

# Scotland's population transition: its implications for the Scottish economy, Scottish Budget and policy<sup>1</sup>

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## I Introduction

It is a great pleasure to speak with you this evening. What I would like to do is to build upon some of the historical issues that Michael Anderson has outlined and to look forward to the implications of Scotland's demographic transition for the Scottish economy, Scotland's Budget and – briefly – policy implications and opportunities.

## II The outlook for Scotland's population

I was struck chatting to Michael before this evening about three themes that arose from his reflections of the last century or so.

Firstly, just how much today's population and how it will evolve has been driven by trends that have been decades in the making.

Secondly, that the shape of our population, including migration patterns, and where people live and work, has been shaped by economics. And of course, Scotland's population has in turn greatly shaped the economy of this country.

Thirdly, when we talk about Scotland's changing demography, we often ignore the major differences that exist *within* Scotland. Much in the same way that Scotland's economy is far from homogenous, so too is our population.

All of these factors set an important backdrop for my remarks tonight. And have crucial implications for policy. So, whilst others have talked about how we have got here, I'd like to focus upon where we go next.

Last month, we had the latest assessment from the National Records of Scotland.

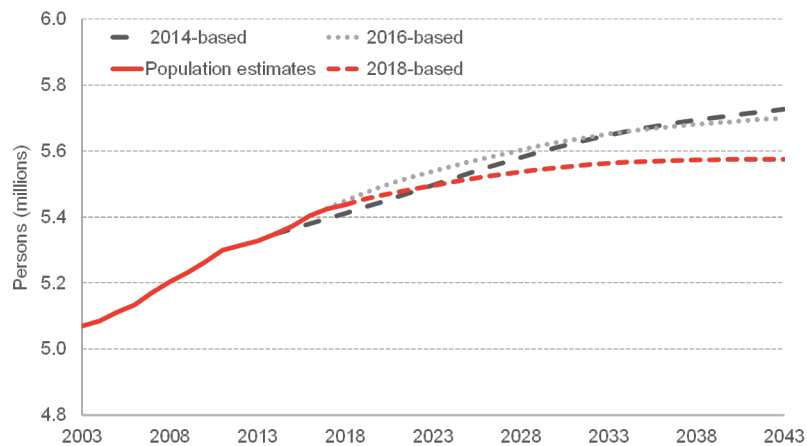
A number of points are worth highlighting.

Firstly, the latest figures confirm that whilst Scotland's population is projected to grow over the next 25 years from around 5.4 million to 5.6 million, the pace of growth is projected to slow and then level off. Chart 1.

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<sup>1</sup> Speech given to the David Hume Institute's "Scotland's Populations" seminar, 26 November 2019.

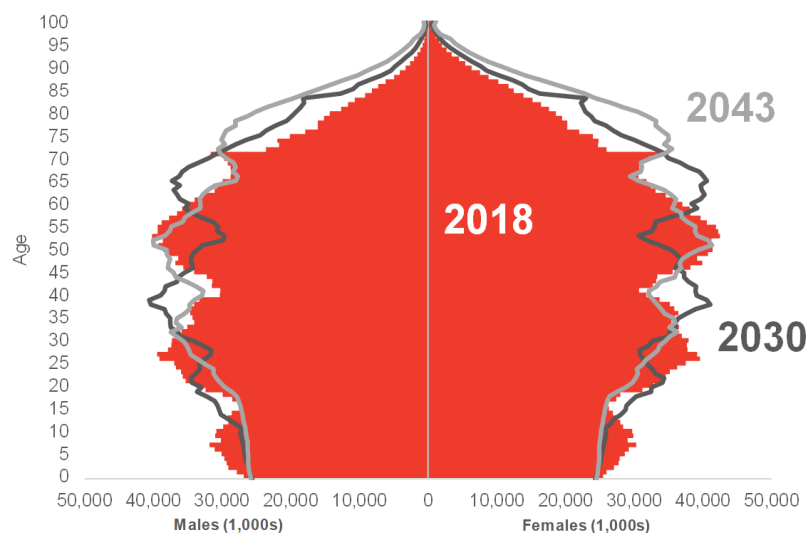
**Chart 1:** Population projections for Scotland to 2043



Source: National Records of Scotland

Secondly, our population will continue to age. In 2001, the median average age in Scotland was 39. By 2017, that had risen to 42. In 20 years', time that will rise to around 45. Chart 2.

