AN ECONOMY-WIDE PERSPECTIVE ON EARNINGS DATA IN IRELAND

Barra Casey[*]

1. Introduction

The objective of this article is to give a detailed description as to how earnings data is recorded in the Irish economy and to develop new methods of presenting this data in order to give a more comprehensive picture of wage movements over the period since 1998. Currently, earnings data are published by the Central Statistics Office (CSO) on a sectoral basis with similar methodological backgrounds across the surveys. However, the surveys can vary in terms of their scope. For example, the survey of industrial earnings presents both hourly and weekly earnings series while the survey of distribution and business services contains just weekly earnings data. The type of worker being surveyed can also vary, some surveys covering all workers and other surveys covering just full-time workers.

A single series that attempts to capture the movement in earnings across the whole economy does not exist in Irish statistics. The UK New Earnings Survey (NES) provides a very detailed and comprehensive source of information on earnings levels across the wider economy in terms of sectors, occupation, gender, regions, age etc. Although there are moves in Ireland towards a comprehensive survey investigating earnings related issues, it is not currently available. This article will attempt, insofar as Irish sectoral earnings data allows, to move as close as possible to an average earnings series for the whole economy. Once this series has been constructed, it will be possible to view sectoral earnings data in the Irish economy from a new perspective. One of the features that emerge from this methodology is the possibility of making meaningful comparisons of cross-sectoral earnings growth. It is also possible to amalgamate the data in such a way so as to compare earnings growth in more aggregated sectors, for example, in the public sector versus the private sector.

[*] The author is very grateful for assistance and advice from colleagues within the ESRI, in particular Professor J.J. Sexton.

2. Methodology

The methodology used in the construction of the average earnings series for the wider economy is outlined in detail in Casey (2004).

The methodology is new insofar as it attempts to construct a single average earnings series for the economy at large by taking the various sectoral earnings surveys published by the CSO and amalgamating them together. It does this by using sectoral employment from the *Quarterly National Household Survey* (QNHS) to create a set of weights and then applying them to the sectoral earnings surveys.

The enterprise-based sectoral earnings surveys published by the CSO and being considered in this article are:

- Industrial Earnings and Hours Worked,
- Earnings in Distribution and Business Services,
- Public Sector Employment and Earnings,
- Earnings and Hours Worked in Construction,
- Banking, Insurance and Building Societies: Employment and Earnings.

Most importantly, each sectoral earnings survey generally collect a similar type of earnings on a quarterly basis. This is the gross weekly payment made to the employee before income tax or social insurance deductions and includes overtime, regular bonuses/ commission, holiday/sick pay, "wet time" in the case of construction workers etc.

Due to a number of differences in the scope of these earnings surveys, the construction of the economy-wide earnings series is limited in a number of respects. The distance the series extends into the past is restricted by the recent nature of the survey on distribution and business services. Therefore, the average gross earnings series for the State extends back only as far as 1998. Due to the varying coverage across the earnings surveys in terms of the type of worker being surveyed (full-time versus part-time) as well as the enterprise-based nature of each survey, the resulting earnings series purports to represent *full-time employees*. This implies that part-time employees, the self-employed and assisting relatives are not covered by the economy-wide earnings series.

Table 1 shows the numbers of full-time employees from the QNHS that go into the weighting process in each year between 1998 and 2001. The sectors are grouped on the basis of the EU NACE system, and the weights are then applied to the relevant sectoral earnings series. In some cases, a degree of subjectivity was required in the apportioning of employment weights due to the absence of a corresponding industrial classification system within certain earnings surveys. An important example of this is with the survey of public sector earnings.

In terms of the proportion of the economy that is covered by the average gross earnings series, a number of sectors could not be included. The most important of these is the health sector, which forms a large part of all public services (almost 30 per cent). Earnings data for the public sector are largely taken from administrative sources, for example government payroll systems, but unfortunately this data has not been made readily available by

the health sector. The second most important sector not covered is agriculture, for which the currently available earnings survey is unsuitable for the purpose of indicator construction due to its infrequent publication.

Table 1: Full-time Employees (000s) with Sectoral Weights in Parenthesis, 1998-2001

	1998		1999		2000		2001	
Industry	266.9	(0.32)	270.7	(0.30)	270.6	(0.28)	277.5	(0.28)
Hi-Tech Manufacturing	126.6	(0.15)	129.7	(0.14)	133.1	(0.14)	141.1	(0.14)
Other Manufacturing	140.3	(0.17)	141.0	(0.16)	137.4	(0.14)	136.4	(0.14)
Construction	85.0	(0.10)	98.5	(0.11)	115.6	(0.12)	126.3	(0.13)
Private Market Services	356.4	(0.42)	393.9	(0.43)	425.7	(0.44)	444.2	(0.44)
Distribution	121.1	(0.14)	128.3	(0.14)	137.6	(0.14)	144.5	(0.14)
Trans & Comm.	63.8	(0.08)	72.7	(0.08)	76.7	(0.08)	83.2	(0.08)
Hotels & Restaurants	47.7	(0.06)	49.5	(0.05)	53.7	(0.06)	56.0	(0.06)
Other Market Services	123.8	(0.15)	143.4	(0.16)	157.7	(0.16)	160.5	(0.16)
Non-Market Services	136.0	(0.16)	146.0	(0.16)	152.1	(0.16)	153.8	(0.15)
Public Administration and Defence (PAD)	66.9	(0.08)	70.3	(0.08)	74.5	(0.08)	76.0	(0.08)
Education	69.1	(0.08)	75.8	(0.08)	77.6	(0.08)	77.8	(0.08)
State Total	844.3		909.1		964.0		1001.8	

Source: CSO, *Quarterly National Household Survey* (QNHS).
Note: In terms of the sectoral grouping, see also Sexton *et al.* (2004).

It is important to remember that changes in the structure of employment within organisations could potentially affect the average weekly earnings recorded. This is a problem inherent within each enterprise-based survey. For example, the appointment of replacement staff at lower grades and therefore lower pay levels could depress the average earnings. Another example would be a reduction in the numbers of part-time staff, who generally get paid less than full-time staff, could increase the average earnings. It must be borne in mind while structural changes can have an affect on the indices this problem is not likely to be significant because the period under review is relatively short (1998–2003).

3. Recent Earnings Trends in Ireland

ECONOMY-WIDE EARNINGS

Table 2 shows the average gross *weekly* earnings series for full-time employees in the economy, constructed using the methodology described in Section 2, for Q1 1998 to Q3 2003. Also shown are the average usual weekly hours worked for each quarter over the same period.[1] Using this series, the average gross *hourly* earnings can be estimated for full-time employees. All earnings are denominated in euro (€) and no seasonal adjustments have been made. Table 2 also

[1] The average usual weekly hours worked were calculated using data from the *Quarterly National Household Survey* (QNHS). To ensure that this weekly hours worked series was consistent with the weekly earnings series, a number of precautions had to be taken. First, the average usual weekly hours were calculated using just full-time employees. Second, only the sectors used in the weighting of the State weekly earnings series were used when constructing the corresponding series for average usual hours worked. Therefore, for example, weekly hours from agriculture and the health sector have been excluded from this series.

contains year-on-year changes in both weekly and hourly earnings, which represent the percentage change between the relevant quarter and the corresponding quarter one year previously.

