
Post-issue operating performance of firms listing on the JSE

1. INTRODUCTION

Various studies conducted in the United States (US) have documented several anomalies with initial public offerings (IPOs). Ibbotson (1975) and Ritter (1984, 1991) document short-run underpricing, cyclical “hot issue” markets and long-run underperformance.

These findings are not peculiar to the US. Long run IPO underperformance is documented in the United Kingdom (UK) (Levis, 1993), and Brazil (Aggarwal, Leal and Hernandez, 1993). In South Africa research on IPO performance on the Johannesburg Securities Exchange (JSE) has produced mixed results (Lawson, 1996 and M'kombe and Ward, 2002). These contradictory findings indicate that the long run performance of IPOs varies over time and long-run returns are sensitive to the sample period and methodology used (Ritter and Welch, 2002 and Brav, 2000).

This study examines the change in operating performance of 391 firms that listed on the JSE between 1990 and 2003. Using a fixed-effects panel data regression model, factors such as the changes in profitability, investment and growth, tax, leverage and cost of credit are examined over a three year period. Profitability of IPO firms declines significantly in the third year after listing. In addition, tax payments increase permanently and significantly. These results are consistent with findings by Pagano, Panetta and Zingales (1998) and Jain and Kini (1994). Moreover, they are also consistent with M'kombe and Ward (2002)'s results of long-run underperformance of South African IPOs and Ritter (1991) and Loughran and Ritter (1995)'s discovery of long-run IPO underperformance in the US. Similar to Ritter's (1991) results, IPO volume in the South African market fluctuates. The highest concentration of IPOs occurred during the technology fuelled bull market of 1998 and 1999 whereas the lowest concentration occurred during the global recession of 2001 to 2003.

1.1 The decision to go public

One question that academics have explored is the motivation to go public. Given the underperformance of IPO firms, it appears that companies list not to finance future growth, but to take advantage of buoyant markets. In fact, Pagano, Panetta and Zingales (1998) question the idea that going public is simply an inevitable growth stage of a company. They argue that

the need to finance future growth had little to do with the motivation to list; rather the relative overvaluation of firms in the same industry provided the greatest incentive to undertake an IPO. Furthermore, some large firms in the US, for example United Parcel Service (UPS), remain private and in Europe, large private firms are far more common.

Various life cycle theories have been proposed to explain the decision to go public. Zingales (1995) proposes that entrepreneurs are able to get more money for their firm via an IPO than they would by simply selling it to a single bidder because a single acquirer can force a target firm on pricing concessions more than outside investors could. Thus, by undertaking an IPO, the initial owners sell their company for a higher value than they would ordinarily receive from an outright sale. Ang and Brau (2003) discovered that insiders hide the full extent of their actions, in that they sell a greater amount of their holdings in the IPO than originally disclosed. Such conduct is consistent with wealth-maximising behaviour.

There are also direct and indirect costs associated with going public. Smaller firms are more likely to remain private as there is a considerable administrative burden on companies that undertake an IPO: underwriting fees, registration fees, etc. Moreover, once listed, there is the expense incurred from auditors, distribution of annual reports, stock exchange fees, etc. However, larger firms can bear these expenses more readily since the magnitude of these costs does not increase proportionally with the size of the IPO (Pagano *et al.*, 1998).

Disclosure rules of stock exchanges may force companies to reveal sensitive information, which may put them at a competitive disadvantage. Such transparency may dissuade firms with sensitive information and a high proportion of research and development (R&D) expenditure from listing. Moreover, listed companies are subject to more scrutiny from tax and legal authorities and thus, have a reduced ability to conceal tax obligations (Pagano *et al.*, 1998).

However, announcing an IPO can be beneficial. Pagano *et al.* (1998) cite the following as benefits of going public: overcoming borrowing constraints, improved bargaining power with lenders, liquidity and portfolio diversification, monitoring, change of control and taking advantage of the market's overvaluation of the firm and investor optimism. Chemmanur and Fulghieri (1999) argue further that listing facilitates greater diffusion of ownership, which allows large

* Department of Business Finance, School of Economics and Business Sciences, University of the Witwatersrand, Private Bag 3, Wits 2050, Republic of South Africa.
Email: christo.auret@wits.ac.za

block, undiversified investors to offset some of their risk. According to Stoughton *et al.* (2001) an IPO is a signal of high product quality. In the UK, a survey revealed the main reason for undertaking an IPO was to improve the visibility of the company and hence, improve its competitive position (Burton, Helliard and Power, 2003).