**Chart 2:** Age profiles for Scotland, 2018, 2030 and 2043

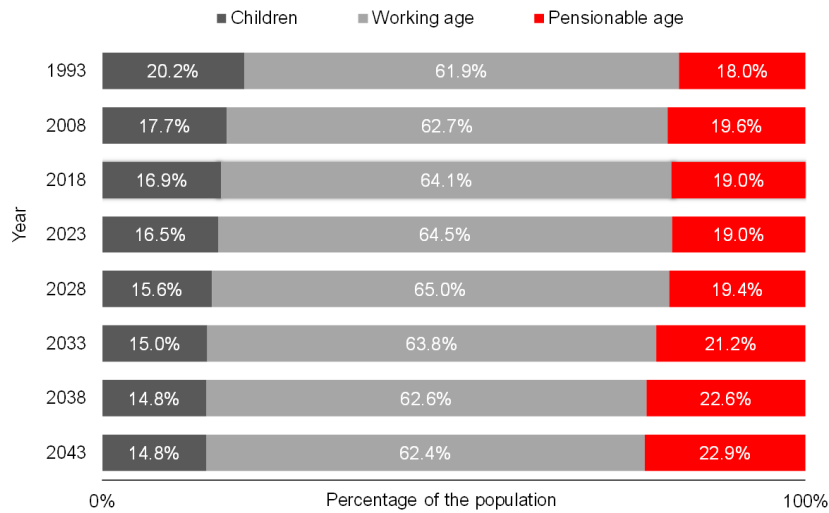


Source: National Records of Scotland

Our current age profile has a relatively large peak at around 70 years old (the post-war baby boomers) and then a bulge of people in their early to mid-50s (the children of the baby boomers). As these people age, with higher life expectancy than in previous generations, they are projected to make up a growing proportion of the population. Though planned increases to the state

pension age will help protect Scotland’s working age population – at least for the foreseeable future – in time it will start to fall back. Chart 3.

**Chart 3:** 2018 Population projections for Scotland to 2043 by children, working age population and pensionable age



Source: National Records of Scotland

Thirdly, Scotland is not unique in facing such challenges. These latest projections put Scotland pretty much on the average in Europe. However, some of the changes – particularly in Eastern Europe - are hugely significant. Chart 4. However, interestingly, the UK bucks the trend a little.

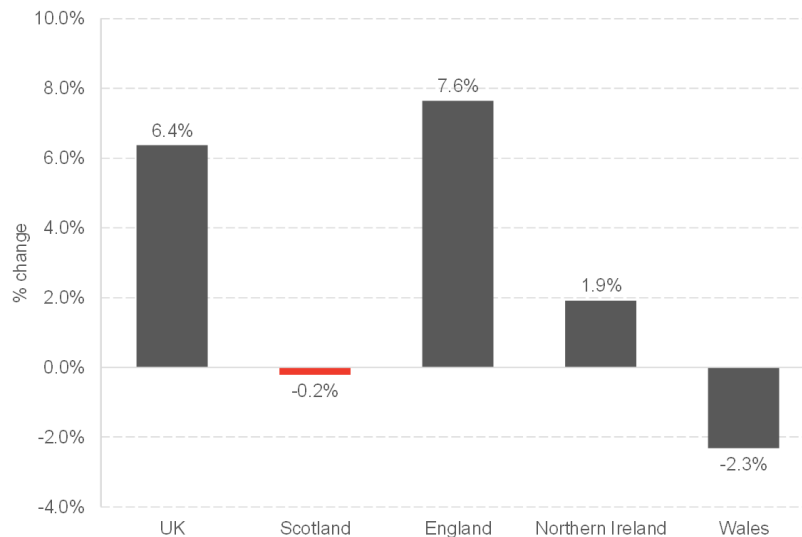
**Chart 4:** Projected change in population by EU country: 2018 to 2043



Source: National Records of Scotland

In contrast to an average EU and Scottish population growth of 2.5% over the next 25 years, the UK population is projected to increase by around 9% - and the outlook for the UK's working age population is much healthier. Chart 5.

