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DETERMINANTS OF PRIVATE EQUITY EXIT STRATEGIES IN SOUTH AFRICA

by

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Thesis submitted in fulfilment of the requirements for the degree of

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at the

UNIVERSITY OF THE WITWATERSRAND

Supervisor: Prof. Kalu Ojah

DECLARATION

I, *Ntiamoah Agyapong*, declare that the research work reported in this dissertation is my own, except where otherwise indicated and acknowledged. It is submitted for the degree of Master of Management in Finance and Investment at the University of the Witwatersrand, Johannesburg. This thesis has not, either in whole or in part, been submitted for a degree or diploma to any other universities.

…….

Ntiamoah Agyapong

Signed at……..

On the……..Day of…….2016

ABSTRACT

The objective of this paper is to study the exit behaviour of private equity investments held by independent private equity firms in South Africa. As this is an exploratory study we examine empirical hypotheses previously tested by other authors. Firstly, we test whether portfolio companies within high technology sectors are more likely to achieve an initial public offering (IPO) exit relative to other exits. Secondly, we test the effect of the lending rate on the likelihood of a secondary sale. Lastly, we consider the relative preference of IPO compared to acquisition (M&A) and other exit modes. As South Africa is considered to be a bank-centered financial system (Levine, 2002), private equity investments within the market would be expected to experience poor IPO activity as suggested by the literature (Black and Gilson, 1998).The research is quantitative in nature and involves the use of statistical modelling, multinomial logistic regression was applied, using panel data, which assumes that the effect of explanatory variables on the choice of exit varies across observations (private equity firms) and over time. From the multinomial logit model it was found that; 1) High technology firms were more likely to be exited by means of M&A rather than IPO; 2) An increase in the lending rate was found to increase the likelihood of a Secondary sale which is contrary to previous research (Sousa, 2010); and 3) M&A was found to be the most likely mode of exit assuming all explanatory variables were at their mean, while IPO was the least likely mode of exit.

DEDICATION

This research report is dedicated to
God Almighty,
My parents: Mr Kwame Agyapong and Mrs Bernice Agyapong,
and
My siblings: Adwoa Agyapong and Kwadjo Agyapong.

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CHAPTER 1: INTRODUCTION

1.1.CONTEXT OF THE STUDY

Against a backdrop of reduced performance from traditional asset classes in developed markets, the higher returns available in emerging markets provide an attractive investment opportunity in which to deploy capital (Wilton and Reed, 2013). African private equity has benefited greatly from these current market conditions. For instance, private equity fund raising activity in 2011 generated approximately USD1.7 billion in commitments which is a significant increase from USD151 million in 2002 (Ernst and Young, 2012b). The increasing importance of the asset class continues to attract the interest of academics and practitioners alike.

Due to the specifics of private equity, investments in portfolio companies must be exited within a specific time frame in order to maximize returns (Cumming and Johan, 2009). This process of divestment is one of important activities which occur at various stages in the private equity investment process but can be considered to be the most important. The exit is a fundamental core event of the private equity investment model; it aims to maximise the value of the investment and at the same time, secure optimal opportunities for the firm to grow after venture capitalist have left the firm (Klonowski, 2010). The exit has also been linked to the growth of the industry as a whole; due to its facilitating of the recycling of non-financial contributions to new portfolio companies as well as increasing the reputation of the managers which has an impact on the value of successive funds raised by the firm (Black and Gilson, 1998; Gompers, 1996).

However, achieving exits within emerging markets context continues to be a challenge due to liquidity constraints. It has been found that even the most advanced emerging markets fail to provide viable outlets for private equity portfolio companies (Leeds and Sunderland, 2003). In addition to this, being dominated by bank centered financial systems suggests that the African market would be expected to exhibit poor IPO activity (Black and Gilson, 1998; Levine, 2002) and thus potentially limiting the use of this exit method. Based on these factors it would be interesting to compare the exit behavior of private equity investments in Africa with those of a more developed stock market centered economy such as the United States of America (USA).

Recent studies of exit behavior have focused mainly on developed markets such as Canada, USA and Germany (Cumming and MacIntosh, 2003a; Baumeister and Muelke, 2010). Emerging markets such as China, India and Singapore have also been studied to a lesser extent, with data limitations being a common theme amongst these studies (Wang and Sim, 2001; Prahl, Cannarsi and Zeisberger, 2011). The African private equity industry is no exception in this regard with very little market data available to the general investment community. It is believed that this lack of information causes a perception gap amongst international investors and ultimately reduces the attractiveness of the continent as an investment destination (Ernst & Young, 2012a). Consequently the main aim of this research is to contribute towards the level of market knowledge regarding the African private equity industry with specific focus on South Africa. We chose to study South Africa for two reasons. Firstly, South Africa has the highest private equity penetration rate in Africa (EMPEA, 2012). Secondly, the South African financial services sector is also generally regarded as the most advanced on the continent and thus increasing the prospect of data availability.

Even though the South African private equity industry has been in existence for over 20 years, the most complete set of market data at our disposal begins from the year 2001. The market has shown significant growth over this period with total assets under management increasing from R35.9 billion in 2001 to R126.4 billion in 2012. The majority of this growth in assets under management is concentrated between 2005 and 2008, which also mirrors the industry's growth trend in other emerging markets (Dickinson, 2008). Figure 1.1 presents the growth in total assets under management; sourced from the Southern African Venture Capital and Private Equity Association (SAVCA) survey of South Africa covering the 2012 calendar year.

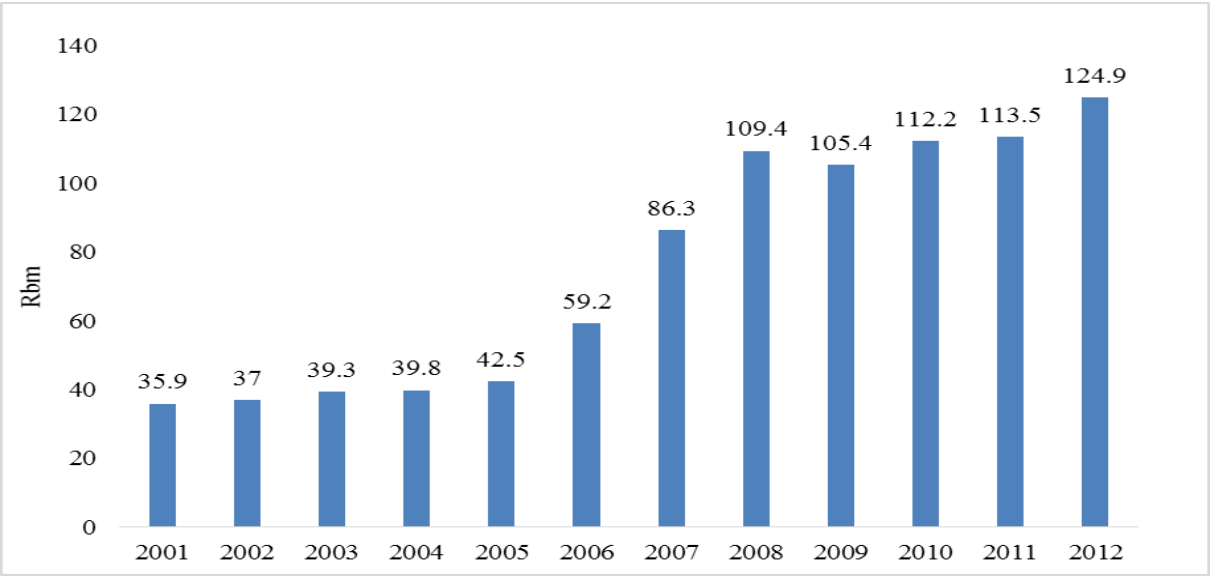

Figure 1.1 Private equity funds under management in South Africa

Source: (KPMG and SAVCA 2013) Southern African Venture Capital and Private Equity Industry Performance Survey of South Africa covering the 2012 calendar year.

1.2. PROBLEM STATEMENT

The literature on the South African private equity market is not as extensive as that of more advanced private equity markets in the USA and other developed nations. Previous research efforts were mainly concerned with the level of return generated by the asset class (Missankov, Van Dyke, Van Biljon, Hayes and Van Der Veen, 2008), the rationale for syndication amongst local private equity firms (Bent, Williams and Gilbert, 2004) and evolution of the venture capital industry (Lingelbach, Murray and Geilbert, 2009). Additionally, the suitability of the venture capital type of private equity financing compared to the leverage buyout type is another area of academic debate. To this effect (Ojah and Mokoaleli-Mokoteli, 2010) suggest that venture capital finance is actually the right kind of private equity for the African market and would possibly address the shortfalls of the current state of micro finance for SMMEs[1] within the South African and African market.

This study aims to contribute towards the literature by taking a look at exit behavior of independent private equity firms given the available dataset. We do not distinguish between venture capital and private equity as the firms sampled tend to engage in all stages of financing.

[1] Small, Medium and Micro Enterprises.

Therefore we use the term private equity to refer to both leverage buyout type deals as well as venture capital type deals.

1.3. RESEARCH OBJECTIVES

The objective of this study is to study the exit behavior of independent private equity firms in South Africa. As this is an exploratory study we examine empirical hypothesis previously tested by other authors. Firstly, we test whether portfolio companies within high technology sectors are more likely to achieve an IPO exit relative to other exits. Secondly, we test the effect of the lending rate on the likelihood of a secondary sale. Lastly, we consider the relative preference of IPO compared to M&A. As a bank centered financial system (market) South Africa which lacks a more vibrant venture capital industry would be expected to experience poor IPO activity (Black and Gilson, 1998).

1.4. RESEARCH QUESTIONS

The study hopes to answer the following questions as a means of streamlining the research objectives:

1. Are portfolio companies within high technology sectors more likely to achieve an IPO exit relative to other exits?
2. Does the lending rate influence the likelihood of a secondary sale exit?
3. As a Bank centered market does the South African market experience poor IPO activity as suggested by the literature?

1.5. Hypotheses

The following hypotheses were tested as part of this study;

Hypothesis 1: Industry of Portfolio Company

H1: Portfolio companies within high technology sectors are more likely to achieve an IPO exit relative to other exits.

Hypothesis 2: Debt capital markets

H2: Lower lending rates will increase the likelihood of a secondary sale.

Hypothesis 3: Market structure

H3: As a bank-centered market we expect investments in South Africa to exhibit low IPO activity, with M&A being the most preferred mode of exit.

Table 4.5 below presents the results of the hypotheses tested.

Table 1.1 Summary of hypothesis testing

	Null hypothesis	**Alternative hypothesis**
Hypothesis 1	High technology portfolio companies are less likely to be exited by IPO relative to other exit modes.	High technology portfolio companies are more likely to be exited by IPO relative to other exit modes.
Hypothesis 2	Lower lending rates will not increase the likelihood of a secondary sale exit.	Lower lending rates will increase the likelihood of a secondary sale exit.
Hypothesis 3	As a bank-centered market which lacks a vibrant venture capital industry, South Africa is expected to experience high IPO activity, with IPO being a more probable mode of exit relative to M&A exit.	As a bank-centered market, which lacks an active venture capital industry, South Africa is expected to experience low IPO activity, with M&A being the most probable mode of exit relative to IPO exit.

1.6. LIMITATIONS

The results derived from the analysis of the data used in this study will be considered indicative of the explanatory power of the determinants of exit identified in this study. It is important to note the following limitations:

- The dataset used in this study consist of 69 transactions which is relatively smaller than datasets used in other studies which have in excess of 100 transactions (Cumming and MacIntosh, 2001; Sousa, 2010).
- Transaction dates, in some instances, lack the level of detail required to ascertain the .exact day on which the transaction too place. In such cases the transactions were assumed to take place on the last day of the month or year indicated.
- Due to a lack of information the study does not include other explanatory variables tested by other authors.

