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## **GROWTH AND PROFITABILITY IN SMALL AND MEDIUM SIZED AUSTRALIAN FIRMS**

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### **ABSTRACT**

This study investigated the longitudinal behaviour of growth rates and profitability for a large sample of Australian firms. Similar to previous studies, growth rates were found to be much more volatile than profitability measures. Using a regression equation with lagged profit and growth variables, we found no evidence of a consistent relationship between growth and profitability. The longitudinal behaviour of the growth profitability relationship was also investigated. Consistent with previous research, we found that higher growth firms were on average younger. Similarly, high and low profit firms were found to be younger on average. Our results found that a higher proportion of firms pursuing the profitability pathway were much more likely to achieve high growth and profitability in following years. A much lower proportion of firms pursuing the growth pathway were likely to achieve above average performance in profitability in future years.

### **INTRODUCTION**

Organisational growth has been a focus in the literature with many researchers associating growth with entrepreneurship (Davidsson et al, 2002). Gartner (1990) identified growth as a major component of entrepreneurship, with growth being one of eight themes associated with the entrepreneurship concept. But growth as a measure of firm performance has had mixed results in the literature. Delmar et al (2003) suggest that one possible reason for this is that researchers use different measures of growth and that growth itself is heterogenous in nature.

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The use of growth as a measure of firm performance is generally based on the belief that growth is a precursor to the attainment of sustainable competitive advantages and profitability (Markman, 2002). In addition, larger firms have higher rates of survival (Aldrich 1986), and may have the benefits of associated economies of scale. The alternative view is that fast growing firms may encounter difficulties associated with growth that leads to reduced profitability and perhaps financial difficulty. Overall, it is difficult to imagine sustained growth without profitability. Without funding growth through retained earnings, the firm must rely on additional debt or equity finance. The relationship between growth and profitability is therefore an important consideration and to date there has been little agreement on the relationship between these two measures. MacMillan and Day (1987) considered that rapid growth could lead to higher profitability based on evidence that new firms become more profitable when they enter markets quickly and on a large scale. On the other hand, Hoy (1992) concluded that the pursuit of high growth may be minimally or even negatively correlated with firm profitability. Sexton et al (2000) found that firm profitability was correlated with sustainable growth, while Chandler and Jensen (1992) found that sales growth and profitability were not correlated.

While growth has been considered the most important measure in small firms, it has also been argued that financial performance is multidimensional in nature and that measures such as financial performance and growth are different aspects of performance that need to be considered (Wiklund, 1999). It has also been argued that firms grow in many ways and that a firm's growth pattern is related to age, size and industry (Delmar et al, 2003). Delmar et al (2003) also point out that firm growth is not static in nature and there may be considerable variation in firm growth over time. As such, the dynamic nature of growth is an area worthy of investigation.

The primary focus of this study is to investigate empirically the relationship between the performance measures of growth and profitability for a sample of Australian small and medium enterprises. In addition, given the relative lack of research into the regularity of performance measures over time we investigate the longitudinal nature of these performance indicators.

## **MEASURES OF ENTREPRENEURIAL PERFORMANCE**

A significant problem in the measurement of performance outcomes of entrepreneurship is to reach consensus on suitable measures of performance. In this paper, we confine our attention to performance at the level of the firm. While a range of financial and non-financial indicators have been suggested as measures of performance, prior research has tended to focus on variables for which information has been easy to gather (Cooper 1995). Reviews of the literature by Ardishvili (1998), and Delmar (1997) found possible indicators of performance which include assets, employment, market share, physical output, profits and sales.

Several researchers suggest growth as the most important performance measure in small firms, with growth being a more accurate and easily accessible performance indicator than accounting measures, and therefore superior to indicators of financial performance (Wiklund 1999). Lumpkin and Dess (1996) suggested that performance is multidimensional in nature and as such multiple measures of performance should be considered. The relationship between the different measures of performance can be

complex in nature with growing firms not necessarily performing better when financial performance is taken into account. Firms may also trade off performance along different dimensions, choosing for instance, to trade-off long term growth for short term profitability (Zahra, 1991). As such, the relationship between these measures warrants further research if a better understanding of firm performance is to be gained.

Delmar et al (2003) discussed the various performance measures and suggested that if only one indicator had to be chosen as a measure of firm growth, then the preferred measure of growth should be sales. Sales figures are relatively easy to obtain and reflect both short term and long-term changes in the firm. In addition, as Barkham (1996) points out, it is also the indicator favoured by entrepreneurs themselves. Other arguments for using sales growth are based on the growth process being driven by demand for the firm's products and services. Increasing sales will allow growth along other dimensions such as employees and assets. Sales though, may not always be the best measure of performance. Delmar et al (2003) note that start-up and high technology firms may grow significantly in employment and assets before any significant sales are made. As a result, growth in employment and assets should also be considered as performance measures.

