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CATCHING UP WITH THE LEADERS: THE IRISH HARE

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Abstract

Ireland's remarkable jump from 24th to 9th in the league table of per capita income over the past 15 years is often seen by outsiders as a productivity miracle or the outcome of ingenious fiscal policy. This paper shows that it is best interpreted as a belated convergence not in productivity but in the share of the population at work outside low-income agriculture. The supply-side and institutional preconditions for such convergence were already present in 1973, but a sequence of fiscal policy errors in the 1970s derailed the convergence for more than a decade. When these were eventually corrected employment growth was facilitated by a collective pro-employment approach to wage bargaining resulting in improved wage competitiveness.

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1. Introduction

For many decades, Ireland's output per head ranked about 24th among the major nations. Suddenly, in the mid 1990s, Ireland started to move up, from 22nd in 1993 to 18th in 1997 and an amazing 9th in 1999. The many facets of Irish economic success over these years caught the public imagination at home and abroad, from a disproportionate representation in popular music to the highest current account balance of payment surplus in the industrial world. This paper examines the startling turnaround in Irish economic performance that began in the mid-1980s. By comparison with Ireland's previous economic performance there surely is a miracle to explain, but from a global perspective the question is more why it took so long for us to catch up with the rest of Europe.

Although most attention has focused on aggregate output growth rates – real GDP growth averaged 10 per cent 1995-2000 – we will show that the salient feature of this catch-up has been an increase in the proportion of the population at work. This is partly a function of demographic trends and partly of a remarkable reduction in the rate of unemployment, neither of which will can be sustained. When the data are correctly interpreted, there has been no productivity miracle. Dissecting the sources of output growth and understanding the transformation of the labour market are the two central tasks of our paper. In addition, we need to describe how inappropriate fiscal and perhaps monetary policies held Ireland back in the years before the 'miracle', with the results that convergence, when it occurred was telescoped into a short period.[1]

Catching-up, and doing so rapidly, requires a favorable institutional, policy, and external environment. There are several individual institutions and policy entities in Ireland each of which is quietly confident that it is the unique source of the turnaround. As our story unfolds, it will become evident that the credit must be widely shared, and that a much improved external environment also played its part.

1.1 The background

In a letter to David Ricardo in 1817 Robert Malthus said 'a population greatly in excess above the demand for labour' was 'the predominant evil of Ireland'. This was a generation before the famines of the 1840s triggered large-scale emigration and a decline in the national population that lasted until the 1960s. Irish adjustment during the nineteenth century has been cited as a good example of how globalization fostered convergence of living standards. The island was transformed from a poverty-stricken, peasant economy that had served as a source of cheap labour for booming cities in Britain and North America to an economy at the start of the twentieth century that boasted wages – in some sectors of the urban economy at least – close to those prevailing across the Irish Sea (O'Rourke and Williamson, 1999, pp. 21-22).

But the rural population and unskilled urban workers – who predominated - continued to lag behind, and in the course of the twentieth century Ireland seemed to lean on its oars. Feeding Britain through two world wars provided adequate export revenue for what was

still primarily an agrarian economy, especially focusing on that part of the island that became the Republic of Ireland, which is the subject of this paper.

Economic historians characterize the third quarter of the 20th Century as the "Golden Age" of European growth (Crafts and Toniolo, 1996). Most European economies, having recovered from wartime damage by around 1950 continued to grow more rapidly than before or since until the first oil shock in 1973. Ireland did not fully share in this happy period of growth – indeed only the UK had a lower rate of per capita output growth over those years. In the 1950s Ireland stumbled badly, with a renewed surge of emigration and it continued to exhibit the symptoms of a labour-surplus economy – evident not so much in the rate of unemployment, but in emigration and a declining population, a low participation rate in paid employment by women, and continued dependence on subsistence agriculture.

1.2 Convergence Postponed

Conditions became more promising during the 1960s. Growth accelerated somewhat and the overall policy stance looked increasingly benign in terms of macroeconomic management, human capital formation and openness. In addition to the fixed exchange rate with sterling, macro policy was characterized by a modest balance of payments deficit, and a conservative fiscal stance consistent with the "golden rule" (borrowing only to finance public capital investment). Taxation was relatively low (taking less than 30 per cent of GNP, compared with an average of over 36 per cent in the OECD) and earnings from exports were exempt from income taxes. Inward foreign direct investment was also encouraged by grant incentives and from the 1970s by duty-free access to Europe.[2] Education attainment was rapidly increasing as a result of the belated introduction of universal free secondary education from 1967.

Although income per head was low relative to that in the UK (by far the largest trading and financial partner, the main destination for migrants and at that stage still the dominant reference point for economic policy), non-agricultural income per worker was already close to that in the UK. Ireland's continued backwardness reflected above all the modest share of the population in higher-productivity non-agricultural activities. That GDP per head of population was 27 per cent lower than in the UK in 1973 reflected: first, a participation rate 19 per cent lower; and second, the fact that almost a quarter of those at work in Ireland were engaged in agriculture, where incomes per head were 40 per cent below those in the UK. Average non-agricultural GDP per person engaged were about the same in both countries – to within about 1 percent (Table 1).

[Table 1 about here]

Thus in 1973, an optimist could – and many did – foresee a steady convergence in living standards to reach those of the UK and other advanced European economies within a generation, especially as rising participation by a better-educated workforce in the modern, export-driven, non-agricultural sector lifted average income per capita. [3]

Indeed, the situation at the end of the twentieth-century can be seen as the fulfillment of such a prediction. The policy stance had reverted to the earlier one : once more there is a fixed exchange rate, the current account of the balance of payments and the fiscal accounts were both in surplus for most recent years. The figure for tax revenue as a share of GNP is again in the lower third of the OECD countries, and unemployment is back to where it was – thus placing it below that in most other industrial countries.

The non-agricultural workforce now accounts for 42 per cent of the population, compared with 27 per cent in 1973. The employment-dependency ratio peaked in 1986 at 224 dependants per 100 employed. By 2001 it was down to 124. As a result, GNP per capita is now close to the industrial country average.[4]

[Figure 1 about here (employment share)]

The convergence towards the leaders that occurred in Irish output per head of population in the last quarter of the century was thus essentially the result of employing a new generation – one with higher educational qualifications and, in the case of women, a higher propensity to labour force participation – in the modern sector and notably outside of traditional agriculture.

At one level, therefore, Ireland's achievement does not seem all that special. It had finally caught up with the early modernizers to take its place among the most productive and prosperous countries (Ó Gráda and O'Rourke, 2000). The challenge is to explain the timing and speed of the catch-up.

The two snapshots, as of 1973 and 2001, conceal the fact, already foreshadowed in the introduction, that the path between them was anything but stable. Thrown badly off-course by the first oil crisis and the policy response to it, for the first fifteen years or so of the intervening period conditions for steady convergence were absent. In particular, lacking were a stable fiscal environment and a wage formation process that would keep Irish labour competitive.

Instead, an attempt to force a quick recovery from the slump of the mid-1970s gave rise to wage pressures and fiscal imbalances that left Ireland ill-prepared for the high global interest rates post-Volcker and the weak foreign demand of the early 1980s, not least from Thatcher's Britain. Thus, the aggressive fiscal expansion in the late 1970s helped drive up real wages and crowd out a sustainable growth of productive capacity. Subsequently the spiraling debt, high tax rates and high interest rates of the early 1980s perpetuated conditions hostile to sustained growth. High taxes placed upward pressure on the supply-price of labour, and, together with the apparently inexorable rise in debt, sapped business confidence. In addition, fiscal policy results in a sizable net withdrawal of demand as the authorities struggled to limit deficits despite the growth in external debt service. These were years of deep recession in Ireland when the economy presented a very weak picture. The net result was that, by 1986, there was a lot more catching-up to do.[5]

By this time everyone concerned realized that a more disciplined demand management policy was required. But that realization was not in itself sufficient to ensure convergence. When fiscal and demand conditions stabilized, it was the institutional arrangements for wage bargaining that took center stage in smoothing the process of employment transition. Real wage growth was very moderate by international standards from the mid-1980s and this greatly facilitated employment growth. In contrast to East Asian miracle economies, accumulation of physical capital, including public infrastructure, has not played an important driving role, although our measures may miss the crucial change in the quality of investment in the 1990s.

Although the rapid reduction in unemployment, the fiscal turnaround, and the very high recorded rates of GDP growth in the subsequent 15 years reflect a strong improvement in competitiveness (measured as wage rates relative to those of our trading partners in a common currency), partly associated with a successful process of centralized wage bargaining. they also owe much to more favourable external conditions. The external impetus provided by inward FDI from the US and other countries has had a multi-dimensional impact on economic performance. These have been the booster rockets that were needed to lift Ireland into the higher orbit in which it travels today.

The whole period since 1973 thus appears as a long business cycle, with a deep and prolonged trough in the first half of the 1980s and a climacteric around end-century, superimposed on a secular transition in the pattern of labour force participation and employment. [6]

Though we emphasize convergence, distinctive features of the Irish economy at end century clamour for attention. It is among the most globalized economies in the world, with (for example) more than half of its manufacturing and financial sectors owned by foreigners. Exports already amounted to almost half GDP by 1980 before the boom of the entrepôt sectors raised the proportion to almost 100 per cent by the end of the 1990s.

An exceptional propensity to emigrate was long an Irish characteristic and during the boom this was replaced by a high immigration rate. This openness to the rest of the world has undoubtedly contributed to the economy's ability to experience rapid employment growth – the 50,000 jobs added annually in the 1990s is a small fraction of overall employment in the industrial countries. But the substantial presence of high-tech multinational corporations has the effect of putting an unduly flattering gloss on some Irish economic statistics, notably measures of productivity which, when correctly interpreted, appear solid, rather than miraculous.

The remainder of the paper looks at these three key elements. Section 2 focuses on demand management policy, explaining the failures and successes of fiscal and monetary policy that first delayed, and then strongly assisted, the economic convergence. In Box 1 we discuss the political economy of this period. Section 3 and Box 2 look at how the labour market functioned. The fact that this market, long cleared through migration, suddenly saw enough job creation to achieve both full employment and net immigration

is the nub of the matter. Section 4 analyzes trends in the level and composition of output and of productivity, showing both the distinctive patterns of Ireland's productive structure, but also that faster productivity growth plays a limited role the recent success. Box 3 explores the implications for measuring income and productivity of the exceptional industrial sectors dominated by affiliates of US corporations. Finally, in Section 5 we ask what lessons can be exported to other countries and in particular whether one can isolate any policy ingredient as being *the* determining factor.

2. Managing Demand: Fiscal and monetary policy

Ireland is not alone in having experienced severe macroeconomic imbalances in the past quarter century, but their amplitude has been greater than in almost any other OECD country. The early 1980s saw the worst extremes, with inflation at 21% in 1981, the current account of the balance of payment in deficit to the extent of 15% of GDP, and public sector borrowing running at an even higher rate. The attempt to rein in the twin deficits caused taxation as a share of GDP to jump by 9 percentage points in as many years, while unemployment soared to a measured 17% of the labor force in 1986 with net emigration approaching 1% of the population. Nevertheless, Government debt continued to grow reaching almost 130% of GDP in 1986.

Contrast those figures with the situation in 2001, when the unemployment rate fell as low as 3.7%, despite a dramatic rise in labour force participation rates and substantial net immigration. Taxation had been falling steadily as a percentage of GDP but this did not prevent the fiscal surplus reaching 4.5% of GDP in 2000, bringing the government debt-to-GDP ratio to 36% (by end-2001). There was just a small deficit in the current account of the balance of payments that year and inflation, though higher than the European Central Bank's target, was falling to around 4% in 2001.

This compares trough with peak, and indeed from mid-2001 the economy began to slow, with unemployment rising and the fiscal accounts not as healthy as they had been. Nevertheless the contrast is startling, and to interpret it requires a narrative approach explaining what happened and why.

2.1 Falling into the debt trap.

Happily, it is possible to abstract from higher frequency fluctuations and concentrate on the big picture of a single long cycle in macroeconomic imbalances in Ireland during the last quarter of the 20th Century (Figure 2).[7] The figure shows the evolution of internal and external balance, with the former measured by unemployment, the latter by the current account of the balance of payments. Although the figure does echo developments in other countries for parts of the period shown, the amplitude and duration of this single cycle is unique among the industrial countries. And, given the fact that immigration was high when unemployment was low (and vice versa), the figure even understates the amplitude of the internal disequilibria.[8] Recognizing the existence of this one long cycle has methodological implications for our analysis. First, it means that we are not dealing

just with growth theory – as have most previous attempts to understand the Irish 'miracle' - , but that an important part of the analysis needs to focus on stabilization policy: on the fiscal and monetary policy responses to external shocks and shifting state variables over the period. Second, to the extent that the whole period represents a single observation (cycle), it limits the kind of econometric work that can be done on the broad time-series characteristics: numerous slow moving variables also display a single cycle over this period; attempts to identify which were causal are almost inevitably inconclusive. [9]

[Figure 2 about here: Loop]

The length and amplitude of this cycle must, however, be mainly attributed to some serious policy errors. In essence, the oil price crisis of 1973-74 triggered a sequence of short-termist demand management responses that kept the economy out of equilibrium and inhibited sustainable job creation for more than two decades.

The initial decision to finance the oil crisis with borrowing paralleled decisions in the UK. Government debt and inflation surged, while unemployment rose in tandem with that in the UK. A fiscal correction was initiated by 1976, but it was the decision to respond to the lingering high unemployment with an aggressively expansionary fiscal policy from 1977 that by the end of the decade had placed the government finances on a dangerously unstable path. New spending programs, expansion of public sector employment, and higher rates of transfer payments all translated into a hard-to-finance ratcheting-up of current government expenditure. The debt-to-GNP ratio was rising rapidly (Figure 3a), with an increasing share being borrowed from abroad and denominated in foreign currency. Now the government had little room to maneuver in response to the next adverse shock, which came with the Iranian revolution and the tightening of UK and global monetary policy.

[Figure 3 about here; (6 panel fiscal accounts)]

By 1981 rising interest rates and weakening external demand conditions meant that the fiscal deficit was increasing rapidly even though policy had turned contractionary.[10] Thus, automatic stabilizers, especially through income support payments, worked against the early fiscal correction attempts, as unemployment soared as a result of the combined effect of the cutback in the primary deficit and adverse shocks from the deteriorating labour market conditions in the UK. The impact of these deflationary forces on employment and output was aggravated by the fact that the liberalized trading environment had weakened many of the traditional, formerly heavily protected industries. Employment in these sectors contracted by about 25 per cent – or 30,000 jobs – in the first half of the 1980s. The rapid demise of these jobs was undoubtedly hastened by the contraction of demand, which it in turn intensified.

By the mid-1980s even paying for current spending programs was proving difficult. Every year from 1979 the share of tax in GNP rose as government scrambled to find additional revenue to meet the soaring spending - from 28 to almost 38 per cent in 1984 (Figure 3c). Tax rates on alcohol and tobacco, as well as on TVs and other consumer

durables, were so high that cross-border smuggling was rampant. Some rates were above revenue-maximizing levels and were subsequently lowered with an apparent gain in revenue (FitzGerald and others, 1988). The spiraling tax take had put upward pressure on wage rate negotiations despite rising unemployment. Although the primary deficit began to fall as early 1983, the debt ratio continued to grow to perilously high levels (sufficient to prompt suggestions that default would be an attractive option – a view espoused for example by Dornbusch, 1989). By 1986 fiscal policy was at the decisive crossroads.

