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# The Agency Advantage of Debt Over the Lifecycle of the Firm

Ed Vos  
Carolyn Forlong

The question of an 'optimal' capital structure of a firm has been studied for publicly listed businesses for years. From these studies, agency theory has emerged as a good way to understand a firm's capital structure. This paper empirically examines the role that agency theory plays in determining the capital structure of businesses as they move from being small unlisted businesses to newly listed on the stock exchange, to being mature listed businesses. The paper finds that debt has a negative agency advantage (defined as reducing agency costs of equity) for small businesses, a significant but minor advantage at the IPO stage, and a significant advantage at the mature listed stage.

## I. INTRODUCTION

While it is generally accepted that debt financing is relevant to shareholder wealth, it is not known exactly how the role of debt financing changes at various stages of the firm's development. Several capital structure theories have been developed and are based on the existence of market imperfections such as agency costs, taxes, bankruptcy costs and asymmetrical information. However, most of the discussion of these capital structure theories has been made with reference to listed businesses and it is uncertain how leverage relationships might differ at other stages of the business life cycle.

The purpose of this study is to empirically test the agency advantage of debt over the life cycle of the business. The agency advantage of debt is interpreted as the degree that debt benefits the firm by reducing the agency costs of equity. We expect that the changing ownership structures over the firm life cycle will cause the role of leverage to shift also, particularly at the small business stage where there is less separation between manager and owner, and at the IPO stage where a firm undergoes a process of greater diffusion of ownership.

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Consequently, we have divided the firm life cycle into three stages: the small business, the initial public offering (IPO), and the mature-listed stage. For the purpose of this study, we define small businesses as unlisted businesses where the owner is also the manager of the firm. IPO firms are firms which have listed on the stock exchange in the past year. Mature listed firms are those which have been listed on the stock exchange for five or more years.

Before testing the agency advantage of debt at the three stages, this paper reviews the current financial literature in order to understand capital structure theories based on mature listed firms and the different characteristics of small businesses and IPO firms. The report then outlines the empirical tests of leverage in four data sets and comes to a conclusion about the changing agency advantage of debt. That is, the changing degree that debt benefits the owners by reducing agency costs of equity in small businesses, IPO firms and mature listed businesses.

## II. LITERATURE REVIEW

### Capital Structure Theory and Mature Listed Firms

Many studies have examined the benefits of leverage since the famous Modigliani-Miller irrelevance proposition (1958). The irrelevance proposition states that, in a perfect world without taxes, changes in leverage should have no effect on a firm's value. However, the existence of market imperfections has led financial theorists to agree that an optimal capital structure does exist for each firm. There are four generally accepted theories which explain the significance of debt in the presence of taxes, bankruptcy costs, asymmetrical information, and agency costs. These theories have all been tested and have found to be relevant to large listed businesses.

First, there is evidence that debt creates a tax shield advantage through interest payments, and this advantage is balanced by the cost of bankruptcy. This theory was supported by De Angelo and Masulis (1980) who found that capital structure in listed firms is related to the tax shield of debt. This idea is also supported by Givoly, Hayne, Ofer, and Sarig (1992) who documented a positive relationship between the debt ratio and tax rate changes. However, Homaifar, Zietz and Benkato (1994) find that the debt ratio relationship with the tax shield is only observable in the long term, whereas Bayless and Diltz (1994) conclude that firms do not appear to be motivated by the tax advantage of debt. Therefore, while the tax advantage of debt is a simple and intuitive theory, the evidence suggests that there are many other considerations determining a firm's optimal capital structure.

Second, the information hypothesis, popularized by Ross (1977), suggests that managers use capital structure to signal information about the firm's expected future cashflows and operating risk. This hypothesis is confirmed by many

studies<sup>1</sup> which have documented stock price increases when leverage increasing decisions are announced. The information hypothesis argues that this effect occurs due to asymmetrical information between managers and shareholders, and suggests that managers are signalling information about the firm's capacity to meet future interest payments.<sup>2</sup>

The information gap between management and shareholders leads to a third theory by Myers (1984) known as the pecking order hypothesis. This hypothesis suggests that managers will first seek to finance assets with the lowest cost financing available. Myers argues that managers will issue the least risky security available in order to reduce costs when new debt or equity is underpriced by uninformed investors. This theory implies that asymmetrical information leads to a hierarchy of preferred financing according to the relative costs of each security.

