

## **Benchmarking Company Profitability and Growth: Some Measurement Issues for Small Firms in Ireland\***

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*Abstract:* International comparisons of productivity, purchasing power and inflation can depend crucially on differences in national statistical procedures. This paper indicates that even in more localised comparisons of small firm performance, differences in accounting practice can have an important distortionary effect. In particular, the tendency for small firms in Northern Ireland to under-value grant assisted asset purchases may be inflating asset based profit measures.

This under-valuation is shown, however, to explain only part of the difference between the efficiency of asset utilisation in Northern Ireland and the Republic of Ireland. By contrast small firms in the Republic of Ireland had higher levels of both sales per employee and profit per employee.

### I INTRODUCTION

It has long been recognised that international comparisons of productivity, purchasing power and inflation depend crucially on differences in national statistical procedures and currency conversion.<sup>1</sup> Even in more localised comparisons, however, differences in firms' operating environment can make comparisons difficult. In this note we highlight a number of issues raised by a project designed to benchmark the profitability and growth performance of small firms in Northern Ireland and the Republic of Ireland.

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1 See, for example, the discussion in O'Mahony and Wagner (1994).

More specifically we consider the impact on the relative profitability, growth and asset utilisation of small firms of differences in accounting practice.

The motivation for the comparisons originated from a desire on the part of development agencies throughout Ireland to promote small firm growth (Government of Ireland, 1994; Department of Economic Development, 1990). Small companies, with less than 100 employees account for around a third of manufacturing employment in Ireland, but "relatively few small firms graduate into the ranks of medium or large companies" (Gudgin *et al.*, 1989, p. 64). The need to identify those companies with significant growth potential led to a joint benchmarking initiative between the Local Enterprise Development Unit (LEDU) and the Industrial Development Board (IDB) in Northern Ireland and Forbairt in the Republic of Ireland.

## II COMPANY BENCHMARKS AND MEASUREMENT ISSUES

A major element of this joint initiative — called the Competitive Analysis Model (CAM) project — has been the establishment of a database of performance benchmarks for developing companies throughout Ireland (McFerran *et al.*, 1996). This was based on an extensive interview survey conducted between April and September 1995 which led to a final sample of 703 small independently owned companies.<sup>2</sup> Response rates differed significantly between Northern Ireland (52 per cent) and the Republic of Ireland (28 per cent) contributing to a sample biased towards Northern Ireland companies.<sup>3</sup> As part of the survey detailed information was sought on firms' profitability, growth and asset utilisation during the 1991 to 1994 business years. Values for each measure are given in Table 1, which also reports the results of Mann-Whitney tests for the independence of the Northern Ireland and Republic of Ireland samples, i.e., whether the samples are — in statistical terms — likely to have come from the same underlying distribution (population) of profitability or growth rates.<sup>4</sup>

2. To be included in the survey, firms had to be manufacturers, employ between 10 and 100 workers, be trading for at least four years *and* be thought by the development agencies to have significant growth potential (as identified by the development agencies). The survey was therefore biased towards the most dynamic companies within the relevant population. From an initial sample of 1,853 firms, usable responses were obtained from 406 firms in Northern Ireland and 297 firms in the Republic of Ireland.

3. The sample bias towards Northern Ireland firms reflected primarily a greater level of encouragement for firms to participate by the Northern development agencies. See Barkham *et al.* (1996) for a survey of the performance characteristics of Northern Ireland firms compared to some other UK regions, and Gudgin *et al.* (1995) for an overview of the relative performance of the small business sectors in Northern Ireland and the Republic of Ireland.

4. Average profit rates were constructed as a simple average of the rates from 1991 to 1994, with 1991 to 1993 values being inflated in 1994 prices. Profit per employee values were inflated to 1994 prices before averaging and expressing in Sterling.

Table 1: *Relative Profitability, Growth and Asset Utilisation of Small Firms in Ireland: 1991-1994*

	<i>n</i>	<i>Lower Quartile Limit</i>	<i>Median</i>	<i>Upper Quartile Limit</i>	<i>Mean</i>
<b>1. Return on Sales (% of turnover)</b>					
Northern Ireland	294	2.4	5.6	10.2	6.9
Republic of Ireland	131	2.9	4.9	10.0	6.8
<b>2. Return on Assets (% of net worth)</b>					
Northern Ireland	264	9.1	22.5	42.9	27.1**
Republic of Ireland	126	8.1	13.8	22.2	17.9**
<b>3. Profit per Employee (£'000 Stg. per employee)</b>					
Northern Ireland	275	1.0	2.0	5.1	3.5**
Republic of Ireland	133	1.2	2.9	6.2	4.7**
<b>4. Sales Volume Growth (% per year)</b>					
Northern Ireland	324	1.0	8.3	17.6	11.5
Republic of Ireland	173	0.3	6	12.6	8.3
<b>5. Employment Growth (% per year)</b>					
Northern Ireland	302	-1.9	2.6	12.5	5.7
Republic of Ireland	184	0.0	3.5	10	5.1
<b>6. Turnover to Asset Ratio</b>					
Northern Ireland	280	3.0	4.6	8.8	3.6**
Republic of Ireland	141	1.9	2.8	4.0	2.2**
<b>7. Turnover per Employee (£'000 Stg. per year)</b>					
Northern Ireland	302	25.5	41.0	62.6	56.9**
Republic of Ireland	173	33.4	55.4	96.5	85.1**

