

**SYMPOSIUM  
ON  
ECONOMIC GROWTH IN IRELAND:  
WHERE HAS IT COME FROM, WHERE IS IT GOING?**

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**Reflections on the Process of Irish Economic Growth**

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**1. INTRODUCTION**

The most remarkable feature of the so-called Celtic Tiger has been the extraordinary growth in employment. In a short period, this has transformed the economy from a situation of chronic labour surplus to one with labour scarcity.

*Employment Growth*

Table 1 shows the growth rates of output volume, population and employment in Ireland over various periods since 1926. I take the last period, 1993-2000, as the *Celtic Tiger* phase. In 1993, total employment was just back to the 1980 level after the large fall in the first half of the 1980s during the worldwide recession following the second oil crisis, and the 1993 level was still 7 percent below that of 1926. It is essentially since 1993 that Ireland has experienced the wholly novel phenomenon of rapid and sustained growth in employment.

When we compare the Celtic Tiger with earlier phases, three things stand out. *First*, there is the amazing acceleration in the growth of output (measured here as the total volume of GDP at constant factor cost on the output basis). *Second*, there is the almost equally great acceleration in the growth of GDP per capita – a crude measure of the rise in living standards. *Third*, there has been **no** acceleration in the growth of overall labour productivity, as measured by GDP per worker ((v) in Table 1). Throughout the postwar period labour productivity growth has been relatively high – in the region of 3½ percent per annum. All of the acceleration in the growth of output, therefore, is accounted for by the acceleration in the growth of employment to an average annual rate of 4¾ percent per annum – an extraordinary rate whether judged in relation to previous Irish history or contemporary international experience. Moreover, practically all of the acceleration in the growth of living standards is

accounted for by the rise in the employment-population ratio. In turn, the rise in the employment-population ratio is fully accounted for by the acceleration in employment growth, since variations in the growth of population have been comparatively small. It is this rapid growth in employment which most distinguishes the Celtic Tiger from all previous phases of Irish economic history.

**Table 1: Average Annual Growth Rates of Real GDP, Population and Employment, Various Periods Since 1926 (%)**

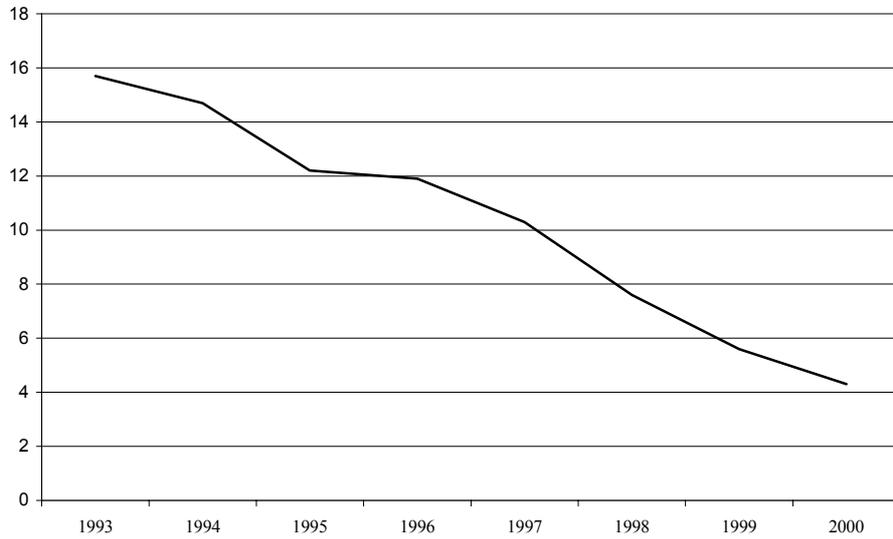
Period	(i) GDP	(ii) Population	(iii) GDP /Cap	(iv) Employment	(v) GDP /Worker	(vi) Employment- Population ratio
<b>1926-1947</b>	0.9	0.0	0.9	0.0	0.9	0.0
<b>1947-1960</b>	2.3	-0.4	2.7	-1.3	3.6	-0.9
<b>1960-1980</b>	4.1	0.9	3.1	0.5	3.5	-0.4
<b>1980-1993</b>	3.3	0.4	2.9	0.0	3.3	-0.4
<b>1993-2000</b>	8.3	0.8	7.4	4.7	3.5	3.8

*Source: National Income and Expenditure, various issues; ESRI Quarterly Economic Commentary, December 2000; data compiled for the ESRI Medium-Term Review 1999-2005; and Kennedy (1971).*

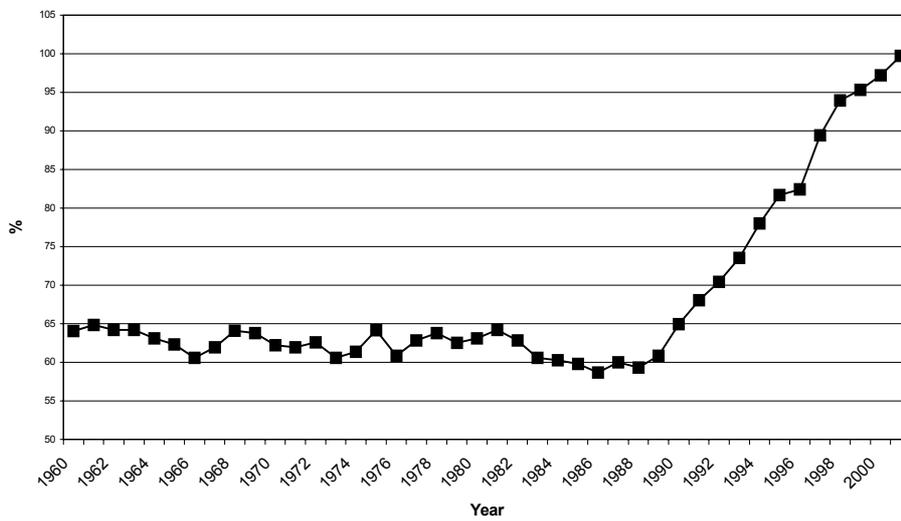
The impact of the growth of employment on the unemployment rate is illustrated in Figure 1. In considering its impact on living standards, it is necessary to note the qualification that the rise in GDP per capita overstates the improvement in average living standards, chiefly because of the large and increasing outflow of profits in multinational enterprises, which do not add to domestic living standards. A better measure is GNP per capita, which excludes net international capital flows, and its growth rate is given in Table 2 for the periods since 1960 when differences in the growth rates of GDP and GNP began to become significant. The annual average growth rates of real GNP, and real GNP per capita, in the period 1993-2000 are both about 1.25 percentage points below the corresponding GDP entities.

However, the *acceleration* in growth is nearly as great when measured on a GNP as on a GDP basis. Moreover, since the growth of GNP per worker was slightly lower from 1993-2000 than in the preceding postwar periods, our earlier conclusion - that the acceleration in the rise in living standards during the Celtic Tiger phase is overwhelmingly attributable to the change in the employment-population ratio - is reinforced. The impact on living standards relative to the European Union is clear from Figure 2, which shows that GNP per capita in Ireland, having remained for long at about two-thirds of the EU-15 level, has now caught up with the EU average.

**Figure 1: Unemployment Rate 1993-2000**



**Figure 2: GNP per Head of Population 1960-2001, EU 15=100**



**Table 2: Average Annual Growth Rates of Real GNP,  
Various periods since 1960 (%)**

	<b>GNP</b>	<b>GNP per Cap</b>	<b>GNP per worker</b>
<b>1960-1980</b>	3.9	2.9	3.3
<b>1980-1993</b>	2.5	2.1	2.5
<b>1993-2000</b>	7.1	6.2	2.3

*Source: As in Table 1.*

It is worth taking a closer look at the changes in the employment-population ratio (E/P). As is well known, this ratio encompasses three familiar entities: the unemployment rate (measured here as E/L, which is 1 minus the unemployment rate), the labour force participation rate (L/Pa), and the age dependency rate (measured here as Pa/P, which is 1 minus the share of the dependent age groups in the total population) – where E is total employment, L is the total labour force, Pa is the population in the active (i.e. non-dependent) age groups, and P is the total population.<sup>2</sup> Table 3 gives the average annual rates of change in these entities for each of the periods in Table 1.

It may be seen from Table 3 that the period 1993-2000 emerges as highly exceptional, not simply because of the huge rise in the employment-population ratio, but also because all three components of the ratio improved – in contrast with previous history when all three components were usually static or deteriorating.