Employment has been considered an alternative measure for performance and with the public interest in new employment there are arguments that employment growth is an important dimension to capture (Wiklund, 1999). Measuring performance by employment growth can be problematic though, since this measure can be affected by productivity changes, replacement of employees with capital investments and outsourcing of activities. As a result, a firm can grow significantly in output without any increase in employment (Delmar et al, 2003). Growth in assets is another useful performance measure that has been considered however measuring growth in terms of assets can be difficult from an accounting perspective. Service firms for example may have considerable intangible assets which may not be reflected in the firms' balance sheet (Wiklund, 1999). Other problems include differences in capital intensity ratios across industries (Delmar et al, 2003).

Profitability is another important measure of performance that must be considered as it is unlikely that firm growth can be sustained without profits being available for reinvestment in the firm. Growth along this dimension can be considered in terms of net profit margins or return on assets. If we take the definition of entrepreneurship as the creation of rents through innovation (Stewart, 1991) where rents are defined as above average earnings relative to competitors (Norton, 2002), then profitability measures are particularly appealing. This also implies that economic success is required by high performance firms. Alternative views are given by Delmar et al (2003), who point out that while profits are an important indicator of success, the relationship of profits to size is only evident in aggregate of firms or over long periods for individual firms.

Davidsson (1989a) suggested that composite measures using multiple indicators should be considered given that no universally superior growth indicator seems to exist. Delmar (1997) suggested using the same explanatory model on several growth measures, since different dimensions of growth are aspects of the same underlying dimension of growth and tend to be correlated. Using multiple measures may

therefore better capture the underlying processes of growth (Delmar et al, 2003). They also point out that as there seems to be no universal measure of growth, the use of multiple measures might give a better overall picture of the relationships and a way to test the robustness of any theoretical model to misspecifications in the dependent variable.

Delmar et al (2003) also note that many studies neglect the issue of growth over time, with most empirical research based on size differences between two points in time. This approach is considered problematic since it ignores the development of the firm between the two time periods. Given that growth may be subject to stochastic variation (Davis 1996), Delmar et al (2003) suggest that the regularity or irregularity of growth over time is an important topic of investigation. Chandler, (1996) was one of the few studies that focus on the growth variations over time, suggesting that emerging businesses often do not exhibit monotonic sales growth and that single year sales or growth may not capture aberrations representing the true health of the organisation. Delmar et al (2003) also suggest that using growth averages such as summary statistics may not capture complex growth patterns across time and may not accurately represent the firms' current performance.

Chandler and Baucus (1996) also note that when using sales growth as a measure of performance, researchers often assume that faster growth is desirable. But the notion that faster growth indicates better performance than slower growth may not be universally true. Fast growing firms have excessive strains on resources which can lead to underperformance and in some cases bankruptcy. This reflects the work of Marris (1967), who considered the concept of maximizing sustainable growth as being the goal of management.

The relationship between performance measures such as sales growth and profitability over time is therefore an important area of investigation. Marris (1967) considered the relationship between these measures and suggests that there is an identifiable growth profit trade-off, where in order to finance growth, the firm must forego profits. Cowling (2004) investigated this relationship between growth and profitability and found little evidence of the growth versus profit trade-off. He suggested that there is potential for a cumulative type effect whereby profits engender growth and growth engenders future profit that allows some firms to continually face increasing returns to scale.

Cowling (2004) considered the growth-profit relationship in terms of a system of equations. The starting point was to consider a profit equation with lagged growth rates as explanatory variables, and lagged profit rates. The lagged growth terms allowed them to explore the direction of causality between growth and profitability, while the lagged profit terms allowed them to examine whether profits persisted in the short term.

The profit equation takes the form:

$$\pi_{it} = \alpha + \beta G_{it} + e_{it} \tag{1}$$

where

$$G_{it} = \alpha' + \beta\pi'_{it-n} + u_{it} \quad (2)$$

and where  $\pi$  is the rate of profit and  $G$  is the growth rate of sales. This type of single equation model allows consistent estimates by allowing previous growth to influence profitability.

An estimating equation using ordinary least squares can be then given as:

$$\pi_{it} = \alpha + \beta_1\pi_{it-1} + \beta_2\pi_{it-2} + \beta_3G_{it-1} + \beta_4G_{it-2} + \beta_5S_{it} + e_{it} \quad (3)$$

where  $S_{it}$  is a variable representing firm size.

The use of lagged growth rates is considered to mitigate the effects of any possible endogeneity problems caused by using growth in a profit equation. If growth were endogenous in a profit equation then this would bias the coefficients and the equation system would take the form:

$$\pi_{it} = f(\pi_{it-n}, G_{it} + \text{exogenous variables})$$

$$G_{it} = g(\pi_{it}, G_{it-n} + \text{exogenous variables}) \quad (4)$$

where  $f$  and  $g$  are linear functions.