1.2 Market timing theories

Ritter (1991) argues that firms tend to list at peak valuations. Pagano *et al.* use the market-to-book ratio (M/B) as a proxy for investor optimism and find that the M/B ratio has the highest explanatory power in determining an IPO. However, while the M/B ratio may be an indication of market buoyancy it may also be a measure of future growth opportunities. Pagano *et al.* (1998) distinguish between the two arguments by examining *ex post* evidence. They find that during the years subsequent to the IPO, profitability falls. In addition to this finding, investment and leverage fall. By contrast, Jain and Kini (1994) in their study of IPOs in the US from 1976 to 1988, find that IPO firms have significantly higher capital expenditure growth. Despite the increase in capital expenditure, they also find that profitability deteriorates subsequent to an IPO. Overall, an IPO is not a means for companies to take up profitable growth opportunities but rather a means for firms to take advantage of a window of opportunity and to adjust their capital structure while equity financing is relatively cheap (Bayless and Chaplinsky, 1996, Pagano *et al.*, 1998).

Baker and Wurgler (2002) and Loughran and Ritter (1995) argue that companies are more likely to issue equity when their shares are overvalued. They focus on the M/B ratio as a determinant of the changes in leverage and attempt to establish whether changes in equity are a result of net equity issues as market timing theory would predict. Like Pagano *et al.* (1998) they acknowledge that while the M/B ratio may be a proxy for mispricing, it is also a measure of a firm's investment opportunities and profitability. They separate the two signals by examining the effect of profitability on leverage. Baker and Wurgler (2002) find that high M/B ratios are associated with lower leverage, which is consistent with market timing theories. However, the lower leverage could be a result of higher retained earnings. This is plausible because according to Myers (1984)'s seminal *pecking order theory*, higher retained earnings actually reduce leverage giving the impression that profitable firms are net equity issuers. Despite this, Baker and Wurgler (2002)'s results show that leverage is not affected by retained earnings but rather net equity issues as market timing implies.

1.3 Long-run performance of IPO firms

Perhaps the most studied anomaly of IPOs is their long-run performance. Moreover, a three year market-

adjusted return on an IPO stock would have provided investors with -23,4% (Ritter and Welch, 2002). The finding of persistent IPO long-run underperformance is puzzling because the doctrine of the Efficient Markets Hypothesis (EMH) suggests that there should be no abnormal risk-adjusted returns. This contradiction of the EMH has prompted some academics to argue that the magnitude of abnormal returns (and possibly the sign) is sensitive to different econometric models (Brav, 2000, Loughran and Ritter, 2000).

In the seminal article "The Long-run Performance of Initial Public Offerings", Ritter (1991) documents long-run underperformance of IPOs during the period 1975 to 1984. Moreover, Ritter (1991) finds that while IPO firms generated an aggregate return of 34,47% in the years subsequent to the offering, a portfolio of industry and matched firms earned an average return of 61,86%. This means that investors would be worse off by purchasing IPO shares.

Loughran and Ritter (1995) also document long-run IPO underperformance during the period 1970 to 1990. In addition, they find firms that conducted a regular rights issue also underperformed, which suggests that long-run underperformance is not exclusively an IPO effect. In general, an investor would have to invest 44% more in either an IPO or a rights issue in order to have the same level of wealth that an alternative investment would have provided. The *wealth relative* for the three year period is 0,80 (Ritter (1991) reported 0,83), which deteriorates to 0,70 by year five. The average buy-and-hold return generated by the IPOs is 15,7%, whereas their matching firms posted 66,4%. Finding that both IPOs and rights issues underperform in the long run, Loughran and Ritter (1995) argue that investors are too optimistic about companies that issue equity.

Given the findings by Fama and French (1992) that the M/B ratio and size are proxies for risk and can explain share price returns better than the traditional measure of risk, beta, Loughran and Ritter (1995) examine if such a model can explain the abnormal IPO returns. The cross-sectional regression results are consistent with Fama and French (1992)'s findings in that the underperformance of IPOs can be attributed to (although not entirely) the propensity of firms with high M/B ratios to produce low returns. However, the three-factor time series regressions cannot explain away IPO underperformance. Loughran and Ritter (1995) argue that if IPO underperformance is caused by variability in beta, size and M/B then the intercept of the model should be zero. They find, however, that the intercept is negative and significantly so, which again indicates that IPOs underperformed.