1.7. ASSUMPTIONS

The main assumptions of the study are as follows:

- The financial data downloaded is accurate and reliable.
- Given that the funds included in our sample account for over 75% of Assets under management by independent private equity firms in South Africa as at 31 December 2012, it is representative of the South African private equity market.
- This study uses panel data and assumes that the effect of the explanatory variables on the dependent variables may vary across the observations (private equity firms) and across time.

1.8. OUTLINE OF REMAINING SECTIONS

In the following section a literature review is presented. Hypotheses are then developed along with a detailed description of the research undertaken in the methodology chapter. Empirical findings are presented and discussed in chapter 4. Chapter 5 concludes the report with suggestions for future research.

CHAPTER 2: LITERATURE REVIEW

2.1.WHAT IS PRIVATE EQUITY?

Institutionally, private equity is the provision of capital and management expertise given to companies to create value and, consequently, generate big capital gains after the deal. Usually, the holding period of these investments is defined as medium or long (Caselli, 2010). The literature further identifies venture capital as a sub category of private equity. Venture capital is typically concerned with financing high growth, high-risk, often high-technology firms that need capital to finance product development or growth and must, by nature of their business, obtain this finance in the form of equity rather than debt (Black and Gilson, 1998). Private equity therefore can be regarded as a broader term which also encompasses later stage investments as well as buyouts and turnaround investments (Cumming and Johan, 2009). Throughout this report we use the term private equity as a broader term and venture capital for specific reference to the venture capital industry. This excludes angel finance, the informal private equity market, which is generally not regarded as an institutional level investment (Meyer and Mathonet, 2005).

2.2.THE PRIVATE EQUITY MARKET

2.2.1. The main private equity markets

The literature suggests that the USA has the most developed private equity market in the world. Other countries have also openly sought to replicate the success that the USA has achieved with its venture capital industry (Black and Gilson, 1998). For example, one way that the European market has sought growth is through the creation of local and regional exchanges such as AIM in the United Kingdom, EASDAQ in Brussels and Euro.NM which are dedicated to regional markets in Germany, France, Belgium, Holland and Italy (Povaly, 2006). These exchanges were created to provide exit opportunities for smaller high-growth venture capital backed companies. The USA and Europe are regarded as the most advanced and largest private equity markets in the world. Other established markets include Canada and Japan.

Emerging market private equity has witnessed significant growth over the past decade and continues to attract significant capital flows from investors in search of higher returns. Some of the larger markets include Brazil, India, China and Singapore. The literature appears to suggest a change in the global perception towards emerging market private equity. Earlier papers such as Leeds and Sunderland (2003) acknowledged the opportunity to generate high returns in emerging markets but also highlighted the significant challenges faced by private equity firms within emerging markets related to issues such as identifying exit opportunities to realize investments. However**,** a more recent work by Wilton and Reed (2013) illustrates the continued success that the International Finance Corporation (IFC) has had with investing in emerging markets. The authors show that emerging market private equity provides attractive returns when compared to developed markets. Additionally, the authors also argue that exit opportunities are possible within emerging markets where the manager is seen as a genuine "hands-on" partner who provides valuable contributions to grow and improve the business. As a result of the continued change in perceptions regarding emerging markets the private equity industry in these markets continues to grow and attract international investors.

2.2.2. Market participants

The main participants in the private equity market can be categorised as issuers, intermediaries and investors (Fenn, Liang and Prowse, 1995). Issuers are generally companies for whom debt financing or public equity financing is not accessible. Intermediaries are the private equity firms while the investors are all institutional and private investors that invest in the private equity asset class.

Issuers

Issuers in the private equity market are generally private companies for whom access to debt or public equity capital is not feasible (Fenn, Liang and Prowse, 1995). These firms are generally too risky to seek debt finance and also lack adequate public information to access public equity markets. Issuers may be at various stages in their life cycle. They may be broadly classified as new ventures, middle-market private companies and public companies.

New ventures

New ventures consist of early stage venture capital projects which usually have high risk of failure due to their unproven technology or business model. Later stage venture capital projects on the other hand typically have a proven technology or business model but require capital to add capacity or to update their equipment to sustain their already fast growth.

Middle market

Middle market companies are usually larger, more established and more profitable than new ventures. They also tend to be in the retail and manufacturing sectors as opposed to the high technology sectors. These firms seek private equity finance to effect a change in ownership or capital structure or to finance an acquisition for expansion purposes. Included in the middle market are companies that are in financial distress. The companies have usually triggered default provisions on their current loans. In addition to the financial resources, these companies will also obtain advisory services from the private equity firm to assist in restructuring the organization.

Public companies

Public companies that issue private equity are not necessarily in distress. Some of the reasons these firms issue private equity include; raising funds to effect acquisitions confidentially, raising funds for complex merger and acquisition activity that may be more suitable for the private market relative to the public market. The ease of raising funds in the private markets relative to the public markets is also another reason. Finally, temporary interruptions of access to public equity may require public firms to seek finance in private markets. These temporary interruptions may be caused by analysts' views towards a sector.

Intermediaries

Intermediaries in the private equity market are mainly limited partnerships. These consist of professional private equity managers working as a team to fulfil the role of the general partner which is responsible for the day to day running of the fund. Institutional investors invested in the fund will act as limited partners who do not take part in the day to day operations of the fund.

Investors

The private equity market consist of a broad base of investors which has grown over time. These investors include corporate pension funds, public pension funds, endowments and foundations, bank holding companies, wealthy families and individuals, insurance companies and investment banks (Fenn, Liang and Prowse, 1995). For each investor group the largest investors tend to invest both directly and through limited partnerships. They typically begin by investing through limited partnerships and later broaden their scope by initially co-investing alongside partnerships to gain experience in structuring, monitoring and exiting deals and ultimately proceeding with their own direct investment programs.

2.2.3. Market dynamics

The private equity market is characterised by boom and bust cycles, particularly in venture capital. Boom periods are often driven by technological changes, such as personal computers becoming a consumer product, the rise of the biotech industry in the 1980s, or the internet revolution during the 1990s (Meyer and Mathonet 2005). The most recent market bust was witnessed during the recent credit crisis in 2008 (Bain and Company, 2010). During the period 2000 to 2007 there was a liquidity surge in the private equity market with private equity investors taking advantage of the relatively lower cost of credit during this time period which fuelled the boom in the market leading to the credit crunch in 2008 (Sousa, 2010). During 2008 increasing loan defaults by over indebted companies lead to tightening of debt covenants and higher costs of credit, leading to a fall in leverage buyout deal activity in the private equity market.

2.3.OVERVIEW OF EXISTING LITERATURE

The literature on private equity shows that numerous studies have been carried out on areas of industry practice such as financing, syndication, monitoring and advising of portfolio companies (Bergemann and Hege, 1998; Hellmann, 1998; Lockett and Wright, 2001; Cumming and Johan, 2009). As a specialist financial intermediary, the private equity firm will provide both financial and non-financial resources to its portfolio companies. Financial resources are typically provided to portfolio companies in order to facilitate new product development, working capital enhancements and acquisitions. The introduction of non-

financial resources assists in defining the firm's strategy, professionalising the business operations and also developing financial and governance policies. This advisory role has been extensively documented by Gorman and Sahlman (1989), Thompson (2008) and Cumming and Johan (2009).

Exit behavior still remains a relatively less researched area of the industry with the majority of research being dedicated to the initial public offering (IPO) and long run performance of companies whose shares are sold at an IPO (Ritter, 1991; Jain and Kini, 1994; Loughram and Ritter, 1995; Pagano, Panetta and Zingales, 1998). However, a few studies have also considered the interaction between more than one exit mode. Cumming and MacIntosh (2003a) is a comprehensive study of this nature, as it studies the interaction between all exit modes.

2.4. THE INVESTMENT PROCESS

2.4.1. Deal origination

A private equity firm can either source deals through its own networks or receive business proposals and applications for finance from private companies. The role of the private equity firm will be to review and quickly make a decision on the merits of the proposals. However, the good opportunities rarely come through the door or email (Thompson, 2008). As a result the private equity manager will source better deals through its personal networks. This process of deal generation is critical for the overall performance of the portfolio as suggested by (Klonowski, 2010). The importance of deal generation can be explained in three ways. Firstly, the quality of investments made by the private equity firm depends on the quality of its deal generation. Well networked private equity firms will have access to better quality deals and this influences the quality of the investments the firm ultimately makes. Secondly, access to good quality investments before other private equity firms will provide a competitive edge as the firm would have the opportunity to form a sound relationship with the management and founders of the portfolio company, conduct due diligence in an orchestrated manner, and negotiate a transaction with the most favorable terms. Thirdly, the continuation of strong deal flow is essential for the going concern of the private equity firm.

2.4.2. Screening and selection

Each year venture capital firms receive hundreds of business proposals before deciding which projects and teams to support (Sahlman, 1990). In addition to this sheer volume there is also the diversity of issuers in the market, as they may be at various stages of development (Fenn, Liang and Prowse, 1995). As part of the limited partnership agreement the private equity firm will develop an investment strategy which will indicate the sector and stage of development the private equity firm will target and thus influencing the screening and selection of originated deals (Cumming and Johan, 2009). However, the literature also suggests that managers may sometimes deviate from their investment objective in response to major changes in market conditions (Cumming, Fleming and Schwienbacher, 2005). For example, managers have been found to invest more in early stage high technology projects in times of low liquidity in the market in order to postpone the exit. Whereas later stage investments would be pursued in times of high liquidity in order to quickly realise returns. Specifically, the authors find that an increase in liquidity of 100 IPOs in a year reduces the likelihood of investing in new early-stage projects by approximately 1.5% to 2.3%.

2.4.3. Contracting

Private equity contracts govern the relationship between the private equity firms and their portfolio companies. The management of the portfolio company act as agents to the private equity firm in terms of applying best effort to implement the value creation plan. The private equity firm also acts as an agent to the portfolio company by providing the required financial and non-financial resources to achieve the growth objectives of the company. As a result of this principal agent relationship between the private equity firms and the management of their portfolio companies there is a risk of agency costs (Cumming and Johan, 2009). Agency costs are actions that one party to a contract may take which are beneficial to their interest but at the detriment of the other party. (Sahlman, 1990) identifies three main control mechanisms that the private equity firm may use to minimise the potential agency costs which are; 1) Financing by means of convertible securities 2) Syndication of investments and 3) Staging of financing.

2.4.4. Use of convertible securities

The empirical literature has generally supported the view that convertible preferred equity is the best form of finance for venture capital and private equity (Bascha and Walz, 2000). One of the reasons identified in the literature is that convertible preferred equity is perceived as a more flexible investment security as it allows the owner/manager to remain in control of the daily operations of the business and leaves the private equity firm with the option to convert its interest into equity and effectively gain control over the exit, if required. This is particularly important from a venture capital perspective as the businesses are usually involved with high technology which the venture capital firm may not have adequate expertise in. However as the majority of the literature has been based on the U.S. market, this view ignores the effect of the tax legislation in the U.S. and the bias that this creates towards convertible preferred equity (Gilson and Schizer, 2003).