**Table 3: Average Annual Rates of Change in the Employment-Population  
Ratio and Its Components (%)**

	<b>E/P</b>	<b>E/L</b>	<b>L/Pa</b>	<b>Pa/P</b>
<b>1926-1947</b>	0.0	0.1	0.0	0.0
<b>1947-1960</b>	-0.9	-0.2	-0.3	-0.4
<b>1960-1980</b>	-0.4	0.0	-0.4	0.1
<b>1980-1993</b>	-0.4	-0.8	-0.1	0.5
<b>1993-2000</b>	3.8	1.7	1.2	0.9

*Source: As in Table 1.*

The only significant exception to the latter is that the age dependency ratio ceased to deteriorate from the mid 1960s, though it is only since the end of the 1980s that a significant improvement took place. However, the improvement in the age dependency ratio from 1993-2000, though substantial, was the smallest of the three elements in the rise in the employment-population ratio. The dominant factor was the greater utilisation of the actual and potential labour force available, as shown by the fall in unemployment and the rise in labour force participation.

It is reasonable to conclude that improvement in the employment-population ratio at the rate experienced from 1993-2000 is a once-off phenomenon, and cannot be sustained much longer. The economy is now near full employment, the labour force participation rate of females is approaching the EU average,<sup>3</sup> and age dependency is set to rise again in the second half of the present decade.<sup>4</sup>

#### *Growth of Labour Productivity*

The only conceivable way, therefore, that the rate of growth in output and in average living standards experienced during the Celtic Tiger phase could be maintained would be through an acceleration in the growth of labour productivity. We saw already that no such acceleration took place during the Celtic Tiger as far as overall labour productivity is concerned. Does the same hold true for the major sectors? Table 4 gives the growth rates of volume of output, employment, and output per worker in each of the three main sectors – agriculture, industry and services – for the same periods as Table 1. In terms of employment, the services sector was the largest contributor to the overall employment increase from 1993-2000 – because it has by far the largest number of jobs. As far as relative growth is concerned, however, industry was the leader in terms of both output and employment. The growth rate of industrial employment from 1993-2000, at about 6 percent per annum, is very remarkable at a time when industrial employment has been static or declining in most developed economies. Moreover, the *acceleration* in the growth of output and employment compared with the preceding postwar phases was also greatest in industry. Though much has been made of the growth of services, there can be little doubt about the critical importance of industry in driving the Celtic Tiger economy.

In regard to labour productivity, essentially there has been no acceleration in the growth rate of productivity in the sectors during the Celtic Tiger. True, productivity growth in industry in that phase was higher than in the rest of the period since World War 2, but the acceleration had already taken place over the period 1980-93, which actually recorded a higher rate of productivity growth than from 1993-2000. Admittedly, the data for services are problematic because of the difficulties of measuring real output growth in that sector, and it is conceivable that during the Celtic Tiger productivity growth there was higher than recorded. If that were so, however, then the growth rate of output would also be higher in services and in the economy as a whole.

**Table 4: Sectoral Growth Rates (% p.a.)**

	<b>GDP</b>	<b>Employment</b>	<b>GDP/Worker</b>
<i>Agriculture</i>			
<b>1926-1947</b>	-0.3	-0.8	0.5
<b>1947-1960</b>	2.0	-3.1	5.3
<b>1960-1980</b>	1.6	-2.8	4.5
<b>1980-1993</b>	2.8	-2.8	5.7
<b>1993-2000</b>	0.3	-2.1	2.5
<i>Industry</i>			
<b>1926-1947</b>	2.4	1.9	0.5
<b>1947-1960</b>	5.2	0.5	4.6
<b>1960-1980</b>	5.5	1.8	3.7
<b>1980-1993</b>	4.7	-1.3	6.1
<b>1993-2000</b>	11.9	5.9	5.6
<i>Services</i>			
<b>1926-1947</b>	1.1	0.3	0.7
<b>1947-1960</b>	0.9	-0.4	1.3
<b>1960-1980</b>	4.0	1.7	2.2
<b>1980-1993</b>	2.3	1.5	0.8
<b>1993-2000</b>	6.9	5.3	1.6

*Source: As in Table 1.*

Labour productivity growth can in principle be separated into two components: the part taking place within sectors (or firms), and the part due to structural change arising from a growing employment share of sectors (or firms) with high *levels* of productivity. The work of Keating (2000) and others shows that the latter component (the intersectoral effect) is quite small when measured at the level of the three main sectors – so that most productivity growth takes place within these broad sectors (the intrasectoral effect). But, of course, structural change also takes place within each of the three sectors, with some tendency for high productivity activities to increase their share of employment, and for low productivity firms to go out of business.

Keating's (2000) results suggest that if we could disaggregate sufficiently, the intersectoral effect could become quite sizeable. This may account for the fact that the period of most rapid productivity growth in industry was during the 1980s when industrial employment fell sharply. Most of the job losses took place in indigenous industry due to closures in firms that probably had low levels of productivity

compared with the new high-tech foreign firms which fared better during this period.

We pointed out above that labour supply is likely to constrain the future growth of the Irish economy unless labour productivity growth was to rise. On the basis of past trends, a rise in the growth rate of labour productivity is improbable: indeed, it would be a considerable feat to even maintain the high rate experienced throughout the post-war period. Much of the post-war growth in labour productivity was no doubt due to realising the potential for catching-up which exists for all developing economies. As an economy approaches nearer to the frontier of best-practice technology, however, the scope for catching-up is attenuated. Moreover, the potential for productivity growth due to structural change is now more limited in Ireland than in the past, since many activities and firms with relatively low productivity have ceased to exist.

#### *Growth of Capital and Total Factor Productivity*

If the growth of labour productivity did not increase during the Celtic Tiger, what about capital productivity? Table 5 shows the average annual growth rates of (physical) capital and output per unit of capital for the periods since 1960 for the economy as a whole and for the three main sectors. Taking the economy as a whole first, there has been a substantial acceleration in the growth of the productivity of capital since 1993. When we look at the sectors, however, the improvement is essentially confined to industry, and is probably associated with structural change towards activities like electronics which have comparatively low physical capital requirements relative to their output.

Given that the overall rate of growth of capital productivity rose from 1993-2000, while the growth rate of labour productivity was unchanged, it follows that the overall growth of Total Factor Productivity (TFP, or output per unit of combined labour and physical capital input) was higher during the Celtic Tiger than previously – as may be seen from Table 6. A sectoral breakdown shows that this acceleration in the growth of TFP was confined to industry.

#### *Growth of Human Capital*

So far I have said nothing about the presumed rise in the quality of labour as a result of increased education. The available figures show, however, that in a growth accounting framework, the rise in human capital per worker cannot account for *any* of the *acceleration* in the growth of output (or tffp). The reason is that these figures indicate that human capital per worker was rising more slowly from 1993-2000 than in the preceding period! The figures in Table 7, drawn from FitzGerald and Kearney (2000) and based on the data in Durkan, FitzGerald and Harmon (1999), show the average annual rise in education per worker and its (weighted) contribution to the growth of output (and productivity) for each five-year period since 1980.

**Table 5: Growth Rates of Physical Capital Stock and Capital Productivity  
(% pa)**

	<b>GDP</b>	<b>Capital*</b>	<b>GDP/Capital</b>
<i>Agriculture</i>			
<b>1960-80</b>	1.6	6.5	-4.6
<b>1980-93</b>	2.8	1.1	1.6
<b>1993-2000</b>	0.3	2.0	-1.7
<i>Industry</i>			
<b>1960-80</b>	5.5	7.0	-1.4
<b>1980-93</b>	4.7	2.4	2.3
<b>1993-2000</b>	11.9	4.3	7.2
<i>Services</i>			
<b>1960-80</b>	4.0	1.6	2.4
<b>1980-93</b>	2.3	2.8	-0.5
<b>1993-2000</b>	6.9	4.5	2.3
<i>Total Economy</i>			
<b>1960-80</b>	4.1	4.0	0.0
<b>1980-93</b>	3.3	2.5	0.7
<b>1993-2000</b>	8.3	4.3	3.8

\*The growth rates for capital refer to 1993-99, since the 2000 figure is not available. Housing capital stock is included for the whole economy but not for the sectors.

Source: GDP as in Table 1. Capital stock kindly supplied by John FitzGerald.

**Table 6: Growth Rates of Total Factor Productivity,  
Total Economy (% pa)**

<b>1960-80</b>	2.0
<b>1980-93</b>	2.3
<b>1993-2000</b>	3.6

Source: As in Table 5.