Table 2: Average Gross Weekly and Hourly Earnings (€) for Full-Time Employees in the State (Non-Seasonally Adjusted), Q1 1998–Q3 2003

Period	Average Gross Weekly Earnings (€)	Year on Year Change (%)	Average Usual Weekly Hours	Average Gross Hourly Earnings (€)	Year on Year Change (%)
Q1 – 98	434.8		40.2	10.8	
Q2 – 98	443.9		40.2	11.1	
Q3 – 98	448.0		40.1	11.2	
Q4 – 98	455.7		40.0	11.4	
Q1 – 99	456.8	5.1	39.9	11.5	5.9
Q2 – 99	465.4	4.8	39.9	11.7	5.6
Q3 – 99	475.0	6.0	39.9	11.9	6.7
Q4 – 99	486.6	6.8	39.8	12.2	7.4
Q1 – 00	488.3	6.9	39.8	12.3	7.0
Q2 – 00	500.9	7.6	39.8	12.6	7.8
Q3 – 00	510.3	7.4	39.8	12.8	7.5
Q4 – 00	535.3	10.0	39.8	13.4	10.0
Q1 – 01	536.8	9.9	39.8	13.5	10.0
Q2 – 01	547.3	9.3	39.8	13.8	9.4
Q3 – 01	557.2	9.2	39.7	14.0	9.4
Q4 – 01	570.4	6.6	39.6	14.4	7.1
Q1 – 02	566.9	5.6	39.6	14.3	6.2
Q2 – 02	575.2	5.1	39.5	14.6	5.8
Q3 – 02	582.5	4.6	39.5	14.8	5.3
Q4 – 02	594.7	4.3	39.4	15.1	4.8
Q1 – 03	594.9	4.9	39.3	15.1	5.5
Q2 – 03	604.9	5.2	39.3	15.4	5.6
Q3 – 03	608.8	4.5	39.4	15.5	4.8

Note: Quarters one, two, three and four here refer to March, June, September and December respectively.

Using these newly constructed indicators, it can be seen from Table 2 that in absolute terms, average gross weekly earnings in the Irish economy increased from €435 to €609, an increase of some 40 per cent in five and a half years. The corresponding change in average gross hourly earnings was an increase from €10.8 in Q1 1998 to €15.4 in Q3 2003. This represents a proportional increase of some 43 per cent. The reason for the difference is that the average usual hours worked has fallen slightly over this period. On average, full-time employees were working almost one hour less on a weekly basis in 2003 than they were in 1998.

Table 3 contains the annual rates of increase in weekly and hourly earnings for 1999 to 2003[2] as well as annual average increases for the full period. On an annual average basis, weekly and hourly earnings in the Irish economy increased by some 6.4 per cent and 6.8 per cent respectively. In comparison, consumer prices

[2] The annual rate is calculated by taking the average of the year-on-year changes in any one particular year.

increased over the same period by an annual average of 4.0 per cent. Therefore in terms of purchasing power, full-time employees in the Irish economy increased their real weekly earnings by 2.3 per cent and their real hourly earnings by 2.7 per cent on an annual average basis over the period being considered here.

The growth in weekly earnings in 1999 at an annual rate of 5.7 per cent was moderate relative to the overall growth in weekly earnings within the period under review here. The annual rate of increase in hourly earnings was somewhat faster at 6.4 per cent which was caused by a fall in average weekly hours worked. The years 2000 and 2001 saw weekly earnings begin to accelerate quickly, recording annual increases of 8.0 per cent and 8.7 per cent respectively. Average hourly earnings grew slightly faster over these years as the average hours worked continued to creep downwards. This acceleration was due to a tightening in the labour market at that time as the demand for labour began to exceed the supply. One indicator of this tightening effect, as shown in Williams *et al.* (2002), was the high level of vacancies in the Irish economy at the time. Vacancies can be defined as "…unmet demand for labour where the positions are currently unoccupied, available immediately and the company is actually searching for workers". This would have contributed significantly to the observed increase in weekly and hourly earnings.

Table 3: Annual Rates of Increase in Average Gross Weekly and Hourly Earnings (%) for Full-Time Employees in the State, 1998 to 2003

	Average Gross Weekly Earnings (%)	Average Gross Hourly Earnings (%)	Annual Average Usual Weekly Hours
1998			40.1
1999	5.7	6.4	39.9
2000	8.0	8.1	39.8
2001	8.7	9.0	39.7
2002	4.9	5.5	39.5
2003	4.9	5.3	39.3
1998 - 2003 Annual Avg. (%)	6.4	6.8	

Note: The annual rate of increase in earnings for 2003 is an estimate as it is calculated using data from the first three quarters of that year only. It therefore assumes that the year-on-year growth in the fourth quarter is an average of the year-on-year growth rates in the previous three quarters.
The average usual weekly hours for each year are calculated as an average of the quarterly figures within that year.

The economy reached a turning point in mid-2001 as the economy slowed and the previous decade of unprecedented growth in output came to an end. Subsequently, the unemployment rate began to increase, which was accompanied by a slowing in the rate of growth of earnings once more. The annual rate of increase in weekly earnings in 2002 was 4.9 per cent while hourly earnings grew at an annual rate of 5.5 per cent.

The annual increases for weekly and hourly earnings for 2003 in Table 3 are estimates using the data from the first three quarters of the year. Judging by these, earnings seem to have grown at approximately the same rate as they did in 2002.

SECTORAL EARNINGS

This section, which deals with earnings trends by sector, will use the average gross hourly earnings as its analytical base. In this case, the weekly earnings series by sector have been adjusted appropriately using the corresponding average usual hours worked in each sector. The sectoral earnings series have also been seasonally adjusted using procedures that have been outlined in Casey (2004).

Turning first to the level of earnings by sector, Table 4 shows average gross hourly earnings (seasonally adjusted) by sector for two periods, Q1 1998 and Q3 2003, as well as the average gross hourly earnings for the wider economy. The quarterly hourly earnings series by sector for the full period (seasonally adjusted) are contained in Appendix Table A1.

It can be seen from Table 4, that in 1998, it is the service type sectors where hourly earnings were greatest. Full-time employees in Non-Market Services (public sector) were registering the highest level of hourly earnings at almost €15 an hour. Transport & Communication and Other Market Services were earning in and around €12.50 an hour, above the State average level of €10.90. All other sectors were earning a level below this State average. Construction was at a level of €10.50 an hour, while Distribution was earning almost one euro less at €9.80 an hour. Both divisions of Industry (Hi-Tech and Other Manufacturing) were earning approximately €9.40 an hour and the lowest level of sectoral hourly earnings in the economy was in the Hotel and Restaurant sector at €6.60 an hour.

