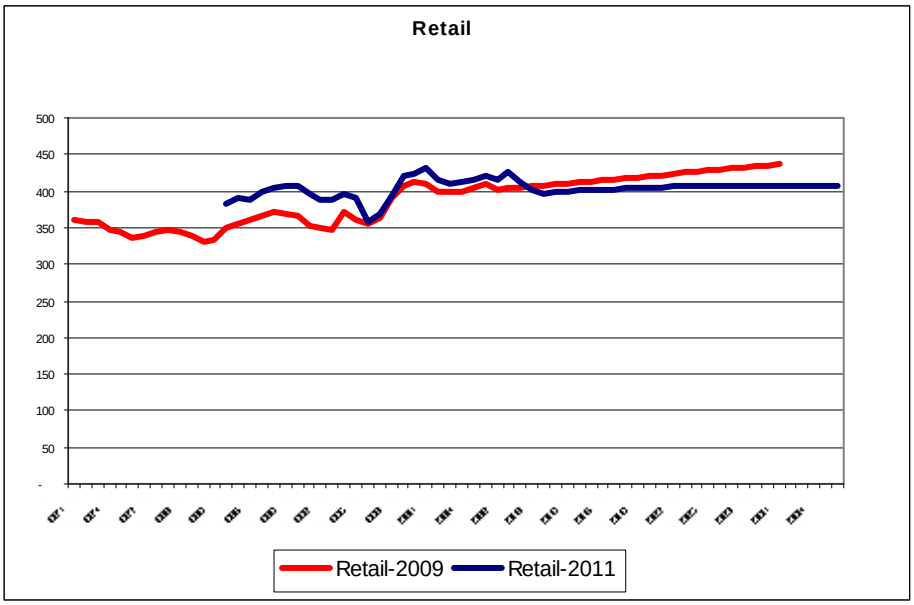
Appendix C: Comparison of 2011 and 2009 employment trends and projections