It emerges that the rise in the education input, and its contribution to the growth of output (and productivity) was highest from 1980-85 and was progressively less in

each subsequent quinquennium. In fact, the rise in human capital per worker during the Celtic Tiger was dwarfed by the rise in labour input (unadjusted for quality) – so that the outstanding feature of the Celtic Tiger was the increased utilisation of labour rather than the increase in its quality. Accordingly, while the rise in education can account for a (small) part of the growth of output (and productivity) during the Celtic Tiger, it cannot account for any of the acceleration in growth in this period – *unless* human capital affects growth in ways that are not captured by a growth accounting framework. This proviso may be an important one, and I will return to it later.<sup>5</sup>

**Table 7: Growth Rates of Education per Worker, and its Contribution to Growth of Output and Productivity (% pa)**

	<u>Education per worker</u>	<u>Contribution to growth</u>
<b>1980-85</b>	1.51	0.96
<b>1985-90</b>	1.00	0.59
<b>1990-95</b>	0.94	0.54
<b>1995-2000</b>	0.81	0.43

*Source: FitzGerald and Kearney (2000)*

## 2. POSSIBLE CAUSES OF THE CELTIC TIGER

I believe we are still a long way from a full understanding of the causes and timing of the Celtic Tiger. There is no great difficulty in compiling a list of plausible factors, but insufficient research has yet been done to enable us to specify with confidence the necessary and sufficient conditions of Ireland’s remarkable expansion, and to quantify their relative contribution. There is also need for scepticism arising from the fact that many of the factors commonly advanced to explain the Celtic Tiger (such as the growth of human capital, or the restoration of order in the public finances) were already in place in 1993 – yet no one predicted that they would bear fruit so soon and on such a massive scale. What I can most usefully do here is to highlight some factors which I believe would repay further research.

One factor which I myself had envisaged (Kennedy 1993) as a necessary, though not a sufficient condition, of a rapid acceleration in Irish economic growth, was a return in our main trading partners to the “Golden Age” growth rates experienced before the first oil crisis in 1973. This did in fact materialise in the United States, but not in the area receiving two-thirds of our exports, the European Union (see Table 8). What I did not foresee, however, was that despite continued low growth of European GDP, the growth of the volume of goods imports in the EU, and in the OECD as a

whole, was restored to the rapid rates prevailing before the first oil crisis (Table 8). I do not think this factor has received as much attention as it deserves in accounting for Ireland's performance since 1993. In formal terms, it means that the import elasticity of demand with respect to GDP in the EU was substantially higher in this period than in the preceding thirty years. That immediately raises the question "Why?". I would speculate that the Single European Market is a key factor. If so, this raises a wider question as to why other EU countries, apart from Ireland, did not derive more benefit in terms of higher GDP growth.

The rapid growth in the US was undoubtedly a major contributor to Ireland's success, though without the resurgence in EU trade the Irish growth rate would have been constrained. The massive growth of US imports from 1993-2000 can be attributed to high GDP growth, and the US import elasticity was no higher than in the 1980s. However, the buoyancy of the US economy helped Ireland on both the supply side and on the demand side. On the supply side, as is widely recognised, the flow of US foreign direct investment, from which Ireland drew, was critical in enabling Ireland to realise the potential offered by the Single European Market. On the demand side the strong growth in US imports underpinned the buoyancy of world trade, as well as providing a rapidly expanding market for Irish goods. The last mentioned point has attracted little notice, though at first sight the impact seems dramatic.

In 1992, the US was only the fourth most important market for Irish exports, much the same as exports to France, about two-thirds of exports to Germany, and only one-third of Irish exports to Great Britain. In the latest figures available, covering the first ten months of 2000, Irish exports to the US were more than twice those going to France, 50 percent more than to Germany, and were on the way to taking over leadership from Great Britain as Ireland's most important export market. More detailed examination of the figures, however, indicates a less dramatic impact than the above data would suggest. Much, though by no means all, of the growth in Irish exports to the US is concentrated in one category, organic chemicals (SITC Division No 51), which by the year 2000 accounted for nearly half of all Irish exports to the US. Even apart from considerations of transfer pricing, this category has very high value-added relative to its employment – so that the impact on the Irish economy is comparatively small. According to the 1998 *Census of Industrial Enterprises*, while "other organic basic chemicals" (NACE Code 2414) accounted for over one-quarter of the total gross value added in Irish manufacturing, it employed less than 2 percent of persons engaged in manufacturing.<sup>6</sup>

The buoyancy of the demand for Irish exports during the Celtic Tiger phase, and the extent to which Ireland took advantage of this, is shown in Table 9. The volume of Irish goods exports grew at the phenomenal rate of 16½ percent per annum from 1993-2000 - a rate that would lead to a doubling of exports every 4½ years, and almost twice the average rate achieved in the preceding 30 years. Of the increase over the previous period, only about two-fifths can be attributed to Ireland increasing its share of export markets, so that the larger part can be accounted for by

the growth of the markets themselves. While the Irish performance in gaining market share is impressive, this would not have accomplished nearly as much as it did without the major acceleration that took place in market growth.

**Table 8: International Growth Rates of GDP and Goods Imports (% pa)**

	1960-1973	1973-1980	1980-1993	1993-2000
<b>GDP Growth (volume)</b>				
United States	4.0	2.2	2.3	4.1
<b>EU-15</b>	4.7	2.3	1.9	2.5
<b>Germany</b>	4.3	2.2	2.0	1.8
<b>United Kingdom</b>	3.1	1.1	2.0	3.0
<b>Total OECD</b>	5.0	2.5	2.4	3.2
<b>Growth of Goods Imports (volume)</b>				
United States	9.1	2.7	6.7	12.1
<b>EU-15</b>	8.7	3.1	3.7	8.1
<b>Germany</b>	10.6	4.7	3.7	7.8
<b>United Kingdom</b>	5.9	1.5	4.4	7.8
<b>Total OECD</b>	9.2	2.8	4.5	9.4
<b>Implied Import Elasticities</b>				
United States	2.3	1.2	2.9	3.0
<b>EU-15</b>	1.9	1.3	1.9	3.2
<b>Germany</b>	2.5	2.1	1.9	4.3
<b>United Kingdom</b>	1.9	1.4	2.2	2.6
<b>Total OECD</b>	1.8	1.1	1.9	2.9

Source: OECD *Economic Outlook*, December 2000 and earlier issues; OECD *National Accounts of OECD Countries, Main Aggregates*; and OECD, *Historical Statistics*, various issues.

Nevertheless, Ireland during the Celtic Tiger managed not only to hold its share of rapidly growing world markets, but also to increase that share substantially. In fact the figures in Table 9 show that Ireland has been increasing its market share since the 1960s, but it did so at a much more rapid rate during the Celtic Tiger. Critical to this achievement was the sustained flow of US foreign direct investment to Europe, and that Ireland won an increased share of this flow. The question then arises as to why Ireland was such a favoured location for US investment compared with other areas of Europe. Plausible reasons can be advanced, such as the generous industrial incentives (and particularly the favourable tax treatment of profits), the plentiful supply of young well educated labour at competitive wages, the improvements in human capital and physical infrastructure funded by EU Structural Funds, sound public finances and sensible economic policies, the fact that Ireland is an English-

speaking country, and the far-sightedness and dynamism of the Industrial Development Authority in marketing Ireland's advantages.

**Table 9: Irish Export Performance Growth Rates (% pa)**

	<b>Volume</b>	<b>Market</b>	<b>Performance</b>
<b>1963-1980</b>	7.7	3.2	4.4
<b>1980-1993</b>	9.2	4.1	4.9
<b>1993-2000</b>	16.5	8.0	7.8

Note: Export performance is measured as the difference between the growth of a country's exports and the growth of its markets. The export market facing each country is calculated on the basis of a weighted average of import volumes in each exporting country's markets, where the weights correspond to trade flows in a designated year.

Source: *OECD Economic Outlook*, various issues.

I would have to admit, however, that we still lack a convincing analysis of the relative importance of the factors involved. It is possible, for instance, that human capital has played a greater role than emerged earlier in the growth accounting framework, which essentially measures only its supply side contribution. Human capital may also have had a profound influence on the demand for labour in that it proved an attraction to foreign enterprise which in its absence might have chosen another location. The possibility that there may be lags and/or threshold effects in the impact of human capital, further complicates the identification and quantification of the causal mechanisms.

The foregoing factors can be summed up in one measure, familiar to economists, namely that Ireland must have been a highly profitable environment in which to locate production in the nineteen-nineties. That is indeed borne out by many statistics. I give one set in Table 10 – the share of profits and professional earnings in non-agricultural net domestic product at factor cost (excluding rents). Looking first at the figures for total non-agriculture, it will be seen that the profit share rose substantially in the period 1993-2000. However, it was rising rapidly also well before 1993!