Table 4: Average Gross Hourly Earnings (€) by Sector (Seasonally Adjusted) for Full-Time Employees in Q1 1998 and Q3 2003

	Q1 1998 (€)	Q3 2003 (€)
Hi-Tech Manufacturing	9.4	12.5
Other Manufacturing	9.5	14.0
Construction	10.5	16.5
Distribution	9.8	15.2
Transport & Communication	12.6	16.3
Hotels & Restaurants	6.6	9.2
Other Market Services	12.3	16.6
Non-Market Public Services	14.9	20.1
State Average	10.9	15.5

Over the following five years hourly earnings grew in all sectors but at varying rates. In 2003 the average State hourly earnings level was approximately €15.50. Again full-time employees in certain service type industries were earning at a premium to this level, for example, public sector earnings were on average €20.10 an hour while in Other Market Services and Transport & Communication earnings were approximately €16.50 an hour. Where previously average hourly earnings in Construction were below the State average, strong earnings growth in this sector had brought earnings above the State average in 2003, up to a level of €16.50 an hour, similar to some of the service type sectors. The level of hourly earnings in Industry generally was again less than the State average. As in 1998, average hourly earnings for full-time

employees in the Hotels & Restaurants sector was the lowest in 2003 at just over €9.

Note that these sectoral divisions would reflect different mixes of occupations and skills and therefore do not represent earnings for comparable work. It is for this reason that each sector is dissected, for the year 2001, in terms of *occupational* composition in Table 5 (see also Appendix Table A3 for a more detailed table). This exercise was also done for 1998 and the occupational profiles observed by sector in that year were virtually unchanged when compared with the 2001 figures. This is not unexpected given the short time period and the structural change that would be required to alter the occupational profile in any particular sector over that time.

Table 5 goes some way in explaining the varying earnings *levels* across the sectors. Examining Industry, the occupational composition of the Hi-Tech and Other Manufacturing sectors could be seen as being relatively similar. This is a possible reason for both divisions of Industry containing similar levels of earnings in 1998.

As one would expect, the occupational composition of the Construction industry is predominantly skilled and unskilled manual workers.

From an occupational classification point of view, Distribution and Transport & Communication could also be seen as being relatively similar with a large proportion for each sector in the diverse occupational category "other". Workers in this category can range from service and sales type occupations in Distribution to drivers of all sorts in the Transport & Communication sector. Generally, these workers (along with the operatives) would not have the same level of skills and qualifications as other occupations higher up the occupational classification. There was, however, an earnings gap between these two sectoral divisions in 1998 with Transport & Communications earnings more on average on an hourly basis. One factor that could explain this divergence is the slightly higher proportion of professional staff generally within Transport & Communications.

Hotels & Restaurants constitute an exception in that the level of earnings in this sector is considerably less than any other sector. As one would expect, service and sales type occupations and managers constitute a large proportion of the occupations in this sector. There are, however, a significant number of associate professionals (19 per cent of employment within the sector) who would hold sub-degree type qualifications in hotel management etc.

The earnings premium that exists in the Other Market Services sector can be explained to a degree by the high prevalence of professionals and associate professionals, at almost 35 per cent of full-time employees. The majority of the remaining workers can be occupationally classified as managers or clerical staff.

Table 5: Occupational Composition by Sector in 2001 for Full-Time Employees

	Managers	Profs.	Associate Profs.	Clerical	Craft Workers	Oper-atives	Other	State Totals
	(Proportion Within Sectors)							
Hi-Tech Manufact.	0.09	0.10	0.08	0.09	0.14	0.46	0.06	1.00
Other Manufact.	0.10	0.05	0.04	0.10	0.22	0.34	0.14	1.00
Construction	0.04	0.05	0.02	0.03	0.53	0.10	0.23	1.00
Distribution	0.20	0.02	0.01	0.15	0.10	0.06	0.46	1.00
Trans & Comm.	0.14	0.04	0.05	0.18	0.06	0.05	0.47	1.00
Hotels & Rest.	0.19	0.02	0.19	0.07	0.01	0.00	0.52	1.00
Other Mkt. Servs.	0.19	0.20	0.15	0.29	0.02	0.02	0.13	1.00
Non-Mkt. Servs.	0.08	0.41	0.05	0.23	0.01	0.01	0.21	1.00
State Total	0.13	0.13	0.07	0.15	0.14	0.14	0.24	1.00

Source: CSO, *Quarterly National Household Survey* (QNHS), Q2 2001.

At each point of time in Table 5, earnings in the public sector exceeded the earnings in any other sector. One reason behind the high earnings in this sector is that 41 per cent of all workers in this sector are fully professional (i.e. generally have been awarded a university degree) and a further 5 per cent are classified as associate professionals (i.e. generally awarded sub-degree qualifications such as a diploma).

It is important to note that the occupational composition of the sectors is important in terms of explaining the varying earnings *levels* by sector and would be less important when it comes to describing the varying earnings *growth* by sector.[3] Table 6 sheds light on the performance of the various sectors in terms of hourly earnings growth. It looks at the earnings distribution across the sectors by expressing hourly earnings in each sector as a ratio of State average hourly earnings. This has been done for each year between 1998 and 2003 and therefore it is possible to see which sectors are gaining ground or otherwise in terms of average State hourly earnings.[4]

First looking at Industry, it can be seen from Table 6 that in 1998, both Hi-Tech Manufacturing and Other Manufacturing had an hourly earnings level approximately 87 per cent of the State average. By 2003, Other Manufacturing had slightly increased its earnings as a ratio of the State average while earnings in the Hi-Tech industries had lost ground, falling to 81 per cent of the State average. In this context, it must be noted that the Hi-Tech industry contains predominately foreign-owned multinationals exporting their goods to highly competitive global markets while the majority of companies in the Other Manufacturing industry are indigenously-owned companies serving the domestic market. Therefore, the Hi-Tech sector is exposed to a more competitive market where controlling costs, including wages, is a more important issue. Also

[3] Relevant work in this area, from a longer-term perspective, would include Sexton *et al.* (1999).

[4] For added insight, one should also refer to Appendix Table A2 throughout the analysis on earnings growth by sector. This important table shows the indices of quarterly hourly earnings growth by sector (seasonally adjusted).

unionisation of employees would be less common among the Hi-Tech sector, which would also have a bearing on the outcome.

Hourly earnings in the Construction sector have shown significant growth over the period under review. In 1998, earnings in the Construction sector were 97 per cent of State earnings, while in 2003 earnings in this sector had increased to 106 per cent of the State average. This represents an increase in hourly earnings for that sector of 57 per cent, the highest recorded proportional increase among all sectors. Over the same period, this large increase in earnings was accompanied by a parallel increase in employment in the sector at almost 50 per cent extra full-time employees. This is indicative of the boom in the building sector over the last number of years.