**Chart 5:** Percentage change in working age population by UK nation, 2018 to 2043



Source: National Records of Scotland

Now one might argue that population projections have just about as good a track-record of looking in to the future as we economists do! However, it is important to separate out the different elements to understand what is driving the results and the level of uncertainty around each one.

On the one hand, fertility and mortality rates are relatively stable and can be predicted a long time in advance. These are driven by the dynamics Michael has so eloquently set out.

On the other, we have migration flows which are much less easy to project with any accuracy. So, what do we know?

On the first of these – natural change – we can be pretty confident that this is declining and will continue to do so for the foreseeable future. In 2018, the number of deaths in Scotland exceeded births by around 8,000. The most recent projections are that as our population ages, this will rise to closer to 20,000 over the coming decades. Of course, actions to boost fertility and support families all have a role, but the scale of the shift means that this will only ever have an impact at the margins.

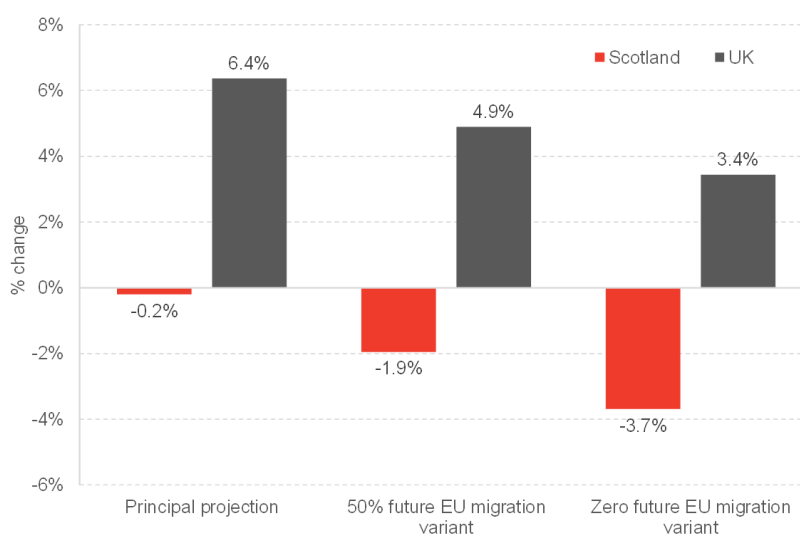
Which means that migration becomes absolutely crucial. Without migration - and at levels sufficient to counterbalance the fall in Scotland's natural change - Scotland's population will decline. For example, average net migration from mid-2001 to mid-2018 from both the rest of

the UK and overseas was around +21,000 individuals a year. Just enough – in the future – to maintain a stable population in Scotland.

Of course, what is particularly crucial for our economy is not just the impact upon Scotland’s total population, but the effect it has on the number of people of working age. Overseas migrants tend to be much younger than the population as a whole.

To illustrate this, a 50% decline in EU net migration – reducing the steady state level of international net migration from 10,000 per year to 7,000 per year - would see Scotland’s working age population fall by nearly 2% over the next 25 years, rising to a fall of nearly 4% if there was to be zero net EU migration. In contrast, for the UK as a whole, its working age population is projected to still rise, even without EU migration. Chart 6.

**Chart 6:** Percentage change in working age population: principal projection, 50% and zero migration from EU, 2018 to 2043

