GLAECONOMICS

Working Paper 4: Long-term Employment Projections for London

Alternative methodology and results

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September 2003

Transport for London

LONDON DEVELOPMENT AGENCY

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Greater London Authority
September 2003

Published by
Greater London Authority
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www.london.gov.uk
enquiries 020 7983 4000
minicom 020 7983 4458

ISBN 1 85261 525 7

This publication is printed on recycled paper.

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Introduction

Long-term employment projections can be produced using a variety of methods. The long-term employment projections to 2016 that underpin the Mayor's draft London Plan (GLA 2002a) were prepared by Volterra Consulting using a methodology based on long-term trends in output and productivity (GLA 2002b).

An alternative approach, which is commonly applied, is to use projections of the population and employment rate (the percentage of the population in employment) in order to derive employment projections. An example of this approach at the UK level is HM Treasury's projections for employment growth between the financial years 2008/09 and 2032/33 contained in *Illustrative Long Term Fiscal Projections* (HM Treasury 2003). This approach is used in this working paper to derive long-term employment estimates for London through to 2041.

Population

The last official central government sub-national population projections were the 1996-based projections produced by the Office for National Statistics (ONS). These projections are very dated and predate the results of the 2001 Census, which has had very major implications for the Government Actuary's Department's (GAD's) population projections at the national level. Updated ONS sub-national projections, consistent with the results of the 2001 Census, are not due to be published until late 2004. However, the GLA's Data Management and Analysis Group (DMAG) has produced population projections for London up to 2016, taking account of the 2001 Census results (GLA 2003). DMAG has extended these projections to 2041 specifically for previous work by GLA Economics and the results are reported in this working paper.

Table 1 shows the DMAG central or Scenario 7.9 projections for the population of working age in London. All figures have been rounded to the nearest ¼ of a percentage point in order to avoid the perception of spurious accuracy.

Table 1 DMAG and GAD population projections

Time period	DMAG annual average growth in the population of working age in London (%)	GAD interim 2001 based principal population projections for the UK (%)
2003-08	1	¼
2008-13	¾	½
2013-22	¾	¼
2022-32	¼	-¼
2032-41	½	0

Source: GLA Economics calculations based on data from DMAG in the GLA and the GAD

London's population of working age is projected to grow at a faster rate than GAD projects for the UK in its interim 2001-based principal population projections. This is consistent with recent trends in population growth. Following a number of decades in which the total population of London fell, it grew by 5.6 per cent between 1981 and 2001. Over the same period, the total UK population grew by 4.4 per cent. The population of working age grew by 7.8 per cent in London between 1991 and 2001, but by just 2.7 per cent in the UK as a whole. As a result, it is not unreasonable to suppose that London's population of working age will continue to grow faster than the population of working age in the UK as a whole.

Employment rate projections

Often the assumption made in long-term employment projections is to hold the employment rate constant. This is often justified on the grounds that the labour market is complex and it is difficult to justify that the employment rate will either rise or fall in tenor 20 years. Alternatively, holding the employment rate constant may well be appropriate where one is deliberately attempting to make cautious projections. One example of this is the long-term fiscal projections produced by HM Treasury, where an assumption of an increasing employment rate would increase future tax revenues and consequently improve the fiscal outlook. In order to err on the side of caution, HM Treasury assumes a constant employment rate going forward.

More practically, allowing the employment rate to keep rising into the future could mean projecting that it will rise above 100 per cent, which is logically impossible,[1] or reach levels which seem implausibly high even while below 100 per cent. However, holding the employment rate constant may not always be sensible if it appears that the employment rate has been generally increasing over the past, as it may then be reasonable to expect this trend to continue into the future. To illustrate these tensions it is useful to consider the case of employment rate projections for the UK before turning to the case of London.