[Box 1: "Why governments acted?" about here]
[Table 1: "External conditions" about here

2.2 The fiscal recovery: expansionary fiscal contraction?

The rapid turnaround in the fiscal accounts – for which the decisive date is 1987 – took everybody by surprise. Not only was the marked tightening of policy (see Column 10 of Table 3), by the incoming government unexpected (see Box 1), but the speed with which borrowing and the debt ratio responded was also unforeseen. The contribution of greatly improved external conditions (Table 2) should not be underrated in this regard.

With the economy turning around also, it is not surprising that some authors (Giavazzi and Pagano, 1990; McAleese, 1990) pointed to the dramatic fiscal correction as an important part of the explanation of Ireland altered fortunes, arguing that this was an example of an expansionary fiscal contraction. Subsequent work (Barry and Devereux, 1994; Bradley and Whelan, 1997, Whelan, 1991) cast doubt on the mechanisms proposed. Indeed a glance at the sequence (exports lead consumption leads investment – see the highlighted segment of Table 3 covering 1987-90) shows that the confidence story underlying the simplified version of the expansionary fiscal contraction hypothesis has an uphill struggle to find empirical support in Ireland.

[Table 3: "GDP Components" about here]

Yet the fiscal correction was undoubtedly a necessary pre-condition for subsequent performance. Spiraling tax rates and an apparently run-away debt-to-GDP ratio will not have encouraged entrepreneurial or investor confidence in Ireland.[11] Even though taxation as a percentage of GNP had peaked in 1984 (apart from a spike in tax receipts under the amnesty of 1988) and top marginal rates started to fall sharply (Figure 3c), only by 1988-89 was it clear that the debt situation had been brought under control – perhaps a precondition for the recovery of investment. Comparing 2001 with 1985, the top rate of income tax has come down from 65% to 42%; of standard corporation tax from 50 to 16; of capital gains tax from 60 to 20 and of capital acquisitions tax from 55 to 20.

The specific fiscal steps taken in 1987 were quite orthodox: a temporary freeze on public sector recruitment – implying a sharp fall in numbers employed – combined with (further) cutbacks in public capital spending (Figure 3f). The better external conditions helped turn the automatic stabilizers around, as first emigration and then a pick-up in labour demand at home lowered unemployment (Figure 3e). Falling interest rates also

helped and when the debt ratio started to fall in 1987 the positive feedback became cumulative (Figure 3a).[12]

2.3 Monetary and exchange rate policy in the 1980s – a complicating factor

Abandonment of the sterling link in 1979 in favor of membership of the new adjustable peg regime of the European Monetary System was an additional, and on the whole unhelpful, factor in stabilization policy. The decision to join the EMS was taken on strategic diplomatic and political grounds, with economic arguments playing only an incidental role. It certainly did not reflect any attempt to escape the discipline of the quasi-currency board arrangement that had, in some form or other, been in place for 150 years. If anything, policy-makers expected the new regime to result in appreciation of the Irish pound against sterling (which had been notably weak since the mid-1960s), and subsidies were granted from Europe to ease the burden of adjusting to a tougher regime.

[Figure 4 about here – real interest rates]

In the event, realignments in the EMS were frequent, and, at least for the first decade, Ireland was not slow to avail of these opportunities to retain wage competitiveness. In seven of the eleven realignments in the first decade of the EMS, the Irish pound was devalued against the DM. With two exceptions, Ireland always pursued the modal realignment. The exceptions were triggered by the two sharp real appreciations that occurred as a result of a weakening sterling in 1983 and 1986. And they imparted an additional cumulative 9 per cent depreciation to the Irish pound in the 1980s, making it weaker than all but the French franc and the lira in that period. Rather than a "zone of monetary stability" the EMS proved to be, for Ireland, a "dragging anchor" rather than a genuine hard currency peg. All in all, membership weakened anti-inflationary discipline and increased uncertainty. Interest rates, adjusted for exchange rate depreciation, averaged about 250 basis points above those in Germany – much higher during several pre-realignment surges. This has been interpreted as a "peso" premium (Conroy and Honohan, 1994, Walsh, 1993) though domestic policy in the form not only of high government borrowing, but also of technical deficiencies in monetary policy implementation, added to the volatility and average level of interest rates before 1988 (Honohan, 1994).

On the other hand, de-coupling from sterling just as it was about to appreciate in the early 1980s fortuitously protected Ireland from an additional severe competitiveness shock.[13] Relative to main trading partners, exchange-rate corrected wage rates increased on average by about 1 per cent per annum, in both the 1970s and into the 1980s, with no evident acceleration after EMS membership (Figure 5). Wage rates are a preferable measure to either consumer prices – affected by substantial increases in indirect taxes not directly relevant to international competitiveness – or to unit labour costs – dramatically influenced by the shift in sectoral composition to low labor-share sectors, discussed below.[14] This long-term trend was usually interpreted as an equilibrium Balassa-Samuelson effect, that is a reflection of the rise in relative wages and costs in the non-traded sectors of an economy enjoying rapid export-led growth, though this would not be the case for sharp run-ups such as that in 1976-80.

[Figure 5 about here – wage competitiveness]

The devaluation of 1986, initiated as a defensive measure in light of the loss of competitiveness associated with a rapid depreciation of sterling, was especially timely in that sterling suddenly recovered, leaving Ireland well-placed in terms of wage competitiveness to benefit from the accelerating economic boom in the UK and other trading partners countries after 1987. As it happened, this was the first step in a sustained improvement in wage competitiveness, which we consider in the next section.

2.4 Fiscal and exchange rate policy during the boom

Once economic activity started to pick-up in the late 1980s, tax receipts began to flood in (not least corporation tax with the surging manufacturing profits taxed at 10%), allowing the government to lower tax rates quite sharply without any significant decline (after 1990) in the share of GNP taken in taxation or any increase in the deficit. [15] As we will see, the ability to lower tax rates gave government an important bargaining chip in the centralized pay negotiations; potentially generating another virtuous circle, as credible multi-year wage agreements halted the deteriorating wage competitiveness that had been a feature of the previous ten years.

With the fiscal stabilization, and inflation staying low, maintaining confidence was the watchword and attitudes towards realignments hardened. Thus after the departure of sterling from the exchange rate mechanism (ERM) of the EMS in September 1992, the government resisted market pressure to devalue for over four months despite the sudden severe loss of cross-channel competitiveness and soaring interest rates (Figure 4). Not long after the eventual devaluation of February 1993, the ERM effectively fell apart and members were allowed a wide margin of fluctuation. During the six years of loosely managed float that followed, real interest rates (and excess returns) were lower than they had been under the ERM (Figure 4).

The budget also benefited from the receipt of substantially expanded structural grants from the European Union budget after 1988. This came at a crucial moment inasmuch as, using these funds, the government could begin to tackle the backlog of deferred infrastructure projects without threatening the initially fragile recovery in the public finances. Annual receipts from this source peaked at over 3 per cent of GNP in 1993, a very substantial sum, though only a fraction of the fiscal turnaround. The wider impact of these funds on the economy is discussed in Section 5 below.

While the major contribution to demand growth in the late 1980s and early 1990s was from net exports, attributable both to competitiveness and to capital formation in the export sectors (as discussed below), by the mid-1990s the increased prosperity and lower interest rates induced higher private investment in housing. Thus, though the fiscal accounts continued to strengthen until 2000, the current account of the balance of payments – in surplus from 1992 – began to deteriorate in 1998 and moved into a small deficit by 2000.

By this stage, the economy was displaying unmistakable signs of overheating, most conspicuously in property prices: residential property appreciated by some 120 per cent between 1996 and 2000. Consumer price inflation accelerated for a while, touching 7 per cent in 2000 despite adoption of the euro as the national currency.[16] This inflation spike was largely attributable to the appreciation of the dollar and sterling against the euro in its early months but local demand pressure also contributed.

This is not the place to discuss the prospects for a successful management of the transition from boom to more normal growth rates, which was unmistakably evident by mid-2001. As we will see in the following sections, some of the institutional features that had worked so well in the upturn – the pay bargaining system and the role of inward FDI in hi-tech sectors, looked by 2001 as if they might be less benign in the downturn. Still, memories of the protracted fiscal crisis, and the associated economic malaise, were sufficiently fresh to ensure more prudent fiscal management this time around. And although the recent surge in current expenditure is disturbingly reminiscent of the mistakes of the late 1970s, as a member of the European Monetary Union at least there is now no scope for homegrown monetary policy mistakes.

* * *

Before concluding this section, mention should be made of the alternative generational accounting approach to fiscal policy. This presents a very different picture for Ireland. Indeed, because of relatively favorable demographics (discussed below), Ireland has, from this alternative perspective, had one of the stronger fiscal positions among OECD countries throughout the period under review (McCarthy, 1999, Cronin and McCoy, 2001). In a sense, then, the Irish fiscal crisis was one more of liquidity than of underlying long-term imbalance, but there is a limit to what you can borrow in the markets on the strength of a favorable generational account balance!

3. Employment and the labour market

While demand management failures and the consequences of the struggle to restore order to the public finances explain the sluggish employment performance during most of the 1980s, and their correction could be expected to result in some recovery, the rapid and sustained growth in employment especially after 1989 still needs discussion. The new jobs were sufficiently numerous not only to wipe out most of the unemployment, but also to absorb an unusually high natural rate of labor force growth, a sharp increase in labour force participation by women *and* considerable net immigration, reversing the traditional outflow.[17] (Figure 6 shows how these developments transformed the population structure in favour of productive workers.)

[Figure 6 about here]

A high elasticity of international migration has long been a hallmark of the Irish labour market and indeed (as discussed in Box 2, Figure 7) the rate of unemployment is loosely anchored by that in the UK. Net emigration has long seemed to place a ceiling on the gap between Irish and UK unemployment. Even if there had been no employment boom in Ireland, the fall in UK unemployment in the late 1990s would have exerted its traditional downward pressure on the Irish rate, but through the usual outflow of emigrants and the stagnation of non-agricultural employment. Instead, the effect of higher unemployment and centralized wage bargaining on wage inflation spurred job creation that sucked in from abroad returned Irish emigrants, young workers from elsewhere in the EU and a modest, though much remarked, flow of economic migrants and asylum-seekers from the third world.

[Box 2: "Unemployment dynamics" about here]
[Figure 7 about here]

One important factor that helps to explain the altered labour market performance is (somewhat provocatively) illustrated in Figure 5, namely the sharp change in the trend of the relative supply price of labour in Ireland from 1986. The data here, based on average hourly earnings in industry in Ireland as compared with its main trading partners, need to be treated with caution: the series shown relates only to industry and is not adjusted for important shifts in age, skill, and sub-sectoral composition.[18] Nevertheless, partial indications for other sectors suggest that the overall trends shown do not mislead. The rapid increase in relative wages up to the mid-1980s was interrupted and may have been reversed.[19] Wage restraint has been a hallmark of the recovery. This is partly attributable to the high levels of unemployment that had been reached, partly to union restraint exercised in the process of centralized pay agreements (associated with tax reductions) and partly, perhaps, to reduced union power in much of the economy.

3.1 The role of corporatism

One helpful way of thinking about the distinctive Irish industrial relations and wage bargaining institutional arrangements is to recognize how sharply they have diverged in the past two decades from those in Britain. Both economies have recovered from severe and protracted episodes of mass unemployment, but they have chosen dramatically different routes for getting there. In Britain the power of the (trade or labour) unions was undermined in the 1980s by confrontations with government such as that which crushed the mineworkers' strike in 1984 and subsequent legislative changes. But in Ireland there was no explicit government agenda to curb union power; on the contrary, the role of unions was greatly strengthened by the revival and deepening from 1987 of a centralized bargaining process that went beyond wages to cover taxation and other aspects of economic policy.

To be sure, the disastrous labour market trends of the 1980s had hit the Irish trade union movement very hard. Union membership, which had been growing rapidly from the 1960s, peaked in 1980 and declined steadily until the 1990s. Union density declined even more rapidly and did not recover in the 1990s, as most of the new jobs creating in

the booming economy were in union-free workplaces (Figure 8). It is easy to see why the unions would have been anxious to bolster their power through corporatist institutions; less easy to see why the authorities would have wanted to revert to this 'partnership approach' to wage bargaining in the late 1980s, which had been abandoned as a failure just a few years before.

[Figure 8 about here]

It was against a historical background of poor industrial relations that centralized wage bargaining had begun decades before with an attempt to achieve a more 'orderly' development of annual 'wage rounds', that is pay increases negotiated between employers and unions. Initially the central agreements were confined to the nitty-gritty of percentage pay increases, the treatment of lower paid workers, cost of living adjustments, and mechanisms for resolving disputes, with the government participating mainly as an employer. But in 1976 the government, influenced by the successful experience of countries like the Netherlands, Austria, Norway, and Sweden, sought an integrated pay agreement, linked to changes in social welfare benefits and accepted some responsibility for job creation in return for pay moderation. Implicitly, the goal was to move Ireland to the 'left' or centralized end of the inverted U-shaped curve explaining excess wage inflation as a function of the degree of centralization in wage bargaining (Calmfors and Driffill, 1988). In contrast, Mrs Thatcher was soon to move Britain to the right.

But the 1979 'National Understanding for Economic and Social Development', negotiated against a backdrop of disastrous industrial strife, embodied the government's expansionist approach and significant wage concessions. While this agreement achieved a reduction in the level of strikes, a second agreement collapsed in 1982 and there followed a five-year period of decentralized collective bargaining (Durkan, 1992, Hardiman, 2000).

It was not until 1987, at the depth of the crisis, that a new centralized agreement was negotiated. This was in very altered circumstances, with much-weakened unions and a widespread consensus that generalized belt-tightening was needed to stem the economic decline. This agreement was followed by four others, negotiated over successive 3-4 year horizons extending from 1988 to 2003, each exceeding the previous in its ambition and scope. The range of objectives now extended far beyond the basic goal of promoting industrial peace and keeping the economy competitive to objectives like 'bringing about a fairer and more inclusive Ireland' and 'promoting an entrepreneurial culture'.

3.2 Impact of centralized agreements

Admirers of the partnership approach, with its use of a broad tax-based incomes policy, give it much credit for contributing to the exceptional growth in employment by almost eliminating industrial disputes and moderating real wage growth.

Strikes

A comparison of the Irish and British industrial disputes records is instructive (Figure 9). The Irish strike rate was similar to the British in the 1970s, with a dramatic spike in 1979 related to a national postal strike. This concentrated minds on the need to promote industrial peace. The strike rate fell to a much lower level after the new wage bargaining system was launched in 1987 and during the 1990s strikes ceased to be a general problem. The UK experience was broadly similar, with a dramatic fall in strike activity after the 1984 miners' strike and a virtually zero rate in the 1990s. Thus the Irish and British records might be viewed as separate paths to the same destination.

[Figure 9 about here]

Employers welcomed the outbreak of industrial peace and the saving of time and energy at the level of the firm achieved by the centralisation and coordination of wage bargaining. It is interesting to note that the affiliates of US firms in Ireland thrived in a setting of centralised pay bargaining completely alien to their domestic industrial relations environment. Many now managed to combine the corporatist approach at the macro level with a union-free work place. Up until the early 1980s, most multinational corporations (MNCs) had accepted the presence of unions as a matter of course; that this stopped being the convention is another reflection of the weakness of unions, and of the unemployment situation, in the mid-1980s.

Of course, the centralized route relies on continuous effort to maintain the consensus. Memories of the bad times fade, and there is already some indication in the last few years of an up-tick in Irish trade union militancy. Starting in 1999, there have been several disruptive strikes, mostly in the public sector or state-owned industries. This underscores the fact that the less confrontational Irish approach to the industrial strife of the 1970s and 1980s did not dislodge the trade union movement from a central role in pay bargaining or reduce its legal prerogatives.