The pecking order hypothesis is supported by Bayless and Diltz (1994) who found that debt is more likely to be issued after a fall in interest rates, and equity is more likely to be issued when a firm's growth opportunities are high. Bayless and Diltz conclude that equity offerings are timed for favorable market conditions, when the cost of equity becomes cheaper than additional debt. Thus they provide evidence that relative costs of each financial instrument are motivating factors in the use of financing.

Finally, the agency theory focuses on how the gap between management and ownership can lead to conflicting interests between managers, bond holders, and owners. This theory is based on the idea that managers will not always act in the best interests of the investors. For instance, managers may seek to consume "perquisites" and decrease their work load if the cost of doing so is mainly absorbed by the investor. Consequently, agency costs consist of the monitoring, bonding, and auditing of managerial performance by both debt holders and shareholders. Agency theory proposes that debt reduces agency costs incurred by shareholders through increased managerial monitoring and pressure to meet interest payments.

Jensen and Meckling (1976) were one of the first to suggest that debt forces agents to take more care with their investments and that it reduces agency costs by performing a monitoring role valuable to investors. They argue that the existence of agency costs for both debt and equity results in an optimal capital structure which minimizes the combined agency costs. The agency theory is also supported by Grossman and Hart (1982), who argue that financial leverage can reduce agency costs by increasing the possibility of bankruptcy and providing a managerial discipline.

Maloney, McCormick and Mitchell (1993) confirmed that debt enhances managerial decision making by finding that firms with higher leverage outperform others in the acquisition market. Ofek and Eli (1993) also found that leverage increases the probability of operational and financial actions, such as labor cutbacks, in the first year of financial distress.

In summary, debt does not only play a role in providing an additional source of funds, but it also benefits mature listed firms through reducing asymmetrical information, creating a tax shield, improving managerial efficiency and reducing agency costs.

### The Small Business Difference

As the empirical research on small business capital structure has been limited,<sup>3</sup> it is difficult to determine whether these theories discussed above are applicable to small businesses. Most theorists agree that small businesses are impacted by tax shields, bankruptcy costs, agency costs and information asymmetries to a different degree. For example, Pettit and Singer (1985) argue that small businesses experience a greater impact of bankruptcy, monitoring costs, and information asymmetry in comparison to large businesses.

There are three popular theories which help us to understand the role of debt in small firms. These theories are outlined below and suggest that the benefits and risks of debt are likely to be quite different in small businesses. In particular it is expected that external funding is less available, suffers from higher agency costs and reduces the independence and utility of the owner.

First, the "finance gap" theory suggests that small firms often find external funds more costly and less available. Groves and Harrison (1974) state:

Small companies are hit harder by taxation, face higher investigation costs for loans, are generally less well informed on sources of finance, and are less able to satisfy loan requirements. (p. 228)

Not only do small business owners face problems in finding external funding, but they will often need to secure the business loans with personal assets. Ang, Lin, and Tyler (1995) believe that these personal commitments cause leverage levels to be overstated since the actual asset base should include both personal and business assets.

As owner-manager businesses have no separation between the agent and equity provider, we would expect that *equity* agency costs are zero. The ownership structure means that the manager is motivated to increase his own equity value. However, agency costs of *debt* are more acute for small firms, as owner-managers have greater opportunities to consume perquisites and channel funds to themselves. Higher agency costs are confirmed by Scherr, Sugrue, and Ward (1990), who find that monitoring problems are more severe for small firms in assessing and controlling managerial behavior. High monitoring costs of debt have meant that lenders to small businesses are usually banks and trade creditors, as they are more efficient at monitoring managerial behavior.<sup>4</sup>

Second, while debt has higher monitoring costs for small firms, it may also carry a lower tax advantage. The combined business and personal incomes of many small business owners are often in the low end of the progressive tax schedules. Thus in contrast to larger firms, taxes actually favor less not more debt for small businesses. Day, Stoll and Whaley (1985) agree that the tax shield is less valuable to small firms as they are generally less capital intensive and less profitable.

The smaller tax advantage is also balanced by higher direct and indirect bankruptcy costs. The concept of higher bankruptcy costs is supported by Bradbury and Lloyd (1994), who discovered that direct bankruptcy costs are negatively related to size. Bankruptcy also carries greater indirect costs to the small business owner, such as the loss of self esteem, self employment, and personal assets.