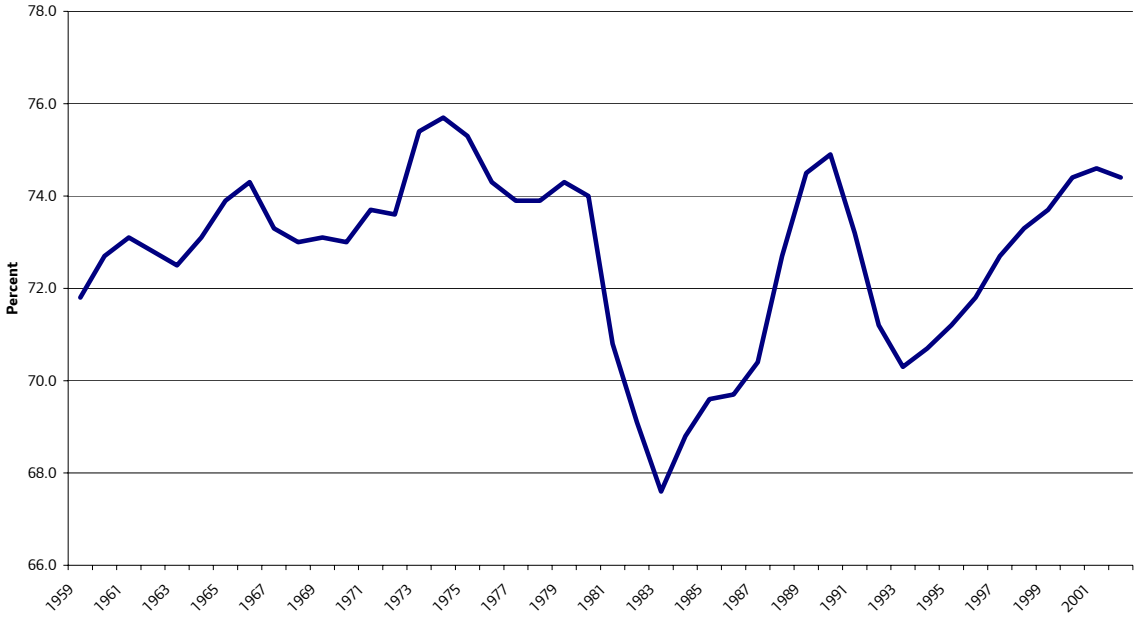
UK projections

Chart 1 shows that the UK employment rate has risen overall since 1959. On average, it rose by about 0.04 percentage points per year between 1959 and 2002. It is also clear from the chart that movements in the employment rate are affected significantly by the economic cycle. The Treasury has previously identified 1986-1997 and 1997-2001 as representing a full economic cycle and a cycle and a half respectively from on-trend point to on-trend point (HM Treasury 2002). Hence movements in the employment rate between these dates should not be affected by short run cyclical fluctuations. In these two more recent periods, the UK employment rate has risen on average by 0.27 percentage points and 0.47 percentage points per year respectively. Given these past trends, it seems reasonable to assume some increase in the UK employment rate into the future rather than holding it constant. In the Treasury's estimation of trend output growth through to the end of 2006, it postulates a trend increase in the employment rate of 0.2 percentage points per year (HM Treasury 2002). However, starting from 2001 (the last Treasury identified on-trend point) using either of the trends from 1986-1997 or 1997-2001

[1] One approach that is used sometimes to deal with this possibility is to logistically transform the data. If A is a bounded variable such that $0 < A < 1$, then the logistic transformation $B = \ln(A / (1-A))$ is an unbounded variable, ie $-\infty < B < \infty$. Instead of projecting A directly, projections for B are undertaken which are then transformed back and which will automatically fall within the bounds of A.

produces extremely high employment rates by 2041 – 85.5 per cent and 93.6 per cent respectively. These seem implausibly high, so it may be more reasonable to project an increase in the employment rate of 0.04 percentage points per year in line with the trend from 1959. This gives an employment rate in 2041 of 76.4 per cent, which seems a more reasonable estimate, if somewhat cautious.

Chart 1 Employment rate 1959-2002



Source: Bell (2000), Labour Force Survey

This UK example illustrates the potential problem of ending up with projections of an implausibly high employment rate if future increases in the employment rate are assumed. However, it also indicates that by using judgement it is perfectly possible to derive projections that do not seem unreasonable over the timeframe being considered.