2.4.5. Syndication

One of the ways in which a private equity firm may invest is through syndication. Syndicates are a form of inter-firm alliance in which two or more private equity firms invest together in a portfolio company and share a joint pay-off. The literature identifies benefits associated with syndication at the fund level as well as at the portfolio company level. At the fund level portfolio diversification has been found to be the main benefit of syndication (Lockett and Wright, 2001; Manigart, Meuleman, Wright, Bruining, Landstr¨om, Desbri`eres, Hommel, 2006). The literature suggests that by working with more established and well networked firms a private equity firm may gain access to better and larger deals in diverse industries and geographies. At the portfolio company level syndication has been suggested to lead to improved decision making throughout the investment process (Learner, 1994; Brander, Amit and Antweiler, 2002). By syndicating the private equity firm will be able to share in industry specific knowledge and skills of its syndicate which should improve portfolio company selection and screening as well as add more value to the portfolio company throughout the investment process. Where the portfolio company is exited by means of an IPO, syndication has also been found to increase the level of certification and reduce underpricing at IPO (Chahine, Wright and Filatotchev, 2007).

Recent literature also considers the costs of syndication to the private equity firm and how these costs react to a change in the level of experience of the private equity firm. Casamatta and

Haritchabalet (2007) suggests that although the private equity firm may enhance value by sharing its investment with other private equity firms it also creates indirect competition for the deal and must forego part of the projects surplus. This cost is suggested to increase along with the experience of the private equity firm. Secondly, syndicating and sharing ownership of a portfolio company can weaken the incentive of the private equity firm to apply best effort as they become over reliant on their syndicate partners. This cost decrease as the private equity firm gains experience.

2.4.6. Staging of finance

Staging ensures that financial resources are invested by means of instalments, with each successive instalment being done after specific business targets have been hit (Caselli, 2010). Gompers (1995) finds that staging the capital infusions into a portfolio company allows the private equity firm time to gather information as well as monitor the performance of the portfolio company. This allows the private equity firm the option to abandon unsuccessful projects at any time.

2.4.7. Pre-planned exits

Private equity firms may, in some cases, pre-plan their exits from a portfolio company. Cumming and Johan (2009) argue that the pre-planned exit, particularly in the case of M&A, need not be disclosed to the entrepreneur as this typically involves the sale of the entire business and removal of the entrepreneur as CEO. Consequently, the need for control over the eventual exit is expected to influence security design and allocation of control rights. Bascha and Walz (2000) show that by using convertible securities the private equity firm has the flexibility to achieve the optimal exit decision. The authors argue that the use of convertible securities allows the private equity firm an option to gain control over the exit decision in the case where the private equity firm and management disagree on the optimal exit mode.

2.4.8. Monitoring

Monitoring of investments commences after the private equity firm has concluded the deal to finance its investee company. Klonowski (2010) suggests that once the investee firm has been funded, venture capitalists focus on maintaining the operational efficiency of the business, developing the business according to the pre-agreed upon business plan, achieving operational and financial milestones and performing operational reviews and audits. The managing and monitoring of investments must ensure the creation of value and the control of any opportunistic behavior of the financed portfolio company (Caselli, 2010). For venture capital firms specifically, Sapienza (1992) suggests that more frequent and open communication between the lead investor and the CEO and the less conflict of perspective between the capitalist and CEO leads to greater value add during the monitoring stage. For the buyout market Acharya, Gottschalg, Hahn and Kehoe (2013) suggests that the abnormal performance from buyout deals are driven by changes in operating performance of the portfolio company and human capital factors such as deal partner skill. Changes in operational performance are brought about by operational improvement implemented by the private equity firm. Deal partner skill is derived from their previous experience. Deal partners with a strong operational background (e.g. ex-accountants or ex-industry-managers) generate significantly higher performance in organic deals. In contrast, partners with a background in finance (e.g. ex-bankers or ex-accountants) more successfully follow an M&A-driven or inorganic strategy.

2.4.9. Exit

There are various ways through which a private equity firm may exit its investment in a portfolio company. Cumming and Macintoch (2003a) give a good account of general exit behavior. They propose an optimal investment duration for private equity portfolio companies. The authors suggest that the greatest value add by the private equity firm to its portfolio companies occurs at the initial stages of investment when key decisions, such as the selection of management, are taken. Over time the marginal value added by staying invested in the portfolio company is expected to decrease as the management of the portfolio company gains experience. Therefore, at some point the private equity firm will no longer be able to generate a positive marginal value add by staying invested in the company and would look to exit the investment. They also hypothesized that higher quality firms would be exited in decreasing order of likelihood by IPO, acquisition, secondary sales, buyback and write-off. Their results

showed that the IPO was the preferred mode of exit for high value companies whiles write-offs were associated with the least valuable companies. Although inconclusive their results generally supported the order amongst the remaining modes of exit. Ideally, where a portfolio company has performed well against its business plan and achieved high profitability the private equity firm will seek the most lucrative exit. In these circumstances, the portfolio company is likely to have already lured interested buyers or been approached by investment bankers promising a successful IPO (Klonowski, 2010).

2.4.10. Partial exits

There are also instances where the private equity firm may seek a partial as opposed to a full exit. A full exit in an IPO involves a sale of all of the private equity firm's holding within one year of the IPO; a partial exit involves sale of only part of the Private equity firm's holdings within that period. A full acquisition exit involves the sale of the portfolio company for cash. In a partial acquisition exit, the private equity firm receives shares in the acquirer, which are often illiquid, instead of cash. In the case of a buyback exit or secondary sale, a partial exit entails a sale of only a part of the private equity firm's holdings. A partial write-off involves a write down of the investment below cost. The literature reviewed suggests that there is a signaling effect associated with partial exits (Leland and Pyle, 1997; Lin and Smith 1997; Cumming and Macintosh, 2003b). By retaining a partial interests in its portfolio company the private equity firm signals the quality of the investment as private equity investors would not hold on to bad investments.

2.5. THE IMPORTANCE OF THE EXIT

The importance of the exit is very clear from the literature. The ability of the private equity firm to exit its investments can be linked to the overall viability of the private equity investment model. Black and Gilson (1998) suggest that the exit facilitates efficiency in the relationships that the private equity firm has with its portfolio company and its investors. Firstly, the realized proceeds from exit provides investors with a reliable measure of the private equity firm's performance. Secondly, distribution of exit proceeds allows investors to reallocate funds to better performing private equity firms. In its relationship with the portfolio company the skills and expertise of the private equity firm become less relevant over time as the management of

the portfolio company gains experience. Therefore it is required that the private equity firm reallocates its financial and non-financial resources to new portfolio companies and thus becoming a repeat investor. There are also reputational benefits associated with exit. Gompers (1996) suggests that less experienced private equity firms will look to boost their reputation by using the IPO as an exit mode. Based on the literature it is clear that the exit is crucial for both the ability of the private equity firms to attract future investors as well as the recycling of funds through the industry as a whole.

2.6.INVESTMENT DURATION

Throughout the literature there seems to be a link between investment duration and choice of exit mode. Firstly, Gompers (1996) suggests that less experienced private equity managers were more likely to exit their portfolio companies prematurely using the IPO. Cumming and Macintosh (2001) also make findings in support for this grandstanding hypothesis. Write-offs have also been found to be associated with short investment durations (Cumming and Macintosh, 2003a and Schmidt, Steffen and Szabo, 2007). The literature suggest that private equity managers are able to distinguish between good and bad investments and will thus quickly identify and write-off bad investments in their portfolio. There also appears to be a relationship between investment duration and the level of funds available for investment in the market as suggested by (Cumming and Macintosh, 2001). In a study of 112 exits in the USA and 134 exits in Canada between 1992 and 1995 the authors find that greater levels of capital in the industry was associated with shorter investment duration. The authors argue that these findings demonstrate the time constraint associated with monitoring of portfolio companies by private equity firms. An increase in the level of funds available for new investments results in an increase in the opportunity cost of staying invested in the current portfolio companies for too long. This suggest that duration will be shorter when there is a greater amount of capital for investment.

2.7.EXIT MODES

2.7.1. Initial public offering

The IPO involves the sale of the portfolio company's shares to the public. It is worth noting that in most cases the private equity firm will not sell all or even part of its interest at an IPO. Rather, securities will be sold into the market over a period of months or even years after the IPO (Cumming and Macintosh 2003b). The implication is that the IPO will not necessarily guarantee liquidity although it may attract a higher valuation for the portfolio company. The literature on IPOs also suggest that it is a mode of exit for the best performing companies (Wang and Sim, 2001; Schwienbacher, 2002; Schmidt, Steffen and Szabo, 2007). As a result it is generally regarded as the most profitable mode of exit. From a contracting perspective Black and Gilson (1998) argue that the IPO is the only exit that provides an entrepreneur and private equity firm the opportunity to contract implicitly over control. This means that the IPO allows a successful entrepreneur to regain control of their company once the private equity firm disposes of its interest to the public without explicitly contracting for this return of control. Therefore, given the right market conditions the IPO will be attractive to both the private equity firm and the management of the portfolio company.

2.7.2. M&A (Acquisition)

In an acquisition the entire portfolio company is acquired by a strategic investor. This would typically involve the replacement of current management and shareholders. As we know that the IPO is an exit mode for the best performing portfolio companies, it is not surprising that the returns generated from acquisitions are not as high as for IPOs (Bygrave and Timmons, 1992; Wall and Smith, 1997; Bienz and Leite, 2008). However, there are also benefits to the acquisition exit. Acquisitions are attractive to private equity firms because of their strong pricing potential and instant liquidity (Klonowski, 2010). The pricing potential of acquisitions lies in the synergies that the strategic acquirer may unlock from the portfolio company. Additionally, strategic acquirers will tend to use newly acquired entrepreneurial subsidiaries for research and development purposes. Therefore a strategic acquirer would, in most cases, be prepared to pay a premium. The instant liquidity of the acquisition exit steams from the fact

that the private equity firm will typically receive cash, after any escrow[2] arrangements, for their interest in an acquisition exit.

2.7.3. Secondary sale

In a secondary sale the private equity firm sells its interest in the portfolio company to another private equity firm or other strategic investor while other shareholders remain invested. Although this exit method has previously been regarded as an exit of last resort, recent academic research appears to suggest something different. (Achleitner, Bauer, Figge and Lutz, 2012) find, in a study of 1100 leveraged buyouts closed between 1995 and 2008 in North America and Europe, that the level of returns on secondary sale exits were comparable to that of the initial public offering and thus concluding that the secondary sale is not an exit of last resort.

2.7.4. Buyback

In a buyback the private equity firm will exit from its investment by selling its stake back to the portfolio company. This usually occurs when the portfolio company has extra cash or when it can borrow money from a bank (Wang and Sim, 2001). An important thing to realize about the buyback is that it does not raise any new capital for the portfolio company. Cumming and Macintosh (2003a) suggest that buybacks are usually triggered by the exercise of put and call options held by either the private equity firm or the portfolio company. As a result buyback exits indicate a failure to achieve performance targets or secure other lucrative exits.

2.7.5. Write-offs

Essentially a write off is a failure. Private equity firms are often required to write-down or write–off poorly performing portfolio companies. The literature suggests that the time taken to write-down or write-off investments can be an indication of manager skill. Cumming and Macintosh (2003a) find that shorter holding periods were associated with high probabilities of write-offs as private equity managers would quickly write-off bad investments in order to signal their ability to distinguish between good and bad investments. Schmidt, Steffen and

[2] Purchasers in a trade sale may often require that a portion of the purchase price be held in Escrow for a period of time following the transaction as part of the warranties provided by the private equity firm as a seller (Klonowski 2010).

Szabo (2007) also find strong support for this hypothesis in a study of 675 management buyout (MBO) and leveraged buyout (LBO) exits over the period 1990 through 2005 in Europe and USA.

By far the most important of the exit methods identified above are the IPO and Acquisition (Black and Gilson, 1998). This is due mainly to the level of returns generated by these modes of exit exceeding the other modes. As a result the majority of the literature dealing with exits tends to focus on these two exit modes. Aside from the different levels of return generated by each type of exit, various other factors can also influence choice of exit.