Brav and Gompers (1997) find that underperformance persists even after controlling for size and M/B. One reason why these IPO peculiarities remain could be

that IPO firms are overpriced and investors only recognise this in the years following the listing.

In the South African context, M'kombe and Ward (2002) find that IPOs underperform the market over one, three, five and ten year holding periods. In addition, they find the companies that listed during hot issue periods generated lower returns compared to firms listing during cold issue periods. Such a discovery suggests that South African firms time their issues. M'kombe and Ward (2002) also document that underperformance is more severe for firms that listed during hot issue periods. They argue the larger fraction of risky shares that listed during the hot issue period explains the difference in performance between hot and cold issue periods. In addition, managers may recognise that the market has overvalued their firm and thus, take advantage.

1.4 Sources of long-run underperformance

The evidence of long-run underperformance presented by Ritter (1991) and Loughran and Ritter (1995) suggests that IPOs and investors are subject to particular tastes and preferences. Loughran and Ritter (1995) believe the most likely explanation is that firms are taking advantage of a window of opportunity. Given the fluctuation of IPO volume and evidence that it is negatively related to the discount on closed-end mutual funds, Ritter (1991) argues that the pattern of returns is consistent with investor overoptimism. The finding that the underperformance of issuing firms is partly explained by high M/B firms is consistent with the findings of Lakonishok, Shleifer and Vishny (1994) and Fama and French (1992).

Jain and Kini (1994) suggest that IPOs may suffer long-run underperformance because of the higher agency costs that arise when a firm becomes publicly owned. What is more, they show a significant deterioration in the M/B and P/E ratio for each post-issue year. Thus, the earnings-multiples of IPO firms begin at a high level but fall significantly on an industry-adjusted basis. As mentioned previously, agency costs may drive IPO underperformance and firms with higher ownership retention perform relatively better. However, Jain and Kini (1994) concede that the effect of higher managerial ownership and thus, lower agency costs cannot be separated from the effect of entrepreneurs signalling the quality of the firm with high ownership retention.

Brav and Gompers (1997), Ritter (1991) and Loughran and Ritter (1995) argue that investor sentiment is an important determinant of IPO underperformance. In fact, Brav and Gompers (1997) confirm Lee, Shleifer and Thaler (1991)'s findings that the average discount on closed-end mutual funds is a proxy for investor sentiment. They maintain that investor sentiment explains why smaller IPO firms generally suffer greater underperformance. Individuals are more likely to be

shareholders of small firms than institutions. Institutional investors avoid holding shares of small companies because they may become a large blockholder, which subjects them to restrictive regulatory burdens such as trading limits. Brav and Gompers (1997) argue further that individuals have a greater propensity to behave irrationally and thus affect smaller firms more.

Finally, long-run IPO underperformance may be a consequence of short sale restrictions and as a result, the price of overvalued IPO firms takes time to adjust. Ritter (2002) argues that although the EMH implies a lack of arbitrage profits, it does not rule out the possibility of large misvaluations. Even if the persistence of long-run IPO underperformance presents a profitable trading strategy, arbitrage becomes limited and risky when securities are grossly overvalued. Hence, even if an investment strategy is profitable in the long-run, it does not guarantee that an investor will not suffer significant losses in the short-run. Indeed, Ritter and Welch (2002) point out that a lot of short sellers lost a significant amount of money on internet bubble IPOs because they had to close out their positions before their strategy paid off.

2. DATA AND METHODOLOGY

The sample of the study was constructed from balance sheet and income statements that were obtained from the Bloomberg Data Service. The sample period included firms that listed between 1990 and 2003 and all new listings on the JSE are defined as IPOs. The JSE statistics and records department provided a list of 406 companies that listed on the exchange between 1990 and 2003. Companies were removed if they were not found on Bloomberg's archives or if they had insufficient data. Hence, a total of 391 companies were used in the final sample.

Rather than examine share price returns, this paper attempts to observe the changes in the financing of a company directly. To do this, data from balance sheets and income statements were required. Specifically, the objective of the analysis is to observe the changes in a company's capital structure (the portion of the firm financed by debt or equity), investments and profitability. The most appropriate method to examine these changes is to undertake a suitable regression analysis.

To observe how a company's profitability, capital structure, long-term investments, etc. change after it has gone public, and taking into account the problems associated with the Fama and French three-factor model, it was decided that fixed-effects panel data regression analysis would be used. Panel data has several benefits; one of which is that it allows one to exploit the cross-sectional as well as the time-series aspects of the data set. Thus, with panel data, a variable is measured across time and space, while

controlling for any unobserved heterogeneity in the data.