Table 6: Average Gross Hourly Earnings by Sector (Seasonally Adjusted) expressed as a Ratio of Average Gross State Hourly Earnings (Seasonally Adjusted), Q1 1998–Q3 2003

Sector	1998	1999	2000	2001	2002	2003	Change 1998 – 2003
	(Ratio of average State hourly earnings)						%
Hi-Tech Manufacturing	0.86	0.84	0.82	0.80	0.80	0.81	33.9
Other Manufacturing	0.87	0.88	0.88	0.87	0.90	0.90	47.0
Construction	0.97	0.93	1.00	1.02	1.06	1.06	57.1
Distribution	0.90	0.91	0.94	0.96	0.95	0.98	54.9
Transport & Communication	1.16	1.14	1.10	1.10	1.06	1.05	29.3
Hotels & Restaurants	0.61	0.63	0.61	0.61	0.58	0.60	40.0
Other Market Services	1.13	1.12	1.10	1.11	1.09	1.07	35.4
Non-Market Public Services	1.37	1.37	1.34	1.34	1.33	1.30	35.2
State Total	1.00	1.00	1.00	1.00	1.00	1.00	42.6

Note: The figures in this table are taken from quarter one in each year except in 2003 when quarter three was used.

In the sectoral breakdown in Table 6 above, the term 'private market services' could be used to describe the diverse sectors of Distribution (retailing and wholesaling), Transport & Communication (land, sea and air transport, telecommunications etc), Hotels & Restaurants and Other Market Services (finance, insurance, real estate etc). The private market services sector encompasses a large portion of total employment with approximately 450,000 full-time employees in 2003. However, the pattern of earnings growth within this broad categorisation can vary greatly.

For example, if you look at the hourly earnings growth among all sectors over the full period considered here, Distribution was the second fastest growing sector at 55 per cent and Transport & Communication was the slowest growing sector at 29 per cent. This resulted in a reversal in fortunes for the hourly earnings of full-time employees between these two sectors. Hourly earnings in Distribution, which in 1998 were 10 per cent below the State average, underwent a period of catch-up thereafter and in 2003 were only 2 per cent below the State average. In Transport & Communication, where previously full-time employees enjoyed earnings 116 per cent of the State average, that ratio in 2003 had fallen to 105 per cent.

Turning to Hotels & Restaurants, earnings growth almost kept pace with earnings growth in the economy generally and therefore maintained its earnings ratio of the State average, at approximately 60 per cent.

Other Market Services, which is a diverse category of mainly business services (including financial intermediation, insurance services, legal and accounting services), saw relatively slower average growth in earnings than the wider economy and as a result lost some of its earnings premium over and above the level of earnings in the economy as a whole. Therefore in 2003, earnings in this sector were 107 per cent of the State average, down from 113 per cent in 1998.

The last sector being considered here is the Non-Market Services sector or in effect the public sector. The public sector earnings series does not include earnings from the health sector and does not include earnings from any of the commercial or non-commercial semi-state bodies. It can be seen that relative to the growth in earnings in the wider economy, there was quite moderate growth in earnings in the public sector over the period 1998-2003. This is reflected in a fall in its ratio of average State earnings, from 137 per cent of the State average in 1998 down to 130 per cent in 2003. This represents earnings growth over the five-year period of 35 per cent, below the growth in hourly earnings in the wider economy at 43 per pent.

EDUCATIONAL ATTAINMENT AND SECTORAL EARNINGS GROWTH

The variation in earnings growth by sector is interesting to view in terms of the educational attainment of full-time employees by sector. Table 7 shows the proportion of full-time employees in each sector that attained an educational level up to primary, lower secondary (Junior Certificate), upper secondary (Leaving Certificate) and third level. It can be seen that Construction and Distribution, the two sectors with the largest growth in earnings between 1998 and 2003, have the lowest proportions of full-time employees with third level qualifications. The public sector and Other Market Services, each of which had earnings growth below the State average, have the highest proportions of full-time employees with third level qualifications. The slowest growing sector, Transport & Communication, is an exception to this general pattern of sectoral earnings growth, as its level of education attainment is quite low. A pattern of earnings growth such as this has implications for the returns to education in the economy as a whole. If earnings are growing fastest in the sectors where educational attainment is lowest and vice versa, the returns to higher education may be falling.

Recent research in this area, such as Callan and Harmon (1999), Barrett *et al.* (2002) and Fitz Gerald *et al.* (2003), found evidence of this effect occurring between 1994 and 2000. The research was based on panel data from the Living in Ireland Survey, which forms part of EUROSTAT's European Community Household Panel project. The main results from the analysis

indicated a sharp fall in the returns to university degrees between 1994 and 2000. There was also a fall in the returns to Junior and Leaving Certificates relative to a "no qualification" category.

Table 7: Educational Profile by Sector in 2001 for Full-Time Employees

	Primary	Lower Secondary	Upper Secondary	Third Level	State
			(Proportion Within Sectors)		
Hi-Tech Manufacturing	0.08	0.16	0.48	0.28	1.00
Other Manufacturing	0.17	0.23	0.42	0.17	1.00
Construction	0.18	0.26	0.45	0.11	1.00
Distribution	0.10	0.19	0.55	0.16	1.00
Transport & Communication	0.14	0.20	0.42	0.24	1.00
Hotels & Restaurants	0.13	0.15	0.47	0.24	1.00
Other Market Services	0.04	0.05	0.36	0.55	1.00
Non-Market Public Services	0.06	0.07	0.31	0.56	1.00
State Total	0.11	0.16	0.43	0.31	1.00

Source: CSO, *Quarterly National Household Survey* (QNHS), Q2 2001.

THE PUBLIC SECTOR AND THE SOCIAL PARTNERSHIP PROCESS

The ability to present average hourly earnings for full-time employees in the public sector relative to comparable average hourly earnings in the economy as a whole is a useful way of viewing the dynamics of hourly earnings growth that has been occurring in the public sector since 1998. It is also interesting in the light of the ongoing commitment to social partnership[5] and the recent report from the Public Service Benchmarking Body (PSBB). Among the terms of reference in the PSBB report was … *the need to ensure equity among employees in the public service and the private sector*. Therefore, the Benchmarking process involved the examination and consideration of work and reward of the public service and the private sector. As noted in Ruane and Lyons (2002), the PSBB adopted a Human Resource Management (HRM) approach to differentials, which involves comparing a range of similar jobs between the public and private sectors, entirely independently of market conditions in either of these different job markets.[6]

Other objectives associated with the Benchmarking process included the need to ease staff recruitment and retention problems, to ensure ongoing modernisation of public services in order to achieve greater efficiency and effectiveness and to underpin Ireland's competitiveness. The process, which was initiated under the *Programme for Prosperity and Fairness* (PPF) in 2000, was published as part of the partnership agreement, *Sustaining Progress.*

The recommendation of the Benchmarking Body was to increase pay in the public service by on average 8.9 per cent, with significant variations across sector and grade. The increases decided upon under the Benchmarking process were of course additional to any increases already agreed under the relevant national wage

[5] For a full discussion on wage determination and the social partnership process in Ireland, see McCoy and MacCoille (2001).

