

CHAPTER 4

PERSPECTIVES ON NORTHERN IRELAND'S PRODUCTIVITY PERFORMANCE

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ABSTRACT

In this chapter Iparraguirre D'Elia outlines the productivity performance of Northern Ireland between 1995 and 2002. The results indicate that while Northern Ireland returned the highest rate of economic growth of all UK regions between 1989 and 2004, its productivity performance has been poor, with most of the economic growth over this period being attributable to increasing employment levels. Northern Ireland's economy is dominated by high rates of employment in the public administration, health and education sectors, sectors that typically have less potential for future productivity growth.

4.1 Introduction

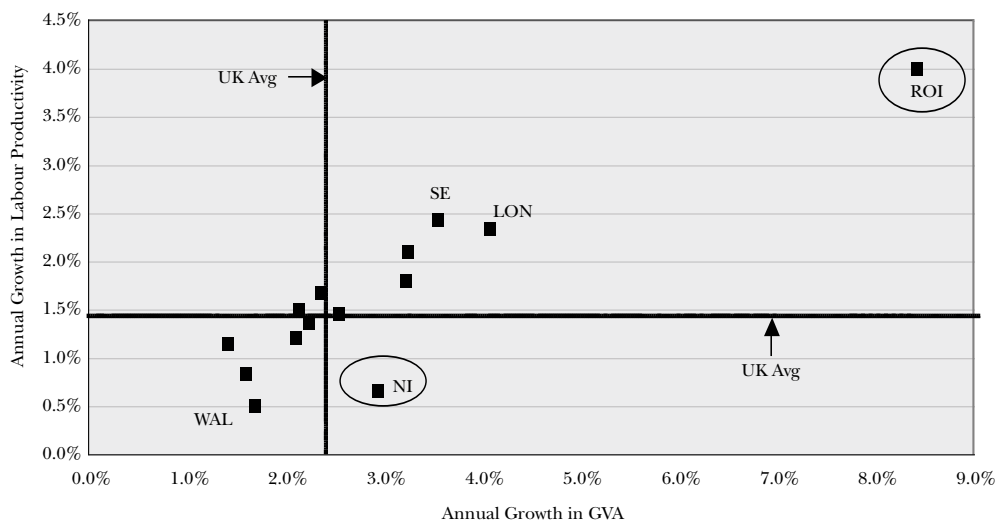
Northern Ireland returned the highest rate of economic growth (measured in terms of Gross Value Added (GVA) per capita) of all UK regions between 1989 and 2004, although most of this positive economic performance took place before 1997. Since 1995 Northern Ireland's economic performance has remained above the UK average, but it has been overtaken by four other regions within the UK. However, the productivity performance of the Northern Irish economy has been poor, with most of the economic growth over this period being attributable to increasing employment.

Investigating the role productivity growth plays in economic activity is of crucial importance for policymaking. What makes an economy more productive? Is it the skill of its workforce, the level of entrepreneurship, the level of fixed investments in machinery, equipment and infrastructure or expenditure on Research and Development (R&D) activities? This chapter discusses these questions for Northern Ireland within the context of other regions in the UK. It draws upon recent research carried out by the Economic Research Institute of Northern Ireland (ERINI).

4.2 Labour Productivity in Northern Ireland

Figure 4.1 shows the average growth in both GVA per head and labour productivity for the regions in the UK and for the Republic of Ireland between 1995 and 2002. Northern Ireland is the only UK region that exhibited a higher than average growth in GVA per capita along with a lower than average growth in labour productivity. Furthermore, Figure 4.1 illustrates that there was a significant disparity between the UK and Republic of Ireland's performance. The economy in the Republic has grown at more than twice the rate of even the fastest growing region within the UK over the period, and has substantially outperformed the most productive UK region.

Figure 4.1: Annual Changes in Labour Productivity and GVA, UK and ROI, 1995-2002



Source: For UK Regions, Iparraguirre D’Elia (2005); for Republic of Ireland, CSO.

Note: ROI = Republic of Ireland, SE = South-East, Lon = London, WAL = Wales, NI = Northern Ireland.