Real wages and competitiveness

Several authors have analyzed why the upward relative trend of Irish wages was halted in 1986 but the underlying factors have proved resistant to an agreed econometric explanation. Much of the short-term fluctuation in the relative position is attributable to autonomous exchange rate changes involving sterling and the US dollar. Indeed, once these are allowed for, it is hard to identify a statistically significant role for the domestic unemployment rate, let alone the pay bargaining regime (Curtis and FitzGerald, 1996; Walsh, 2000). But exchange rate movements are implausible as an underlying cause of the sustained reversal of trend. How much of this should be attributed to the new pay negotiation environment? Despite the inconclusive econometric results, most observers regard the coincidence of timing of the reversal of the deteriorating trend in competitiveness with the new approach to pay bargaining as suggestive that the latter did pay dividends.

A key feature of the agreements was the lowering of the burden of taxation on employees; this was held to be crucial to the moderation of nominal wage claims.

Indeed, crudely plotting the overall share of taxation in GNP (Figure 3) against the wage competitiveness measure of Figure 5 produces a temptingly close fit.[20] Thus the reductions in tax rates, already discussed above, were an implicit part of the negotiation of each agreement, with government promising income tax 'concessions' in return for pay moderation. The average personal income tax and social security rate fell from 28% in the late 1980s to 24% in the late 1990s, despite the rise in real incomes. As well as the rapidly falling top marginal tax rates, mentioned earlier, income tax thresholds were raised sharply in real terms, taking more and more of the lower-paid out of the income tax net.

Of course, this was a somewhat Faustian bargain in that the process of lowering tax rates had a natural limit influenced by public perceptions of the adequacy of the provision of public services, and the time would eventually come when the government would have nothing more to offer in this dimension to buy wage moderation. Indeed, targeted improvements to public services were also part of each of the pay bargains.

Was there a price paid in terms of inequality? Naïve calculations suggest a huge increase in the share of profits in GDP, but for reasons discussed in the next section relating to the interpretation of the profits of multinational corporations, it is hard to be precise about the extent to which wage restraint really did shift relative factor shares.[21] Certainly the boom has brought a large reduction in absolute income poverty, and in non-monetary measures of deprivation, but there has been no clear trend in relative poverty or in inequality (Nolan, O'Connell and Whelan, 2001).

By 1998, there was considerable drift in actual private sector wage rates above what was agreed in the national agreements. The era of wage restraint seemed nearing its end. Fortuitously though, the weakness of the euro 1999-2002 helped keep Irish labour competitive despite accelerating nominal wage increases (Figure 5).

3.3 Structural rigidities

Conventional wisdom (repeated in many reports of the OECD and the European Commission) has it that the poor labour market performance of the continental European economies may be partly blamed on rigidities and structural defects in their labour markets. Specifically, it is believed that the interaction of the tax and benefit systems creates serious disincentives to offering and accepting employment. It is thus worth examining whether, aside from the lower tax rates, policy changes of the type advocated by the OECD played a significant role in the transformation of the Irish labour market during the 1990s.

The simplest summary of the impact of the benefit system on work incentives is the replacement ratio, the proportion of the net-of-tax income that is replaced by unemployment benefits in various situations. The extensive evidence on this topic compiled by the OECD shows that during the 1970s the relative generosity of Irish benefits increased from a low initial level, reached a plateau in the mid-1980s, and

declined gently thereafter. It also shows that Ireland is close to the OECD average on this index, above countries like the United States but significantly below the Netherlands and the Scandinavian countries (OECD, 1998). There was no radical reform of the Irish welfare system during the 1990s to which the dramatic improvement of the labour market can be attributed.

But the interactions between social welfare benefits and net-of-tax earnings from employment are complex and not fully captured by the replacement ratio. Some subtle changes were made to the structure of the Irish entitlements system that increased the incentives to take paid employment.[22] Still, these were relatively minor and occurred after the unemployment rate had begun to fall rapidly.

Others point to the carrot and stick approach taken to encourage job search and participation in education and training programmes. OECD data reveal that Ireland moved well up the league table on spending on such 'active labour market policies' between 1985 and 1997 - from 14% of average industrial earnings per person unemployed in 1985 to 29% in 1997, when only the Netherlands and the Scandinavian countries were higher. This level of spending has proved controversial, and though there is some microeconometric evidence to suggest that the increased emphasis on 'back to work' measures did help a little in improving the functioning of the labour market in the 1990s, its role should not be exaggerated (Martin, 2000).

The disincentive effects that have been uncovered appear to be small compared to those reported in the international literature – elasticities of duration with respect to benefits of only 0.01 – and the largest effects are reported among relatively advantaged unemployed groups and not the long term unemployed who constitute such a large proportion of the core unemployment problem in Europe (Layte and Callan, 2001). It is all the more remarkable, then, that the long-term unemployment rate was even more responsive than the overall rate to the employment boom, falling from almost 11 per cent in the late 1980s to just over 1 per cent in 2001. Some but not much of this is due to reassigning chronic unemployed to other categories, including work on special ('community employment') schemes.

3.4 Where did all the jobs come from?

During the dark days of the long 1980s pessimists would raise the seemingly unanswerable question: Where will all the jobs needed to achieve full employment come from? As we noted, the lack of a convincing *ex ante* answer to this question was used to advocate a major expansion of public sector employment. In the event, it was *after* the emphasis on public sector employment was abandoned that jobs were generated at an unprecedented rate. Table 4 shows how the employment gain was distributed across sectors.

[Table 4 about here]

The predominance of 'market services' as a provider of new jobs is striking. This heterogeneous category ranges from financial services (banks, insurance companies, etc), legal services, accountancy firms, to hotels, catering, restaurants, pubs, and so on. It includes employment in what might be regarded as 'economic base' activities (such as tourism and internationally traded financial services) as well as 'induced' activities (such as local commercial services). Employment in the publicly financed health and educational services also increased quite rapidly, but the numbers in core public administration were contained.

Export-driven manufacturing has been a particular strength, with the numbers employed growing against the trend of the OECD countries generally. Most of this expansion occurred in newer sectors such as electronics, pharmaceuticals, and medical instrumentation where foreign-owned firms account for over 90 per cent of output, (the peculiarities of these sectors are discussed in Section 4, below). Employment in the traditional industrial sectors – clothing, textiles, furniture, utilities and so on – where established Irish firms predominate, was more or less static over the period. But by 2000 manufacturing as a whole accounted for only 18 per cent of total employment, of which foreign-owned firms contributed about half. Even if a generous allowance is made for the employment indirectly generated by these firms their contribution to total employment remains small, whatever about their wider contribution to the economy (to which we turn in the next section).

* * *

Ireland's high labor force elasticity is not unique, especially when the size and openness of the economy is recalled. High initial unemployment, an exceptional gap between Irish and UK unemployment rates, low initial participation rates, and a baby bulge entering the labour force endowed with high educational qualifications ensured that there would be no difficulty in filling a large number of newly created jobs.[23]

That these jobs were created owes something to the more cooperative approach between the 'social partners' than had been achieved at any time in the past. The key to this outbreak of harmony was the weakening of the trade union movement by the devastating job losses and soaring unemployment of the early 1980s. Faced with a dismal situation in the mid-1980s the government decided on a conciliatory approach rather than imitating the confrontational Thatcherite strategy. Various continental models as well as earlier experience at home influenced the new social partnership approach that achieved industrial peace as well as moderation in nominal and real wage claims in exchange for tax cuts, social welfare improvements, and a growing list of government commitments on other fronts.

The cuts in income tax rates detailed earlier helped moderate the rate of inflation in wage costs, improved the competitiveness of labour and created the conditions conducive for investment by home and foreign entrepreneurs. This led to the creation of employment on an unprecedented scale, as we have seen not only in the service sector, but also even in manufacturing sector, where foreign-owned firms led the way, and eventually – very

strongly – in the building industry as the boom matured. Some reduction in disincentives to employment arising from the social welfare-tax system, and an increased emphasis on active labour market measures, helped the labour market to function more smoothly, but these measures were secondary.

4 Output growth and productivity

Previous sections have, we hope, managed to explain and interpret much of the essence of the Irish economic miracle of the last 15 years without mentioning some of the most distinctive elements revealed by even a cursory examination of Irish economic statistics, namely the extremely high degree of trade openness, the high share of foreign-owned firms in manufacturing, and the high level and recent growth rate of apparent labour productivity.

All three of these characteristics are related. A very high proportion of Irish trade (over 90 per cent of manufacturing exports, almost 80 per cent of all exports) reflects the output of foreign-owned manufacturing enterprises. And the level and growth rate of productivity has been much higher in sectors dominated by these firms. This is not, as some skeptics have believed, a mirage: the numbers are correctly recorded. But, although productivity has been high and the role of foreign firms important, a simplistic reading of the numbers can greatly overstate their contribution to the Irish boom. In this section we explain why this is so, thereby resolving one of the puzzles of the Irish story: how such rapid measured productivity and aggregate output growth could have been achieved during the 1990s.

4.1 The contribution of MNC production to trade and productivity

Ireland was recently rated first in the world in *Foreign Policy* magazine's globalization ranking. One aspect is the ratio of trade (exports plus imports) to GDP, which in 2000 is 173 per cent, a figure approached only by Singapore.[24] This particular county comparison alerts us to the near-entrepôt character of a segment of the MNC-segment of manufacturing in Ireland. Probing deeper, we find that a handful of sub-sectors, employing just a small fraction of the manufacturing workforce – and much less of total employment – accounts for a very large share not only of economy-wide exports but also of imports, output, and profits, and makes a disproportionate contribution to measured aggregate productivity.[25]

To take the most extreme case identified in the official statistics, just two dozen enterprises manufacturing goods classified under NACE[26] code 2414 ("Other organic basic chemicals"), and employing 4800 workers, or just 0.3% of economy-wide employment, produced in 1999 over 18% of the economy's total exports, a sum equivalent to 14% of GDP. Even after subtracting the very substantial import component, the value added of this 4-digit sub-sector that produces various pharmaceutical-related chemicals accounted for 8½% of GDP. But what are we to make of a sector where the share of labour net output is as low as 1.7%, and where net output per employee has been as high as $2½ million (the 1998 figure)?

Several other sectors also display a strikingly low labour share. Box 3 provides particulars about some other extreme cases. It is not hard to figure out what is going on when we see the sectors involved. (The "other food products" sector is understood to be dominated by a few large soft-drink concentrate producers; "reproduction of recorded media" includes the manufacture of software packages such as Microsoft Windows.) It is not that these are capital-intensive sectors – all are estimated to have annual real returns on capital invested in excess of 100%.[27] Instead, these are all sectors characterized by highly valuable patented products. Most of the R&D that went into producing these products was conducted in affiliates of these enterprises in other countries, mainly the US. Much of the profits, however, are located in Ireland, a natural consequence of the low corporate profits tax rate that prevailed there for such business, one way or another, for the past half-century. Until 1979 the major concession came in the form of exemption of profits derived from exports from corporation and personal income tax. Thereafter, in order to come into compliance with European Union (EU) requirements of non-discrimination (as between production for the home market and that for exports to other EU states), the exemption was replaced by a preferential 10% corporation tax rate applied to manufacturing and certain internationally traded services. Recently, this concession came under pressure from European Union partner countries, leading to a decision to unify the corporation tax rate economy-wide at 12½ per cent from 2003.

Ireland's long-standing and enthusiastic encouragement of inward FDI includes not only low corporation profit tax rates, but also an element of grant assistance, freedom to repatriate profits, and an energetic industrial promotion agency. But it is notable that a disproportionate share of the firms attracted by this package has come from sectors well placed to take advantage of legitimate tax management within the standard transfer pricing rules.

In effect, since Ireland has by far the lowest standard rate of corporation tax on manufacturing among the advanced economies, these transactions are often booked at transfer prices that have the effect of locating a very high fraction of the enterprise's global profits in Ireland. The pricing of such specific inputs and outputs, many of them traded with affiliates, though governed by rules established by tax authorities, is somewhat arbitrary (European Commission, 2001).[28] What is clear is that, in many cases, the huge profits recorded by the Irish affiliates have very little to do with the manufacturing activities being conducted in Ireland. The low labour shares in value added should not be interpreted as truly implying high economic productivity of the labour and physical capital employed by the enterprises in Ireland.

This is a caveat whose applicability goes far beyond the analysis of sectoral production statistics. The numbers involved are large and have been growing relative to the total economy, so they affect growth rates as well as levels. As one rough indication of the scale of the problem, aggregate GDP in 1999 would be more than 15 per cent lower if the output of just the four sectors shown in Box 3 was re-priced at "shadow" prices chosen to make the re-estimated apparent labour productivity equal to the mean for corresponding sectors in other European countries. At these shadow prices, aggregate exports would be

27 per cent lower and aggregate industrial production 52 per cent lower. The growth rate of GDP would also be lower, as discussed below.

Obviously that is a very crude adjustment to the data. For one thing, it does not cover all of the industrial sectors to which the issue is relevant. On the other hand, it may err on the conservative side by making no allowance for any special attributes of these sectors in Ireland, such as their recent vintage and favourable product mix. Because of the scale and complexity of this transfer-pricing issue, it bedevils aggregate economic analysis. Cross-national analyses of output, productivity, profit shares, and geographical trade patterns, for example, are strongly influenced by how transfer pricing is treated.[29] Unfortunately, this aspect is all too often neglected.

[Box 3: "Entrepôt" about here]

Even after adjustments such as the one offered above, the contribution of MNCs to the economy is very large. For example, just under 50 per cent of manufacturing employment is in foreign-owned firms, and, even at the low tax rate, corporation tax revenue from manufacturing and internationally traded service companies yields almost 7 per cent of total tax revenue. Though direct industrial and service linkages are relatively modest (input-output based calculations suggest that each manufacturing job is associated with one other job in the economy delivering inputs to the manufacturer, O'Malley 1995), it is generally accepted that these firms have, over the years, brought management practices and skills which have percolated widely throughout the economy.
It may also be that reliance on tax incentives, which resulted in self-selection by increasing returns firms dependent not on physical but on intangible knowledge capital, helped to tilt the sectoral composition of Irish manufacturing towards higher growth. This of course was also a goal of the industrial promotion agencies, which claim success in picking wining sectors. Whatever the cause, the indications are that Ireland was already capturing an increased share of the stock of US manufacturing FDI into Europe from the late 1970s (Figure 10).[30]

[Figure 10 about here (FDI)]

Explicit mention should also be made of the International Financial Service Centre (IFSC) in Dublin. In this rejuvenated and rebuilt zone of what had been a disused part of the capital's inner city docklands, firms offering approved international financial services to non-residents of Ireland enjoyed broadly similar corporation tax concessions, together with relief from property taxes from 1988 until, under pressure from the European Commission, the concessions were withdrawn for new start-ups after 1999. By 2001, the official figure for employment creation at the IFSC had risen to 11,000, which corresponds to a quarter of total financial sector employment in Ireland. There could, however, be some debate about the extent to which this employment is truly additional, as Irish banks have moved substantial parts of their operations physically into the IFSC, in order to be able to claim the low rate of tax on their non-resident business. On the other hand, the Centre's boast of considerable complementary factor employment outside the IFSC itself is not an empty one.

4.2 Productivity and real income growth

Recognizing then the need for caution in employing unadjusted output figures for productivity analysis, and also that data problems have hampered the development of a solid body of knowledge in the field, we still need to provide a balanced summary of aggregate income and productivity growth during the boom years.