*Notes:*

1. Profit for each business year was measured by firms' net profit on trading activities before bank interest and tax and excluding all extraordinary items (e.g., the sale of capital equipment).
2. Return on sales expresses net profit as a percentage of sales turnover. Return on assets is net profit as a percentage of net worth. Profit per employee is (real) net profit (in £'000) per person employed. Net profit figures were converted into 1994 prices using the producer price index and converted to sterling using an exchange rate of 1.0233 (Source: *Financial Statistics*, CSO, December 1995, Table 7.1A).
3. Sales volume is defined as turnover (less any discounts given) deflated by the national rate of producer price growth. For Northern Ireland this implied a price increase of 6.75 per cent from 1991-1994 (Source: *Economic Trends*, Table 3.1). For the Republic the implied price increase was 7.54 per cent (Source: *Economic Series*, November 1995, p. 15). Employment growth relates to the total number of employees. No allowance is made for any change in part-time employment.
4. The turnover to asset ratio expresses turnover as a multiple of net assets or net worth.
5. Independence of the Northern Ireland and Republic of Ireland samples was tested using the Mann-Whitney test. \*\*indicates non-rejection of the hypothesis of independence at the 5 per cent level.

Source: CAM (1995) Survey Data.

The distributions of return on sales, sales volume growth and employment growth rates were very similar among small firms in Northern Ireland and the Republic of Ireland. By contrast, the distributions of profit per employee and return on assets were significantly different as illustrated by the Mann Whitney test statistics (Table 1). Mean and median rates of return on assets were higher (by 51 and 56 per cent respectively) among small firms in Northern Ireland, reflecting higher average levels of turnover per unit of assets. Both median and mean turnover to asset ratios in Northern Ireland were 64 per cent higher than their southern equivalents. Turnover per employee, on the other hand, tended to be higher in the Republic of Ireland leading to higher profit per employee (see Table 1).

These contrasts may reflect differences in small business performance or differences in firms' operating environment or accountancy practices. In the measurement of profit, for example, it is important to use pre-tax indicators as business tax rates and thresholds differ between Northern Ireland and the Republic of Ireland. Similarly, as the interest rates available on deposits and those charged by banks can also differ between the two areas it is preferable to use a measure of trading profit rather than an indicator which includes investment income or takes account of interest charges. The profit indicator used in the benchmarks was therefore firms' net profit on trading activities before bank interest and tax and excluding all extraordinary items (e.g., the sale of capital equipment). Even this profit measure, however, is subject to uncertainties relating to directors' remuneration/drawings and the accounting approaches which firms use to take account of capital grants.

In large firms, or in situations where a small firm's directors are not employees of the company, directors' drawings or remuneration will be included in net profit. In small firms, the directors of a business may also be employees. In this situation, the directors of a business may choose to draw-out money either as wages/salaries or in the form of directors' drawings or remuneration. In the former case, net profit will be reduced, in the latter, the situation will reflect that in larger firms and, net profit will be unaffected. *Ex post* it is impossible to determine how an individual small firm is determining the split between wages and salaries and drawings, resulting in some uncertainty in the measurement of net profit. There is no reason, however, to anticipate any systematic difference between the approaches being adopted by small firms in Northern Ireland and the Republic of Ireland.

A second, and perhaps more important, issue relates to the accounting method firms use to take account of capital grants. In the Republic of Ireland, firms are required to include new capital assets in their balance sheet at purchase value. Any grant is then added to the profit and loss account over a period of time which reflects the depreciation profile of the assets purchased.

In Northern Ireland around half of all manufacturing firms also adopt this approach (Roper, 1993). The remaining Northern Ireland firms adopt a *net cost* approach including new assets in their balance sheet at purchase value less any grant received. They then depreciate this smaller value. The impact of this difference is twofold. First, the average book value of firms' assets in Northern Ireland is likely to be lower than that in the Republic of Ireland. Second, the time-profile of capital grant receipts on the net profit of an individual firm will be more heavily front-loaded in Northern Ireland.<sup>5</sup> In aggregate the former of these two effects is likely to be most important, reducing asset values in Northern Ireland and introducing an upward bias into asset-based profitability and efficiency measures.

