
Economic PERSPECTIVE

THE POLITICAL ECONOMY OF SCOTLAND'S POPULATION DECLINE

by David Webster*, Glasgow City Council

The population of Scotland is declining, both absolutely and relatively to the rest of the UK. Decline in the Scottish population relative to the rest of the UK is not new. In fact it has been continuous at least since 1851. But a prolonged period of absolute decline such as we are currently seeing is new; the only significant previous decline was by a rather small 40,000 in the 1920s. Since 1974 there has been a fall of about 100,000 and the decline is now projected to extend into the foreseeable future, accelerating after 2020.

There are several reasons why this is a public policy issue. First, there is clear evidence that continuing population decline is due to the failure of the Scottish economy to offer reasonable opportunities to a large section of the population, and that this economic failure affects both the migration and natural change (births minus deaths) components of population change. Second, there are unfavourable fiscal consequences via the "Barnett formula", under which relative decline in

* David Webster MA MBA FCIH is Chief Housing Officer (Policy Review and Development), Glasgow City Council. The views expressed are not necessarily those of the Council, although an early version of part of the migration analysis was published in the Council's Housing Plan 1996. Jan Freeke of the Council's Development and Regeneration Services, Nick Bailey of the University of Glasgow and Anne Green of the University of Warwick made valuable comments on the draft, and the author would like to acknowledge Jan's invaluable advice on migration issues over several years. Garnett Compton of the GRO (Scotland) and Mary Smalls of the Common Services Agency kindly checked over the draft for errors and Peter Jamieson of the GRO (Scotland) has been particularly helpful in supplying data. The author alone is responsible for any mistakes which remain.

the Scottish population reduces the public resources available to deal with the underlying problems. Third, the economic significance of the decline appears to have been misinterpreted by Scottish policymakers who have drawn incorrect conclusions as a result.

This paper analyses the causes and consequences of Scotland's population decline. It shows that:

- Recent discussion of Scottish population change has been over-sanguine, for two reasons:

- The small gains of population through in-migration to Scotland during the early 1990s were due to the rare circumstance of a recession primarily affecting the south of England. These gains have already been reversed and are unlikely to recur for a long time to come.

- While there has been a longer term reduction in out-migration, it has been offset, for the first time in modern Scottish population history, by a serious deterioration in natural change, reflecting both a greater fall in the birth rate and a lesser fall in the death rate than in the rest of the UK.

- Net out-migration is continuing to occur because of poor relative employment performance. The finding that migration is strongly determined by unemployment is well established in earlier work. This paper shows that Scottish net out-migration flows continue to be strongly related to changes in the relative levels of unemployment in Scotland and the south east of England.
- Decline is not general across Scotland, but is confined to particular areas, mainly the inner Clyde Valley and especially Glasgow. The decline in these areas is due to both migration and natural change and is responsible for most of the overall Scottish decline.
- Migration flows from the declining to the growing parts of Scotland are small and have been falling steadily. There is therefore little labour market adjustment by long-distance migration within Scotland. When jobs are lost in the inner Clyde Valley, many people leave Scotland altogether.
- The mortality component of the adverse trends in natural change in the inner Clyde Valley,

and especially Glasgow, is certainly a consequence of employment loss and resulting high levels of unemployment and deprivation. It seems probable that the fertility component has been affected in a similar way.

- The current decline in the Scottish labour force is due to a combination of localised population decline and falls in economic activity, particularly in Glasgow, both of which are due to declining employment opportunity. It therefore indicates not a shortage of labour, but localised surplus.
- Scottish population decline will intensify the fiscal stress already being created by the Barnett formula. Less obviously, excess spending on social security, personal social services and health caused by the distress of Glasgow and the inner Clyde Valley is one of the principal reasons for the strength of the current political pressure to reduce Scotland's share of UK public expenditure.
- The analysis as a whole shows that Scotland's population decline, out-migration, excess mortality, low economic activity and fiscal stress are all strongly interlinked and derive mainly from the economic distress of the inner Clyde Valley and especially Glasgow. The decline in fertility is found in the same areas and appears likely to be affected by the same causes.

These findings conflict with key assumptions generally held by Scottish policymakers, particularly in identifying the pivotal role of localised employment loss and in showing that the parlous state of Glasgow is so damaging to Scottish prospects. They therefore have important implications for policy. It is argued here that the distress of Glasgow and the inner Clyde Valley is to a substantial extent actually the result of policies dating from the 1960s. Scottish policymakers adopted a particularly strong version of the "growth pole" strategy, which was fashionable at that time, attempting to create what was conceived to be a more competitive spatial structure for central Scotland by concentrating resources on the New Towns. This strategy has dominated policy through to the present day. However, it depends upon a number of key assumptions, which in Scotland as elsewhere, have proved invalid. The consequence has been to cause economic decline in the unfavoured areas without sufficient compensating growth in the target areas. This paper concludes therefore that Scottish spatial economic development strategy needs to be fundamentally

reshaped to promote employment growth in Glasgow and the inner Clyde Valley.

The statistical analysis in this paper takes the story back a quarter century to 1974. This was the year in which the Scottish population peaked, at 5.241m, after almost continuous growth since records began in 1801. It is also a convenient starting point in terms of availability of data. The paper begins with an overview of Scottish population change, identifying the respective roles played by migration and by natural change. It then goes on to consider migration and natural change separately in more depth, analysing the relationship with unemployment and the varying picture in the different parts of Scotland. The issue of the declining Scottish labour force and the connected influence upon it of localised population decline and falling economic activity are then discussed. The implications for public expenditure via the Barnett formula and the debate surrounding it are drawn out. Finally, the paper discusses how Scottish policy has come to tolerate, and promote, such extreme disparities in prosperity between areas.

A one-off upward correction in the mid-year population estimate for Glasgow City of around 12,000 was made in 1998 as a result of an increase in the electoral roll produced by a registration campaign. This has affected several of the officially published figures for individual areas within Scotland. The issue is discussed in Appendix 1. To avoid confusion, all the tables and figures show the official statistics exactly as published; the implications of the correction for the likely true figures are discussed in the text. Sources and detailed issues of methodology are discussed in Appendix 2.

Throughout the article, "Rest of Scotland" ("RoScot") means all the Scottish Health Board Areas other than the one being considered. "Rest of UK" ("RoUK") always means England, Wales and Northern Ireland.

SCOTTISH POPULATION CHANGE: THE OVERALL PICTURE

The divergence of experience of population change between Scotland and the rest of the UK since 1974 is plain. In absolute terms, while Scotland's population has fallen by 0.094m, the population of the rest of the UK has risen by 2.879m. Figure 1 shows these changes in index number terms, with Scotland falling to 98.1% of its 1974 population by 1998 and the rest of the UK growing to 106.1%. The rest of the UK has seen unbroken population

increases since 1982, but the pattern for Scotland has been more variable. The Scottish population fell steadily from 1976 to 1988, then rose at a slower rate than the rest of the UK to 1995 before resuming its fall. The 1998-based projections have the Scottish population falling further to 97.0% of the 1974 figure by 2021, with decline accelerating thereafter to 93.0% in 2036. The population of the rest of the UK by contrast is projected to grow continuously to 113.2% of its 1974 level in 2021 with only a levelling off in its growth thereafter, to 115.4% in 2036. In consequence, whereas Scotland had 9.3% of the UK population in 1974, it had only 8.6% in 1998 and is currently projected to have 7.5% in 2036, one fifth less than its share in 1974.

This is a rather worse picture than is acknowledged in recent official statements. The Secretary of State (1998) and Scottish Enterprise (1999a) have referred to the Scottish population as having been "static" "for the past 40 years" or "since 1950". But this overlooks the continuing increase up to 1974 and the substantial decline of about 100,000 since then, and also the fact that death of the large post-war "baby boom" cohorts is certain to exert strong downward pressure on the population after 2020.

Figure 2 shows how migration and natural change have both contributed to the divergence in population change between Scotland and the rest of the UK since 1974.

MIGRATION

For most of the period migration has been much the more important factor, and it is changes in migration which explain most of the year-to-year fluctuations in the Scottish pattern of population change. The switch to population growth in 1988-1995 was due to net migration turning positive - only the second time this has happened since records began, the previous occasion being 1932 and possibly 1933 (Hollingsworth 1970). The impact of this change has however been modest. Although there were six years of migration gains, from 1989/90 to 1994/95, in only three of these - 1989/90, 1992/93 and 1993/94 - did Scotland have a better migration experience than the rest of the UK. And since 1995 the historical trend of net out-migration has resumed, albeit at a lower rate than before.

NATURAL CHANGE

While the migration picture has improved, the experience of natural change has worsened. Figure

2 shows that Scotland and the rest of the UK have had similar year-on-year movements in natural change, but that there has been a steadily increasing divergence between them since 1976 so that Scotland's experience has become progressively less favourable. Natural change has now become almost as important as migration in explaining the overall divergence in population experience between Scotland and the rest of the UK. This is a new phenomenon. Net out-migration has been an almost constant feature of Scottish life for more than two centuries, since the 1780s. But until recently, it has almost always been much more than offset by buoyant natural increase (Flinn et al. 1977).

GEOGRAPHICAL DIFFERENCES WITHIN SCOTLAND

Geographical differences in population change between the different parts of Scotland are not an incidental detail. They are the heart of the matter. Broadly speaking, Scotland might as well be three different countries: it has a declining part, a booming part, and a stable part. Geographical analysis within Scotland in this paper is in terms of the 15 Health Board Areas (HBAs), because they are the smallest geographical units for which accurate data are available on a yearly basis. Table 1 shows the populations of the HBAs in 1974 and 1998, together with information on employment change, unemployment and deprivation which is required to interpret migration and natural change. The biggest HBAs are Greater Glasgow, Lothian, Lanarkshire and Grampian, in that order, each having over 10% of the Scottish population. At the other end of the scale, Dumfries & Galloway and Borders have less than 3% each and the three islands HBAs around a half per cent each.

Total net population change over the whole period 1974 to 1998 is dominated by the huge loss of over a quarter of a million people, 253,806, from the Clyde Valley - the combined area of the three HBAs of Greater Glasgow, Lanarkshire and Argyll & Clyde. Most of this, 218,187, was from Greater Glasgow, with Argyll & Clyde also showing a substantial loss of 33,281. Lanarkshire's loss was much smaller at 2,338. Tayside - an area which unhelpfully from the present point of view combines the declining city of Dundee with a booming exurban hinterland around Perth - lost a net 11,383. By contrast, Grampian gained 77,265 and Highland 30,023, with Lothian, Fife, Forth Valley and Borders gaining smaller numbers.

Official 1998-based population projections to 2016 have just been published for the HBAs. Figure 3

shows these and the 1974-98 changes on an annual basis so that they can be compared directly. The main changes are that Greater Glasgow's rate of loss is projected to be much reduced, while Grampian (reflecting the rundown of jobs in North Sea oil) moves from gain to loss, Highland ceases to gain significantly, and Lothian's gain increases greatly. But the picture overall is not very different. In particular, the Clyde Valley's losses continue to dominate at 60,000 over the 18 years, compared to a net Scottish loss of 42,000, with Greater Glasgow continuing to have the biggest loss, at 29,000.

Figure 4 compares each HBA's population change in 1981-96 with employment change (from the Census of Employment) over the same period. There is generally a fairly close relationship: areas gaining jobs gained people and areas losing jobs lost people. The correspondence between employment and population change is not perfect because there are other flows, which are not related to employment. In particular, Western Isles and Shetland both lost far more population than would be expected from their employment experience, presumably because of their remoteness. The correlation between employment change and population change is 0.78 if they are excluded but comes down to 0.56 if they are included. There has been strong net migration of retired people into Borders, Dumfries & Galloway, Fife and Tayside, and some decentralisation by commuters (Findlay et al. 1999); these flows also complicate the picture..

Job gain or loss is reflected in unemployment and deprivation. Table 1 shows that in 1971 unemployment was generally relatively low. The exception was Western Isles, where it was 12.3%; the Clyde Valley HBAs were also higher than the rest, in the 6%-8% range, with Greater Glasgow second highest at 7.6%. By 1981 unemployment had risen greatly everywhere except Western Isles and Shetland, particularly in the industrial areas, with Greater Glasgow, Lanarkshire and Ayrshire & Arran all rising by some 10 percentage points. It is more difficult to track subsequent change. Since 1981, Census, claimant and Labour Force Survey unemployment figures have all become progressively more misleading because of the movement into other statuses of large numbers of people who want to work. This issue has been discussed by a number of authors including Gregg & Wadsworth, Green and the TUC Economics Department. The Sheffield Hallam University estimates of "real" unemployment are therefore shown in Table 1. Based on empirical study of labour market adjustment in areas of job loss, they

include estimates of those people on Incapacity Benefit or in other statuses (early retired, on government training schemes etc.) who would be employed in conditions of reasonably full employment (Beatty et al. 1997). On this measure, it is striking how much worse are the Clyde Valley and especially Greater Glasgow than the rest of Scotland. Greater Glasgow scores 28.9%, almost 11 percentage points worse than the Scottish average. This is due mainly to Glasgow City (30.6%). Some people may baulk at the sheer magnitude of these figures. But it should not be surprising, given the scale of the job losses which have been seen. Glasgow lost one third of its manual jobs in 1981-91 alone, a larger number than the whole of the rest of Scotland put together.

The 1991-based Carstairs deprivation scores in Table 1 mainly reflect the various consequences of unemployment. They show how hugely deprived is Greater Glasgow by comparison to the rest of Scotland, with over half its population (almost all in the city of Glasgow and Clydebank) in the most deprived categories 6 and 7. The other Clyde Valley HBAs have around one quarter of their populations in these categories, and Tayside one fifth, almost all in Dundee, while Western Isles also shows up strongly with 17% and Ayrshire & Arran has 11%, due particularly to the former coalfield area of Cumnock & Doon Valley. Reflecting general prosperity, the other HBAs have no or very small proportions of their populations in these categories. Within the Clyde Valley, high levels of unemployment and deprivation are in practice mainly confined to the inner Clyde Valley, from Motherwell, Coatbridge and Airdrie through Glasgow, Clydebank, Renfrew and Paisley to Dumbarton and Inverclyde. The new towns of East Kilbride and Cumbernauld, as well as the prosperous Glasgow suburbs of Eastwood, Bearsden, Milngavie and Bishopbriggs, have relatively low levels of unemployment and deprivation.

