

A REVIEW OF RECENT TRENDS IN OUTPUT, EMPLOYMENT AND PRODUCTIVITY IN IRELAND

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Abstract: This paper reviews real output, employment and productivity trends in the Irish economy over the ten year period from 1995 to 2005. The analyses, which are carried out within the framework of the CSO Annual National Accounts, extend across the entire economy. An important feature of the paper is the provision of estimated trend measures for different sectors, which entails an extension of the limited number of categories usually shown in the National Accounts statistics. As the measurement of volume or real economic output is the subject of ongoing discussion and debate at international level, it was considered appropriate to include a section which highlights some of the main methodological and conceptual problems involved, and how these are dealt with. Productivity trends, which are currently the subject of much debate, are analysed in some detail. These results reaffirm that productivity growth in the economy has faltered noticeably in recent years, due not only to declining productivity levels in some sectors (e.g. building and construction), but also due to ongoing changes in the sectoral composition of the economy. The paper also compares the recent output, employment and productivity performance of the Irish economy with the trends in the European Union and in the US. Finally, the paper reviews some policy options for the future, drawing particular attention to the consequences arising from declining productivity and the concentration of growth in a limited number of areas. The identification of possible areas which would underpin sustainable economic growth in the future is also discussed.

Keywords: Output, Employment, Productivity, Economic growth
JEL Classifications: O40, O52

1. INTRODUCTION

1.1 General Background: Sources

The purpose of this report is to review trends in real output, employment and labour productivity in Ireland over the period since 1995. The analysis is basically of a macro nature, set within the overall framework of the National Accounts estimates as published by the CSO. This is considered appropriate, as it is necessary to consider output and productivity trends in the context of the overall

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performance of the economy if one is to obtain an adequate understanding of the very substantial changes that have taken place in recent years. The analysis contains a sectoral dimension, involving seven categories.

It should be mentioned at this stage that the measurement of output (and as a result of productivity) in real or volume terms is not a straightforward matter. There are different ways to approach this problem, and in some areas considerable difficulties arise in compiling volume measures. This is an issue that has been much discussed both nationally and internationally in bodies such as the UN, OECD etc. Generally, it is possible to devise reasonable volume output indicators for sectors such as agriculture, industry and construction, and for services related to activities such as distribution and transport and communications, for which consistent and usable volume statistics are available. These are derived either from independent sources, or by deflating nominal or value series by means of appropriate price index series. However, the position is much more problematic in areas such as the public sector and for non-market services generally, where for the most part the services provided are not subject to commercial or sales transactions or are made available in the form of collective services as a public good. Heretofore, changes in real output for these spheres of activity have tended to be calculated from employment trends applied to base year value added, which effectively implies no change in productivity. It was considered desirable that further discussion or elaboration relevant to these issues was appropriate. This is done in Section 2 following. This material may seem somewhat aside from the main thrust of the Paper, in which the emphasis is on analysing recent national economic performance. However, the qualifications associated with data used have to be borne in mind when interpreting the results presented. Nevertheless, for those readers who wish to dwell only on the analytical results, this Section can be bypassed.

1.2 Data Sources: Concepts

Virtually all of the Irish data contained in this report have been obtained from CSO sources, either from the National Accounts database or (in the case of employment) from the Quarterly National Household Survey (QNHS). For the most part the output measures used in this Paper relate to Gross Value Added (GVA) at factor cost, as this allows one to simultaneously analyse overall and sectoral trends. Basically GVA is the sale of goods or services less the costs of production, apart from employee remuneration. The calculation is made before any allowance is made for depreciation. GDP, which is very similar to GVA in numerical terms, is obtained by adding product and non-product taxes (less subsidies) to total GVA.¹ The employment figures used relate to the totality of those at work compiled on an annual average basis, and include the self employed and part-time workers.²

1.3 What's New?

While much of the material in this paper will be familiar to readers, it is of interest to highlight what is new or different when compared with data currently available. The most notable feature here is the more detailed sectoral subdivision of output in a National Accounts context (involving seven categories in all). In this regard, the most important aspects relate to the separate identification of

¹ Typically, on the basis of recent data, this aggregate represents almost 90 per cent of GDP at market prices. Annual average real GVA growth between 1995 and 2005 was 7.0 per cent, compared with 7.3 per cent for GDP.

² The share of persons in part-time work remained reasonably constant over the period covered. While the incidence of part-time work did rise during the first few years of the period covered, it has remained more or less stable at about 17 per cent since 1998. It is unlikely, therefore that part-time work trends would have a significant effect on productivity movements in the period under consideration. It should be noted that, in any event, Section 3 contains a supplementary analysis in which productivity is based on hours worked rather than employment.

building and construction activity and the subdivision of the large and heterogeneous “other services” category into “finance and business services” and a smaller residual services group.

The importance of identifying the building industry is self-evident, especially in view of its spectacular growth over the past ten years. However, the subdivision of the existing services data is also of considerable relevance, not only because it distinguishes the important financial and business sector, but also because the new residual services group is now predominantly non-market and, in effect, broadly represents the wider public sector covering central and local administration, security and education and health /welfare services.³

Within the manufacturing sphere, the classification also distinguishes between “modern” and “other manufacturing”, even though it should be noted that this distinction has been made in relevant National Accounts figures in recent years. The first of these categories mainly covers high technology multinational enterprises engaged in manufacturing chemicals, computers (including software replication), instrumentation, electrical machinery and equipment and the reproduction of recorded media.⁴ The “other industry” category comprises all other manufacturing activities in more traditional areas such as food, beverages and textiles, and also includes mining and quarrying and utilities. The reason for distinguishing the first category is now well recognised: it involves particularly high output levels (both in aggregate and per person employed) and has recorded exceptional output growth over the period covered, and before.

The Paper also contains an analysis which estimates the effects of shifts in the sectoral structure of the economy on overall or national productivity change – an aspect which tends to be overlooked. Essentially, this attempts to separate out the impact of intrinsic changes in productivity within sectors.

1.4 Some Qualifications

Apart from the qualifications associated with the methodology used in calculating national output, which is described in some detail in Section 2, some analyses of the economy’s overall performance are presented “with” and “without” the modern sector as just defined. While it is of interest, and indeed useful, to consider Irish performance in this way, this should not lead one to infer that the presence of the sector involved is in some sense questionable, or that the position should necessarily be otherwise. While it is true that Ireland is exceptional (indeed highly exceptional) in terms of the share of national output accounted for by high technology multinationals, this has been the position for quite a long time. Whatever views one might hold about the income losses due to profit repatriation etc., the reality is that the sector currently employs over 90,000 persons, significantly more than in 1995, even if the numbers have fallen in recent years.

While the omission of the modern industry sector from the calculation of the various measures may be mathematically correct, one should exercise caution in interpreting this approach in an economic context. The absence of the multinational high-tech sector from the Irish economy would have significant indirect effects (which are not captured by simple data exclusion). These industries generate knock-on activities in the rest of the economy through purchases of goods and services and the expenditure of wages etc. If these influences were accounted for in the exclusion exercise in question,

³ The broad public sector activities as referred to account for nearly 80 per cent of total employment for the residual services as a whole.

⁴ In terms of the EU NACE Industrial Classification, the categories cover classes 223, 24, 30, 31, 32 and 33.

the performance in the rest of the economy (as measured) would be set at a somewhat lower level.⁵ Furthermore, in a human resource context, the expansion of the multinational sector in the period since the 1960s had substantial positive effects in enhancing skill levels and skill acquisition, and in widening attitudes and horizons, features which are now important in view of the imperative to compete in the global market. It is true, however, that the funds from the capital grants and other supports directed to the modern industrial sector would presumably have been available for investment elsewhere in the economy, even though probably with less spectacular results. In summary, any comparisons between the two scenarios as described must be qualified, but are still useful and instructive, especially in view of the significant differences involved.

1.5 Content of the Paper

The content of this Report is structured as follows. Section 2 following, as already indicated, reviews the some methodological problems associated with measuring economic output. Section 3 contains a detailed analysis of trends in national output, employment and productivity covering the period from 1995 to 2005, with a particular emphasis on identifying sectoral trends and in probing the causative factors underlying recent changes in productivity. Ireland's economic performance is compared with trends in the international economy in Section 4, while the final Section 5 sets out some implication arising from our analysis, with particular reference to some relevant policy issues. The Report also contains detailed statistical appendices.

2. SOME METHODOLOGICAL ISSUES ASSOCIATED WITH THE MEASUREMENT OF GROWTH

This Section is, in effect, a summary version of relevant parts of a more comprehensive discussion of problems related to measuring economic growth contained in a Paper by W. Keating presented to a meeting of the Statistical and Social Inquiry Society of Ireland in October 2000.⁶ It has also drawn on other studies, such as the Annual Reviews of the Construction Industry carried out by DKM Economic Consultants for the Department of the Environment and the recent Atkinson Review in the UK of the Measurement of Government Output and Productivity for the National Accounts. A summary of the main issues covered in the latter report were described in a further Paper given to the Society in May 2005.⁷ While the primary concerns in these studies relate to the measurement of output growth, the conceptual and other problems involved apply equally to assessing labour productivity trends, which is derived by taking the ratio of output levels to labour inputs.

While the content of this section of the Paper is somewhat aside from the main analytical issues covered, it was considered necessary to include this material, even if in summary form, in order to acknowledge some well documented qualifications associated with the methodologies and data involved. However, the scale of some of the trend changes identified over the period covered is

⁵ There is evidence to suggest that the secondary effects are significant. An ESRI report published in 1995 indicated that the number of secondary jobs generated by high technology industry was approximately equal to the number of core industrial jobs involved. See O'Malley (1995). *An Analysis of Secondary Employment Associated with Manufacturing Industry*. ESRI General Research Series, Paper No.167.

⁶ Keating, William (2000), "*Measuring the Economy – Problems and Prospects*" Journal of the Statistical and Social Inquiry Society of Ireland, 2000/2001 Session, Volume XXX, Dublin.

⁷ "*Measurement of Government Output and Productivity in National Accounts*" by Sir Tony Atkinson (Nuffield College, Oxford), read to the Statistical and Social Inquiry Society of Ireland at Manor House Hotel, Enniskillen on 19 May 2005.

considerable, and therefore any interpretation based on the data presented is unlikely to be rendered invalid as a result of such methodological aspects.

2.1 General Issues

Since sectoral decomposition is a fundamental element in this analysis, in national accounts terms the main focus is on gross value added (GVA), as when using this output measure the contribution attributable to different sectors can be directly aggregated to obtain a national GVA total. The best method of taking value added estimates forward in real terms relative to a base year is to use the double deflation method, i.e. use (separately) deflated inputs and outputs for each sector at the prices of the base year. The difference between these two entities provides an estimate of value added at constant prices for the sector in question. In practice, this method is used only to a limited extent in most countries, mainly because the required data are not available, especially in the short-term. In Ireland, it is, however, used for measuring real annual changes in agricultural net output, but not generally in other sectors.

GVA volume trends, calculated on the basis of single volume indicators, based either on deflated output values or on direct volume measures of output (e.g. tonnes of steel or passenger-kilometres travelled), are generally acceptable alternatives to double deflation in providing estimates of change at constant prices. However, the validity of these methods does rely on the assumption that the ratio of inputs to outputs in a given sector remains constant and that the trends in output and input prices for that sector are similar over the time period in question. To the extent that these conditions are not met, the result is not as good as would be obtained using the double deflation methodology, if this were possible. In most cases these two assumptions are in fact reasonable, especially for short time periods. The recent introduction of chain linking in the National Accounts, which involves the annual updating of weights, also makes these conditions more likely to be met.

In practice, the value added estimates in the base year for different sectors are taken forward in a variety of ways. The principal methods used are:

- Using price indicators employed to deflate turnover or gross output measured in nominal terms;
- Using trend indicators based on outputs expressed in physical values;
- Using inputs. This approach is generally applied for non-market activities (public administration, education, health etc.) and generally involves measuring labour inputs (mainly employment).

2.2 Sectors

For the manufacturing sector, real or volume GVA is derived separately for different industrial categories mainly (but not exclusively) using an index based on price deflated production values. A notable advantage in this area is the annual Census of Industrial Production which provides a great deal of relevant data for weighting purposes extending back for a long period. The IT sector, which is of particular importance to Ireland, presents special problems. The method used to date in Ireland to compile real net output series for the relevant subsectors has been to use deflated values of production. Deflation has involved using price trends which reflect, in particular, the effect of the \$ exchange rate on € valuations of output. The main problem is that these price trends have not fully reflected improved quality in the form of the enormous growth in the power of computers that has arisen in tandem with falling prices (see below).

The compilation of National Accounts output data for the building and construction sector is based on an annual report compiled by DKM Economic Consultants on behalf of the Department of the Environment, Heritage and Local Government (DEHLG). This is a comprehensive exercise which

contains a wide range of value and volume estimates for different subsectors of the industry.⁸ The volume indices are derived mainly by deflating value output figures for the different subsectors using a range of special construction related price indices based on the trend in housing unit prices (in association with house completions), special published tender price indices,⁹ CSO capital goods price indices and other similar material. In a number of areas (e.g. parts of the productive infrastructure such as water and sanitary services) there are few, if any, such series available and in these circumstances consultations with industry interests on issues such as tender price trends form an important element. It should be noted that the absolute output data contained in the annual DKM Report relate to gross output, and not to GVA.¹⁰ In compiling the National Accounts figures for the building sector the CSO has to transform this material to a net basis using estimated relationships between gross production values and value added.

For the distribution and associated areas volume output trends are obtained by using the special price series used to deflate the value Retail Sales Index. In the transport and communications area physical indicators (such as passenger-kilometres, data on telecommunications traffic monitored by ComReg etc.) are to some degree used as volume trend measures applied to base-year GVA data.