Again, it is reasonable to allow for lags in the response to changes in the profit share, but such lags would need to be established. When we look at the two sectors comprising non-agriculture, industry and services, we see that the rise in the profit share prior to 1993 was essentially due to what was happening in industry. In services, there were ups and downs in the profit share over the period 1960-93, but the share was little different in 1993 from what it was in 1960, and it has risen much less than the industry share since 1993.

**Table 10: Share of Profits in Non-agricultural Net Domestic Product at Current Factor Cost, Various Years (%)**

<b>Year</b>	<b>Industry</b>	<b>Services</b>	<b>Total Non-Agr</b>
<b>1960</b>	25.7	22.5	23.7
<b>1980</b>	25.8	11.7	15.9
<b>1985</b>	37.7	12.1	24.1
<b>(1990)†</b>	(42.4)	(23.0)	(31.8)
<b>1990†</b>	43.1	29.3	35.2
<b>1993</b>	46.7	25.5	33.5
<b>2000</b>	*57.8	*29.2	44.0

\*Figures relate to 1999.

†Two sets of figures are given for 1990, because of changes in concepts and methods. The set in parentheses is roughly consistent with the years prior to 1990, while the second set is wholly consistent with the years after 1990.

*Source: As for Table 1. Rents are excluded from NDP.*

The huge rise in the profit share is not something that should be overlooked in considering the causes of the Celtic Tiger. Ultimately the growth of an economy is constrained by the willingness of society to accept the costs of growth, such as a fall in the wage share of national income. That Ireland has been willing to accept such a large fall in the wage share for a comparatively long period, has almost certainly been important in sustaining the high growth rates of the Celtic Tiger phase. Although many of my economic colleagues are sceptical of the part played in this by the successive national partnership agreements, I believe that it is unlikely that such a prolonged shift to profits would have been tolerated without the partnership mechanisms. Whether it will be possible to sustain partnership much longer is of course a different matter. Indeed I do not think we understand fully why it has been sustained so long. One might speculate that the savage job losses of the first half of the 1980s so burned itself in the minds of the trade unions and the general public, that they were willing to accept prolonged pay restraint once it was seen to be translating into more jobs – an example, perhaps, of Olsonian social learning leading to a regime change in response to a shock (Olson, 1996).

It may be argued that the rise in the profit share in industry is somewhat spurious, and as much a consequence as a cause of the way Ireland has developed – in that transfer pricing encourages foreign firms to locate a disproportionate share of their global profits in Ireland in order to take advantage of the favourable tax regime. Nevertheless, although profits in Ireland are artificially inflated, this does not detract from the value of the incentive in attracting foreign investment, since the facility

enables foreign firms, through investing in Ireland, to legally raise the after-tax rate of return on their global investment. A recent study of foreign investment by over 500 US multinationals (Grubert and Mutti, 2000), shows that tax rates have a significant and substantial effect on the choice of location and the amount invested there. They found that a lower tax rate that increases the after-tax rate of return to capital by one percent is associated with about 3 percent more capital investment where the country has an open trade regime.

The provision of well researched answers to the kind of questions I am raising is not simply an esoteric academic quest: it has profound practical importance. For example, how much is the flow of US direct investment likely to be hit by recession in the US, and what would be the consequences for Ireland? How badly would Ireland be affected by a tightening of restrictions on the use of transfer pricing in US tax law? Many similar questions can be posed of a severely practical nature to which we need better academic answers.

I will conclude this section with two more general points. *First*, the Irish experience suggests that the notion of jobless growth may be something of a myth. Rather it suggests that if high enough growth can be maintained, jobs are bound to be created. *Second*, the Irish experience may be of limited applicability to the search for a general means of securing economic growth. Certainly it is doubtful if the path followed by Ireland could be successfully pursued by a large country. In the case of foreign investment, for example, the global pool is simply not big enough to enable a large country, like Britain or France, to secure the same proportionate impact as in Ireland.

### 3. FUTURE CHALLENGES

For those of us who worked on Irish economic issues over the past forty years, uppermost in our minds was the problem of labour surplus, which constituted the dominant development challenge in Ireland for much of the past 200 years or so. The problem manifested itself in diverse ways: most notably in massive emigration, high unemployment, low labour force participation and a large amount of underemployment, especially in agriculture. It is quite a major transformation, therefore, to reorient our minds to cope with a situation of labour scarcity.

Clearly Ireland's economic success during the past decade means that the development challenge for the future differs greatly from the past. Three key issues immediately present themselves:

- 1) How do we maintain the progress achieved during the Celtic Tiger, and at what rate?
- 2) How do we cope with the adverse side effects? and
- 3) How do we best use the fruits of our success?

In regard to (1) I argued above that there is no possibility of maintaining much longer the kind of growth rates achieved during the Celtic Tiger – even if that were desirable. On the other hand we would wish to avoid a crash. Accordingly, there is a broad consensus that the desirable goal would be a so-called “soft landing” – in which GDP growth would taper down to the sustainable long term rate, i.e. the rate consistent with the secular growth of labour productivity and the natural increase in the labour force (the latter perhaps supplemented by moderate net immigration). The chief threats to the achievement of this goal lie, domestically, in the explosion of expectations in regard to pay and, internationally, in a recession in the US economy and/or a cyclical downswing in the industries in which Ireland has become heavily specialised, such as electronics.

In regard to (2), the chief adverse side effects that have revealed themselves are price inflation (and, most notably, soaring house prices), and congestion (especially in traffic, but also in other services). The distribution of the fruits of the Celtic Tiger (question (3)) is obviously a matter of social choice, and depends on how far we want to go to become an inclusive and caring society and on how much we value quality of life in preference to more material goods and services. Key concerns that arise are poverty strategy, provision of affordable housing, reduction of hospital waiting lists, childcare, care of the elderly, school drop-outs, literacy deficiencies, and the protection of the physical environment.

While the three questions can be posed separately, the answers to them are interrelated, since the desired objectives for each can conflict with one another, and trade offs are inevitable. The issues that arise constitute a formidable list of challenges for the next generation of economists!

## Endnotes

1. I am deeply indebted to my ESRI colleague, John FitzGerald, who greatly facilitated the writing of this paper by making available to me the basic data underlying his joint paper, FitzGerald and Kearney (2000). I would also like to thank the following for helpful comments on an earlier draft: John FitzGerald, Finola Kennedy, Danny McCoy, and Eoin O'Malley.

2. This follows from the identity

$$E/P \equiv E/L * L/Pa * Pa/P$$

When converted to growth rates as in Table 3, the equality between the two sides of the equation is approximate since there are interrelations components, but the latter may be presumed to be small.

3. See, for example, *Employment in Europe 2000*, Luxembourg, Office for Official Publications of the European Communities, 2000.
4. Central Statistics Office, *Population and Labour Force Projections, 2001-2031*, Dublin: Stationery Office, July 1999.
5. The matter is also examined in detail in FitzGerald and Kearney (2000).
6. It is interesting to note that a similar, though less extreme, situation existed in Irish manufacturing in 1926, when brewing, then the dominant industry, accounted for over 30 percent of the value of net output in Transportable Goods industry, but only 7½ percent of employment – so that its labour productivity was four times the average. The implied labour productivity level in “other organic basic chemicals” in 1998 was about 13 times the average!

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**SYMPOSIUM  
ON  
ECONOMIC GROWTH IN IRELAND:  
WHERE HAS IT COME, WHERE IS IT GOING?**

*(read before the Society, 26, April 2001)*

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**Openness and Growth: An International Perspective**

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**1. INTRODUCTION**

International openness via the pursuit of liberal trade and investment policies has become one of the conventional verities of the policy advice handed out by multilateral institutions over the past two decades. Greater international integration is now widely regarded as a pre-requisite for improved economic performance and higher per capita incomes, with the former intellectual consensus that had favoured import-substituting regimes as a means of stimulating industrialisation having been gradually undermined (Kreuger, 1997).

Openness has many possible dimensions. In this paper we concentrate on international trade and foreign direct investment, partly to keep matters to a manageable length. But there are clearly other facets such as the migration of labour that can also matter a great deal for economic development.

The objective of the paper is to provide an overview of some of the theoretical and empirical literature that investigates the link between international openness and economic growth in order to provide an international perspective on recent developments within Ireland. Whilst the evidence points on balance towards a complementary relationship between openness and development, with greater international openness helping to raise per capita incomes, the gains from greater openness are by no means automatic. Openness may be necessary for sustained growth, but is unlikely to be sufficient by itself and needs to be complemented by

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\* I am grateful to the UK Economic and Social Research Council for financial support.

investments in human capital and institutional reforms tailored to domestic needs and objectives.