Figures 5A, 5B and 5C show the components of population change for each HBA. As shown earlier in Figures 1 and 2, the overall rate and composition of population change in Scotland has varied, between three main time periods: 1974/75-1988/89, 1989/90-1994/95, and 1995/96-1997/98. The three charts therefore show the components of change separately for each of these periods (to avoid problems resulting from the Glasgow population correction, for the international/error column only, the final period is 1995/96-1996/97). Changes are expressed in terms of annual averages so that the three charts are directly comparable. Overall, apart from a rather unstable position in relation to

international migration, the geographical differences have remained similar over the whole 1974-98 period, although losses from the losing areas and gains to the gaining areas are both generally smaller in 1995-98 than in 1974-89.

The patterns of migration and natural change and their relationship to economic factors are now examined more closely.

MIGRATION

Scotland's unfavourable migration experience is a consequence of relatively poor economic performance. The levels of the net flows to the rest of the UK, and, perhaps more surprisingly, to the rest of the world, are predominantly determined from year to year by the capacity of the south of England to absorb migrants, as in turn determined by economic conditions there. It was the inability of the south to absorb migrants during the recession of the early 1990s which created the more favourable Scottish migration experience of 1989 to 1995. Long-distance movements within Scotland play little economic role: the two halves of the country interact almost exclusively with the rest of the UK and with the rest of the world rather than with each other. They have almost completely independent migration systems.

DESTINATIONS FOR SCOTTISH NET OUT-MIGRATION

The net migration flow from Scotland is separated into its component destinations in Figure 6. Net movement to and from the armed forces is only a small element, although, reflecting force manpower reductions, it accounted for a gain to Scotland of 28,170 over the whole period 1974-98 and contributed significantly to the favourable migration experience in the early 1990s. Exchanges with the rest of the UK and with overseas countries are much more important, accounting for losses to Scotland of 83,800 and 101,887 respectively in 1974-98.

Scotland's net migration loss to the rest of the UK is overwhelmingly to the south of England. Over the 18 years 1980-97 net movement to the rest of the UK from Scotland was 37,000, but net movement to the three southernmost English regions (south east, East Anglia and south west) was almost double this, at 63,700. Of this movement to the south, almost half (about 28,000) was to London and one third (about 21,000) to the rest of the south east. Net movement to the Midlands and Wales was negligible, while Scotland actually gained 18,000 from the three northernmost

English regions and 12,000 from Northern Ireland.

MIGRATION EXCHANGE WITH THE REST OF THE UK

Migration exchange with the rest of the UK is clearly related to changing job prospects. There is a longstanding body of statistical work showing this (e.g. Oliver 1964; Adams 1980). More recently, Forsythe (1995) has identified the north-south movement of unemployed men directly, and studies in London of homeless people from Scotland have shown that job search is the main reason for their move south. Jackman & Savouri (1992) have shown that long-distance migration increases when hiring by employers is taking place. It rises when jobs are being created and falls during recessions. The timing (as opposed to existence) of long-distance migration is therefore not determined by unemployment differentials but by *changes* in unemployment differentials. In line with this, Figure 7 shows that there is a clear correlation ($r = 0.62$) over the period 1974-98 between the annual change in the difference between the unemployment rates in Scotland and SE England, and the level of the net migration flow. In most years, unemployment has fallen in SE England relative to Scotland, and migration has been from Scotland to the rest of the UK (which as we have seen means mainly to the SE). The net flow to the rest of the UK was large until the mid-1980s, accelerating as the Lawson boom took off in 1987/88. There has also been a net flow to the rest of the UK since 1994/95 as the economy in the south has recovered, falling off modestly in 1997/98 as the Scottish economy briefly caught up. At the time of writing, this relative economic improvement has already reversed again, and Figure 7 shows that the already known relative change in unemployment rates in 1998/99 implies that that year's net migration flow (yet to be announced by the official statisticians) is likely to be barely positive.

The striking exception to the general pattern of flow from Scotland to the rest of the UK was the recession years 1989/90 to 1992/93 when, unusually, Scottish unemployment was falling relative to the SE. Green et al. (1994) have shown that the 1989-93 recession had a completely different geography from that of 1979-83. The earlier recession, which was of the "structural" type, started in the north, reflecting the impact of sterling overvaluation on manufacturing, and much of the south remained relatively untouched. The later recession, of the "debt deflation" type, started in the south, being due to unwinding of the over-inflation of the service sector which had occurred during the later 1980s. It only later spread to the

north, again assisted by sterling overvaluation. There is a close parallel with 1932-33, when there was the same combination of a debt deflation recession originating outside Scotland and a favourable net migration flow. At the time of writing we are again seeing the economy run in such a way as to favour the service economy of the south. However the monetary regime is now much tighter and seems likely to prevent the excessive asset price inflation and growth of indebtedness which would be required for a recurrence of the 1932-33 and 1989-93 experience. It therefore appears likely that the relative buoyancy of the southern economy will continue to draw people out of Scotland.

INTERNATIONAL MIGRATION

The international net outflow of migrants from Scotland has usually been broadly similar in magnitude to the net outflow to the rest of the UK. It has been erratic, but the long-term trend is a steady reduction, although there have still only been three years when Scotland has actually gained population from the rest of the world - 1989/90, 1993/94 and 1994/95. Net movement to the rest of the world has a marked tendency to move inversely to migration to the rest of the UK, in particular rising strongly during the 1979-83 and 1989-93 recessions, when net movement to the rest of the UK fell. Inspection of the estimated international inflows and outflows (Figure 8) reveals that this inverse movement is due to changes in the outflow, not the inflow. Similarly, the longer-term improvement in the balance is due to a slow rise in the inflow, not a fall in the outflow. This is strong evidence that there is an underlying economic pressure to leave Scotland, and that movement to the rest of the world is regarded by migrants as a "second-best" compared to movement to the rest of the UK, presumably in view of higher financial and personal costs. In other words, people leave for better opportunities; they get them in England if they can, otherwise they go further afield.

PROJECTIONS OF SCOTTISH NET OUT-MIGRATION

The new official 1998-based projections assume that from 2001 the net Scottish migration loss to the rest of the UK and the rest of the world together will be 1,000 per year, compared to 3,000 per year in the previous (1996-based) projection. These official projections take into account trends over the whole of the past decade and, unlike the present paper, do not consider an explicit model of the way migration is determined. The analysis made here implies that there may be a continuation of the

trend in 1995-98, when the net migration loss (including Armed Forces) was about 4,600 per year. The argument of this paper does not depend on querying the official projections; however, it is worth being aware of the possibility that they may be overoptimistic.

DIFFERING MIGRATION EXPERIENCE WITHIN SCOTLAND: DOMESTIC AND UK FLOWS

The experience of migration, like population change as a whole, has been hugely different between different parts of Scotland. Over the whole period 1974-98, the net migration loss to Scotland (excluding Armed Forces) was 186,390. But over four-fifths of this (152,745) was from the Clyde Valley, almost half of it (66,933) from Greater Glasgow, with Lothian also losing 26,255, while Grampian and Highland together gained 21,361. Changes elsewhere were relatively small. In the recent two years 1995-97 (a better guide than 1995-98 because avoiding the effects of the Glasgow correction), Scotland's total migration loss was 16,278. The Clyde Valley lost 4,457, with Grampian losing 8,428 and Tayside 2,488. Lothian was the only significant gainer at 3,573 and the whole of the rest of Scotland lost only 4,478. While Lothian has performed better and Grampian worse in the most recent period compared to 1974-88, the Clyde Valley has lost consistently.

These geographical differences in migration reflect labour market differences. Figures 9 to 11 show the relationship between changes in unemployment differentials and net migration to the UK outwith Scotland in 1974-98 separately for Greater Glasgow, Grampian and Lothian - the three HBAs with the largest net migration. In each case, the claimant unemployment rate of the appropriate Travel-to-Work Area (TTWA) is used as a proxy for the true unemployment rate of the HBA, and compared with unemployment in the SE. Not surprisingly, Greater Glasgow with its high unemployment shows the strongest dependence of migration on relative unemployment changes (correlation 0.67 for the migration rate, which adjusts for population change over the period, greater than the average of 0.62 for the rest of Scotland). Grampian shows a fairly high correlation (0.59) and Lothian the lowest (0.46). Grampian's low level of unemployment is reflected in the fact that it has far more observations lying in the top right quadrant of the chart than Lothian or (especially) Greater Glasgow.

Changes in unemployment therefore have a strong influence on migration flows between the different

parts of Scotland and the rest of the UK. However the same turns out not to be true of the flows that these different parts of Scotland exchange with each other, indicating that there is very little long-distance labour market adjustment within Scotland. The correlations of migration with relative unemployment change are weak for Greater Glasgow with Grampian (0.33) and Greater Glasgow with Lothian (0.43). Figure 12 shows that apart from the exceptional years 1990/91 to 1993/94, the flows between the Clyde Valley and the growing Grampian and Lothian HBAs have been very small by comparison with those between the Clyde Valley and the rest of the UK. In other words, the east and west of Scotland have disconnected migration systems; they relate separately to the south of England but not to each other. Migration losses from the Clyde Valley are losses to Scotland, not gains to the East. This is particularly important because of the size of the Clyde Valley. In spite of many years of population decline, the Clyde Valley's share of Scotland's population (Table 1) has fallen only from 41.2% in 1974 to 37.1% in 1998. In theory, Grampian and Lothian together might be big enough to absorb the Clyde Valley's losses; together they accounted for 29.4% of Scotland's population in 1998, up from 26.5% in 1974. But in practice they do not (and the latest projections in any case suggest that Grampian will in future have little capacity to absorb net immigration). This leads to the important conclusion that Scotland's loss of population through migration can be effectively stemmed only by improving employment performance in the inner Clyde Valley.

This picture is different from that assumed by Scottish policy makers. Since the Toothill Report (SCDI 1961) and the Scottish Office white papers of 1963 (Cmnd 2188) and 1966 (Cmnd 2864) which followed it, it has been assumed that people would migrate from the declining to the growing parts of Scotland, so that a strategy of promoting employment growth in what are considered to be the most competitive places will maximise the Scottish population. As Parr (1999) notes, the assumption that people would migrate more readily to a growth centre in their own region than they would to places outside the region was made quite generally in the "growth pole" strategies which were fashionable at the time. This idea continues to appeal. In a recent paper on north east Scotland reported in *The Herald* (21 October 1997), Tony Mackay of Mackay Consultants argued that the "efficient" level of (claimant) unemployment for Aberdeen would be about 4%, higher than the then recorded 2.4%, and that people should therefore move from elsewhere in the country to live and

work there. But people evidently do not behave that way.

Figures 5A to C show large within-Scotland net migration flows. However this does not contradict the picture of small long-distance flows just outlined. The within-Scotland flows are often dominated by short-distance moves. For instance, in the case of Greater Glasgow, three-quarters of the net movement to "Rest of Scotland" since 1981 have been to the adjacent HBAs of Lanarkshire, Argyll & Clyde and Ayrshire & Arran. These local flows reflect residential choices and adjustment to decentralisation of employment. They can therefore have important labour market effects, but not such as to affect the overall Scottish adjustment to employment change. In the Clyde Valley, the usual situation has been that Argyll & Clyde and Lanarkshire gain population from Greater Glasgow, but lose population to England and overseas; the Clyde Valley in effect has an internal suburbanisation process overlaid on an underlying process of net migration outwith Scotland taking place from all three of its HBAs.

DIFFERING MIGRATION EXPERIENCE WITHIN SCOTLAND: INTERNATIONAL FLOWS

Net international migration for HBAs within Scotland is not estimated as such by the official statisticians and must therefore be calculated as a residual, by deducting all the separately measured components each year from the estimated change in mid-year population. This procedure will generally give a reasonably reliable picture. For 1997/98, however, the resulting figures are badly distorted by the Glasgow population correction and they are therefore ignored here.

All HBAs except Greater Glasgow and the islands have shown losses through international migration over the period 1974-97 taken as a whole. In spite of an overall improvement, in most parts of Scotland the position actually worsened in 1995-97 compared to 1974-88, with a very large loss in Grampian (reflecting the rundown of North Sea oil), and substantially increased losses in Tayside and Fife. But these have been offset by Lothian and Greater Glasgow, which have moved from loss to gain. Greater Glasgow's better experience may seem surprising. However, Champion (1999) shows that all the British conurbations except Merseyside had net gains in the "international/error" component in 1991-97. For the UK as a whole, he shows that the largest single component of the net inflow (84%) was students, with a much smaller number of people (22%)

whose reason for coming was to accompany or join others. The flows to Greater Glasgow and Lothian seem likely to be similar. An expansion in the student body will show up as net in-migration even if all the students individually go home at the end of their course. Some of those "joining others" may belong to the significant Asian minorities in Glasgow and Edinburgh. Asylum seekers also figure. These special flows to the two major cities are a relatively minor exception to the general picture of an unemployment-driven migration system.

IMPLICATIONS OF SCOTTISH NET MIGRATION LOSS

This analysis shows that, as in the past, Scotland is continuing to see net out-migration because of poor economic growth. Scottish policymakers appear however to have lost sight of this relationship and even to be arguing that the causation runs the other way. The Secretary of State (1998, para.12-13) recently argued that the "static" Scottish population "explains in part why long term economic growth in Scotland at 1.75% per annum has been about 0.5% per annum below the UK rate". This argument may seem attractive, but given the relationships examined here, it is not plausible. No one is attempting to argue that Ireland's current favourable experience - in which there has been both fast growth and net in-migration - is the result of a spontaneous reversal of migration flows producing faster economic growth. It is too obvious that the causation is the other way round.