The most intractable problems in calculating output values or volume trends arise in non-market areas such as public administration, education and health. Heretofore, the general practice has been to use inputs (wages and other costs etc.) as a proxy for output (output=input). Output volume trends post base-year are then estimated using inputs deflated with appropriate price series, or direct volume measures (frequently employment or hours worked) as trend indicators applied to base year input (=output) values. Currently, an index of employment is used in Ireland and in a number of other countries as a proxy for determining the trend in real output for these sectors. Unless an explicit adjustment is made for productivity in such instances (which is generally not done in the Irish case), then there will be no allowance for volume increases arising from inputs other than labour.¹¹

The compilation of direct quantity or volume output series is within the realm of feasibility for non-market or public activities which involve the provision of services to individuals or households. They can, for example, take the form of data on numbers of students at different levels, recipients of welfare allowances of various kinds, GP visitations etc. It goes without saying, however, that any such series must be defined and conceived carefully in order that it adequately reflects the volume movements required. In the case of education output, for example, student-hours could be used instead of numbers, with possibly, the involvement of school completion or examination results in order to introduce a quality element. However, for other “collective” services such as public administration, defence etc. (which are more in the nature of a public good), direct volume output trend measures are more difficult still and continued reliance has to be placed on the traditional methods.

2.3 International Conventions and EU Requirements

In an international context, the realisation of agreed or standardised procedures for compiling National Accounts cross countries has long been an objective of the major international bodies. Currently the

⁸ “*Review of the Construction industry 2004 and Outlook for 2005-2007*”, DKM Economic Consultants, Dublin, September 2005.

⁹ Such as the Bruce Shaw Tender Price Index.

¹⁰ The building and construction output figures as shown in the DKM report are more closely related to the gross domestic capital formation figures given in the National Accounts.

¹¹ Germany applies such an adjustment intended to reflect the impact of productivity.

important bedrock is the SNA 1993 (*System of National Accounts*) developed and agreed jointly by the UN, OECD, World Bank, IMF and the European Commission. This document was prepared by an inter-institutional working group and approved by the UN Statistical Commission. It thus has global acceptability and has been widely implemented, even if with considerable delay in some countries. Steps are currently being taken to update SNA 1993. It is envisaged that a revised draft will be available for presentation to the international institutions in 2007.

The SNA is a comprehensive and detailed document covering all aspects of the National Accounts, but in regard to measuring volume output trends it states that:

“In principle, volume indices may always be compiled directly by calculating a weighted average of the quantity relatives for the various goods and services produced as outputs using the value of these goods and services as weights”.

Essentially, output indicators should either incorporate quality change or be adjusted for quality change. When it is not possible to avoid using an input measure, the SNA states that this measure should be a comprehensive one, not limited to labour inputs.

The European Union has carried the process further by enshrining many of the SNA provisions in legislation and stipulating various extensions which are of special relevance for EU purposes, such as determining the eligibility of member States (or parts thereof) for EU financial supports and in monitoring countries' performances under the Stability and Growth Pact. The relevant legal instrument is Council Regulation 2223/96 of 25 June 1996, which has been followed by a number of amendments. The requirements on member States were embodied in a European Commission Decision of 17 December 2002. The implementation year for the revised accounts is 2006, even though some Member States have secured derogations allowing them to initiate the revised procedures in respect of a later year.

For non-market services directed at persons or households the new EU system rejects the (output=input) convention on the grounds that it takes no account of productivity, and also rules out such an approach even if complemented by an assumed productivity change. In these circumstances Member States are, therefore, required to develop direct output methods. However, for collective services (such as public administration) input methods are acceptable, provided that the constituent indicators are estimated separately and quality changes are taken into account. The latter are regarded as an inferior option, but are accepted on the basis that a more satisfactory approach is simply not possible.

Considerable progress has been made in recent years in a number of countries in extending the use of direct volume output indicators for non-market services. This has occurred especially in the UK where real output trends related to some two thirds of general government final consumption is now estimated in this way, particularly in areas such as health, education and the administration of social security.¹² Australia and the Netherlands have also applied this approach to a significant degree and others plan to follow this path in the years ahead. In Ireland, the CSO is investigating the availability of data that has the potential to be a source for direct measurement of outputs with the relevant Departments and agencies.

¹² See Atkinson 2005. Report quoted earlier.

2.4 Quality Improvements

Improved quality of goods and services should, in theory, be regarded as increased volume of production. A number of countries are now using what are termed “hedonic” price indices that strive to take into account quality improvements. As a result, the adjusted price indicators used for deflation purposes can involve rapidly falling prices,¹³ as the improvements in quality will, in many cases, not give rise to price increases. This is a situation where the double deflation approach would seem to be particularly appropriate, as the price increases are often an integral part of the inputs. There will then be substantial increases shown in both the volume of outputs and volume of inputs, with the value added at constant prices being the difference between these two levels.

These issues are currently the subject of much discussion among National Accounts experts at international level. It may well be that there will be a unified EU approach to compiling the indices appropriate for deflation to volume purposes or that, in common with the current practice of a number of other countries, Statistical Offices will use the US hedonic indices, adjusted for exchange rate movements. These could be appropriate for use in the Irish situation, especially in the IT sector, given the predominance of US enterprises in this particular sector in this country.

3. REAL OUTPUT, EMPLOYMENT AND PRODUCTIVITY IN A NATIONAL ECONOMIC CONTEXT

3.1 Aggregate or National Trends

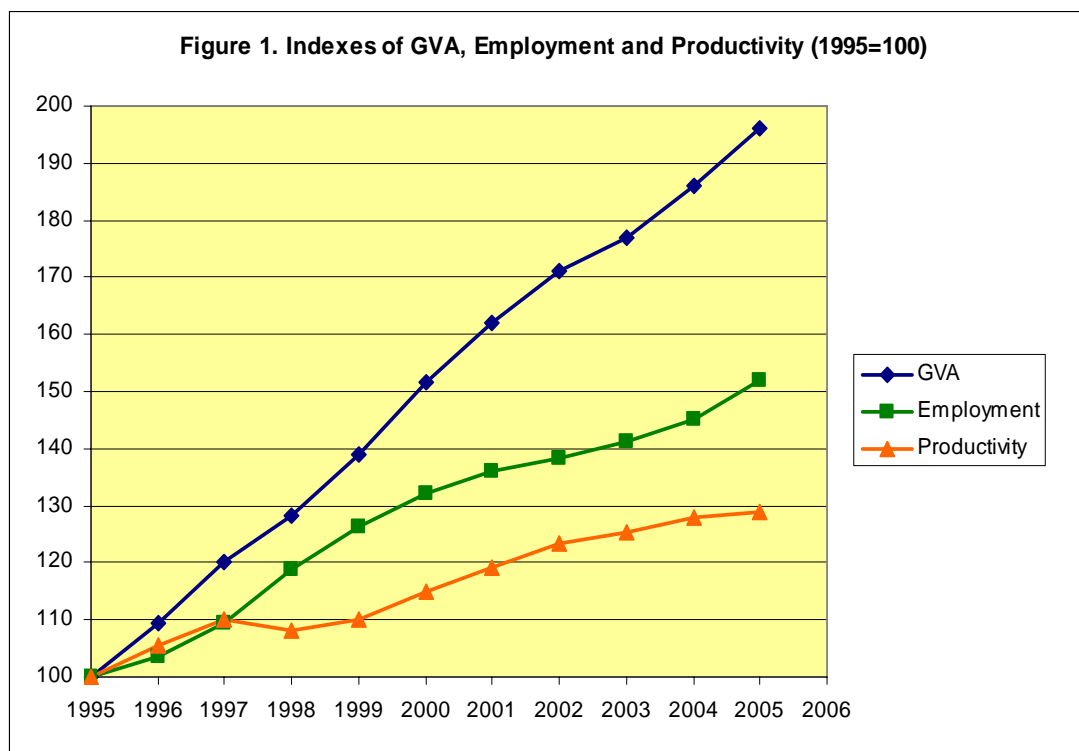
Turning to the main objective of this Paper, i.e. analytical issues, Table 1 shows annual figures at State level for real Gross Value Added (GVA) and average numbers at work and for the period from 1995 to 2005. The real GVA figures are expressed in terms of constant 2004 prices. The table also shows these data in index number form, along with labour productivity indices. The latter were derived by dividing the real output index values by the corresponding values of the employment index, i.e. they reflect GVA per person at work. Figure 1 gives a graphical representation of the three index number trends.

These data show that total GVA almost doubled in real terms between 1995 and 2005, or by 7 per cent on an annual average basis. Output growth has been strong over the entire period, even though it displayed a tendency to moderate in the early recent years of this decade. The total number of persons at work in the Irish economy rose by nearly 670,000 over the ten-year span concerned, reaching a total of 1,952,000 in 2005. This represents a relative increase of more than 50 per cent, or 4.3 per cent annually on average. The increases were particularly rapid during the final years of the 1990s, peaking at well over 100,000 between 1997 and 1998. The increments moderated during the early years of this decade, but have recently accelerated again. The increase in 1994/95, at nearly 90,000, was very substantial.

¹³ In these circumstances the deflator is, in effect, a combined “price/quality” index.

Table 1. Real Output (GVA), Employment and Labour Productivity, 1995-2005						
	GVA	Employment		GVA	Employment	Labour Productivity
	(2004 Prices)			Index 1995=100		
	Euro (000)			Index 1995=100		
1995	70034	1284.7		100.0	100.0	100.0
1996	76556	1330.7		109.3	103.6	105.5
1997	84221	1405.0		120.3	109.4	110.0
1998	89846	1525.8		128.3	118.8	108.0
1999	97412	1621.1		139.1	126.2	110.2
2000	106175	1696.4		151.6	132.1	114.8
2001	113481	1747.5		162.0	136.0	119.1
2002	119754	1778.6		171.0	138.5	123.5
2003	123869	1814.0		176.9	141.2	125.3
2004	130178	1865.0		185.9	145.2	128.0
2005	137293	1952.1		196.0	152.0	129.0
Ann Av.				7.0	4.3	2.6

Source: CSO. National Accounts Database. QNHS (Labour Force Survey to 1997)



The productivity figures reveal some interesting features. Total labour productivity in the Irish economy rose by almost 30 per cent between 1995 and 2005, or annually by 2.6 per cent on average. However, while this measure recorded near continuous growth over most of the period, this began to slow noticeably after 2002, and the most recent data show that the level of labour productivity

remained virtually unchanged over 2004 and 2005. This recent trend, which differs from current experience in other developed economies, is examined further later in the Paper.

3.2 Sectoral Shares of Output and Employment

Before proceeding to analyse trends for output and other data on a sectoral basis, it is useful to provide, in a cross-sectional context, some information on the relative size of the different sectors, in order to indicate the scale of the contribution of each to economic activity. In this regard, Table 2 shows the sectoral subdivision of employment and GVA for 2005, and figures for average GVA per person employed in different sectors (both calculated at 2004 prices).

With regard to GVA, manufacturing and finance and business services account for the greatest shares (over 25 per cent in each case). The modern subsector of manufacturing accounts for over 16 per cent of national output, but less than 5 per cent of employment. In fact both of the sectors referred to are in the high value added category, and between them are responsible for more than half of total GVA, but account for only 28 per cent of employment. In contrast, the broad area covering other services (including distribution and transport) covers some 36 per cent of output, but over half of total employment. The building and construction industry accounts for less than 10 per cent of national GVA and nearly 13 per cent of the jobs market.

Sector	GVA	Employment %	GVA/Person Employed (Euro Annual)
Agriculture	2.9	5.9	34,700
Manufacturing	26.8	15.0	125,600
Modern Manufacturing	16.3	4.7	241,800
Other Manufacturing	10.6	10.3	72,200
Construction	9.3	12.6	51,900
Distribution, Hotels, Transport etc.	17.5	26.1	47,200
Finance, Business Services	25.2	13.3	133,500
Other Services	18.3	27.1	47,300
Total	100.0	100.0	70,300
Total excl Modern Manufacturing	-	-	61,800

Source: CSO. National Accounts Database. QNHS.
Note. The financial data are at 2004 prices.

The figures for average GVA per head, shown in the final column of the table, essentially indicate why the output and employment shares vary so much across sectors. While the overall national average GVA per person employed is calculated at €70,000, this varies substantially across sectors. The figures that immediately stand out are those for manufacturing, with the average GVA per person for the modern subsector being as high as €242,000, compared with €72,000 for the “other manufacturing” category. There are a number of reasons for this divergence. Value added for multinational chemical

and high technology enterprises would incorporate research and development costs which, for the most part are carried out externally, and would not necessarily feature in the cost structure for these companies in Ireland, especially in relation to aspects such as methodology and intellectual property.¹⁴ The much discussed and controversial issue of transfer pricing, which would serve to boost the profit component of total GVA, would be a further contributing factor. It will be noted (from the final row of this table) that the impact of the activities of these enterprises on overall State level GVA is substantial: if “modern manufacturing” is excluded from the calculations the economy wide figure for GVA/person decreases to just under €62,000, a reduction of 12 per cent on the figure quoted previously.

The GVA/person average is also relatively high for finance, insurance and business services activities (over €133,000). This is not altogether surprising, as this sector involves sizeable numbers of employees with medium to high level skills and is essentially a high value added sector. The figures for construction, distribution etc. and “other services” all lie in the €45,000 to €55,000 range. As for the last mentioned category, as this mainly consists of public service activities, output measurement is almost exclusively based on employee remuneration and must be viewed somewhat differently from other sectors (see Section 2). The lowest average GVA per person at work (under €35,000) is recorded for the agricultural sector.

It is of interest at this point to refer to a special article in the Summer ESRI Quarterly Economic Commentary entitled “*New Drivers of Growth? Sectoral Contributions to the Irish Economy*” by Eoin O’Malley and Yvonne McCarthy. This also addresses many of the issues raised in this Paper, but using a somewhat different approach based mainly on trends in sectoral shares of nominal GVA. Broadly speaking, under a number of headings, the conclusions reached are similar those set out in this Paper. With regard to the exclusion of specific sectors or economic components, interestingly the analysis involves what are termed “adjusted GVA” figures which exclude external profit outflows. This adjustment gives rise to sizeable differences; total nominal GVA for 2003 is reduced from €124 billion to €90 billion, a fall of €34 billion, or over 27 per cent. This is a markedly larger decrease than that which results from the exclusion of GVA for “modern manufacturing” as in this Paper, in regard to which the corresponding total GVA decrease is 18 per cent for the same year. This is mainly due to the fact that the O’Malley/McCarthy deduction includes profit outflows for a number of sectors as well as manufacturing, some of which are relatively sizeable (e.g. finance and business services). It must be borne in mind, however, that this exclusion process needs to be qualified in the same way as applies to the somewhat similar approach used in the current Paper in deducting the modern manufacturing GVA component (see Section 1).