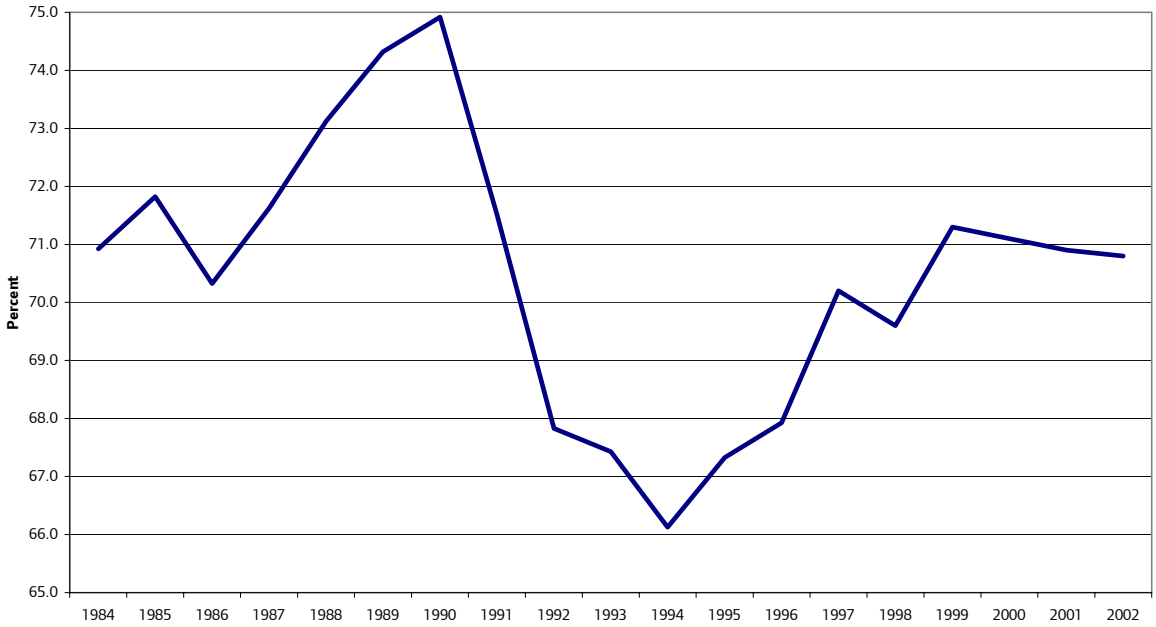
London employment rate projections

Residence-based working age employment rate data for London from the Labour Force Survey (LFS) is only available from 1984.[2] Given the fluctuations in the employment rate in Chart 2, it is difficult to identify the longer-term trends in the London employment rate from those due to the influence of the economic cycle.

Using the trends in the employment rate between the on-trend points identified by the Treasury (1986, 1997 and 2001) then the picture that emerges is broadly one of a flat or possibly slowly rising employment rate as the London working age employment rates at these three dates are 70.3 per cent, 70.2 per cent and 70.9 per cent respectively.

[2] ONS has revised the data for the period 1997-2002 in light the 2001 Census results. The data for 1984-96 are based on the previous ONS data, which has not yet been revised to take account of the Census results. This data has been spliced onto the 'census consistent' data. In practice, for years where there is an overlap of data, the difference between the pre-census and post-census employment rates is small and never exceeds 0.1 percentage points.

Chart 2 Working age employment rate in London



Source: LFS

The average annual change in the London employment rate between 1986 and 2001 is 0.04 percentage points. This is virtually identical to the 1959-2002 trend for the UK, noted above. Hence, one could justify either the assumption of a flat employment rate or a small increase in the employment rate of 0.04 percentage points per year to 2041. In fact, the practical consequences of these two assumptions do not much matter once the results are rounded to the nearest ¼ of a percentage point. This is shown in Table 2, with the employment projections using these two alternative employment rate assumptions combined with DMAG's projections for the population of working age. The precise assumption made only affects the employment growth assumption for 2008-13. The employment projections, assuming no increase in the employment rate, give an increase in residence-based employment in London of 14.7 per cent between 2001 and 2016. Assuming an increase of 0.04 percentage points per year gives an increase of 15.6 per cent over the same period. The former is closer to the projected 14.2 per cent increase in workplace-based employment for this same period suggested by the long-term projections which underpin the Mayor's draft London Plan. This argues in favour of the slightly more cautious constant employment rate assumption.