NATURAL CHANGE

Scotland's continually worsening experience in natural change relative to the rest of the UK is due both to greater fall in the Scottish birth rate and lesser fall in the Scottish death rate. Like the adverse migration trends, these adverse changes are mainly a feature of the Clyde Valley.

Figure 13 shows the overall trends in fertility and mortality for Scotland and the UK. Scottish women's "total fertility rate" (TFR), or estimated total number of children on current fertility patterns, was higher than the UK's up to 1981, but has fallen more and is now lower. It fell from 2.53 in 1971 to 1.84 in 1981 and 1.58 in 1997; over the same period, the UK TFR fell only from 2.41 to 1.81 to 1.73. Scotland's age-standardised mortality rate per million population has fallen less than in the rest of the UK, from an already higher level, so that the differential has increased further. It fell only by 2,821 between 1971 and 1997, from 11,444 to 8,623, while the UK average fell by 3,078, from

an already lower 10,448 to 7,370. In 1997, Scotland's standardised mortality ratios for men and women were respectively 17% and 15% higher than the UK average and higher than in any UK region by a wide margin. Out of every 1,000 men and women born in Scotland, only 640 and 771 respectively could expect to live to age 70, compared to 701 and 810 in the UK as a whole.

In respect of both fertility and mortality, the trends have been more adverse in the declining than in the prospering parts of Scotland. Because the population age and sex structure differs both between areas and over time, the natural change shown in Figures 5A to C gives a misleading impression. Valid comparisons must be made in terms of *standardised* birth and death rates, in other words the number of births or deaths per thousand population which each HBA would have had if it had had the same age and sex structure as Scotland as a whole. There have been considerable fluctuations from year to year, but a good indicator of long-term trends can be obtained by comparing the mean rates for 1995-98 with the mean rates for 1974-79 (Table 2).

The overall fall in the birth rate across Scotland between these periods was 1.2 per thousand. There were large falls in the islands, of 7.3, 3.7 and 1.6 per thousand in Western Isles, Shetland and Orkney respectively. But the islands have very small populations, a combined 1.8% of the Scottish total. Much more important to the overall outcome are the above average falls in the Clyde Valley HBAs of Greater Glasgow (2.2), Lanarkshire (1.9) and Argyll & Clyde (1.3). Ayrshire & Arran also had an above average fall, of 1.4. All the other HBAs had average or below-average falls, with Tayside and Lothian having trivial falls of 0.1 and 0.3 respectively, and Borders and Dumfries & Galloway showing no change at all.

The geographical picture for standardised death rates is only a little less clear-cut. The mean death rate for Scotland fell by 0.8 per thousand between 1974-79 and 1995-98. Once again, the islands show up particularly badly, with actual increases of 0.3 in both Western Isles and Shetland, and a below average fall of 0.5 in Orkney. Greater Glasgow had a fall of only 0.2 and Lanarkshire 0.6. Tayside and Lothian (both 0.4) and Grampian (0.7) also had below average falls. All the other HBAs had above-average falls, the largest being in Dumfries & Galloway (2.0) and Highland (1.8).

In terms of standardised mortality ratios (SMRs) - the ratio of the area's standardised death rate to the Scottish average - Greater Glasgow has had much

the worst experience. In the 1970s all four west of Scotland HBAs had higher SMRs than the rest, at around 107. Over the next 24 years Ayrshire & Arran did well, falling to the average of 100, while Lanarkshire and Argyll & Clyde remained about the same. But Greater Glasgow has seen a big rise, particularly since 1989, to 112, putting it well above all the other HBAs. There were also significant rises in the SMRs for Western Isles and Shetland, and for Lothian and Tayside, but these have brought them respectively only to an average 100 and a still below average 97.

Standardised birth rates and standardised death rates can be brought together to show standardised natural change - the overall rate of expansion or contraction of the population. Here the results are stark indeed. Between 1974-79 and 1995-98, mean Scottish natural change fell by 0.5 per thousand and turned from positive - growth by 4 people per 10,000 per year - to negative - contraction by 1 person per 10,000 per year. But most areas had an improvement in natural change, or only a slight worsening. Seriously adverse changes were confined to the Clyde Valley and the islands. Western Isles and Shetland had the largest falls, of 7.5 and 4.0 respectively, but still had positive natural change and as already noted have very small populations. The falls in the Clyde Valley are far more important to the Scottish outcome, especially Greater Glasgow's fall of 2.0. Figure 14 compares the Clyde Valley and the islands with the average for the rest, showing how striking is the deterioration in the Clyde Valley, and especially in Greater Glasgow whose population by 1998 was contracting (on this standardised basis) at a rate of 27 people per 10,000 per year.

Such contraction indicates very severe economic and social distress. Shaw et al. (1999) have shown that unemployment has a powerful effect on mortality and ill health, and that Glasgow has 7 out of the worst 10 constituencies in Britain for premature death. McLaren & Bain (1998) have shown for Scotland that deaths from suicide, coronary heart disease, stroke and some cancers are all strongly related to deprivation, which as seen in Table 1 is worst in Glasgow and the Clyde Valley. The Greater Glasgow Director of Public Health commented in 1998: "A necessary and continuing theme of successive Directors of Public Health Annual Reports has been the association between socio-economic deprivation and ill-health. For almost every significant condition this relationship holds." The fall in birth rates seems likely also to have been influenced by unemployment and poverty, although this relationship needs further research. Such a connection could operate via such

factors as marital and relationship breakdown and homelessness (which are known to be strongly related to unemployment), ill health and substance abuse.

THE DECLINING SCOTTISH LABOUR FORCE

With a declining population, it is to be expected that Scotland will have a declining labour force. However the labour force decline is larger than would be expected on the basis of population change alone. This excess decline is again due primarily to the problems of the inner Clyde Valley and especially Glasgow.

Table 3 splits the estimated and projected change in the Scottish and Great Britain labour force over three time periods since 1971 into its population and activity rate components or "effects". The Scottish labour force has been growing more slowly throughout, with cumulative growth 1971-2006 of 8.9%, half the Great Britain increase of 17.4%. The difference is mainly accounted for by differential population change, with Scotland's greater rise in (female) economic activity in 1984-94 closing some of the gap.

The gap between Scottish and Great Britain labour force change has however been growing and the 1994-based projections to 2006 (the latest available) indicate that Scotland alone of all UK "regions" will see an actual fall in its labour force by 2006. This is due to a projected static population and a declining male activity rate. When these projections were published, they caused some consternation (*The Herald*, 12 August 1995). Scottish Enterprise's spokesman said forecasters "are obsessed with pessimism about the Scottish economy". But to date, the projection has turned out to be too optimistic about Scotland. It showed an increase of 0.6% in the Scottish labour force, from 2.519m in 1994 to 2.534m in 1999. The outcome according to the Labour Force Survey has been an increase in economically active persons of 0.04%, from 2.496m in summer 1994 to 2.497m in summer 1999. Over the same period the total of economically active persons in Great Britain increased by 2.8%, exactly as projected.

The less favourable Scottish labour force outcome has been due not to the population effect but to an unexpected further fall in economic activity from its already relatively low levels - Scotland's working age economic activity rate has been consistently below that of Great Britain, currently by some 1.6 percentage points, and is over 5 percentage points below the South East. This is shown in Figure 15.

Quarterly Economic Commentary

The recent overall fall is mainly due to a large decline in economic activity in Glasgow. In 1995, Glasgow's working age activity rate as shown in the LFS was already some 8 percentage points lower at about 68% than that for any other separately distinguishable area in Scotland. It was almost 15 percentage points lower than Aberdeen. Since then, Glasgow's activity rate has fallen by about 5 percentage points, to about 63%. No other area has had a fall of more than about 3 points, Dundee being the next worst affected, but only to about 73%, 10 points better than Glasgow.

The progressive decline in Glasgow's working age economic activity over the last two decades is shown in Figure 16. In 1971 Glasgow actually had a higher activity rate than the rest of Scotland, and almost as high as Great Britain; it was still ahead in 1981. But since then there has been a huge decline of about 14 points, while Scotland and Great Britain have seen a further rise of 2-3 points. Between 1981 and 1991 the city moved from 208th to 10th in the ranking of British local authority districts for working age economic inactivity (Green 1994). Glasgow's decline is so massive that by itself, on the basis of 1998 population, it amounts to a reduction of over 2% in the Scottish labour force; if Glasgow had the average Scottish activity rate, the Scottish rate would almost equal that of Great Britain instead of being almost 2 points lower. The rigorous labour market accounts by Bailey et al. (1999) indicate that this fall in activity is due to a straightforward collapse in local demand for labour rather than to labour supply factors. By way of analogy, the pronounced spike in the GB (but not Scotland) activity rate in 1987-93 shown in Figure 15 was clearly due to the surge in labour demand in southern Britain created by the Lawson boom.

The decline in the Scottish labour force is therefore a consequence of localised job loss, acting via out-migration, excess mortality, and unemployment disguised in the form of economic inactivity. But it has been misinterpreted by Scottish policy makers as a labour shortage. The Secretary of State's Strategy Guidance to Scottish Enterprise (1998) has already been quoted. Continuing his line of argument that labour supply, not labour demand, is the leading factor, he argued that the "static" population requires that "productivity must therefore increase if our (growth) performance is to improve further." Referring to these comments by the Secretary of State, the Scottish Office's Knowledge Economy Task Force (1999, para.1.3) took up the theme: "given Scotland's static population and relatively high labour force participation rate (emphasis added), a large part of

the burden of delivering (faster economic growth) must fall on technology, innovation and productivity improvements." But, as we have seen, Scotland does not have a high labour force participation rate except in some prospering areas such as Aberdeen; and it is losing population because of poor job opportunities, not the other way about.

One of the reasons why Scottish policymakers have misinterpreted the evidence appears to be that they are unaware of the limitations of the official measures of unemployment. The Scottish Executive's new *Scottish Economic Report* (January 2000) gives a misleading picture of area variations in unemployment by quoting, without qualification, ONS local authority claimant "rates" which are invalid. These purport to show the rate of unemployment among the "workforce" of each area by expressing the number of unemployed people resident in the area as a percentage of the sum of those working in the area plus the unemployed resident in the area. But members of the purported "workforce" who are not resident in the area cease to be counted if they become unemployed. Thus this "rate" is no more valid than would be a Scottish death rate calculated by reclassifying Scottish people who die as foreign upon decease. As a result of this curious procedure, Glasgow's unemployment rate is stated to be 5.9%, only 0.9% above the Scottish average and lower than that of nine other authorities. But the Labour Force Survey shows its ILO unemployment to be the highest in Britain at 13.8% (Summer 1999). Given the central importance of Glasgow's unemployment to the whole evolution of the Scottish population and economy, such misrepresentation is bound to undermine policymakers' ability to understand what is happening.

A similar problem affects the official agencies' perception of overall Scottish unemployment. The Secretary of State (1998) has said that "unemployment is at its lowest for two decades" and Scottish Enterprise (1999a), referring to the claimant rate, stated that Scotland's unemployment is the lowest since the late 1970s and that the rate "is slightly above the UK average, but compares favourably with rates in continental Europe". But the claimant count cannot be used to make valid comparisons with the situation before 1979. ONS recently published estimates enabling comparison of the LFS (ILO) rate today with that prior to 1984 (Innes & Moralee 1999). This shows that UK unemployment in 1979 on today's definition was 5.2%-5.3%; this compares with 6.1% at summer 1999, with Scotland higher at 7.4%. However,

even this comparison does not make any allowance for the huge movement of unemployed people on to sickness benefits, which has occurred since 1979, and was discussed earlier in relation to Table 1. Beatty et al. (1997) estimates that Scotland's real unemployment is considerably worse than Great Britain as a whole - 18.1% compared to 14.2% in 1997. The TUC has produced a measure, the Want Work Rate (WWR), which can be used to make valid comparisons across time and between countries. It shows the unemployed plus the inactive wanting work as a percentage of all those working or wanting work (TUC 1998). The UK WWR was 14.0% at Autumn 1997 and 13.0% at Autumn 1999 compared to approximately 5.0% for 1979. In 1997, the WWR for France was 13.7% and Germany 12.9%. Confirming this picture, the proportion of the UK's inactive persons who wanted work was the highest in the entire EU at 12.9%, compared to only 4.7% in Germany and a mere 1.6% in France. This picture is much more easily reconciled with Scotland's continuing migration losses than is the official view.

IMPLICATIONS FOR SCOTTISH PUBLIC EXPENDITURE

The size of the population of Scotland relative to that of England is one of the determinants of Scottish public expenditure via the "Barnett formula". Kay (1998) described lucidly how this works. The principle is that each year's increase per head in public spending should be the same in Scotland as in England. Over time this will reduce the currently higher spending per head in Scotland to the same level as in England. There is thus a continuing "Barnett squeeze" on Scottish relative to English public spending.

The major determinant of the size of the Barnett squeeze is the rate of increase of English spending in cash terms, which in practice is mainly determined by the rate of inflation. But the shrinkage of the Scottish population relative to that of England is also significant. Using Kay's numbers (1998, Table 1), and assuming a 5% per year increase in English cash spending including a 2.5% rate of inflation, the effect of the officially projected relative decline in the Scottish population would be to reduce Scottish spending in 2026/27 by about £1,090m at 2001/02 prices, compared to what it would have been if the population relativity had remained unchanged. The relative population reduction would account for approaching one fifth of a total "squeeze" of £5,870m (2001/02 prices) per year by 2026/27 (Figure 17). This scenario is relatively palatable, in that Scotland would still see a real increase in spending of £6,566m compared to

2001/02, albeit less than the £12,436m needed to keep up with the growth in England. A less attractive prospect is given by assuming 2.5% per year inflation, but no real growth in public spending. In this case Scottish spending in 2026/27 would be £368m lower (2001/02 prices) than it would have been if the population relativity had remained the same. The population reduction would account for about one sixth of a smaller £2,200m (2001/02 prices) "squeeze" - but in this case the whole of the squeeze would represent a real cut in spending compared to 2001/02 levels.