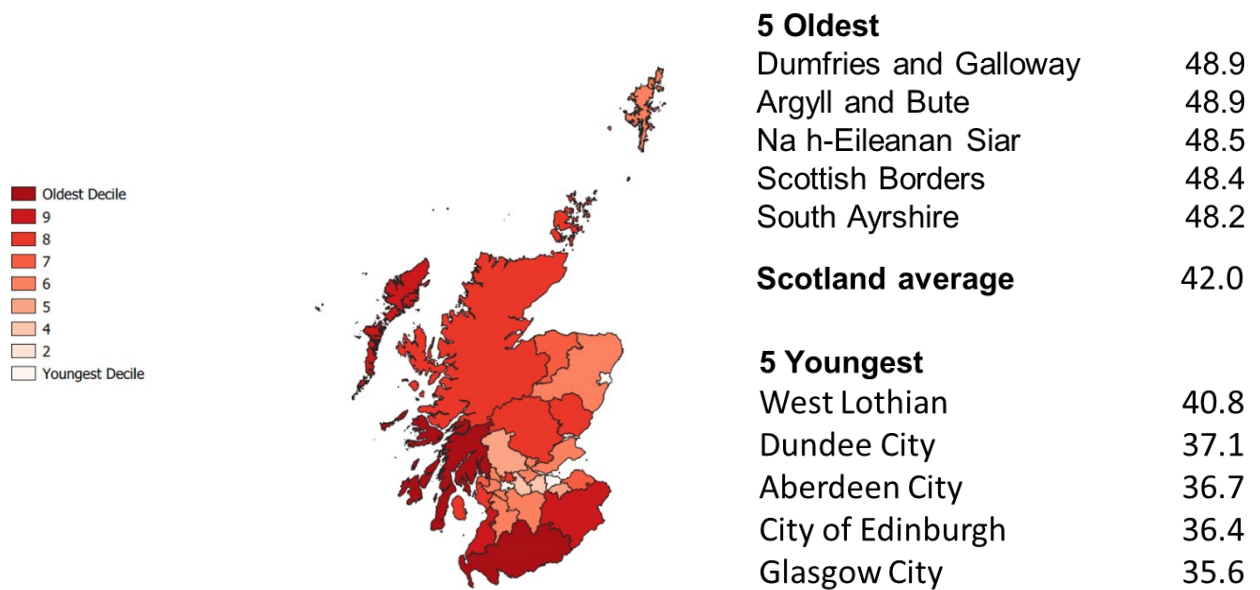


Source: National Records of Scotland

Of course, migration rates can change quickly and it doesn’t take much for such numbers to look quite different. The outlook for the economy both here and in migrants’ country of origin will be crucial. We’ve seen already how many of the sources of Scotland’s population growth in recent years – especially Eastern Europe countries – face even greater demographic pressures than we do. And we also know that policy has an impact.

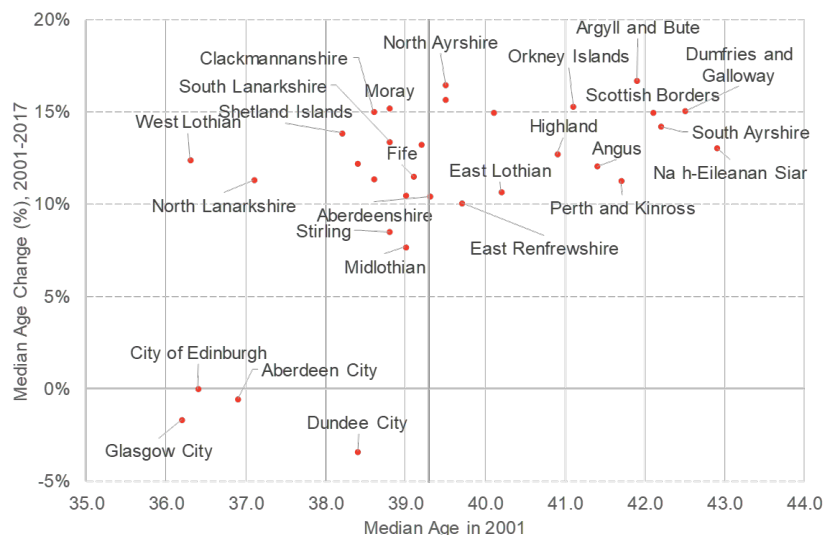
So that’s the picture at a UK level. But as Michael has touched on, the picture within Scotland is extremely varied. As I mentioned, the average age in Scotland is 42 today. In Dumfries & Galloway and the Western Isles it is 49. In Glasgow, Edinburgh, Aberdeen – and other cities with large student populations – it is in the mid-30s. Chart 7.