Given that fixed-effects models are quite unique compared to Ordinary Least Squares regression models, some information on the technique is provided (for a discussion on fixed-effects panel data see Frees (2004) and Gujarati (2003)). Fixed-effects models isolate the non-random quantities that account for the heterogeneity. In other words, the model takes into account any peculiarities or nuances that are specific to a certain subject (in this case a company). However, the fixed-effects model cannot generate the inherent causal relationship of differences among subjects. It can only estimate the influence of these differences through a subject-specific error term.

Panel data deals with individuals or subjects over time and the intrinsic heterogeneity of these units will arise. Panel data estimation techniques take this heterogeneity directly into account by allowing for subject-specific variables. Hence, by using this technique, the individual unobserved heterogeneity can be controlled for. Another advantage of combining cross-sectional and time-series data is that the estimates of such a model contain more information, have more variability, less collinearity among variables, more degrees of freedom and more efficiency. Collinearity or multicollinearity occurs when the explanatory variables of a regression model are either perfectly or imperfectly correlated with each other. The presence of multicollinearity can cause one to make spurious inferences, such as accepting the zero null hypothesis more readily (Gujarati, 2003).

Finally, panel data allows the exploration of individual dynamics in that the time and specific effects are separated.

The basic fixed-effects model is represented by the regression function:

$$y_{it} = \alpha + \beta_1 x_{it,1} + \beta_2 x_{it,2} + \dots + \beta_k x_{it,k} \quad \dots (1)$$

The regression function above follows a number of classical assumptions. The first assumption is that there is linearity in the parameters and the distribution of y is conditional on the observed explanatory variables. From this it follows that $x_{it,1}, \dots, x_{it,k}$ are non-stochastic variables. The third assumption is that the variance of y_{it} is a constant equal to σ^2 . Fourth, y_{it} are independent random variables. This flows from the assumption that each value of $x_{it,k}$ was drawn from a population of a random sample of responses i.e. there is no serial correlation. The error, or disturbance term, also follows classical assumptions: $E(\varepsilon_{it})$ is equal to zero, variables $x_{it,1}, \dots, x_{it,k}$ are non-stochastic, the variance of ε_{it} is equal to σ^2 and ε_{it} are independent random variables.

Each subject (i) varies from one to n subjects and is observed T_i times. In addition, there are k explanatory variables that vary by subject (i) and time (t).

The parameters, β , in the function above are common to each subject and are referred to as population parameters. The term α_i is unique to each subject and varies across subjects. Hence, α_i is called the subject specific parameter. The subject specific parameters control for the heterogeneity between the subjects i.e. they pickup the nuances or special features of the various groups. The parameters which require the most attention are the population estimators as they detect any trends that one is hoping to examine.

With panel data the effect of α_i can be isolated from the disturbance terms, which increases the accuracy of the regression. Thus, by separating α_i and ε_{it} , the problem of unobserved heterogeneity is avoided and with it, the potential to produce spurious results is reduced. Unobserved heterogeneity occurs when $x_{it,k}$ is correlated with ε_{it} thereby violating the classical assumptions.

While a fixed-effects model has several advantages, there are some limitations associated with panel data. First, time constant variables cannot be estimated in a fixed effects regression. The least-squares estimators of the expressions are built upon matrices, which introduces further mathematical complexities such as the fact that matrices of time constant variables cannot be inverted. Thus, the time-constant variables in a regression are dropped. In other words, fixed-effects models cannot isolate the inherent statistical relationship between a time-constant variable and the regressand. Next, there must be some variation in x_{it} in order to estimate its effect. However, the fixed-effects estimation is based upon the assumption that $\text{cov}(x_{it}, \varepsilon_{it})$ is equal to zero. If this assumption does not hold and the independent variables are correlated with the disturbance terms, the fixed-effects estimator will be biased. If this is the case then there is a problem of endogeneity (the omitted variable bias) and spurious inferences can occur. However, this will not be an issue if the omitted variables are time-constant because as discussed above, they will be dropped out of the regression. Endogeneity could also be caused by systematic or random shocks, or measurement error. The problem of systematic shocks, however, can be easily corrected by including dummy variables (structural dummies) to control for these shocks.