3.3 Sectoral Trends in Economic Activity, 1995-2005

Sectoral trend changes in output, employment and productivity over time are best illustrated as index numbers, and in graphical form. In this regard, the following commentary sets out annual average changes for the ten-year period in question for seven sectors in the summary Table 3, while Figures 2 to 4 chart sectoral movements in output, employment and productivity on an annual basis in index number form. For reference, the basic numerical data (for both index numbers and absolute figures) are given in Appendix Tables A1 to A5. All the index numbers are to base 1995=100.

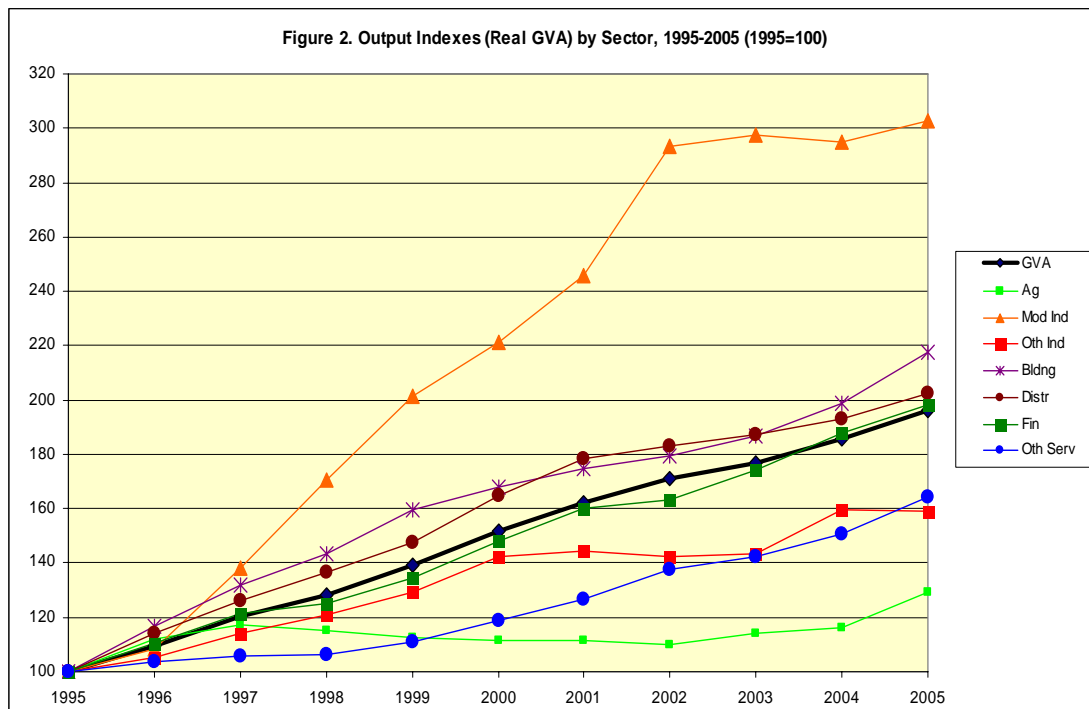
¹⁴ This would apply, for example, to non-generic medicines.

Table 3. Annual Average Changes in Real GVA, Employment and Labour Productivity, 1995-2005			
Sector	GVA	Employment %	Productivity
Agriculture	2.6	-1.7	4.3
Manufacturing	8.4	0.9	7.4
Modern Manufacturing	11.7	2.1	9.4
Other Manufacturing	4.8	0.4	4.3
Construction	8.1	9.9	-1.7
Distribution, Hotels, Transport etc.	7.3	4.9	2.3
Finance, Business Services	7.1	7.4	-0.3
Other Services	5.1	4.4	0.6
Total	7.0	4.3	2.6
Total excl Modern Manufacturing	6.3	4.4	1.8
Source: CSO. National Accounts Database. QNHS (Labour Force Survey to 1997)			

3.3.1 Trends in Real Output

Turning first to output, it has already been noted that total GVA almost doubled in real terms between 1995 and 2005, or by 7 per cent on an annual average basis. The most notable changes are in the manufacturing area, with output in modern manufacturing showing a rise of some 200 per cent over the ten year period in question (nearly 12 per cent annually). The more traditional “other manufacturing” sector expanded by 60 per cent, or by 4.8 per cent annually. Reference to Figure 2 shows, however, that real output in modern industry has recorded virtually no growth since 2002. Throughout this more recent period, as indicated below, job losses in this sector were substantial. These trends are somewhat different to those for the more traditional manufacturing enterprises. In this area, output continued to rise in recent years (albeit very slowly), and the employment level held up, at least until 2005 when it declined noticeably.

Real growth in the building industry was particularly strong and continuous over the entire period from 1995 to 2005, averaging more than 8 per cent annually. As the graph in Figure 2 shows, expansion was particularly strong in 2004-05 (over 9 per cent). Output performances in distribution, hotels, transport etc. and in financial and business services were also robust and sustained, recording annual increases of more than 7 per cent on average.



The volume rise in “other services” activities, which mainly involves public or non-market services, was lower than in other areas (apart from agriculture), increasing by just over 5 per cent annually between 1995 and 2005. However, this divergence (i.e. compared with other sectors) would be partly due to methodological differences in measuring real output (see Section 2). One would expect (or hope) that if a productivity element were included in the output calculations for this sector, the volume growth rates would be higher.

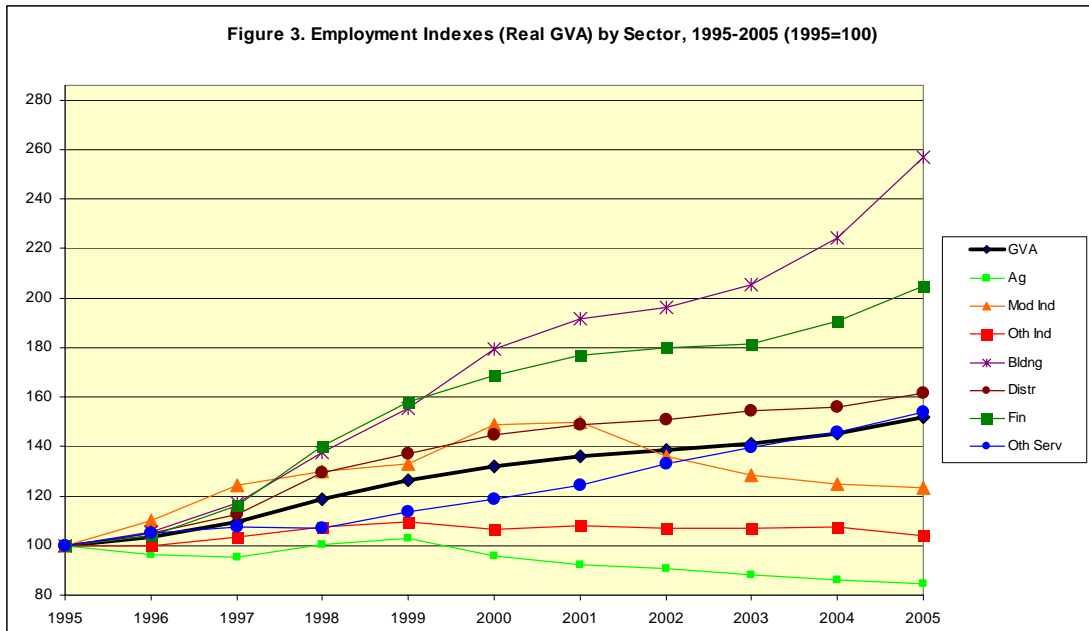
Real output growth in agriculture can only be described as minimal in the ten years up to 2005. It amounted to less than 30 per cent over the full ten-year period, averaging only 2.5 per cent per year. Some significant expansion was recorded in the early years of this period, but broadly speaking, in subsequent years output growth has been negative, apart from 2004/2005 when a significant gain (of 11 per cent) was recorded. However, the last mentioned was, in effect, a once-off phenomenon and more in the nature of a distortion, being due mainly to the change in the method of payment of farm supports from production based subsidies to fixed or flat payments.

Finally, it of interest to observe the extent to which growth in modern or high technology manufacturing affects overall economic expansion. If this subsector is excluded from the total GVA real growth calculation, the annual average rate for the 1995-2005 period is reduced by 0.7 of a percentage point, from 7.0 to 6.3 per cent., not an unduly large amount, but significant nonetheless. However, as explained earlier in section 2, the exclusion of modern manufacturing from the growth calculation as illustrated here should, ideally, be done in a wider context which takes account of secondary effects.

3.3.2 Employment

Our earlier analysis has already indicated that the total number at work in the Irish economy rose an average of 4.3 per cent per year over the ten years between 1995 and 2005. Table 3 shows that the

fastest rates of increase were recorded in building and construction (nearly 10 per cent annually), in finance, insurance and business services (7.5 per cent) and, to a lesser extent, in the broad sector covering distribution, hotels and restaurants and transport and communications at just under 5 per cent. The graphical representation (Figure 3) reveals that the rate of increase in the building industry accelerated noticeably after 2003 (it rose by as much as 14 per cent in 2004/2005).



The annual average rise in “other services” (i.e. mainly public sector activities) was more modest, nearly 4.5 per cent, but Figure 3 indicates that this rate of expansion remained steady over the entire ten-year period. The increase for total manufacturing, at just under 1 per cent was relatively small. Within this group it was over 2 per cent for the “modern” subsector, but less than 0.5 per cent for other manufacturing. Employment in the former peaked at the beginning of this decade and has declined markedly (by nearly 20,000) since that time; the numbers in traditional manufacturing also decreased in recent years, albeit more slowly, except in 2004-2005 when there was a sharp drop of nearly 7,000.

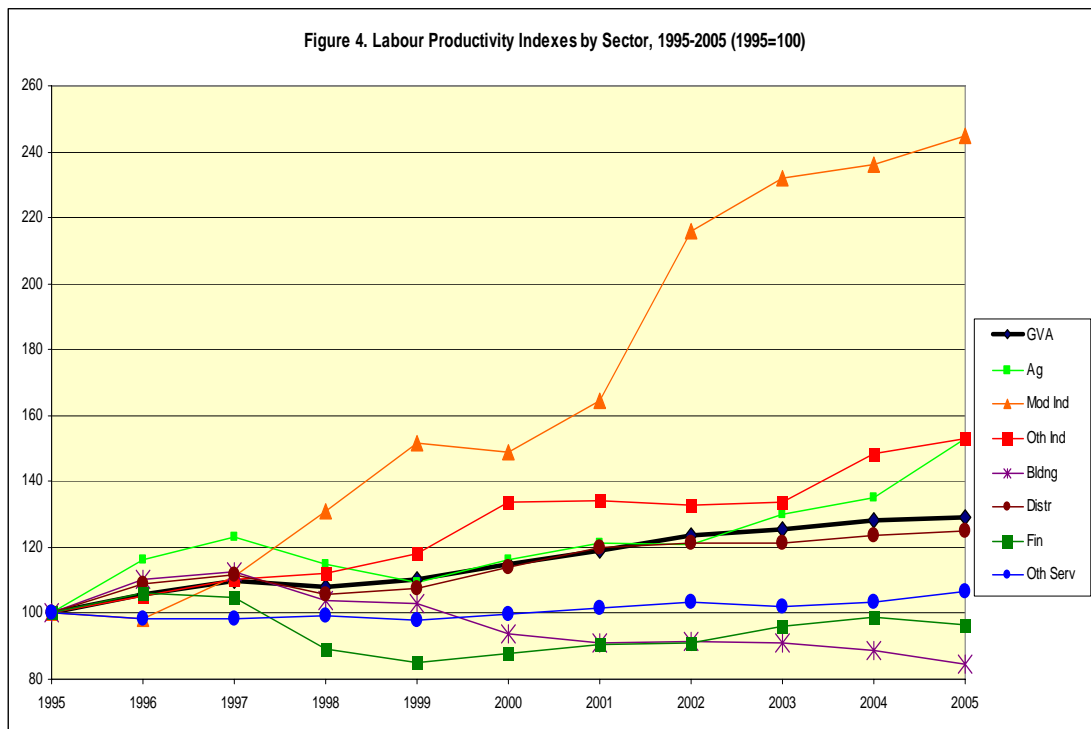
3.4 Labour Productivity

Let us now consider recent trends in labour productivity – perhaps the most interesting feature in this study. The figures in Table 3 show that total labour productivity in the Irish economy rose by 2.6 per cent annually on average between 1995 and 2005, or by nearly 30 per cent over the full period. However, the growth in productivity has declined noticeably in the last few years and the level remained more or less static in 2004 and 2005. This has been mainly as a result of a number of parallel influences, involving structural changes in the economy, falling productivity in certain sectors (notably building and construction), as well as a tapering off in productivity growth in a number of other areas, e.g. financial and business services.

Turning first to sectoral trends for the industrial sector as a whole productivity more than doubled in this period, but within this category productivity in modern manufacturing rose by 145 per cent (9.4 per cent annually) and by nearly 55 per cent in the more traditional area, or 4.3 per cent per year on average (see Figure 4). An interesting point to note in regard to the modern technology-based category

is that since 2001 the rapid gain in productivity has derived more from declining employment rather than from rising output. A contributing factor was that many of the job losses related to the lower skill end of the subsector in question. This type of effect has now also begun to apply to labour productivity in traditional manufacturing. This subsector recorded a sizeable fall in employment in 2004/2005, but productivity continued to rise.