**Chart 7:** Average age in years: Scotland and by five oldest and youngest local authority areas



Source: National Records of Scotland

**Chart 8:** Changing age profiles of Scotland's local authorities: 2001 median age vs. growth in median age 2001-2017



Source: National Records of Scotland & Fraser of Allander Institute

There are clear geographic patterns in typical ages across the country, with rural areas generally older than urban ones. Areas of past industrial decline are also much more likely on average to be older. And, the pace of ageing in some parts of the country is quickening. Many of the parts

of the country with the oldest populations have also seen their average age rising fastest. Chart 8. A vicious cycle of fewer young people, fewer births and shrinking populations is a major risk to the sustainability of many communities, most especially in Scotland's extensive rural areas.

So, what does all of this mean for the Scottish economy and its public finances?

### **III Why does demography matter for our economy?**

Understanding the dynamics of economic growth is actually relatively straightforward. There are really only a small number of ways that our economy can grow. By expanding our land and stock of capital, growing our active labour force or boosting productivity. Now unless Mr Mackay has secret plans to invade Northumberland, then I think we can park that expanding our land territory for the time being!

Ultimately, the way an advanced economy like Scotland grows is through its labour force, new investment and productivity. The demographic changes that I have touched on will have profound effects on these in the years to come – both nationally and regionally.

Let's take the labour force first. Any decline in the economically active population has two implications. Firstly, by curtailing the size of the workforce, it acts to reduce aggregate supply in our economy, pushing up costs and reducing competitiveness. This in turn shrinks our long-term growth performance. Secondly, a declining population – particularly of its working age component - can impact the demand side of our economy. With fewer people spending money this acts as a further brake on growth. Some of this will stem from weaker private sector demand, but also weaker public sector growth. Tax revenues will be squeezed with fewer people paying tax and/or not paying in as much tax. All this will act to further dampen demand. Hence, as a result, if the economically active population shrinks the implications for our economy are serious.

As an illustration, we've done some modelling at the Fraser of Allander Institute to show the potential impact of a reduction in in-migration over the long-term. To estimate the effects, we have used our general equilibrium model of the Scottish economy. The variant we use is that developed for the Scottish Policy Foundation and – crucially – includes Scotland's new fiscal framework. In our modelling, we examine the impact over the long-run of moving from the central projection for migration to a 'low' migration scenario as set out by the National Records of Scotland.

This would see annual net international migration fall from around 9,500 to 5,000 per year. To put this in context, this is broadly equivalent to a near freeze in net EU migration. Based on past trends, this would not be far away from the level of net migration we might expect in Scotland should UK net migration slip below 100,000. If this was to occur, we anticipate a hit to real Scottish GDP of around 2% - or around £2.5 billion – with a broadly comparable hit on a per capita basis over the long-run. Employment would fall by around 1.6%, whilst real household consumption – a broad measure of overall welfare – would fall by 1%. With lower tax revenues,

the Scottish Government's budget would also be squeezed. And note, this is simply the effect of reducing the economically active population in Scotland, even before any consideration is made of the higher on-average skill level – or participation rates – that migrants have.

Of course, the impacts will be particularly significant in sectors where EU citizens play a particularly disproportionate role, such as in tourism, agriculture, academia or a number of our key export sectors such as food processing. Many of these jobs would not cross thresholds for earnings that some people have advocated. The importance therefore, of sustainable levels of new migrants to Scotland cannot be over-stated.

Now I don't want to stray into the migration debate, other than to simply stress that policies – by any political party in the UK – which limit migration to the UK carry a significant economic cost to Scotland.

Alongside these effects on our labour supply, economists have also speculated about the possible impacts upon productivity of an ageing population. Unfortunately, our understanding of such issues remains limited - particularly in a Scottish context.

How might an ageing population impact upon Scotland's productivity? The so-called 'life-cycle hypothesis' would suggest that people save more – and therefore invest more – whilst working, and run down these assets when in retirement. As a result, as a population ages the amount of savings and investment might slip back, acting to dampen productivity growth. But evidence on this remains mixed.