To include the time-series aspect, time-specific dummy variables can be created to control for changes over time. Thus, if λ_t is a time-specific variable that is independent of the subjects, then the full two-way fixed-effects model can be described as follows:

$$y_{it} = \alpha_i + \lambda_t + \beta_1 x_{it,1} + \beta_2 x_{it,2} + \dots + \beta_k x_{it,k} \quad \dots (2)$$

The regression model for the IPOs is built upon the error-components model where the error term is divided into two components; a subject-specific error and an idiosyncratic error. Changing the notation slightly, the disturbance term, ε_{it} , is now represented as u_{it} . This condition is articulated as $u_{it} = v_i + \varepsilon_{it}$ where v_i is the subject-specific error and ε_{it} is the unique error. Omitting several steps, the equation

$$y_{it} = \alpha_i + \lambda_t + \beta_1 x_{it,1} + \beta_2 x_{it,2} + \dots + \beta_k x_{it,k} \quad \dots (3)$$

can be expressed as

$$y_{it} - \bar{y}_i = \beta_1 (x_{it} - \bar{x}_i) + \varepsilon_{it} - \bar{\varepsilon}_i \quad \dots (4)$$

This final specification is the within transformation, which removes v_i . Thus, time-constant unobserved heterogeneity will not be an issue.

3. RESULTS AND DISCUSSION

To best observe how a company changes once it has listed, dummy variables were created to capture the time-series aspects of the data. The dummy variables IPO1, IPO2, IPO3 and IPO4plus are equal to one if one, two, three or four years and above have elapsed since the listing, respectively. The base category in this instance is the year of the IPO.

Note, however, that the regression model generated by the statistical package Stata (version 8,2, 2004)¹ differs slightly to the one described above. Stata's output includes a constant term because after the within transformation, the constant is added back. Hence, the expression produced by Stata is

$$y_{it} = \beta_0 + \beta_1 x_{it,1} + \dots + \beta_k x_{it,k} + v_i + \varepsilon_i \quad \dots (5)$$

The analysis is performed on the following variables:

- Profitability (return on assets (ROA))
- Long-term investment (capital expenditure divided by total assets)
- Changes in capital structure (debt and equity issues divided by total capital)
- Sales growth
- Tax burden (income tax expenses divided by pre-tax income)

- Interest burden ([income before extraordinary items + income tax expense]/earnings before interest and taxes)
- Dividend policy (dividend payout ratio)

Fixed-effects model regressions of transformed and untransformed data.

$$y_{it} = \alpha + \text{IPO1} + \text{IPO2} + \text{IPO3} + \text{IPO4plus} + v_i + \varepsilon_{it} \quad \dots (6)$$

First, changes in profitability after an IPO are examined. The profitability of a firm is measured as return on assets (ROA)². ROA is calculated as earnings before interest, tax, depreciation and amortisation (EBITDA) divided by total assets.

The results indicate that profitability increases initially after the IPO by 2,66% and 2,28% in year one and two, respectively. But neither is significant. However, in the third year after the IPO, profitability declines significantly (at the 10% significance level) by 14,33%. In the fourth year and beyond, profitability increases by 3,29% suggesting that the underperformance of IPOs may not be permanent. This, however, is not statistically significant at conventional levels. The results are consistent with the results of Ritter (1991), Loughran and Ritter (1995) and in particular, M'kombe and Ward (2002) who find that IPOs underperform significantly in the long-term. Moreover, the results are in line with Jain and Kini (1994)'s findings that ROA declines in the years subsequent to an IPO. The initial increase in ROA after the IPO suggests that South African firms may list at a time when the company is performing unusually well. Thus, it appears that South African firms are taking advantage of a window of opportunity.

While the profitability may fall in the years subsequent to its listing, investment expenditure should increase to finance future growth. Changes in long-term investment should also give a greater indication of the motivation behind the IPO. In this study long-term investment is divided by total assets and therefore expressed as a ratio. A fall in long-term investment will add more weight to the window of opportunity hypothesis, whereas higher long-term investment is indicative of firms coming to the market to augment future growth. As expected, long-term investment nearly doubles at the time of the IPO, increasing by a significant 93% (not shown in table). Investment continues to increase one year after the IPO by 75%. By year three and beyond, however, the picture does change. Long-term investment declines by 28% in year two, 13% in year three and approximately 35% in year four and beyond. However, none of these results are significant.

¹Stata/SE 8,2 for Windows, 2004. StataCorp 4905 Lakeway Drive College Station USA. Licenced to the University of the Witwatersrand, Johannesburg.

