The structure of employment and graduate employment in Scotland, 2001 – 2009

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Introduction

The current policy scenario in Scotland presumes the development of what is commonly referred to as a 'knowledge economy'. Moreover, the policy assumption is that, in time, most of those who participate in the labour market will find work in occupations compatible with being 'knowledge workers', subsequent to and consequential of personal human capital investment in education, most especially to degree level (Reich, 1993: Warhurst, 2008). This is reflected in the Scottish Government's lifelong skills strategy which offers the vision of "a smarter Scotland, with a globally competitive economy based on high value jobs" (Scottish Government, 2007, p. 4). It is the principal basis for the Scottish Government's encouragement – both vocal and financial, especially in terms of its 'no fees' policy – for yet more to enter into degree and degree equivalent programmes of study.

How has industrial and occupational employment in Scotland changed between 2001 and 2009? In which industrial sectors and occupational groupings have those with graduate status found jobs? Have these changed over this period? Are the prospects for potential graduates of the future worth the personal financial costs this investment entails? And should the Scottish Government persist with a skills policy which places so much emphasis on the production of yet more graduates?

The answers to some of these questions are presented in the sections which follow.

The labour market context

Between May 1995 and September 2008, employment in Scotland increased by (approximately) 285,200 or by over 12 percent. The unemployment rate decreased by 4.3 percentage points, from 8.8 percent to 4.5 (cf. Figure 1). Over the period, female employment did expand by 6 percentage points more than male employment, but, nonetheless, for many in Scotland – and elsewhere in the United Kingdom, for that matter – these were propitious times in terms of the employment opportunities available.

These times came to an abrupt end in the last quarter of 2008, however, as the consequences of the financial crises prompted by the failure of Lehman Brothers compounded the problem of an imminent decline in demand in the world economy[1]. Between the second (calendar) quarter of 2008 and the second (calendar) quarter of 2009, approximately 36,000 jobs were lost in Scotland, some 1.5 percent of the 2008 total. That said, the magnitude of total job loss was not as great as many forecasters had feared. Many employers met declining demand for their goods and services by reducing the number of hours many of their employees worked rather than dismissing them, as had been a common practice during previous recessions. This strategy, however, has obvious limitations and implications. Any future decrease in labour demand may have a proportionately greater impact on unemployment. Conversely, any marginal increase in labour demand will do little to alleviate unemployment. If economic growth is observed, it will be 'job-less growth'.