Outside of industry significant productivity gains were recorded in agriculture (4.3 per cent annually between 1995 and 2005) and in distribution, hotels etc. transport and communications, which recorded an annual average rise of 2.3 per cent. In agriculture these gains (as recently in industry) were mainly achieved due to falling numbers at work in the sector. It should be noted, however, that for agriculture the average percentage increase has been significantly influenced by the large productivity growth recorded in 2005 (13 per cent), which is attributable mainly to the changes in the method of payment for farm subsidies. Productivity actually declined in building and construction – by 1.7 per cent per year on average over the full period covered – with the result that the level recorded in 2005 was over 15 per cent lower than in 1995. While this may appear somewhat surprising, it should be borne in mind that this sector has recorded extremely large employment increases during this time. A closer inspection of the results shows that productivity in this sector actually rose in the early years of the period covered, but has been falling continuously since 1997.



Labour productivity in the financial and business services sector also declined (albeit slightly) in the ten year period between 1995 and 2005 – by just over 3 per cent (or 0.3 per cent annually). However, the trend within this period has been somewhat erratic. It rose initially between 1995 and 1997, but then fell sharply in the following two years when employment in the sector rose rapidly. However, it has been increasing steadily at a moderate pace since 1999, with the result that by 2005 the level was nearly 14 per cent above that for the valley point of 1995.

As indicated earlier, the “other services” category consists predominantly of public service activities. As the methodological basis of the output calculations for this large component effectively implies a situation of zero productivity growth, one would expect that the productivity trend figures should reflect this. This is indeed evident from the relevant graph in Figure 4, the values of which remain at or near the base-year axis (100) throughout the entire period involved. There is some evidence of a slight rise in productivity in the sector in recent years, which one presumes must derive from the small private sector component.¹⁵

3.4.1 The Impact of Structural Changes in the Economy on National Productivity Growth

While analyses of productivity for specific sectors are important and instructive, one must also bear in mind that overall productivity change at national level reflects the effect of structural variations in the economy over time. Such changes arise from the increasing importance in employment terms of certain sectors and corresponding relative declines elsewhere. The declining influence of the agricultural sector provides an example, a development that of itself resulted in an increase in the overall level of output per person employed due to the replacement of jobs giving low value added with higher output employment. Often such underlying causative factors tend to attract little attention, but they are nonetheless important.

This type of development was illustrated in the October 2000 SSISI Paper by W. Keating referred to earlier. The method he employed was to estimate what output levels would have been in a current year if the distribution of the numbers employed in different sectors of the economy was as in the base-year of the period under discussion, and output per worker in each sector was expressed in current terms. In other words, with this procedure the only movements recorded relate to intrinsic changes in productivity, and the difference between this and the actual change reflect the impact of structural shifts in the economy. In the Keating Paper the period covered was from 1990 to 1999.

The results of a similar simulation for the period from 1995 to 2005 using sectoral data on output and employment from the present study are shown in Table 4. As well as applying the procedure to the full ten year period, corresponding results are also given for two subperiods, 1995-2000 and 2000-2005. The figures for the full period indicate the structural changes in the employment profile of the economy had little net effect on overall productivity growth over this ten year time span. The actual growth in productivity was 29 per cent (or 2.6 per cent on average annually as indicated earlier), of which only a minimal amount (less than one percentage point) could be attributed to structural shifts. We are already aware, of course, that substantial structural changes did occur during this time, but these were clearly offsetting in terms of their impact on national productivity.

The results for the two subperiods are quite different. Between 1995 and 2000, national real productivity growth was nearly 15 per cent, of which 9 per cent related to intrinsic productivity growth within sectors, but this was augmented by a further 6 per cent arising from changes in the employment profile across sectors of the economy. The reasons for this are not difficult to identify.

¹⁵ As indicated earlier in the Paper, this accounts for nearly 80 per cent of activity in the sector. It consists of personal services and other miscellaneous private service activities.

Table 4. Relative Growth in Overall Real Productivity between 1995 and 2005 assuming no change in the Sectoral Structure of Employment			
	1995-2000	2000-2005	1995-2005
		%	
Productivity Growth with Base Year Employment Structure	9.0	17.2	28.1
Actual Productivity Growth	14.8	12.4	29.0

This was a time when employment in high productivity areas such as modern manufacturing and finance and business services was increasing rapidly. This, of itself, served to boost national productivity levels, irrespective of productivity movements within these sectors. The results for the period from 2000 to 2005 indicate trends which are, in effect, the opposite of those evident for the earlier subperiod. Actual real productivity growth was nearly 12.5 per cent, but the growth component involving the constant base year employment structure was actually higher, by almost 5 percentage points at 17.2 per cent. This indicates that the impact of structural trends in the economy were negative during this time, and in contrast to the earlier period, had the effect of reducing, not increasing, overall productivity. Again the underlying reasons are evident. This period saw a significant decline in the share of total employment accounted for by high value added manufacturing (both modern and traditional) and a rise in the share attributable to the low productivity building and construction and “other services” sectors. Furthermore, the employment share related to financial and business services, where productivity is high, stabilised after a period of increase.

In summary, this analysis shows that, in addition to declining productivity within some sectors, structural changes in the economy have been a significant influence in reducing or eliminating overall national productivity growth in recent years. In view of this, any significant resumption of productivity growth is unlikely in the short-term, unless substantial employment increases occur in high value added sectors such as finance and business services.

3.4.2 Productivity Declines in Individual Sectors

In addition to the recent near disappearance of overall productivity growth, the sizeable decreases in output per worker in certain sectors have also become a source of debate.¹⁶ It is, therefore, relevant to add some further thoughts on this issue. It has been suggested, for example, that the absence of recording of black economy activity may have contributed to this phenomenon, or the recruitment of large numbers of foreign workers at relatively low rates of pay since the late 1990s. If the latter tends to depress real wages while simultaneously increasing employment, this can transmit into reductions in productivity. The building and construction industry has, in particular, been referred to as an area where these influences apply. While one cannot offer any direct proof that events have materialised as suggested (or even if true whether they can be attributed to foreign workers), they are within the realm of possibility. If the cost of labour in the building sector increases more slowly than that for other inputs it allows the engagement of more workers while at the same time achieving increases in what is termed the “gross operating surplus” (i.e. GVA less wages).¹⁷ In these circumstances, the additional increase in employment can result in a reduction in productivity as it is currently measured.

¹⁶ See, for example, the article “All these extra jobs, but where is the output?” by Brendan Keenan in the *Irish Independent* of 20 July 2006.

¹⁷ This can be broadly interpreted as being close to a gross profit total.

In this regard, it is of interest to note the graphs in Appendix Figures A1 and A2. The first shows the annual trend for average weekly earnings in nominal and real terms in building and construction from 1995 to 2004. The real or volume earnings series has, in this instance, been obtained by adjusting the nominal or value earnings data with a price index based on the relative movements in gross value added (GVA) for the building sector in value and volume terms (i.e. in much the same manner as the calculation of the overall GDP deflator). It will be seen, *when viewed from this enterprise-based perspective*, that while the nominal value of weekly earnings more than doubled between 1995 and 2004, the trend in real terms actually declined slightly.

Appendix Figure A2 shows a selection of annual indexed trend indicators for the building industry covering employment and volume series for GVA, labour productivity and real average weekly earnings, the last mentioned calculated as described above. As indicated earlier in this Paper, employment and real GVA show strong growth, while productivity declined. Since real earnings also decreased, if a volume gross operating surplus series were included it would show a higher growth path than GVA, and very likely higher than the employment series. It should be mentioned, of course, that these types of trend relationships could occur in other sectors, for example in personal services. The illustration involving building and construction is of relevance because of the extremely high growth rates recorded over the last decade, and it is possible to compute as the required data are available.

With regard to immigrant worker inflows generally, there have, of course, been very large increases in recent years, an aspect which has been amply detailed elsewhere.¹⁸ For the most part, these immigrants, while not necessarily less educated than Irish workers, have mainly tended to fill low-skill jobs, particularly in areas such as personal services and building. Between 2000 and 2005 some 37 per cent of net labour force growth was attributable to non-nationals, a proportion which approached 60 per cent over the last few years.

3.4.3 Productivity Measured in terms of Hours Worked

One aspect which I consider is necessary to address is the question of how different (or similar) the productivity outcomes would be if, in the calculations, hours worked was used as a denominator instead of employment. Generally, there have been indications for quite some time that the level of average weekly hours worked per person has been declining. This can be either due to a rising incidence of part-time work (at least in some sectors) and/or a tendency to work fewer hours anyway, irrespective of full-time or part-time status.

In dealing with this issue, the basic data used relate to the information on usual weekly hours worked as obtained in the CSO QNHS. This, of course, ensures consistency with the employment data used earlier in this Paper and also allows the compilation of hours worked data for sectors, again on the same basis as earlier. The time span covered extends from 1998 to 2005,¹⁹ and within this period data on hours worked for each quarter were used in order to derive a more representative picture on an annual basis. In compiling the productivity series the output figures used as numerators were the same real GVA data as used in calculating the labour productivity indicators. Thus, the essential difference between the two series derives solely from the use of hours worked figures instead of employment as

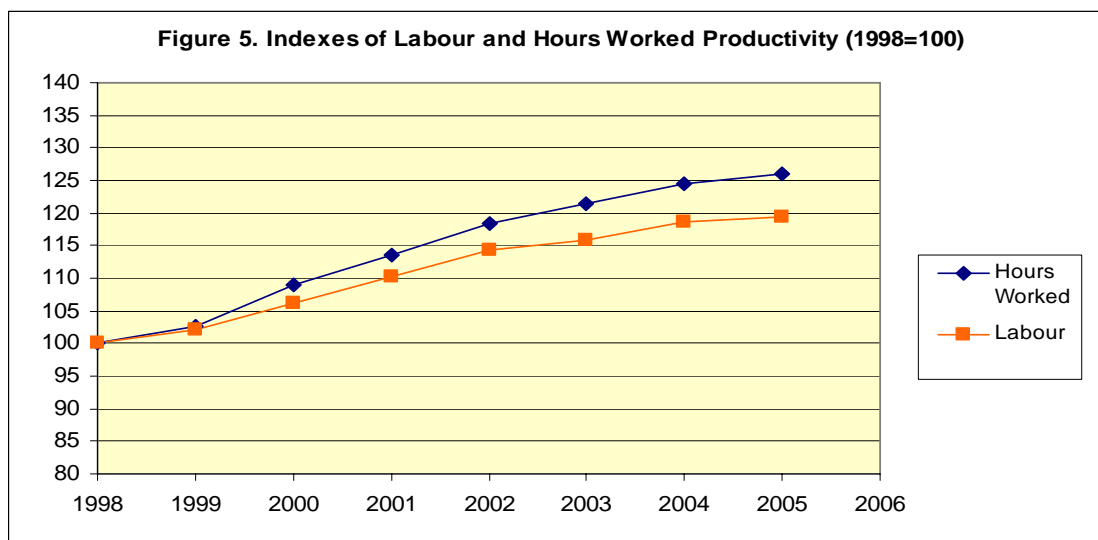
¹⁸ For example in the most recent CSO QNHS Releases. See also Barrett, Bergin, Duffy (2005), "*The Labour Market Characteristics and Labour Market Impacts of Immigrants in Ireland*". ESRI Seminar Paper SP2005-02, March 2005.

¹⁹ Comparable data on hours worked are not available for the years prior to 1998.

denominator inputs. The more detailed basic data are given in Appendix Tables A6 to A9. These are summarised in Tables 5 and 6 and in Figures 5 and 6 in the following text.

The aggregate index numbers for the two types of productivity measures given in Table 5 show that overall labour productivity rose by over 19 per cent between 1998 and 2005, while that based on hours worked increased by nearly 26 per cent. These represent annual average increases of 2.6 and 3.4 respectively. The differences are significant, but not unduly large. The corresponding Figure 5 shows that the trend pattern for each indicator is very similar, with a noticeable tendency towards slower productivity growth in recent years. The divergence was widening progressively in the early years of the period covered, but seems to have stabilised somewhat over the last few years.

Table 5. Indices of Overall Labour and Hours Worked Productivity (1998=100)			Table 6. Annual Average Changes in Labour and Hours Worked Productivity by Sector, 1998-2005		
Year	Labour	Hours Worked	Sector	Labour	Hours Worked
					%
1998	100.0	100.0	Agriculture	4.2	4.5
1999	102.0	102.6	Manufacturing	7.2	7.6
2000	106.3	108.9	Building	-2.9	-2.8
2001	110.3	113.5	Distribution, etc.	2.4	3.3
2002	114.3	118.4	Finance & Business	1.2	1.4
2003	116.0	121.5	Other Services	1.0	1.8
2004	118.5	124.4	Total	2.6	3.4
2005	119.4	125.9			
Ann. Average Change (%)	2.6	3.4			



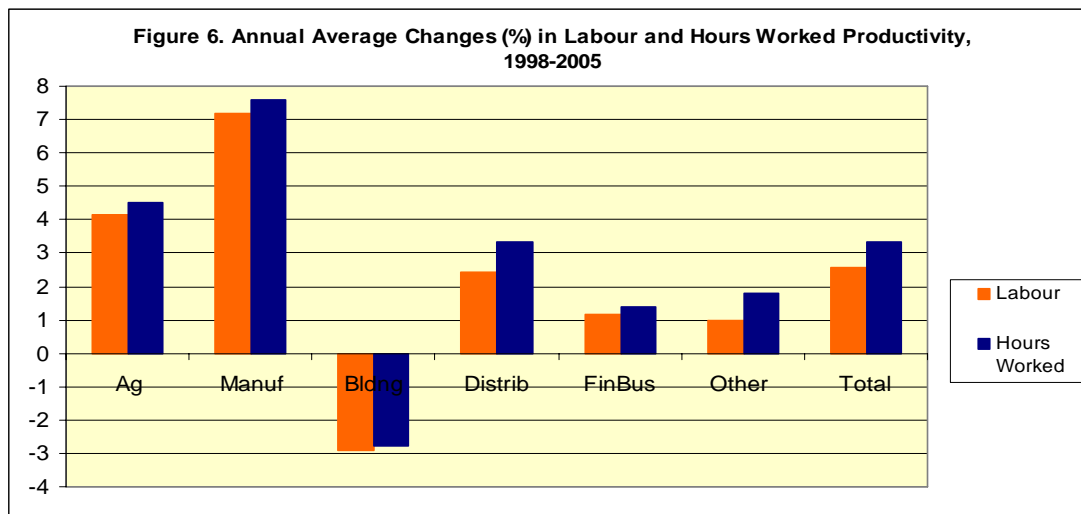


Table 6 shows annual average relative changes in labour and hours worked productivity by sector in the 1998-2005 period. The changes are also represented graphically in bar chart form in Figure 6. The pattern of change is much the same as shown by each measure, even though generally the increases in productivity indicated by hours worked measure tend to be greater. However, in the case of agriculture, manufacturing and financial and business services these differences are minimal: in the building sector, where productivity fell, the relative changes are almost identical. However, for the distribution, transport etc. sector and for “other services” the differences in question are more marked. In the case of the former category the annual average rise in labour productivity in 1998/2005 was 2.4 per cent, but 3.3 per cent when based on the hours worked related measure. For “other services” (which is predominantly public sector) the variation is relatively greater, the corresponding increases being 1.0 and 1.8 per cent respectively. It is of interest to note (see Appendix Table A10) that these two sectors recorded the greatest reductions in average weekly hours worked between 1998 and 2005. Furthermore, as these sectoral categories are large in terms of their shares of total economic activity, the percentage increases in question have a significant effect on the overall economy.