As Cowling (2004) points out, the underlying hypothesis as outlined by Marris (1967) is that in order to finance growth, the firm must forego profits and therefore the coefficient for the growth variable on the right hand side of equation (3) should have a negative sign. Firm size is also hypothesised to influence profitability for reasons of scale economies. In addition, if there is persistence in profitability in optimally run firms, then the coefficients for the lagged profit terms should be positive.

In summary, it is becoming increasingly apparent that studies of performance in firms should include multiple measures of performance. The complex nature of the growth process itself warrants investigation into the relationship between different performance measures and how they evolve over time.

## METHOD

We conducted a longitudinal study of the growth and profit performance of Australian Small and Medium Enterprises (SMEs), using a large panel of firms over the four-year period 1994/95 to 1997/98. We first replicate part of the study by (Cowling 2004) in order to investigate whether firms do in fact trade-off growth and profitability. Next, we develop a two dimensional profit-growth representation of firm performance, and use this to conduct a longitudinal analysis of firm performance.

### Sample

The research utilises data from the Business Longitudinal Survey (BLS) conducted by the Australian Bureau of Statistics over the period 1994-95 through to 1997-98. This survey contains data on approximately 9,700 business units employing fewer than 200

persons, and is a broad representation of Australian small and medium enterprises. The survey was designed to provide information on the growth and performance of Australian employing businesses and to identify selected economic and structural characteristics of these firms. For confidentiality reasons, all large businesses employing more than 200 people were removed. Approximately 13,000 business units were selected for the initial 1994-95 survey. For the 1995-96 survey, a sub-sample of the original selections for the 1994-95 survey was selected and this was supplemented by a sample of new business units added to the survey in 1995-96. The sample for the 1996-97 survey was again considered in two parts, with the first part being the remaining live businesses from the 1995-96 survey and the second part being a sample of new business units. For the purposes of the study, only those firms that provided complete information in each year were included in the analysis.

### **Measures**

Performance measures included sales growth, employment growth, net profit margin and return on assets. For each performance measure an annual figure was calculated for each of the four year periods from 1994-95 to 1997-98. Sales growth was calculated as the percentage change in sales in each year divided by the sales in the initial year. Net profit margin was calculated as the net profit (operating profit or loss before tax and extraordinary items) as a percentage of gross income in each year. Return on assets was calculated as the net profit in each year as a percentage of total assets. Following Marris (1967), this pre-tax return on assets is also referred to as the internal rate of return, rate of profit or rate of return.

Performance measures relative to a firm's industry subdivision (2 digit ANZSIC code)<sup>1</sup> were also calculated. For firms larger than 100 employees, only the industry division was reported (1 digit ANSZIC code). For these firms, performance was calculated relative to the entire industry division. These relative performance measures were calculated as z-scores. That is, the relevant industry sample mean was subtracted from the firm's measure, and divided by the industry sample standard deviation.

### **Control Variables**

Control variables were included for firm size (sales), firm age and industry (ANZSIC industry division). Delmar et al (2003) suggests that one possible reason for the conflicting results amongst firm growth studies is that many studies fail to account for differences in these factors and that these factors are likely to influence how firm growth occurs.

## **RESULTS**

### **Descriptive Statistics of Measures**

Descriptive statistics for the performance measures used for the study are given in Table 1. As can be seen from the table, there is some variability in the averages of each of these performance variables change over the four year period of the survey.

(Table One)

Correlations for each of the performance measures used in the study in each year are given in Table 2. Correlations between sales growth in each year and other performance measures are generally poor, although there is a small positive correlation between sales growth and both employment growth and net margins in each year. More noticeable is the lack of correlation between sales growth across each year which suggests that sales growth in one particular year is no guarantee of growth in the following year. A similar situation exists with employment growth, where in several years there is a slight negative correlation between years. This also raises the question of whether sales growth and employment growth measures are suitable measures of performance.

In contrast, correlations between net profit margins in any given year show a moderate positive relationship with values from 0.410 to 0.567. Rates of return show a similar moderate positive correlation across the four year period. Overall this suggests that net margins and rates of return are persistent with profits in one year being a good predictor of short term future performance.

(Table Two)

### **Replication and Extension of Cowling (2004)**

We investigated evidence for a trade-off by firms between profit and growth. Following Cowling (2004), current year growth cannot be directly regressed against current year profit because it must be regarded as an endogenous variable (that is sales growth affects profit and vice versa). Instead, current profit is regressed against both lagged profit (to control for firm advantage/disadvantage) and lagged growth. If growth is achieved at the expense of profit (or vice-versa), negative coefficients are expected for growth variables.