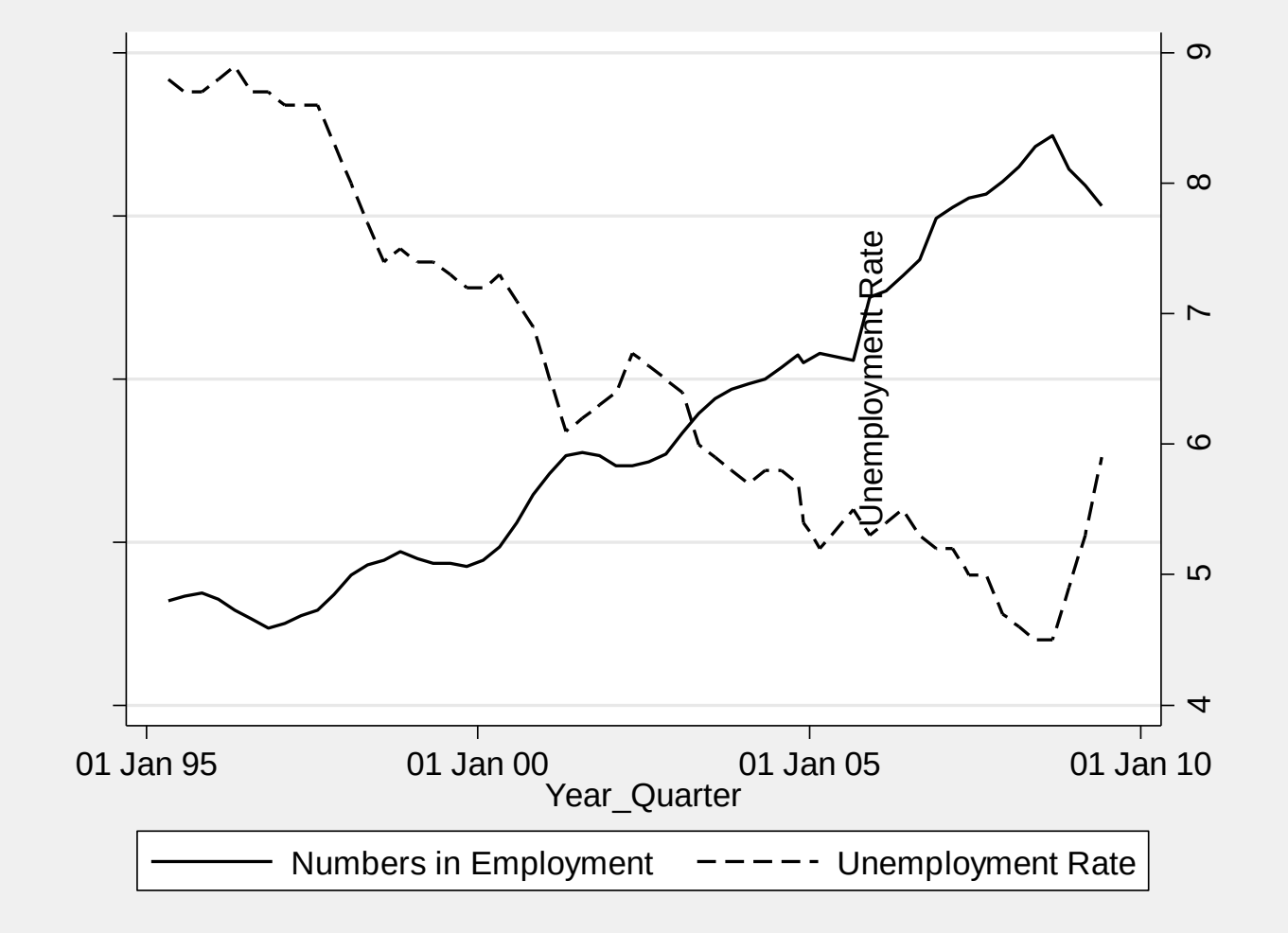
Given this context, therefore, statistics which relate to the structure of industry by employment, occupational structure and graduate employment over the period 2001 – 2009 are better examined for two sub periods: the first for the years 2001 and 2008, the end of the era of long run economic expansion; and the second for the years 2008 and 2009, the beginning of the period during which the economy was in recession.

The structure of industry, by employment

Individuals are recruited by business enterprises and organisations and employed at workplaces. Workplaces are classified according to the nature of the economic activity undertaken, a classification known as the Standard Industrial Classification (SIC). Change in the structure of industrial employment reflects both the change in demand for products and services and how these products and services are produced and provided. For example, product demand within a sector may increase yet employment there fall because the technology used has changed and requires proportionately less labour per unit of output.

The distribution of employment by industry for the years 2001, 2008 and 2009 is presented in Table 1. In 2009, almost two thirds of those in employment were working in three industrial sectors, in order of their relative importance: Public Administration, Education and Health; Distribution, Hotels and Restaurants; and Banking Insurance and Finance. Public Administration, Education and Health illustrates one important feature of employment in Scotland: segmentation by gender, how certain industrial sectors may be identified as predominantly male, for example Manufacturing, whereas certain others may be identified as predominantly female, for example Public Administration, Education and Health. Another important feature is that

Figure 1: Employment and unemployment, May 1995-June 2009



Source: NOMIS

employment expansion has tended to advantage the 'female' industrial sectors and disadvantage the 'male'.

The public sector (to be distinguished from the industrial sector Public Administration, Education and Health) plays a significant – and often seen as controversial - role within the Scottish economy (Cumbers, 2007). Three in ten workers were employed in the public sector in Scotland in 2009, approximately two thirds of whom were female.

Occupational structure

Whereas the SIC classifies workplaces according to the economic activity undertaken there, so the Standard Occupational Classification (SOC) categorises their workforces according to what individuals do, in an implicit hierarchy reflecting the knowledge and skills required to do the job. Consequently, as industrial sectors within the economy expand and contract, a process referred to as 'sectoral change', this will impact upon occupational structure. However, separately and simultaneously, there is another process on-going, referred to as a process of 'structural change', as workplaces change the nature of labour they employ, principally, although not exclusively, as a consequence of technical change. In principle, 'structural change' in terms of its occupational impact may be either 'de-skilling' or 'up-skilling', where the former entails the employment of proportionately more less skilled workers and the latter entails the employment of proportionately more high skilled workers.