In summary, however, while the differences between the labour and hours worked productivity measures are significant and must be acknowledged, the message emerging from the analysis of each is much the same, and the variations are not of a sufficient order of magnitude so as to materially alter the conclusions of the earlier analyses based on labour productivity only.

4. IRELAND’S PERFORMANCE COMPARED WITH TRENDS IN THE INTERNATIONAL ECONOMY

In this Section recent output, employment and productivity trends in Ireland are compared with two of the major regions of the international economy, i.e. the European Union²⁰ and the United States. The relevant data are given in Tables 7 to 9 and in Figures 7 to 9. All the trends are, as in most of the earlier analyses, shown in index number form to base 1995=100. For reasons of consistency with other tables in the Paper, the Irish data are based on GVA, even though those for the EU15 and the US relate

²⁰ The indexes for the European Union relate to EU15 as the relevant data for some of the 10 new member States are not available for the full period under consideration.

to GDP. However, as already explained in Section 1, the use of GVA instead of GDP makes little difference to the comparisons.

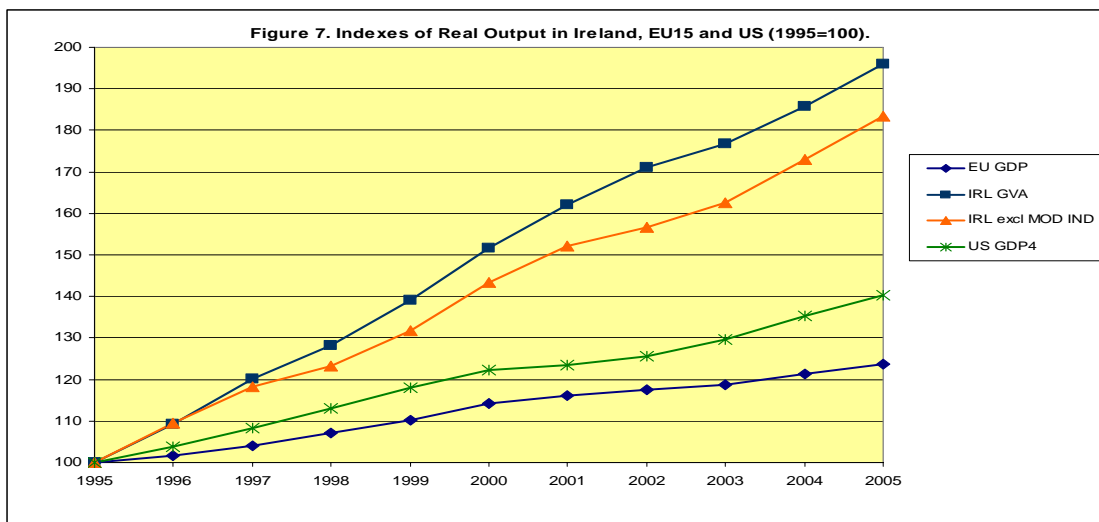
The comparative output data for the areas in question reveal considerable trend differences. Economic expansion has been much faster in Ireland than in both EU15 and the US. Annual real output growth averaged 7 per cent in real terms in Ireland between 1995 and 2005, compared with 2 just over per cent in EU15 and 3.4 per cent in the US. As already indicated, if the “modern manufacturing” sector is excluded from the Irish data, the annual real GVA increase for Ireland falls to 6.3 per cent. Leaving aside differences in growth levels, the graphical representation in Figure 7 shows that output in all regions rose steadily in the ten-year period concerned. It is noticeable, however, that expansion faltered somewhat in the US at the beginning of the current decade, but began to increase again at a more rapid pace in recent years.

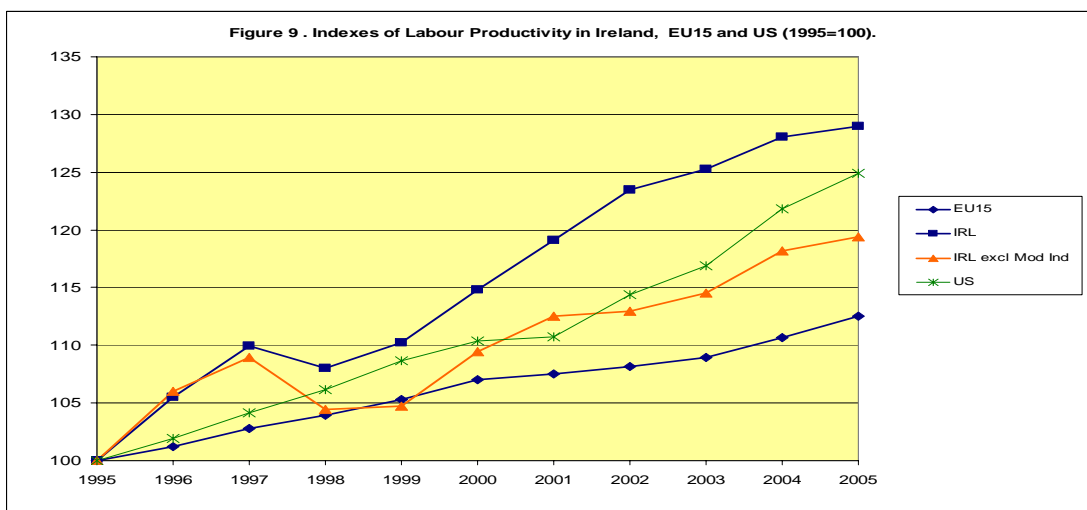
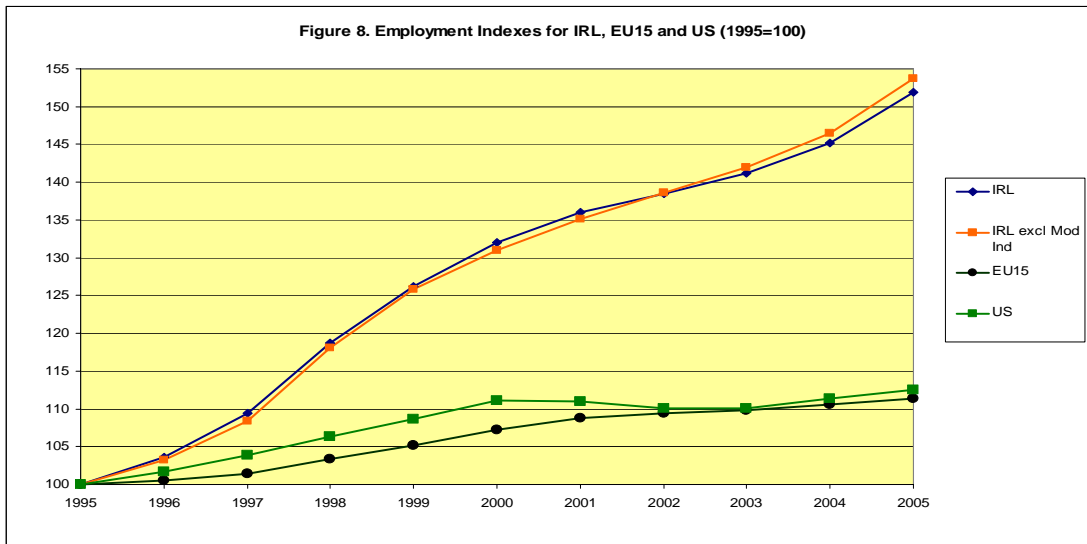
The comparative employment trends (Table 8 and Figure 8) show even greater divergence between Ireland and the other two regions. The annual average jobs gain in Ireland between 1995 and 2005 was 4.3 per cent, compared with corresponding increases of just over 1 per cent for both EU15 and the US. While the upward trend in employment in EU15 applied consistently throughout the period, the figures for the US reveal somewhat different pattern. Figure 8 shows that the number of persons at work in the US rose more rapidly than in Europe in the second half of the 1990s, but then actually declined between 2000 and 2002, after which time it began to increase again, but slowly. While employment growth in EU15 was maintained over the ten year period, it can only be described as painfully slow, largely due to the sluggish performance of the large German and French economies.

Table 7. Indices of the Trend of Real Output in IRL, EU15 and the US				
	IRL		EU15	US
	GVA	GVA excl Mod	GDP	GDP
	1995=100			
1995	100.0	100.0	100.0	100.0
1996	109.3	109.4	101.6	103.7
1997	120.3	118.1	104.1	108.4
1998	128.3	123.3	107.2	112.9
1999	139.1	131.7	110.3	118.0
2000	151.6	143.4	114.2	122.4
2001	162.0	152.1	116.2	123.3
2002	171.0	156.6	117.5	125.7
2003	176.9	162.7	118.6	129.6
2004	185.9	173.1	121.4	135.4
2005	196.0	183.5	123.7	140.3
Ann Av. Change	7.0	6.3	2.1	3.4

Table 8. Indices of Employment for IRL, EU15 and the US				
	Total	IRL Excl Mod Ind	EU15	US
1995=100				
1995	100.0	100.0	100.0	100.0
1996	103.6	103.2	100.5	101.7
1997	109.4	108.4	101.5	103.9
1998	118.8	118.1	103.3	106.3
1999	126.2	125.8	105.2	108.6
2000	132.1	131.0	107.3	111.1
2001	136.0	135.2	108.8	111.0
2002	138.5	138.6	109.5	110.1
2003	141.2	142.0	109.8	110.1
2004	145.2	146.4	110.6	111.3
2005	152.0	153.7	111.4	112.5
Ann Av. Change	4.3	4.4	1.1	1.2

Table 9. Indices of Labour Productivity for IRL, EU15 and the US				
	Total	IRL Excl Mod Ind	EU15	US
1995=100				
1995	100.0	100.0	100.0	100.0
1996	105.5	106.0	101.2	101.9
1997	110.0	108.9	102.8	104.1
1998	108.0	104.5	104.0	106.1
1999	110.2	104.7	105.3	108.7
2000	114.8	109.5	107.0	110.4
2001	119.1	112.6	107.5	111.0
2002	123.5	113.0	108.2	114.3
2003	125.3	114.5	108.9	117.9
2004	128.0	118.2	110.7	121.8
2005	129.0	119.4	112.5	124.9
Ann.Av. Ch. (%)	2.6	1.8	1.2	2.2





The variations in the pattern of output and employment trends as described (even though they may not appear all that substantial) have had a profound impact on differences in productivity trends for the three regions. Table 9 shows that labour productivity trends in Ireland, and those for EU15 and the US do not diverge to the same degree as for output or employment, as during the period in question Ireland also achieved a much faster rate of employment expansion. The indexed data in Table 9 show that labour productivity in Ireland rose by nearly 30 per cent between 1995 and 2005, or 2.6 per cent on average annually. The corresponding increase in EU15 for the same period was nearly 13 per cent (1.2 per cent annually) and 25 per cent (2.2 per cent per year on average) in the US. However, if the high technology modern sector is excluded from the Irish data, it is interesting to note that the productivity increase for the period concerned is reduced to 1.8 per cent, which is somewhat below the US annual average figure.

The productivity related graphs in Figure 9, from which one can more readily observe changes over time, provide a more revealing picture. While labour productivity growth has been substantial in Ireland over almost the entire period under study, as described earlier in this Paper, it began to decelerate after 2002. The productivity rise in EU15, as with output and employment, has been slow but consistent. The data for the US are, perhaps, the most interesting. Productivity increased significantly throughout most of the 1995-2005 period, even though it lost its upward momentum and all but stabilised for a short period at the beginning of this decade (even though employment fell). It is of interest to note, however, that it increased strongly thereafter, in parallel with the (admittedly slow) resumption of jobs growth. This indicates that the labour market adjustments that occurred in the US at this time initially involved job losses among low productivity, low skill workers, while the increasing job opportunities that subsequently emerged benefited workers with higher skills. This is the opposite of what now appears to be happening in Ireland, where the disappearance of productivity growth at a time of continued high employment expansion suggest that the latter primarily involves low skill employees. On balance, leaving aside other economic considerations (US budget deficits etc.), the US productivity trends reveal a more solid basis for future growth.

5. CONCLUDING REMARKS; SOME POLICY ISSUES

5.1 Changing Growth Patterns

Arising from the results as presented in the foregoing analyses, an important aspect which calls for comment is the extent to which the structure of economic growth in Ireland has altered over the ten-year time span covered, especially in recent years. The widely varying growth rates for different sectors have created a situation where the current basis of output expansion is heavily dependent on building and construction and on the public services dominated “other services” category. Table 10 shows that these two categories alone accounted for nearly 45 per cent of total output in 2004/2005, with the distribution, catering, transport etc, sector (which is primarily driven by domestic consumption) adding a further 15 per cent. This means that 60 per cent of the overall growth increment in this twelve month period was generated by these three sectors, with about 40 per cent generated by the goods producing areas and business and financial services. Apart from tourism, the latter broad group encompasses virtually all of the export oriented activities in the economy. The position was virtually the opposite five years earlier in 2000/2001, when the two growth shares were just under 57 per cent for goods producing and business activities and 44 per cent in aggregate for the other sectors. The imbalances as described are even more extreme if economic expansion is viewed in terms of employment.