The structure of the paper is as follows. In the next section some of the theoretical linkages between openness and growth are drawn out, highlighting differences between the older neo-classical models of growth and location under perfect competition and more recent models of economic growth and trade and location that adopt an imperfectly competitive framework. Section 3 reports selected empirical evidence on the degree of convergence in per capita incomes between countries, the linkages between openness and the level and growth of incomes, and the impact of foreign direct investment on the UK economy. Some concluding comments are given in Section 4.

## **2. OPENNESS AND GROWTH THEORETICAL ISSUES**

In accounting terms there are two principal sources of economic growth – a rise in the quantity and quality of inputs into the production process, and improvements in the efficiency with which those inputs are utilised. Such improvements can be generated by internal organisational change and the elimination of X-inefficiencies, the exploitation of economies of scale, from technical change arising from the development of new ideas and products or through the entry and exit of firms of different efficiencies. All of these may be affected by openness to international markets, defined as the extent of barriers to the free movement of ideas, products and factors of production.

Romer (1993) highlights the means through which openness can help to close idea, object and organisational gaps between countries. Two important channels are foreign direct investment, which may involve the direct transfer of technology or physical capital or new ideas, and international trade, which makes available products that embody foreign knowledge. Firms that participate in export markets might also have access to technical expertise regarding product designs and production methods from their buyers (Egan and Mody, 1992). Exposure to international markets also raises the degree of contestability of national product markets and, in principle at least, this should encourage firms to eliminate remaining organisational inefficiencies (Nickell, 1996).

What then are the benefits to growth if countries adopt policies to raise their international openness? Traditional theories of trade under perfect competition have always indicated that trade can enhance allocative efficiency and welfare in the economy as a whole by allowing resources to be transferred from import-substituting activities into ones in which countries have a comparative advantage. Such a shift could be expected to raise the level of income, but would not have a permanent impact on the growth rate, although faster growth would be observed for a period of time as the economy moved towards the new long-run output frontier. At the level of the individual firm, the ability to access international markets could be expected to enhance efficiency by allowing economies of scale to be exploited

fully. In small countries, or capital intensive industries such as the production of military equipment or chemicals, it is likely that the minimum efficient scale of production is large relative to the size of the home market (Kunst and Marin, 1989; Marin, 1992).

In the standard neo-classical model of growth, technology was treated as exogenous, with common blueprints available to all producers in all economies. The income levels of countries might differ initially because of different endowments, but trade or the mobility of factors of production could be expected to offset these differences. Ultimately, with diminishing returns to capital, growth in incomes per head in all countries should converge to the underlying rate of growth of technical progress. The empirical implication of this model is that countries with lower per capita incomes should grow faster than ones with higher incomes until convergence of income levels has occurred.

Recent advances in trade and growth theory stress the importance of imperfect competition, economies of scale, product diversity and the spread of ideas and organisational techniques across international borders. The creation and exploitation of knowledge are two of the key factors driving the growth process in many theoretical and empirical models of growth and technological change. In models with endogenous growth and endogenous technologies, openness can have long-lasting effects on economic growth by influencing the rate of domestic innovation and by affecting the rate at which technologies developed elsewhere are adopted (Grossman and Helpman, 1991; Aghion and Howitt, 1998).

In this framework, expanding market size can matter not just because it allows economies of scale to be exploited, but also because it affects the returns to innovation. Openness can also raise the resources available to undertake domestic innovation, with access to foreign technologies and ideas providing a larger pool of knowledge that can be used in subsequent research. International knowledge spillovers of this kind can arise from all forms of international contact, including the mobility of skilled labour, inward investment and trade. The scale of outward direct investment may also matter, since mergers and acquisitions provide a way of acquiring location-bound foreign knowledge and expertise. The potentially infinite expansibility of knowledge means that such assets can then be utilised simultaneously across multiple establishments under common ownership. A further testable implication of the new growth theories is that there may be externalities from openness, so that new knowledge can be utilised by firms in the economy other than those who participate directly in international markets.

But the effects of openness need not always be beneficial to growth. For instance, product market competition whilst stimulating efficiency, also serves to reduce the monopoly profits available from innovation. The reallocation of resources across sectors in line with comparative advantage can also have negative effects on growth (Rodríguez and Rodrik, 2000). If countries become increasingly specialised in low-tech sectors in which little or no R&D takes place, then resources may be diverted

away from the activities that help to promote long-term growth. Older, unresolved arguments over the need to protect 'infant industries' also suggest that there are circumstances in which the maintenance of trade restrictions might promote long-run performance.

A further implication of the new theories of international trade and economic geography with imperfect competition and increasing returns to scale is that comparative advantage can be path dependant, with the pattern of growth across countries differing significantly (Krugman, 1991; Fujita *et al.*, 1999). Models of the location of activities under perfect competition cannot explain why regions with similar factor endowments and similar factor prices may have very different industrial structures. Competitive disadvantage can be remedied quickly if location patterns were determined solely by geographical endowments, transport costs and production costs, and there would be few reasons to locate anywhere for long.

In contrast, an implication of the new models of location is that temporary differences in national or regional characteristics, such as investment incentives for foreign or national firms or hysteresis effects on entry and exit from movements in the real exchange rate, can have permanent effects on the location of activities if other firms are subsequently drawn to particular regions by the possibility of obtaining agglomeration economies. Such economies arise from any location-bound economic activity in an area that generates positive externalities for nearby firms. These may arise from the availability of skilled labour, or by proximity to firms in other industries with whom there are close business linkages, or by the existence of clusters of innovating firms. Publicly financed infrastructure may be a further example. Some of the roots of the surge of FDI in Ireland over the past fifteen years can undoubtedly be traced back to the decision to make active use of fiscal incentives, such as low rates of corporation tax and discretionary grants, complemented by carefully formulated, proactive industrial and educational policies targeted at particular sectors (Ruane and Görg, 1999).

The mechanism of cumulative causation, with agglomerations attracting new investments which then influence the growth process by affecting the rate of technical progress (Barrell and Pain, 1997 and 1999), suggests that the size of regional and national economies has to be seen as determined in part by their acquired characteristics rather than just by their endowed characteristics (Hanson, 2000). The policies and development strategies of devolved bodies and central governments thus have to be carefully designed as temporary changes to factors affecting the spatial dispersion of economic activity can have long-lasting effects (Head *et al.*, 1999).

The process of economic integration and trade liberalisation can also have a significant effect on the location of economic activities by changing the balance between centripetal and centrifugal forces. Openness is partly a reflection of supranational policies – in Ireland's case the trade policies pursued by the European Commission and the requirements for membership of the European Economic Area.

Midlefart-Knarvik *et al.*, (2000) document how the process of European integration has raised industrial specialisation within the European Union.

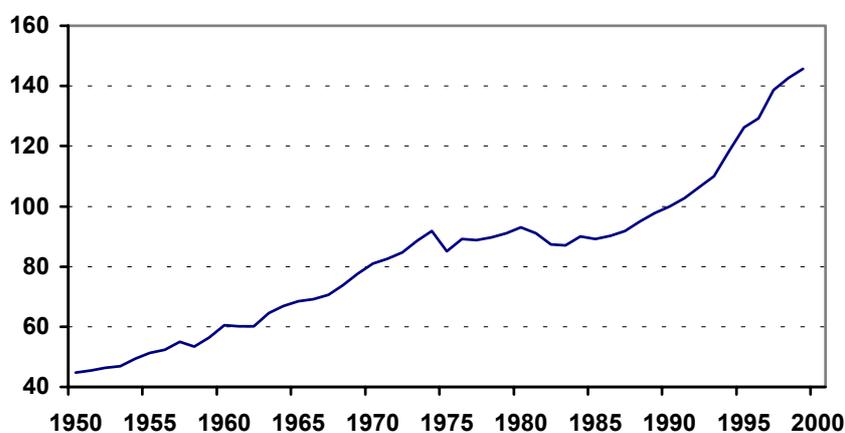
In summary, the new and the traditional models of growth, trade and investment both suggest that greater openness can have a positive effect on per capita incomes. There may be a variety of channels through which international exposure could generate improvements in the relative performance of national firms. Some of these channels, such as competition, economies of scale, entry and exit and knowledge spillovers, are already known to be general influences on productivity growth.

### 3. OPENNESS AND GROWTH: EMPIRICAL EVIDENCE

#### *Convergence of Per Capita Incomes*

The post-war years have seen a steady upward trend in the ratio of global merchandise trade to GDP, expressed in constant prices, as can be seen from Figure 1, although there have been periods, most notably the decade from 1974-84 when trade growth has been comparatively subdued. But this increase in openness does not appear to have been associated with a systematic tendency for poorer countries to experience faster growth than richer ones.