Even if the Barnett formula were to be modified, the principle that expenditure should be population-related is unlikely to be abandoned, so that this element of the "squeeze" is likely to continue. Scotland as a whole is therefore suffering to a significant degree the fiscal stress which usually accompanies, and intensifies, the economic decline of an area; as we have seen, this is mainly due to the decline of the inner Clyde Valley. An important corollary is that additional expenditure in the inner Clyde Valley would cost Scotland nothing to the extent that it reduced its population decline, since the additional population would attract additional resources from the overall UK budget.

The decline of the inner Clyde Valley has a further indirect impact on Scottish public expenditure. Scotland's position in the debate over Barnett is weakened by the existence of a "fiscal deficit" - an excess of public spending over revenue (Scottish Executive 1999). Most authors argue that this is because Scotland has higher needs, and indeed it is relatively easy to argue that some areas of expenditure need to be higher, such as agriculture, fisheries and forestry, education and water, or that lower population density has a pervasive effect in raising costs. But the same is not true of health and personal social services, and social security (Figure 18), which account respectively for £962m and £670m or almost half (44%) of the £3,729m by which identifiable Scottish spending in 1997/98 was greater than it would have been on the basis of UK per capita levels (Scottish Executive 1999, Tables 3 and 4).

This excess spending is strongly related to the distress of the inner Clyde Valley. The Scottish Executive (*ibid.*) comments that "in health expenditure, Scotland's needs are greater for a number of reasons, including high death rates from circulatory diseases and cancer". These high death rates are to be found mainly in the inner Clyde Valley. In addition, social work services costs are substantially driven by such activities as child protection and criminal justice; these are well

established to be strongly related to unemployment. For instance, the city of Glasgow currently has almost twice the Scottish proportion of children in local authority care. The justification for extra spending on social security seems especially weak. Overall, Scotland is not poor compared to Great Britain: its GDP per head is 98.6% of Great Britain's (Bailey et al. 1999). But the excess spending on social security is huge, and it goes not to pensioners or children, but to people who ought to be in work. Scotland had 8.9% of the GB population in 1998, but accounted for only 8.7% of those receiving retirement benefits and 8.5% of children for whom child benefit was being paid. But it had a remarkable 12.2% of sickness and disability benefit claimants, 11.2% of unemployment benefit claimants, 11.6% of Housing Benefit claimants, 11.1% of Council Tax benefit claimants and 10.2% of those on Income Support. Once again, these excess levels are mainly a feature of the inner Clyde Valley (Figure 19). The new DSS Cross Benefit Analysis shows that the Clyde Valley by itself accounts for 85% of Scotland's excess working age benefit claimants; Glasgow City (post-1996 boundary) alone accounts for half (49.8%). Monklands, Glasgow and Clydebank all had more than one fifth of their working age male population on Incapacity Benefit in 1996 (Bailey et al. 1999).

SCOTTISH POLICY TOWARDS GLASGOW AND THE INNER CLYDE VALLEY

Given the severity of the problems of Glasgow and the inner Clyde Valley, one would expect to find Scottish policy vigorously promoting employment growth in these areas. But this is not the case.

The fundamental assumptions which drive Scottish policy today are those introduced by the Toothill Report of 1961 and the subsequent White Paper *Central Scotland: A Programme for Development and Growth* (Cmnd 2188, 1963) in which the Scottish Office adopted its ideas. Like the present paper, Toothill was focused on Scotland's loss of population and on the relatively poor employment growth and high unemployment which it acknowledged were driving it. Its thinking about the solution was very much of its time: it saw salvation in the concept of "growth areas". In the main, the chosen growth centres were New Towns, although Cmnd 2188 also listed North Lanarkshire, the area around Falkirk and Grangemouth, and the Vale of Leven.

Parr (1999) comments, "a newcomer to the field at that time could have been excused for thinking that no matter what the nature of the regional problem,

it would be most effectively overcome by the adoption of a growth-pole strategy". As in other growth-pole strategies of the period, the idea was that by concentrating infrastructure investment on new centres where mutually reinforcing development would occur, Scotland could be given a more competitive spatial structure. This was linked in the Toothill case to a belief that both the Scottish cities themselves, and the industries located in them, were outmoded and needed to be replaced by something more modern. Before Toothill, Glasgow overspill had a positive purpose towards the city. It was designed to relieve excessive densities (although the validity of this was always disputed by the Corporation). After Toothill, overspill was directed to the reduction of employment and population in Glasgow as an end in itself. Whereas in relation to major centres such as Clydeside, the 1944 Employment White Paper had introduced a strong commitment to addressing unemployment through investment in the same or an immediately adjacent place, the Toothill strategy adopted the idea that investment should be targeted to the areas where it was hypothesised to be most productive, without regard to the location of the unemployed. People would then be required to move there.

The Toothill policies were adopted with unparalleled enthusiasm by the Scottish Office. Cmnd 2188 talked of a Scottish population of almost 6 million by 1981. But Parr comments about growth-pole strategy in general that "in the light of subsequent experience.....(it) can only be judged to have been unsuccessful". The Toothill strategy has been no exception. People have not migrated to the new growth poles in the way intended. The growth poles themselves have not produced faster growth; their manufacturing employment performance has been no better than the Scottish average (Henderson 1982) and inwardly locating overseas-owned plants have not become "embedded" in the local economy to any great extent, at least in electronics which has been the most studied (Jackson & Patel 1996). Faster Scottish population growth has not been achieved, and, worse, the consequences for Glasgow in particular have been dire, with the severe worsening of unemployment, economic activity and relative mortality seen in this paper.

The Toothill Committee did its work almost four decades ago and cannot be blamed for reflecting the ideas of its time. What is remarkable is the way that policymakers have clung to the Toothill strategy for so long in the face of the mounting evidence of its failure and of the huge costs it has been imposing. Infrastructure investment has

continued to be channelled away from inner Clydeside, and especially Glasgow, to this day. In spite of having no less than 9.1% of its land area vacant or derelict land, much of it superbly located on new motorways, Glasgow has never had a designated Enterprise Zone - uniquely among British industrial cities. Inward investment has been directed away from Glasgow, to the extent that the city, with 12% of the Scottish population, has only 5% of manufacturing employment in overseas owned plants (Bailey et al. 1999). Since Regional Selective Assistance (RSA) and European funding are both primarily triggered by property projects, and these do not occur except on sites which have been prepared, the benefit of RSA and EU assistance has disproportionately gone to support the "growth areas" rather than to relieve unemployment in areas such as Glasgow. In 1998/99, for instance, Glasgow with 17.5% of Scotland's ILO unemployment received only 9.7% of RSA (Hansard, 27 January 2000). Scottish Enterprise Network funding allocations to LEC areas give no priority to areas of higher unemployment; Glasgow Development Agency expenditure per claimant unemployed in 1998/99 was only 75% of that in Lothian, and lower than that of any other central Scotland LEC (Bailey et al. 1999). The new Scottish Enterprise *Strategic Framework for Economic Inclusion* (1999b) proposes as a target for "jobs into regeneration areas" a mere 500 in 2000/01. While there has been much discussion of policies on "social inclusion", they do not involve any serious commitment of resources to promote employment (Webster 2000). Finally, the M74 completion is regarded by all the public and business bodies in the west of Scotland as the highest priority infrastructure project in the entire region (Glasgow and the Clyde Valley Structure Plan Joint Committee 1999); it would unlock employment development across southern and eastern Glasgow, and is vital to the whole of Argyll & Clyde. On the Scottish Executive's own figures, it has a benefit-cost ratio greatly exceeding that of any other Scottish strategic road project, including all of those approved in November 1999 - for instance *eight times* better than the A1 upgrade. Yet it has received no funding from the Scottish Executive. The Executive has moreover indicated that it will block development projects that would put extra traffic on to the overstretched M8 - in other words any important project in the West of Scotland (Glasgow *Evening Times*, 29 February 2000; Scottish Executive letter "Transport Impact of Developments in Glasgow" of 13 December 1999). This is unmistakably a programme for the continued rundown of the inner Clyde Valley. Its Toothill lineage is clear.

CONCLUSION

Scottish policymakers are operating with a view of the world in which many of the problems which dominated the country's history in the twentieth century have supposedly been overcome. Economic growth may still be relatively slow, but it is thought that unemployment is low, out-migration can be regarded as negligible, at least in quantitative terms, and there is a shortage rather than a surplus of labour; the population is static rather than declining, and the country is in good shape to embrace the "knowledge economy". The present analysis contradicts this sanguine perspective. It shows that Scotland is suffering population decline, large localised labour surpluses, continuing unemployment-related net out-migration, declining fertility, excess mortality, low economic activity and fiscal stress; and that these are strongly interlinked and derive mainly from the economic distress of the inner Clyde Valley and especially Glasgow. Continuing failure to recognise and address the problems of these areas through vigorous promotion of employment will undermine the whole future of the country.

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APPENDIX 1: THE 1998 GLASGOW POPULATION CORRECTION

The Registrar General's 1998 mid-year population estimate for Glasgow City showed a rise of 8,020 compared to 1997. This was in response to an increase in Glasgow City's electoral roll of about 18,300, mainly caused by a more intensive electoral canvass and a registration promotion campaign in 1998 (Glasgow City Council 1999). The increase in population of 8,020 compares with an average

decrease in the previous three years of 3,960. In effect, therefore, a one-off upward correction in the mid-year population estimate for Greater Glasgow of around 12,000 (8,020 + 3,960) has been made.

The change in mid-year HBA population estimates from year to year is the net result of births, deaths, within-UK migration (including movement to/from the Armed Forces) and international migration. Births and deaths are very well recorded and within-UK migration is rather well recorded. International migration however is generally less well recorded, and no official estimates are published at HBA level. In the estimation of net migration GRO(S) first establishes a net migration figure for Scotland, based on NHSCR data (for UK internal moves) and the results of the International Passenger Survey (for international migration), and then derives estimates for individual HBAs. The 12,000 adjustment for Greater Glasgow in 1998 has been put by the GRO(S) into the "estimated net civilian migration" item and in the present paper it is contained in the "international migration/error" item. The "net civilian migration" items for the other Scottish HBAs in 1997/98 have been adjusted by the GRO(S) also, to "compensate" for the adjustment to the figures for Greater Glasgow. For this reason, Figure 4C does not use the 1997/98 figures for "international migration/error".

The 1998 correction for Glasgow is open to various interpretations. It is possible that net out-migration from Glasgow was overestimated in previous years. In this case, the excessive loss will have been shown in the "international/error" item. Unfortunately there is no way of knowing how any correction should be made to earlier years. However, a correction to the estimated population at a point in time does not necessarily imply that any of the flow estimates have been incorrect, since the true size of the population is never known with certainty. Another possibility therefore is that the correction for underenumeration in the 1991 Census, although already large, was too low. It is not possible to choose between the alternative explanations at this stage.

APPENDIX 2: DEFINITIONS, SOURCES AND METHODS

Boundaries Definitions of the Health Board boundaries can be found in the Registrar General's Annual Report for Scotland. They correspond to the 1974-96 Regions except within Strathclyde where they are groupings of 1974-96 Districts. The Clyde Valley as defined here in terms of the HBAs of Greater Glasgow, Lanarkshire and Argyll &

Clyde coincides with the present Clyde Valley Structure Plan area except that the latter excludes the present Argyll & Bute council area. All references to Glasgow City in this paper are to the 1974-96 boundary (including Rutherglen and Cambuslang), unless clearly indicated to the contrary. The DSS Cross Benefit Analysis uses post-1996 local authorities. These correspond exactly to HBAs except in the Clyde Valley, for which benefit figures are therefore approximate. For these figures, W.Dunbartonshire has been split between Greater Glasgow and Argyll & Clyde using the population ratio given in the Scottish Office statistical guide to the new local authorities (1995); E.Renfrewshire has been attributed wholly to Greater Glasgow, and N. and S. Lanarkshire wholly to Lanarkshire. The effect is probably to overstate the extent of benefit dependency in Argyll & Clyde and Lanarkshire, and to understate it in Greater Glasgow. The figures for the Clyde Valley as a whole are not affected.

Population UK and Scotland mid-year populations 1974-97 are from the ONS *Annual Abstract of Statistics*. The 1998 mid-year population and components of change for Scotland in 1997/98 are from the *Annual Report* of the Registrar General for Scotland and the 1998 mid-year UK population from ONS *Population Estimates*, Series PE No.1 (1999). The 1998-based population projections for Scotland, England and the UK are from the Government Actuary's Department at www.gad.gov.uk. The components of population change 1974/75 to 1996/97 are from ONS *International Migration*, Series MN Table 1.1. The components of population change for the UK for 1997/98 are from ONS *First Release*. This latter source does not split "net civilian migration and other changes" into its components; the split for 1997/98 has been estimated by assuming that the mean ratio for 1995/96 and 1996/97 applies.

Migration Migration flows between Scotland and the rest of the UK, between Scotland and the Armed Forces, and within Scotland are taken from the National Health Service Central Register (NHSCR) data published by the GRO (Scotland). Migration flows from Scotland to different parts of the UK are taken from *Regional Trends* and/or *Social Trends*. These data have only been published since 1980. Net international migration flows for all years except 1997/98 are from ONS *International Migration*. These figures are subject to large revisions after publication and therefore the latest published figure for each year has been used. Official international migration estimates are not published as such for areas smaller than the whole of Scotland. The estimates for HBAs in this paper

Quarterly Economic Commentary

have been calculated as a residual from the officially published elements of population change.