Third, some theorists propose that small business managers follow a unique financial objective function. Petty and Bygrave (1993) conclude that a firm's financial objective is largely dependent upon the stage of development of the business. While managers of larger firms appear to pursue a goal of wealth maximization, small business owners are more concerned with utility maximization. Ang (1992) argues that small business managers are not only concerned with creating wealth, but also with the preservation of control, the avoidance of accountability, the preservation of self esteem, the security of self employment and the employment of friends and family. Therefore, it is expected that these particular concerns would be put at risk by a highly levered capital structure.

The owner-manager's preoccupation with retaining control and avoiding accountability may often limit the growth potential of a small business. McMahon (1993) argues that the desire to maintain control causes owner-managers to minimize the use of outside financing, which in turn may severely limit the development of the enterprise. In fact, it was discovered by Davidsson (1989) that forty percent of small business owners are not motivated by wealth to increase the size of their business. The main two fears given for avoiding growth were the possibility of a lack of control and a lower well-being of employees. Similarly, an investigation by the Australian National Investment Council (1995) concluded that:

Only two percent of Australian small businesses are growth firms currently seeking out equity (...) taking outside equity increases debt capacity (...) increases growth but leads to shared control and increased accountability. (p. 19)

With debt incurring higher bankruptcy costs, lower tax advantages, and lower agency advantages to small business owners, one might expect that small businesses would have less leverage in comparison to larger firms. Norton (1990) confirms this idea in a survey which found that small business managers have a greater preference for zero debt and are unconcerned about target debt ratios in comparison to larger firms.

However, what we find in reality, is that a perceived lower advantage of debt for small businesses does not appear to affect actual leverage ratios. Some studies such as Pettit and Singer (1993), Brigham (1969), and Walker (1975) have found that leverage is significantly higher for small firms. Similarly, in a study of 86,000 firms, Davidson and Dutia (1991) discovered that small businesses generally have higher debt levels especially in the form of short term debt.<sup>5</sup> In contrast, Remmers, Stonehill, Wright and Beekhuisen (1974) concluded that size was not a determinant of the leverage ratio in manufacturing firms and Chen and Balke (1979) also reported a similar result.

The apparent disagreement of these studies could be due to the difficulty of measuring small business capital structure. A true market value for equity is very hard to determine except perhaps at the time a business is sold. Ang (1992) points out that the leverage ratio for small businesses can be biased due to debt acting like "quasi equity" and certain asset and liability items being unreported. In addition, a small business owner's contributions such as low cost loans, low cost labor, and free use of personal assets, can often cause equity to be understated.

From the above review of financial literature, it appears that small businesses suffer from very high agency costs of debt and insignificant agency costs of internal equity. Bankruptcy costs are also high and may completely outweigh a smaller tax advantage of debt. Added to the fact that the owner-manager pursues a goal of maximizing utility rather than wealth, one would expect that small businesses would generally *prefer* to use lower levels of debt.

Certainly, if the agency costs of equity are insignificant and the agency costs of debt are very high, one would expect that debt in a small business would actually increase the combined agency costs in a small business. In fact, the entire role of debt would differ in small businesses as they generally gain less from tax shields, increased managerial efficiency and monitoring, and reduced asymmetrical information. Thus, we expect that the most important motivation for using debt in a small business would be simply to provide much needed funds.

### **The Different Circumstances For IPO Firms**

An initial public offering (IPO) provides firms with greater access to equity funds, greater liquidity, and an avenue for significant growth. It is generally agreed that IPOs are timed when stock prices are high and equity capital is cheap. Loughran & Ritter (1993) confirm this idea with a finding of low IPO stock returns, which they documented as 2% on average for the first two years in comparison to 15% for mature listed firms.<sup>6</sup> This finding indicates that firms are being listed on the stock exchange to take advantage of a low cost of equity.

Certainly, IPO firms are likely to have different characteristics in comparison to mature-listed firms, and their capital structure is expected to be significantly dif-

ferent also. In fact, it may be optimal for IPO firms to maintain a conservative capital structure for several reasons outlined below.

First, IPO firms may suffer from problems of asymmetrical information to a lesser extent, as the underwriter's involvement with the company may decrease the information gap. Consequently, the underwriter often acts as a certifying agent and disseminator of information. Therefore, the underwriter may absorb some of the agency costs which would normally be incurred by investors, and as a result, the process may lessen the monitoring advantage of debt.