2.8. FACTORS AFFECTING CHOICE OF EXIT

2.8.1. Industry focus of Portfolio Company

It has been found that Portfolio companies in the high technology sectors are more likely to be exited by IPO as compared to those in other sectors (Gompers, 1995). The literature suggests a few reasons for this. Firstly, portfolio companies in high technology sectors have been found to be relatively more successful compared to those in other sectors. Secondly, these companies have also usually invested significantly in research and development, which has been found to be one of the key determinants of the amount of capital that a company can raise at IPO (Deeds, Decoralis and Coombs, 1997). The idea here is that although the company has no products in the market its research could potentially lead to scientific breakthroughs. These conditions are particularly prevalent in bio-technology firms. Consequently they require significant capital investment in order to achieve their potential (Pagano, Panetta and Zingales, 1998). Hence an exit by IPO would be very attractive for such a company.

2.8.2. Quality of Portfolio Company

The literature suggests that higher quality firms are more likely to be exited by IPO relative to acquisition, secondary sale and buyback. Cumming and Macintosh (2003a) find that an increase in the quality of a portfolio company, as captured by its market/book ratio, increased the likelihood of exit by IPO relative to acquisition, secondary sale and buyback. This appears to be consistent with the view that only high performing firms are taken public (Schwienbacher, 2002).

2.8.3. Type of private equity firm

The literature draws a distinction between independent and captive private equity firms. Cumming and Johan (2009) point to the corporate structure, compensation and investment focus as the main differences between independent and captive private equity firms. Independent private equity firms are structured to be autonomous from their limited partners. This means the limited partners have little influence on the day to day operations of the general partner. Alternatively, captive private equity firms are a part of a greater corporate structure with funds being sourced from their corporate parent. As a result of this autonomy, independent private equity firms contract with limited partners in a manner that clearly lays out all rights and responsibilities of both parties over the life of the fund. The general partner is also adequately compensated to ensure that he is fully incentivised to apply best effort. Investment professionals at captive private equity firms are compensated like normal employees and therefore are not as adequately incentivised. Captive private equity firms also tend to invest only in sectors or technologies that their corporate parent operates in or sectors in which the government has identified market failures.

The strategic objectives that influence the investment behavior of private equity captives, such as the development of new technology, also leads them to prefer M&A exits relative to IPO in order for the their corporate parent to invest in the technology it has developed (Cumming and Johan, 2009). In summary, independent private equity firms are expected to perform better as well as achieve more IPOs than corporate and government captives.

2.8.4. Market conditions

The literature also suggests that prevailing market conditions in the debt and equity capital markets will influence the choice of exit. Brzeszczynski (2012) finds that the number of IPOs in emerging markets is linked to stock market phases with a higher number of IPOs during periods of rising stock market prices. Of course the decision is not simultaneous with a time lag allowing for the time it takes to decide and prepare a company for exit by IPO. Conditions in the debt capital markets also appear to have an influence on the choice of exit. Sousa (2010), in a study of 759 private equity exits in Europe from January 2000 to June 2007, finds that the greater access to credit contributed to creating a ‘window of opportunity’ for the use of the

secondary sale and thus explaining its increased use over the sample period. He also finds that secondary sales were more likely to occur after periods of low stock market returns.

2.9.CHALLENGES TO IPO EXIT IN SOUTH AFRICA

2.9.1. Market structure

Black and Gilson (1998) suggests that stock market centered economies, which are characterised by large corporations and small banks which play a limited role in corporate governance, are likely to exhibit higher IPO activity compared to bank centered economies which are characterised by fewer larger banks which play a central governance role. The authors argue that stock market centered economies such as the USA provide the entrepreneur and venture capitalist the opportunity to contract implicitly over control. This means that although the entrepreneur cannot demand the retention of control over their company at the time of seeking venture financing they have the opportunity, if successful, at exit to regain control over their company once the private equity firm exits by means of IPO. The authors conclude that the entrepreneur's preference for the IPO will increase the likelihood of this method being used in stock market centered economies. The empirical literature has generally supported this hypothesis with authors finding higher probability of IPO exits in stock market centered economies, usually the USA or the UK, compared to bank centered economies in Europe (Schwienbacher, 2002; Espenlaub, Khurshed and Mohamed, 2010). However, there have also been exceptions. Schmidt, Steffen and Szabo (2007), in a study of 672 private equity exits in Europe and America, find that investments in Europe were more likely to be exited by IPO compared to those in USA. Even after controlling for sample size to ensure that the European transactions were not over represented in the total sample, they still fail to find support for the market structure hypothesis proposed by (Black and Gilson, 1998). Levine (2002) constructs a broad cross-country dataset to compare bank-centered and market centered economies. In terms of this dataset South Africa is classified as a bank centered economy. The importance of this dataset is that it provides a very broad cross-country comparison with a total of 48 countries which extends the comparison beyond the usual market-centered economies such as the USA and UK and bank-centered economies such as Germany and Japan.

2.9.2. Lack of a vibrant venture capital industry

In addition to South Africa being classified as a bank centered economy it also lacks a vibrant venture capital industry. The rise and subsequent fall of the South African venture capital industry is well presented by (Lingelbach, Murray and Gilbert 2009). The authors suggests that the weakening of embedded relations between public and private actors within the post-apartheid South African economy prevents coproduction, the transformation of inputs from individuals in different organisations into goods and services, from taking place. As a result this prevents the emergence of a vibrant venture capital industry. Consequently, the South African private equity industry is dominated by Leverage Buyout type funds which typically invest in mature companies which have the capacity to assume debt. The literature suggests that such later stage investments are less likely to be exited by IPO compared to early stage investments (Das, Jagannathan and Sarin, 2002).

Therefore it would appear that by being bank centered as well as lacking a vibrant venture capital industry would be expected to significantly decrease the likelihood of the IPO exit within the market.

2.10. EXIT OPPORTUNITIES IN EMERGING MARKETS

Lerner, Ledbetter, Speen, Leamon and Allen (2016) suggest that the ability to enter and exit an investment and to realise suitable returns is of critical importance to investors especially in emerging markets where public markets are underdeveloped. However, they find that exit opportunities in emerging markets are no worse than those in developed markets with investors potentially benefiting from a greater reliance on the IPO exit.

The authors identify two differences between exit opportunities in emerging markets and developed markets. The first is the type of exit. IPOs comprise 49% of exits in emerging markets compared to developed markets where they account for 10% of exits. The second difference is the holding period. Emerging markets show shorter holding periods compared to developed markets.

CHAPTER 3: METHODOLOGY

In order to answer the research questions we use revealed preference data to predict the aggregate behaviour of South African private equity firms based on objectively measured explanatory variables as in (Ben-Akiva and Lerman, 1985). This chapter proceeds by laying out the research design, data population, and the collection methods used. This is then followed by a discussion of the research instrument used.

3.1. RESEARCH DESIGN

This study is quantitative in nature and involves the use of statistical modelling to determine the behaviour of private equity firms at exit. Cumming and Johan (2009) characterise the relationship between the private equity firm and limited partners of the fund as one where the private equity firm, as a general partner, is fully responsible for the day to day running of the fund and is compensated by a fixed management fee as well as a performance fee. They also find that approximately 77%[3] of the general partner's compensation is liked to his carried interest[4] in the fund. It would suffice to say that the private equity firm is incentivised to act in a manner that maximises the overall wealth of the fund investors. With this in mind the choice of exit mode deployed is clearly dependent on the level of wealth maximisation the private equity firm expects to derive from the exit. Brooks (2008) describes such a choice as being discrete, as the private equity firm in this case does not view exits in any particular order but rather aims to always select the route that maximises wealth in a particular exit situation. This is also in line with the empirical pecking order which states that the private equity firm will look to deploy the exit mode that maximises returns (Bygrave and Timmons, 1992; Gompers, 1996; Wall and smith, 1997). To model this discrete choice the study uses panel data consisting of exit events performed by private equity firms predominantly within the South African market and other African markets to a lesser extent over the sample period of 1995 to 2012.

[3] This was based on an informal survey of venture capital firms with, at least, $200 million in capital under management.
[4] Sahlman (1990) describes this as the overall return on capital committed after taking annual management fees into account but before any annual bonus to general partners.

3.2. POPULATION AND SAMPLE

3.2.1. Unit of measure

The unit of measure in this study is an exited private equity investment. Due to the limited nature of our data no distinction is made between full and partial exits.

3.2.2. Population

The population of interest in this study consist of independent private equity firms operating in South Africa. The literature draws a distinction between independent and captive private equity firms in terms of which Investment professionals of independent private equity firms are adequately compensated for their role as fund managers whereas those of captive private equity firms are compensated like normal employees. Based on this it would appear that independent private equity firms would be expected to exhibit the most efficient behaviour in order to maximise the wealth of private investors and thus serve as a good reference point for the analysis of exit behaviour for the purpose of this study.

3.2.3. Sample selection

Due to the confidential nature of private equity data, this study has tried to balance the need for representative data with its availability. A population of 74 Private equity firms was obtained from the Southern African Venture Capital and Private Equity Association (SAVCA) website. Based on these firms we identified a total of 64 exit transactions from 11 independent private equity firms. Five additional transactions performed by private equity firms not listed on the SAVCA website (AKA Capital and African Agricultural Capital) were also identified during the research process. This resulted in a total sample of 69 exit transactions performed by 13 independent private equity firms within the period of analysis, from 1995 to 2012. Thirteen of the sampled exit transactions were performed in other African markets. Table 3.1 presents the sampled private equity firms as well as their year of establishment and assets under management as at 31 December 2012.

Table 3.1 Sampled private equity firms

Private equity firm	Year established	Fund size or Funds invested to date (USDm)	start-ups investment
4DI Capital	2009	n/a	YES
Actis	2004	1922	NO
African Agricultural Capital	2005	n/a	n/a
AKA	2001	n/a	n/a
Aureos	2001	536	NO
Brait	1991	2604	NO
Capitalworks	2006	177	NO
ECP	2000	2413	NO
Ethos	1984	1815	NO
Horizon	1992	35	NO
Kingdom Zeipher	1990	200	n/a
Medu	2003	136	NO
Sphere	2001	36	NO

Source: Financial Mail 2012

3.3.DATA COLLECTION

Transaction data was obtained from S&P CapitalIQ[5] and official private equity firm websites. The annual private equity market review published by the SAVCA was also used as a source of overall market analytics.

For the purpose of this study the sample selected consists of private equity exits by independent private equity firms over the period of 1995 to 2012. The process of data collection began with the identification of all registered private equity firms as reported by the SAVCA. As at 31 December 2012 the SAVCA had 74 members. Table 3.2 provides a breakdown of members of the SAVCA by type and their portion of funds under management. Independent private equity firms dominate the market with approximately 49% of total funds under management. Government and financial services captives each contribute 24% with other captives and investment holding companies making up 2% and 1%, respectively. Transaction level data gathered includes; investment duration, private equity firm experience (years), Industry focus of portfolio company and the country headquarters of the portfolio company.

[5] S&P Capital IQ is a provider of multi-asset class and real time data, research and analytics.

Table 3.2 Funds under management at 31 December 2012

SAVCA members	Number of firms	Funds under management (ZAR bn)
Captives Other	*6*	3.0
Captives Government	*6*	30.4
Captives Financial Services	*13*	29.8
Investment holding company	*2*	1.5
Independents	*47*	61.7
TOTAL	**74**	**126.4**

Source: (KPMG and SAVCA 2013) Venture Capital and Private Equity Industry Performance Survey of South Africa as at the 2012 calendar year.