This is the same procedure as used by Champion (1999). Scottish international inflows and outflows for calendar years 1974 to 1997 are from *International Migration*. These are estimated from the International Passenger Survey and are not revised subsequent to publication.

Births and Deaths Comparative data for Scotland and the UK on TFRs and age-standardised mortality rates are taken from *Population Trends*, on standardised mortality ratios from *Regional Trends*, and on survival rates from the *Annual Abstract of Statistics*. Comparative age-standardised mortality rates for Scotland and the UK use the European Standard Population.

Rates for Scottish Health Board areas are standardised to Scottish experience. They were sourced from the *Annual Reports* of the Registrar General for Scotland as follows. Standardised birth rates per 1,000 population are from Table P2.1 (1974-78), Table A2.2 (1979-93) and Table 1.3 (1994 onwards). Death rates per 1,000 population standardised for age and sex are from Table A2.2 (1974-93) and Table 1.4 (1994 onwards). Standardised mortality ratios are from Table C.2.29 (1974-93) and Table 1.5 (1994 onwards). Table C.2.29 was not printed for 1983-85 but produced on microfiche; copies of the 1983 and 1985 tables were kindly supplied direct by GRO (Scotland) and of the 1984 table by Tricia Fraser of the ISD Library, Common Services Agency.

Employment Employment figures are from the Census/Annual Survey of Employment via NOMIS, kindly supplied by Fergus Cooper of DRS, Glasgow City Council. 1981-96 is the longest period for which comparable figures can be readily obtained. These figures do not distinguish part-time from full-time jobs and therefore give an unduly favourable impression of employment change.

Unemployment Census unemployment figures for 1971 are for all aged 15+; for 1981 and 1991 they are for the population aged 16-64/59. Real unemployment estimates for 1997 are from Beatty et al. (1997), with figures for the HBAs within Strathclyde calculated separately from additional data kindly supplied by Tina Beatty of Sheffield Hallam University. One weakness of this measure appears to be that it overestimates real unemployment in areas which attract retirement in-migration, because it estimates excess early retirement on the basis of a simple comparison with the South East region of England in 1991. Beatty

& Fothergill (1999) have computed an alternative measure of "hidden male unemployment" by comparing the number of Incapacity Benefit claimants at August 1996 with the number recorded as "permanently sick" in the 1981 Census. The two measures are highly correlated, but the "hidden male unemployment" measure shows Argyll & Clyde as worse than Ayrshire & Arran, as would be expected on the basis of other information including employment change. The ranking of the worst seven HBAs is otherwise unchanged. The real unemployment *relativities* between HBAs are broadly the same as those shown by LFS ILO unemployment rates in all cases for which separate figures are published, i.e. all except Lanarkshire, Argyll & Clyde and Ayrshire & Arran.

The unemployment series for regions and TTWAs are not fully satisfactory. All the figures are from *Labour Market Trends* or its predecessor the *Employment Gazette*. The unemployment figures for 1974-99 for Scotland and SE England are the unadjusted claimant count rate, which is expressed as a percentage of the total "workforce". The SE region in 1974-96 is the standard region, including Greater London, and thereafter it is the Government Office Region. The TTWAs used to measure relative unemployment are Glasgow, Edinburgh and Aberdeen. From 1974 to 1989 the TTWA figures were published only on the "narrow base" denominator of "employees and unemployed"; to promote continuity, this "narrow base" denominator (now renamed "per cent employee jobs and claimants") has been used for later years also. For 1981, no March figures were compiled and February has been used instead. There were changes of TTWA boundary in 1985 and 1999. The comparisons between Scottish TTWAs and the SE region are between "broad" base figures for the SE and "narrow" base for the TTWAs; since the focus here is on the *change* in the difference rather than the difference itself, this is not too serious a limitation.

The relationship between the level and direction of migration and the change in the difference in unemployment rates is not very sensitive to the choice of time lag. A range of quarterly lags has been tried. The best, used here, is effectively a one quarter lag. The change in unemployment is from March to March, while the migration flow is estimated to be from June to June (patient registrations are recorded from September to September, and the NHS statisticians estimate that on average migrants take 3 months to register with a new doctor).

In Figures 7 and 9 to 11 it is noticeable that the

Quarterly Economic Commentary

relationship between net migration to the rest of the UK and change in the unemployment differential has been more favourable during the 1990s than in previous years. It is not possible to say whether this represents a real change (due for instance to changing population structure), or is merely an artefact of the changing coverage of the claimant unemployment count. The projections of migration for 1998/99 use the already known changes in the unemployment differential, together with the unemployment-migration relationship as seen during the 1990s.

A number of different statistical approaches can be taken to analysing the relationship between unemployment and migration. That taken here, using the change in the difference in unemployment rates, is believed to be innovatory. It is supported by the analysis of Jackman & Savouri (1992). It has been tested on the data for 1951-61 used by Oliver (1964) and works well. There, a simple regression of the rate of net total in-migration to Scotland on the annual change in the difference in unemployment rates between Scotland and "London, etc." produces an adjusted R-square of 0.92, better than the 0.76 produced by the best of Oliver's own multiple regression models.

Labour Force and Activity Rates Labour force estimates and projections for Scotland and Great Britain are from the *Employment Gazette*, February 1986, January 1990 and August 1995, and from the Labour Force Survey (LFS). The activity rate figures for Glasgow are taken from the Census (1971, 1981 and 1991) and LFS, with the figures for 1992-94 from the ESRC Data Archive via a draft PhD dissertation, Dept of Urban Studies, University of Glasgow by Donald Houston, whose kind assistance is greatly appreciated. Activity rates for 1971 are for those aged 15-64/59, and otherwise they are for those aged 16-64/59. The LFS has some sampling error and also uses the latest population projections rather than mid-year estimates.

Public Expenditure In calculating the Barnett squeeze to 2026/27, the assumption has been made that the population relativity used in the Barnett formula will be that given by the mid-year estimates for the calendar year three years before the start of the financial year in question, i.e. for 2000/01 the population relativity is that for 1997, for 2001/02 that for 1998, and so on. This is in line with para.3.8 of HM Treasury's *Funding the Scottish Parliament, National Assembly for Wales and Northern Ireland Assembly: A Statement of Funding Policy* (31 March 1999). This lengthy lag is due to the time required to finalise the mid-year

population estimates and to the need to plan public spending well before the start of each financial year.

Social Deprivation Carstairs deprivation category figures are 1991-based and are from McLaren & Bain (1998).

Social Security Claimant figures for Scotland and Great Britain are from *Social Security Statistics 1999*, and for local authority areas from the Department of Social Security's Cross Benefit Analysis for May 1999.

TABLE 1
POPULATION, EMPLOYMENT CHANGE, UNEMPLOYMENT AND DEPRIVATION
SCOTTISH HEALTH BOARD AREAS 1974-1998

	Population				Employment	Census	Census	Real	Population
	1974		1998		change	unempl.	unempl.	unempl.	in Carstairs
	No.	% of	No.	% of	1981-96	1971	1991	1997	categories 6 & 7
		Scotland		Scotland	%	%	%	%	1991%
Gtr Glasgow	1129387	21.6	911200	17.8	-13.0	7.6	16.2	28.9	51
Lanarkshire	563138	10.8	560800	11.0	2.4	6.3	12.5	23.4	24
Argyll & Clyde	460181	8.8	426900	8.3	-8.9	6.0	11.5	19.2	25
CLYDE VALLEY	2152706	41.2	1898900	37.1	-8.6	6.7	14.0	25.6	37
Ayrshire & Arran	374423	7.2	375400	7.3	-4.7	4.9	11.7	21.8	11
Borders	99105	1.9	106300	2.1	-0.4	3.2	6.1	8.1	0
Dumfries & G.	143711	2.7	147300	2.9	-7.5	4.2	8.1	14.6	0
Forth Valley	267029	5.1	275800	5.4	-7.1	4.9	10.0	17.9	5
Fife	337690	6.5	348900	6.8	-1.5	5.1	9.6	17.4	4
Grampian	447935	8.6	525200	10.3	27.7	4.0	5.0	9.3	0
Highland	178268	3.4	208300	4.1	5.8	5.7	8.8	15.0	0
Lothian	758383	14.5	773700	15.1	10.8	5.1	8.8	13.6	5
Tayside	401183	7.7	389800	7.6	-6.2	5.8	9.6	15.8	20
Orkney	17462	0.3	19550	0.4	6.9	3.0	5.6	9.5	0
Shetland	18445	0.4	22910	0.4	-2.0	3.9	4.8	7.2	0
Western Isles	30060	0.6	27940	0.5	5.5	12.3	11.6	15.6	17
SCOTLAND	5226400	100.0	5120000	100.0	0.0	5.8	10.6	18.1	18

Sources: See Appendix 2

TABLE 2
STANDARDISED BIRTH RATES, DEATH RATES AND NATURAL CHANGE
SCOTTISH HBAs 1974-79 and 1995-98
All rates are per 1,000 population

	SCOTLAND	Borders	Forth V.	D & G	Fife	Grampian	Highland	Lothian	Argyll & C.	Gtr Glasgow	Ayr & Arran	Lanarks	Tayside	Orkney	Shetland	W.Isles
STANDARDISED BIRTH RATES																
Mean 1974-79	12.8	12.4	12.8	12.7	12.7	12.3	14.3	11.1	13.3	13.2	13.2	13.7	12.0	14.9	16.8	19.2
Mean 1995-98	11.5	12.4	11.8	12.7	11.6	11.5	13.1	10.8	12.0	11.0	11.8	11.8	11.9	13.3	13.1	12.0
Difference	-1.2	0.0	-1.1	0.0	-1.1	-0.8	-1.2	-0.3	-1.3	-2.2	-1.4	-1.9	-0.1	-1.6	-3.7	-7.3
STANDARDISED DEATH RATES																
Mean 1974-79	12.4	11.3	12.6	12.3	11.9	11.1	12.6	11.7	13.3	13.3	13.1	13.2	11.5	11.4	11.1	11.3
Mean 1995-98	11.6	10.1	11.4	10.4	11.0	10.4	10.9	11.3	12.4	13.1	11.6	12.6	11.1	10.9	11.4	11.6
Difference	-0.8	-1.2	-1.2	-2.0	-0.9	-0.7	-1.8	-0.4	-0.9	-0.2	-1.5	-0.6	-0.4	-0.5	0.3	0.3
STANDARDISED NATURAL CHANGE																
Mean 1974-79	0.4	1.0	0.3	0.4	0.9	1.2	1.7	-0.6	0.1	-0.1	0.1	0.5	0.6	3.5	5.7	7.9
Mean 1995-98	-0.1	2.3	0.4	2.3	0.7	1.1	2.3	-0.5	-0.4	-2.1	0.2	-0.8	0.8	2.4	1.7	0.4
Difference	-0.5	1.2	0.2	2.0	-0.2	-0.1	0.6	0.0	-0.4	-2.0	0.1	-1.3	0.3	-1.1	-4.0	-7.5

Source: Annual Reports of the Registrar General for Scotland

TABLE 3

SCOTLAND AND GREAT BRITAIN
COMPONENTS OF CHANGE IN THE LABOUR FORCE 1971-2006

	Population effect	Activity rate	Total change
MEN			
1971-84 change as per cent of 1971 labour force			
Scotland	7.5	-7.1	0.4
GB	6.5	-7.1	-0.6
1984-94 change as per cent of 1984 labour force			
Scotland	2	-4.8	-2.8
GB	4.7	-4.5	0.2
1994-2006 projected change as per cent of 1994 labour force			
Scotland	-1.3	-2.4	-3.7
GB	4.7	-2.5	2.2
WOMEN			
1971-84 change as per cent of 1971 labour force			
Scotland	4.2	9.1	13.2
GB	5.1	12.1	17.2
1984-94 change as per cent of 1984 labour force			
Scotland	-0.2	13.1	12.9
GB	2.7	8.1	10.8
1994-2006 projected change as per cent of 1994 labour force			
Scotland	-2	6.2	4.2
GB	3.8	6.7	10.5
ALL			
1971-84 change as per cent of 1971 labour force			
Scotland	5.9	-0.5	5.3
GB	5.8	0.3	6.1
1984-94 change as per cent of 1984 labour force			
Scotland	1.1	2.5	3.6
GB	3.9	0.7	4.6
1994-2006 projected change as per cent of 1994 labour force			
Scotland	-1.6	1.4	-0.2
GB	4.3	1.5	5.8

Sources: Employment Gazette, Feb. 1986 and Aug. 1995

FIGURE 1 SCOTLAND AND REST OF UK: POPULATION 1974-98 AND 1998-BASED PROJECTIONS TO 2036
1974=100

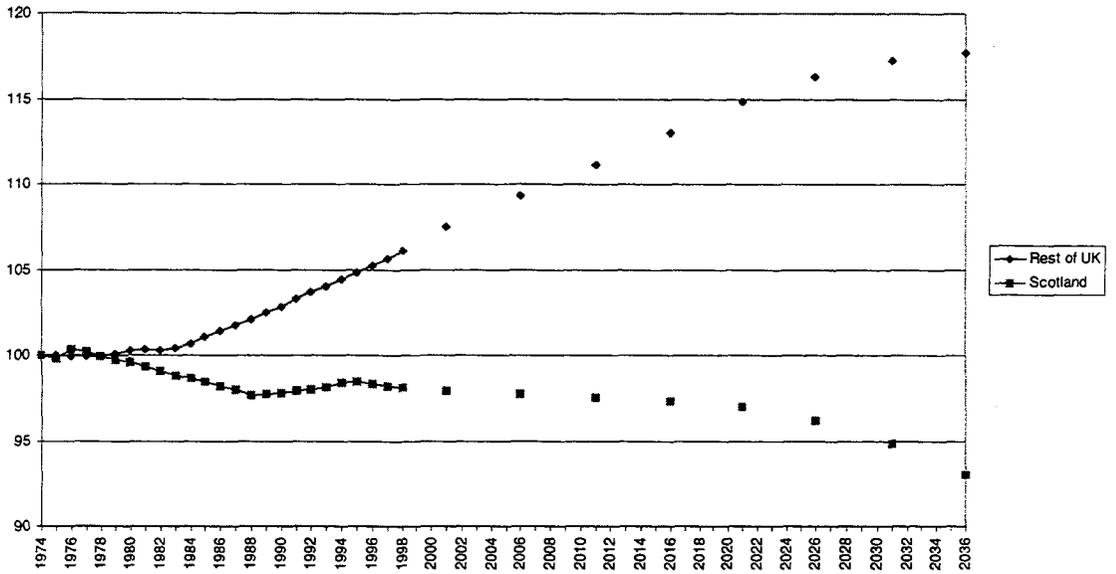


FIGURE 2 SCOTLAND AND REST OF UK: NET MIGRATION AND NATURAL CHANGE
as % of population at start of year