The distribution of employment by occupation for the years 2001, 2008 and 2009 is presented in Table 2. Note again, the prevalence of gender segmentation, with some occupations (e.g. Skilled Trades Occupations) being predominantly male and others (e.g. Administrative and Secretarial) being predominantly female. In 2009, the three most populous occupational groupings were, in order of their relative importance: Associate Professional and Technical, Managers and Senior Officials and Professional Occupations, constituting approximately 45 percent of total

Table 1: The structure of industry, by employment: 2001, 2008 and 2009

	2001		2008		2009	
	Employment ('000s)	**Of Which Male (%)**	**Employment ('000s)**	**Of Which Male (%)**	**Employment ('000s)**	**Of Which Male (%)**
Agriculture and Fishing	**57.5**	**78.1**	**56.6**	**77.4**	**28.5**	**84.5**
Energy and Water	64.2	85.2	89.9	75.4	71.3	76.1
Manufacturing	336.5	69.9	251.4	76.2	172.8	81.1
Construction	178.1	90.3	209.3	88.6	179.2	87.8
Distribution, Hotels And Restaurants	453.5	42.3	478.2	47.3	411.4	48.8
Transport and Communication	161.2	74.2	144.7	77.9	147.6	76.3
Banking, Insurance And Finance	287.4	52.8	351.0	54.7	346.9	54.4
Public Administration, Education and Health	668.8	29.4	805.3	30.3	725.3	30.2
Other Services	132.4	50.0	149.4	41.7	122.5	43.7
Total (all Industries)	2,340.1		2,536.2		2,205.3	
'Public Sector'	652.2	36.8	695.8	35.4	662.3	35.6

Notes to Tables 1 through to 6: The data have their origin in the second (calendar) quarter of the Labour Force Survey, a quarterly sample survey of households living at private addresses in Great Britain which, inter alia, seeks information about respondents' personal characteristics (such as gender and qualifications) and labour market status (such as their workplace if in employment and occupation). Industry and occupation data refer to the individual's main job. Observations with missing or incomplete information are omitted from the analysis. For example, in the surveys > 10 percent do not respond to questions about qualifications. The incidence of omission varies across the three calendar periods examined. This factor part explains the apparent discrepancies between the 'total' employment numbers which appear in these tables and the corresponding statistics used in the construction of Figure 1. It also means that direct cross year comparisons should be resisted or, if undertaken, the interpretation of the results should be treated with some caution.

Table 2: Occupational structure: 2001, 2008 and 2009

	2001		2008		2009	
	Employment ('000s)	**Of Which Male (%)**	**Employment ('000s)**	**Of Which Male (%)**	**Employment ('000s)**	**Of Which Male (%)**
Managers and Senior Officials	273.3	69.5	340.5	65.3	328.5	63.3
Professional Occupations	265.8	55.3	336.1	54.1	318.9	52.1
Associate Professional and Technical	307.1	48.1	380.1	47.3	348.4	50.9
Administrative and Secretarial	309.1	20.4	277.2	19.0	262.8	20.2
Skilled Trades Occupations	287.3	91.5	280.8	92.3	235.8	92.9
Personal Service Occupations	171.7	15.9	232.4	17.8	201.6	16.3
Sales and Customer Service Occupations	206.5	27.5	205.7	33.1	171.9	32.9
Process, Plant and Machine Operatives	218.8	80.3	184.5	87.9	133.9	92.2
Elementary Occupations	299.6	51.4	298.1	53.1	202.9	55.7
Total (All Occupations)	2,340.1		2,536.2		2,205.3	

Table 3: Percentage distribution of individuals who had graduate status, by industry: 2001, 2008 and 2009

	2001	2008	2009
Agriculture and Fishing	1.1	0.5	0.7
Energy and Water	3.7	5.0	2.9
Manufacturing	10.1	7.0	4.7
Construction	3.6	2.7	4.8
Distribution, Hotels And Restaurants	8.7	7.2	9.1
Transport and Communication	2.5	3.1	5.4
Banking, Insurance And Finance	19.1	21.9	20.7
Public Administration, Education and Health	46.9	46.9	46.3
Other Services	4.3	5.8	5.3
Total (all Industries)	100.0	100.0	100.0
‘Public Sector’ (as opposed to ‘private sector’)	45.0	41.5	44.3
Number who have graduate status	366,168	511,861	516,525

Note to Tables 3 and 5: Because of rounding, totals may not sum to 100.0

Table 4: Percentage within the industry who had graduate status: 2001, 2008 and 2009