The Republic of Ireland’s economy grew by 68 per cent between 1997 and 2005 while GDP per capita increased by 49 per cent. This impressive performance was facilitated by increasing employment levels, with total employment growing by 41 per cent. Hourly productivity (i.e. GDP per hour worked) has increased by 20 per cent since 1997, while stagnating in Northern Ireland. This is the most remarkable difference between the recent productivity performance in the Republic of Ireland and Northern Ireland.

In order to understand the elements that have contributed towards differing economic and productivity growth performances within the UK, we decomposed Northern Ireland’s GVA per head gap vis-à-vis the UK average for the period 1989 to 2004. We have considered five elements:¹

1. Hourly labour productivity (i.e. GVA per hour worked);
2. Hours worked per person in employment;
3. Employed people as a percentage of labour force;
4. Economic activity rate (i.e. the ratio of the labour force to the population of working age); and
5. The dependency rate (i.e. the ratio of the population of working age to total population).

Northern Ireland’s economic growth between 1989 and 1997 (the most successful period in recent times in terms of economic growth), was not the result of growth in productivity. On the contrary, the region had the lowest levels of regional productivity per worker over the period. Furthermore, hourly labour productivity was the main negative contributor to economic performance in Northern Ireland vis-à-vis the other UK regions. Most of the economic growth Northern Ireland experienced over the period can be attributed to increasing employment. Northern Ireland also falls behind in terms of activity rates, and that the only positive contribution has come from the relatively high number of hours worked. In other words, Northern Ireland

had the lowest percentage of the population who were economically active and these were the least productive workforce, although those who were in employment worked longer hours than most of the people in employment across the UK.

4.3 The Drivers of Productivity

The framework for productivity and competitiveness policy in the UK is based on five key areas: skills, innovation, entrepreneurship, investment and competition. These are known as the five drivers of productivity. The importance of each driver individually on labour productivity is well documented.

However, there are no published theoretical models explaining how these five drivers simultaneously affect labour productivity. Moreover, no empirical analyses have been published which estimate the relative importance of each driver and their interrelationships to labour productivity. In short, the contention that skills, innovation, entrepreneurship, investment and competition are the main drivers of productivity has neither been theoretically formulated in full nor empirically validated.

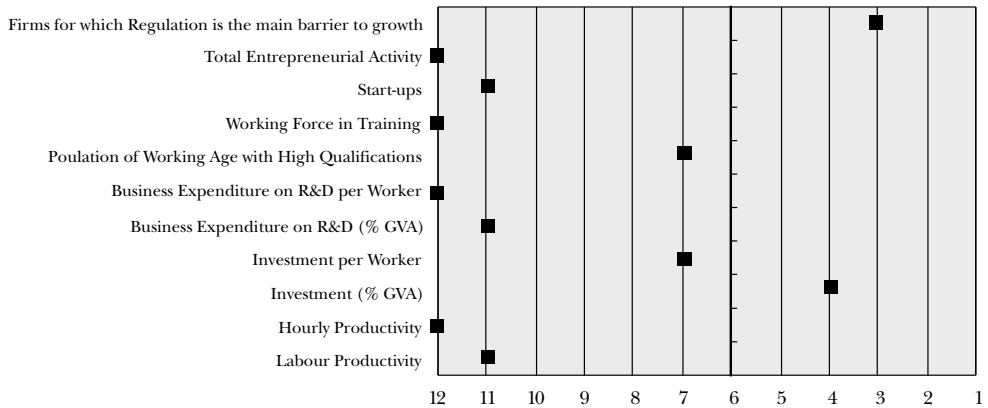
Many factors that have been omitted from this policy framework are also germane to labour productivity performance, such as social capital, organisational restructuring, innovation absorptive capacity, industrial structure, agglomeration, firm exit or churning, or distance to main economic hub.