The regression results using the profit rate in year 1997-98 are shown in Table 3. Consistent with Cowling (2004), there is persistence in profits when lagged by one and two years as indicated by quite large and significant regression coefficients ( $b > 0.3$ ).

The results for the impact of growth were inconclusive, with non-significant results. We conducted a range of similar analyses searching for any significant results. Specifically, we utilised a range of different variables to measure profitability (net margin, both measures relative to industry) and growth (relative to industry). We also conducted industry specific regressions. The results were similar, consistently showing a strong relationship with lagged profitability, but almost no significant relationship with lagged growth. None of the analyses revealed a significant relationship with 1-year lagged growth. A very weak positive relationship ( $b = 0.008$ ) significant at 0.05 was identified between 2-year lagged growth when net margin was used to measure profitability.

(Table Three)

## **Growth-Profit Performance and Firm Age**

We were interested in determining in what way a firm's performance tends to vary over time on the dual measures of growth and profitability. As a first step, we conducted cross-sectional analyses to establish if there was a relationship between these performance measures and a firm's age.

Since we were primarily concerned with firm behaviour, we used measures relative to industry subdivision in order to remove industry effects as much as possible. We selected relative sales growth and as the measure of growth and relative net profit margin as the measure of profitability.

To enable us to explore these dual dimensions of performance simultaneously, for both measures, we categorised firms into quartiles (four equally sized groups based on their percentile rank) for that measure. For each year, an ANOVA of firm's age was conducted against these two classifications.

(Figure One)

(Table 4)

The results of this analysis are shown in Figure 1 and Table 4. The four lines in the figure represent the four quartiles of relative sales growth while the x-axis represents four quartiles of relative net profit margins (increasing towards the right). Firm age is represented along the y-axis (in two year age categories).

As can be seen in the Figure 1, the highest quartile growth firms are on average younger than the other three quartiles by approximately 2 years. In addition, it can be seen that for each group representing growth rates, the highest and lowest net margin quartiles tend to be younger on average than the middle two quartiles by approximately two years. The differences between the mean age of each net margin quartile are significant ( $p\text{-value} = 0.000$ ). Similarly, the differences between the mean age for each sales growth quartile are significant ( $p\text{-value} = 0.000$ ). However, the interaction effect is not significant. That is, there is no difference in the effect of net margin, for the different growth quartiles.

## **Longitudinal Growth-Profit Performance**

To investigate directly how the growth-profit performance varies over time for individual firms, firms were classified into 5 groups as outlined below. The firms were first separated into a 4x4 classification based on their percentile rank across the dimensions of relative sales growth and relative net profit margin. They were then divided into five groups as follows:

- Poor – low performance on both dimensions
- Middle – mid performance on both dimensions
- Growth – high growth performance, but low profit performance
- Profit - high profit performance, but low growth performance
- Star – high performance on both dimensions

(Figure Two)

For each group in one year, the proportion that moved into each group (or ceased business) was determined. From the four years of data, three of these transitions could be calculated. Table 5 shows the mean transition proportions (expressed as a percentage) from 1994/95 to 1995/96. We note that these transition proportions were quite stable over the three years of data.

For all groups, a high proportion of firms remained in the same group – substantially higher than the population means in all cases. The ‘Middle’ group is the most stable, with almost 50% of members likely to remain in that group the following year. The other groups all have approximately 30% of members remaining.

The most interesting observation from the table is the high proportion of ‘Profit’ firms that improve to become ‘Stars’ (28.3%), yet the low proportion of ‘Growth’ firms that achieve this improvement (9.1%). In fact, ‘Poor’ and ‘Middle’ firms are approximately equally likely as ‘Growth’ firms to transition to ‘Stars’ (approximately 10%). All three groups are also about equally likely to transition to ‘Profit’ (about 6-9%).

In contrast, ‘Profit’ and ‘Star’ firms are likely to remain within that combined group (over 55%), with transitions between these two groups only marginally less likely than these firms remaining in their own group. Firms in both groups are quite unlikely to transition to ‘Poor’ or ‘Growth’ (<15%), with ‘Profit’ firms particularly unlikely to transition to ‘Growth’ (approx 5%). Firms in both these groups have approximately equal likelihood to transition to ‘Middle’ (approx 20%).

## **DISCUSSION**

### **The Persistence of Profit and Growth**

The results showing persistence in profits lagged one and two years is consistent with the work of Cowling (2004) who found a similar relationship in short run profitability. These results are also similar to empirical studies by several others including (Cubbin 1987) who found that the systematic persistence of profitability was primarily related to the firm rather than the industry.