[Figures 12 and 13 about here]

Figure 12 shows three different measures of average living standards during the past 25 years – per capita Gross National Product, Gross National Disposable Income (GNDI), and Consumption. Figure 13 shows three apparent productivity measures (three measures of output divided by relevant employment). Each of the six series tells a distinct part of the story. The use of GNP rather than GDP in Figure 12 is important: the difference between them has long been greater in Ireland than in any other industrial country. For most countries it makes little difference which measure is used and GDP is the market leader. For Ireland, unadjusted GDP is arguably too misleading to be used in most contexts, and one or other of the adjusted series is preferable depending on the context of interest. The level of GDP has been consistently higher than GNP because of the large net interest payments to foreign creditors (resulting from the size of government foreign debt especially in the 1980s) and because of the large share in GDP – reaching as high as 24 per cent in 2000, if the IFSC is included, 20 per cent for manufacturing alone – accounted for by the profits of foreign-owned firms operating in Ireland.[31] Growth of GDP has been faster than GNP – by 1¼ percentage points on average in the late 1990s.

The second living standards measure, GNDI adjusted for terms of trade, differs from GNP by adding net current transfers from abroad, mainly coming from the structural funds of the European Union, as well as by adjusting for terms of trade effects which have also tended to be adverse in recent years.[32],[33]

Since 1985 growth in per capita personal consumption was much more moderate than in aggregate income, as the government absorbed much of the difference and applied it to debt reduction – an approach that tended at first to conceal the extent of the boom from the general public.

For productivity comparisons we show in Figure 13, in addition to calculations based on GDP per person employed, an adjusted figure excluding all MNC profits.[34] This is even cruder than the adjustment made in Box 3, but is available for a longer time period. It is clearly conceptually an over-adjustment, but not a large one, and is preferable to simply using GNP to correct for the transfer pricing problem because that does not allow for the complication of the rise and fall in net interest payments on government debt.

But the adjusted figures are less puzzling. For example, the level of adjusted GDP per head of population converges on EU and OECD averages, rather than overshooting. Growth in apparent labour productivity, as adjusted, is now within the range exhibited by

other countries and by Ireland in earlier periods. Nevertheless it has been sufficient, when applied to the rapidly increasing share of workers in the population, to generate the observed convergence in living standards.

To keep the story simple, we have said little about physical capital formation, as we do not see this as a central part of the story behind the boom. Although (for reasons by now evident) making credible calculations of total factor productivity is problematic, it would be very hard to argue that physical capital formation was a major growth driver. Indeed, having touched 30% of GDP in 1979,[35] gross domestic capital formation declined sharply, averaging only 17% of GDP during the recovery period 1986-95, much of the decline due to the shrinking importance of the public capital programme, which fell by four percentage points of GDP between 1981 and 1990, while the recovery in the second half of the 1990s was largely due to a resurgence of investment in housing – see Figure 11. (The ratios to GNP are, of course higher). Even in 1996-2000, the investment ratio was well below the figures recorded by the other rapidly expanding economies of the 1990s in the Far East. Furthermore, less than one-seventh of the total was attributable to manufacturing.

5. Lessons and conclusion

5.1 Was there a "secret ingredient"?

We have argued that the outstanding performance of the Irish economy in the past decade or so should be interpreted mainly as a delayed structural transformation as the proportion of the population at work outside agriculture and their productivity at last spurted towards the levels long achieved in other industrialized countries, and the productivity of the labour force remaining in agriculture rose. This interpretation implies that underlying institutional pre-conditions for reaching this frontier were in place but its achievement delayed by macroeconomic policy errors.

Journalistic commentators have sought to identify a single explanation – a secret ingredient in the hare's diet, one might say – a particular policy measure or development that was *the* key to a turnaround in Irish performance. The arguments of these authors are not without merit, but in our view none of the supposed ingredients stands scrutiny as the unique decisive factor, and as such an easy lesson to be applied elsewhere. The various ingredients fall into three categories. First are those that prove on examination to have been simmering away on the back burner for decades. These contributed to the improved performance over the long run and certainly formed an important part of the underlying policy environment but did not change much during the period of turnaround, and so cannot explain the "miracle" of the last decade. Second are ingredients that, though useful, fail in quantitative terms: their direct contribution cannot plausibly account for a major part of the gain in output – though they may have played an important catalytic role at the moment of turnaround. Third are elements already encompassed in our catch-up characterization, as such we see them not as special ingredients, but as the removal of obstacles.

The unavoidably mundane conclusion is that all of these ingredients have played their part, and thus that improved economic performance requires a strong policy environment on a broad front.

5.2 Slowly simmering ingredients

The much-vaunted quality of Irish education, contributing to the employability of the young workforce is a key slow-burner. An acceleration in the growth of average educational attainment in the workforce dates to the introduction in 1966 of universal access to secondary education free of fees. There is no significant inflection point in the 1980s. Applying the estimated wage gradient to educational attainment suggests that this factor contributed almost one percentage point to the growth of GNP in the 1980s and 1990s. [36]

A second factor that has also been steadily present from the early 1970s is the improvement in *age dependency* already touched on above. Almost one third of the population was aged under15 in 1971. As the birth rate belatedly declined towards the European average this proportion began to fall in the 1980s to about 21 per cent in 2001, while the share of the elderly in the population remained unchanged (Figure 6).

Lower age dependency eased pressures on the public finances, while the demographic momentum attributable to the high birth rate of the 1970s contributed to the elastic labour supply. (Of course these demographic trends were not wholly exogenous to the improved employment conditions, as witness the reversal of net emigration. Even the fall in the birth rate could be attributed in part to the rise in women's labour force participation.)

We have already explained that *tax concessions* for exporting manufacturers have become less rather than more generous since the late 1970s. While their attractiveness was limited by unfavourable fiscal and other developments until the late 1980s, their continued liberality is obviously an important but slowly simmering element of the environment.

Other contributors to economic growth, identified in cross-country studies, include the effectiveness of deep *underlying institutions* such as those related to rule of law, quality of public administration, and the depth and efficiency of the financial system. By comparison with the condition observed in many less developed countries, the essentials in this regard were arguably present in Ireland from an early date. For instance, Ireland scores highly on most of the subjective indicators of institutional quality employed by growth researchers. As another example, the underlying soundness of the financial system (seen in the literature as a key to sustained growth) is reflected in the fact that, unlike so many other countries, and despite the severity of the recession, Ireland escaped an extensive banking crisis in the 1970s or 1980s (Honohan and Kelly, 1997). An alternative crude, and somewhat quixotic, indicator of the basic efficiency of the public services was its *ability* to collect well over 40 per cent of GNP in tax revenue. Of course, some long-standing institutions had become dysfunctional or sclerotic, and there have been many important institutional changes during the past two decades; our claim here is the limited one that Ireland of the early 1970s already enjoyed to a reasonable extent

what are typically regarded in the growth literature as the underlying institutional essentials. (Obvious exceptions were whatever flaws in political institutions of the 1970s that contributed to the policy errors that we have discussed).

Finally, under this heading, can be mentioned the catchall heading of *cultural factors*, for measuring the contribution of which we have no good methodology. The familiarity to American investors of the language and legal and administrative systems, as well as Ireland's Janus-like Euro-American orientation may be cited as attractions. But if culture was important, it must have been in its ability to react to changed circumstances. The interaction of culturally-determined aptitudes with changing technology is one possibility that has already been mentioned in the introduction. If working with computer-based or communications-intensive technology is a culturally-determined comparative advantage of the Irish, then this may help explain the speedy convergence that was experienced once other barriers were removed. It might also be related to the findings of recent happiness surveys, where Ireland tends to score very highly – top of the list, for example in a 1998 survey of workers from 32 countries. Is this cause, or effect, of the economic boom? Not evidently the latter, as attempts to explain happiness and job satisfaction with objective economic conditions still leave Ireland with the largest positive residual (Blanchflower and Oswald, 2000).

5.3 Catalytic factors

Among the suggested ingredients whose timing is correct, and which thus no doubt contributed to the turnaround and perhaps conveyed a catalytic effect beyond their direct impact on growth, are the flow of EU structural funds, the devaluations of 1986 and 1993, and revitalized promotion of tourism and inward FDI (including offshore financial services). Each of these elements also could have a flavour of "beggar-thy-neighbour" about them, making it is especially important to know whether they could have been the decisive factors.

Most often cited by external observers is the expansion in *EU structural funds* from 1988. As mentioned above, these came at an excellent time. They helped fund a resumption of public capital spending which had been pared down as part of the fiscal adjustment. After the austerity of the 1980s, a backlog of socially productive investment projects was available to absorb the funds, and a further benefit of the EU's role was to ensure that they were deployed with comparatively little deadweight (Honohan, 1997, Barry et al. 2001). They were counter-cyclical too, insulating Ireland from the Gulf War recession. The inflow of funds (which still continues, though now running much below the peak) had a demand effect as well as boosting the ability of the infrastructure to sustain the greatly increased level of economic activity. These very substantial transfers are estimated to have lifted the *level* of Irish GDP on a sustained basis by as much as 4%. While not trivial, this boost is dwarfed by the exceptional *growth* rates recorded after 1995.[37]

Unlike that of 1993, the *devaluation* of 1986 was not simply defensive. Its role has also been discussed above. Here again the direct impact can only have been a transitory one,

though by generating external demand at a time when the fiscal correction was restoring confidence, there may have been a catalytic effect going beyond the direct demand and competitiveness contribution.

International *tourism* and travel receipts did start to accelerate after 1986, and showed a sustained growth of over 8 per cent per annum to the end of the century, a development generally attributed to airline deregulation,[38] to measures taken to expand capacity and to a revitalized promotional strategy, though improved price competitiveness can also explain much. Here too there has been a lasting and considerable effect, but total receipts come to little more than 4 per cent of GNP.

The role of inward *FDI promotion* has also been discussed above. The major new development was in offshore financial services; the claims of some of the participants in industrial promotion that strategy was decisively reformed at that time on a wider front lack convincing evidence: the indications are that the agencies have been effective and adaptive to changing circumstances throughout the past half century, as indicated by their long history of success in attracting a high share of US manufacturing FDI (Figure 11).

Absent from our list of catalysts is Ireland's commitment to the EU common currency project. As predicted interest rates converged to low German levels in the run-up to the single currency – removing the premium that had been over 5 per cent in the 1980s. This contributed to a consumption and property boom from 1997 on, but that was a relatively late development and not altogether welcome in its timing. Also missing from our list are radical overhauls of the social welfare system and the legal labour market framework. The social welfare was always relatively ungenerous by European standards, and the level of employment protection relatively low.

5.4 Popular explanations that are encompassed in our reading

Two dominant explanations of the recovery have been the corporatist social partnership and the lowering of tax rates, which we describe in an earlier section. If these were key ingredients, we prefer to see them as aspects of the removal-of-barriers hypothesis. They were part of the process that ensured that political economy and wage setting got back on a sustainable path.

As discussed, the importance of the *social partnership* from 1986 on cannot be dismissed. The partnership agreements did reflect a determination to set aside, for the time being, social class antagonism in favour of a joint effort to remove barriers to employment growth. But at the same time the key precondition for the adoption of these agreements was the widespread recognition that the crisis of the public finances must be resolved and that the key to unemployment reduction could not be found in fiscal expansion. This did require dismantling of encrusted attitudes and behavior on the shop floor, and likely also benefited from an erosion of wider institutional sclerosis (Mancur Olson, 1998); these might not have been achieved without the lengthy period of malaise in the early 1980s.

Likewise, the *tax rate reductions*, sometimes attributed to the partnership process, were evidently part-and-parcel of the fiscal normalization. Thus our preferred characterization embodies and encompasses these two important policy ingredients, which can be seen as aspects of the wider normalization.

Our conclusion is that there was no single magic ingredient. Many separate factors contributed. Given the already generally market-friendly and outward-looking orientation of long-standing structural policy, together with the emphasis on educational spending, removal of the barriers posed by the unsustainable trajectory of debt and taxation in the 1980s was enough. The initial gap in the employment-population ratio between Ireland and other countries meant that the room for catch-up was large. Some progress towards convergence was already evident in the 1960s, but in the 1990s the rate of catch-up accelerated dramatically as the upward trend of the tax burden was reversed and confidence restored in the management of the public finances, to a favourable conjuncture of external factors, and to a collective determination not to repeat the errors of the 1970s.

5.4 A lucky period for a regional economy

Amounting to only about 1 per cent of either Eurozone or US GDP, extremely open to trade and factor flows, and with a currency that has mostly been pegged to an external unit, Ireland has many of the characteristics of a relatively small region of a larger economy rather than those we associate with a sovereign country (Krugman, 1997). Viewed as such, its performance during the 1990s was unexceptional by American standards, albeit unmatched in Europe. If Ireland had been a US state, its population growth rate in the 1990s would have ranked 23 out of the 50 states – between New Hampshire and Mississippi. Confining attention to cities of one million or more in 1990, no fewer than nine US metropolitan areas grew faster than Greater Dublin in the 1990s. To be sure, there are no parallels among other European countries or metropolitan areas for the pace of economic and demographic growth recorded in Ireland in the 1990s. The percentage increase in employment in Ireland was almost 2.7 times that of the next best performing economy, the Netherlands, and four to five times those of Sweden, Norway, Denmark and Belgium. This paper does not attempt a comparative assessment of 'Eurosclerosis', but it is relevant to note that the natural increase in the labor force of other European countries is much lower than in Ireland.

Although our reading of the miracle is that it was essentially a deferred and telescoped process of bringing more of the population into a modern sector which was already close to the production frontier a quarter century ago, we do not deny that Ireland has been well-placed to benefit from shifting global technology. Already by the 1980s the country's comparative advantage (especially considering the skills and aptitudes of the labour force) and tax policy had disproportionately favored IT and pharmaceutical among manufacturing sectors: incumbency allowed Ireland to benefit disproportionately from the strong subsequent growth of MNC production in these sectors. Then again, a relatively young and rapidly growing English-speaking workforce with relatively high educational attainment was the ideal factor of production to be employed in rapidly

growing IT-using sectors ranging from software localization through computer-assisted call-centers (serving, for example, airline and hotel reservation systems) to more sophisticated financial services. Even worries about the carcinogenic potential of a depleted ozone layer has meant that Ireland's cloudy and damp climate no longer seemed as much of a barrier to the booming tourist sector in which indoor (bar-room) activities played their part. These factors help explain why net emigration did not just stop, but was reversed.

* * *

A lucky period then, for Ireland, but one during which policy makers and the social partners, shaken into realism by earlier disasters, seized the opportunities that were on offer with greater prudence, realism and restraint than before.

The hare did not win its race with the tortoise, and although much has been achieved, Ireland has not assumed economic leadership in any significant industrial sector? The exceptional growth spurt has come to an end, partly a self-correction as well as because of the global economic slow-down, and has left Ireland close to, but not yet at, the frontier in per capita income.

What remains to be seen is whether the improved performance on a broad front can be maintained in more difficult times and with most of the potential for catch-up exhausted. Given the altered expectations and the re-emerging pressures on current spending the task of demand management in the slow-down looks particularly challenging.

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Table 1: *Ireland's employment share and productivity relative to UK, 1973*

	Ireland	UK	Ireland As % of UK
Apparent Productivity (£ per head)			
GDP per person at work	2 380	2 642	90
Agricultural output per person at work	1 634	2 726	60
Non-agricultural output per person at work	2 605	2 640	99
GDP per head of population	856	1 173	73
Employment shares (%)			
Employment in agriculture as % total	23.2	3.0	780
Total employment as % population	36.0	44.4	81
Non-agricultural employment as % population	27.6	43.1	64

Source: Ireland: ESRI database; UK: Annual Abstract of Statistics, 1985 edition; OECD National Income Accounts. Note: "Agriculture" includes forestry and fisheries.