Consequently, in a paper soon to be published, the ERINI set out a model to estimate the direct and indirect effects of each driver on labour productivity and their interrelationships, both in the UK and in a group of 83 countries.² The main finding is that there is no one single driver that can boost regional productivity on its own. Promoting entrepreneurship, spending more on R&D, increasing the capital to worker ratio and the percentage of the workforce with higher qualifications have a significant bearing on regional labour productivity. In contrast, competition and regulatory barriers do not seem to affect labour productivity at a regional level, although we obtained some positive effects of competition and negative effects of regulation upon labour productivity in our cross-country estimation.

Having a skilled workforce not only directly affects productivity, but it also impacts positively on the level of entrepreneurship and investment. Therefore, it contributes to productivity in an indirect way. Another relevant finding is that an increase in the number of start-ups impacts positively on levels of expenditure on R&D.

Northern Ireland labour productivity has clearly been affected by its performance for each of the five main drivers (see Figure 4.2). Northern Ireland stands out as the region with the fourth highest investment ratio (net capital expenditure/GVA). However, for all the other indicators, it ranks below average.

Figure 4.2: Regional Rankings by Productivity Driver, 2003



Source: Iparraguirre D'Elia (forthcoming).

Finally, we compared how both the Republic of Ireland and Northern Ireland fare in four of the five drivers of productivity. Table 4.1 provides some insight into the factors underlying the much higher labour and hourly productivity performance of the Republic of Ireland vis-à-vis Northern Ireland. The Republic of Ireland ranks better than Northern Ireland in total entrepreneurial activity, gross fixed capital formation and R&D expenditure as a percentage of GDP. Northern Ireland only ranks better than the Republic of Ireland for the skills indicator.

Table 4.1: Drivers of Labour Productivity⁴

| Driver | Republic of Ireland | Northern Ireland |
|------------------|---------------------|------------------|
| Entrepreneurship | 9.8 | 4.8 |
| Skills | 20.9 | 26.5 |
| Investment | 23.5 | 12.8 |
| Innovation | 1.1 | 1.1 |

4.4 Productivity Across Industrial Sectors

Regional economic processes are rarely smoothly distributed across industries. For example, labour productivity in the manufacturing sector grew by five per cent between 1995 and 2002, whilst labour productivity in the extractive industries (i.e. agriculture, hunting, forestry, fishing, mining and quarrying) fell by eight per cent over the same period.⁵

Three sectors account for almost 66 per cent of total employment in Northern Ireland: the non-market sector (public administration, health and education), the distribution sector (which includes hotels and restaurants), and the manufacturing sector. Labour productivity increased by almost 47 per cent in the distribution sector but fell in the non-market sector by almost eight per cent and by two per cent in the manufacturing sector. Although weighted by the sectoral share in total employment, labour productivity in the distribution sector increased by almost 22 per cent, whereas it diminished by around six per cent in the two other sectors.⁶ The average change in labour productivity for all other sectors amounts to 3.7 per cent for the period in question.

In a study of sectoral differences in output, employment and productivity across the UK regions between 1995 and 2002, we found that Northern Ireland presented the second highest degree of output and employment specialisation in the UK (after London).⁷ However, whereas London has mostly specialised in banking, finance and insurance and manufacturing, the Northern Ireland economy is dominated by employment in public administration, health and education and manufacturing. An increase in the sectoral specialisation in employment or productive structure positively affects labour productivity in a region when it comes as a result of changes in innovation and skills rather than in price-related factors. A higher concentration of economic activity or employment in highly competitive industries would contribute more to labour productivity than a relative concentration in less competitive industries or declining sectors. The sector in which Northern Ireland exhibited the highest concentration in production was in agriculture, hunting, forestry and mining, while it exhibited the highest employment concentration in construction.

Another structural indicator is the speed of re-allocation of employment across industries, which reflects the adaptability of labour as a factor of production and the degree of mobility of the industrial structure in a region. The efficient re-allocation of employment across industries is a sign of a healthy economic structure seeking optimisation of its productive resources. Of all the regions in the UK, Northern Ireland exhibits the highest speed of sectoral re-allocation between 1995 and 2005. A high degree of re-allocation fosters employment growth; consequently it should come as no surprise that regional employment has grown faster in regions with a higher speed of labour re-allocation adjustment than in regions exhibiting a lower speed of adjustment.