	2001	2008	2009
Agriculture and Fishing	7.0	4.9	12.6
Energy and Water	21.3	28.6	21.3
Manufacturing	11.0	13.8	14.1
Construction	7.4	6.7	13.7
Distribution, Hotels And Restaurants	7.1	7.7	11.5
Transport and Communication	5.6	10.9	19.0
Banking, Insurance And Finance	24.2	32.0	30.9
Public Administration, Education and Health	25.6	29.8	33.0
Other Services	11.8	20.0	22.4
Total (all Industries)	15.6	20.2	23.4
‘Public Sector’	25.3	30.5	34.5
Number who have graduate status	366,168	511,861	516,525

employment. Each of these occupational groupings is conventionally associated with 'knowledge workers', and, notably, their combined share in the distribution increases across the three years examined. In essence, therefore, occupational change over the period has been compatible with what is associated with the development of a 'knowledge economy'.

Graduate employment

How the stock of those who had graduate status was distributed across industrial sectors in the 2001, 2008 and 2009 is identified in Table 3[2]. Nearly half were employed in Public Administration, Education and Health. There was a similarly high level of concentration of graduates in the public (as opposed to the private) sector. The only other industrial sector which employed a significantly large proportion of graduates was Banking, Insurance and Finance.

The percentage of workers who had graduate status within each industrial sector is reported in Table 4. In 2009, almost one in four workers had graduate status. The percentage of workers who had graduate status was noticeably larger in two industrial sectors: Public Administration and Health (at 33.0 percent) and Banking, Insurance and Finance (at 30.9 percent). 34.5 percent of workers in the public sector had graduate status in 2009. If 'up-skilling' is to be measured in terms of the percentage of workers within an industrial sector who have graduate status, this process would appear to be evident over the period across most industrial sectors in ScotlandGiven the qualification levels required for entry to certain occupations within the SOC, the expectations are that, first, the percentage distribution of individuals who had graduate status will be skewed towards the upper end of the occupational hierarchy and, second, proportionately more individuals within these 'higher' occupational groupings will have graduate status. This proves to be the case, as demonstrated in Tables 5 and 6.

In 2009, more than four in every five individuals who had graduate status were employed in the top three occupational groupings, in order of their relative importance: Professional Occupations; Managers and Senior Officials; and Associate Professional and Technical. This distribution appears to have changed only marginally over the period (cf. Table 5). Two in every three employed within Professional Occupations had degree status in 2009. One in every three employed within Managers and Senior Officials and Associate Professional and Technical had degree status in the same year (cf. Table 6).

That individuals with graduate status were seen to be employed in the other six occupational groupings would be seen by some to be a possible manifestation of 'over-education' i.e. not being in jobs commensurate with the level of qualifications held (cf. Table 5) (Dolton and Vignoles, 2000: Sloane et al, 1999). Moreover, the incidence of 'over-education' would appear to be increasing, in that the percentage of individuals who had graduate status generally increased in most of these occupational groupings over the period (cf. Table 6).

Employment prospects for graduates

Higher education underwent a policy driven, major, sudden and traumatic systemic change in the mid 1980s, moving from an 'elite' to a 'mass' system, with the latter designed to provide opportunities in tertiary education for an increasing proportion of the school leaving population (Sutherland, 2008)3. This change had inevitable short run and long run impacts upon the graduate labour market. Despite initial fears of supply exceeding demand, the period was associated more with demand exceeding supply4. No longer being able to recruit quality school leavers who had now entered into higher education, employers sought graduates as substitutes; the professions requiring graduate entry diversified, from the 'traditional', such as law, medicine and teaching for example, to the 'modern', such as accounting, architecture, surveying and town planning; 'new' and 'niche' graduate jobs appeared, the former often reflecting managerial specialisms, such as 'finance', 'personnel' or 'sales', and the latter requiring the ability to apply hybrid skills, for example combining managerial skills with technical expertise, frequently in the manifold areas associated with information and communication technology (ICT) (Elias and Purcell, 2004). Graduates facilitated if not initiated the very prevalent re-organisation of work which occurred during the 1990s (Mason, 1996).

Even before the recession, however, there was accumulating evidence that the relative demand for and supply of graduates was changing. The graduate premium was declining (Green and Zhu, 2010, forthcoming); and skills under-utilisation was becoming more prevalent (Felstead and Green, 2008: Felstead et al, 2007).