Table 2: *External conditions in the 1980s*

	UK GDP Growth % per annum	UK unemployment % Annual average change	US $ short interest rate[a] %
1981-84	1.8	1.4	12.0
1986-89	4.1	-1.2	7.6

[a]Nominal; US CPI inflation was about 1.2% higher in the earlier period. The average nominal appreciation of the US$ was 40% in the earlier period; compared with a depreciation of 24% in the later period.

Table 3: *Real annual growth of GDP components, 1973-2000*

	Consumption		Investment	Exports	Imports	GDP	GNP	GNDI adj for TOT	GDP adj for profit repat	Fiscal impulse
	Private	Government								
	A	B	C	D	E	F	G	H	J	K
1973	7.5	6.9	17.7	10.9	19.0	6.0	5.3	7.9	4.9	
1974	1.4	9.2	-7.3	0.7	-2.3	2.9	2.9	-1.2	3.6	
1975	-2.8	6.5	-5.1	7.2	-10.2	0.4	0.1	0.2	1.4	
1976	2.8	2.7	8.9	8.1	14.7	3.2	2.7	3.1	1.6	3.4
1977	6.8	2.0	5.1	14.0	13.3	6.0	5.3	6.4	6.2	-0.0
1978	9.0	8.2	18.2	12.3	15.7	7.9	7.0	8.5	6.7	2.5
1979	4.4	4.6	15.0	6.5	13.9	3.8	3.6	2.6	4.6	0.9
1980	0.4	7.1	-5.0	6.4	-4.5	2.0	1.8	-0.8	3.4	0.4
1981	1.7	0.3	7.2	2.0	1.7	2.4	1.9	0.3	2.3	-0.3
1982	-7.1	3.2	-3.3	5.5	-3.1	-0.1	-2.0	-0.9	0.5	-0.1
1983	0.9	-0.4	-9.3	10.5	4.7	-0.1	-0.9	0.9	-0.2	-2.9
1984	2.0	-0.7	-2.0	16.6	9.9	3.0	1.5	1.7	2.7	-0.9
1985	4.6	1.8	-7.4	6.6	3.2	2.3	1.3	2.4	1.5	0.7
1986	2.9	2.6	0.5	3.1	6.3	0.5	-0.2	2.3	0.6	1.6
1987	3.0	-4.8	-3.0	13.7	6.2	3.4	3.3	3.0	3.9	-2.3
1988	4.4	-5.0	-2.1	8.9	4.9	3.0	1.5	1.4	-0.3	-2.4
1989	6.2	-1.0	13.9	10.3	13.5	5.8	5.0	5.8	4.6	-0.6
1990	1.1	5.4	10.1	8.6	4.9	6.8	6.9	5.2	10.4	1.3
1991	1.8	2.8	-6.2	5.7	2.4	1.9	2.3	1.3	2.6	-1.9
1992	2.9	3.0	-1.8	13.9	8.2	3.3	2.3	0.7	1.2	1.1
1993	3.0	-0.4	-3.5	9.7	7.5	2.7	3.4	4.9	2.4	-2.1
1994	4.4	4.1	11.9	15.1	15.5	5.8	6.3	4.0	4.7	1.8
1995	4.4	3.0	12.8	19.9	16.4	10.0	8.4	6.4	6.9	-0.1
1996	6.3	3.2	16.5	12.2	12.5	7.8	7.4	8.1	8.0	0.0
1997	7.3	5.5	17.9	17.4	16.8	10.8	9.4	9.4	8.3	1.3
1998	7.3	5.5	16.5	21.4	25.8	8.6	7.9	7.5	6.2	0.6
1999	8.2	6.5	14.0	15.7	11.9	10.8	8.2	7.3	6.2	1.7
2000	9.9	5.4	7.0	17.8	16.6	11.5	10.4	7.5	8.3	-1.4
Memo: % share of GDP										
2000	49.0	12.2	23.6	94.8	80.7	100.0	84.2			

Notes: A. Personal expenditure on current goods and services; B. Expenditure by public authorities on current goods and services; C. Gross fixed capital formation; D,E. Exports and imports of goods and services; H Gross national disposable income adjusted for changes in the terms of international trade; J. Real GDP reduced by the ratio of foreign profit outflows to GDP in nominal terms; K. Model-based estimate of the change in fiscal deficit resulting from discretionary policy changes relative to the previous year. Sources: A-J: Central Statistics Office, *National Income and Expenditure 2000*, ESRI Macroeconomic database; K: Kearney et al. (2000), Duffy et al. (2001).

Table 4: *Sectoral employment growth, 1985-2000*

Sector		Share of employment in 1985	Annual average growth rate of employment %	Share of total increase in employment %	Share of employment in 2000 %
Agriculture		15.1	-1.8	-7.3	7.9
Building and construction		6.6	5.4	16.4	10.2
Manufacturing industries		19.8	2.4	15.9	18.0
Of which:	Traditional	12.5	0.2	0.6	9.0
	Modern, high-tech[a]	7.3	4.6	13.1	9.0
Market services		36.9	3.8	54.1	42.4
Non-market services		21.4	2.9	22.4	21.5
Total		100	2.7	100	100

[a] Approximated by the chemicals and electronics sub-sectors.

Figures

Figure 1: Non-agricultural employment as a percentage of total population, 1961-2001

Source: CSO; ESRI Database

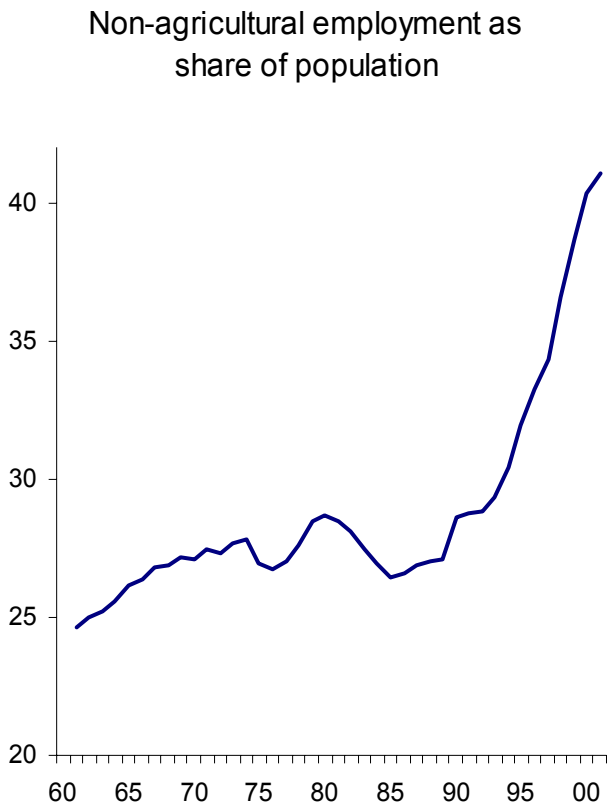


Figure 2: Internal and external balance 1961-2001

Source: CSO National Income and Expenditure, 2000; ESRI Database; Central Bank of Ireland estimate for 2001.
(Loops.xls)

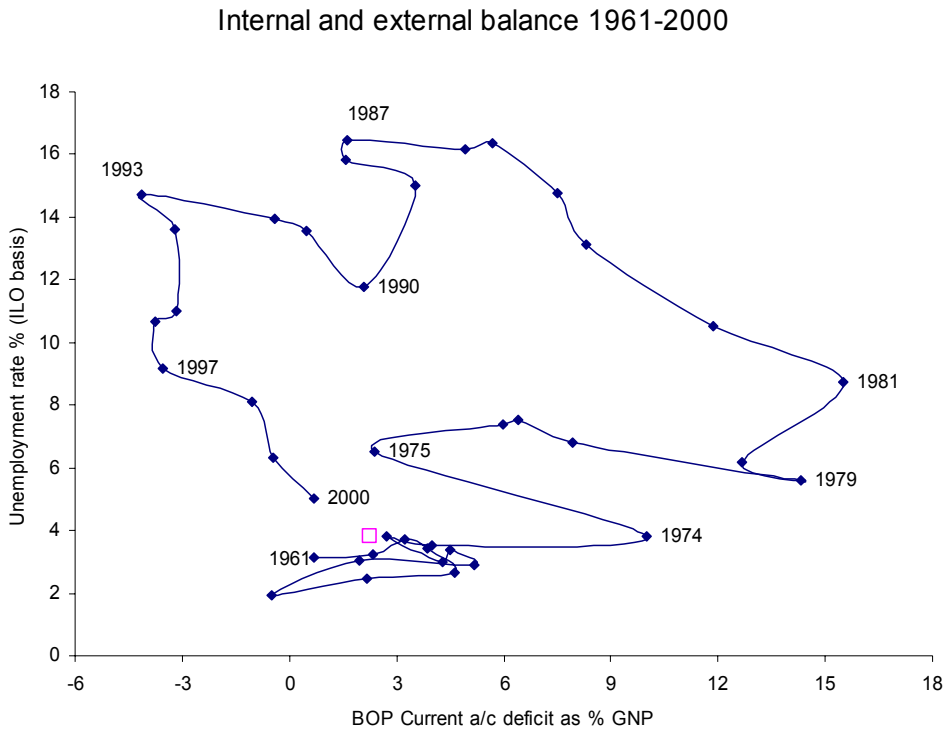
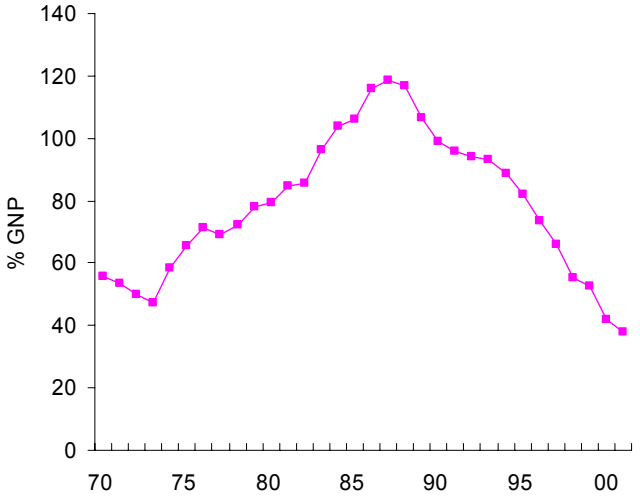


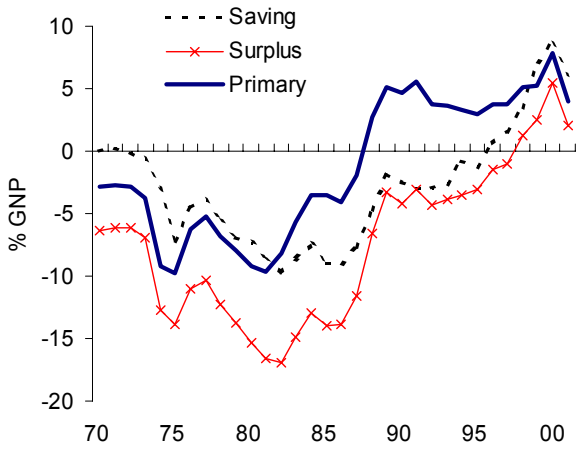
Figure 3: Budgetary Aggregates.

Source: Authors' calculations based on CSO National Income and Expenditure, 2000; ESRI Database; Department of Finance: Budget 2002.

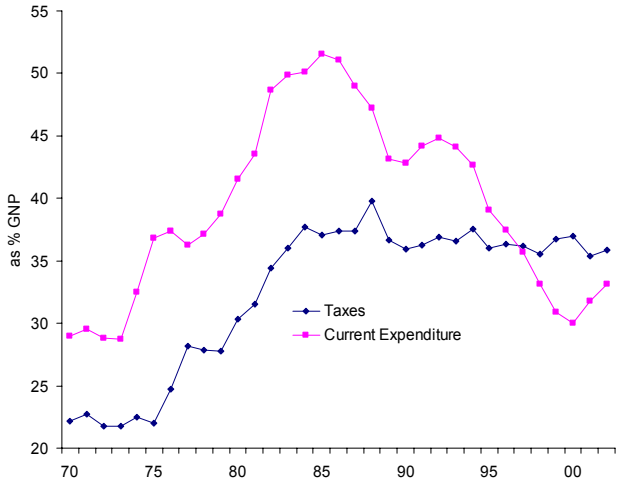
Government Debt



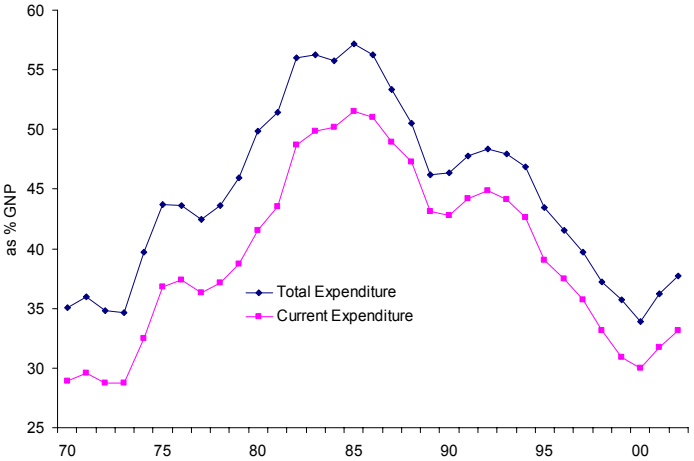
Government surplus 1970-2001



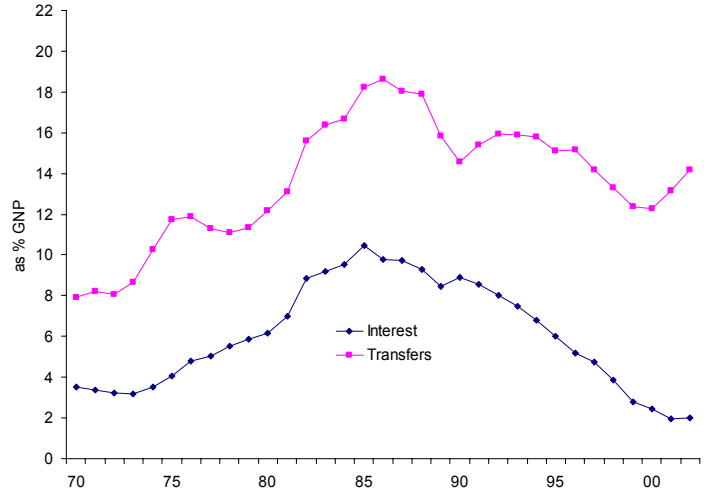
Taxes and Current Expenditure



Public Expenditure



Interest and Transfers



Wages and Capital Spending

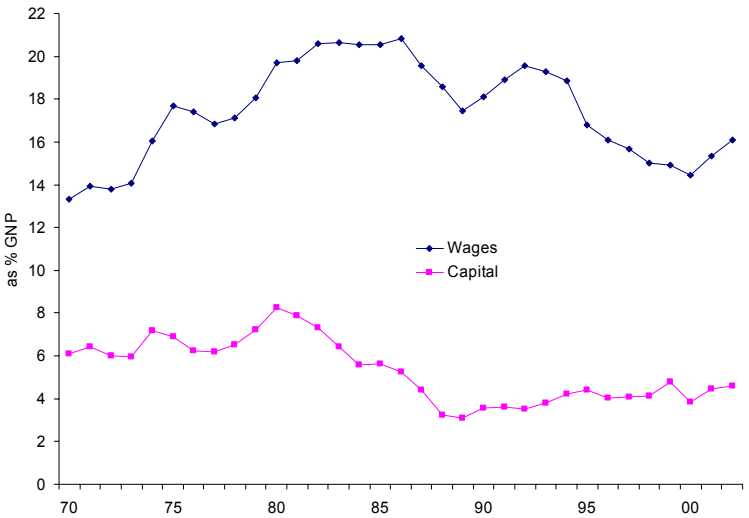


Figure 4. Real Interest Rates 1983-2001
Quarterly average money market rates deflated by next quarter's change in CPI.
Source: Authors' calculations based on Central Bank of Ireland Quarterly Bulletins
(emu\Exint.xls)