We found that sectoral specialisation in production had a significant effect on labour productivity across regions in the UK, but we failed to find any statistically significant relationship between employment, sectoral specialisation and labour productivity at the regional level. With regards to concentration of GVA and employment, we found a significant positive association with regional labour productivity.

A different perspective on regional output, employment or productivity growth distinguishes whether the process is due to:

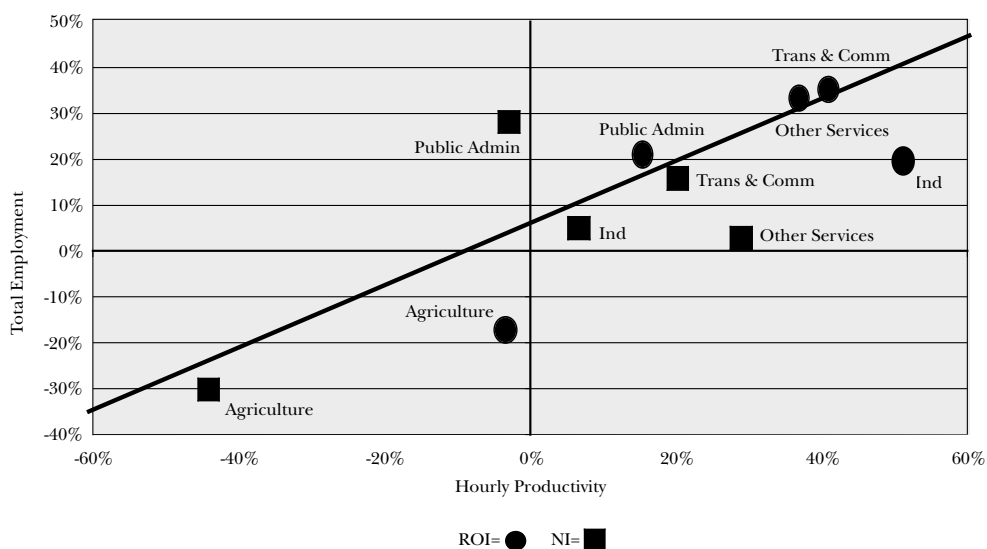
1. General increases at the national level;
2. Cross-regional increases; or
3. Factors specific to the region

We found that most of the labour productivity growth in Northern Ireland's market sector (i.e. excluding the public sector) between 1995 and 2002 was a result of positive changes at the national level, mainly via changes in GVA. Both the mix of slow and fast growing industries and in particular, variables specific to the region, had an adverse impact on the labour productivity growth, particularly in the market sectors. In other words, most of the change in the labour

productivity gap between Northern Ireland and the UK average was explained by the negative incidence of sectoral shocks specific to the region and intra-sectoral differences vis-à-vis the UK as a whole. Furthermore, employment growth in the market sector in the region positively and substantially responded to domestic factors, with a negative impact on labour productivity.

It is also worth comparing productivity performance between both regions in different industrial sectors. Due to data limitations for Northern Ireland, we will cover the period 1997 to 2003. Figure 4.3 presents hourly productivity and employment growth rates by sector in both the Republic of Ireland and Northern Ireland between 1997 and 2003.

Figure 4.3: ROI and Northern Ireland's Hourly Productivity and Employment Growth Rates per Sector, 1997-2003⁸



Sources: CSO, for the Republic of Ireland and NISRA and ONS, for Northern Ireland.

In the Republic of Ireland, hourly productivity has grown in all sectors except agriculture – and the same applies to employment. Furthermore, in all sectors, except public administration, hourly productivity has increased. The sector in which hourly productivity increased most was in industry.

In contrast, in Northern Ireland hourly productivity fell in agriculture and public administration, while growth rates for all other sectors were lower than those recorded in the Republic of Ireland. In addition, total employment levels also grew less in all sectors in Northern Ireland compared to the Republic of Ireland, except in public administration. Hourly productivity grew more in Northern Ireland in the ‘other services’ sector, mainly due to the strong performance of the banking, finance and insurance sector.