In contrast to profitability, sales growth rates showed considerable volatility between years. This is also seen in the correlations of sales growth rates with values between (-0.106 to 0.073). These results are consistent with a large body of research into the volatility of growth rates dating back to the work by Gibrat (1931). The pure volatility of sales growth raises questions about its appropriateness as a dependent variable for firm-level entrepreneurship research, particularly in cross sectional designs, or longitudinal designs where growth is only measured at one time period. This high level of volatility can mean one of two things (or a combination of both). The phenomena of interest (entrepreneurship) is highly volatile, in which case measurement at one time period is of questionable value. Alternatively, sales growth is strongly influenced by factors other than the phenomena of interest that are

themselves highly volatile. In that case, isolating the impact of the entrepreneurship is clearly a difficult task.

### **Profitability - Growth Relationships**

We discussed above a number of competing theoretical arguments regarding the relationship between firm profitability and firm growth: both growth and profitability are predominantly determined by environmental and industry conditions; firms strategically trade-off growth against short-term profit; growth and profit relationships vary over the product life-cycle; and, growth is required to build resources and scale that enable profitability.

Cowling (2004), found evidence that growth has a positive impact on profitability, providing support for explanations that indicate a positive relationship. Despite a large sample (2923 firms), we did not replicate this result and found no significant relationship between profit and growth. As such, our results disconfirm the generalisability of the Cowling result.

The most likely explanations for the differences between our findings and those of Cowling are differing environmental and industry affects. First, as Cowling points out, his analysis of UK firms over the period 1991-1993 takes place at a period of economic recovery following a downturn. Further, he notes that average profitability varied differently by industry and firm size through this economic period. In contrast, our study took place during a period of steady economic growth in Australia<sup>2</sup>. It is likely that different firms, strategic groups and industries respond differently to these economic cycles. Growth and profitability performance tend to move up and down together. Using dummy variables is generally not sufficient to eliminate industry effects for two reasons. Firstly, the industry categories are very coarse. Industries are likely to be quite heterogeneous at a less aggregated level. Second, a dummy variable does not act to moderate the strength of the relationship.

### **Longitudinal Behaviour of Growth-Profit Performance**

Our results also investigated the dual growth and profit performance of firms over time. Consistent with earlier studies (e.g. Evans (1987), Becchetti (2002), Davidsson (2002)), high growth firms were younger on average. Both high and low profit firms were younger on average. This is consistent with other results showing profits to yield higher variance for younger firms (e.g. Cowling (2004)). These results suggest that some young firms have higher than average profits, but at least some struggle to maintain their competitive advantage. It is likely that firms with above average profits will attract competition from either new or existing players. It appears that some firms find it difficult to maintain a competitive advantage. Other young firms experience below average profits. Over time, many of these firms must either improve their profitability or exit. It is likely that firms improve their performance either through learning or scale.

Finally, we investigated temporal behaviour of firms on their dual growth-profit performance. In order to track the behaviour of these firms over time, they were classified into five groups depending on their relative performance across growth and profitability. For the analysis these classifications were identified as 'Poor', 'Middle',

'Growth', 'Profit' or 'Stars'. The results indicate that the largest proportion in each group tended to remain in that group in the following year. Of particular interest though were the differences in the performance pathways for the 'Growth' and 'Profit' groups. Most notable is that it is much more likely that firms become 'Stars' via a 'Profit' pathway than a 'Growth' pathway. Firms following the 'Growth' pathway were much less likely to move to the 'Profit' or 'Star' group. In addition, those firms leaving the 'Star' group tended to remain profitable while having more modest relative growth rates.

One implication of these results is that firms pursuing growth as the expense of profits might be adopting a risky strategy. Pursuing the profitability pathway might well be the more appropriate strategy for those firms wishing to ultimately perform well along both growth and profitability dimensions. Geroski (1997) discussed this problem of firms trading off profits for growth. While managers may prefer the growth pathway given the desire to preside over a larger firm, it may be a riskier strategy given that growth rates are much more variable than profits. They suggested that a firm sacrificing current profits for increased growth rates may be effectively trading off a reasonably steady stream of profits for uncertain outcomes in terms of growth. Gartner (1997) also considered this situation and suggested that the process of rapid growth could lead to a series of sizeable hurdles that could diminish a firm's ability to generate profits.

## **CONCLUSIONS**

This study investigated the longitudinal behaviour of growth rates and profitability for a large sample of Australian firms. In line with previous studies, it was found that growth rates are highly volatile over time and the relationship with profitability is not always clear. One aim of this study was to determine if firms intentionally traded off profits for growth or whether there was evidence of growth enabling profits. Using a regression equation with lagged profit and growth variables, we found no evidence of a relationship between growth and profitability.