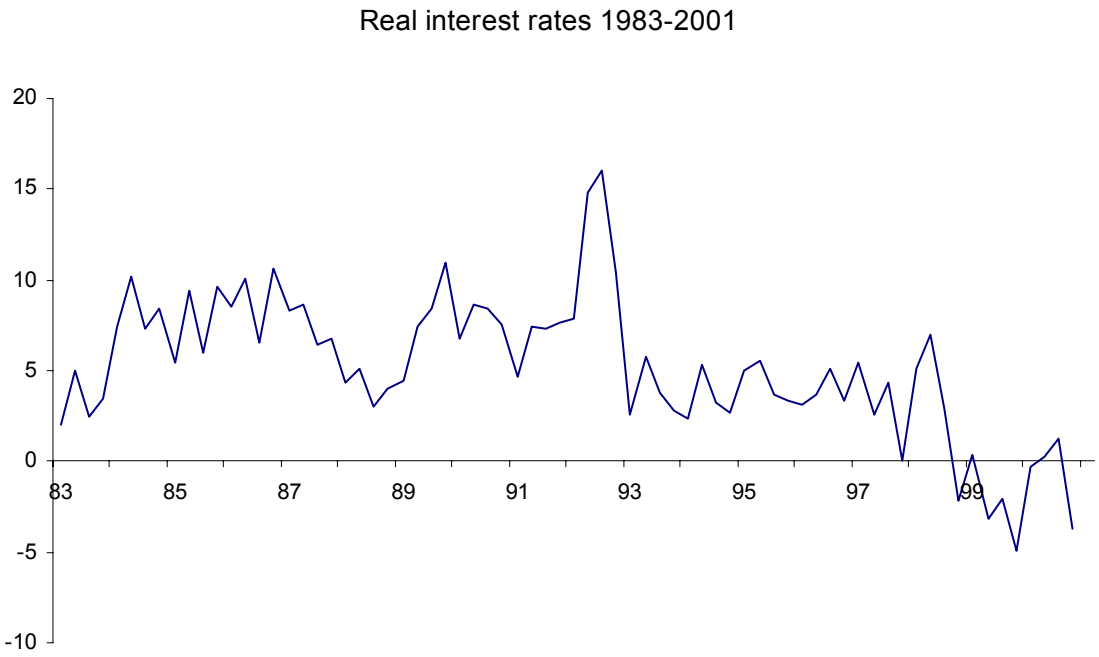


Figure 5: Wage competitiveness and total employment 1975-2000

"Wage competitiveness" is an average of the wage rate (hourly earnings) in the main trading partners divided by the same for Ireland, all taken to a common currency and expressed as a percentage of the 1975-87 linear trend projected. The higher the value the more competitive is Ireland. Total employment in thousands (Source: Authors' calculations based on Department of Finance, *Economic Review and Outlook*)
(production aggregates.xls)

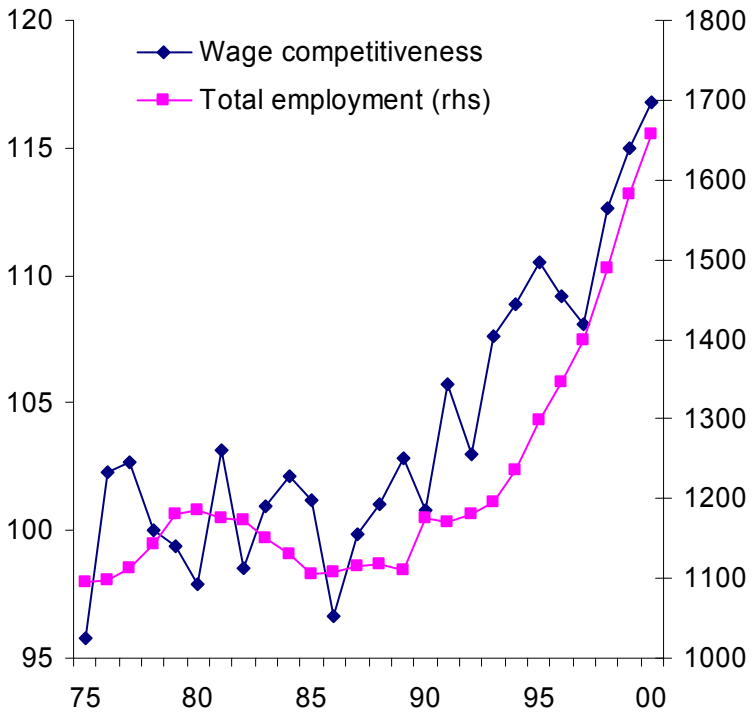
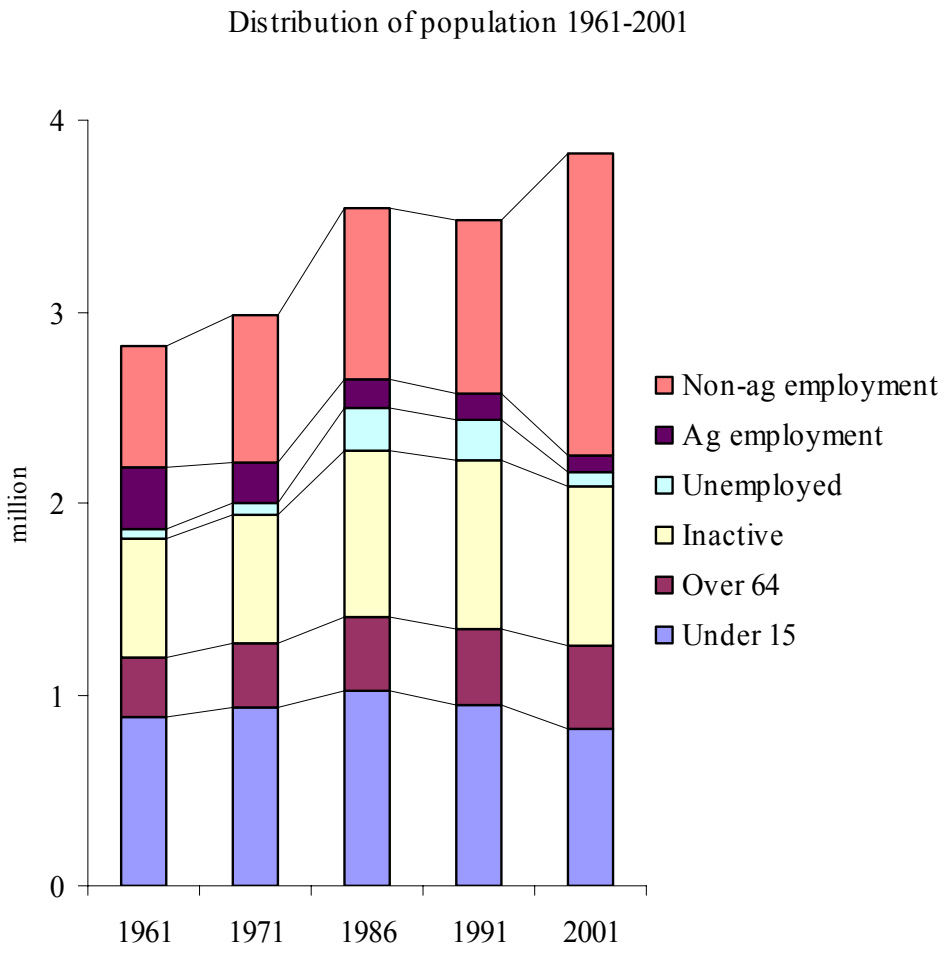
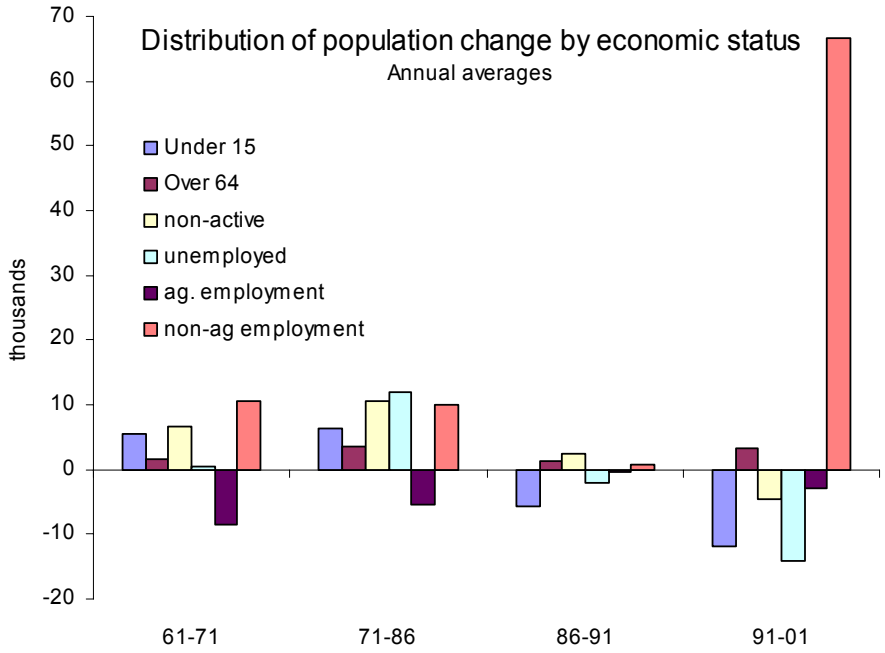


Figure 6: Population: employment and age, 1961-2001.
Source: Central Statistics Office
employment share.xls

(a)



(b)


Distribution of population change by economic status
Annual averages
thousands
70
60
50
40
30
20
10
0
-10
-20
Under 15
Over 64
non-active
unemployed
ag. employment
non-ag employment
61-71
71-86
86-91
91-01

(c)

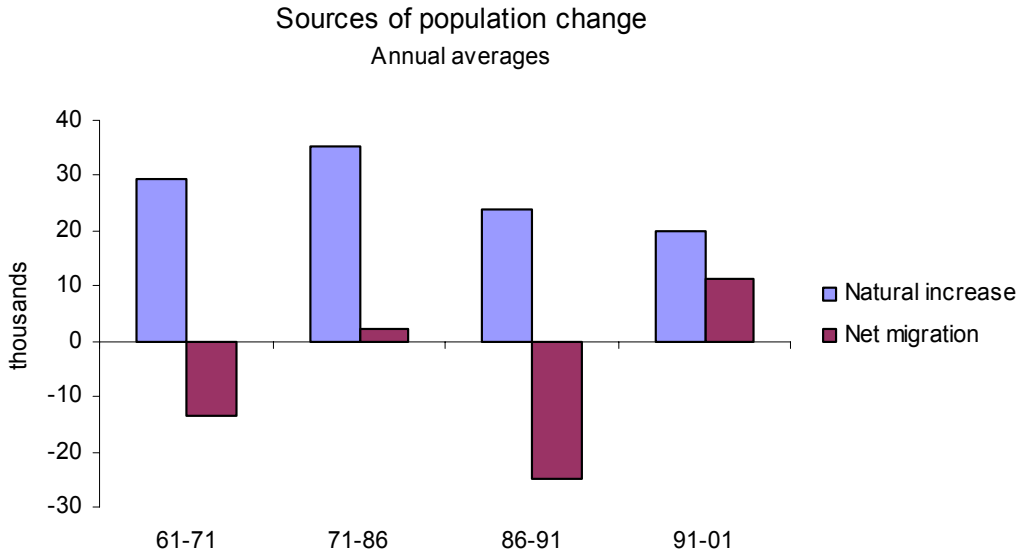

Sources of population change
Annual averages
thousands
40
30
20
10
0
-10
-20
-30
Natural increase
Net migration
61-71
71-86
86-91
91-01

Figure 7: Unemployment rate: Ireland and UK, 1961-2001.

Source: ESRI Database (based on ILO concept)
Loops.xls

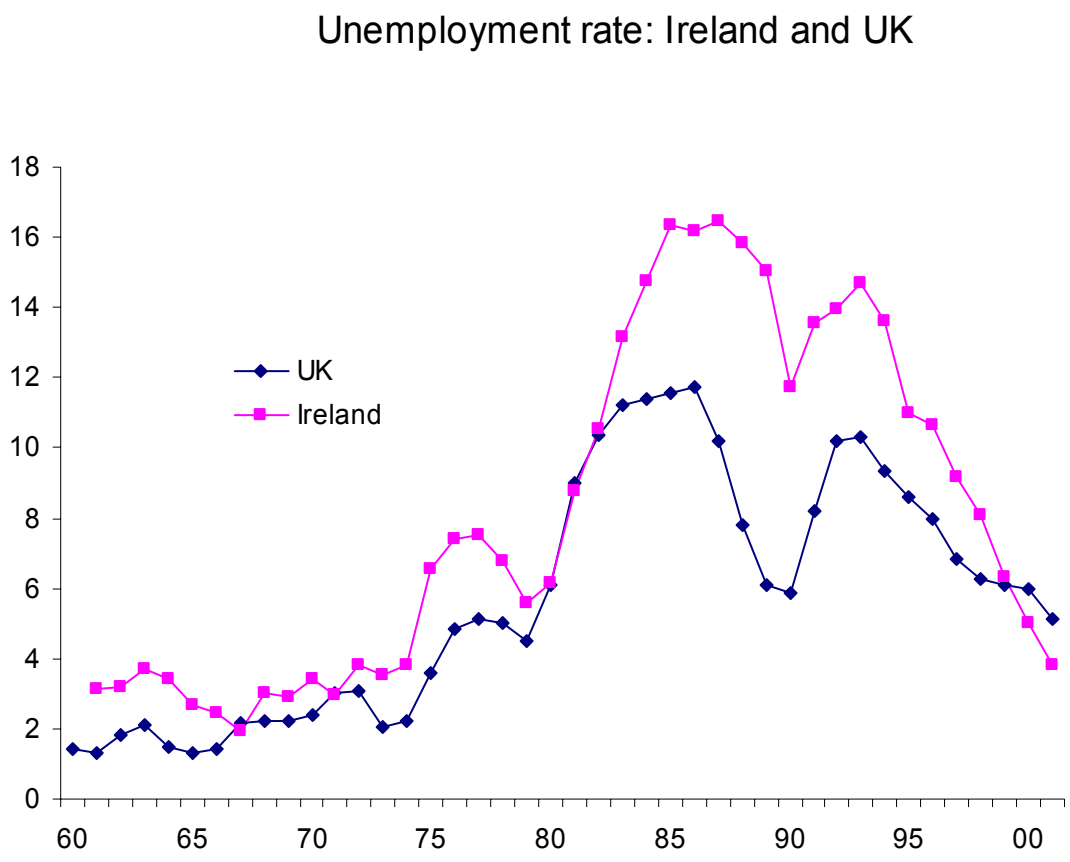


Figure 8: Membership of trade unions as a percentage of the total labour force.