3.4. THE RESEARCH INSTRUMENT

As part of the study we aim to determine the probability of occurrence of an exit mode given a set of objectively identified explanatory variables. In order to estimate the probability of a qualitative dependent variable a logistic regression as described in Brooks (2008) shall be used. A major drawback of the basic logit model is its inability to handle more than one dependent variable. As there are several exit modes to be considered simultaneously in the model it is required that a generalisation of the simple logit model is used. Furthermore, due to the utility maximisation objective of the private equity firm at exit the dependent variables in this case can be regarded as unordered responses[6]. To cater for all these specifics the multinomial logit model, first developed by Theil (1969), has been selected as the best possible form of logistic regression to be used. The approach utilised in this research is very similar to Cumming and MacIntosh (2003a), except that we do not have sufficient information to include a variable representing firm quality.

Wang and SIM (2001) also supplemented logistic regression with a case study. This is considered superior to a survey as it can explain casual links in real life interventions that may be too complex for a survey (Yin, 1994). Unfortunately the intimate level of detail required for a case study was unobtainable in this case. For the purpose of implementing our model we first

[6] As explained earlier the private equity firm does not view exits in any particular order but rather selects an exit mode based on its ability to maximise returns within a given exit scenario.

identify the dependent variable as one of the following exit modes: IPO, M&A, Secondary sale and Buyback. We did not identify any write-offs in our data.

We then identify the independent variables as Investment duration, private equity firm experience, Industry focus, Country of headquarters, exchange rate, GDP growth rate, Inflation rate and lending interest rate. The logit regression model equations for estimating the utilities associated with each exit mode are as follows;

$$\mathbf{V_{IPO}}, = \beta_0 + \beta_1 ID_{it} + \beta_2 PEE_{xt} + \beta_3 IF_{it} + \beta_4 CH_{it} + \beta_5 RDER_t + \beta_6 GDPR_t + \beta_7 IR_t + \beta_8 LR_t + \varepsilon_t$$

$$\mathbf{V_{M\&A}} = \beta_0 + \beta_1 ID_{it} + \beta_2 PEE_{xt} + \beta_3 IF_{it} + \beta_4 CH_{it} + \beta_5 RDER_t + \beta_6 GDPR_t + \beta_7 IR_t + \beta_8 LR_t + \varepsilon_t$$

$$\mathbf{V_{SS}} = \beta_0 + \beta_1 ID_{it} + \beta_2 PEE_{xt} + \beta_3 IF_{it} + \beta_4 CH_{it} + \beta_5 RDER_t + \beta_6 GDPR_t + \beta_7 IR_t + \beta_8 LR_t + \varepsilon_t$$

$$\mathbf{V_{BB}} = \beta_0 + \beta_1 ID_{it} + \beta_2 PEE_{xt} + \beta_3 IF_{it} + \beta_4 CH_{it} + \beta_5 RDER_t + \beta_6 GDPR_t + \beta_7 IR_t + \beta_8 LR_t + \varepsilon_t$$

Where;

V_{IPO} is the utility associated with the IPO exit.

$V_{M\&A}$ is the utility associated with the M&A exit.

V_{SS} is the utility associated with the secondary sale exit.

V_{BB} is the utility associated with the buyback exit.

β_0 is the intercept.

$\beta_{1\text{-}8}$ is the beta coefficient associated with each explanatory variable**.**

ID_{it} is the investment duration for an investment *i* at time *t*. This variable is captured in years from date of original investment to date of exit.

PEE_{xt} is the experience of private equity firm *x* at time *t*. The variable is captured as the number of years from date of establishment of the firm to date of original investment into a portfolio company.

IF_{it} is a dummy variable indicating the industry focus of investment *i* at time *t*. The variable is captured as "1" for an investment within a high technology sector and "0" for investments in other sectors.

CH_{it} is a dummy variable indicating the location of the headquarters of investment *i* at time *t*. The variable is captured as "1" for investments made within the South African market and "0" for investments made in other African markets.

$RDER_t$ is the exchange rate at time *t*. The variable is captured as the average rand: dollar (ZAR: USD) exchange rate during the year of exit.

$GDPR_t$ is the GDP growth rate at time *t*. The variable is captured as the GDP growth rate of South Africa during the year of exit.

IR_t is the inflation rate at time *t*. The variable is captured as the annual % change of the CPI in South Africa during year of exit.

LR_t is the lending rate at time *t*. The variable is captured as the lending rate in South Africa during the year of exit.

ε_t is the error term from the logistic regression at time ***t*.**

In order to determine the probability of selection associated with each exit mode the following equations must be solved;

$$Pr(IPO) = \frac{exp(V_{IPO})}{\exp(V_{IPO})+\exp(V_{M\&A})+\exp(V_{SS})+\exp(V_{BB})} \quad (3.1)$$

$$Pr(M\&A) = \frac{exp(V_{M\&A})}{\exp(V_{IPO})+\exp(V_{M\&A})+\exp(V_{SS})+\exp(V_{BB})} \quad (3.2)$$

$$Pr(SS) = \frac{exp(V_{SS})}{\exp(V_{IPO})+\exp(V_{M\&A})+\exp(V_{SS})+\exp(V_{BB})} \quad (3.3)$$

$$Pr(BB) = \frac{exp(V_{BB})}{\exp(V_{IPO})+\exp(V_{M\&A})+\exp(V_{SS})+\exp(V_{BB})} \quad (3.4)$$

Where Pr(IPO), Pr(M&A) , Pr(SS) and P(BB) are probabilities of exit by IPO, M&A, Secondary sale and Buyback. V_{IPO}, $V_{M\&A}$, V_{SS} and V_{BB} are the utilities associated with each exit mode. In order to estimate the model one of the sets of coefficients must be normalised to zero and thereby serve as a reference category for all other probabilities to be estimated by reference to this exit mode. In our case M&A has been selected as the base category and therefore no coefficients are estimated for this category. It is also common to replace the equations 3.1 to 3.4 with a single general equation to represent the probability of any alternative;

$$Pr(i) \quad = \frac{exp(V_i)}{\sum_{j=IPO,M\&A,SS,BB} \exp(Vj)} \tag{3.5}$$

Where (i) indicates the alternative for which probability is being computed. This formation implies that the probability of choosing an alternative increases monotonically with an increase in the systematic utility of that alternative and decreases with increases in the systematic utility of each of the other alternatives (Koppelman and Bhat, 2006).

3.4.1. Sample size dependent efficiency of logistic regressions

Logistic regression tends to overestimate beta coefficients for sample sizes less than 500. This effect however is negligible for single studies and is more pronounced where results of multiple studies are pooled together for total analysis. Peduzzi, Contcato, Kemper, Holford and Feinstein (1996) suggest a minimum of 10 events per independent variable for running logistic regressions. Our dataset satisfied this requirement.

The following preliminary tests were performed to ensure the validity and accuracy of the results from the analysis.

3.4.2. Multicollinearity

The panel data utilised for this study was tested for multicollinearity.

3.4.3. Independence of irrelevant alternatives (IIA)

The independence of irrelevant alternatives is one of the main assumptions of the multinomial logit model which was first explored by Arrow (1951). This choice axiom applied to the multinomial logit model dictates that if alternative "*a"* is a preferred choice from a set of "*a"* and "*b"* alternatives, the existence and subsequent inclusion of alternative "*c"* into the set will not improve the probability of selecting "*b"* within the set of "*a"*, "*b"* and "*c"*. The independence of irrelevant alternatives assumption was tested using the Hausman-McFadden test (Hausman and Mcfadden, 1984).

3.5.DATA ANALYSIS

Correlation analysis, trend analysis and Hypothesis testing are conducted using stata 12.0 to determine the effects of the explanatory variables on the dependent variables, and the relationships that exist among them.

3.5.1. Hypotheses Testing

Hypothesis testing is carried out on equations 3.1 to 3.4.

Hypothesis 1: Industry of Portfolio Company

H1: Portfolio companies within high technology sectors are more likely to achieve an IPO exit relative to other exits.

Hypothesis 2: Debt capital markets

H2: Lower lending rates will increase the likelihood of a secondary sale exit.

Hypothesis 3: Market structure

H3: As a bank-centered market we expect investments in South Africa to exhibit low IPO activity, with M&A being the most preferred mode of exit.

CHAPTER 4: RESULTS AND DISCUSSION

4.1. PRESENTATION AND DISCUSSION OF REULTS

The empirical analysis and results are based on the 69 transactions sampled over the period 1995 to 2012. The transaction data collected is tabulated in Appendix A. The natural log of investment duration and private equity firm experience were included as part of the explanatory variables to make the model more stable. The results of the correlation test are presented in Table 4.1.

4.1.1. Analysis of correlation matrix

An analysis of the correlation between test variables is presented below. Review of the correlation matrix suggests that the explanatory variables are not significantly correlated. As the multinomial logit is a non-linear model any correlations identified do not strictly suggest a direct linear relationship between the variables.

Table 4.1 Correlation matrix

	Investment duration (years)	**Log of Investment duration (years)**	**Private equity firm experience (years)**	**Log of private equity firm experience (years)**	**Industry focus (dummy)**	**Country headquarters (dummy)**
Investment duration (Years)	1.00					
(LN) Investment duration (years)	0.95	1.00				
Private equity firm experience (years)	0.02	0.00	1.00			
(LN) Private equity firm experience (years)	0.10	0.06	0.89	1.00		
Industry focus (dummy)	0.10	0.14	-0.07	-0.10	1.00	
Country of headquarters (dummy)	0.16	0.18	0.39	0.52	0.06	1.00
Exchange rate	0.06	0.12	0.02	-0.07	0.09	-0.15
GDP growth rate	-0.02	-0.08	0.32	0.38	-0.05	0.28
Inflation Rate	-0.11	-0.08	-0.19	-0.27	0.11	-0.12

Lending interest rate	-0.18	-0.13	-0.17	0.01	0.06	0.16

Table 4.1 Correlation matrix (continued)

	Exchange rate	**GDP growth rate**	**Inflation rate**	**Lending interest rate**
Exchange rate	1.00			
GDP growth rate	-0.31	1.00		
Inflation rate	0.37	-0.25	1.00	
Lending interest rate	-0.28	-0.20	0.46	1.00

The Macroeconomic variable of importance for the purpose of this study is the lending rate. The lending rate is not expected to have any relationship with the investment level variables identified. The correlation of -0.02 between investment duration and GDP growth rate suggests that the sampled private equity firms achieved quicker exits in years of high GDP growth rate. Based on the correlation matrix above there does not appear to be any multicollinearity between the test variables.

4.1.2. Descriptive analysis

Table 4.2 presents an analysis of the sampled transactions by mode of exit. Out of the total number of transactions 13 were executed outside of South Africa but still within Sub-Saharan Africa. M&A showed the greatest frequency with 40 transactions followed by Buybacks totalling 15 as well as 10 Secondary sale transactions and 4 IPOs.

Based on our sample, investments exited by M&A were associated with the longest average investment duration of 5.6 years. The quickest form of exit over the sample period was the buyback which had an average investment duration of 4.5 years. Secondary sales and IPOs fall in between with 5.1 years and 4.9 years, respectively. The sample data suggests that M&A exits are performed by the most experienced firms, with an average of 8.4 years of experience at date of divestment. The IPO is associated with private equity firms of the lowest years of experience of 4.9 years. This set of results appears to provide support for the grandstanding hypothesis proposed by (Gompers, 1996). In terms of the grandstanding hypothesis, younger venture capital firms will exit their portfolio companies prematurely using the IPO in order to boost their reputation in the industry.