Second, firms at the IPO stage are usually high growth firms needing capital to fund future investments. If a firm is facing high growth opportunities then it would probably be better to maintain a higher level of financial slack. Both Myers and Majluf (1984) and Cornell and Shapiro (1988) agree that firms should try to maintain a level of financial slack so that profitable investment opportunities are not foregone. The large transaction costs for issuing equity, in terms of both investment bankers fees and management effort, may also provide an incentive for IPO firms to issue more equity than is immediately necessary.

Third, Leyland and Pyle (1977) conclude that a high proportion of equity retained by insiders signals that insiders value the company's prospects as high. Therefore, IPO firms may initially use less debt in order to signal a high valuation of the firm to the market.

Finally, young firms typically have much of their value represented by intangibles such as growth opportunities. The lower proportion of tangible assets will discourage funding from debt holders and limit debt capacity. Myers (1977) supports this idea and argues that debt holders lend less to firms with high growth options because managers have an incentive to sub-optimally invest.

In summary, the listing stage of the business life cycle seems to occur when the utility gained from retaining control is outweighed by the low cost of equity, desire for growth, benefit of greater liquidity, and need for additional financial slack. IPO firms are less likely to benefit from the agency advantage of debt because the underwriter may already act as a monitor and disseminator of information.

However, the initial public offering stage is where a firm experiences a greater diffusion and liquidity of ownership. Agency theory predicts that with diffusion of ownership, agency costs should increase, and as a result, we would expect IPO firms to gradually take on increasing amounts of debt to counteract agency costs and improve managerial efficiency.

### **III. EMPIRICAL TESTS**

#### **Small Businesses**

In order to understand the role of debt at the small business stage we have tested the leverage relationships that exist among a set of small owner-manager



firms. In order to provide a true picture of small business capital structure and obtain a market value for equity, we have used a list of owner-manager firms at the time the business is sold.

We expect that debt will have no agency advantage to the owner-manager as the manager will already act in a way to increase his own personal wealth. In fact, debt is expected to decrease the total utility to the owner due to a loss of control, added accountability, and an increase in personal risk. Thus, debt is anticipated to have a negative agency advantage and to be used only when additional funds are necessary.

## Data

The first set of data was a list of 99 observations from 35 New Zealand (N.Z.) small businesses which had been sold from 1988-1993. This data set was obtained on a confidential basis from a number of New Zealand accounting firms. As the sample size was considered to be smaller than optimal, a second set of data from the United States (U.S.) was also studied. The U.S. data was private information obtained from a broker. The data set consisted of 123 observations for sixty five U.S. small businesses which had been sold from 1984 to 1991. This list was then narrowed down to 50 observations from 35 firms because some of the financial data was incomplete.

## Methodology

To examine why small business managers use debt, leverage relationships were determined using the Spearman's rank correlation procedure. This form of analysis is a non-parametric method which is more suitable for determining relationships when the data is not normally distributed.

Leverage was calculated using the sale price of the business, for the reason that financial statements usually do not accurately measure leverage in small businesses. Table 1 shows the formulas for each of the variables.

**Table 1**  
**Formulas for Spearman's Rank Analysis**

<i>Key</i>	<i>Variable</i>	<i>Formulas</i>
L1	Term leverage	Term liabilities / market equity + total debt
L2	Total leverage	Total debt/ Market equity + Total debt
t	Unlevered tax rate	(Tax paid + Interest expense * Tax rate) /Net income before tax, interest & depreciation.
s	Size	Total assets
f	Future growth opportunities	Market Equity: Book equity
g	Sales Growth	% change in yearly sales

**Table 2**  
**Small Business Coefficient Results for Each Variable**

Variable	<i>US Term Leverage</i>	<i>US Total Leverage</i>	<i>NZ Term Leverage</i>	<i>NZ Total Leverage</i>
Tax rate	-.102	-.053	+.099	+.248*
Size	+.048	+.446***	+.341**	+.349**
Future Growth Opp	-.172	-.084	-.061	.003
Sales Growth	+.291**	+.334**	+.059	-.042

Note: \* .10 level of sig., \*\* .05 level of sig., \*\*\* .01 level of sig.

## Results

The Spearman's rank analysis identified a positive leverage relationship for both size and sales growth. However, there was no evidence to suggest leverage was related to tax rates or future growth options. Table 2 shows the results of the Spearman's rank analysis.