**Figure 1: World Merchandise Trade Volumes  
(% of World GDP 1990 prices, 1990=100)**

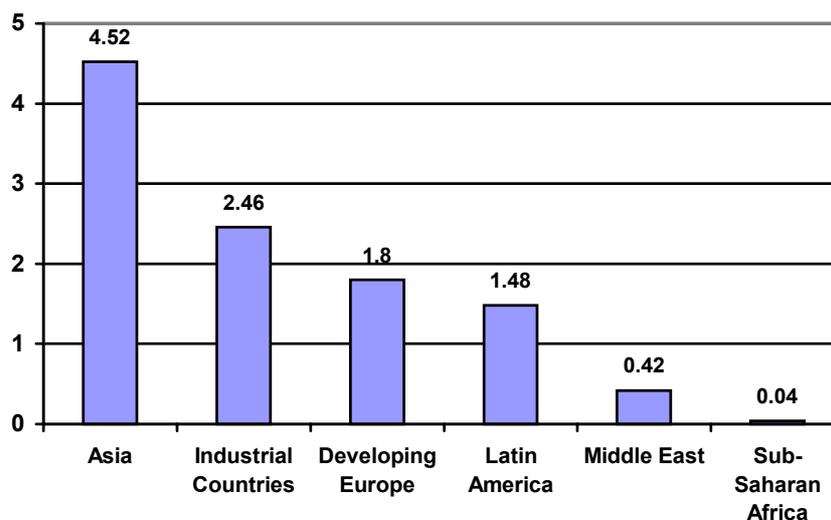


*Source: WTO (2000).*

During the past thirty years there has been a divergence, rather than a convergence, between the levels of per capita income in the industrialised countries and many developing countries. This can be seen from Figure 2, which shows the average

annual growth rate of per capita incomes, measured in US dollars at 1987 prices and exchange rates in selected regions from 1970 to 1998. Similar results are reported in IMF (2000) using purchasing power parity rates.

**Figure 2: Annual Real Per Capita Income Growth  
1966-98 (%)**



*Source: Table A2.2 Global Economic Prospects and the Developing Countries 2000, World Bank.*

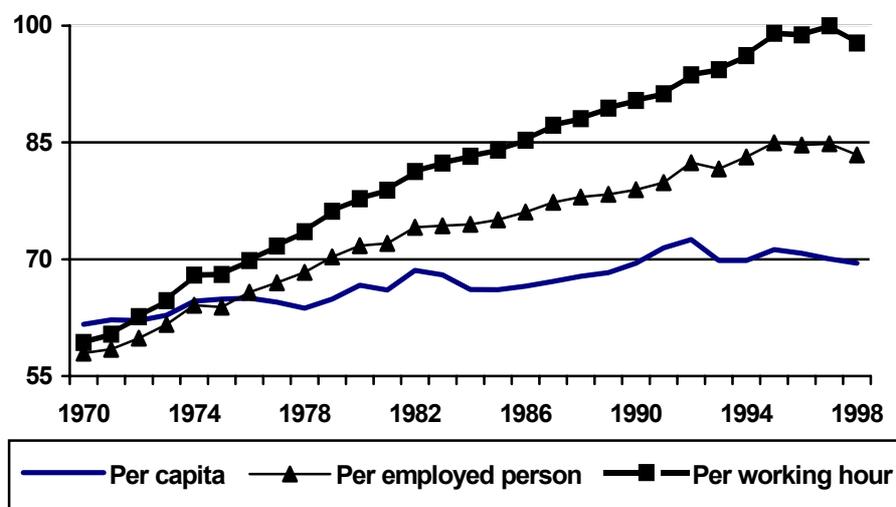
Real per capita incomes rose by an average 2.5 percent per annum in the industrialised countries. This rate of growth was exceeded only in Asia, particularly East Asia where incomes rose by an average 5.9 percent per annum. China had a per capita income growth rate of 7½ percent per annum. Real incomes have risen in developing countries in the Middle East and Latin America, but at a slower pace than in the industrialised countries. Real incomes hardly changed at all in sub-Saharan Africa, and have actually fallen since 1973. Whilst real per capita incomes are estimated to have risen over the period as a whole in the Developing Europe bloc, which includes the transition economies of Central and Eastern Europe, there has been a sharp decline since transition began. In total approximately three-quarters of all the developing economies have recorded slower per capita income growth than the industrialised economies since 1970 (IMF, 2000), although this group comprised only about 30 percent of the total in terms of population, reflecting the relative success of China and, to a lesser extent, India which had a per capita growth rate of 2¾ percent.

Thus whatever benefits openness may bring, it appears unlikely that it is sufficient by itself to promote convergence of income levels between countries. Indeed much of the econometric evidence from the wider economic growth literature strongly suggests that both social capabilities and absorptive capacity matter for growth performance (Temple, 1999).

Even in East Asia, which is commonly regarded as providing a *prima facie* example of the benefits of greater openness, the evidence is subject to some debate. The links between openness and growth in East Asia are reviewed by Lloyd and Maclaren (2000). They argue that the perception that East Asia is an open region largely rests on its openness to merchandise trade compared to other developing countries. East Asian developing economies are generally less open than developed countries inside and outside Asia, and frequently less open to services and FDI than many other developing economies.

The importance of cross-country differences in institutions and societal norms can also be observed from Figure 3, which shows per capita incomes (GDP based) in the European Union relative to those in the United States.

**Figure 3: European Union GDP at Current Prices and Current Purchasing Power Parities (USA=100)**



Source: Barrell and Pain (2001)

In the so-called ‘Golden Age’, the post-war period from 1950-73, growth in the EU had been considerably faster than in the US, helping per capita incomes rise to two-thirds of those in the US by 1973, from under half in 1950 (UNECE, 2000, Table

5.3.2). But since that time little further convergence has occurred, with per capita incomes in the EU remaining around 70 percent of those in the US throughout the 1990s.

Yet this was a period in which international trade and capital flows between the EU and the US rose rapidly. The value of merchandise trade between the US and the EU (defined in terms of the present 15 members) rose from around \$12½ billion in 1963 to \$389 billion in 1999 (WTO, 2000, Table II.3). Translating these nominal figures into constant prices by using an aggregate manufacturing export price index (WTO, 2000, Table II.1) implies that the volume of bilateral trade between the EU and the US rose by an average 5.9 percent per annum between 1963-99, a growth rate well above the rates of GDP growth in either of them. However, as might be suspected from Figure 1, the underlying trend appears far from uniform. Bilateral trade volumes rose by 8¾ percent per annum between 1963-73, and by 9½ percent per annum between 1993-99, but by only 3.4 percent per annum between 1973-93. The pattern of per capita incomes up to 1993 appears broadly consistent with the slowdown in the rate of convergence since the early 1970s, but the constancy of relative incomes through the 1990s appears at odds with the acceleration in international transactions during this period.

A key question for policy makers in the EU is to understand why the process of convergence in incomes appears to have stagnated. Some insights can be obtained by decomposing output per capita as follows. Letting Y denote GDP (at constant prices), and P population:

$$\frac{Y}{P} = \frac{L}{P} * \frac{E}{L} * \frac{Y}{EH} * H \quad [1]$$

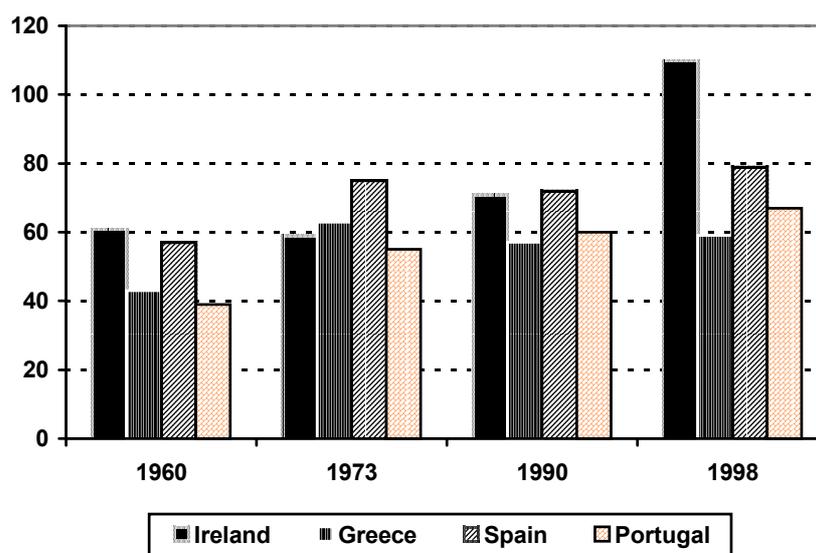
where L represents the labour force, E denotes the number of employees and H hours worked per employee. Figure 3 also shows comparative figures for output per employee hour in the EU (Y/EH) and output per employee ([Y/EH]\*H). There is much less evidence that convergence has ended using either of these measures.