Table 10. Shares of Annual Real Output (GVA) Growth in 2001 and 2005.		
Sector	2000-01	2004-05
		%
Agriculture	0.2	5.7
Manufacturing	27.7	8.0
Modern Manufacturing	25.1	8.4
Other Manufacturing	2.6	-0.4
Construction	5.6	15.1
Distribution, Catering, Transport etc.	21.9	15.9
Finance, Business Services	28.7	25.9
Other Services	16.0	29.3
Total	100.0	100.0

This is a situation which cannot be sustained for long and calls for steps to be taken to constrain output demand in building and construction and, possibly, some curbs on personal spending (or at least the discretionary parts thereof). While every effort should be made to promote expansion in export oriented goods producing sectors and in business services (see below), it is not realistic to expect that growth in these areas, where enterprises face strong competition in the global market, can be raised to the extent that an appropriate balance can be restored. In effect, what is being suggested implies slower, but more sustainable growth. It is recognised that, when viewed in political terms, this is not an easy time to apply curbs, but it would be preferable to exercise a measure of control over corrective mechanisms, rather than allow them to be imposed in a totally uncontrolled manner by economic imperatives, which may be much more painful.

5.2 Where are the Best Prospects for Future Growth?

Another major issue of relevance to future economic performance is which sectors should be targeted, and if necessary supported, if reasonable growth rates are to be maintained. In addressing this issue it is, however, necessary to lower our sights overall, as one cannot expect to repeat the extraordinary overall growth rates achieved in recent years, at least not in the medium term.

While policy must strive to enhance growth in all areas of the economy, both traded and non-traded, our main concern must focus on those areas which have export potential and are not unduly dependant on domestic demand. The possibilities are not numerous. The main contributions to growth in the past have come from exports from agriculture and manufacturing industry and export tourism. In more recent years, international business services have become increasingly important, a feature to which we will return later in this section.

Historically, agriculture, or agriculture based industries, has been an important contributor to growth (prior to the 1960s they were virtually the only source). However, our analyses show that output in the primary sector has now become more or less static according as Ireland (like other developed

countries) has been obliged to reduce trade barriers and dismantle internal supports as part of the wider application of WTO-sponsored global trade agreements. This trend is unlikely to change, as trade liberalisation is likely to progress, even if slowly.²¹ While agriculture will, of course, remain an important output component in the Irish economy, it cannot be expected to make a substantial or above average contribution to future economic expansion.

Manufacturing (especially the multinational high-technology sector) has effectively been the engine of growth in the Irish economy for many decades. This has been due not only to rapidly rising output in the sector, but also from knock-on effects in the rest of the economy. In a wider sense, the positive social or psychological impact on Irish society in having developed a sizeable high-tech sector, which provided numerous high-skill employment opportunities, has been substantial. However, things are obviously beginning to change. The data presented earlier in this Paper show that volume output in the modern sector has moderated and employment has declined substantially in the last few years. This cannot be attributed to cyclical influences, but is of a more fundamental nature according as enterprises (particularly those at the lower skill end of the sector) transfer operations to low-cost countries. The ultimate vision here is a sector which has fewer but larger units engaged in a range of core activities (including research and development) which require significant investment and high-skill HR inputs. Because of its strategic value, high-technology manufacturing will continue to be an important, indeed crucial, element in fostering economic growth in Ireland, but is unlikely to occupy the dominant position it has held since the 1960s.

With regard to tourism, while this sector has also contributed substantially to growth over a prolonged period, this has not been the case in recent years. Total gross income from international tourism and travel (which amounted to €4.3 billion in 2005) rose by 11 per cent per year between 1995 and 2000, but this rate declined to 3.3 per cent in 2000/2005.²² The latter figure in fact represents a slight decrease in real terms when cost inflation is taken account of.²³ The output figures just quoted are broadly consistent with recent trends in employment in the tourism related sector covering hotels, restaurants etc. which has recorded a minimal net jobs increase since 2000, even though total employment in the economy rose by as much as 250,000 between 2000 and 2005.

The foregoing comments should not, of course, be taken to imply that the current situation in tourism will (or should be allowed to) continue indefinitely. Export tourism will continue to be an important component in achieving growth and every effort should be taken to ensure that it will continue to expand as rapidly as possible. Current trends do suggest, however, that in the years ahead growth rates will be constrained and, thus, any contribution to overall expansion will be limited, at least in the medium term. All the signs are that many of the major difficulties affecting tourism (e.g. uncompetitive prices, environmental issues and attitudinal problems) are features that permeate throughout the economy generally, and corrective measures will take time to have effect.²⁴ While acknowledging the pressures of international competition, tourism is, nonetheless, is an area where

²¹ The recent WTO trade negotiations which took place in Geneva are of particular relevance in this regard. The outcome may not have been satisfactory, but the movement towards freer trade is likely to continue.

²² CSO. *Annual Tourism and Travel* release for 2005 and earlier years. It is of interest to note that a reduction in expenditure on transportation by non-residents influenced the post-2000 trend as described. If this is not included, the nominal rise in income from international tourism was 5.5 per cent in 2000-2005 and 10 per cent in the preceding five year period.

²³ The annual average GDP deflator was 3.7 per cent over the same period.

²⁴ Many of these problems were highlighted in the 2003 Tourism Policy Review Group Report “*New Horizons for Irish Tourism – An Agenda for Action*”.

corrective measures are largely in our own hands, and thus offers real opportunities for contributing to growth.

On the basis of the above brief sectoral review, international business services would appear to be the most obvious export oriented area which offers the opportunity to generate rapid or above average growth and become the prime focus or centrepiece of overall economic advance. Expansion in this area (both in a domestic and international context) has the added advantage that it involves high value added activities and thus can make an important contribution to raising overall productivity levels. It should be mentioned that “services exports” as referred to in this context are intended to embrace more than what may be described as conventional commercial activities. It also covers professional expertise in areas such as professional and technical agricultural assistance, education, public administration etc.

This is, in fact, an area which has already been recommended for targeting by the State development agencies²⁵ and, indeed, considerable progress has been made to date. The value of services exports from Ireland increased nearly fourfold between 1998 and 2005 from €12.4 billion to €46.1, representing an annual average rise of over 20 per cent.²⁶ While a volume series is not available, the scale of domestic and international price movements over this period makes it clear that this is a very substantial advance in real terms.²⁷ Within this broad services category business and financial services accounted for about €39 billion in 2005 (85 per cent), within which computer services comprised €15 billion, or nearly a third of the overall total. Nearly two thirds of Irish service exports went to EU25 countries, but a surprisingly small share (just over 5 per cent) went to the US and Canada. The latter feature does, perhaps point to an area which offers opportunities for further expansion.

One notable setback in relation to fostering international trade in services (outside of the EU) is the failure of the recent WTO Trade Negotiations (in which services was an important element) to conclude a satisfactory agreement. While this may have caused some interests here to heave a sigh of relief, in the wider context of overall growth prospects for Ireland it is a setback, and is likely to result in a slower rate of expansion in world trade than would otherwise emerge. However, the threads of these negotiations are likely to be picked up again, and the general movement towards greater free trade is likely to continue, even if more slowly.

5.3 Productivity

Finally the trends in recent years which reveal a marked decline in labour productivity growth in the economy call for some comment.²⁸ At present productivity growth seems to have ceased, and may well turn negative, at least for a time. Our analysis indicates that structural changes in the sectoral profile of the economy has been a significant influence in reducing overall productivity growth in recent years, even though output per worker in some sectors (e.g. building) has also contributed to this. With regard to structures, the rapid decrease in the relative importance in the economy of the

²⁵ See the 2004 Report of the Enterprise Strategy Group “*Ahead of the Curve*”.

²⁶ CSO. (a) Balance of International Payments Quarter, 1 2006. (b) Service Exports and Imports 2003 and 2004. (c) Website database on Services Exports and Imports.

²⁷ Further evidence of the growth in business services in Ireland is indicated by the rapid increase in employment in this sector between 1995 and 2005 (see Table 3). However, these data cover both domestic and external service activities.

²⁸ For a detailed analysis of national productivity issues see also Paul Tansey’s 2005 Study “*Productivity: Ireland’s Economic Imperative. A Study of Ireland’s Productivity Performance and the Implications for Ireland’s Future Economic Success*”. Published by Microsoft.

manufacturing sector (especially in the high-technology area) has been a major causative factor. Falling productivity in building and construction has tended to attract much attention in the current debate, but in fact changing sectoral structures have been a much more important, if silent, influence. The nature of these influences would suggest that any significant resumption of productivity growth is unlikely in the short-term, unless substantial employment increases occur in high value added sectors such as finance and business services.

The imperative of having to compete in the high-skill/technically advanced end of the global market renders it essential that national productivity be enhanced, not only by targeting high value added sectors, but also through productivity across the wider spectrum of economic activities. In this context recent Government initiatives to aid and promote R&D and high-skill education/training are to be welcomed.

The achievement of higher productivity should not, however, be regarded solely as an end in itself. The average output per worker or per inhabitant may well increase, but it may conceal a less than equitable distribution of the additional wealth created, with some interests benefiting, and others being left behind. This is an issue on which the Celtic Tiger phenomenon has been criticised. Therefore redistributive options (including reviewing corporate taxation) may have to be applied if necessary, bearing in mind the need to maintain globally competitive.

This is not an issue that relates only to manufacturing industry. While the study by O'Malley and McCarthy quoted earlier indicated large profit outflows from the manufacturing sector, it also revealed smaller, but still significant outflows from other areas, such as financial and business services. In emphasising this aspect, it is not being suggested that tax incentives designed to attract inward investment be dismantled. If these incentives did not exist, the large FDI inflows and the expansion of high technology manufacturing over recent decades would not have occurred – developments which the earlier commentary in this Paper acknowledges as having been markedly beneficial on a number of fronts. However, there can be debate about points of intervention and modalities in regard to taxation or other instruments. Recent experiences related to the closure of multinational plants would suggest that these had more to do with cost competitiveness rather than corporate taxation. Such issues may have to be revisited in the context of a changing economic and social environment.

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Table A1. GVA at Factor Cost at Constant 2004 Prices (euro millions)											
Sector (ESA)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Agriculture	3,094	3,470	3,632	3,567	3,485	3,445	3,457	3,401	3,533	3,594	3,998
Manufacturing	16,502	17,619	20,590	23,608	26,682	29,321	31,345	34,630	35,029	36,290	36,861
Modern Manufacturing	7,379	8,009	10,197	12,569	14,875	16,323	18,155	21,655	21,956	21,744	22,344
Other Manufacturing	9,123	9,610	10,393	11,039	11,807	12,998	13,190	12,975	13,073	14,546	14,517
Construction	5,859	6,837	7,734	8,387	9,361	9,837	10,243	10,505	10,949	11,659	12,736
Distribution, Catering, Transport etc.	11,875	13,544	14,952	16,235	17,512	19,573	21,175	21,764	22,248	22,900	24,031
Finance, Business Services	17,436	19,251	21,197	21,812	23,427	25,864	27,959	28,481	30,369	32,751	34,594
Other Services	15,267	15,835	16,116	16,236	16,945	18,135	19,303	20,973	21,741	22,984	25,072
Total	70,034	76,556	84,221	89,846	97,412	106,175	113,481	119,754	123,869	130,178	137,293
Total excl Modern Manufacturing	62,654	68,547	74,024	77,276	82,537	89,852	95,326	98,099	101,913	108,434	114,949

Source: CSO Special Tabulation.

Table A2. Employment by Sector 1995-2005											
Sector (ESA)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
						(000)					
Agriculture	136.3	131.3	129.7	136.7	140.1	130.5	125.7	123.8	119.8	117.1	115.3
Manufacturing	268.2	275.6	292.5	305.7	311.3	317.3	320.6	308.8	303.3	301.2	293.6
Modern Manufacturing	74.8	82.5	92.9	97.3	99.5	111.2	112.0	101.6	95.9	93.4	92.4
Other Manufacturing	193.4	193.2	199.6	208.4	211.8	206.2	208.6	207.1	207.5	207.8	201.2
Construction	95.5	100.9	112.0	131.5	148.4	171.4	183.1	187.4	196.4	214.4	245.2
Distribution, Catering, Transport etc.	314.6	330.1	354.9	407.3	431.6	455.3	467.5	474.6	485.6	491.5	509.0
Finance, Business Services	126.3	131.1	146.7	177.1	199.4	213.0	223.1	227.1	229.4	240.6	259.1
Other Services	343.8	361.6	369.1	367.6	390.2	409.0	427.5	456.9	479.5	500.3	529.9
Total	1,284.7	1,330.7	1,405.0	1,525.8	1,621.1	1,696.4	1,747.5	1,778.6	1,814.0	1,865.0	1,952.1
Total excl Modern Manufacturing	1,209.9	1,248.2	1,312.1	1,428.5	1,521.6	1,585.3	1,635.5	1,677.0	1,718.1	1,771.6	1,859.7

Source: CSO. (a) QNHS. (b) Labour Force Survey 1995-1997.