Table 2 Projected average annual increase in employment in London (per cent)

Time period	With constant employment rate	With 0.04% points annual increase in the employment rate
2003-08	1	1
2008-13	¾	1
2013-22	¾	¾
2022-32	¼	¼
2032-41	½	½

Commuting and employment in London on a workplace basis

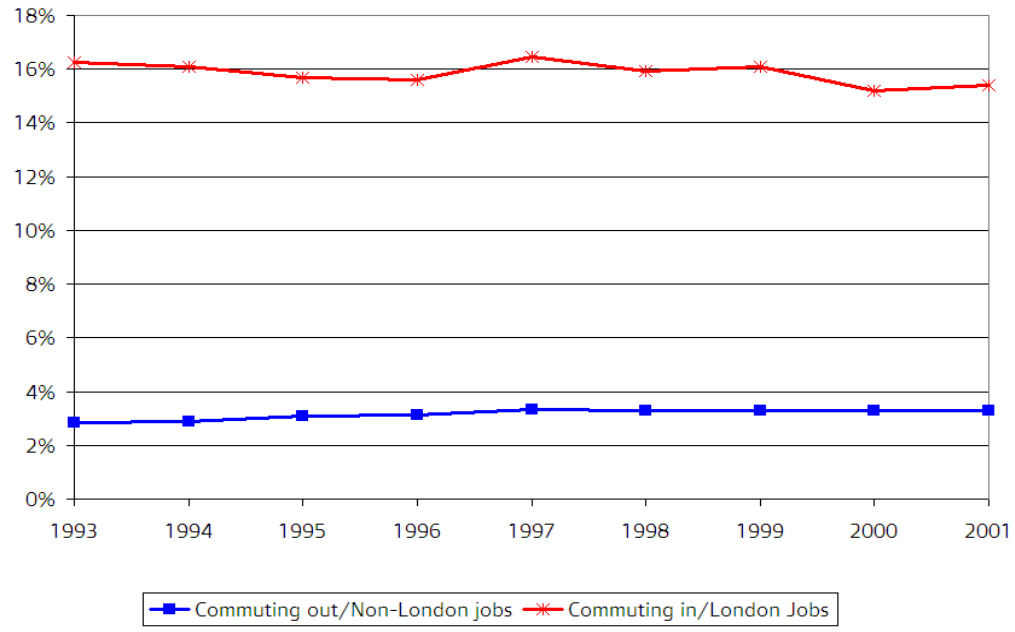
The approach set out so far in this paper has utilised residence-based population projections together with residence-based employment rates. The combination of these produces an estimate of the number of people residing in London who are in paid work.

However, many jobs located in London are filled by people who live outside London and commute in. Similarly, some Londoners commute to jobs outside of London. From the perspective of the London economy, GLA Economics is interested in the number of jobs located in London, that is employment growth on a workplace basis. An assumption could be made that future growth in employment in London on a workplace basis was equal to the projections made for residential employment in London. For this assumption to be valid, the following are required to be constant over time:[3]

- the proportion of employed Londoners who work inside/outside London
- the proportion of London's jobs that are taken by non-Londoners, often known as the in-commuting to London rate.

Commuting in and out of London was investigated in *Working Paper 1: Labour market balances and employment in the wider South East* (GLA 2003b). Data from this working paper, together with data on residential employment from the Labour Force Survey, have been used to check whether the two proportions above have been constant over the recent past. The proportion of Londoners who worked outside London rose from 5.7 per cent to 6.8 per cent between 1993 and 1997 and then fell very slightly to 6.6 per cent by 2001. Assuming this proportion is constant going forward does not seem unreasonable. The rate for commuting in to London fluctuated around 16 per cent in the period 1993 to 2001 but showed no clear-cut trends either up or down (GLA 2003b).

Chart 3 Commuting between London and surrounding regions as a share of jobs



Source: GLA 2003b

[3] See Appendix 1 for a full explanation.