Indeed, in terms of output per employee hour there is now little difference between the EU as a whole and the US, whereas back in 1970 the EU level was only about 60 percent of that in the US. The gap between the EU and the US begins to widen once measured in terms of output per employee, reflecting the fact that the average employee in the United States works for more hours a year than the average European. In part this reflects a conscious choice to consume more leisure in Europe. The remaining gap between output per employee and output per capita reflects differences in labour markets which are widely thought to stem in part from institutional differences. Labour force participation is lower in Europe than it is in the United States, as is the employment rate. OECD figures show that in 1998 73.8 percent of the working age population (ages 15-64) were in work in the US, compared to 61.5 percent in the EU (OECD Employment Outlook, 2000). The high

level of output per employee hour in Europe can in part be explained by the lower employment rate and the corresponding likelihood that those members of the labour force with comparatively few skills, and hence lower productivity, are not in work.

Even within the European Union it is clear that domestic institutions matter for growth and convergence. Figure 4 shows per capita incomes (again measured using GDP) in Ireland, Greece, Spain and Portugal relative to the EU average over the period 1960-98. During this period all have entered the European Union, and lowered barriers to trade and capital mobility. Yet the experience of the countries has been quite distinct, with Spain and Portugal converging slowly, Greece making rapid gains between 1960-73 but not in subsequent years, and relative incomes in Ireland accelerating rapidly, but only since the late 1980s. Even if GNP were used instead of GDP Ireland would show marked convergence over this period, although per capita incomes measured using the former were still 5-10 percent lower than the EU average in 1998.

**Figure 4: Real GDP per Capita (EU=100)**



*Source: UNECE (2000), Table 5.3.3*

The broad picture from the evidence considered so far offers relatively little support for the hypothesis that greater openness automatically improves growth prospects. It does not appear that it is sufficient to bring about income convergence, even if it may be necessary for it to occur. We now turn to the large empirical literature on the relationship between international openness and growth. We begin by reviewing

the aggregate cross-country evidence before turning to evidence from microeconomic studies of individual firms and specific studies of the impact of inward direct investment on the UK economy.

*International Trade: Macroeconometric Evidence*

The widespread belief that openness is linked to growth has, at least until recently, appeared to have considerable support in the literature. Ben-David *et al.* (2000, Chapter 1, Annex Table 1) cite twenty empirical studies published between 1977 and 1998 which use cross-country evidence and trade policy indicators and which find that open and outward orientated economies tend to enjoy faster economic growth. The indicators used include trade ratios, tariff levels and indices of price and exchange rate distortions.

In a subsequent study not included in the literature cited by Ben-David *et al.*, Frankel and Romer (1999) also report a significant positive association between international trade and per capita income using cross-sectional data for 150 countries in 1985. Their results suggest that, on average, a difference of 1 percentage point in the ratio of trade to GDP between countries is associated with a positive differential of between ½-2 percent in the level of per capita incomes.

Of course it is difficult to attribute causality in cross-sectional regressions of this kind. If richer countries tend to trade more, or can afford to forego many trade policy restrictions, then causality may run from income levels to policy. One other important point to note about the Frankel and Romer study, and several others, is that it utilises trade shares rather than trade policies. Some countries may have extremely liberalised policies, and contestable markets but still experience low levels of trade relative to GDP because of their size or location. It would clearly be mistaken to view the UK economy as being less open than that of Ireland just because trade accounts for a smaller proportion of GDP.

Rodríguez and Rodrik (2000) have recently questioned the reliability of many of the results concerning the consequences of trade policies (as opposed to the level of trade) for growth. They argue that in some cases the indicators of openness are poor measures of trade barriers, or highly correlated with other variables that are themselves likely determinants of growth, such as the quality of institutions or macroeconomic stability. In other cases the econometric techniques used in some studies are argued to be inappropriate, and re-estimation using different techniques and controls for other policy and institutional variables results in significantly weaker findings. For example, one study they consider is that of Frankel and Romer. Re-estimating their model with additional dummies to control for geographic characteristics such as climate, Rodríguez and Rodrik find that the trade regressor becomes a statistically insignificant determinant of per capita incomes. Similar results are reported by Jones (2000) who finds that trade policy measures tend to become insignificant in cross-country growth regressions which include the

broader measure of the quality of institutions developed by Knack and Keefer (1995).

A further difficulty with empirical studies covering a wide variety of countries lies in assessing whether their findings are really applicable to all economies, or whether they are driven by differences between developed and developing economies. A small number of studies have looked at the experience of developed European economies.

In a series of papers Ben-David (1993, 1996) has emphasised the linkages between formal trade liberalisation amongst the founder members of the European Economic Community in the 1950s, the associated convergence of income levels between these countries and the apparent stimulus trade reform provided to longer term growth.

Hoeller *et al.* (1998) estimate a common production function for a panel of 11 EU economies over the period 1970-95 in which they include the share of total trade in GDP as a proxy for the impact of openness on total factor productivity. This is found to have a significant positive coefficient, with a 1 percentage point change in openness being associated, on average, with a 0.09 percent increase in GDP growth per annum.

The Openness and Growth project at the Bank of England (Proudman and Redding, 1998) used sectoral data to look at the factors driving growth in UK manufacturing industry between 1970 and 1992. Sectors were divided into 'open' and 'closed' groups based on ratios of trade and FDI flows. Those classified as open had an average TFP growth rate of 2.1 percent per annum, whilst those classified as closed had TFP growth of just 0.9 percent per annum. The study also found that the openness measures could collectively account for around one-half of the narrowing of the manufacturing productivity gap between the UK and the US over the period from 1970-90.

Whilst some questions could be asked of all these studies, either about the methodologies employed, or the extent to which other factors have been adequately controlled for, it is striking that the different approaches employed have all pointed towards a similar conclusion – that greater international openness is associated with improved living standards.

#### *International Trade: Microeconomic Evidence*

Until recently most econometric work on trade and growth has been undertaken with aggregate data. The benefits of openness and exporting should show up in the performance of individual firms, as well as in the overall level of welfare and growth in the economy. The stylised facts in many economies appear consistent with these arguments; for instance, in most countries exporting firms tend to be larger, older and more innovative than other firms. However they are also consistent

with a counter argument that a self-selection process is at work. It is only the better performing firms that are able to enter international markets because they are the ones able to bear the sunk costs associated with entry into foreign markets and the more intense competitive pressures there. The growing number of firm-level econometric studies on newly available longitudinal data sets permits a direct assessment of the structure of the underlying causal relationships between trade and performance.

Bernard and Jensen (1999) find for the US that exporters and multinational firms tend to be larger and more productive on average than other non-exporting firms. But most of these differences emerge prior to entry into foreign markets, so there is little support for the notion that greater openness through exporting will generate faster economic growth. Exporters do not appear to experience faster growth of productivity than non-exporters, other than in the immediate aftermath of entry into foreign markets. However plants that exit from export markets perform significantly worse than those that continue to export. Instead the benefits of exporting appear to be felt through faster growth of sales and employment and a higher probability of survival. For the economy this matters, since a rising proportion of employment will be in firms with above average levels of productivity, raising the allocative efficiency of the economy as a whole. Related findings for Germany are reported in Bernard and Wagner (1997 and 2001), whilst evidence for developing countries is summarised in Tybout (2000).

If exporting plants have an absolute productivity advantage over non-exporting plants, they are more likely to be close to the production possibility frontier for their industry. Part of the explanation for the faster productivity growth of non-exporters may be that they can benefit from eliminating technical inefficiencies as well as from technological advances. Part of the explanation for the faster growth of exporters in the year or so after entry into the export market may simply be that greater exposure to international competition quickly eliminates many remaining inefficiencies. If learning-by-exporting is more important for young or new plants, with older plants having successfully incorporated knowledge of best practices, then we would expect to see a permanent effect on the level of productivity following export market entry, but not a permanent effect on growth.

An important gap in the microeconomic literature is that the question of potential externalities from exporters has yet to be systematically investigated. It is not yet known whether the survival of exporting companies offers wider benefits to non-exporters.

#### *Foreign Direct Investment*

Foreign direct investment can also be an important transmission mechanism for the diffusion of knowledge, both codified and tacit, across national borders. The desire to attract inward investment appears to be one of the few industrial policies pursued consistently by almost all governments throughout the world. Significant levels of

public funds have been committed in order to attract foreign firms in the belief that their presence offers important positive externalities for indigenous firms which will help to raise their productivity.