The positive correlation between leverage and size found for both U.S. and N.Z. firms was very strong. This result is consistent with the work of Bradley and Lloyd (1994) who found that bankruptcy costs decrease as a function of size resulting in a lower optimal debt level for small firms. The finding is also consistent with the finance gap theory and supports the argument that larger firms find external funding cheaper and more available. In addition, the idea that the monitoring of small firms is more costly to debt holders is also supported by a positive relationship with size.

Second, a significant positive relationship was found for sales growth with both measures of leverage for U.S. firms. This finding is consistent with the pecking order theory and supports the idea that small businesses use debt when internal funds become limited.

No relationship was found for the tax rate except for a positive correlation with total leverage in small NZ businesses. Even so, this relationship was only significant at the .10 level. Consequently, the results suggest that the main advantage of debt is not tax related for small businesses.

## Conclusion

From the results of the analysis, it can be concluded that small firms gain an insignificant tax and agency advantage from debt. Instead, a positive relationship with sales growth points to the conclusion that debt is generally used out of necessity and is not voluntarily taken on to increase the firm's performance. A positive relationship with size supports the idea that agency costs of debt increase as the size of the firm decreases. Therefore, in the light of extremely high agency costs of

debt and no agency costs of internal equity, one could conclude that the agency advantage of debt is in fact negative.

### **IPO Firms**

We expect that the agency advantage of debt at the IPO stage is significant but is lower in comparison to mature listed firms. Our reasoning is that the IPO process may perform a similar role to debt in reducing asymmetrical information through the involvement with underwriters. Managers may also have less inclination to consume perquisites due to the high growth circumstances generally experienced at IPO, which often reduce available cash flows.

### **Data**

A list was made of all New Zealand companies which had listed on the stock exchange between the period of 1985 and 1989. Annual financial report information was collected for all the 112 companies from the financial reports in the Datex library files. Datex is a well respected provider of financial information of N.Z. listed companies.

### **Methodology**

To determine the value of leverage at the IPO stage, relationships between leverage and underpricing were analyzed using the Spearman's rank correlation procedure. Leverage was measured in three ways using term liabilities, interest bearing debt, and total liabilities, as a percentage of total assets.

The observations were also divided into two groups: firms with and firms without term liabilities. The underpricing for both groups was analyzed and the significance of any differences was determined through the Wilcoxon rank-sum test.

The Spearman's Rank correlation procedure was used to examine leverage relationships with four variables: the tax shield, size, future growth opportunities, and sales growth. The variables were calculated using the same formula as shown in Table 1 for small businesses, with the exception that leverage was determined using book values. Book values were seen as a fair estimate because it is assumed that the auditing of listed companies would increase the accuracy of financial data.

### **Results**

The analysis found that:

- underpricing was positively related to leverage

**Table 3**  
**Underpricing Relationships with Three Measures of Leverage**

	<i>Long Term Leverage</i>	<i>Total Leverage</i>	<i>Interest Bearing Leverage</i>
Coefficient	+.222	+.365	+.328
Z value	2.34***	3.84***	3.45***

Note: \*\*\*significant at the .01 level

**Table 4**  
**Differences for Long Term Leverage**

<i>Underpricing</i>	<i>Firms Without Term Liabilities</i>	<i>Firms With Term Liabilities</i>
average	46.14%	56.21%
median	2%	18.67%
standard deviation	83.47%	99.1%

- higher underpricing was experienced by firms with term liabilities
- positive leverage relationships exist for size and tax rates

First, the Spearman's rank analysis showed that strong positive relationships were found for underpricing and all three measures of leverage as seen in Table 3. In other words, highly levered IPO stocks have been more underpriced in the period from 1985 to 1989.

When the data was divided into two groups, those companies with term liabilities were on average more underpriced than companies without term liabilities as shown in Table 4. The median underpricing was particularly higher for firms with term liabilities.

Both T tests and Wilcoxon rank sum tests did not show that the differences in the two groups of firms were significant to point to differences in the mean of the two populations, so one can not propose that the difference in underpricing would continue to be evident in the 1990s. However, the fact that Spearman's rank analysis found a relationship between leverage and term liabilities suggests that debt at the IPO stage is valued by the market.

The Spearman's rank analysis also showed that a significant positive relationship existed for both size and the unlevered tax shield at the IPO stage. But, as shown in Table 5, no relationship was found for sales growth or future growth opportunities.