Cutting the deficit will dominate fiscal policies for the foreseeable future. The new coalition government at Westminster has promised reductions in public expenditure totalling £6B in the current financial year, with the details to be confirmed in the 'emergency' budget of 22nd June. These measures will have undoubted, if incalculable, immediate and short run consequences for the macro economy. They will also impact upon the size of departmental spending budgets in England and Wales and Treasury funding received by the Scottish Government.

Approximately 30 percent of the workforce in Scotland are employed within the public sector. Moreover, approximately 35 percent of the stock of employees within this sector have graduate status, most in Professional and Associate Professional and Technical occupations, the majority of whom are female. The employment prospects for many new graduates in these areas in the immediate future, therefore, must be seen to be poor. Early evidence of this comes from the recent announcement of the Greater Glasgow and Clyde Health Board to reduce employment by over 1,000 within the next 18 months. Achieving this outcome via a policy of 'no redundancy', merely transfers the real costs of the policy

Table 5: Percentage distribution of individuals who had graduate status, by occupation: 2001, 2008 and 2009

	2001	2008	2009
Managers and Senior Officials	16.7	18.1	21.7
Professional Occupations	47.6	43.0	40.5
Associate Professional and Technical	20.8	23.6	20.9
Administrative and Secretarial	5.9	5.2	5.5
Skilled Trades Occupations	2.4	2.1	1.7
Personal Service Occupations	1.6	2.6	4.1
Sales and Customer Service Occupations	2.2	2.5	2.8
Process, Plant and Machine Operatives	1.1	1.2	0.4
Elementary Occupations	1.6	1.8	2.5
Total (All Occupations)	100.0	100.0	100.0
Number who have graduate status	366,168	511,861	516,525

Table 6: Percentage within the occupational grouping who had graduate status: 2001, 2008, 2009

	2001	2008	2009
Managers and Senior Officials	22.4	27.2	34.1
Professional Occupations	65.6	65.4	65.5
Associate Professional and Technical	24.8	31.8	30.9
Administrative and Secretarial	7.0	9.7	10.8
Skilled Trades Occupations	3.1	3.8	3.8
Personal Service Occupations	3.5	5.7	10.4
Sales and Customer Service Occupations	4.0	6.2	8.3
Process, Plant and Machine Operatives	1.8	3.3	1.5
Elementary Occupations	1.9	3.1	6.4
Total (All Occupations)	15.6	20.2	23.4
Number who have graduate status	366,168	511,861	516,525

to job seekers, either already in the labour market or about to enter into it.

But what of the longer run, when the deficit no longer constrains economic policy and the normality of modest economic and employment growth returns?
The 'knowledge' economy is known also as the 'information' economy and the 'weightless' economy, because it is associated with value added having its origins in highly qualified human capital inputs making effective use of ICT. Only a proportion of those employed within the knowledge intensive sectors of the economy, however, undertake activities associated with Reich's 'symbolic analyst', identifying and solving problems. Many are in jobs processing information, an activity which may be undertaken anywhere because the costs of moving information across space are negligible. De-industrialisation was often the consequence of firms outsourcing their manufacturing process to low cost locations overseas, at the cost of employment opportunities for unskilled labour at home (Dicken, 2007). Call centres established overseas in the search for competitive advantage on the part of some companies have had similar detrimental employment consequences for many semi-skilled white collar workers.

The multinational firms which dominate the Banking, Insurance and Finance sector are aware of the competitive advantages which accrue from outsourcing overseas their manifold information processing activities. What will be the implications were they to increase the extent of what they already do? Will this increase the likelihood of technically very similar organisations also adopting an out sourcing strategy, for example firms within the legal sector where there is already some evidence of this? When will local authorities evaluate the probable cost savings – and possible reductions in rates, of course – which could arise from doing the same with many of their processing activities. Or the NHS, as it is driven to deliver more value for money? What then, for the future employment prospects of many graduates, 'traditional' or 'modern', 'new' or 'niche'?

Given such a scenario, what then, for the central thrust of the Scottish Government's lifelong skills strategy to produce more graduates?

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Endnotes

[1]See Bell and Blanchflower (2009) for a detailed discussion of the period, and one insight into the several explanations for the turning point.

[2]By graduate status is meant all those who have level 4 qualifications i.e. those who hold degree equivalent, professional and vocational qualifications as well as those who have degrees.

[3]Simultaneously, often to rationalise the expansion of the sector, university attendance became less about learning and the acquisition of knowledge and more about the development of skills to enhance subsequent participation in the labour market on graduation.
[4]The graduate pay premium rose as a consequence, something which, in turn, was used to help rationalise the argument for the introduction of fees in England and Wales.