Studies have also tested for links between innovation and age, with some tentative conclusions that young and/or middle-aged workers tend to be more active in the innovation space. Other research has tested to see when people retire from certain sectors, whether this leads to skills shortages in parts of our economy?

Another possible avenue through which the age of a population could impact upon productivity is through the sectoral composition of spending. As a population becomes older, demand should tend to shift toward more labour intensive – less productive – sectors, the most obvious one being health and social care. Increasing productivity rates in these labour-intensive sectors hasn't been easy.

At the individual level, there is a body of scientific research that shows that physical and cognitive abilities are correlated with age. Most cognitive abilities reach their peak when an individual is in their late 20s and early 30s. However, against this, education and experience tend to increase with age. Management and leadership abilities – something of crucial importance to the productivity debate here in Scotland – also tends to be positively correlated with age. So, there's no knock-out blow that says an ageing population is good or bad for productivity.

Moreover, the experience we have so far relates to our past generations and these relationships between activity and age may not be as strong as they were in the past. For example, my dad



was always going to retire at 60. In contrast, I'll be working far beyond that, so over time our time horizons change and will our incentives.

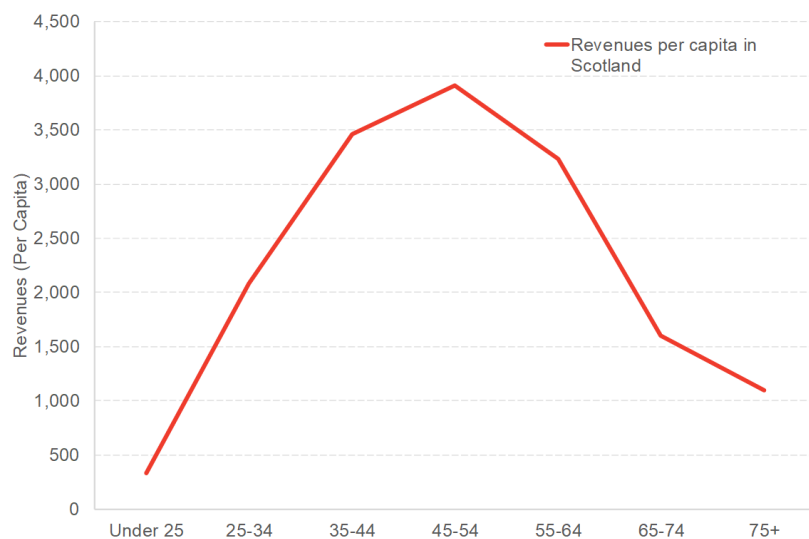
Overall, I think it's simply too early to say what the net impacts of an ageing population might be on Scotland's long-term productivity, with any effects uncertain and ambiguous.

#### IV So why does this all matter for our public finances?

One area where we have a bit more clarity about the impacts of Scotland's changing demography is the public finances.

Firstly, and most obviously, the ageing of our population will increase the cost of public pensions. State pensions and age-related benefits will also continue to rise. And to be clear, such costs haven't been 'saved' for. Instead the costs are met from today's taxpayers. Some responsibility for such costs will – from next April 2020 – be transferred to the Scottish Parliament with the devolution of a number of social security powers, many of which are correlated with age.

**Chart 9:** Tax liabilities per capita by age in Scotland



Source: Fraser of Allander Institute calculations

Secondly, we also know that with fewer people to pay taxes the amount of money we can raise will – all else remaining equal – go down. Moreover, it is not just the total size of a population that is important but its age profile. Chart 9 shows the average income tax liability on a per capita basis for Scotland using the Fraser's tax microsimulation model for Scotland.

Clearly this pressure on public revenues is an issue for all countries. But how does it play out in a devolved context? You might think that from a revenue perspective, the Scottish Budget – with

a weaker demographic outlook than the UK – might face a more acute challenge. But somewhat surprisingly, whether or not the Scottish Government’s Budget is relatively more or less impacted is not entirely clear cut. To understand the impacts, we need to get into the dark recesses of Scotland’s Fiscal Framework. I don’t intend to do that here but it is interesting – or at least it is to me – to understand some of the dynamics – or dare I say it, the somewhat odd – workings of Scotland’s fiscal framework.