[6] See also O'Leary (2002) for a full discussion of the approach adopted by the Benchmarking process.

agreements. Box 1 outlines the exact dates of the wage increases agreed upon under successive pay agreements since 1998 as well as any extra provisions that might have occurred over this period.

Box 1: National Wage Agreements, 1998–2004, Agreed Nominal Wage Increases

National Wage Agreement	Dates Applicable	Agreed Change in Nominal Wage (%)
Partnership 2000	July 1997 – June 1998	2.5
	July 1998 – June 1999	2.25
	July 1999 – Mar 2000	1.5
	Apr 2000 – Oct. 2000	1.0
Programme for Prosperity and Fairness	Oct 2000 – Sept 2001	5.5
	Oct 2001 – Sept 2002	5.5
	Oct 2002 – June 2003	4.0
Sustaining Progress	July 2003 – Dec 2003	3.0
	April 2004 – Sept 2004	2.0
	Oct 2004 – Dec 2004	2.0

Extra provisions between 1998 and 2003:

- 3.0 per cent 'early settler' provision paid in Oct 2000.
- 2.0 per cent inflation compensation paid in April 2001.
- 1.0 per cent once-off payment paid in April 2002.
- In Sustaining Progress the pay increases lagged behind the private sector by approximately 6 months. For example, July 2003 – December 2003 was characterised by a pay freeze in the public sector and the 3.0 per cent increase under this agreement was not paid until January 2004. The following 2.0 per cent will be paid in July 2004 and the last 2.0 per cent will be paid in December 2004. Therefore it can be seen that the delay between the public and private sector in paying the terms of Sustaining Progress is narrowing as the agreement runs towards maturity.
- The first quarter of the recommended public sector Benchmarking pay increases was paid at varying times throughout the second half of 2003.

Amalgamating all of the above information, we find that that the annual average increase in nominal wages between the start of 1999 and the end of 2003 (five years of growth), agreed upon under successive national wage agreements, was approximately 5.4 per cent for the public sector and 4.7 per cent for the private sector. The private sector did not receive the 'early settlers' increase, nor the Benchmarking increases but also did not have a pay freeze in the second half of 2003. These figures are comparable with the annual average increases presented for various sectors in Table 8.

The first quarter of the recommended increases under Benchmarking were backdated to December 2001 and paid on ratification of the *Sustaining Progress* agreement. A further half of the recommended increases were paid from January 2004 and the final quarter of the increases are to be paid from June 2005. Only the first quarter was an unconditional increase in public sector earnings, the remainder was intended to be paid after public service employees proved their commitment to ongoing modernisation and change in the delivery of public services.

Table 8 attempts to investigate some of the issues raised by the report of the PSBB. It shows annual growth rates in average hourly earnings within the public sector. It also includes the category All-Private Activities, which comprises of all sectors of the economy other than the public sector. The methodology involved in the

creation of this private sector series was similar to that used for the hourly earnings indicator for the whole economy discussed in Section 1. The category All-Private Activities (excluding Construction) has also been included. The Construction sector was excluded here due to the distorting effect it has on the All-Private Activities category. Construction is unusual in the sense that it has undergone particularly large growth in terms of output, employment and earnings over the last number of years. Figure 1 graphically shows an index of quarterly growth in average hourly earnings in the public sector, All-Private Activities and All-Private Activities (excl. Construction) between Q1 1998 and Q3 2003.

A certain degree of caution should be exercised in interpreting the average earnings from the public sector. Many public sector employees are paid on the basis of incremental scales with the result that significant recruitment, which usually occurs at the lower levels, can depress the average earnings in the sector. This should be borne in mind but because the time period being considered is relatively short, these compositional issues may not to be too serious.

Table 8: Annual Rates of Increase in Average Gross Hourly Earnings (%) in Non-Market Services (Public Sector) and Selected Private Sectors, 1999 to 2003

	1999	2000	2001 (%)	2002	2003	1998 – 2003 Annual Avg. (%)
Non-Market Services	5.4	5.6	9.5	3.9	3.6	5.6
All Private Activities	6.7	8.8	8.9	5.8	5.5	7.1
All Private Activities (Excl. Construction)	6.3	8.2	8.7	4.8	5.8	6.7

Note: The annual rate of increase in earnings for 2003 is an estimate as it is calculated using data from the first three quarters of that year only. It therefore assumes that the year-on-year growth in the fourth quarter is an average of the year-on-year growth rates in the previous three quarters.

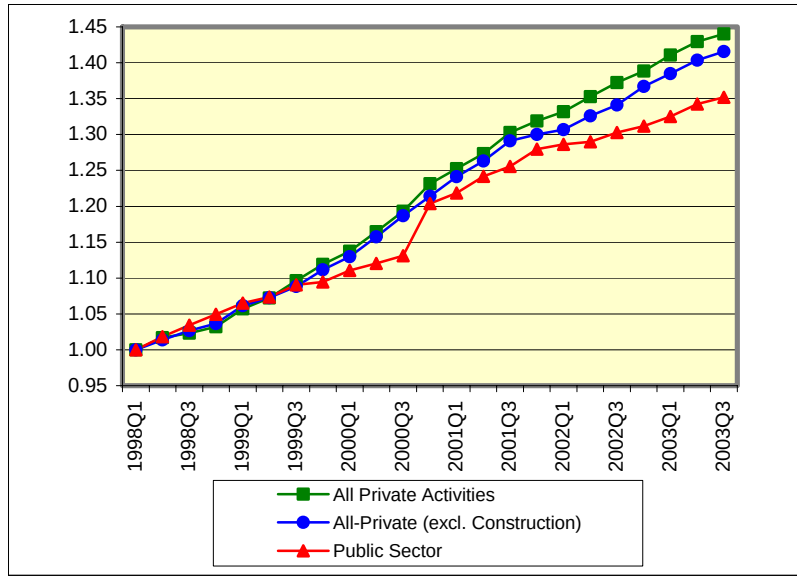
It can be seen from Figure 1 that over the full period, all three indices were clustered relatively closely together up until the end of 2001. At this time, the earnings growth in the public sector slowed noticeably while the earnings growth in private activities generally continued its upward trend. This is reflected in the fact that the annual increase in All-Private Activities in 2002 was 5.8 per cent while in the public sector the annual increase was 3.9 per cent. This trend has continued into the first three quarters of 2003.

Therefore, taking the full period from 1998 to 2003, hourly earnings in private activities grew proportionally faster than the public sector but much of this gap emerged in 2002 and 2003. The annual average increase in earnings in private activities was 7.1 per cent compared with 5.6 per cent in the public sector. When Construction is excluded from the All-Private Activities category the annual average increase in the remaining amalgam of private activities was slightly lower at 6.7 per cent.[7]

[7] Note that annual average increase in earnings in the public sector for 2003 should include at least part of the first quarter of the Benchmarking payment. Also, the survey of earnings in the public sector does not include lump sum back-payments therefore would not include the backdated payments from the Benchmarking process.