Table 4.2 summarises the relative labour productivity (as opposed to hourly productivity) performance by sector in the Republic of Ireland and Northern Ireland between 1997 and 2003. For the economy as a whole, labour productivity grew by 14 percentage points more in the Republic of Ireland than in Northern Ireland. Excluding public administration, the difference is still remarkable. Labour productivity in the market economy sectors grew by eight

percentage points more in the Republic of Ireland. In particular, the labour productivity of the 'industry' sector in Republic of Ireland was almost 30 percentage points better than that in Northern Ireland.

Table 4.2: ROI and Northern Ireland Labour Productivity Growth 1997-2003 by Sector

| Industrial Sector | ROI | NI | Difference |
|--|------|-------|---------------------|
| | % | | (percentage points) |
| Agriculture Forestry and Fishing | 13.9 | -14.0 | 27.9 |
| Industry | 28.3 | -1.4 | 29.7 |
| Distribution Transport and Communication | 4.1 | 2.5 | 1.7 |
| Public Administration and Defence | -8.2 | -33.6 | 25.4 |
| Other Services (including Rent) | 2.1 | 23.4 | -21.3 |
| All Market Sectors | 17.1 | 8.7 | 8.4 |
| All Sectors | 17.2 | 2.9 | 14.3 |

Sources: CSO, for the Republic of Ireland and NISRA and ONS, for Northern Ireland.

4.5 Patterns of Labour Productivity

Regional labour productivity patterns can be classified in terms of the differences against the national average in the growth of three variables: GVA, employment and labour productivity (Cuadrado-Roura et al., 2000). There are three basic categories: virtuous growth, restructuring and vicious circle.

1. Virtuous growth is the process in which a region or sector presents higher labour productivity, GVA and employment growth rates than the nation as a whole;
2. Restructuring can happen via productivity or employment. Restructuring via productivity implies that labour productivity grows more, but employment less in a region or sector than at the national level. Restructuring via employment means that labour productivity grows less and employment more in a region or sector than at the national level; and
3. Finally, a vicious circle of economic decline occurs when the region or sector presents lower labour productivity, GVA and employment growth rates than the national average.

Two sectors in Northern Ireland, construction and manufacturing, underwent a process of virtuous growth in their labour productivity. In these sectors, output and employment levels grew more than the UK average. Given that production grew more than employment, labour productivity also grew more than the UK average.

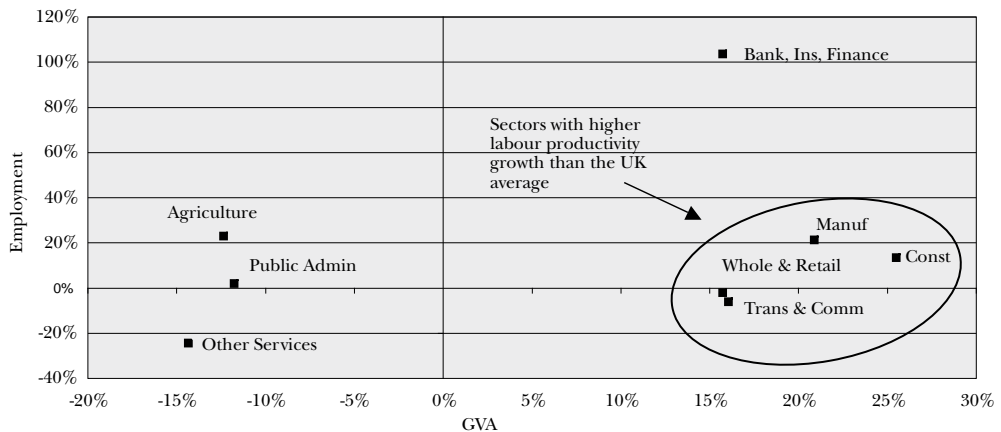
The sectors 'wholesale, retail trade, hotels and restaurants' and 'transport and communication' underwent a process of relative restructuring via productivity. Labour productivity grew more in Northern Ireland than it did in the UK as a whole, while at the same time they experienced higher GVA growth rates and lower and negative growth rates in employment than the UK average. 'Energy and water' went through a process of absolute restructuring via productivity (i.e. labour productivity increased vis-à-vis the UK average), whilst both GVA and employment

fell in comparison to the UK average. ‘Banking, finance and insurance’ went through an intensive restructuring process via employment, in that labour productivity fell behind the UK average whilst GVA and employment grew more than average.