²For completeness ROA is a measure of profit margin and asset turnover. Thus, it captures profitability and efficiency.

Table 1: Post-issue operating performance

	Model	IPO1	IPO2	IPO3	IPO4plus	F test (p-value)
ROA	Linear	2,6554	2,2786	-14,3287**	3,2887	0,0183
Long-term investment	Linear	75,1478	-27,8885	-13,0323	-34,6084	0,0310
Debt financing	Log - linear	-0,2748*	0,0401	0,1108	0,3786*	0,0000
Equity financing	Log - linear	0,1161*	0,0081	-0,003	0,0142	0,0243
Sales growth	Log - linear	0,5208	0,0514	-0,3434	-0,5946	0,0000
Effective tax rate	Log - linear	0,1036**	0,1517*	0,235*	0,2093*	0,0014
Interest burden	Log - linear	0,0696	0,0986	0,0888	0,0718	0,0278
Dividend payout ratio	Linear	3,9444	14,0939	8,56733	74,3743*	0,0278

*coefficient significant at the 5% level.

**coefficient significant at the 10% level.

These findings lend further support to the idea that firms do not list to finance future growth. While IPO firms increase long-term investments initially, the higher level of investment does not persist. Managers may be overoptimistic at first about their firm's prospects but may later realise that the company's investment opportunities are not that profitable as anticipated and hence, scale down their investments (Heaton, 2002 and Jain and Kini, 1994).

To verify that the decline in long-term investment is the result of firms rebalancing their capital structure, one must examine how a company's debt financing changes once it has listed. Debt financing is calculated as book value of short plus long term debt divided by total assets. If firms de-leverage immediately after going public then the likely scenario is that firms are rebalancing their capital structures rather than financing growth.

The results show that leverage declines significantly a year after the IPO by roughly 27,48% but by years two and three leverage increases by approximately 4% and 11%, respectively. However, these results are not significant. By year four and beyond, leverage increases significantly by 37,86%. This suggests that capital structure rebalancing is not permanent. The target capital ratio of companies may change over time and hence, the desired level of debt financing. The change in leverage may be explained by Myers and Majluf (1984)'s model that managers will follow a pecking order. The pecking order hypothesis argues that there is no optimal capital structure and managers simply use the cheapest source of funds and because investors rationally discount the firm's share price when equity is issued, it is an expensive method of financing.

According to the pecking order theory, managers have a preference for financing investments with retained earnings first then debt and as a last resort, equity. During stages of high investment, a firm following a

pecking order will likely start to exhaust their debt capacity. However, the results suggest that the increase in leverage is unlikely to be caused by firms nearing their debt capacity while undertaking large investments and are more consistent with Pagano *et al.* (1998)'s notion that companies list to rebalance their capital structure.

Next, equity financing post-IPO is examined and as expected, in the first year after the IPO, equity increases significantly. Equity financing is calculated as equity issued divided by total capital. However, equity financing fluctuates from year two and later. These changes may be a manifestation of managers attempting to time further equity issues. Baker and Wurgler (2002) maintain that capital structure is an accumulation of past attempts to time the market and this may explain the discrepancy between these results and those obtained for changes in leverage.

Another test of a company's change in profitability is to examine the change in sales growth. The sales growth measure obtained from Bloomberg's archives is essentially a measure of a company's revenue growth. Here again one would expect revenue growth of IPO firms to be positive because the whole point to listing is to raise capital in order to pursue lucrative opportunities. Yet the results show that sales growth decreases in the long run despite initial increases. This contrasts with Jain and Kini (1994)'s evidence that sales of IPO firms in the US actually outpace their industry counterparts but perform poorly because they increase their assets faster than their sales grow. However, while these results are not significant they fit in with the general picture presented. Deteriorating profitability is being driven by poor sales (revenue) growth, which leads to lower investment and capital expenditure.

Other areas of interest regarding IPOs are changes in tax and interest payments once a company has listed. The tax payments were assessed by the accounting

measure, *effective tax rate*. This is calculated as income tax expenses divided by pre-tax income. Pagano *et al.* (1998) argued that taxes increase once a firm has gone public because it is harder for a public company to conceal its true tax obligation from tax authorities. An advantage of greater visibility, however, is that it should lead to a lower cost of credit due to the fact that listed companies have access to another source of capital, increasing the firms bargaining power with lenders.