Therefore, since 1998, a divergence in earnings growth for full-time employees has occurred between the public sector and the rest of the economy. Using the annual average data above (derived from the quarterly data in Figure 1 below), this divergence amounts to 7.7 per cent for the full period or 5.6 per cent if Construction is excluded from the rest of the economy.

Figure 1: Index of Average Hourly Gross Earnings in the Public Sector and Other Selected Categories, (Seasonally Adjusted), Q1 1998-Q3 2003



It is also possible to compare the earnings growth in the public sector to the earnings growth in a particular sub-sector of All-Private Activities such as Other Market Services. This sector could be classed as having a similar occupational profile to that of the public sector. Both the public service and Other Market Services can classify approximately 55 per cent of full-time employees as either managers or professionals (fully and associate). They also have a similar proportion of clerical and "other" occupations (see Table 5). The annual average increase in earnings in this private sector category was the same as that recorded in the public sector at 5.6 per cent (not shown in Table 8). Therefore, taking the period from 1998 to 2003, it is difficult to say that any inequities have emerged between public sector earnings and earnings in an occupationally similar category such as Other Market Services.

These figures can be compared against the annual average increases in nominal wages agreed upon under successive national wage agreements over this period (see Box 1). Between the start of 1999 and the end of 2003 (five years of growth), the approximate annual average increase agreed upon was 5.4 per cent in the public sector. Therefore, in terms of the excess over the agreed terms of the national wage agreements, the public sector gained only marginally extra on an annual average basis over this period.

Unfortunately, due to data restraints, the analysis is constrained here by the short time period. Ideally, data would be available stretching back to the 1980s before the Irish economy began to boom and income levels began to substantially increase.

To address this time span limitation, Table 9 attempts, using the National Accounts, to shed some light on the question of how earnings growth in the public sector compares to earnings growth in the private sector pre-1998. This shows average annual earnings for the period 1980 to 2000 for Public Administration and Defence (PAD) and a broad industrial sector covering Manufacturing, Building and Construction as well as Mining and Utilities. These figures have been derived by dividing National Accounts remuneration aggregates for these sectors by the total numbers employed. Therefore, not only is the data general in nature but the definitions of the public sector (excludes education) and the private sector (excludes market services) are much narrower in terms of their coverage than that used above. Also, as with the data from the enterprise-based sectoral earnings surveys, the National Accounts data are influenced not only by movements in pay rates but also by shifts in the occupational structure. Since the length of time being analysed here is longer, this consideration becomes more important.

Bearing these qualifications in mind, the data can still be used to give an indication of the short-term trend movements in public sector pay relative to a broad private sector industrial category. The trend can be analysed by observing the ratio of average annual earnings in Public Administration & Defence (PAD) and the broad private sector industrial category, as shown in the final column of Table 9. During the 1980s this indicator varied somewhat but in general remained relatively constant, indicating that the growth in average annual earnings in PAD and Industry were very similar over this period. However, between 1989 and 1994, a noticeable trend emerged as the ratio began to increase. Average annual earnings per public sector worker were 33 per cent above average annual earnings for industrial workers in 1989, but by 1994 the excess had increased to 52 per cent. As noted in Sexton and O'Connell (1996), this was not a surprising result as public sector workers were given significant "special" pay awards at this time, over and above the norms agreed within the national wage agreements. Fitzgerald (2002) also notes that the public sector did relatively better than the private workers in the first half of the 1990s. There was also a restructuring of staff within the civil service resulting in an increase in the numbers of high-grade staff, which would have increased the average annual earnings per public sector worker. However, this factor alone could not explain the full divergence, leaving little doubt that public sector pay increased at a faster rate than the private sector industrial category between 1989 and 1994.

The most discernible trend to emerge, between 1994 and 2001, was a fall off in the average annual earnings per public sector worker relative to the average annual earnings for industrial workers. The implied 52 per cent excess earnings that public sector workers enjoyed in 1994 was reduced down to 40 per cent by 2001. Also, within this period, the ratio seems to have shown a

particularly strong downward trend after 1998. Although comparisons must be made tentatively, the slower earnings growth experienced by workers in the public sector after 1998 using the National Accounts data, is consistent with the divergence in earnings growth between private and public sector employees suggested by the sectoral earnings data shown in Figure 1 earlier.

Summarising the remuneration figures from the National Accounts, earnings of public sector workers seem to have gained significantly relative to the earnings of private sector industrial workers between 1989 and 1994, while thereafter seem to have lost some ground in the period up until 2001.

Table 9: Average Annual Employee Earnings for Public Administration and Defence (PAD) and the Industrial Sector, 1980–2000

	PAD (1) (€)	Industry (2) (€)	Ratio (1)/(2)
1980	10,134	7,791	1.30
1981	13,206	9,121	1.45
1982	14,033	10,373	1.35
1983	15,492	11,868	1.31
1984	17,166	13,101	1.31
1985	18,336	14,675	1.25
1986	20,451	15,331	1.33
1987	21,461	15,995	1.34
1988	21,728	17,165	1.27
1989	23,850	17,903	1.33
1990	27,462	18,553	1.48
1991	28,026	19,100	1.47
1992	29,086	20,060	1.45
1993	32,567	21,540	1.51
1994	33,059	21,731	1.52
1995	31,808	22,527	1.41
1996	31,675	23,676	1.34
1997	35,311	24,152	1.46
1998	39,236	24,937	1.57
1999	38,420	26,462	1.45
2000	39,996	29,262	1.37
2001	42,976	30,593	1.40

Source: ESRI/Department of Finance Databank (2004).
The "Industry" category in this table includes Manufacturing, Building and Construction and Utilities, unlike the definition for Industry in earlier tables.

4. Conclusions

This article has attempted to develop a methodology to amalgamate the data from sectoral earnings surveys into an average gross earnings series for the economy as a whole. Due to various data constraints, the construction of this series was limited in a number of respects. First, due to the recent nature of the survey on distribution and business services, the average gross earnings series for the State extends back only as far as 1998. The series is shown from a quarterly perspective from Q1 1998 up until the most recently published quarter (Q3 2003 at present). There was evidence of seasonal elements within this quarterly series and therefore the series was seasonally adjusted.

In terms of the proportion of the economy that is covered by this average gross earnings series, a number of sectors could not be

included. The two most important sectors excluded because of data constraints were the health sector and the agricultural sector. Also, this earnings series only represents full-time employees which means part-time employees and the self-employed are not included. Therefore, an average gross *weekly* earnings series for full-time employees in the State was constructed by weighting the various sectoral earnings surveys using full-time employee weights from the *Quarterly National Household Survey* (QNHS). An average gross *hourly* earnings series for full-time employees in the State was subsequently calculated by utilising average hours worked by sector.