Table A3. GVA Volume Indexes by Sector, 1995=100											
Sector (ESA)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Agriculture	100.0	112.2	117.4	115.3	112.6	111.3	111.7	109.9	114.2	116.2	129.2
Manufacturing	100.0	106.8	124.8	143.1	161.7	177.7	189.9	209.9	212.3	219.9	223.4
Modern Manufacturing	100.0	108.5	138.2	170.3	201.6	221.2	246.0	293.5	297.5	294.7	302.8
Other Manufacturing	100.0	105.3	113.9	121.0	129.4	142.5	144.6	142.2	143.3	159.4	159.1
Construction	100.0	116.7	132.0	143.2	159.8	167.9	174.8	179.3	186.9	199.0	217.4
Distribution, Catering, Transport etc.	100.0	114.1	125.9	136.7	147.5	164.8	178.3	183.3	187.4	192.8	202.4
Finance, Business Services	100.0	110.4	121.6	125.1	134.4	148.3	160.3	163.3	174.2	187.8	198.4
Other Services	100.0	103.7	105.6	106.3	111.0	118.8	126.4	137.4	142.4	150.5	164.2
Total	100.0	109.3	120.3	128.3	139.1	151.6	162.0	171.0	176.9	185.9	196.0
Total excl Modern Manufacturing	100.0	109.4	118.1	123.3	131.7	143.4	152.1	156.6	162.7	173.1	183.5

Table A4. Employment Indexes by Sector, 1995=100											
Sector (ESA)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Agriculture	100.0	96.3	95.2	100.3	102.8	95.8	92.2	90.8	87.9	85.9	84.6
Manufacturing	100.0	102.8	109.1	114.0	116.1	118.3	119.5	115.1	113.1	112.3	109.5
Modern Manufacturing	100.0	110.3	124.2	130.1	133.1	148.6	149.7	135.9	128.2	124.9	123.6
Other Manufacturing	100.0	99.9	103.2	107.7	109.5	106.6	107.8	107.1	107.2	107.4	104.0
Construction	100.0	105.6	117.3	137.7	155.5	179.5	191.7	196.3	205.7	224.5	256.8
Distribution, Catering, Transport etc.	100.0	104.9	112.8	129.4	137.2	144.7	148.6	150.9	154.3	156.2	161.8
Finance, Business Services	100.0	103.8	116.2	140.2	157.9	168.6	176.7	179.8	181.6	190.5	205.1
Other Services	100.0	105.2	107.4	106.9	113.5	119.0	124.4	132.9	139.5	145.5	154.2
Total	100.0	103.6	109.4	118.8	126.2	132.1	136.0	138.5	141.2	145.2	152.0
Total excl Modern Manufacturing	100.0	103.2	108.4	118.1	125.8	131.0	135.2	138.6	142.0	146.4	153.7

Table A5. Indexes of Labour Productivity, 1995=100.											
Sector (ESA)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Agriculture	100.0	116.4	123.4	114.9	109.6	116.3	121.2	121.1	129.9	135.2	152.8
Manufacturing	100.0	103.9	114.4	125.5	139.3	150.2	158.9	182.3	187.7	195.8	204.1
Modern Manufacturing	100.0	98.4	111.3	130.9	151.4	148.8	164.3	215.9	232.1	236.0	245.0
Other Manufacturing	100.0	105.5	110.4	112.3	118.2	133.7	134.1	132.8	133.6	148.4	153.0
Construction	100.0	110.5	112.6	104.0	102.8	93.6	91.2	91.3	90.9	88.6	84.6
Distribution, Catering, Transport etc.	100.0	108.7	111.6	105.6	107.5	113.9	120.0	121.5	121.4	123.4	125.1
Finance, Business Services	100.0	106.4	104.6	89.2	85.1	88.0	90.8	90.8	95.9	98.6	96.7
Other Services	100.0	98.6	98.3	99.4	97.8	99.8	101.7	103.3	102.1	103.4	106.5
Total	100.0	105.5	110.0	108.0	110.2	114.8	119.1	123.5	125.3	128.0	129.0
Total excl Modern Manufacturing	100.0	106.0	108.9	104.5	104.7	109.5	112.6	113.0	114.5	118.2	119.4

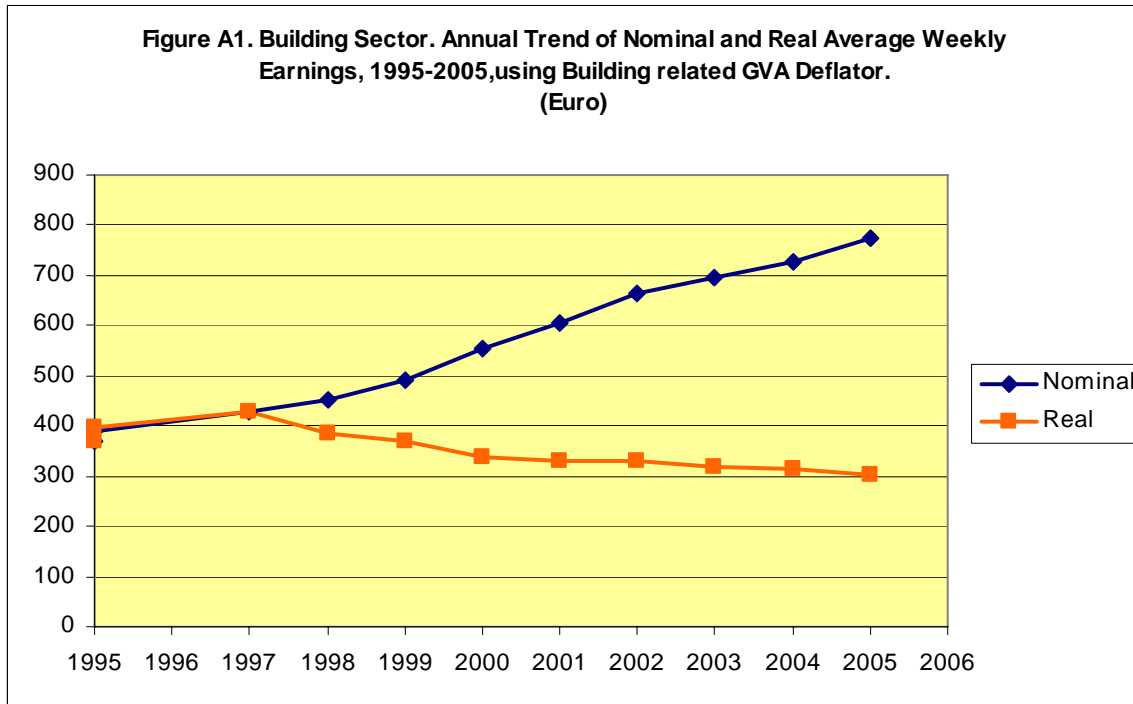
Table A6. Usual Annual Hours Worked by Sector, 1998-2005								
Sector	1998	1999	2000	2001	2002	2003	2004	2005
	Millions of Hours							
Agriculture	388.8	392.8	366.2	353.5	347.1	327.7	321.0	319.7
Manufacturing	637.4	696.6	653.0	661.9	633.6	622.1	613.1	596.5
Building	283.7	319.3	372.4	398.8	405.8	420.0	459.2	524.0
Distribution, Catering, Transport	800.5	827.2	867.8	888.5	899.4	904.5	917.2	942.5
Finance & Business Services	350.4	391.9	419.5	438.0	445.7	447.6	471.3	504.5
Other Services	663.8	675.0	710.6	737.8	785.1	823.9	856.5	903.8
Total	3124.7	3302.7	3389.4	3478.4	3516.6	3545.8	3638.2	3791.1

Table A7. Indexes of Hours Worked by Sector (1998=100)								
Sector	1998	1999	2000	2001	2002	2003	2004	2005
Agriculture	100.0	101.0	94.2	90.9	89.3	84.3	82.5	82.2
Manufacturing	100.0	109.3	102.4	103.8	99.4	97.6	96.2	93.6
Building	100.0	112.5	131.2	140.5	143.0	148.0	161.8	184.7
Distribution, Catering, Transport	100.0	103.3	108.4	111.0	112.4	113.0	114.6	117.7
Finance & Business Services	100.0	111.9	119.7	125.0	127.2	127.7	134.5	144.0
Other Services	100.0	101.7	107.0	111.2	118.3	124.1	129.0	136.2
Total	100.0	105.7	108.5	111.3	112.5	113.5	116.4	121.3

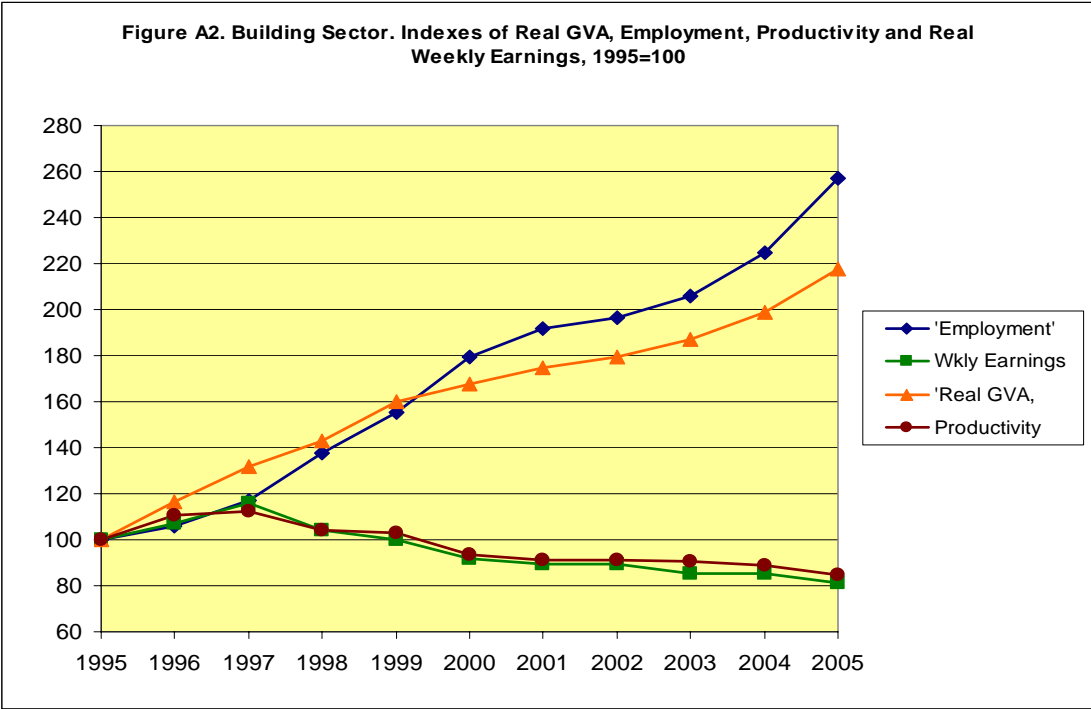
Table A8. Indexes of Hours Worked Productivity by Sector (1998=100)								
Sector	1998	1999	2000	2001	2002	2003	2004	2005
Agriculture	100.0	96.7	102.5	106.6	106.8	117.5	122.1	136.3
Manufacturing	100.0	103.4	121.2	127.9	147.6	152.0	159.8	166.8
Building	100.0	99.2	89.4	86.9	87.6	88.2	85.9	82.2
Distribution, Catering, Transport	100.0	104.4	111.2	117.5	119.3	121.3	123.1	125.7
Finance & Business Services	100.0	96.0	99.0	102.5	102.7	109.0	111.6	110.1
Other Services	100.0	102.6	104.3	107.0	109.2	107.9	109.7	113.4
Total	100.0	102.6	108.9	113.5	118.4	121.5	124.4	125.9

Table A9. Indexes of Employment Productivity by Sector (1998=100)								
Sector	1998	1999	2000	2001	2002	2003	2004	2005
Agriculture	100.0	95.3	101.2	105.4	105.3	113.0	117.7	133.0
Manufacturing	100.0	111.0	119.6	126.6	145.2	149.5	156.0	162.6
Building	100.0	98.8	90.0	87.7	87.8	87.4	85.2	81.4
Distribution, Catering, Transport	100.0	101.8	107.8	113.6	115.0	114.9	116.9	118.4
Finance & Business Services	100.0	95.4	98.6	101.7	101.8	107.5	110.5	108.4
Other Services	100.0	98.3	100.4	102.2	103.9	102.7	104.0	107.1
Total	100.0	102.0	106.3	110.3	114.3	116.0	118.5	119.4

Table A10. Average Weekly Usual Hours Worked by Sector in 1998 and 2005			
Sector	1998	2005	Change 1998-2005
	Hours Worked		%
Agriculture	54.7	53.3	-2.5
Manufacturing	40.1	39.1	-2.6
Building	41.5	41.1	-1.0
Distribution, Catering, Transport	37.8	35.6	-5.8
Finance & Business Services	38.0	37.5	-1.6
Other Services	34.7	32.8	-5.5
Total	39.4	37.3	-5.2



Source: CSO. (a) Quarterly Earnings Inquiry for Building and Construction. (b) National Accounts Database.



Note: The real earnings series has been calculated using the building sector GVA deflator.

APPENDIX

A Note on the Output and Productivity Estimates Used

Most of the data used in this report, either in the form of output or employment measures (and, by implication, the productivity calculations), are based on Central Statistics Office data for the period from 1995 to 2005, either published material or provided in the form of special tabulations, mainly from the National Accounts database.

There is one aspect, however, for which the author compiled special estimates. This involved the estimation of separate volume output measures for the period in question for “financial intermediation, business services etc.” and “other services”. The CSO was able to provide nominal or current value based series for these two separately, but only in aggregate form when expressed in constant price terms.

The author compiled a constant price series (1995=100) for the “other services” category by adjusting the nominal series provided using a weighted deflator based on the GDP deflator for the “public administration and defence” (PAD) sector (which is distinguished in the National Accounts publications in both nominal and real terms) and a corresponding deflator related to the distribution, hotels, transport etc. sector. The allocation of the weights involved 80 per cent for the PAD subsidiary deflator and 20 per cent to that for the broad distribution, transport etc. sector – based on the employment totals for these two groups. This approach involved the assumption that the subsidiary PAD deflator used is applicable to the wider public service area covering health, welfare and education, and that the second deflator, based on distribution etc., is applicable to the smaller “market services” component of the sector involved..

The constant price series for “financial intermediation, business services etc.” was then obtained as a residual by deducting the above mentioned estimated series from the original volume series as supplied for the two sectors combined.