A notable feature of foreign firms throughout the world is that they tend to be larger, more capital intensive and enjoy higher levels of labour productivity than indigenous firms in the host country. In the UK detailed statistics are available on the operations of foreign firms in the manufacturing sector. The most recent figures available currently relate to 1997. In that year foreign-owned enterprises accounted for 25¼% of gross value added output in the manufacturing sector, 33 percent of net capital expenditure and 17½ percent of total employment. US controlled affiliates accounted for over half of the value-added output produced in foreign-owned firms. Average output per head in all foreign-owned firms was thus almost 60 percent higher than in indigenous firms. The labour productivity of US-owned firms was 89 percent above that of UK-owned ones. Productivity levels in Japanese and EU-owned firms were lower, but still 26 percent and 21 percent above those of UK-owned companies.

These differentials in the average levels of labour productivity in firms of different nationality in the UK are remarkably similar to the aggregate differentials in the level of labour productivity across countries calculated by O'Mahony (1999, Table 2.4). In 1996 for instance, labour productivity levels in the US manufacturing sector are estimated to have been 71 percent higher than in the UK. Thus the growing proportion of high productivity foreign firms in the UK can be viewed as making an important contribution to closing the productivity gap between the UK and the US.

Detailed statistics are not available for the operations of all foreign firms in the non-manufacturing sectors of the UK economy. But it is clear that foreign firms are a significant part of the overall economy, with statistics produced by the US Bureau of Economic Analysis indicating that US-owned firms accounted for 7 percent of UK GDP in 1998.

Even after controlling for factors such as the larger average size of foreign firms, their relative concentration in higher productivity sectors, and their higher levels of capital, skilled labour and intermediate inputs, the balance of evidence suggests that the average foreign-owned firm in the UK manufacturing sector has a productivity advantage of at least 10-15 percent over the average UK-owned firm (see the papers in Pain, 2000), with the differential being largest for American-owned firms. Thus it seems clear that foreign firms have some important firm-specific advantages that allow them to achieve higher levels of productivity than their UK counterparts. These may reflect factors such as better organisational efficiency, greater exposure to international competition and the quality of knowledge-based assets. If foreign firms did not possess such firm-specific advantages, it would be difficult to explain why they are able to take advantage of profitable opportunities in the UK whilst UK-owned firms are not.

A key policy issue is whether there are significant spillovers of knowledge in the form of technologies, working practices or skilled labour from foreign to domestic companies. If that was the case, then inward investment would be associated with significant positive externalities for the economy as a whole, providing a justification for government intervention in the form of investment incentives and promotional activities designed to attract potential foreign investors. There are two broad categories of spillovers that can be distinguished:

- direct spillovers – domestic firms can acquire knowledge of new technologies and working practices from foreign firms; labour mobility from foreign to domestic firms.
- indirect spillovers – examples include the impact of greater competition in product markets, the impact on national innovation and R&D, and the impact on export performance. These issues are discussed in Pain (2000).

All of these are potentially important sources of productivity growth. Blomström *et al.* (2000) provide a comprehensive overview of the literature on spillovers in from inward investment in developed economies. They conclude that ‘the evidence is convincing in showing the existence of FDI efficiency spillovers in host countries, although there is no strong consensus on the associated magnitudes’.

Evidence for the UK is reported in Hubert and Pain (2000, 2001), building on the framework developed by Barrell and Pain (1997). Using a sample of two digit manufacturing industries for 1984-92, Hubert and Pain (2001) find significant intra and inter-industry spillovers from foreign firms in the manufacturing sector, with a 1 percent rise in the volume of output in foreign firms estimated to raise the level of labour-augmenting technical progress, and hence other things being equal labour productivity, in UK-owned firms by 0.5-0.6 percent. The results are found to be robust to the inclusion of R&D and imports. Intra-industry import volumes are found to be significant, but not inter-industry imports. A 1 percent rise in imports raises technical progress by 0.3 percent.

One interpretation of this is that imports bring new technologies (and competitive pressures) that are industry-specific, whilst inward investors have transferred innovative business techniques and management practices that can be applied across a wide range of industries rather than just new processes and products that are specific to a particular industry. This is only to be expected. Ideas such as mass production, just-in-time inventory systems and high quality control standards have been disseminated in part through inward investors in motor manufacturing, and have subsequently been used widely throughout the economy.

The high level of inward investment in manufacturing activities has also been particularly important in the economic development of many smaller European economies such as Ireland (Barry and Bradley, 1997) and Portugal (Farinha and

Mata, 1996). Studies of manufacturing inward investment in other OECD countries such as Australia, Canada and Mexico (see Caves, 1996) also suggest that the presence of inward investors has had a positive influence on the productivity of local firms.

Whilst the evidence appears to point towards favourable effects from inward investment on the level of national income, much more remains to be learnt. There is certainly no reason to suppose that any externalities from inward investment are distributed equally amongst industries or regions (Girma *et al.*, 2001), and in the UK at least, there appears to be little evidence that the average productivity gap between foreign and UK firms has been closed over time. Whilst some gap might reasonably be expected to persist, since the average foreign-owned company operates at a larger scale than the average British company, the apparent failure to narrow the gap does suggest that there may be additional complementary policies or institutional reforms which are required in order to achieve the highest possible level of spillovers and the dissemination of best-practice techniques.

#### **4. OPENNESS AND GROWTH: A SUMMARY**

A reasonable summary of the evidence on trade and growth and inward investment might be that it is consistent with the hypothesis that greater openness helps to raise per capita incomes, but there is a large amount of uncertainty regarding the magnitude of the effects and it is likely to depend on a range of host country and external characteristics. There is little evidence in favour of the opposite view that trade protection or capital controls are beneficial for sustained economic growth, suggesting that policies should more appropriately be biased towards ensuring greater openness and contestability of product markets.

There is nothing in the present literature to indicate what an appropriate level of openness might be. In general, smaller economies tend to have higher levels of trade relative to GDP simply because there are fewer domestic consumers for producers to trade with. It is quite possible that significant barriers to trade and capital mobility are costly but more modest restrictions are not. There are clearly some economies such as North Korea which have fallen behind as a result of remaining closed to the outside world for the last fifty years, and others, such as Hong Kong which have experienced sustained growth associated with their openness. However these are extremes, and it may be difficult to generalise from their collective experience.

The available empirical evidence has yet to provide a convincing verification of the endogenous growth models. Most of the evidence points towards permanent effects on the level of technical efficiency. Of course, discriminating between changes which have small, but long-lasting, effects on growth, and others which ultimately have large effects on the level of output may be very difficult to do, given the average time dimension of most data sets.

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**Mr. Shane Whelan:** I would like to thank the three speakers for a most stimulating evening.

I have a question that draws together points made by each of the speakers. First, Professor Kennedy pointed out that the ultimate constraint on economic growth is not one of the traditional factors of production but how much we are prepared to sacrifice on the alter of faster growth. The capital stock can literally be doubled overnight simply by working nightshifts and the pool of labour deepened either by working longer hours or having an even greater participation rate. Professor O’Rourke, while making the point of economic convergence, showed just how divergent economic growth can be in a small economy like Ireland relative to its trading partners and that this divergence can persist for decades. Well, if a small economy can be such an outlier in terms of sluggish economic growth then can it not be equally as extreme an outlier on the positive side? This brings me to Dr Pain who showed a graph that highlighted the significant differences in work patterns that

exist between Europe and the US. In Europe both the working hours and the participation rate are less than the US.

So here is my question. If the Irish want economic growth just as much as the Americans and are willing to make the same sacrifices in terms of longer hours and greater participation, how much of a fillip would this give to GNP? An answer to this could be used to set an upper limit on how much longer the tiger economy can run.

'Symposium on economic growth in Ireland: where has it come from, where is it going? - Openness and growth: an international perspective'. - Dublin: Journal of the Statistical and Social Inquiry Society of Ireland, Vol. XXX, 2000/2001, pp140-158. Download Item: jssisiVolXXX\_140158.pdf (PDF) 238.0Kb. Abstract: International openness via the pursuit of liberal trade and investment policies has become one of the conventional verities of the policy advice handed out by multilateral institutions over the past two decades. Greater international integration is now In the United States, it comes from the Federal Reserve. When the U.S. government decides that it wants to spend another billion dollars that it does not have, it does not print up a billion dollars. Rather, the U.S. government creates a bunch of U.S. Treasury bonds (debt) and takes them over to the Federal Reserve. The Federal Reserve creates a billion dollars out of thin air and exchanges them for the U.S. Treasury bonds. The U.S. Treasury bonds that the Federal Reserve receives in exchange for the money it has created out of nothing are auctioned off through the Federal Reserve system. But wait. There is a problem.