We further investigated the longitudinal behaviour of the growth profitability relationship. Consistent with previous research, we found that higher growth firms were on average younger, and high and low profit firms being younger on average. Our investigations into growth profitability pathways for firms found that firms pursuing the profitability pathway were much more likely to achieve high growth and profitability in following years. A much lower proportion of firms pursuing the growth pathway were likely to achieve above average performance in profitability in future years. This suggests that pursuing growth strategies at the expense of profits may be a risky strategy. Focussing on profits and reinvesting those profits into the firm may be a better strategy in the longer term.

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## **NOTES**

1. Australian Bureau of Statistics, Catalogue 1292.0 Australian and New Zealand Standard Industrial Classification (ANZSIC), [www.abs.gov.au](http://www.abs.gov.au)
2. GDP Growth over the period 1994/95 to 1997/8 was 5.4%, 6.7%, 5.4% and 5.9% respectively.

	Mean	Standard Deviation	Median
Sales Growth 94/95 (%)	25.89	76.18	10.94
Sales Growth 95/96 (%)	8.85	36.03	3.86
Sales Growth 96/97 (%)	7.35	41.16	3.34
Sales Growth 97/98 (%)	8.18	40.14	3.93
Net Margin 94/95 (%)	7.31	13.16	4.65
Net Margin 95/96 (%)	6.42	11.85	3.78
Net Margin 96/97 (%)	6.39	12.77	3.76
Net Margin 97/98 (%)	6.43	13.05	3.51
Return on Assets 94/95 (%)	20.67	61.11	10.34
Return on Assets 94/95 (%)	16.11	44.88	8.08
Return on Assets 94/95 (%)	16.51	55.52	7.77
Return on Assets 94/95 (%)	17.12	53.48	7.68
Employment Growth 94/95 (%)	11.51	52.19	.00
Employment Growth 95/96 (%)	5.96	42.48	.00
Employment Growth 96/97 (%)	4.02	36.63	.00
Employment Growth 97/98 (%)	7.28	52.03	.00

Table 1. Descriptive statistics for performance measures in each year  
(n = 2330 Firms)