The results, which should, of course, be viewed with some caution, look reasonable. In particular, the productivity calculations for the overall “other services” category indicated minimal productivity change, which is what one would expect in view of the manner in which public sector output is calculated in the National Accounts (see Section II).

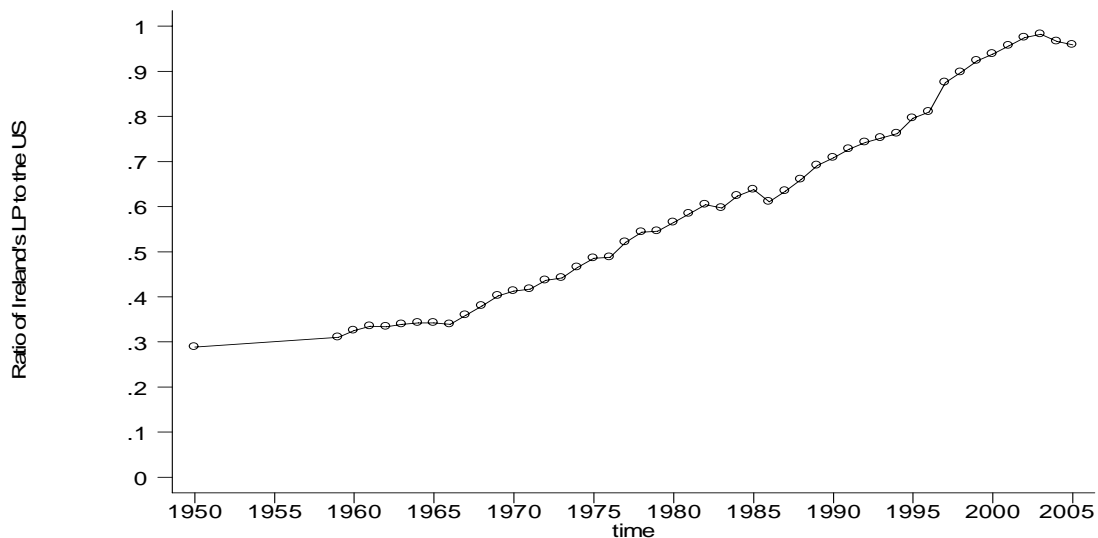
FIRST VOTE OF THANKS PROPOSED BY PAUL WALSH, UNIVERSITY COLLEGE DUBLIN.

I would like to propose a vote of thanks to J.J. Sexton for his paper “A Review of Recent Trends in Output, Employment and Productivity in Ireland” presented to *The Statistical and Social Inquiry of Ireland* 19th October 2006. The paper gives us a very nice review of the trends in real output, employment and labour productivity in Ireland over the period 1995-2005. In particular we see a more refined breakdown of the main sectors that allows a comparison of the contribution of Agriculture, Manufacturing (Modern and Traditional), Construction, Finance & Business Services and Other Services

A core innovation of the paper is the separate identification of building and construction activity and the subdivision of the large and heterogeneous “other services” category into “finance and business services” and a smaller residual services group (mainly non-market). This is done to highlight the recent expansion in these sectors and to see how national levels or changes in productivity are so dependent on these sectors of the economy.

It is interesting to look at the evolution of Ireland’s labour productivity from 1950-2005. I use the *Total Economy Database* from the Groningen Growth and Development Centre, <http://www.ggd.net>. In Figure 1, I take the ratio Ireland to US Labour Productivity, per hour worked, in 1990 US\$ in PPPs. The trend since 1950 has been a relentless improvement in labour productivity which has led Ireland to converge on the US levels. If finance and construction are primarily driving aggregate productivity from 1995, what sectors were key during the period 1950-1995?

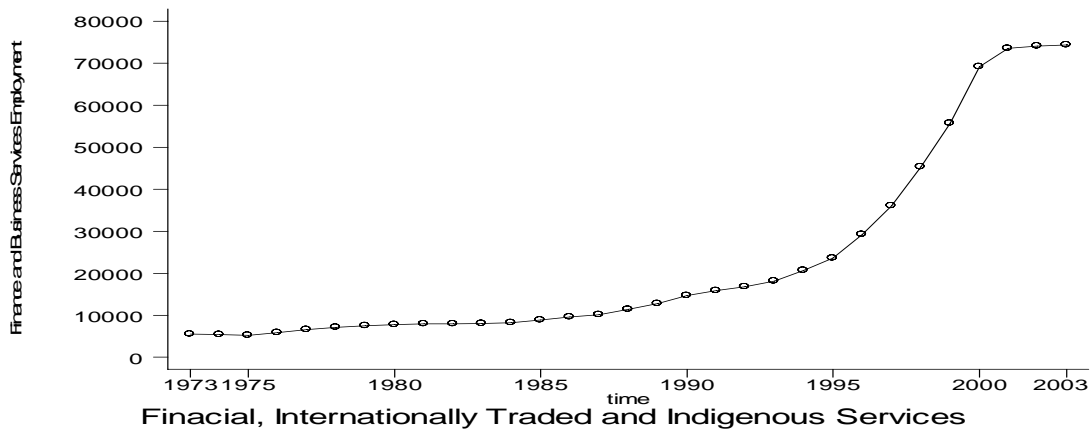
Figure 1



One should think off three phases of globalisation in terms of Trade, Finance and People. Walsh and Whelan (2000) document the role of structural change in terms of export orientated output in manufacturing coming from both traditional and US dominated FDI sectors. Trade liberalisation has been important for labour productivity from the early 1960s onwards right up to 2003.

The role of Finance & Business Services had a less gradual effect on employment and has come into its own since 1995. In Figure 2 we document employment levels from the Forfás employment survey.

Figure 2



Finally, immigration represents the last explosive phase of globalisation. Construction benefited from the skilled inflow of workers from Europe, see Minns (2005). Such employment increases are documented by Sexton.

This core contribution of the paper is to show that employment and productivity gains have moved away from the old reliable export oriented manufacturing into a sudden burst in building and construction and finance and business services sectors. We have become very dependent on these sectors of the economy. Such sectors have become linked and there is a real danger that Ireland could decline rapidly if these sectors go into decline.

I thank J.J. Sexton for this nicely done paper.

References:

Minns, C. (2004/5), ‘Immigration policy and the skills of Irish immigrants: evidence and the implications’, *Journal of the Statistical and Social Inquiry Society of Ireland*, Vol. **XXXIV**, pp 66-92.

Walsh, P.P. & Whelan, C. (1999/2000), ‘The importance of structural change in industry for growth’, *Journal of the Statistical and Social Inquiry Society of Ireland*, Vol. **XXIX**, pp 1-32.

SECOND VOTE OF THANKS PROPOSED BY MICHAEL LUCEY, CENTRAL STATISTICS OFFICE.

I've worked in the CSO on the National Accounts statistics for some years and it's great to see the figures being used and analysed. When publishing the national accounts we always advise users that 'the devil is in the detail' and that in order to fully understand the headline figures you must look at the components and this is precisely what Jerry has done. By combining the outputs from national Accounts with the labour figures from the QNHS, he has come up with some very interesting findings and observations on trends in Irish labour productivity over the past decade. He has also verified what we in CSO have said for some time and that is that even when sectoral productivity levels remain the same, changes in the structure of the Irish economy can have a significant impact on the overall productivity level. This is shown in Table 4 where it is evident that productivity trends in the 5-year segments 1995 to 2000 and 2000 to 2005 have been strongly influenced by structural change.

I'll turn now to the results for the individual sectors starting with Agriculture. Here, overall labour productivity in the 10-year period is surprisingly high. As the paper suggests, this is influenced by the very high output levels recorded in 2005. These were in part due to last year's very high single farm payment, which we included in the national accounts as a production subsidy. I suppose one could question whether this is really a production subsidy since it is payable even if no production takes place. It is considered a subsidy because it was designed to replace a variety of payments, most of which were linked to outputs. Also, if it were not included as subsidy, it would have to be considered some type of social transfer, which might be equally problematic.

Turning to the Manufacturing sector, the paper confirms the huge disparity between GVA levels in the modern industry sectors and in the remainder. Looking at the results in Table 3 for average labour productivity growth I was still surprised by the fairly high average annual growth of 4.3 per cent for the 'Other Manufacturing' category. Of course, as the paper points out, this category still includes some very high value added foreign owned industries, including the drinks concentrates industry, which is classified in the Food manufacturing sector.

Regarding the modern sector, Figure 2 shows that labour productivity growth in the period 1995 to 2002 was exceptionally high but that there has been a significant levelling off in the past three years.

Looking at the figures in more detail, it is evident that Pharmaceuticals were the real drivers of growth in the late 1990's.

Implied labour productivity - Modern Industry					
	Average annual changes				
	1995 - 2005	1995 - 2000	2000 - 2005	2000 - 2002	2002 - 2005
	%	%	%	%	%
Reproduction of recorded media	9.6	-2.2	22.7	20.9	24.0
Chemicals (incl. Man made fibres)	13.1	20.4	6.3	17.3	-0.5
Computers and instrument engineering	5.8	2.0	9.6	8.0	10.7
Electrical engineering and machinery	6.9	7.0	6.8	6.4	7.0
Total	9.4	8.3	10.5	20.5	4.3

In the period under review, implied labour productivity in the Pharmaceutical industry grew by an incredible average of 20 per cent per annum in the five years 1995 to 2000. The industry maintained the growth in the two year 2000 to 2002 but in the past three years productivity has declined.

In the conclusions, the paper sounds a warning for the future of the high tech sector and I think this is especially relevant for Pharmaceuticals. The enormous growth in the 1990s was in large part due to the production of new high value 'state of the art' drugs, which were manufactured and marketed under exclusive patents. Typically in that industry the exclusive patent rights last less than 10 years so these drugs either have or will soon be coming out of patent. The market can then be flooded with generic copies. While there is still a market for the brand leader the price falls rapidly and profit levels are impaired. The decision whether or not to continue manufacturing in Ireland then becomes a direct question of cost competitiveness. Hopefully, the companies have new drugs in the pipeline in their Research and Development Departments that can help maintain the high value added levels in their Irish branches!

Regarding Research and Development (R&D) costs the paper suggests that payments for R&D may not be part of the cost structure of the Irish companies. This is not true when a parent or affiliate owns the patent. In that case, the Irish company typically pays royalties to the owner of the patent and this is counted as an expense the company and reduces value added and GDP. In 2005, the amounts of royalties paid to non-residents exceeded €15 billion. However, the paper is correct if the patent rights are actually owned by the Irish company, as is the case in some instances. Up to now, Research and Development has not been capitalised in the national accounts. Patents are considered intangible assets and are not part of the capital stock of the nation. In the national accounts, they are not depreciated and this can overstate the national income.

Turning to the Construction Sector, I really cannot add much to the paper's comments on the declining productivity rates. The fall in implied productivity rates has more or less been consistent since 1998 but the two biggest drops were in 1998 (-8 per cent) and in 2000 (-9 per cent). I think this was before the large influx of migrant workers so I'm not sure whether the suggestion that the decline is due to cheap labour is fully tenable. On the other hand, I was really taken by the closeness of fit between the two lines at the bottom of Figure A2 of the Appendix. The relationship between deflated earnings and implied productivity trends is so close that the two must be related.

After Construction we come to the sector labelled 'Distribution, Hotels, Transport, etc.' In some respects this seems to be the only 'normal' sector in the Irish economy so I'll move on to the next which is the 'Finance and business services' sector.

The figures in the paper are estimates made by Jerry himself. We have compared these with our figures and, while the levels are a bit different, the trends are similar.

The fall in implied labour productivity levels in the 'Finance and business services' sector initially surprised me. As Paul suggested, this could be the result of structural changes within this broad sector but I think that it may also in part be due to how the financial services industry is recorded in the national accounts. The GDP measures the production of goods and services. In the financial sector, this includes fees charged for financial services and the associated value added. In the case of banks, since the last update of the accounting rules in 1993, we impute a service output which we call FISIM (Financial Intermediation Services indirectly Measured). This is essentially the difference between the interest they charge and the interest they pay. However, what we do not include in output or in GVA is the investment income or capital gains that financial companies earn. The IFSC contains a range of financial companies, such as Fund managers and Treasury companies, and these are making large amounts of profits on their investments but these are not captured in the national accounts as output. To the extent that the increase in employment in the late 1990s was attributable to such companies one therefore will not get a corresponding increase in GVA, with the result that one can easily get a fall in labour productivity.

The final sector identified in the paper is the 'Other services' sector, which is 80 per cent public service. Here we have traditionally measured output in terms of the numbers employed and as a consequence you get little change in productivity. The paper refers to the work being undertaken on developing output based volume measures for some public services. On page 12 there is a reference to the CSO investigating these measures and I can confirm that since Jerry drafted his paper we have incorporated output based measures for parts of Health and Education in the results published in the most recent national Income and Expenditure book. These estimates could only be made for a few recent years and I think they were not significantly different from our traditional estimates. However, I think you would need to compare the alternative methods over a period of years before you would get noticeable divergences.

Very few statisticians will disagree with the need to develop output-based measures for non-traded services. However, it is not as easy as it seems and while we may be able to count actual outputs it is much more difficult to measure changes in quality and even to decide what exactly should be encompassed by quality improvements. For example, in the Education area, we tend to look at examination results as some underlying indicator of the quality of the teaching. However, one can imagine a Leaving Cert class here in Dublin with an especially poor teacher and as a result most of the pupils attend the Institute to take grinds in the particular subject. When these pupils achieve high marks in the Leaving Cert examination we statisticians will accredit additional output to their full-time teacher, which is somewhat difficult to justify. Equally, one thinks of the increasing numbers of special needs pupils who are being facilitated in mainstream education. If these pupils get to sit, not to mind pass, their State examinations it is a big achievement but again this will not necessarily be reflected in quality improvements based on exam results. Here though we are talking about outcomes and in the national accounts I think that we have to be careful to confine ourselves to measuring outputs and not outcomes.

I've kept you a long time but I hope this proves that I very much enjoyed Jerry's paper. I'm privileged, on your behalf, to formally second the vote of thanks for the paper he has read here tonight.