## Conclusion

The positive relationship between leverage and the unlevered tax shield suggests that the principal benefit of debt is tax related at the IPO stage. The strong

**Table 5**  
**Coefficient results from Spearman's rank analysis**

<i>Variable</i>	<i>Ipo Stage Leverage Coefficient</i>
Tax shield	.243**
Size	.302***
Future growth opportunities	.115
Sales growth	-.041

*Note:* \* .10 level of significance, \*\* .05 level of significance, \*\*\* .01 level of significance

positive relationship with size also suggests that bankruptcy costs are relevant and supports the balancing theory.

The strong tax relationship with leverage may be apparent only because debt is not being used by managers for other purposes, such as reducing agency costs. This argument points to the conclusion that the agency advantage of debt is insignificant due to the IPO providing similar monitoring and motivating benefits of debt. As mentioned earlier, the IPO process often reduces asymmetrical information and increases monitoring through involvement with underwriters. The IPO may also have a restructuring or "shake up" effect, which may pressure management in the same way that debt increases efficiency in mature listed businesses.

Nevertheless, the fact that leverage is positively related to underpricing suggests that the market still values leverage as a tool for reducing agency costs in the future. The greater level of underpricing for levered stocks may mean that the market values debt in a firm's capital structure more than investment bankers have realized. In contrast, it is highly likely that investment bankers plan for the higher underpricing as a compensation for greater risk. The market possibly values debt as a means of reducing agency costs in the future and as a tool to ensure that managers are more likely to maximize shareholder wealth.

### **Mature Listed Businesses**

It is expected that the role of debt in mature listed businesses is far from a simple case of providing a source of funds. With high asymmetrical information between investors and managers, high diffusion of ownership, and high agency costs, we expect the role of debt will be complex at this stage. We expect that listed companies will gradually increase the debt ratio from the IPO to mature listed stage in order to benefit from the agency advantage of debt.

### **Data**

Financial information was collected for all New Zealand companies which listed on the stock exchange between 1980 and 1989, and stayed listed for at least

five years. Various financial measures were recorded for the 70 companies in the year of IPO and then again five years after listing.

## Method

The actual difference in shareholder's equity was calculated for each year from IPO to five years after listing. The Wilcoxon signed-ranks test was performed to determine the significance of the changes.

Relationships for leverage at the five year stage were then examined using the Spearman's rank correlation procedure. The variables were calculated in the same way as in the IPO rank analysis.

## Results

The analysis found:

- an increase in leverage from year one to year five of listing
- a negative relationship between leverage and future growth opportunities
- an increase in total assets from the IPO to mature listed stage
- a decrease in sales growth from the IPO to mature listed stage

First, leverage was found to significantly increase over the five years. On average, an extra 21% of total assets were funded by debt in the fifth year of listing compared to in the IPO year. The average and median difference in leverage is

**Table 6**  
Difference in leverage from IPO year

	<i>Absolute difference in leverage from year one of listing to:</i>			
	<i>year 2</i>	<i>year 3</i>	<i>year 4</i>	<i>year 5</i>
average	6.07%	12.61%	16.90%	21.68%
median	2.80%	6.80%	11.62%	8.99%

**Table 7**  
Coefficient Results from Spearman's Rank Analysis

<i>Variable</i>	<i>Mature Listed Leverage Coefficient</i>
Tax shield	.159
Size	.063
Future growth opportunities	-.207**
Sales growth	-.046

Note: \*\*05 level of significance.

**Table 8**  
**Changes in Total Assets and Sales Growth**

	<i>Total Assets (000)</i>			<i>Sales Growth</i>		
	<i>IPO</i>	<i>5year</i>	<i>absolute difference</i>	<i>IPO</i>	<i>5year</i>	<i>absolute difference</i>
average	266,945	420,310	153,364	236%	35%	-201%
median	11,007	19,359	1,966	44%	221%	-45%

shown in Table 6. A Wilcoxon signed-rank test confirmed that the increase in leverage was significant at the .01 level.

A negative relationship for future growth opportunities was the only significant leverage relationship found. Table 7 shows the leverage coefficients for each variable determined by the Spearman's rank analysis.

Third, the analysis found that total assets significantly increase over the 5-year period measured, as shown in Table 8. This result suggests that an unlisted firm's growth may often be constrained by a lack of funds and that listing enables a firm to pursue a number of investment opportunities.

This idea is further supported by the finding that sales growth significantly decreased from the IPO to the mature listed stage. Thus, listing on the stock exchange appears to accompany a significant increase in sales, which then generally decreases as the business matures. The Wilcoxon signed ranks test shows that the differences are significant at the .01 level.