Table 2. Correlations of performance measures

Correlations<sup>a</sup>

		SalGwth5	SalGwth6	SalGwth7	SalGwth8	NetMgn5	NetMgn6	NetMgn7	NetMgn8	irr5	irr6	irr7	irr8	empgrw5	empgrw6	empgrw7	empgrw8
SalGwth5	Pearson Correlation	1	.041*	.073**	.011	.019	-.002	-.005	-.009	-.017	-.019	.033	-.015	.147**	.076**	.003	.032
	Sig. (1-tailed)	.	.024	.000	.293	.175	.457	.413	.338	.203	.184	.056	.239	.000	.000	.436	.061
SalGwth6	Pearson Correlation	.041*	1	.007	-.017	.017	.116**	.047*	.060**	-.035*	.097**	.041*	-.008	.106**	.157**	.017	.044*
	Sig. (1-tailed)	.024	.	.361	.200	.212	.000	.011	.002	.046	.000	.024	.346	.000	.000	.206	.018
SalGwth7	Pearson Correlation	.073**	.007	1	-.106**	.034	.027	.077**	.000	-.040*	-.025	.054**	.007	.014	.131**	.184**	.002
	Sig. (1-tailed)	.000	.361	.	.000	.051	.098	.000	.493	.027	.109	.005	.368	.246	.000	.000	.457
SalGwth8	Pearson Correlation	.011	-.017	-.106**	1	.016	-.038*	-.034	.051**	.033	-.071**	-.038*	.015	.008	.072**	.024	.228**
	Sig. (1-tailed)	.293	.200	.000	.	.227	.032	.050	.006	.058	.000	.034	.237	.358	.000	.122	.000
NetMgn5	Pearson Correlation	.019	.017	.034	.016	1	.539**	.468**	.410**	.468**	.298**	.217**	.226**	.030	.082**	.020	-.029
	Sig. (1-tailed)	.175	.212	.051	.227	.	.000	.000	.000	.000	.000	.000	.000	.073	.000	.168	.081
NetMgn6	Pearson Correlation	-.002	.116**	.027	-.038*	.539**	1	.574**	.500**	.318**	.593**	.305**	.290**	.030	.074**	.080**	-.063**
	Sig. (1-tailed)	.457	.000	.098	.032	.000	.	.000	.000	.000	.000	.000	.000	.075	.000	.000	.001
NetMgn7	Pearson Correlation	-.005	.047*	.077**	-.034	.468**	.574**	1	.567**	.269**	.345**	.534**	.303**	.023	.019	.052**	-.015
	Sig. (1-tailed)	.413	.011	.000	.050	.000	.000	.	.000	.000	.000	.000	.000	.129	.176	.006	.237
NetMgn8	Pearson Correlation	-.009	.060**	.000	.051**	.410**	.500**	.567**	1	.226**	.318**	.281**	.488**	.028	.032	.014	-.037*
	Sig. (1-tailed)	.338	.002	.493	.006	.000	.000	.000	.	.000	.000	.000	.000	.088	.062	.256	.036
irr5	Pearson Correlation	-.017	-.035*	-.040*	.033	.468**	.318**	.269**	.226**	1	.464**	.355**	.375**	.008	.067**	.020	-.019
	Sig. (1-tailed)	.203	.046	.027	.058	.000	.000	.000	.000	.	.000	.000	.000	.349	.001	.171	.181
irr6	Pearson Correlation	-.019	.097**	-.025	-.071**	.298**	.593**	.345**	.318**	.464**	1	.454**	.480**	.026	.011	.049**	-.106**
	Sig. (1-tailed)	.184	.000	.109	.000	.000	.000	.000	.000	.000	.	.000	.000	.109	.303	.009	.000
irr7	Pearson Correlation	.033	.041*	.054**	-.038*	.217**	.305**	.534**	.281**	.355**	.454**	1	.477**	.025	.008	.074**	.002
	Sig. (1-tailed)	.056	.024	.005	.034	.000	.000	.000	.000	.000	.000	.	.000	.114	.352	.000	.461
irr8	Pearson Correlation	-.015	-.008	.007	.015	.226**	.290**	.303**	.488**	.375**	.480**	.477**	1	.018	.015	.025	-.024
	Sig. (1-tailed)	.239	.346	.368	.237	.000	.000	.000	.000	.000	.000	.000	.	.194	.240	.115	.119
empgrw5	Pearson Correlation	.147**	.106**	.014	.008	.030	.030	.023	.028	.008	.026	.025	.018	1	-.038*	.024	-.018
	Sig. (1-tailed)	.000	.000	.246	.358	.073	.075	.129	.088	.349	.109	.114	.194	.	.033	.122	.199
empgrw6	Pearson Correlation	.076**	.157**	.131**	.072**	.082**	.074**	.019	.032	.067**	.011	.008	.015	-.038*	1	-.165**	.001
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.000	.176	.062	.001	.303	.352	.240	.033	.	.000	.473
empgrw7	Pearson Correlation	.003	.017	.184**	.024	.020	.080**	.052**	.014	.020	.049**	.074**	.025	.024	-.165**	1	-.220**
	Sig. (1-tailed)	.436	.206	.000	.122	.168	.000	.006	.256	.171	.009	.000	.115	.122	.000	.	.000
empgrw8	Pearson Correlation	.032	.044*	.002	.228**	-.029	-.063**	-.015	-.037*	-.019	-.106**	.002	-.024	-.018	.001	-.220**	1
	Sig. (1-tailed)	.061	.018	.457	.000	.081	.001	.237	.036	.181	.000	.461	.119	.199	.473	.000	.

\*. Correlation is significant at the 0.05 level (1-tailed).

\*\* Correlation is significant at the 0.01 level (1-tailed).

a. Listwise N=2330

**Coefficients(a)**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	18.043	6.769		2.666	.008
Rate of Return 1997	.326	.019	.312	17.298	.000
Rate of Return 1996	.345	.021	.296	16.383	.000
Sales Growth 1997	.012	.016	.012	.768	.443
Sales Growth 1996	-.033	.016	-.033	-2.033	.042
Sales 1998	.000	.000	-.022	-1.353	.176
Dummy1_Ind8	-19.255	12.577	-.029	-1.531	.126
Dummy2_Ind8	-13.685	6.903	-.118	-1.982	.048
Dummy3_Ind8	-8.319	7.764	-.034	-1.072	.284
Dummy4_Ind8	-14.295	7.119	-.094	-2.008	.045
Dummy5_Ind8	-14.875	7.330	-.079	-2.030	.043
Dummy6_Ind8	-3.003	8.342	-.010	-.360	.719
Dummy7_Ind8	-12.121	8.300	-.040	-1.460	.144
Dummy8_Ind8	-12.635	9.206	-.032	-1.372	.170
Dummy9_Ind8	-5.324	7.189	-.032	-.741	.459
Dummy10_Ind8	-16.537	9.479	-.040	-1.745	.081

a Dependent Variable: Rate of Return 1998

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.526(a)	.276	.272	48.57967

Table 3. Regression Output (Dependent variable – Rate of Return 1998)