The value of this methodology is that it can be readily used to analyse movements in average earnings across a wider spectrum of the economy retrospectively as well as on an ongoing basis into the future. Also, the adjustment to correct for the seasonal elements identified in the earnings series allows analysis from a quarterly perspective. The recent developments towards a national employment survey, which include detailed questions on economy-wide earnings across sectors, occupations, gender, age etc. will further add to our knowledge on earnings related issues.

Once sectoral earnings have been amalgamated in this way, it is possible to investigate the structure of sectoral earnings in the Irish economy. To do this, sectoral hourly earnings data are presented in terms of their ratio of the average State hourly earnings. When carrying out this exercise though, it is important to remember that when comparing earnings across sectors, you are not comparing like-with-like. The skills, qualifications and occupations vary across sectors. This must be borne in mind when viewing the levels of earnings by sectors. The public sector was registering by far the largest earnings premium over the State average earnings, while the Hotel & Restaurant sector was registering the lowest earnings across the sectors. In each quarter between 1998 and 2003, public sector full-time employees were earning over twice that of full-time employees in the Hotel & Restaurant sector in terms of average gross hourly earnings. In 2003, the other sectors with above average earnings were Other Market Services, Transport & Communication and Construction and the other sectors with below average earnings were Industry (both Hi-Tech and Other Manufacturing) and Distribution.

In terms of hourly earnings growth between Q1 1998 and Q3 2003, the average growth across the whole economy was 43 per cent. The fastest growing sectors were Construction (57 per cent) and Distribution (55 per cent) and the slowest growing sectors were Transport & Communication (29 per cent) and both the Non-Market Services and Other Market Services (35 per cent). The variation in earnings growth across the sectors is consistent with recent research on the returns to education. In general, earnings seem to be growing fastest in the sectors where educational attainment is lowest and growing more slowly in the sectors where educational attainment is highest.

In the context of this article, the methodology adopted here also gives an added insight into the recent report published by the Public Service Benchmarking Body (PSBB). One of the grounds for

the recommended 8.9 per cent increase was a perceived disparity that had emerged between the earnings of public service employees and private sector employees. The earnings indicators, constructed in this article, addresses this question by comparing the earnings growth of full-time employees in the public sector against the earnings growth of full-time employees in All-Private Activities between 1998 and 2003. This analysis showed that earnings grew proportionally faster among the private sectors of the economy, at a difference of approximately 1.5 per cent on an annual average basis. This translates into a proportional divergence over the full period, 1998–2003, of 7.7 per cent. Of course, only a proportion of this gap had emerged when Benchmarking was first initiated in 2000.

In an attempt to overcome the time-span limitations of the sectoral earnings data, remuneration figures from the National Accounts were employed in order to track the earnings of public sector and private sector industrial workers in the period before 1998. Strong evidence was found to suggest that, during the period 1989–1994, public sector workers did significantly better than industrial workers in terms of earnings growth. The evidence was inconclusive for the period 1994–1998. Post-1998, the National Accounts data is consistent with what was found using the amalgamated enterprise-based sectoral earnings surveys. This was that earnings of employees in the public sector were growing at a slower pace than earnings of employees in the private sector.

Finally, the development of the earnings indicator for the whole economy used in this article has applications in a wider context and will form the basis for further work in this area.

REFERENCES

BARRETT, A., J. FITZ GERALD, B. NOLAN, 2002. "Earnings Inequality, Returns to Education and Immigration into Ireland", *Labour Economics*, Vol. 9, No. 5.

CALLAN, T. and C. HARMON, 1999. "The Economic Return to Schooling in Ireland", *Labour Economics*.

CASEY, B., (forthcoming 2004). "An Economy-Wide Perspective on Earnings Data in Ireland: Methodological Issues and Analysis", Working Paper Series, March, Dublin: The Economic and Social Research Institute.

FITZ GERALD, J., 2002. "Implications of Changes in Public Sector Pay Rates", *Quarterly Economic Commentary* (QEC), Winter, Dublin: The Economic and Social Research Institute.

FITZ GERALD, J., C. McCARTHY, E. MORGENROTH, P. O'CONNELL (eds.), 2003. *The Mid-Term Evaluation of the National Development Plan and Community Support Framework*, Policy Research Series No. 50, October, Dublin: The Economic and Social Research Institute, Pg. 36 – 43.

McCOY, D. and C. MacCOILLE, 2001. "Smoothing Adjustment Through Modified Wage Bargaining", *The Irish Banking Review*, Winter, p. 15 – 25.

NOLAN, B., J. WILLIAMS and S. BLACKWELL, 2003. "New Results on the Impact of the Minimum Wage on Irish Firms", *Quarterly Economic Commentary* (QEC), Winter, Dublin: The Economic and Social Research Institute.

O'LEARY, J., 2002. "Benchmarking the Benchmarkers", *Quarterly Economic Commentary* (QEC), Winter, Dublin: The Economic and Social Research Institute.

PUBLIC SECTOR BENCHMARKING BODY, 2002. "Report of the Public Sector Benchmarking Body", Dublin: Stationery Office, Pn 11727.

RUANE, F. and R. LYONS, 2002. "Wage Determination in the Irish Economy: An Economist's Perspective on the Benchmarking Report", *Quarterly Economic Commentary* (QEC), Winter, Dublin: The Economic and Social Research Institute.

SEXTON, J.J. and P. O'CONNELL (eds.), 1996. "Labour Market Studies: Ireland", *Employment and Social Affairs*, European Commission, Chapter IV.

SEXTON, J.J., G. HUGHES, B. CASEY, C. FINN, E. MORGENROTH, 2004. *Occupational Employment Forecasts by Region for 2010*, FÁS/ESRI Manpower Forecasting Series, Report No. 11.

SEXTON, J.J., B. NOLAN, B. McCORMICK, 1999. "A Review of Earnings Trends in the Irish Economy since 1987", *Quarterly Economic Commentary* (QEC), Winter, Dublin: The Economic and Social Research Institute.

WILLIAMS, J., G. HUGHES, S. BLACKWELL, B. CASEY, 2002. *National Survey of Vacancies in the Private Non-Agricultural Sector 2001/2002*, FÁS and Forfás, Dublin: The Economic and Social Research Institute.