Finally, the public sector and the extractive sectors went through a conservative restructuring process via employment. In these sectors, both labour productivity and GVA grew less in Northern Ireland than in the UK, but employment grew more in Northern Ireland than in the UK as a whole. Since 1995, no sector in Northern Ireland experienced a vicious circle of economic decline when compared against their UK counterparts.

Thus, the three largest sectors in terms of employment share – public administration (which includes education and health), wholesale and retail (which includes hotels and restaurants), and the manufacturing sector all present different patterns of productivity growth when compared against the UK. Figure 4.4 summarises the findings.

Figure 4.4: Changes in GVA and Employment by Sector – Differences between Northern Ireland and the UK Average, 1995-2002⁹



Source: Iparraguirre D’Elia, (2005).

4.6 Convergence and Divergence of Labour Productivity Across Regions and Sectors

Convergence in regional labour productivity over a given period of time means that regions with lower productivity at the beginning of the period have been catching up, in the sense that their labour productivity has grown faster (or decreased less) than that of the regions that initially had higher productivity levels.

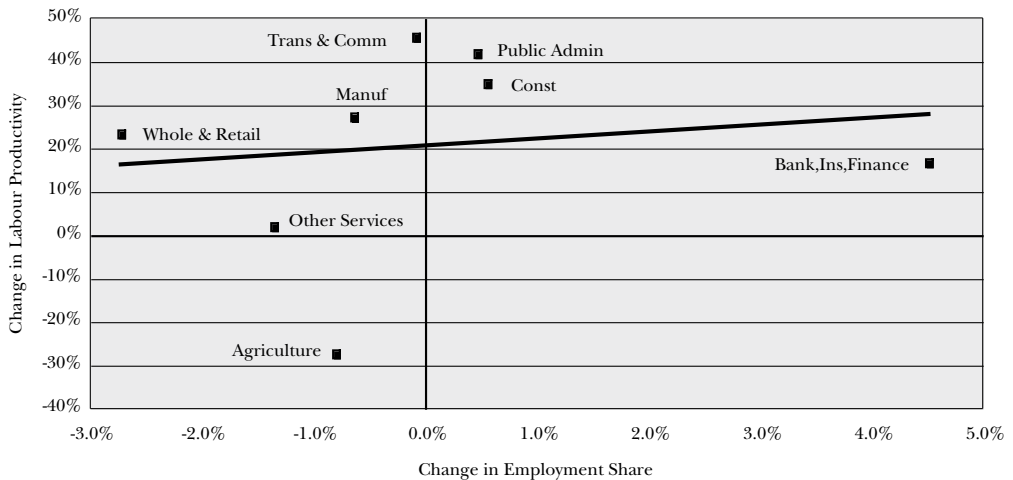
We carried out estimates of convergence coefficients for labour productivity since 1995 and also for output per capita for the UK regions between 1989 and 2003. With respect to GVA per head, there has been a very slight convergence across the UK regions over the period 1989-2003 of around 0.3 per cent a year. However, labour productivity has been slightly diverging across

regions in the UK since 1995. Labour productivity in regions with higher labour productivity in 1995 has grown faster on average, than in those that initially had lower productivity.

Divergence in regional labour productivity has not been homogeneous across sectors. For example, there has been some regional convergence in the manufacturing industries and construction sector. In contrast, divergence was very pronounced in the banking, finance and insurance sector, but less so in the public administration, education and health sectors.