Source: ESRI Database.
Unionization.doc (ESRI Table 70)

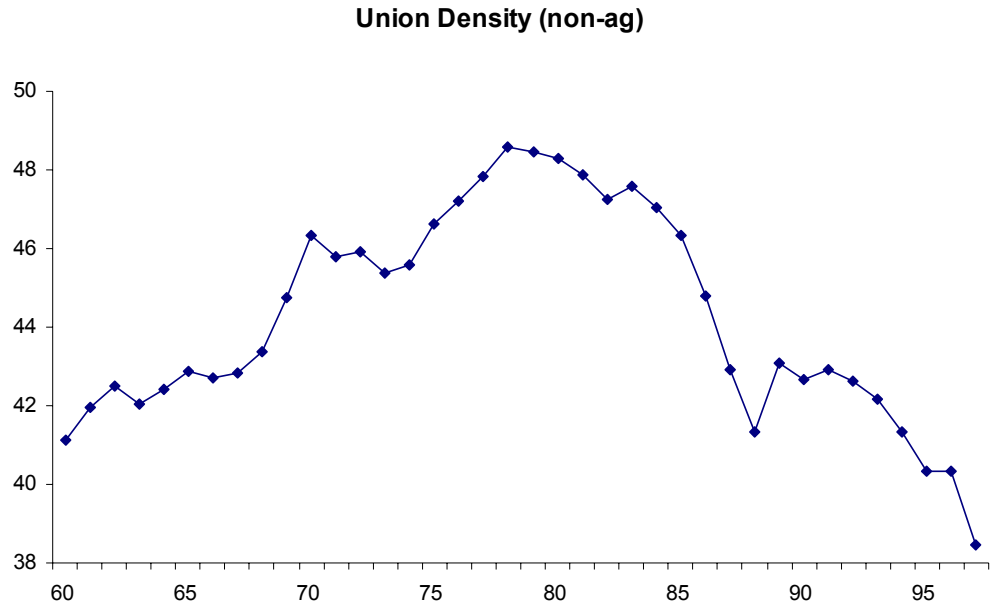


Figure 9: Number of days lost per (1000 employees) through industrial disputes, Ireland and UK
Source: Ireland: CSO Industrial Statistics; UK: Statistical Abstract.
(Strikes.xls)

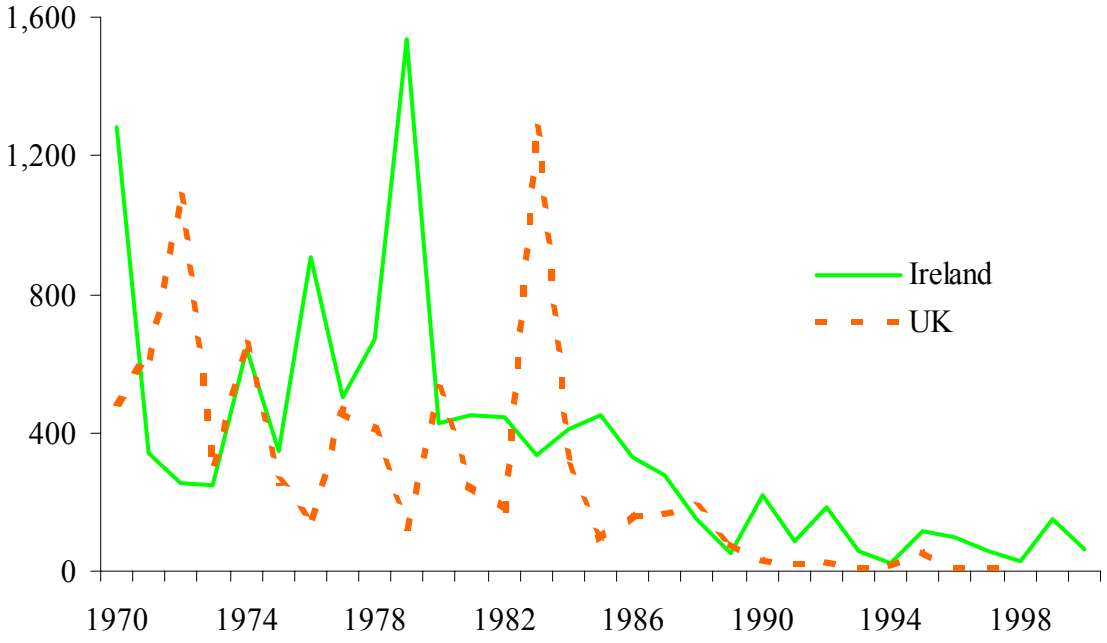


Figure 10: Ireland's share in the stock of US Manufacturing FDI in the EU.

Source: US Department of Commerce data on FDI assets and value of investment spliced to a common level at 1994.

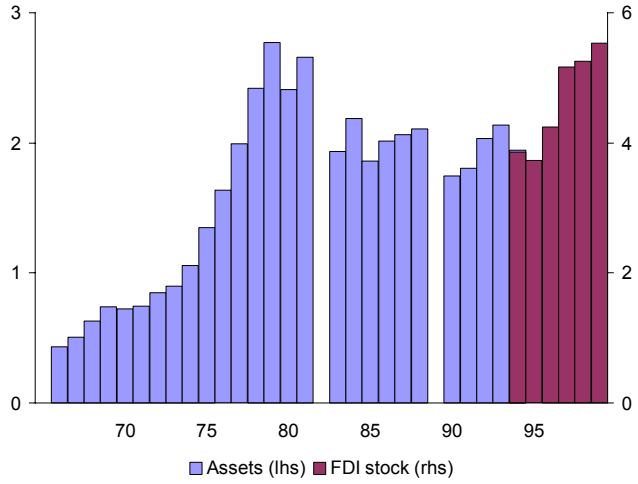


Figure 11 Composition of Gross Domestic Fixed Capital Formation.

Source: CSO: National Income and Expenditure, ESRI Database

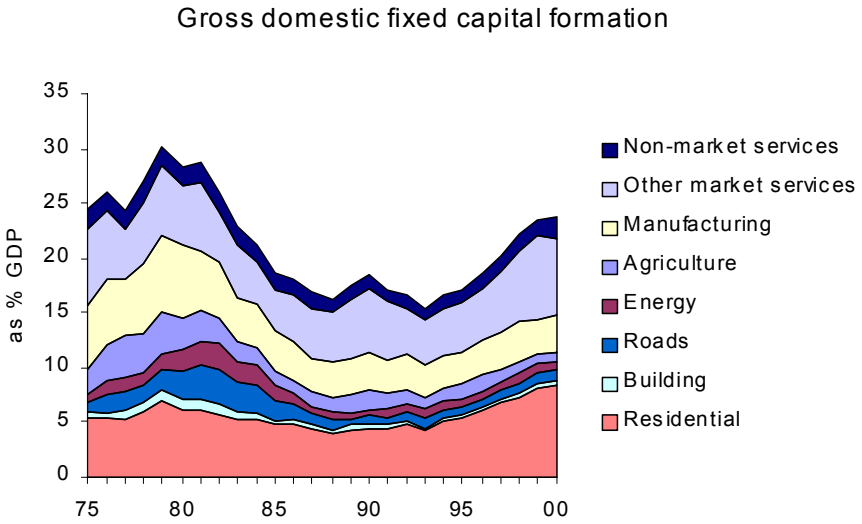


Figure 12 Aggregate growth in living standards (three alternative measures).
Source: Authors' calculations from CSO National Income and Expenditure, ESRI database Production aggregates.xls

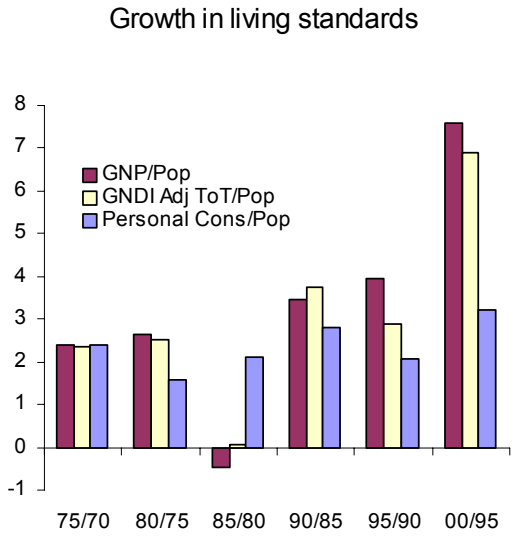


Figure 13 Aggregate productivity growth (four alternative measures).

Source: Authors' calculations from CSO National Income and Expenditure, ESRI database Production aggregates.xls

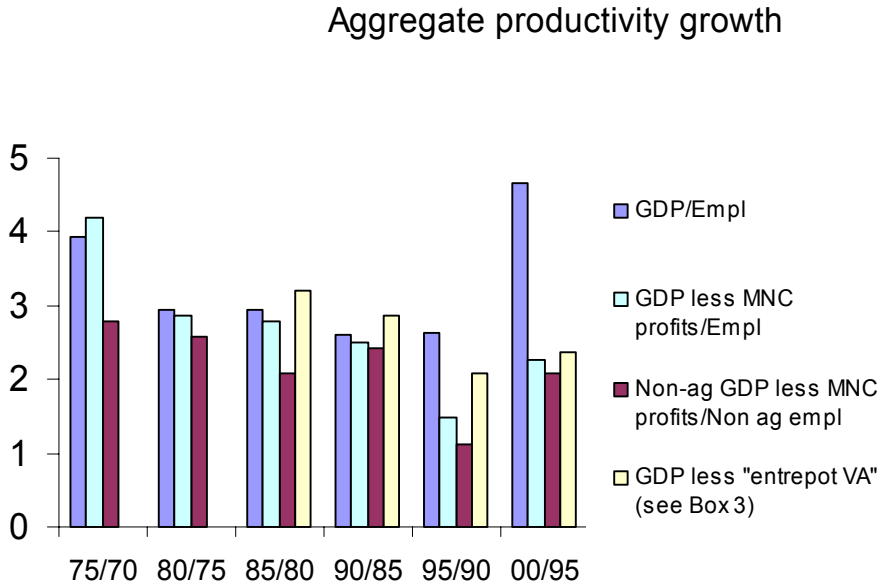
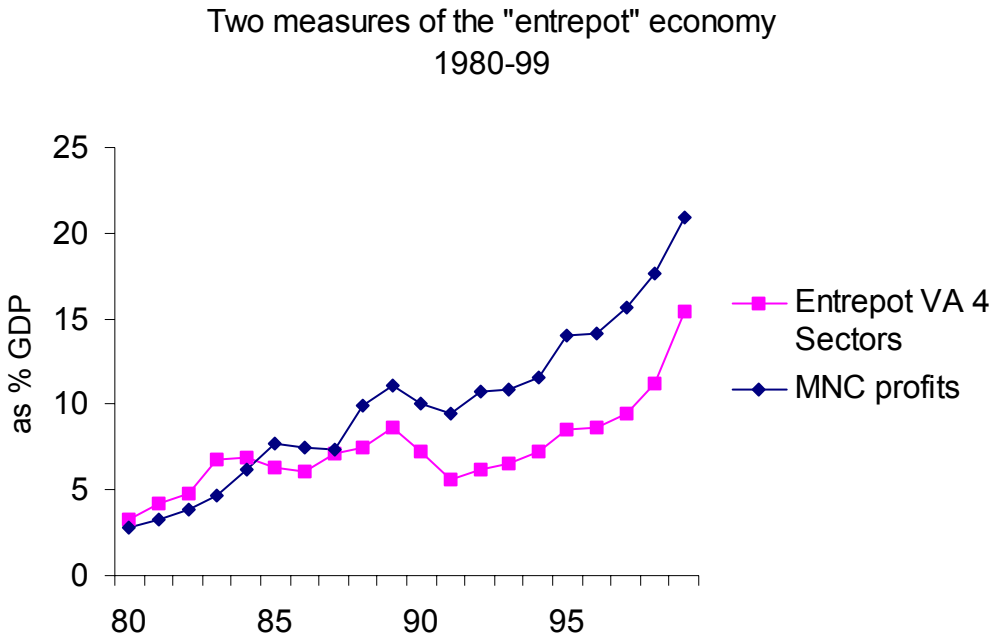


Figure 14: Profits of all multinational corporations, and estimated super-normal value-added of four modern industrial sub-sectors, each expressed as a share of GDP

(Source: Authors' calculations based on CSO: Census of Industrial Production and National Income and Expenditure; Eurostat: Panorama of European Business, 2000; ESRI Database)



Box 1: Why did governments act as they did? Interpreting policy in the 1970s and early 1980s.
How is one to explain the three contrasting approaches to fiscal policy: aggressively expansionary from 1977; tax-and-spend from 1981 and aggressively cost-cutting from 1987? [a] The explanation is to be found partly in the pursuit of flawed economic models, partly by shifting external developments and partly in parliamentary dynamics. But above all it can be interpreted in terms of the shifting political cost-benefit calculations.

The strategy adopted by the incoming government in 1977 was prompted by the high levels that had earlier been reached by unemployment, making its resolution seem the appropriate primary goal of policy, and by the low – indeed sharply negative -- real interest rates which had been prevailing for the previous few years. An ingrained skepticism about the likelihood that private enterprise would ever generate sufficient employment was also influential. Given this environment, borrowing to finance an expansion in employment seemed more attractive than ever before. But the policy was flawed on three fronts. First, the low real interest rates would prove, unsurprisingly, to be a temporary aberration. Second, the ability of a "buy Irish" campaign to neutralize the balance of payments consequences of the fiscal expansion (whether through spending or competitiveness effects or both) was largely illusory. Third, the responsiveness of the Irish unemployment rate to expansionary fiscal policy was much less than one-for-one with job creation. (As a rule of thumb, summarizing econometric evidence, for every two jobs created, one person was added to the workforce in the short-term mainly through the return migration flow but also through rising participation). Jobs were created, and unemployment did fall, but too many of the jobs were dependent either directly on government spending or indirectly on deficit finance that would prove unsustainable.

In the event, external events worsened affairs even more than the government ought to have provided for. Global developments in 1979-80 heightened the realization that the fiscal path was unsustainable and this was widely recognized by the time of the change of government in 1981. From then until 1987 there was a succession of insecure coalition governments whose fiscal policy replaced the defeat of unemployment with a new overriding objective of stabilizing the fiscal position subject to the constraint that an adequate level of public services and income support mechanisms would remain in place. Continued support from the Labour Party required the latter, and it was a hallmark of the ensuing recession that rates of unemployment assistance and other income support payments were maintained in real terms.[b] These dual goals implied a continued increase in spending, as interest rates and unemployment continued to rise, combined with spiraling tax rates, calculated in each budget more or less as a residual as what would be needed after the debt markets had been tapped to the maximum extent possible. This holding operation was barely sustainable; suspension of much of the public capital spending program helped reduce the primary deficit substantially, but rising debt service charges meant that the debt was still growing faster than GNP. Furthermore with the high tax rates and massive levels of borrowing certainly discouraging private sector initiative, and the deep recession in the UK inhibiting out-migration for several years, unemployment continued its inexorable rise.

A new political configuration from 1987 allowed a more single-minded approach to fiscal stabilization.[c] By stealing the out-going government's rhetoric they made cutting government expenditure no longer a political taboo and at last fiscal policy was addressed to an attainable objective function. Furthermore, external circumstances improved dramatically, with a worldwide fall in interest rates while a tightening of labour market conditions in the UK allowing emigration in the late 1980s to lower unemployment and its associated fiscal costs (Table 1). Stricter enforcement of the social welfare code was more politically tolerable as the numbers dependent on transfer began to decline.

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[a] As shown by Barry et al. (1997) and Lane (1998), fiscal policy was definitely procyclical in this period, and may have continued to be so to the end of the century, though deciding this is bedeviled by the acute difficulty of measuring the output gap appropriately.