APPENDIX TABLES

Table A1: Average Gross Hourly Earnings (€) by Sector for Full-Time Employees in the State (Seasonally Adjusted), Q1 1998–Q3 2003

Period	Hi-Tech	Other Manuf.	Const-ruction	Dist-ribution	Trans & Comm.	Hotels & Rest-aurants	Other Market Services	Non-Market Services	State
Q1 – 98	9.4	9.5	10.5	9.8	12.6	6.6	12.3	14.9	10.9
Q2 – 98	9.4	9.6	10.9	10.1	12.9	6.9	12.4	15.1	11.1
Q3 – 98	9.4	9.8	10.6	10.3	13.0	6.9	12.6	15.4	11.2
Q4 – 98	9.5	9.9	10.5	10.5	12.8	7.1	12.7	15.6	11.3
Q1 – 99	9.6	10.1	10.8	10.5	13.1	7.3	12.9	15.8	11.5
Q2 – 99	9.8	10.3	11.3	10.7	13.1	7.4	13.0	16.0	11.7
Q3 – 99	10.0	10.4	12.0	11.0	13.2	7.4	13.2	16.2	11.9
Q4 – 99	10.2	10.6	12.3	11.1	13.6	7.5	13.4	16.3	12.1
Q1 – 00	10.1	10.8	12.4	11.6	13.5	7.5	13.6	16.5	12.3
Q2 – 00	10.4	11.0	12.6	11.9	13.9	7.7	14.0	16.7	12.6
Q3 – 00	10.6	11.2	13.0	12.4	14.0	8.0	14.4	16.8	12.8
Q4 – 00	10.5	11.5	13.7	12.5	14.8	8.3	14.7	17.9	13.3
Q1 – 01	10.8	11.8	13.8	13.0	14.9	8.3	15.0	18.1	13.6
Q2 – 01	11.0	12.2	13.9	13.3	14.9	8.3	15.3	18.5	13.8
Q3 – 01	11.2	12.5	14.3	13.3	15.5	8.4	15.7	18.7	14.0
Q4 – 01	11.3	12.8	14.8	13.6	15.6	8.2	15.6	19.0	14.3
Q1 – 02	11.5	12.9	15.3	13.7	15.3	8.4	15.7	19.1	14.4
Q2 – 02	11.6	13.1	15.8	14.1	15.5	8.5	15.8	19.2	14.6
Q3 – 02	11.9	13.3	16.0	14.3	15.5	8.7	15.9	19.4	14.8
Q4 – 02	12.3	13.4	15.8	14.8	15.3	8.9	16.0	19.5	15.0
Q1 – 03	12.5	13.7	16.2	14.9	16.0	9.0	16.2	19.7	15.2
Q2 – 03	12.6	13.8	16.5	15.0	16.2	9.2	16.4	20.0	15.4
Q3 – 03	12.5	14.0	16.5	15.2	16.3	9.2	16.6	20.1	15.5

Quarters one, two, three and four here refer to March, June, September and December respectively.

Table A2: Indices of Average Gross Hourly Earnings by Sector for Full-Time Employees in the State (Seasonally Adjusted), Q1 1998–Q3 2003

Period	Hi-Tech	Other Manuf.	Const-ruction	Dist-ribution	Trans & Comm.	Hotels & Rest-aurants	Other Market Services	Non-Market Services	State
Q1 – 98	100	100	100	100	100	100	100	100	100
Q2 – 98	100	102	103	103	103	104	101	102	102
Q3 – 98	101	103	101	105	104	105	103	103	103
Q4 – 98	102	105	100	107	101	107	104	105	104
Q1 – 99	103	107	102	107	104	111	105	106	106
Q2 – 99	104	108	107	109	104	112	106	107	107
Q3 – 99	107	110	114	112	105	112	107	109	110
Q4 – 99	109	112	117	113	108	113	109	109	112
Q1 – 00	108	114	118	118	108	114	111	111	113
Q2 – 00	112	116	120	121	110	117	114	112	116
Q3 – 00	114	118	123	126	111	121	117	113	118
Q4 – 00	113	121	131	127	118	126	120	120	123
Q1 – 01	115	125	131	133	119	126	123	122	125
Q2 – 01	118	128	132	136	119	126	124	124	127
Q3 – 01	120	132	136	136	123	127	128	126	129
Q4 – 01	120	135	141	138	124	125	127	128	131
Q1 – 02	123	136	146	140	122	127	128	129	133
Q2 – 02	124	138	150	143	123	129	129	129	134
Q3 – 02	127	140	153	145	123	131	129	130	136
Q4 – 02	132	142	150	151	122	135	130	131	138
Q1 – 03	134	144	154	152	128	137	132	133	140
Q2 – 03	135	146	157	152	128	139	133	134	142
Q3 – 03	134	147	157	155	129	140	135	135	143

Quarters one, two, three and four here refer to March, June, September and December respectively.

Table A3: Occupational Composition by Sector in 2001 for Full-Time Employees

	Managers	Prof.	Associate Prof.	Clerical	Craft Workers	Oper-atives	Other	Total
				(000)				
Hi-Tech	12.7	13.7	10.6	12.3	19.2	64.4	8.3	141.1
Other Manufacturing	14.0	6.8	6.0	13.7	29.9	46.9	19.0	136.4
Construction	5.0	6.6	2.6	3.5	66.8	13.3	28.6	126.3
Distribution	29.4	3.2	1.2	21.4	14.7	8.3	66.3	144.5
Trans & Communication	12.0	3.3	4.5	14.9	4.9	4.5	39.1	83.2
Hotels & Restaurants	10.8	0.9	10.8	4.2	0.3	0.1	29.0	56.0
Other Market Services	30.4	32.2	24.2	47.3	3.5	2.6	20.2	160.5
Non-Market Public Services	12.2	62.8	8.1	35.1	2.2	1.3	32.1	153.8
State Totals	126.4	129.5	68.1	152.4	141.5	141.4	242.5	1001.8
				(Proportion Within Sectors)				
Hi-Tech	0.09	0.10	0.08	0.09	0.14	0.46	0.06	1.00
Other Manufacturing	0.10	0.05	0.04	0.10	0.22	0.34	0.14	1.00
Construction	0.04	0.05	0.02	0.03	0.53	0.10	0.23	1.00
Distribution	0.20	0.02	0.01	0.15	0.10	0.06	0.46	1.00
Trans & Communication	0.14	0.04	0.05	0.18	0.06	0.05	0.47	1.00
Hotels & Restaurants	0.19	0.02	0.19	0.07	0.01	0.00	0.52	1.00
Other Market Services	0.19	0.20	0.15	0.29	0.02	0.02	0.13	1.00
Non-Market Public Services	0.08	0.41	0.05	0.23	0.01	0.01	0.21	1.00
State Totals	0.13	0.13	0.07	0.15	0.14	0.14	0.24	1.00
				(Proportion Across Sectors)				
Hi-Tech	0.10	0.11	0.16	0.08	0.14	0.46	0.03	0.14
Other Manufacturing	0.11	0.05	0.09	0.09	0.21	0.33	0.08	0.14
Construction	0.04	0.05	0.04	0.02	0.47	0.09	0.12	0.13
Distribution	0.23	0.02	0.02	0.14	0.10	0.06	0.27	0.14
Trans & Communication	0.10	0.03	0.07	0.10	0.03	0.03	0.16	0.08
Hotels & Restaurants	0.09	0.01	0.16	0.03	0.00	0.00	0.12	0.06
Other Market Services	0.24	0.25	0.36	0.31	0.02	0.02	0.08	0.16
Non-Market Public Services	0.10	0.48	0.12	0.23	0.02	0.01	0.13	0.15
State Totals	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Source: CSO, *Quarterly National Household Survey* (QNHS), Q2 2001.