Indeed, it may be the case that the fiscal framework may – on purely demographic projections alone – help to protect Scotland’s Budget.

To understand this, recall that the Scottish Budget is now a function of two elements – the block grant from Westminster, as determined by the Barnett Formula; and the relative performance of devolved tax revenues vis-à-vis the rest of the UK. Diagram 1.

**Diagram 1:** The Fiscal Framework



We know that in the long-run the Barnett squeeze should act to bring spending in Scotland – on a per capita basis – more in line with the UK as a whole. However, as we know a slower population growth in Scotland relative to the UK will act to offset – or at the very least slow down – this convergence.

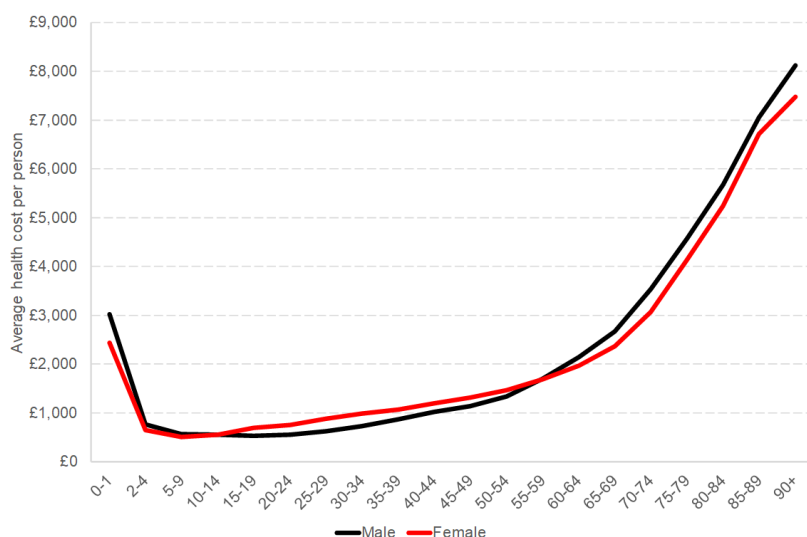
But what about on tax? Recall that what matters in the new framework is the relative performance of devolved taxation on a per head basis. Now you might think – at first glance – that Scotland’s demographic transition represents bad news. See Chart 9 above.

A faster growth in the share of older people will imply relatively slower growth in tax revenues per capita. And, of course this is true. But at the same time, the share of the under-30 population is projected to shrink more rapidly in Scotland than in the rest of the UK. As Chart 9 shows, it is both the young and the old that who on average pay relatively less tax. And although Scotland’s relatively faster growth in the share of older people should reduce the growth of income tax revenues per head relative to the UK as a whole, on current projections this will be offset by a relatively faster decline in the share of younger taxpayers. So, from a theoretical point of view, the net effect is ambiguous.

Interestingly, and in new analysis published by colleagues David Eiser and Frank Brocek, they find that using the latest population projections, this relative shift in population marginally favours the Scottish Budget over the next few years<sup>2</sup>.

The third key area – and one that we can be pretty confident will have a disproportionate impact on Scotland – is through the costs on public services of an ageing population.

**Chart 10:** Average per capita health costs by age and by male and female



Source: Fraser of Allander calculations

We know that as our population ages costs will rise with a greater proportion of the population requiring costly treatments. The greatest pressure will continue to be on health. Chart 10. In recent years, we have seen the health budget rise from around 37% of the Scottish Government budget in 1999 to nearly 50% today. The Scottish Government estimates that spending will need to rise by around 3.5% per annum simply to cope with demand. The government hopes that efficiencies will bring this down to 2%. But even then, real terms growth of 2% in the current climate means that an ever-larger share of our resources will have to be devoted to health. And health is one of the few areas where technological improvements seem to increase rather than decrease costs! So, without a change in policy, health spending is projected to increase from around 8% of Scottish GDP in 2017-18 to 15% by 2067-68.