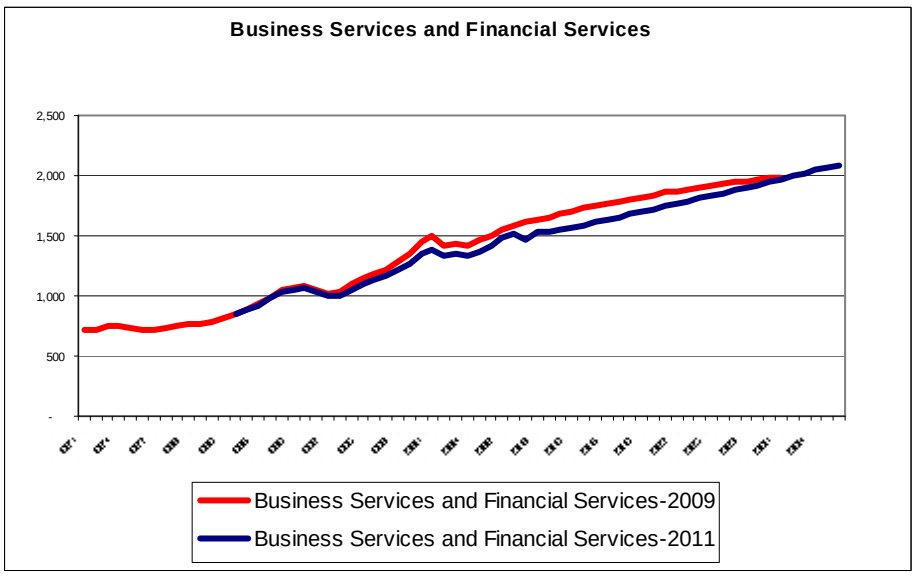


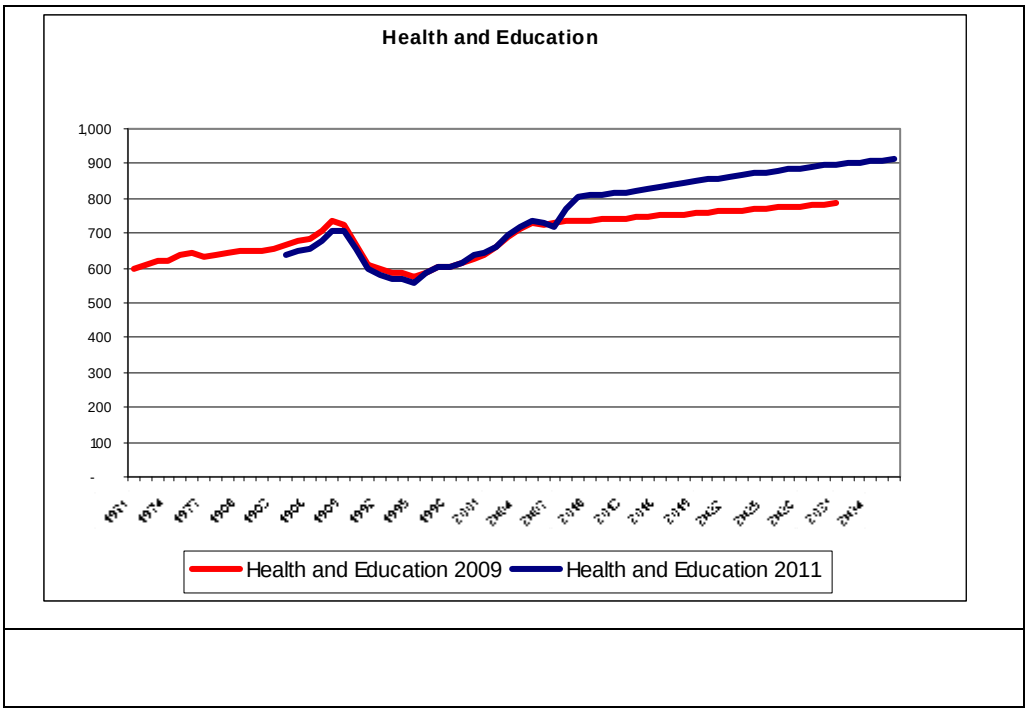



Construction
350
300
250
200
150
100
50
-
Construction-2009
Construction-2011


Wholesale
350
300
250
200
150
100
50
-
Wholesale-2009
Wholesale-2011


Retail
500
450
400
350
300
250
200
150
100
50
-
Retail-2009
Retail-2011


Business Services and Financial Services
2,500
2,000
1,500
1,000
500
-
Business Services and Financial Services-2009
Business Services and Financial Services-2011


Health and Education
1,000
900
800
700
600
500
400
300
200
100
-
Health and Education 2009
Health and Education 2011

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Chinese

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Vietnamese

Nếu bạn muốn có văn bản tài liệu
này bằng ngôn ngữ của mình, hãy
liên hệ theo số điện thoại hoặc địa
chỉ dưới đây.

Greek

Αν θέλετε να αποκτήσετε αντίγραφο του παρόντος εγγράφου στη δική σας γλώσσα, παρακαλείστε να επικοινωνήσετε τηλεφωνικά στον αριθμό αυτό ή ταχυδρομικά στην παρακάτω διεύθυνση.

Turkish

Bu belgenin kendi dilinizde
hazırlanmış bir nüshasını
edinmek için, lütfen aşağıdaki
telefon numarasını arayınız
veya adrese başvurunuz.

Punjabi

ਜੇ ਤੁਹਾਨੂੰ ਇਸ ਦਸਤਾਵੇਜ਼ ਦੀ ਕਾਪੀ ਤੁਹਾਡੀ ਆਪਣੀ ਭਾਸ਼ਾ ਵਿਚ ਚਾਹੀਦੀ ਹੈ, ਤਾਂ ਹੇਠ ਲਿਖੇ ਨੰਬਰ 'ਤੇ ਫ਼ੋਨ ਕਰੋ ਜਾਂ ਹੇਠ ਲਿਖੇ ਪਤੇ 'ਤੇ ਰਾਬਤਾ ਕਰੋ:

Hindi

यदि आप इस दस्तावेज की प्रति अपनी
भाषा में चाहते हैं, तो कृपया निम्नलिखित
नंबर पर फोन करें अथवा नीचे दिये गये
पते पर संपर्क करें

Bengali

আপনি যদি আপনার ভাষায় এই দলিলের প্রতিলিপি
(কপি) চান, তা হলে নীচের ফোন্ নম্বরে
বা ঠিকানায় অনুগ্রহ করে যোগাযোগ করুন।

Urdu

اگر آپ اِس دستاویز کی نقل اپنی زبان میں
چاھتے ھیں، تو براہ کرم نیچے دئے گئے نمبر
پر فون کریں یا دیئے گئے پتے پر رابطہ کریں

Arabic

إذا أردت نسخة من هذه الوثيقة بلغتك، يرجى
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