Once again, assuming this is constant going forward does not seem unreasonable. So overall, it seems reasonable to assume that the growth in workplace-based employment in London will be equal to the projections made above for employment in London on a residential basis.

Conclusion

This analysis of specific London trends indicates that employment in London is likely to grow at a faster rate than in the UK as a whole. Table 3 summarises projected employment growth in London (both on a residential and workplace basis) for various time periods between now and 2041.

Table 3 Projections of Employment Growth in London

Time period	Annual average growth in London (%)
2003-08	1
2008-13	¾
2013-22	¾
2022-32	¼
2032-41	½

Table 4 shows projected levels of workplace-based employment in London at future dates using the London specific trends set out in Table 3. Over the next 40 years, workplace employment in London is projected to increase by around 1.15 million. It should be noted that both the projected growth in workplace-based employment and the levels of workplace-based employment in London at 2011 and 2016 presented here are very similar to the projections prepared for the draft London Plan. As a result, they support these earlier projections.

Table 4 Levels of workplace based employment in London 2002-2041

Year	Thousands
2002	4492
2011	4877
2016	5089
2021	5260
2031	5430
2041	5642

Appendix 1: Employment in London on a residential basis and a workplace basis

Let J_{ik} = Jobs in location i filled by people from location k.
and G (x) = growth of the variable x
Then, with the subscripts (L) denoting London and (N) denoting locations outside London, London's employment on a residence basis is given by:
$E_L = J_{LL} + J_{NL}$ (1)

Similarly London's employment on a workplace based (J_L) basis is given by:
$J_L = J_{LL} + J_{LN}$ (2)
Now $G(E_L) = G(J_{LL}) = G(J_{NL})$ (3), if J_{LL}/E_L is constant over time. This is equivalent to saying that J_{NL} / E_L is also constant over time.
Similarly $G(J_L) = G(J_{LL}) = G(J_{LN})$, (4) if J_{LL}/J_L or equivalently J_{LN} / J_L is constant over time. Note J_{LN} / J_L is the proportion of jobs in London that are filled by non-Londoners commuting into London.

Now if both equations (3) and (4) above hold it follows that since both $G(E_L)$ and $G(J_L)$ equal $G(J_{LL})$ then obviously $G(E_L)$ and $G(J_L)$ are also equal to each other. That is that the growth in employment in London on a workplace basis is equal to the growth in employment in London on a residence basis.

Appendix 2: Bibliography:

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GLA 2002a, *Planning for London's Growth,* GLA, London

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中文
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Hindi
यदि आप इस दस्तावेज़ की प्रति अपनी भाषा में चाहते हैं, तो कृपया निम्नलिखित नम्बर पर फोन करें अथवा दिये गये पता पर सम्पर्क करें।

Vietnamese
Tiếng Việt
Nếu bạn muốn bản sao của tài liệu này bằng ngôn ngữ của bạn, hãy gọi điện theo số hoặc liên lạc với địa chỉ dưới đây.

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

Greek
Αν θα θέλατε ένα αντίγραφο του παρόντος εγγράφου στη γλώσσα σας, παρακαλώ να τηλεφωνήσετε στον αριθμό ή να επικοινωνήσετε στην παρακάτω διεύθυνση.

Urdu
اگر آپ اِس دستاویز کی نقل اپنی زبان میں چاہتے ہیں، تو براہِ کرم نیچے دیئے گئے نمبر پر فون کریں یا دیئے گئے پتہ پر رابطہ قائم کریں۔

Turkish
Bize telefon ederek ya da yukarıdaki adrese başvurarak bu belgenin Türkçe'sini isteyebilirsiniz.

Arabic
إذا أردت نسخة من هذه الوثيقة بلغتك، الرجاء الاتصال برقم الهاتف او الكتابة الى العنوان

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:

Gujarati
જો તમને આ દસ્તાવેજની નકલ તમારી ભાષામાં જોઈતી હોય તો, કૃપા કરી આપેલ નંબર ઉપર ફોન કરો અથવા નીચેના સરનામે સંપર્ક સાધો.

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