The sample consists of 20 technology firms, of which 12 were exited by means of M&A, 5 by buyback, 2 by Secondary sale and 1 by IPO. It is interesting to observe that only one out of the 20 high technology firms was exited by means of IPO. This appears to provide anecdotal evidence for hypothesis 3 as the majority (95%) of the high-technology portfolio companies were exited using other exit modes besides the IPO.

Table 3.2 Sample exit transactions by mode of exit

Exit mode	**Number of portfolio companies**	**Average investment duration**	**High Technology industry**	**PE firm experience**
IPO	4	4.92	1	4.94
M&A	40	5.57	12	8.44
Secondary sale	10	5.07	2	6.38
Buyback	15	4.53	5	7.27
Total	69	5.23	20	7.68

4.1.3. Trend analysis

Figure 4.1 presents the total number of exits per year by mode of exit over the sample period. The sample data shows a gradual increase in the total number of exits from the late 1990s through to the early 2000s. A total of 12 exit transactions were identified between 1995 and 2002. We do not observe any IPO transactions within this period although it coincides with the global dot-com boom. This may be due to limitations of our dataset. The majority of exit transactions occur between the years 2003 and 2007 with a total of 42 transactions identified during this period. We see a decline in the number of transactions in 2008 with only 2 exit transactions identified. According to Bain & Company (2010), higher cost of credit during the global credit crisis limited deal activity, specifically as it relates to buyouts (M&A and Secondary). After 2008 the number of exits continues on an increasing trend with 4 exits in 2009, 5 in 2010, 7 in 2011 and 4 in 2012. The most frequent exit mode, M&A, seems to closely follow the trend described above with peaks in 2004 and 2011 with 6 and 7 transactions respectively. IPO exits are identified in 2004, 2007, 2008 and 2009 with only one transaction each year. Secondary sales in our sample occur between the year 2000 and 2007. We observe 1 transaction in 2000, 5 in 2003, 1 in 2005 and 3 in 2007. Buybacks appear to be more evenly distributed across the sample period with at least 1 buyback in 11 out of the total 18 years under review.

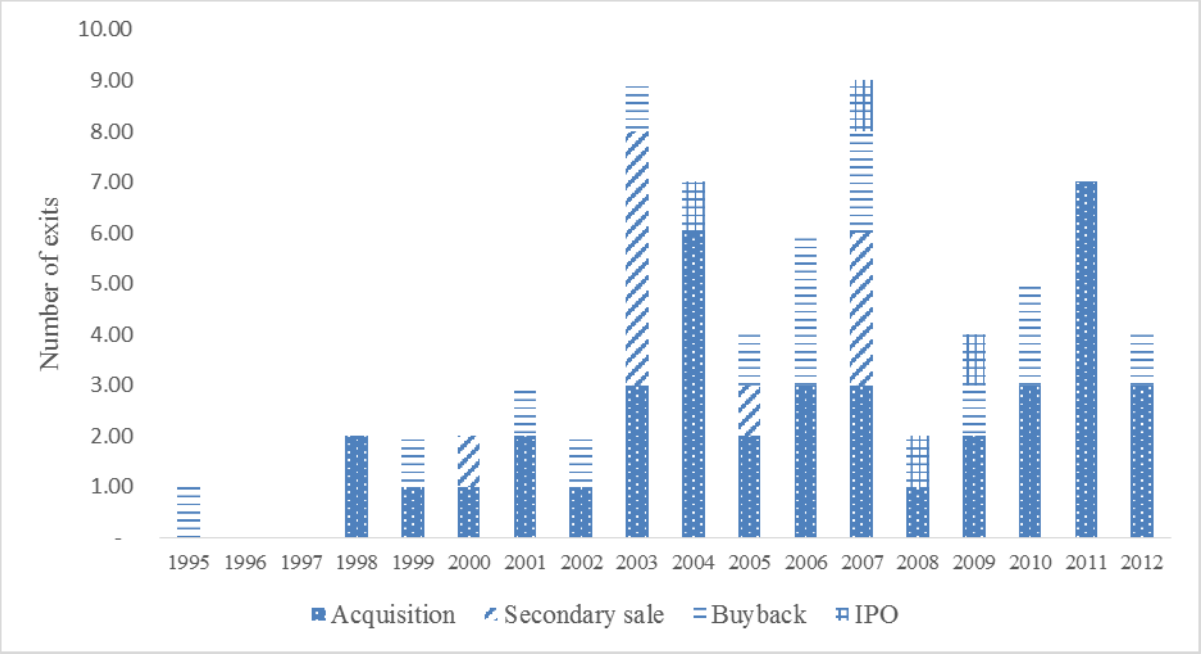

Figure 4.1 Exits by year

Source: S&P CapitalIQ[7]

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4.1.4. Investment duration and undrawn commitments

Figure 4.2 presents average investment duration and total undrawn commitments over the period 2001 to 2012. The graph shows that average investment duration appears to increase during lower levels of undrawn commitments and decrease at peak levels of undrawn commitments. There is a clear upwards trend in both indicators from the year 2001 up to about 2005 after which average investment duration declines rapidly from 7.1 years in 2005 to 4.7 years in 2006 and 4.9 years in 2007 whereas the level of undrawn commitments reaches its peak at R25.3bn in 2006 and R31.6bn in 2007. As undrawn commitments begin to decrease in 2008 the average investment duration also begins to increase from 4.9 years in 2007 to 6.2 years in 2008. This trend appears to be consistent with empirical findings of Cumming and Macintosh (2001) which suggests that when a private equity firm's opportunity cost of staying invested in a portfolio company increases, evidenced by increases in the level of funds available for investment in the market, investment duration will be shorter as the private equity firm has incentive to exit its portfolio companies sooner in order to invest the undrawn commitments.

[7] S&P Capital IQ is a provider of multi-asset class and real time data, research and analytics.

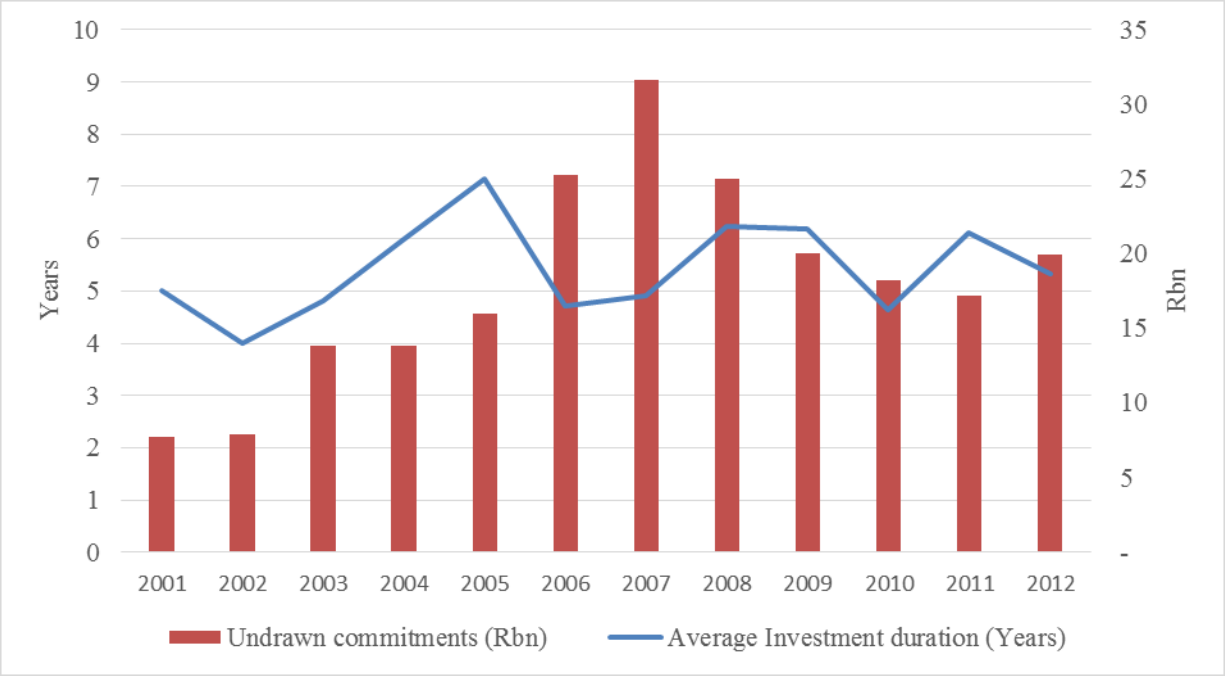

Figure 4.2 Average investment duration and undrawn commitments

Source: (KPMG and SAVCA 2013) Venture Capital and Private Equity Industry Performance Survey of South Africa as at the 2012 calendar year.

4.1.5. Multinomial logit result

In order to test the study's hypotheses, we have employed a multinomial logit model. The dependent variables in our model are the exit modes; IPO, M&A, Secondary sale and Buyack. The multinomial logit model estimates *j-1* binary logits, where there are 'J' outcomes with one of the outcomes representing the base category. By design, STATA uses the most frequent mode of exit as the base category. Therefore, M&A was used as the reference category, with results presenting the other three modes of exit which will then be interpreted relative to M&A. The explanatory variables used in this study consist of investment level variables and macroeconomic variables. Table 4.3 presents investment level variables which consist of investment duration, private equity firm experience, industry focus of portfolio company and country headquarters of portfolio company. Table 4.4 presents the macroeconomic variables which consist of the exchange rate (Rand/US dollar), GDP growth rate, inflation rate and lending rate.

Table 4.3 Investment level variables

Variable	Description
Investment duration	This variable represents the holding period for a specific portfolio company from date of original investment to date of exit. This variable is captured in years.
Natural log of investment duration	This variable represents the natural log of the investment duration.
Private equity firm experience	This variable represents the experience of the private equity firm at date of investment into a portfolio company. The variable is captured as the number of years from date of establishment of the firm to date of original investment into a portfolio company.
Natural log of private equity firm experience	This variable represents the natural log of the private equity firm experience.
Industry focus	This is a dummy variable captured as "1" for portfolio companies within a high technology sector and "0" for investments in other sectors. This variable is included to test whether portfolio companies within high technology sectors are more likely to achieve an IPO exit.
Country of headquarters	This is a dummy variable captured as "1" for investments made within the South African market and "0" for investments made in other African markets. This variable is included to test the effect of geographic location on the choice of exit.

Table 4.4 Macroeconomic variables

Variable	Description
Rand/US dollar exchange rate	This variable represents the average rand: dollar (ZAR: USD) exchange rate during the year of exit.
GDP growth rate	This variable represents the GDP growth rate of South Africa during the year of exit.
Inflation rate	This variable represents the inflation rate in South Africa measured as the annual % change of the CPI during the year of exit.
Lending rate	This variable represents the lending rate in South Africa during the year of exit.

Hypotheses

The hypotheses for this study are limited to independent private equity firms operating within the South African market. The hypotheses tested are summarised in Table 4.5 below.

Table 1.1 Summary of hypothesis testing

	Null hypothesis	**Alternative hypothesis**
Hypothesis 1	High technology portfolio companies are less likely to be exited by IPO relative to other exit modes.	High technology portfolio companies are more likely to be exited by IPO relative to other exit modes.
Hypothesis 2	Lower lending rates will not increase the likelihood of a secondary sale exit.	Lower lending rates will increase the likelihood of a secondary sale exit.
Hypothesis 3	As a bank-centered market which lacks a vibrant venture capital industry, South Africa is expected to experience high IPO activity, with IPO being a more probable mode of exit relative to M&A exit.	As a bank-centered market, which lacks an active venture capital industry, South Africa is expected to experience low IPO activity, with M&A being the most probable mode of exit relative to IPO exit.