Tax payments increase in all the years subsequent to the IPO. In year one, tax payments rise by 10,36% and by year four and beyond, tax payments increase by approximately 21%. In addition, all the coefficients are significant at the 10% level. These results are consistent with the notion that the greater visibility and scrutiny of listed firms makes it harder to 'tax dodge' as purported by Pagano *et al.* (1998).

In terms of financing, South African companies do not appear to be benefiting from increased visibility. Not only do they suffer a decrease in profitability, investment and a higher tax burden, but they don't appear to benefit from a lower interest burden either. The results indicate that interest payments rise by approximately 7% one year after the IPO and by 7,18% in year four and beyond, suggesting that companies do not have better bargaining power with lenders once they go public. However, these results are statistically weak as none of the estimators are significant.

The last area of interest is the company's dividend policy. Most growth companies do not pay large dividends because they plough back the cash to fund their expansion. Thus, if companies list to pursue profitable growth opportunities then the level of dividends should decline in the years after the IPO. However, if dividend payouts increase, then the likely explanation is that the IPO firms no longer have above average growth prospects and managers would better serve investors by paying out a dividend rather than wasting the money on unprofitable investments (Jensen, 1986). The changes in dividends are measured by a firm's dividend payout ratio. Dividend payout ratio is defined as dividends per share as a proportion of earnings per share.

Dividend payments increase after a company lists. In fact, the results show that dividend payments increase in years one to three, although, these results are not significant. However, the finding that dividend payments increase in year four and beyond by 74,37% is significant. The discovery that dividend payments increase in the long run is consistent with the finding that profitability declines after an IPO. If the profitability of a firm falls then so too will the profitability of its investment opportunities. Thus, the amount of cash that would have been ploughed back into the firm's operations is rather paid out as a dividend.

4. CONCLUSION

The results of the study suggest that South African companies do not list to fund future growth but rather to take advantage of a window of opportunity. The finding that ROA decreases significantly, in addition to declines in investment and increases in dividend payments, following an IPO is consistent with Pagano *et al.* (1998), Ritter (1991) and Loughran and Ritter (1995)'s conjecture that firms list to take advantage of miss-pricings and investor optimism. The decline in investment expenditure and leverage indicates that companies list to rebalance their capital structures and not to finance corporate growth.

Given the evidence of the deterioration in the operating performance of IPO firms, the question is why do firms perform badly subsequent to their listing? As discussed earlier, entrepreneurs appear to be taking advantage of a window of opportunity. The decline in ROA in year three is in line with their discovery that IPOs come to the market during early stages of strong performance but this performance is not sustainable. Thus, it appears that investors extrapolate superior growth too far into the future as argued by Lakonishok *et al.* (1994) and are systematically disappointed. Moreover, exuberant analysts themselves could be driving the overpricing of IPOs and ultimately, their long-run underperformance (Rajan and Sevaes, 1997).

IPOs may perform poorly in the long-run because the original owners list at a time when they know the firm is overvalued. Hence, going public may be a means for them to get as much money as possible for their investment from new shareholders (Ang and Brau, 2003). Alternatively, the deterioration of IPO performance may be a result of increased agency costs due to a more diffuse ownership structure (Jain and Kini, 1994). However, it is difficult to discern if the underperformance of IPOs is due to the effect of wealth-maximising initial owners cashing out or higher agency costs that ensue from a more diffuse ownership.

Lastly, could IPO underperformance be due to bad luck? Brav and Gompers (1997) argue that unexpected shocks could have affected the performance of IPO firms permanently. Indeed, the emerging markets crisis that began in early 1998 may have adversely affected South African IPOs. However, despite tough market conditions, IPO volume did not appear to be significantly affected as most of the companies that listed in the late 1990s were technology companies riding the wave of the internet bubble.

Finally, examination of the agency conflicts and allocation of IPO shares could provide some insight into why IPOs underperform. Jain and Kini (1994) touched on the issue and Ritter and Welch (2002) believe that research into this area may unlock

reasons for the wide variation in underpricing and long-run underperformance. In addition, the change in ownership and control after an IPO is an appealing avenue of future research. Given Ang and Brau (2003)'s findings that initial owners sell a substantial amount of shares during an IPO, it would be interesting to see if the same scenario occurs in the South African market. Behavioural theories should receive more attention as they appear to provide the most convincing arguments for IPO underperformance. However, Ritter and Welch (2002) caution that while the behavioural point of view is persuasive, the methodology and time period chosen influence the magnitude of IPO underperformance.