### Estimated Marginal Means of Firm Age (1994/95)

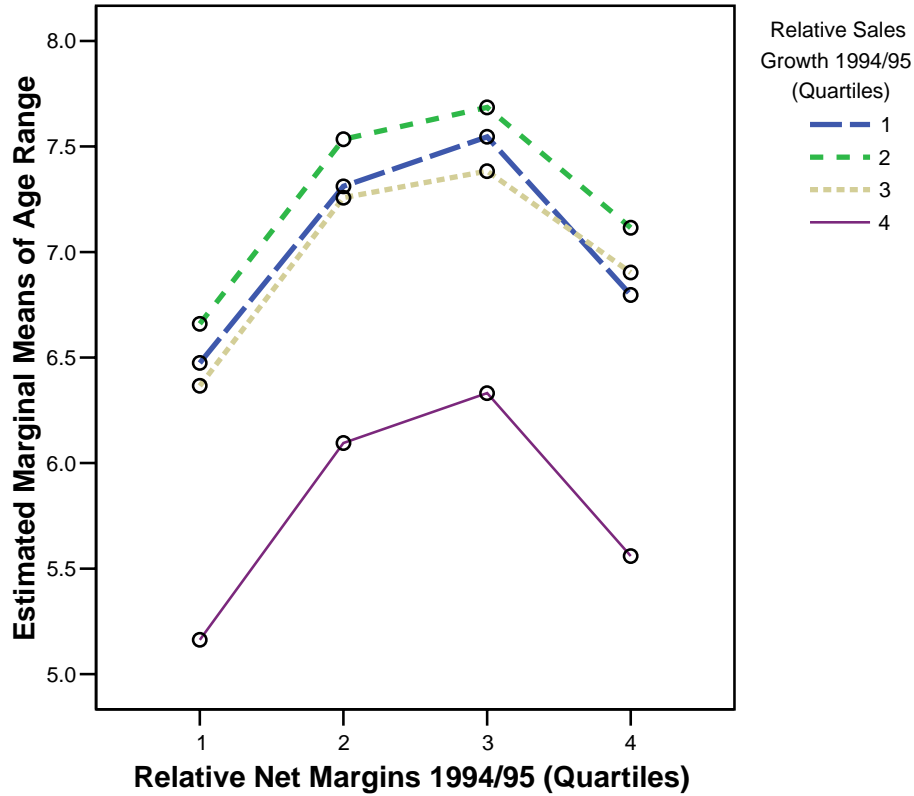


Figure 1. Growth and Profitability and Age relationships in 1994-95 using sales growth and net margins relative to industry (Age variable is in two year interval categories)

#### Tests of Between-Subjects Effects

Dependent Variable: age5a

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3276.156(a)	15	218.410	12.476	.000
Intercept	296146.277	1	296146.277	16916.608	.000
GRP_RelNM5	1096.311	3	365.437	20.875	.000
GRP_RelSG5	2142.081	3	714.027	40.787	.000
GRP_RelNM5 * GRP_RelSG5	14.149	9	1.572	.090	1.000
Error	116223.959	6639	17.506		
Total	425706.000	6655			
Corrected Total	119500.115	6654			

a R Squared = .027 (Adjusted R Squared = .025)

Table 4. ANOVA results for 1994/95 financial year

		Growth Quartile			
		1	2	3	4
Profit Quartile	1	Poor		Growth	
	2	Middle			
	3				
	4	Profit		Star	

Figure 2. Table of classifications for longitudinal growth profitability comparisons

**Proportion of Start Group: Average of 1-Year Transitions**

		Start Group (1994/95)					
		Poor	Middle	Growth	Profit	Star	TOTAL
End Group (1995/96)	Exit	10.0	4.2	6.2	9.0	4.7	6.5
	Poor	<b>30.6</b>	15.4	30.3	9.8	10.9	18.9
	Middle	20.1	<b>47.9</b>	22.8	17.7	19.7	28.1
	Growth	22.1	10.5	<b>25.4</b>	5.6	6.3	13.4
	Profit	6.8	9.5	6.2	<b>29.6</b>	26.8	15.1
	Star	10.3	12.5	9.1	28.3	<b>31.5</b>	18.0
TOTAL		100.0	100.0	100.0	100.0	100.0	100.0

Table 5. Transition proportions from 1994/5 to 1995/6

**Proportion of Start Group: 1994/95 to 1997/98 Transition**

		Start Group (1994/95)					
		Poor	Middle	Growth	Profit	Star	TOTAL
End Group (1997/98)	Exit	12.6	5.9	10.5	9.0	7.7	8.6
	Poor	<b>28.1</b>	16.5	28.0	13.5	11.9	18.9
	Middle	22.2	<b>41.8</b>	20.8	18.8	23.0	27.4
	Growth	18.1	10.4	<b>23.2</b>	5.2	9.1	12.9
	Profit	7.0	13.4	6.6	<b>32.1</b>	23.2	16.0
	Star	11.9	12.1	10.9	21.4	<b>25.1</b>	16.2
TOTAL		100.0	100.0	100.0	100.0	100.0	100.0

Table 6. Transition proportions from 1994/5 to 1997/8