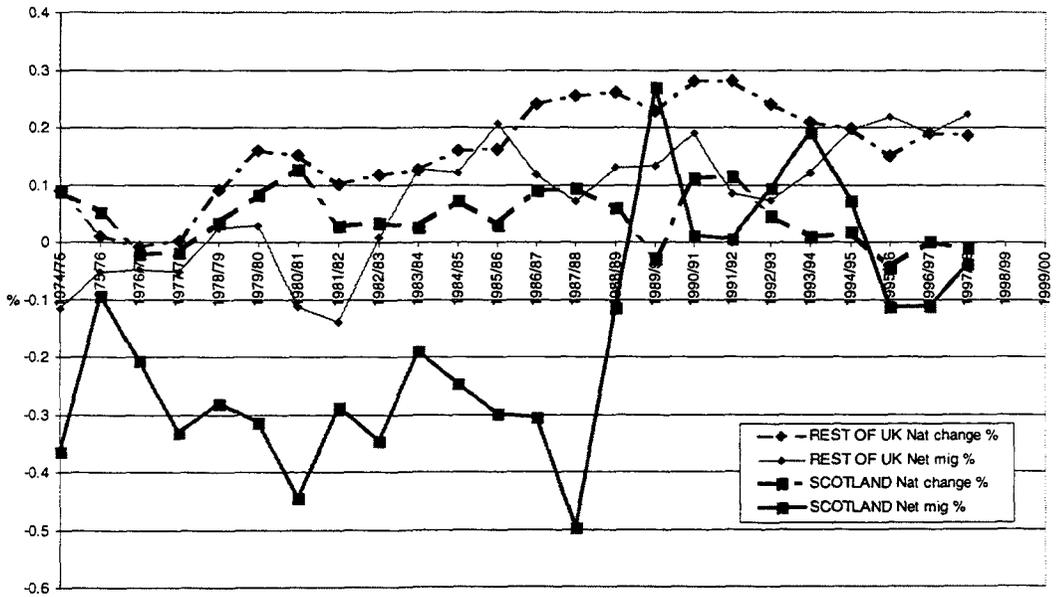


FIGURE 3 SCOTTISH HBAs: POPULATION CHANGE 1974-98 AND PROJECTED POPULATION CHANGE 1998-2016 per year

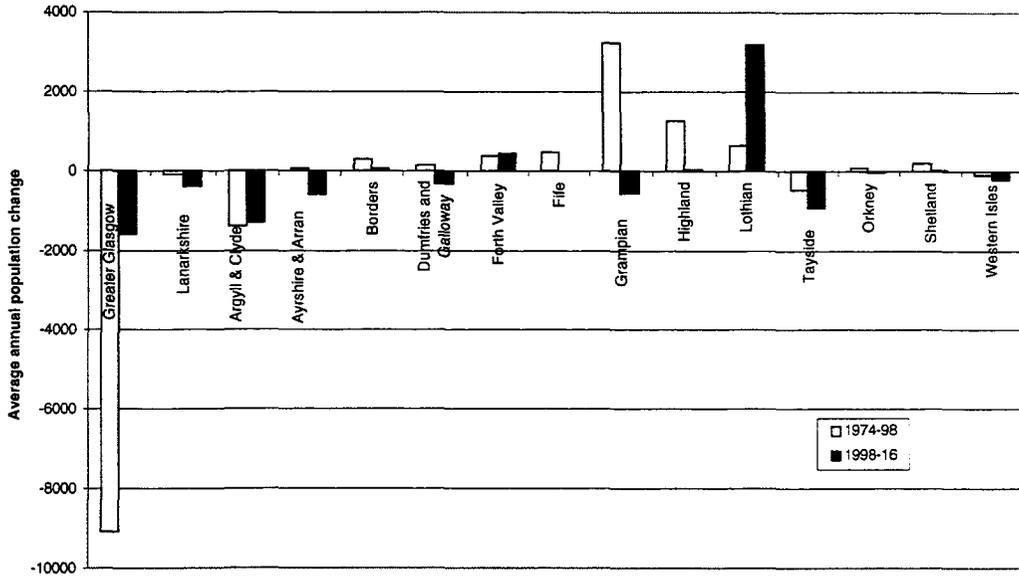


FIGURE 4 SCOTTISH HBAs: EMPLOYMENT AND POPULATION CHANGE 1981-96

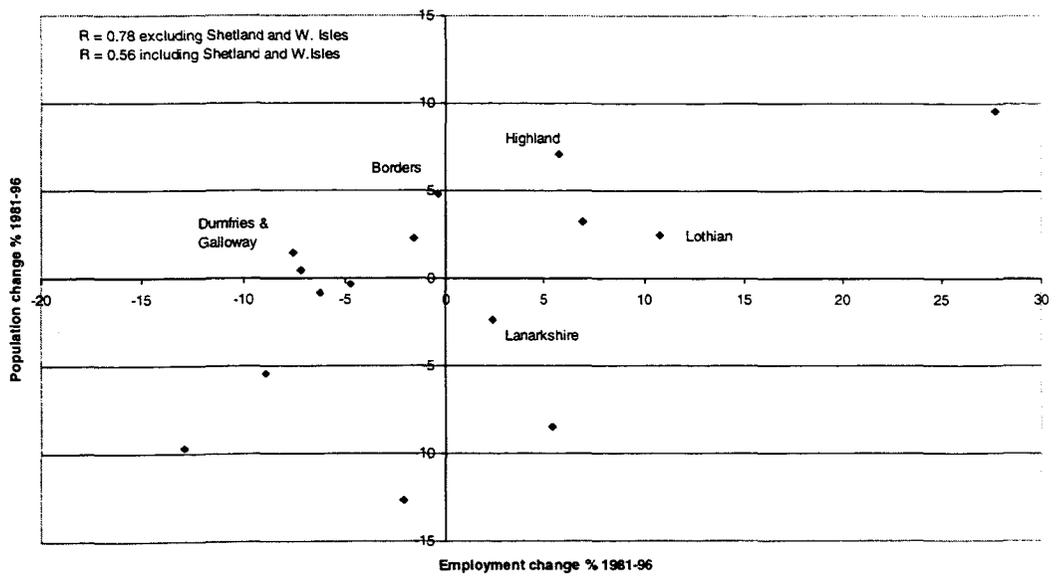


FIGURE 5A SCOTTISH HBAs: COMPONENTS OF POPULATION CHANGE, annual average 1974-89

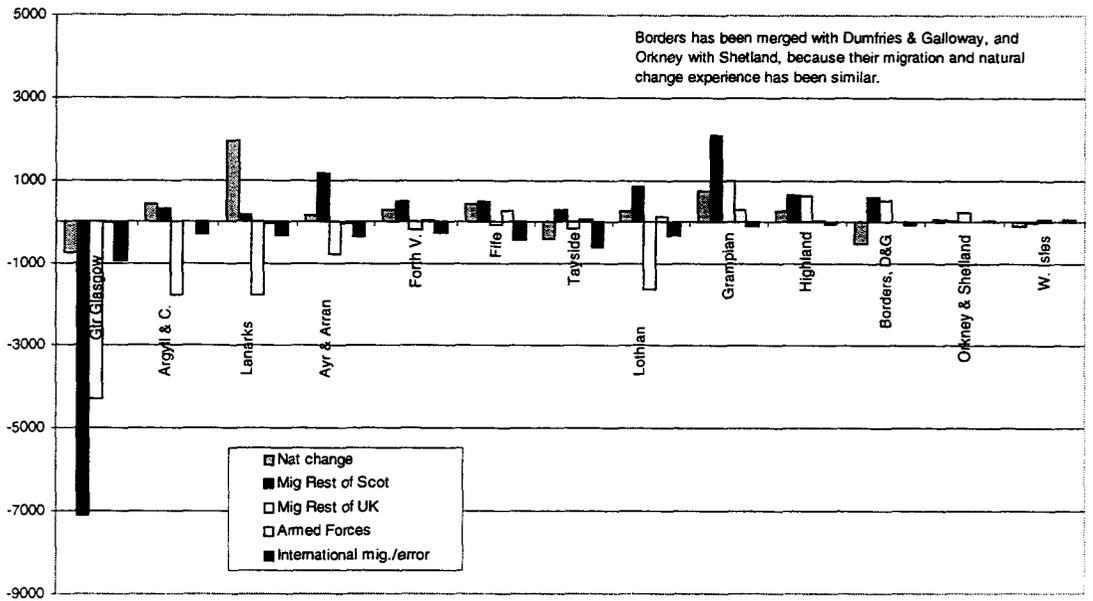


FIGURE 5B SCOTTISH HBAs: COMPONENTS OF POPULATION CHANGE, annual average 1989-95

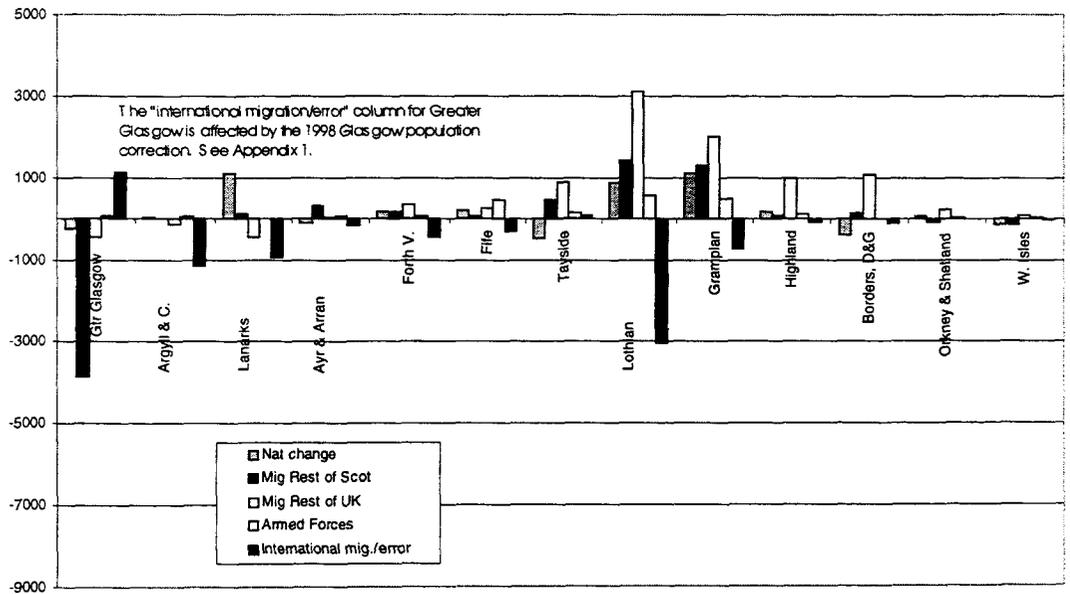


FIGURE 5C SCOTTISH HBAs: COMPONENTS OF POPULATION CHANGE, annual average 1995-98

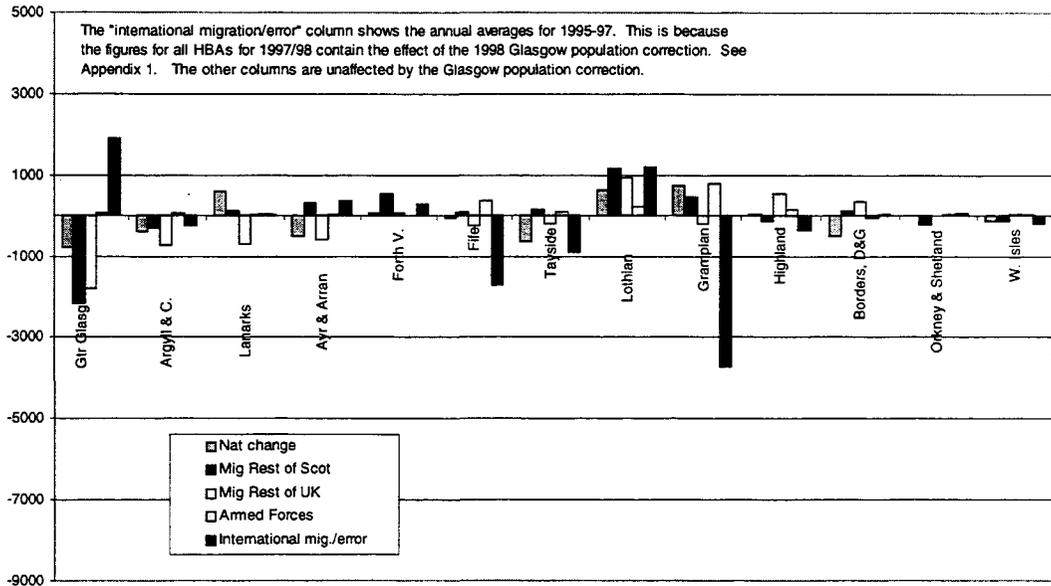


FIGURE 6 NET MIGRATION FROM/TO SCOTLAND 1974/75-1997/98

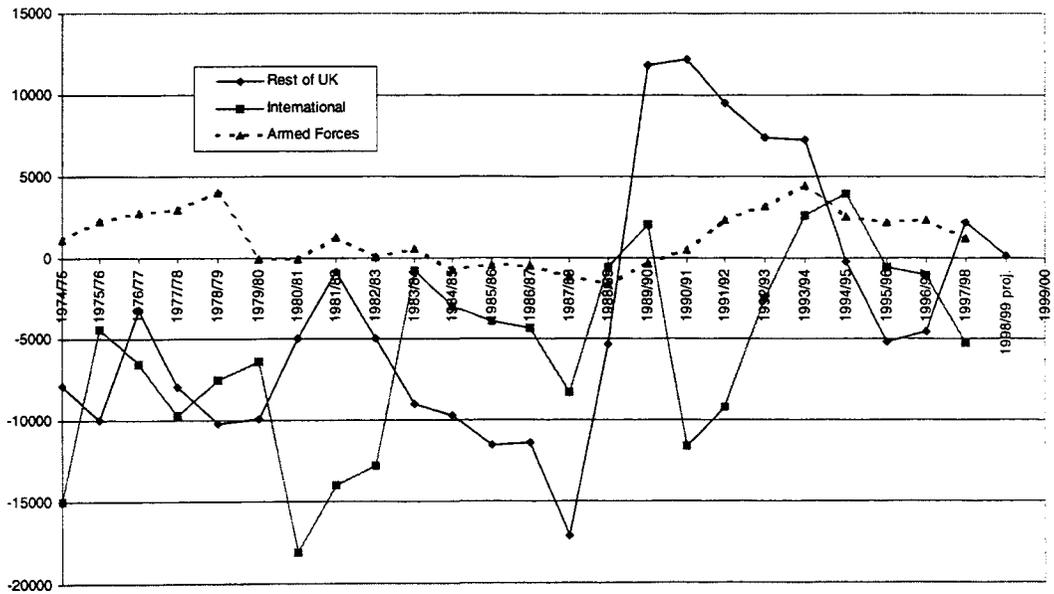


FIGURE 7 UNEMPLOYMENT AND MIGRATION SCOTLAND AND REST OF UK 1974/75-97/98

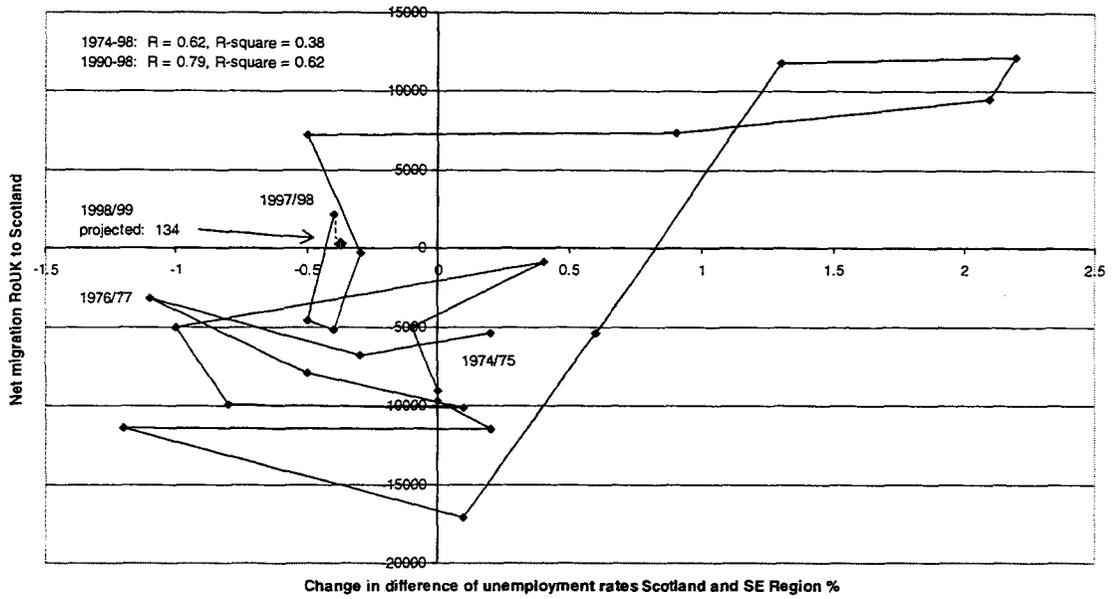


FIGURE 8 SCOTLAND: INTERNATIONAL MIGRATION FLOWS 1974-97 (calendar years)