Summary of Multinomial estimates

In the summary results below, each coefficient can be interpreted as the change in the relative log odds of a portfolio company being exited through the identified exit mode relative to the M&A exit mode. The p-value measures the statistical significance of the relationship. Table 4.6 below presents a summary of the results of the hypothesis testing for the sampled private equity exit transactions. See appendix B and C for full model results.

Table 4.5 Summary of results of hypothesis testing for the sampled exit transactions

Hypothesis	H1	H2	H3
Exit mode	IPO	Secondary sale	M&A
Variable	Industry focus	Lending rate	All
Coefficient	-48.04	0.39	See table 4.8
Marginal effect	-0.00	0.05	See table 4.8
t-statistic	-18.87***	2.47***	See table 4.8
Predicted probability	0.01	0.08	0.73
Decision	Accept	Reject	Accept
Findings	Companies in the High technology sector are relatively more likely to be exited by M&A as opposed to IPO.	An increase in the lending rate appears to suggest an increase in the likelihood of the Secondary sale.	Predicted probabilities suggest that M&A is the most likely method of exit.

*, **, *** significance at the 90%, 95% and 99% levels respectively.

Hypothesis 1: The effect of the Industry focus of the portfolio company on the likelihood of an IPO exit

We hypothesised that portfolio companies within high technology sectors would be more likely to be exited by IPO as opposed to other exit modes. The industry focus variable has a coefficient of -48.04 and an associated p-value of 0.00. The coefficient of -48.04 suggest that being in the high technology sector is associated with a 48.04 decrease in the log likelihood of the portfolio company being exited by means of IPO relative to M&A. This relationship is significant at the

95% confidence level. Although this does not provide support for hypothesis 1 it appears to partly support hypothesis 3, as it shows the low likelihood of the IPO exit relative to M&A even amongst high technology firms which are typically induced to seek IPO exits as they require significant equity investment to access their growth opportunities (Pagano, Panetta and Zingales, 1998).

Hypothesis 2: The effect of the lending rate on the likelihood of the Secondary sale

The coefficient of 0.39, for the lending rate variable, presented in Table 4.6 suggests that a one unit increase in the lending rate would result in a 0.39 increase in the relative log odds of a secondary sale exit compared to M&A while holding all other variables constant. The lending rate variable also has a marginal effect of 0.0500 on the Secondary sale with an associated p-value of 0.014. This means that a one percent increase in the lending rate is expected to result in a 5% increase in the likelihood of a Secondary sale exit. This relationship is significant at the 95% confidence level. These results do not provide support for Hypothesis 2. These findings are also contrary to other research findings that suggests that greater accessibility to credit markets, evidenced by loosening of covenants and reduction of credit spreads, were directly related to increased use of the Secondary sale exit (Sousa, 2010).

Based on the model's results the private equity firm experience, GDP growth rate and lending rate are the only significant relationships predicted by the data with respect to secondary sales. The private equity firm experience variable has a marginal effect of -0.0419 on the Secondary sale with an associated p-value of 0.064. This means that a 1 unit (1 year) increase in the private equity firm experience is expected to result in a 4.2% decrease in the likelihood of a secondary sale. This result is significant at the 90% confidence level. It suggests that more experienced private equity firms are less likely to pursue secondary sale exits. Due to the limited dataset used for this study, the natural log of private equity firm experience was also used as an explanatory variable as it approximates a log normal distribution of the data points.

Table 4.7 Coefficients and marginal effects of Secondary exit

Independent variable	**Secondary sale**			
	Coefficient	t-statistic	Marginal effect	t-statistic
Investment duration	-0.73	-0.71	-0.07	-0.66
Ln-investment duration	3.74	0.73	0.39	0.80
Private equity firm experience	-0.71	-2.88***	-0.04	-1.85*
Ln Private equity firm experience	3.26	2.29**	0.14	1.02
Industry focus	-1.40	-1.34	-0.14	-1.40
Country of headquarters	-1.98	-1.13	-0.21	-1.34
Exchange rate	-0.17	-0.42	0.02	0.54
GDP growth rate	0.93	2.71***	0.10	2.54***
Inflation rate	0.23	0.86	-0.00	-0.19
Lending rate	0.39	1.78*	0.05	2.47***

*, **, *** significance at the 90%, 95% and 99% confidence levels respectively.

The GDP growth rate has a marginal effect of 0.0958 on the Secondary sale with an associated p-value of 0.011. This means that a 1 unit (1%) increase in the GDP growth rate is expected to result in a 9.6% increase in the likelihood of a Secondary sale. This relationship is perhaps better understood from the perspective of the buyer. Although the motives for the secondary sale are still relatively less understood compared to the M&A and IPO, Kitzmann and Schiereck (2009) argue that secondary buyouts create value through other sources such as limitation of agency costs and are not merely an exit of last resort. Assuming that the motive for value creation is in place, it would be intuitive to expect that the buyer would seek investments in growing markets and thus explaining the identified relationship between the GDP growth rate and the likelihood of the Secondary sale exit.

Tables 4.8, 4.9 and 4.10 present the coefficients and marginal effects of the M&A, Buyback and IPO exit modes below.

Table 4.8 Coefficients and marginal effects of M&A exit

Independent variable	**M&A**			
	Coefficient	t-statistic	Marginal effect	t-statistic
Investment duration	0.17	0.26	0.06	0.65
Ln-investment duration	0.36	0.12	-0.20	-0.43
Private equity firm experience	0.78	2.84***	0.12***	4.61
Ln private equity firm experience	-5.11	-2.66***	0.72***	-3.76
Industry focus	-0.00	-0.00	0.09	0.85
Country of headquarters	-0.27	-0.24	0.10	0.54
Exchange rate	0.95	1.86	0.11	1.59
GDP growth rate	0.07	0.25	0.05	-1.28
Inflation rate	-0.76	-2.60***	0.09***	-2.53
Lending rate	0.30	1.60	0.00	0.18

*, **, *** significance at the 90%, 95% and 99% confidence levels respectively.

Table 4.9 Coefficients and marginal effects of Buyback exit

Independent variable	**Buyback**			
	Coefficient	t-statistic	Marginal effect	t-statistic
Investment duration	-0.18	-0.26	0.00	0.02
Ln-investment duration	-0.36	-0.12	-0.18	-0.45
Private equity firm experience	-0.78	-2.84***	-0.08	-2.46**
Ln private equity firm experience	5.11	2.66***	0.57	2.44***
Industry focus	0.00	0.00	0.05	0.52
Country of headquarters	0.28	0.24	0.10	0.73
Exchange rate	-0.95	-1.86**	-0.12	-2.03**

GDP growth rate	-0.07	-0.25	-0.04	-1.17
Inflation rate	0.76	2.60***	0.10	2.70***
Lending rate	-0.30	-1.60	-0.06	-2.31**

*, **, *** significance at the 90%, 95% and 99% confidence levels respectively.

Table 4.10 Coefficients and marginal effects of IPO exit

Independent variable	**IPO**			
	Coefficient	t-statistic	Marginal effect	t-statistic
Investment duration	-7.94	-4.10***	-9.92	-3.74***
Ln-investment duration	69.39	7.05***	0.00	5.87***
Private equity firm experience	-19.27	-22.72***	0.00	-12.47***
Ln private equity firm experience	136.91	19.98***	0.00	12.11***
Industry focus	-48.04	-18.87***	-0.00	-9.94***
Country of headquarters	-115.80	-20.50***	-0.00	-9.85***
Exchange rate	-17.13	-17.28***	7.62	-11.90***
GDP growth rate	0.61	0.50	0.00	0.49
Inflation rate	12.12	18.19***	0.00	11.89***
Lending rate	8.86	18.29***	0.00	9.09***

*, **, *** significance at the 90%, 95% and 99% confidence levels respectively.

Hypothesis 3: The effect of the financial market structure on the choice of exit.

Hypothesis 3 was tested by calculating the predicted probabilities of the dependent variables used in the model. Table 4.11 below presents the predicted probabilities of the dependent variables IPO, M&A, Secondary sales and Buyback.

Table 4.11 Predicted probabilities of exit modes

Exit mode	**Predicted probabilities**
IPO	0.00
M&A	0.73
Secondary sale	0.08
Buyback	0.18

Based on our results, the most probable mode of exit, given that all independent variables are held at their means, is M&A, with a predicted probability of 0.73. The least likely mode of exit is IPO. This provides direct support for our hypothesis that a Bank centered market such as South Africa, which also lacks a vibrant venture capital industry will exhibit poor IPO activity with M&A being the most preferred mode of exit.

Independence of irrelevant alternatives IIA

In order to test for the independence of irrelevant alternatives assumption, the Haussmann McFadden test was implemented in STATA12. Each exit mode was dropped consecutively to test the IIA assumption. Dropping M&A, Secondary and Buyback did not violate the assumption. However, dropping IPO violated the assumption. This may be possibly a result of the relatively few data points relating to this exit mode.

CHAPTER 5: CONCLUSION

5.1. PURPOSE OF THE STUDY

Although it is the final stage in the investment process, the exit is of significant importance to the private equity investment model. The objective of this paper is to study the exit behaviour of private equity investments held by independent private equity firms in South Africa. As this is an exploratory study we examine empirical hypothesis previously tested by other authors. Firstly, we test whether portfolio companies within high technology sectors are more likely to achieve an IPO exit relative to other exits. Secondly, we test the effect of the lending rate on the likelihood of a secondary sale. Lastly, we consider the relative likelihood of IPO compared to M&A. Relying on the findings of Levine (2002), which find South Africa to be a Bank cantered market, we expect that the private equity investments will experience relatively low IPO activity as suggested by Black and Gilson (1998).

5.2. KEY FINDINGS

The research is quantitative in nature and involves the use of statistical modelling, multinomial logistic regression was applied, using panel data, which assumes that the effect of explanatory variables on the choice of exit varies across observations (private equity firms) and over time. From the multinomial logit model it was found that; 1) High technology firms were more likely to be exited by means of M&A rather than IPO; 2) An increase in the lending rate was found to increase the likelihood of a Secondary sale; and 3) M&A was found to be the most likely mode of exit assuming all explanatory variables were at their mean, while IPO was the least likely mode of exit.

5.3. CONCLUSION OF THE STUDY

The results from the analysis of the data lead us to conclude that the exit behaviour of private equity investments held by independent private equity firms in South Africa is consistent with the empirical literature, with the exception of hypothesis 2.

As a bank centered financial system which lacks a more vibrant venture capital industry, the South African market exhibits relatively poor IPO activity based on the sampled exit transactions. M&A is the most likely mode of exit. This is also further highlighted by the proportion of high technology firms in our sample which were exited by M&A (95%) rather than by IPO (5%), despite the fact that the literature suggests that high technology firms, particularly those in the bio-technology sector, are almost induced to seek IPO exits (Pagano, Panetta and Zingales, 1998).

We fail to find support for hypothesis 2. The multinomial logit results suggest that an increase in the lending rate will result in an increase in the likelihood of a secondary sale. This finding is contrary to previous research findings (Sousa, 2010). Due to the data limitation inherent in studying the private equity market in South Africa and the rest of Africa we cannot make any meaningful inferences from the findings of hypothesis 2.

5.4. SUGGESTIONS FOR FUTURE RESEARCH

A number of issues were identified during this research which could be improved upon in future research. The following suggestions are made for further research:

- Increasing sample size to improve the efficiency of the model.
- Including more transactions from other parts of Sub-Saharan Africa to help with regional comparisons.
- Obtaining more data to include other explanatory variables such as;
    - Type of financing used (convertible redeemable debt)

- Market/book ratio of portfolio company at date of exit.