Of course, it's not just health where pressures will emerge. Wider costs – particularly in social care – are already on the increase, putting pressure on local government budgets. At the UK level, the OBR estimate that public spending as a share of our economy will increase from the 37% it is currently to 45% over the next 50 years if no policy action is taken. And contrary to

<sup>2</sup> <https://fraserofallander.org/scottish-economy/budget/demographic-projections-and-income-tax-revenues-under-the-fiscal-framework-implications-for-the-scottish-budget>

what you may think listening to the current general election debate, that can't be funded from borrowing for ever!

## V Some reflections on policy

So, what does all this mean for the policy landscape in Scotland? Clearly migration is important. But we know this already. One area where we need more proactive thought is around greater thinking about how we support parts of Scotland where population pressures are particularly acute. Just as it seems to me to be appropriate to argue that Scotland's migration needs are distinct in the UK, it is the case that those of North Ayrshire, Argyll and the Western Isles are distinct from those, for example, of Scotland and for example Edinburgh and the Lothians.

At the same time, the importance of attracting migration from the rest of the UK should not be ignored. This is of course less about formal rules and regulations for migration but much more about Scotland's attractiveness as a place to live and work. This means getting it right on all aspects of economic and social policy – from housing and business growth to planning tax and public services.

On public spending, it is inevitable that as a country we can't put off a frank discussion for too much longer about how we prioritise and pay for key public services. Some of this will be entail making difficult choices about what we can and cannot afford. Some of it will be about the reforms we must make to manage demand and make budgets more sustainable.

Over the years, from the focus upon outcomes, through to the Christie Commission, we have a rich evidence base to inform what we 'should' and 'need' to be doing. But we've yet to fully grasp turning that into action. One of the frustrating things is that we're still talking about outcomes and prevention as though they are new, when we've known about their importance for well over 15 years.

On the economy, there are opportunities to re-imagine genuine lifelong learning. Quite rightly, much of our focus has been on preventing and tackling youth unemployment, but as our population ages, retraining and reskilling all ages will be crucial. The success of initiatives such as Developing Scotland's Young Workforce offer some great lessons on a possible way forward. Central to this will be opening up our colleges and universities to a much wider audience – and wider demographic – than in the past.

There will be opportunities for firms themselves to get better at understanding the skills of their workforce. I've spoken about the growth in health and social care as a cost, but it's also an opportunity for employment, innovation and improved conditions and work practices in many care services. There will be opportunities for more flexible work targeted at supporting people to remain in the workforce for longer. Just as young people are turning their backs on the standard 5 day a week 9-to-5 role, we have an opportunity to re-imagine what the future of work could look like. Indeed, an ageing population opens up some really interesting questions about 'wellbeing' and the nature of our economic model in the long-run.

Of course, it would be remiss of me not to stress the importance of productivity. Not just because if we have a shrinking working population, it will be the main driver of growth. But technological advancements and innovation are themselves crucial to supporting healthy and productive lives as we all get older.

## VI Conclusion

Many of the above issues have been discussed before and for those who have attended David Hume Institute events over the years, you will not doubt recall these issues being raised by numerous past speakers. What is perhaps different this time is that in the past arguably a lot of these issues were something ‘for the future’, or ‘for tomorrow’. Not any longer. The baby boomers are now in their 70s – and their children are only 10 to 15 years away from retirement. We are already beginning to see the harsh implications of this demographic transition feeding through to budgets in Scotland and the UK. Brexit and the UK’s possible future direction of travel in terms of migration will undoubtedly add a further hard edge to our debates, but many of the issues that Scotland will face are with us now and policy has to address them if we are to prosper into the future.

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## References

Michael Anderson (2018), *Scotland's Populations: from the 1850s to Today*, Oxford University Press.

David Eiser and Frantisek Brocek (4 December 2019), *Demographic projections and income tax revenues under the fiscal framework: implications for the Scottish budget*, Fraser of Allander Institute blog <https://fraserofallander.org/scottish-economy/budget/demographic-projections-and-income-tax-revenues-under-the-fiscal-framework-implications-for-the-scottish-budget/>