Within Northern Ireland, labour productivity growth across industries since 1995 has not been uniform. Labour productivity fell by almost 0.5 per cent a year in the manufacturing sector, by over four per cent in the banking, finance and insurance sectors, by over eight per cent per year in the extracting industries and by over one per cent a year in the public sector. Productivity grew by over four per cent a year in the construction sector and by almost six per cent a year in the wholesale, retail trade and hotels and restaurant sector. Figure 4.5 presents the relationship between labour productivity and changes in employment share by sector between 1995 and 2000 in Northern Ireland. We can see that by and large, the bigger the change in employment share of a sector in 1995, the better its labour productivity changed over the period.

Figure 4.5: Changes in Productivity by Sector, Classified in Terms of Employment Share, 1995-2002⁹



Source: Office for National Statistics.

4.7 The Cyclical Nature of Productivity

D. Parham (2002: 7), from Australia's Productivity Commission, states:

Some, but not all, troughs and peaks in productivity cycles correspond to troughs and peaks in business cycles. The overlaps reflect the importance of the business cycle as a short-term influence on movements in productivity. But other influences on productivity... can operate independently from the business cycle. The productivity cycle can therefore capture more information relevant to changes in underlying productivity trends than can the business cycle.

A recent paper disentangled the cyclical components from the permanent components in GVA, labour productivity and employment for the UK regions between 1975 and 2003.¹⁰ We failed to find any statistically significant breaks in the long-run trends in labour productivity in any UK region. Furthermore, we did not detect any significant structural differences between the productivity cycles across the regions.

On the other hand, the cyclical behaviour of productivity in the UK as a whole was found to be positively and significantly correlated with cycles of regional productivity. Northern Ireland in particular, was the region which presented the second weakest relationship between its cycle of productivity and that of the UK as a whole.

Iparraguirre D'Elia (2006b) looked on the influence of the regional industrial structure on the cyclical behaviour of productivity. The paper concluded that regional structure has some impact on the extent to which fluctuations in the productivity at the national level affect fluctuations at the regional level. The Great-East (the East, South-East and London regions in England) and Wales exhibited the highest associations between cyclical variations in GVA and employment levels. In contrast, the lowest correlation was obtained for Northern Ireland. This suggests that output and labour productivity were the least related in Northern Ireland than elsewhere in the UK.

4.8 Conclusion

Economic growth is not sustainable in the long run without increasing productivity. Northern Ireland was the best performing region in the UK between 1989 and 1997, but since then it has grown slightly above the national average and has been overtaken by four other regions. However, Northern Ireland exhibited the lowest levels of regional labour and hourly productivity in the UK. In fact, most of its economic achievement was due to a large increase in employment levels.

A combination of a highly skilled working force, high levels of capital formation, entrepreneurship, and innovation along with market regulations that do not hamper competition seems to be the main ingredients of a recipe for productivity success. Northern Ireland lags behind most of the UK regions in terms of entrepreneurship and innovation and also ranks poorly with regards to skills and investment per worker. This constitutes the reason for the region's poor productivity performance.

In contrast, the Republic of Ireland's remarkable recent economic growth has been achieved with significant improvements in productivity. When we compare both countries in terms of the drivers of productivity, the Republic of Ireland outshines Northern Ireland in all indicators but skills. Furthermore, in the manufacturing sector, a sector which is central to labour productivity performance and competitiveness, the Republic of Ireland outperforms Northern Ireland by almost 30 percentage points.

We estimated that productivity has been diverging across the UK regions since the mid-1990s. Labour productivity in regions with higher labour productivity in 1995 has grown faster, on average, than in those that initially had lower productivity. The Republic of Ireland depicts a trend similar to the best performing regions in the UK and, consequently, its labour productivity has been diverging from Northern Ireland's.

Lee Hamilton, former Chairman of the Joint Economic Committee of the United States House of Representatives once stated:

One of the most useful roles an economist can perform is to remind policymakers that the economy is complex and that choices must be made among competing objectives. We politicians don't always want to hear these things, but it is important that we do (Dixit, 1997: 150).

With this caveat in mind, there are some important lessons from this paper that policymakers in the Republic of Ireland can take with on a general level.