[b] Though it should be noted that, by comparison with Continental European countries, income support payments have long been pitched at a relatively low percentage of average income.

[b] Seidman, 1988 showed that, although the new Government was also a coalition, it was more secure, as measured in terms of Shapley value, than any of the previous governments of the decade. Additionally, the leader of the opposition committed the main opposition party to supporting the government's fiscal stabilization (in the so-called Tallaght Strategy).

Box 2: The link between Irish and UK unemployment.

Although Irish unemployment is now slightly below the UK rate, instead of being well above, as was the case for decades, UK labour market conditions still appear to be the major determinant of medium-term fluctuations in Irish unemployment. With complete freedom of movement between the two countries, and a tradition of doing so, the UK labour market acts as a flywheel. When job creation was low in Ireland, net emigration eventually closed any wide gaps between Irish and UK unemployment rates *U*. Admittedly, the gap jumped to almost 9 percentage points in 1989, but this was transitory. Assisted by the more rapid job creation of recent years, Irish unemployment has even dipped close even to what have been historically low UK rates. (Figure 7). It was unlikely to fall much lower, even if the global downturn had not intervened.

Econometric analysis of these relations, though not conclusive, provides corroboration of these general assertions. An error-correction model provides a good fit, especially if employment growth $\Delta \log E$ is a transitory element[b] (Equation 1, or ignoring the first decade, Equation 2). Even without the change in employment, or the wage variables as additional explanatory variables, an error-correction model in which UK unemployment is the only driver, provides quite a good fit, though the large positive autocorrelation coefficient clearly flags the omission of one or more slow-moving explanatory variables (Equations 3,4). Omission of the change in employment makes it hard for the equation to match the actual amplitude of the major fluctuation.

[b] Although lack of cointegration between UK and Irish unemployment rates cannot be rejected, when the percentage change in total Irish employment is included, a three-variable cointegrating relationship (Johansen's test) is obtained. However, the coefficient on the employment change term is rather high, and we prefer to present the results based on using change in employment as a transitory term as above.

Table 5: *Regression results: error correction linking Irish and UK unemployment*

Dependent variable: Change in Irish Unemployment ΔU_{irl}

Eqn. no:	1		2		3		4	
	Coeff	*t-stat*	*Coeff*	*t-stat*	*Coeff*	*t-stat*	*Coeff*	*t-stat*
Constant	1.04	(6.6)	1.24	(6.3)	2.31	(2.3)	2.20	(1.6)
ΔU_{uk}	0.50	(7.1)	0.47	(6.4)	0.59	(4.1)	0.63	(3.4)
$\Delta \log E$	-0.37	(11.7)						
$\Delta^2 \log E$			-0.37	(11.5)				
$(U_{irl} - U_{uk})_{-1}$	-0.08	(2.3)	-0.10	(2.8)	-0.67	(3.6)	0.59	(2.2)
rho[a]	-0.26	(1.5)	-0.33	(1.6)	0.86	(6.5)	0.84	(4.1)
RSQ/DW	0.877	2.05	0.899	2.08	0.578	2.16	0.621	2.20
Sample	1964-2000		1973-2000		1957-2000		1973-2000	

[a]First-order autocorrelation coefficient.

Note: Variables are measured as a percentage of the labour force.

Box 3: Calculating the "entrepôt economy"

Four specific sectors of Irish manufacturing display the unusual characteristics of the entrepôt economy: "other foods" (dominated by Cola concentrate manufacturers), pharmaceuticals and related basic chemicals; software reproduction; and computer components.

These sectors are important employers – between them in 1999 they employed about a fifth of the manufacturing workforce or 3 per cent of total employment. But their contribution to industrial output (57%) and GDP (15%) is vastly disproportionate.

Because the relative importance of these sectors has been growing, excluding them reveals a very different story so far as output and productivity growth rates are concerned.

More subtly, we can make an adjustment to the output of these sectors[a] by excluding that part of their value added that seems to represent the return to intangible capital abroad, whether in the form of high profit remittances, royalties or the like.[b] The approach is illustrated for 1999 in Table 6. We refer to the adjustment as a measure of the 'entrepôt'-type output or value-added. The upper panel includes royalties and other non-industrial service inputs; these are excluded in the lower panel which thus refers just to value added. The estimated entrepôt value-added for 1980-99 is plotted in Figure 14, along with the total profits of MNCs, expressed as a share of GDP. (Ideally the price deflators would also be adjusted, but the information to do so is not available.)

This also leads to very sizable changes in measures of the growth of output and productivity. Using the adjusted output figures brings GDP growth down by 2 percentage points – from 8.2 to 6.2 percent - during 1995-99. The growth rate of apparent labor productivity in manufacturing falls by almost 5 percentage points – from 8.6 to 3.8 percent – , and for GDP, apparent labor productivity falls by 2 percentage points – from 3.4 to 1.4 percent[c] in these years.

Crude though these adjustments are, it should be recalled that they are certainly underestimates of the effects inasmuch as they ignore other manufacturing sectors also affected, albeit to a lesser extent, and also the offshore financial services sector.

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[a] We also include the computer assembly sector *30*, which has displayed similar characteristics, though to a greater extent in previous years.

[b] The method essentially assumes that without transfer pricing, apparent productivity in these sectors would be equal to the EU average for the same or related sectors (cf. Conroy, Honohan, Maître, 1998).

[c] A discontinuity in aggregate employment statistics in 1997/8 complicates the analysis.

Table 6: *Net Output - Ireland and EU Average - Selected Sectors, 1999*

Sector		Cola concentrates, etc.	Software reproduction etc.	Certain organic basic chemicals etc.	Computers	Electronic components
NACE code		*1585,87,89*[d]	*223*	*2414,244*	*30*	*3210*
Net industrial output[b] per employee:	Ireland (£000)	1,014.6	727.9	848	169	230
	Europe (£000)	90	64	163	104	104
Employment[c]	numbers	2,333	6,131	13,015	19,923	8,457
Estimated "entrepôt business"[a]	£ million	2,157	4,069	8,908	1,284	1,061
	% of net output	91.1	91.2	80.7	38.2	54.6
Value-added[b] per employee:	Ireland (£000)	499	260	556	74	206
	Europe (£000)	51	61	51	86	47
Employment[c]	numbers	1,743	6,111	11,928	20,130	8,457
Estimated "entrepôt Value-added"[a]	£ million	781	1216	5849		1,342
	% of VA	89.8	76.4	80.7		77.0

[a]Calculated by applying EU average per employee figures for net output and value added (in related sectors) to Irish employment and subtracting the resulting figure from total net output and value-added respectively.
[b]Value-added is less than net industrial output, mainly because it excludes bought-in non-industrial services, including royalty and license payments, which are sizable in these sectors.
[c]The different sectoral employment figures reflect the fact that the upper panel is based on data grouped by local units, the lower panel is based on data grouped by enterprise.
[d]Value-added data refers to sectors *1588* and *1589* only.
Memo: Aggregate manufacturing output: GDP £33.6 billion; total manufacturing employment 247,500; GDP £59.7 billion; Total employment 1,591,100.
Source: Calculated based on data in Central Statistics Office: Census of Industrial Production 1999; Eurostat: Panorama of European Business 2000.

[1] Aesop's image of the hare, long somnolent, dashing to catch up with the slow-and-steady tortoise, makes us favor it, one of the largest wild animals native to Ireland, as a preferable image of the Irish economy's recent performance, to the more widely touted, but zoologically improbable, "Celtic Tiger."
[2] The shift to an outward-oriented policy is usually dated to a suite of policy changes launched in 1958. Other early milestones were the Anglo-Irish Free Trade Area Agreement (1965) and entry to the European Economic Community (1973).
[3] Higher incomes in agriculture were also in prospect, thanks to the stimulus of EEC support prices.
[4] Our characterization of Irish convergence here finds some US echoes in Caselli and Coleman (2001).
[5] 'Poorest of the Rich' was the title used by *The Economist* newspaper in January 1988 for its survey of the Irish economy. When it revisited the topic in May 1997 the title was 'Europe's Shining Light'.
[6] The business cycle partly also driven by developments in the UK. Note that the openness of the economy, including to migration, and the pegged exchange rate regime for much of the time, has always made defining, measuring and explaining a business cycle a nonstandard exercise.
[7] Here and elsewhere in the paper for data before 1995 we use the consistent historical series maintained by the Economic and Social Research Institute. We are very grateful to John Fitz Gerald for making this database available to us.
[8] Though on the other hand, the coincidence of high inflation and nominal interest outflows means that the payments deficit is somewhat overstated at its height.
[9]We chose the variables of Figure 2 in preference to plotting wage inflation against unemployment (such a plot would also generally move in a large loop, though with many eddies); that alternative is not easy to read as a shifting Phillips curve, not only because high international labour mobility has implied a significant medium-term influence of UK unemployment conditions on those in Ireland, but also because, especially before 1979, fluctuations in external inflation were rapidly imported through the fixed exchange rate.
[10] Table 2 includes (Column 10) a model-based measure, due to Kearney and others (2000) of the discretionary change in fiscal policy in each year relative to the previous year. It shows that discretionary fiscal policy was progressively tightened in each of the four years 1981 to 1984. Further, and sharper, tightening occurred in each of the three years 1987 to 89. Although cyclically adjusted budget figures are controversial, the Blanchard (1990) approach gives a broadly similar time-path of the budgetary stance.
[11] And certainly put upward pressure on wage rates (cf. Curtis and Fitz Gerald, 1996; Fitz Gerald, 1999).
[12] Actually, the decline in inflation during the early 1980s meant that the measured fiscal accounts flattered reality. Inflation-adjusted accounts show a less steep cyclical amplitude in both fiscal and international payments deficits; qualitatively though the story is unaffected by such an adjustment.
[13] The sharp appreciation of sterling against all EMS currencies during 1979-81 brought the Irish pound as low as £stg 0.74 – a nominal bilateral depreciation of over a quarter in just two years.
[14] Some observers have attempted to judge Irish labour competitiveness by comparing average unit labor costs across industry. However such measures are seriously misleading (exaggerate improvements in competitiveness) because the average is improved by the shifting sectoral composition from to high to low labour-share technologies, even if marginal or average labor productivity had not changed in any sector. Unit labour cost data in Ireland is further distorted by the special characteristics addressed in the following section. The competitiveness indicator shown in Figure 5 represents a weighted average of the hourly earnings in Ireland's main trading partners divided by the same in Ireland (all brought to a common currency, and expressed relative to the projection of a linear trend from 1975-87. The series shown is that published by the Department of Finance in its annual *Economic Review and Outlook*. (The series in the Central Bank of Ireland's *Bulletin* shows a stronger improvement in competitiveness during the 1990s, apparently because of different country weights).
[15] The role of low corporation profits taxation in boosting inward FDI will be discussed in Section 5 below.
[16] Similar political arguments to those that had driven the Irish pound into EMS in 1979 applied again in the decision to adopt the single currency of the EMU from 1999. Most economists thought that the economic arguments for or against membership absent the UK were fairly evenly balanced. As the start of the system neared, interest rates converged down on those in Germany, adding to the demand pressure in the Irish housing market. In March 1998, in order to dampen inflationary pressure, it was decided to

appreciate the Irish pound's entry rate by adjusting its EMS central rate. This was the only occasion a member currency was revalued against the DM in the twenty-year history of the EMS.

[17] This in turn results from a baby bulge, which has now matured; the birth rate having declined precipitously after 1980.

[18] At the start of the boom Irish wage rates were much below UK, French, and German levels in both skilled and unskilled occupations, but especially in the latter. For example, labour costs in the textile industry were lower in Britain than in Ireland in 1988 but the differential was reversed in the computer sector (Duffy and Others, 1997). The diminishing surplus of unskilled labour and higher social welfare benefits subsequently raised unskilled wage rates while the higher educational levels of the large cohorts leaving the educational system and their lack of external employment opportunities may have exerted downward pressure on skilled wage rates. On the other hand returning migrants earned a wage premium (Barrett and O'Connell, 2000).

[19] See note 14 above.

[20] An R-squared of 0.91 is obtained with just the tax variable, lagged two years (t-statistic of 7), and a linear time trend. Here again, though, we need to be cautious: as has been noted, the 26 years of data represents only one cycle.

[21] Even after excluding MNC profits, the wage share in factor income has been declining since the mid-1990s, but only slightly, e.g. from 64.7% in 1994 to 62.8% in 1999 (Lane, 1997).

[22] An example is the decision in 1999 to allow the retention of the rent and mortgage supplement by those enrolling in back-to-work or training schemes.

[23] The availability of labour was one of the attractions to FDI and its quality influenced the sectors that were attracted to the country.

[24] We can puzzle students by pointing out that the total value of exports now exceeds GNP!

[25] An alternative way of characterizing the impact of the largest MNCs is presented by Keating, 2000, who estimates that they directly accounted for £10 billion out of a 1998 GDP of £61 billion, but only for about £3 billion out of a GNP of £53 billion. While GDP at constant factor cost increased by 75 per cent between 1990 and 1999, the output of the three sectors dominated by MNCs increased by a factor of 3.7.

[26] NACE is the European standard statistical classification of economic activities.

[27] Updated from Honohan, Maître and Conroy (1998).

[28] It is perhaps worth remarking here that the US taxpayer does not necessarily bear the incidence of this use of the Irish tax regime by US MNCs.

[29] That the share of the US in Irish exports jumped from 11.2 per cent in 1997 to 17.2 per cent in 2000 was partly due to exchange rate movements, but more importantly to the surge in Chemicals exports, notably including Viagra.

[30] Plotting Ireland's share of the *flow* rather than the stock of US FDI (as for example in Duffy and Others, 2001) does tend to make Ireland's relative performance in attracting FDI in the 1990s look stronger. It is important to distinguish between manufacturing and total FDI, the latter including an important element of financial services investment which has greatly increased especially since 1998. The data on recorded average flow of inward FDI from all sources was equivalent to 8 per cent of domestic fixed capital formation during 1985-95 – perhaps an underestimate, but serving to emphasize the intangible nature of the intellectual capital actually being employed. There is little correspondence between the value of FDI flows and the value of real capital formation in Ireland by investing firms. By 2000 the flow had jumped to almost 100 per cent of domestic fixed capital formation, much of it in the financial sector intended for use in outward portfolio investment through the IFSC (see below). Finally, it may be mentioned that the late 1990s has also seen a sharp increase in outward FDI.

[31] Note though that recent years have also seen sizeable profit inflows attributable to a growing gross outward flow of FDI.

[32] Buffeted by international developments common to other oil-importing industrial countries, Irish terms of trade have also displayed a trend weakness since the mid-1980s. Part of this may be attributed to rapid price decline due to the short product cycle characteristic of the computer and software industry. Chain-weighted indexes have not yet been employed to alleviate this problem.

[33] A further adjustment, not made here, would add net capital transfers from abroad.

[34] With fewer farmers and more women in the labour force hours worked have declined by 15% since the 1980s. Productivity growth is higher when this is taken into account.

[35] A figure boosted by what proved to be relatively unproductive public investment – though modernization of the telephone system and electricity generation capacity, for example, in these years did not go amiss.
[36] Durkan, FitzGerald and Harmon, 1999; Denny, Harmon and Redmond, 2000; Duffy and Others, 2001.
[37] Not all EU inflows are beneficial. The price support mechanisms of the CAP represented a large transfer to Ireland, but may have long-delayed improvements in agricultural efficiency.
[38] In 1986 Ryanair was granted a license to operate on the key Dublin-London route, long cartelized by the state-owned airlines of the two countries. Outward tourism and travel expenditure has also grown by over 8 per cent in the same period.