Because of its potential significance in the interpretation of the profitability ratios it is important to try to quantify — at least in broad terms — the likely scale of any asset under-valuation in Northern Ireland. Suppose, for example, that all asset purchases by small firms in Northern Ireland were grant-aided at 40 per cent. Then, as around half of Northern Ireland firms were using the *net cost* approach, the underestimation of the total asset value would be 20 per cent. In practice, however, the true level of under-valuation is likely to be lower than this because average capital grant rates are typically much lower than 40 per cent and because only a proportion of asset purchases by small firms are grant assisted. From 1991-1994, for example, only 30.1 per cent of Northern Ireland small firms received any support for investments in plant, machinery and equipment (McFerran *et al.*, 1996).

From the profitability and growth figures in Table 1 it is possible to derive the extent of asset under-valuation that would be necessary to reduce the rate of return on assets and turnover per unit of assets in Northern Ireland to that in the Republic of Ireland. For example, assets would have to be under-valued by 33.8 per cent to reduce the prevailing rate of return on assets in Northern Ireland (27.1 per cent) to equal that in the Republic of Ireland (17.9 per cent). Similarly, a 39.0 per cent under-valuation of assets would be required to reduce the turnover per unit of assets ratio in Northern Ireland (3.6) to that of the Republic of Ireland (2.2). In both cases this is considerably greater than the level of asset under-valuation which is likely, as seen above. The implication is, therefore, that only part of the differential between the rate of return on assets and the turnover to asset ratio in Northern Ireland and that in the Republic of Ireland could be explained by asset under-valuation, i.e., even allowing for asset under-valuation both ratios would still be higher in Northern Ireland. As indicated earlier this contrasts strongly

5. Although over the lifetime of an asset a similar capital grant would have an identical cumulative profit impact in Northern Ireland and the Republic of Ireland.

with higher turnover per employee and profit per employee in Republic of Ireland small firms.

The question then is whether these remaining differences can be attributed to differences in sample composition or other aspects of firms' characteristics. For example, reflecting differences in the underlying populations, a larger proportion of the Republic of Ireland sample was in mechanical and electrical engineering and food processing. In the case of food processing, in particular, turnover per employee would be expected to be higher than the average for all manufacturing but profit margins would typically be below average. For example, sales per employee in the Irish food, drink and tobacco sector in 1995 was £IR245,645 as compared to £IR161,898 for all manufacturing industries.<sup>6</sup> Profitability was, however, lower in the Irish food, drink and tobacco sector, at 4.3 per cent of sales, as compared to the average of 6.2 per cent for all manufacturing firms.<sup>7</sup> Given the slightly higher concentration of food processing firms in the Republic of Ireland sample it would be expected that this would reduce the turnover to asset differential between the Northern Ireland and Republic of Ireland samples. Yet, this was not found with the implication being that sample composition was not an important factor in explaining the performance ratios.

It is also possible that differences in capital intensities between the Northern Ireland and Republic of Ireland firms could help to explain the return on assets and profit per employee differentials.<sup>8</sup> Unfortunately as data was only collected on net assets, no accurate assessment of fixed and working capital could be made to relate to labour inputs. On-going analysis however, suggests that investment patterns and the age of capital equipment are remarkably similar for Northern Ireland and Republic of Ireland small firms (see Hewitt-Dundas, 1998).

Other characteristics of the Republic of Ireland and Northern Ireland samples suggest counteracting effects. For example, the share of firms' sales accounted for by new or improved products was greater in the Republic of Ireland which, product life-cycle models would suggest is likely to increase profit margins and firm growth rates (Kay, 1979). In neither case, however, was this evident from the empirical comparisons (Table 1).

6. CSO, 1995. *Census of Industrial Production*, Table A, p. 11, Dublin: Central Statistics Office.

7. Forfás, Enterprise Policy and Planning Division, 1997, *Irish Economy Expenditure Survey*, Preliminary Results from 1994 and Trends 1988-1994, Table 3, Forfás, Dublin.

8. Our thanks go to an anonymous referee for highlighting the potential effect of capital intensities on relative profit per unit of assets and profit per employee ratios.

## III IMPLICATIONS

International profitability and growth comparisons depend significantly on the regulatory and legislative regimes within which firms operate. Even in localised comparisons, such as that between Northern Ireland and the Republic of Ireland, these issues are not unimportant. In particular, because of differences in accounting practice, firms in Northern Ireland tend to under-value assets relative to their counterparts in the Republic of Ireland. This is a consequence of the fact that around half of Northern Ireland firms include assets in their balance sheet *net* of any government grants.

The effect of this under-valuation is to distort any relative profitability calculations which depend on asset values. In the particular case considered here, however, allowing for the differences in asset valuation was insufficient to account for higher rates of return on assets and turnover to asset ratios in Northern Ireland. Other profitability indicators, less seriously affected by differences in accounting practice, suggested that profit per employee and turnover per employee were higher in the Republic of Ireland than in Northern Ireland. These contrasting strengths suggest the potential developmental value of continued cross-border benchmarking initiatives. Any such initiatives must, however, take careful account of possible distortionary effects due to differing accountancy practice.

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