## Conclusion

From the results of the analysis, it is evident that debt increases considerably in the five years after listing. One could argue that increased leverage is caused by the adaptation to a new ownership structure which involves greater owner-manager separation and higher agency costs. Thus, the agency advantage of debt appears very strong.

The lower correlation for the tax shield suggests that the agency advantage of debt has outweighed the tax and bankruptcy cost relationship which was very strong at the IPO stage. Therefore, the agency benefit of debt appears to have much significance at the mature listed stage.

The negative leverage correlation with future growth opportunities shows that conservative capital structures exist at the mature listed stage for firms with high growth options. While maintaining a low level of financial slack is seen as advantageous to increasing managerial efficiency, there is also an argument for firms with high growth options to maintain enough financial slack so that profitable investment opportunities can be easily invested in. Therefore, it appears that debt

has a high advantage for mature-listed firms with the exception of firms needing considerable financial slack for future growth.

The negative correlation may also point to managers being concerned with reducing the cost of capital by issuing the least costly security available. Thus, if a firm has a high market to book value through high growth opportunities, then managers are more likely to issue equity to take advantage of a lower relative cost of financing.

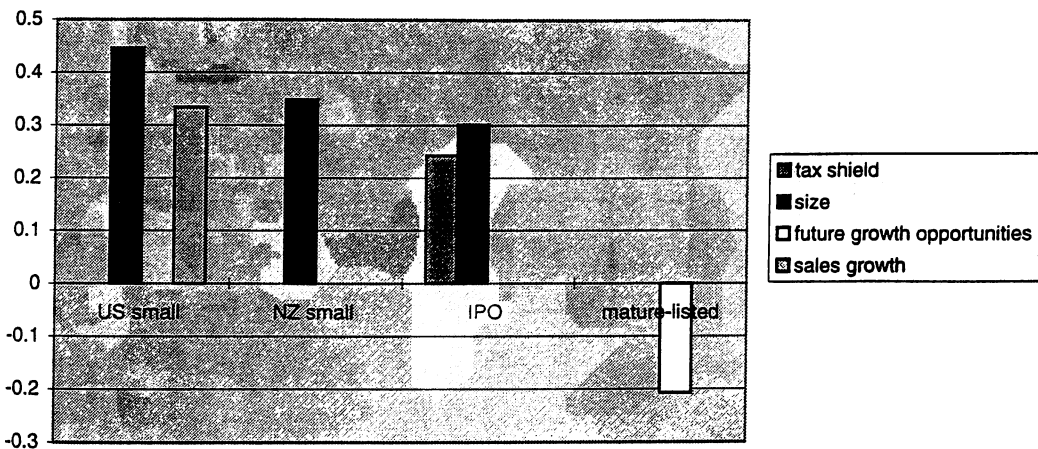
The findings of high growth at the IPO stage suggest that listing on the stock exchange allows a firm to experience its true growth potential, which may have been constrained by the small business finance gap. Additionally, IPO firms experiencing high growth may also suffer from limited cashflow which will lessen the opportunities for managers to consume perks, and thus lessen the agency advantage of debt.

**Table 9**  
**Spearman's Rank Coefficients for Total Leverage**

Variable	US Small Business	NZ Small Business	IPO Stage	5Years After Listing
Tax shield	-.053	.248*	.243**	.159
size	.446***	.349**	.302***	.063
future growth opportunities	.084	.003	.115	-.207**
sales growth	.334**	-.042	-.041	-.046

Note: \*.10 level of significance, \*\*.05 level of significance, \*\*\*.01 level of significance

**Significant leverage relationships**



**Figure 1**  
**Bar Graph of Leverage Relationships Determined by Empirical Analysis**



#### IV. SUMMARY

The analysis shows that leverage relationships vary over the firm life cycle. Table 9 summarizes the results from the Spearman's rank analysis for all three stages.

As Figure 1 illustrates, leverage appears to be related to size and sales growth at the small firm stage. At the IPO stage the tax and size relationship is very high. At the mature listed stage leverage appears to be only correlated with future growth options suggesting that the agency advantage of debt has outweighed the tax shield benefits.