Firstly, the five drivers is an accurate framework for thinking and designing growth and productivity policy. Provided the foundations are right, labour productivity growth depends on a highly entrepreneurial and skilled workforce, high levels of investment and R&D expenditure per worker, and a regulatory framework that does not stifle competition. An attractive financial climate in which to do business is also, of course, an essential ingredient.

Furthermore, some of these drivers reinforce each other. For example, the higher the proportion of highly skilled individuals in the workforce, the higher the entrepreneurial activity tends to be. Thus, productivity growth depends on all its drivers growing in harmony. Any one driver may become a bottleneck for labour productivity growth if it is not nurtured or promoted as much as the rest. A country may, for example, attempt to attract internationally mobile investment to bolster cutting-edge technological activities with high value added or an export bias by introducing financial incentives to potential foreign investors. However, if the existing skills base or the basic infrastructure is not satisfactory enough, the policy will only attract, at best, foreign investment with low value added.

Two recent papers that discuss specific policy measures in Northern Ireland (Harris et al., 2006 and ERINI, 2006b) favour this broad, holistic approach to policymaking. Harris et al. (2006) assess the case for a higher rate of R&D tax credit in Northern Ireland and also discuss the relative effectiveness of the alternative strategy of providing selective financial assistance to stimulate R&D expenditure.¹¹ The paper concludes that fiscal incentives are better than financial assistance, but that the long-run R&D stock resulting from a more generous tax scheme could be halted if "the supply-side provision of R&D facilities (especially personnel)" is not significantly increased at the same time. Furthermore, ERINI (2006a: 2) points out that "behind the apparently simple question of whether a different rate of R&D Tax Credit would be justified for Northern Ireland, there lies a great complexity of issues".

ERINI (2006b) examines the case for a differential rate of corporation tax in Northern Ireland. It concludes that although a reduced rate of corporation tax could yield significant benefits, these would not materialise if support mechanisms and institutional infrastructure

are not refocused towards improving how Northern Ireland engages through trade and other means with the world. Thus, fostering R&D or reducing the corporation tax without, for example, also taking measures to improve the supply of specialised skills will not optimise the economic returns to Northern Ireland.

Notes

- 1 See Iparraguirre D'Elia (2006a).
- 2 Iparraguirre D'Elia (2006, forthcoming).
- 3 We could not find any comparable indicators for competition for both countries.
- 4 The measures for this table are as follows:
 1. Entrepreneurship = Total Entrepreneurial Activity 2005 (Source: Global Entrepreneurship Monitor)
 2. Skills = Percentage of Population of Working Age with University Degree or Equivalent Qualification 2003 (Sources: CSO and DTI)
 3. Investment = Gross Fixed Capital Formation as a percentage of Gross Domestic Product /Gross Value Added 2003 (Sources: CSO and DTI)
 4. Innovation = Gross Expenditure on R&D as a percentage of Gross Domestic Product / Gross Value Added 2003 (Sources: CSO and DTI)
- 5 See Iparraguirre D'Elia (2005).
- 6 See Esteban (2000) and Iparraguirre D'Elia (2005).
- 7 Iparraguirre D'Elia (2005).
- 8 Key: Agriculture = Agriculture, Fishing, Forestry and Mining; Industry = Manufacturing and Construction; Other Services = Financial Services, Health, Education and Other Services; Public Admin = Public Administration and Defence; Trans & Comm = Transport, Communication and Distribution; Other Services = Financial Services, Health, Education and Other Services.
- 9 Key: Agriculture = Agriculture, Hunting, Forestry, Fishing, Mining and Quarrying; Bank, Ins, Finance = Banking, Insurance and Finance; Const = Construction; Manuf = Manufacturing; Other Services = Other Services including Energy and Water; Public Admin = Public Administration, Education and Health; Trans & Comm = Transport and Communications; Whole & Retail = Wholesale and Retail Trade including Hotels and Restaurants.
- 10 Iparraguirre D'Elia (2006b).
- 11 See also ERINI (2006a).

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