REFERENCES

- Aggarwal R, Leal R and Hernandez L. 1993. The aftermarket performance of initial public offerings in Latin America. *Journal of Financial Management*, 22:42–53.
- Ang JS and Brau JC. 2003. Concealing and confounding adverse signals: Insider wealth-maximising behaviour in the IPO process. *Journal of Financial Economics*, 67:146–172.
- Baker M and Wurgler J. 2002. Market timing and capital structure. *Journal of Finance*, 57(1):1 – 32.
- Bayless M and Chaplinsky S. 1996. Is There a window of opportunity for seasoned equity issuance? *Journal of Finance*, 51(1):253–278.
- Brav A. 2000. Inference in long-horizon event studies: A Bayesian approach with application to initial public offerings. *Journal of Finance*, 55(5):1979–2016.
- Brav A and Gompers PA. 1997. Myth or reality? The long-run underperformance of initial public offerings: Evidence from venture and non-venture capital-backed companies. *Journal of Finance*, 52(5):1791–1821.
- Burton B, Helliard C and Power D. 2003. A behavioural finance perspective on IPOs and SEOs. *The Association of Chartered Certified Accountants*, 82:5–138.
- Chemmanur TJ and Fulghieri P. 1999. A theory of the going-public decision. *Review of Financial Studies*, 12: 249–279.
- Fama EF and French KR. 1992. The cross-section of expected returns. *Journal of Finance*, Vol. 47(2):427–467.
- Frees EW. 2004. Longitudinal and panel data: Analysis and applications in the social sciences. First edition, Cambridge University Press, 18–46.
- Gujarati DN. 2003. Basic econometrics. Fourth Edition, McGraw-Hill.
- Heaton JB. 2002. Managerial optimism and corporate finance. *Journal of Financial Management*, Summer, 33–45.
- Ibbotson RG. 1975. Price performance of common stock new issues. *Journal of Financial Economics*, 3: 235–272.
- Jain BA and Kini O. 1994. The post-issue operating performance of IPO firms. *Journal of Finance*, 49(5): 1699–1726.
- Jensen MC. 1986. Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, 76,(2): 323–329.
- Lakonishok J, Shleifer A and Vishny RW. 1994. Contrarian investment, extrapolation, and risk. *Journal of Finance*, 49(5): 1541–1579.
- Lawson RJ. 1996. Price performance of newly listed shares on the Johannesburg Securities Exchange. Research report submitted in partial fulfilment of the requirements for the MBA degree, Wits Business School, University of the Witwatersrand.
- Lee C, Shleifer A and Thaler R. 1991. Investor sentiment and the closed-end fund puzzle. *Journal of Finance*, 46(1): 29–48.
- Levis M. 1993. The long-run performance of initial public offers: The UK experience, 1980 – 1988. *Journal of Financial Management*, 22: 28–41.
- Loughran T and Ritter J. 1995. The new issues puzzle. *Journal of Finance*, 50(1): 23–51.
- Loughran T and Ritter JR. 2000. Uniformly least powerful tests of market efficiency. *Journal of Financial Economics*, 55: 361–389.
- M'kombe C and Ward, M. 2002. Aftermarket price performance of initial public offerings on the JSE. *Investment Analysts Journal*, 55: 7–20.
- Myers SC. 1984. The capital structure puzzle. *Journal of Finance*, 39: 575–592.
- Myers SC and Majluf NS. 1984. Corporate financing and investment decisions: When firms have information that investors do not have. *Journal of Financial Economics*, 13(2): 187–221.
- Pagano M, Panetta F and Zingales L. 1998. Why do companies go public? An empirical analysis. *Journal of Finance*, 53(1): 27–64.

Rajan R and Servaes H. 1997. Analyst following of initial public offerings. *Journal of Finance*, 52(2): 507–529.

Ritter JR. 1984. The 'hot issue' market of 1980. *Journal of Business*, 32: 215–240.

Ritter JR. 1991. The long-run performance of initial public offerings. *Journal of Finance*, 46(1): 3–27.

Ritter JR. 2002. The biggest mistakes we teach. *Journal of Financial Research*, 25(2): 159–168.

Ritter JR and Welch I. 2002. A review of IPO activity, pricing, and allocations. *Journal of Finance*, 57(4): 1795–1828.

Stoughton NM, Wong KP and Zechner J. 2001. IPOs and product quality. *Journal of Business*, 74(3): 375–408.

Zingales L. 1995. Insider ownership and the decision to go public. *Review of Economic Studies*, 63: 425–448.