The following results were also found:

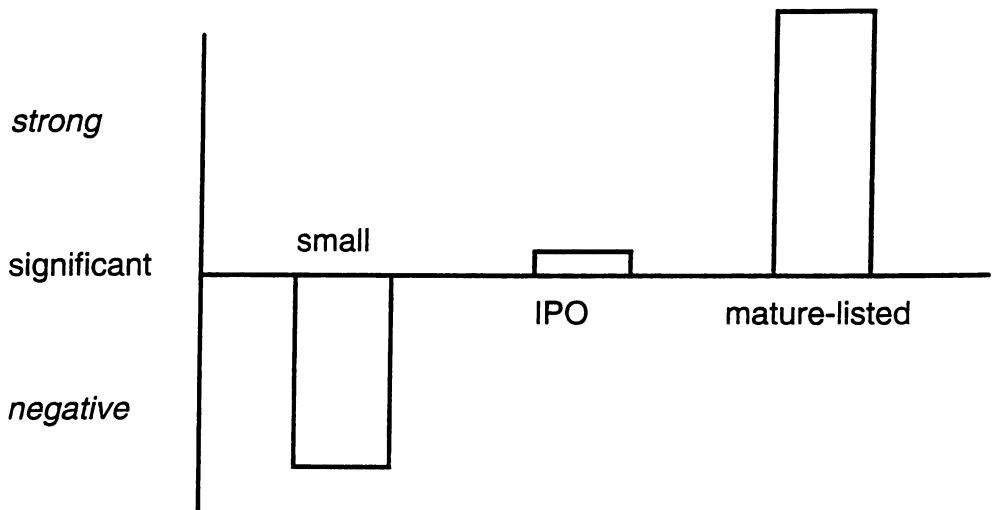
- Higher underpricing for highly levered stocks;
- An increase in leverage and size from IPO to mature listed stage; and
- Significantly higher sales growth at the IPO stage.

#### V. CONCLUSION

The findings give evidence to conclude that the agency advantage of debt does vary from the small, to the IPO, to the mature-listed stage of the firm life-cycle. Figure 2 illustrates the change in the debt advantage over the three stages.

At the small business stage, debt appears to have a negative agency advantage due to the negligible agency costs of equity and high agency costs of debt. The evi-

#### Agency advantage of debt



**Figure 2**  
**The Change in the Advantage of Debt Over the Firm Life Cycle**

**Table 10**  
**Conclusion Summary**

	<i>Small</i>	<i>IPO</i>	<i>Mature Listed</i>
<b>agency benefit of debt</b>	negative	significant	strong
<b>agency costs</b>	nil for internal equity very high for debt	partly absorbed by underwriter	very high
<b>tax benefit of debt</b>	low	high	high (but with many other debt considerations)
<b>main explaining theory</b>	pecking order theory	balancing theory	agency theory
<b>probable considerations in using debt</b>	maximize total utility	increase shareholder wealth, reduce costs of financing	increase shareholder wealth, reduce costs of financing

dence shows that small firms gain an insignificant agency and tax advantage from debt. Instead, the findings point to debt being used in response to a shortage of internal funds.

At the IPO stage, the IPO process performs a similar role to debt in reducing agency costs, and consequently, debt loses much of its agency advantage. Instead, the tax advantage of debt appears to be extremely significant in determining an IPO firm's optimal debt level.

The mature-listed stage is associated with an increase in debt levels which appear to be in response to a new ownership structure. It appears that there is a very strong agency advantage of debt which surpasses the tax advantage. However, if a firm's growth options are high, this agency advantage appears to be outweighed by the need to maintain financial slack.

Thus, one can conclude that if a firm follows a life cycle from a small business to an IPO stage, to a mature listed stage, it is likely to experience increasing agency advantages of debt. Further studies examining how managers decide on a firm's optimal debt level would be useful in increasing the understanding of the shifting advantage of debt.

## NOTES

1. See Ross (1977), Copeland and Lee (1991) and Masulis (1983) for further details of the information hypothesis
2. Research by Shah (1994) also confirms that increasing a firm's leverage generally lowers an investor's assessment of the firm's risk.
3. Empirical evidence on small business capital structure is limited to a few studies such as Walker and Petty (1978) and Day, Stoll and Whaley (1985) and Norton (1990).

4. The efficient monitoring idea may explain why studies such as Davidson & Dutia (1991) have found that small businesses have more short term debt.
5. Gupta (1969) Horrigan (1965) and Walker and Petty (1978) have also produced similar results.
6. Aggarwal and Rivdi (1990) also observed poor performance in the first year of listing. Similarly, Ibbotson (1975) documented periods of high initial returns and high volume "hot issue" markets.

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