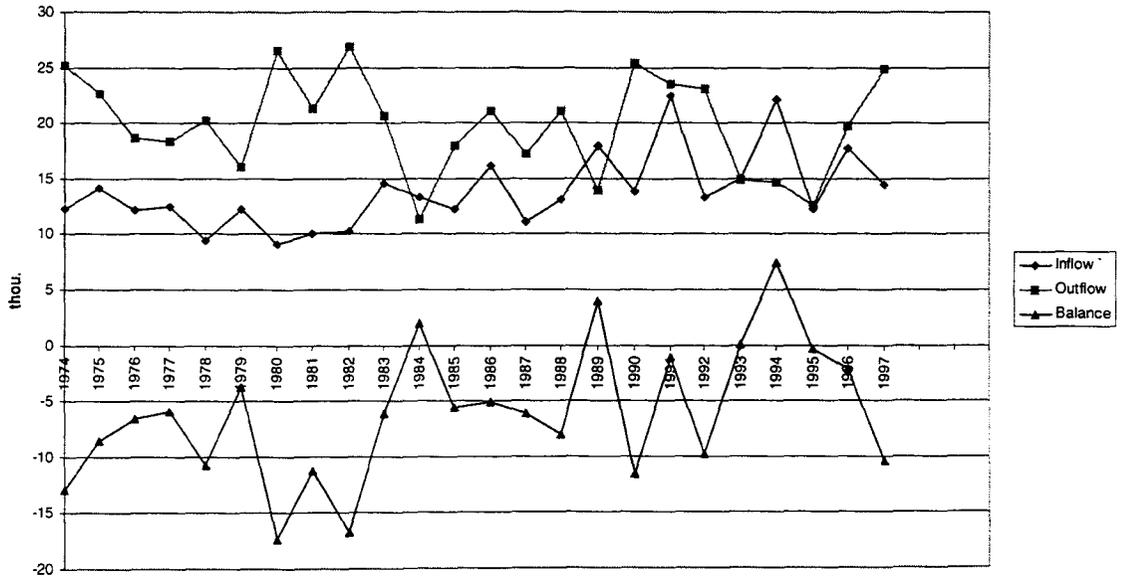


FIGURE 9 UNEMPLOYMENT AND MIGRATION GREATER GLASGOW HBA AND REST OF UK 1974/75-97/98

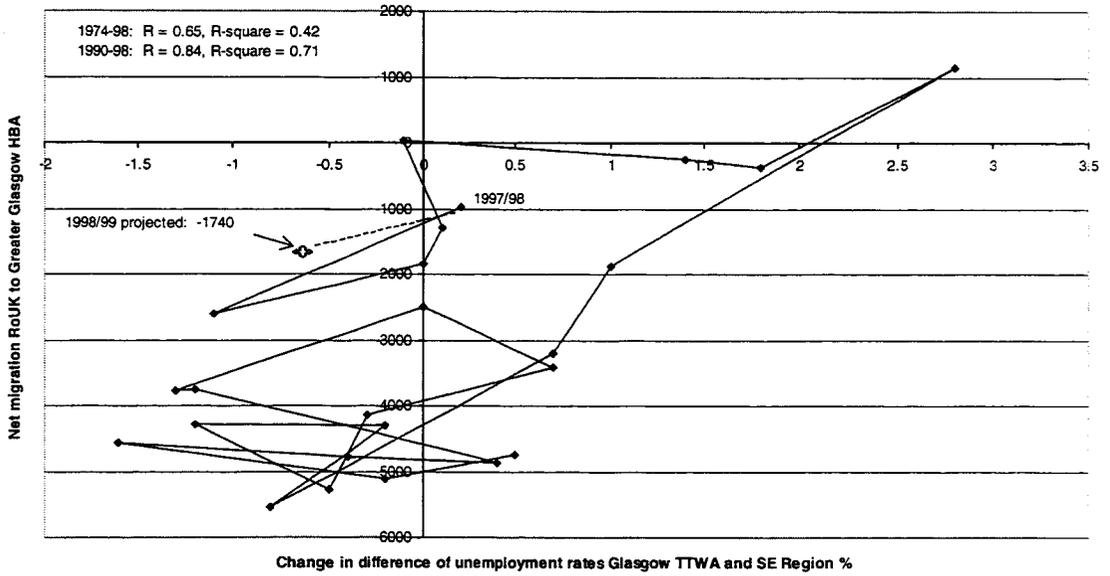


FIGURE 10 UNEMPLOYMENT AND MIGRATION GRAMPIAN HBA AND REST OF UK 1974/75-97/98

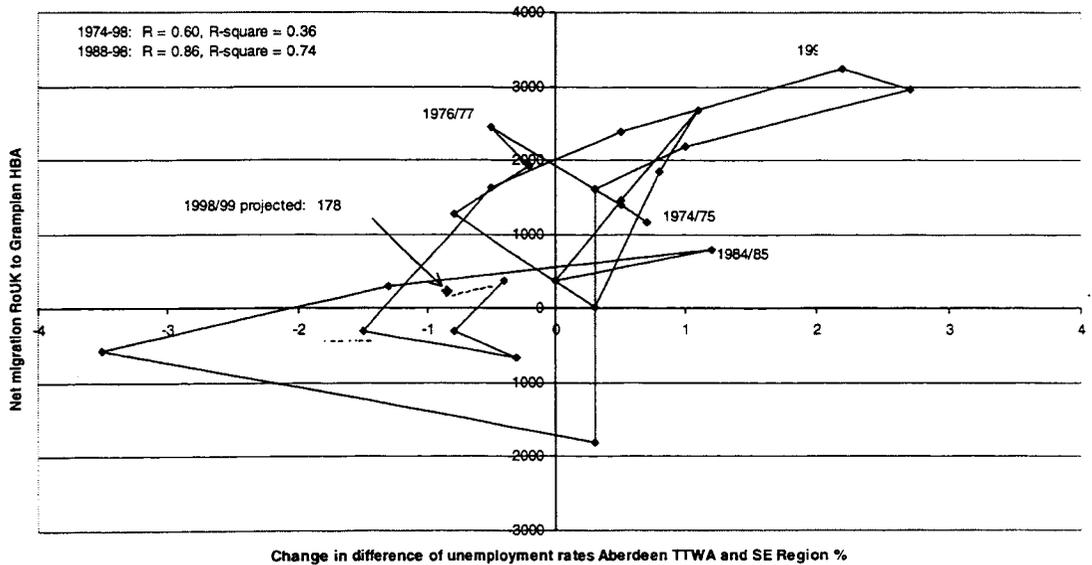


FIGURE 11 UNEMPLOYMENT AND MIGRATION LOTHIAN HBA AND REST OF UK 1974/75-97/98

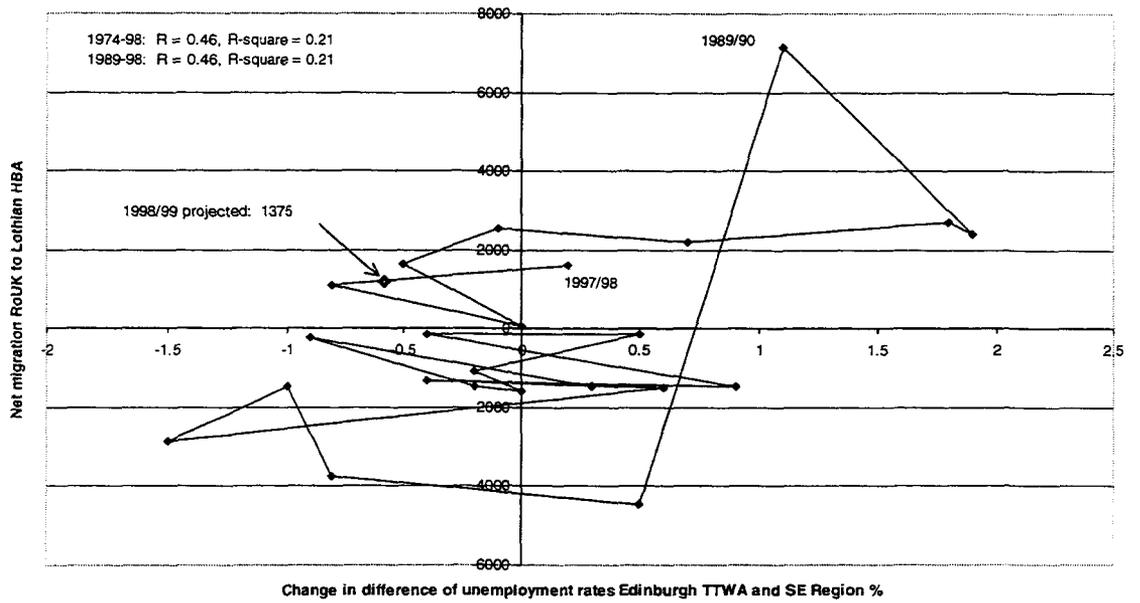


FIGURE 12 NET MIGRATION FROM THE CLYDE VALLEY TO GRAMPIAN & HIGHLAND, LOTHIAN, AND REST OF UK, 1974/75-1997/98

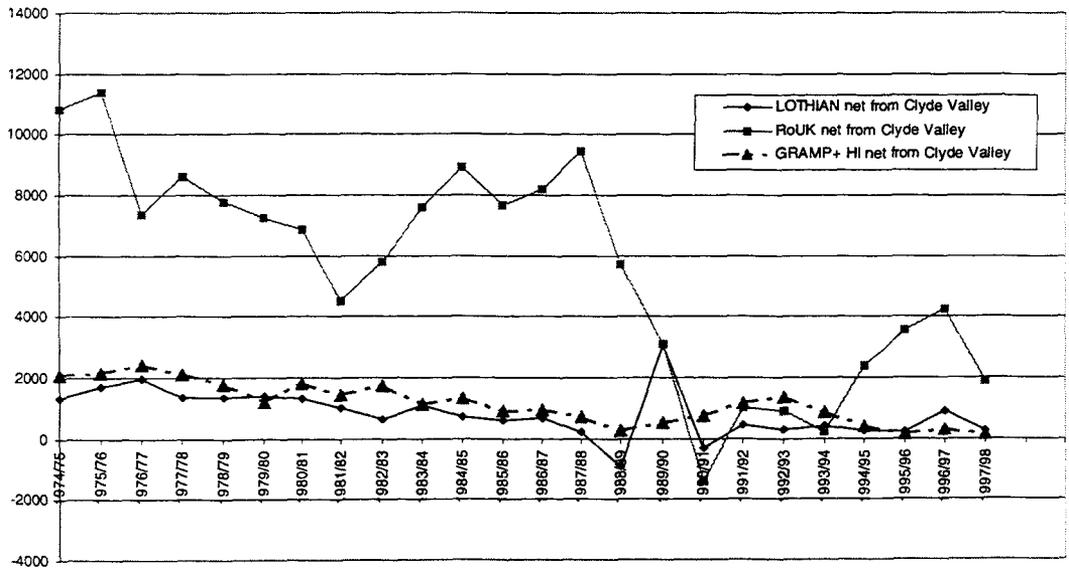


FIGURE 13 SCOTLAND AND UK: FERTILITY AND MORTALITY, 1971-1998

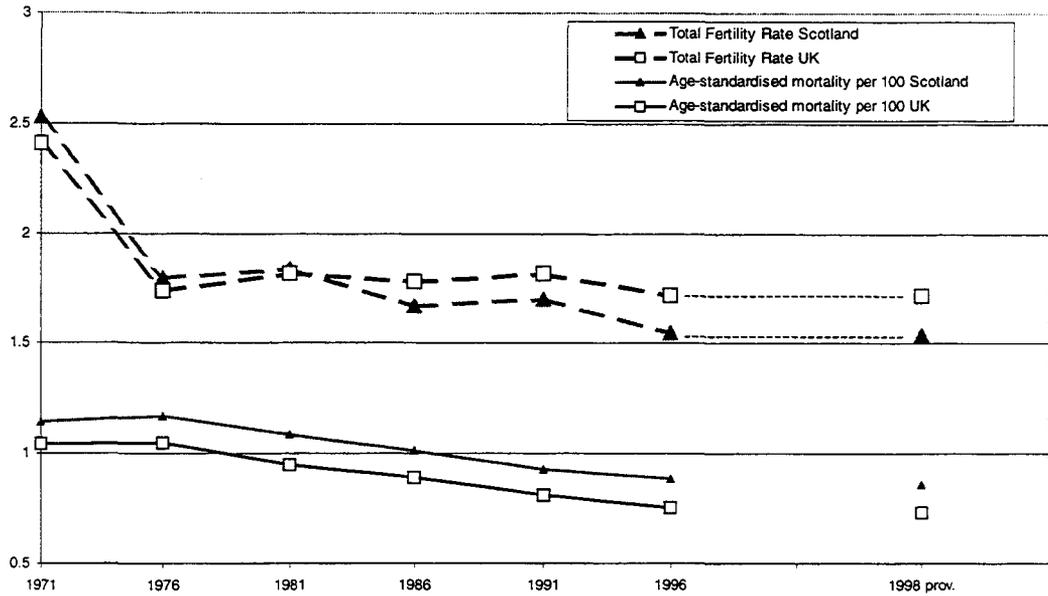
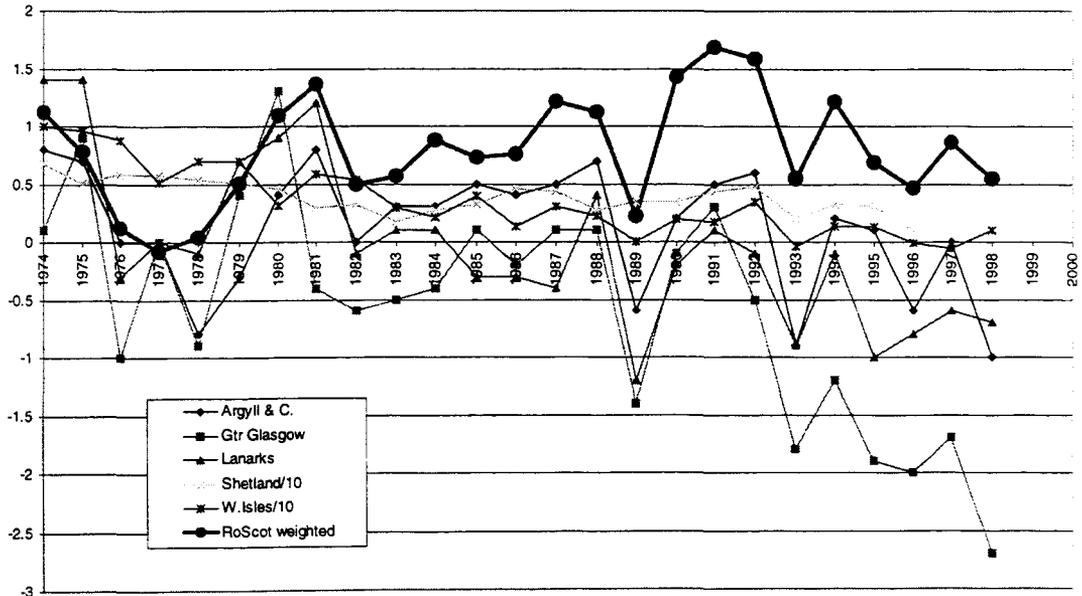
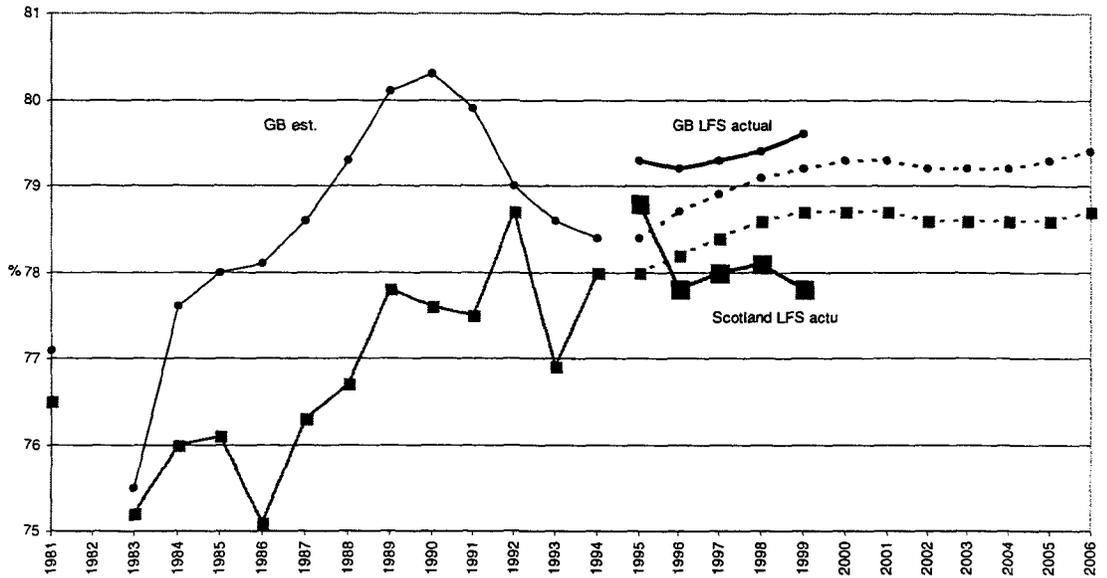


FIGURE 14 SCOTTISH HBAs: STANDARDISED NATURAL CHANGE (per thou.) 1974-1998
WORST PERFORMING AREAS AND WEIGHTED AVERAGE FOR REST OF SCOTLAND



**FIGURE 15 WORKING AGE ACTIVITY RATES
SCOTLAND AND GREAT BRITAIN 1981-2006 estimated and projected**



**FIGURE 16 GLASGOW, SCOTLAND AND GREAT BRITAIN:
WORKING AGE ECONOMIC ACTIVITY RATE 1971-1999**

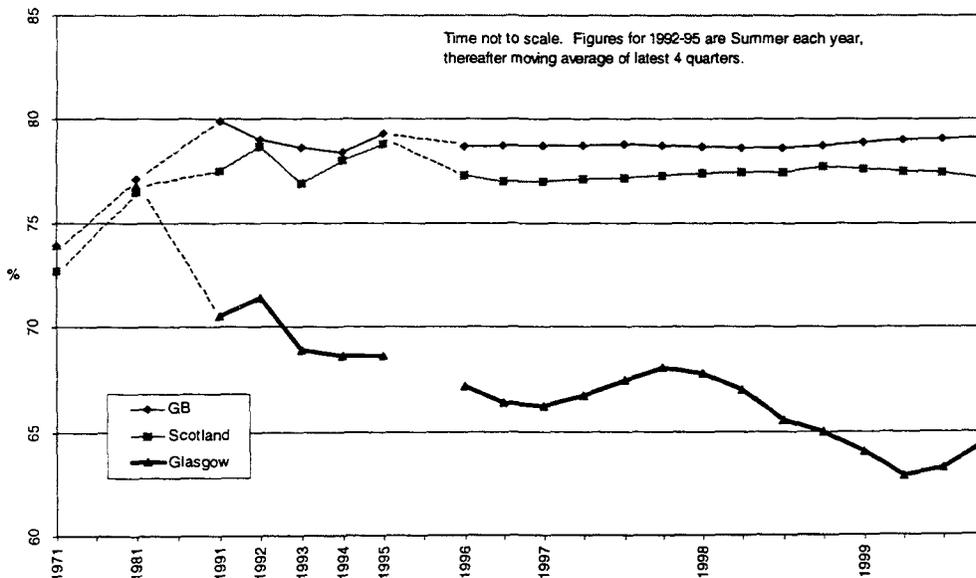


FIGURE 17 THE BARNETT SQUEEZE PROJECTED 2001/02-2026/27 (2001/02 prices)

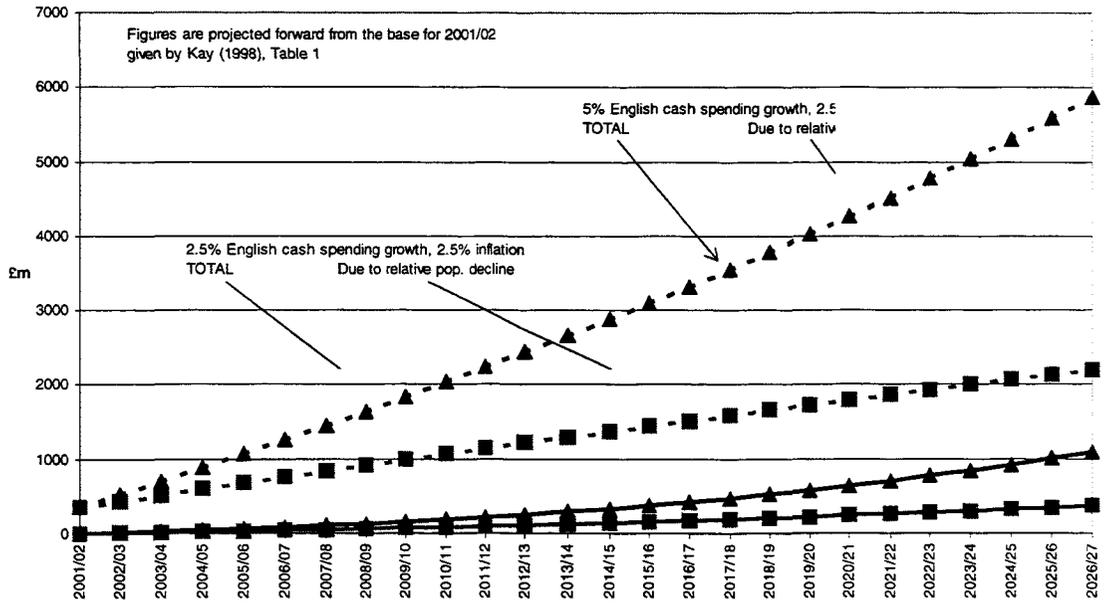


FIGURE 18 COMPOSITION OF SCOTLAND'S IDENTIFIABLE PUBLIC SPENDING IN EXCESS OF UK PER CAPITA LEVELS 1997/98

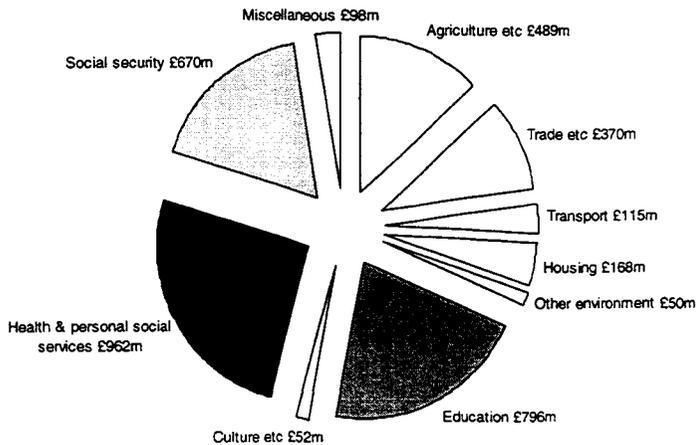


FIGURE 19 SHARE OF SCOTTISH EXCESS WORKING AGE SOCIAL SECURITY CLAIMANTS BY HEALTH BOARD AREA, May 1999