Finally, this research has fulfilled its purpose of using econometric methods to explore the determinants of private equity exits by independent private equity firms in South Africa in comparison to the stylised facts. The objective was to highlight the potential differences that may exist between a bank centered market such as South Africa and a stock market centered market such as the USA.

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APPENDIX A

Table A.1 Private equity exit transactions

Exit modes: M&A = Merger and acquisition; SS = Secondary sale; Buyback = Buyback; IPO = Initial public offering

Observation	Exit mode	Investment duration (Years)	Private equity firm experience (Years)	Industry focus (Dummy)	Country of headquarters (Dummy)	Year of exit	Exchange rate	GDP growth rate	Inflation rate	Lending interest rate	Log of investment duration (Years)	Log of private equity firm experience (Years)
1	M&A	2.06	1.50	1	1	2012	8.21	2.55	5.60	8.75	0.72	0.41
2	SS	3.50	0.47	0	0	2007	7.05	5.55	7.10	13.17	1.25	-0.75
3	M&A	7.96	0.59	0	0	2012	8.21	2.55	5.60	8.75	2.07	-0.52
4	M&A	7.00	1.00	0	1	2012	8.21	2.55	5.60	8.75	1.95	0.00
5	Buyback	3.25	1.75	0	0	2009	8.44	-1.53	7.10	11.71	1.18	0.56
6	Buyback	1.36	3.95	0	0	2010	7.32	3.09	4.30	9.83	0.30	1.37
7	M&A	2.07	4.93	0	1	2007	7.05	5.55	7.10	13.17	0.73	1.60
8	M&A	6.32	4.68	0	1	2011	8.44	3.46	5.00	9.00	1.84	1.54
9	Buyback	4.24	6.76	0	1	2012	8.21	2.55	5.60	8.75	1.44	1.91
10	IPO	5.52	3.00	0	0	2009	8.44	-1.53	7.10	11.71	1.71	1.10
11	M&A	7.00	2.00	0	0	2009	8.44	-1.53	7.10	11.71	1.95	0.69
12	M&A	5.01	4.67	1	0	2010	7.32	3.09	4.30	9.83	1.61	1.54
13	M&A	5.08	4.67	1	0	2010	7.32	3.09	4.30	9.83	1.62	1.54
14	M&A	2.41	7.84	0	0	2011	8.44	3.46	5.00	9.00	0.88	2.06
15	M&A	4.76	3.25	0	1	1999	6.11	2.36	5.10	18.00	1.56	1.18
16	SS	4.59	4.84	1	1	2000	6.94	4.15	5.30	14.50	1.52	1.58

Observation	Exit mode	Investment duration (Years)	Private equity firm experience (Years)	Industry focus (Dummy)	Country of head-quarters (Dummy)	Year of exit	Exchange rate	GDP growth rate	Inflation rate	Lending interest rate	Log of investment duration (Years)	Log of private equity firm experience (Years)
17	M&A	3.00	6.92	0	1	2000	6.94	4.15	5.30	14.50	1.10	1.93
18	SS	4.25	7.75	0	1	2003	7.56	2.95	5.80	14.96	1.45	2.05
19	SS	3.50	8.67	0	1	2003	7.56	2.95	5.80	14.96	1.25	2.16
20	SS	6.84	5.42	0	1	2003	7.56	2.95	5.80	14.96	1.92	1.69
21	SS	5.25	7.25	0	1	2003	7.56	2.95	5.80	14.96	1.66	1.98
22	Buyback	2.75	9.76	0	1	2003	7.56	2.95	5.80	14.96	1.01	2.28
23	SS	7.42	5.42	0	1	2003	7.56	2.95	5.80	14.96	2.00	1.69
24	M&A	3.75	9.17	1	1	2003	7.56	2.95	5.80	14.96	1.32	2.22
25	M&A	4.17	9.17	1	1	2004	6.45	4.55	1.40	11.29	1.43	2.22
26	Buyback	5.34	9.76	0	1	2006	6.77	5.60	4.70	11.17	1.67	2.28
27	SS	6.51	9.76	0	1	2007	7.05	5.55	7.10	13.17	1.87	2.28
28	M&A	3.77	16.01	0	1	2010	7.32	3.09	4.30	9.83	1.33	2.77
29	M&A	3.15	2.85	0	1	2011	8.44	3.46	5.00	9.00	1.15	1.05
30	M&A	2.48	1.00	0	0	2003	7.56	2.95	5.80	14.96	0.91	0.00
31	SS	1.84	5.17	0	1	2005	6.36	5.28	3.40	10.63	0.61	1.64
32	IPO	1.20	6.25	0	0	2007	7.05	5.55	7.10	13.17	0.18	1.83
33	IPO	3.54	5.01	1	0	2008	8.25	3.62	11.50	15.13	1.26	1.61
34	M&A	6.00	12.01	0	1	2001	8.60	2.74	5.70	13.77	1.79	2.49
35	M&A	5.00	13.01	0	1	2001	8.60	2.74	5.70	13.77	1.61	2.57
36	M&A	7.00	13.01	0	1	2003	7.56	2.95	5.80	14.96	1.95	2.57
37	M&A	1.58	19.43	0	1	2004	6.45	4.55	1.40	11.29	0.46	2.97
38	M&A	7.01	14.01	0	1	2004	6.45	4.55	1.40	11.29	1.95	2.64
39	M&A	6.64	14.37	0	1	2004	6.45	4.55	1.40	11.29	1.89	2.67
40	M&A	5.73	16.28	0	1	2005	6.36	5.28	3.40	10.63	1.75	2.79

Observation	Exit mode	Investment duration (Years)	Private equity firm experience (Years)	Industry focus (Dummy)	Country of head-quarters (Dummy)	Year of exit	Exchange rate	GDP growth rate	Inflation rate	Lending interest rate	Log of investment duration (Years)	Log of private equity firm experience (Years)
41	M&A	1.00	22.01	0	1	2006	6.77	5.60	4.70	11.17	0.00	3.09
42	M&A	7.22	16.79	0	1	2007	7.05	5.55	7.10	13.17	1.98	2.82
43	M&A	8.93	16.08	0	1	2008	8.25	3.62	11.50	15.13	2.19	2.78
44	M&A	6.56	21.45	0	1	2011	8.44	3.46	5.00	9.00	1.88	3.07
45	Buyback	2.00	2.00	0	1	1995	3.63	3.12	8.70	17.90	0.69	0.69
46	M&A	4.00	3.00	1	1	1998	5.53	0.52	6.90	21.79	1.39	1.10
47	M&A	7.00	0.00	1	1	1998	5.53	0.52	6.90	21.79	1.95	
48	Buyback	2.00	6.01	0	1	1999	6.11	2.36	5.10	18.00	0.69	1.79
49	Buyback	4.00	6.01	0	1	2001	8.60	2.74	5.70	13.77	1.39	1.79
50	Buyback	3.00	8.01	1	1	2002	10.52	3.67	9.20	15.75	1.10	2.08
51	M&A	5.00	6.01	1	1	2002	10.52	3.67	9.20	15.75	1.61	1.79
52	M&A	6.14	6.87	0	1	2004	6.45	4.55	1.40	11.29	1.82	1.93
53	M&A	7.00	6.01	0	1	2004	6.45	4.55	1.40	11.29	1.95	1.79
54	Buyback	7.00	7.01	1	1	2005	6.36	5.28	3.40	10.63	1.95	1.95
55	M&A	14.01	0.00	0	1	2005	6.36	5.28	3.40	10.63	2.64	
56	M&A	6.00	9.01	0	1	2006	6.77	5.60	4.70	11.17	1.79	2.20
57	M&A	4.00	11.01	1	1	2006	6.77	5.60	4.70	11.17	1.39	2.40
58	Buyback	4.00	11.01	1	1	2006	6.77	5.60	4.70	11.17	1.39	2.40
59	Buyback	8.00	7.01	1	1	2006	6.77	5.60	4.70	11.17	2.08	1.95
60	Buyback	3.95	12.01	0	1	2007	7.05	5.55	7.10	13.17	1.37	2.49
61	SS	7.00	9.01	1	1	2007	7.05	5.55	7.10	13.17	1.95	2.20
62	Buyback	9.00	7.01	0	1	2007	7.05	5.55	7.10	13.17	2.20	1.95
63	M&A	9.00	9.01	1	1	2009	8.44	-1.53	7.10	11.71	2.20	2.20
64	Buyback	8.00	11.01	1	1	2010	7.32	3.09	4.30	9.83	2.08	2.40

Observation	Exit mode	Investment duration (Years)	Private equity firm experience (Years)	Industry focus (Dummy)	Country of head-quarters (Dummy)	Year of exit	Exchange rate	GDP growth rate	Inflation rate	Lending interest rate	Log of investment duration (Years)	Log of private equity firm experience (Years)
65	M&A	9.00	11.01	1	1	2011	8.44	3.46	5.00	9.00	2.20	2.40
66	M&A	9.00	11.01	1	1	2011	8.44	3.46	5.00	9.00	2.20	2.40
67	IPO	9.41	5.49	0	0	2004	6.45	4.55	1.40	11.29	2.24	1.70
68	M&A	3.75	1.25	0	1	2007	7.05	5.55	7.10	13.17	1.32	0.22
69	M&A	6.32	4.68	0	1	2011	8.44	3.46	5.00	9.00	1.84	1.54

Table A.2 Multinomial logits of explanatory variables

This table presents the results of the multinomial logit regression of the probability of each exit outcome. The multinomial logits are presented to highlight the effect that each variable has on the likelihood of an exit relative to the base category (M&A). *, **, *** represents significance at the 90%, 95% and 99% levels, respectively.

	IPO		**Secondary sale**		**Buyback**	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistics
Constant	-194.42	-15.17***	-10.67	-1.77	3.67	0.74
Investment duration	-7.94	-4.10***	-0.73	-0.71	-0.18	-0.26
LN-Investment duration	69.39	7.05***	3.74	0.73	-0.36	-0.12
Private equity firm experience	-19.27	-22.72***	-0.71	-2.88***	-0.78	-2.84***
LN private equity firm experience	136.91	19.98***	3.26	2.29**	5.11	2.66***
Industry focus	-48.04	-18.87***	-1.40	-1.34	0.00	0.00
County of head quarters	-115.80	-20.50***	-1.98	-1.13	0.28	0.24
Exchange rate (ZAR/USD)	-17.13	-17.28***	-0.17	-0.42	-0.95	-1.86*
GDP Growth rate	0.61	0.50	0.93	2.71***	-0.07	-0.25
Inflation rate	12.12	18.19***	0.23	0.86	0.76	2.60***
Lending rate	8.86	18.29***	0.39	1.78*	-0.30	-1.60*

Table A.3 Marginal effects of explanatory variables

This table presents the results of the multinomial logit regression of the probability of each exit outcome. Marginal effects are presented to highlight the statistical significance along with the economic significance. *, **, *** represents significance at the 90%, 95% and 99% levels, respectively.

	IPO[8]		M&A		Secondary sale		Buyback	
	Marginal effect	t-statistic	Marginal effect	t-statistic	Marginal effect	t-statistic	Marginal effect	t-statistics
Investment duration	n/a	n/a	0.06	0.65	-0.07	-0.66	0.00	0.02
LN-Investment duration	n/a	n/a	-0.20	-0.43	0.39	0.80	-0.18	-0.45
Private equity firm experience	n/a	n/a	0.12	4.61***	-0.04	-1.85*	-0.08	-2.46***
LN private equity firm experience	n/a	n/a	-0.72	-3.76***	0.14	1.02	0.57	2.44**
Industry focus	n/a	n/a	0.09	0.85	-0.14	-1.40	0.05	0.52
County of head quarters	n/a	n/a	0.10	0.54	-0.21	-1.34	0.11	0.72
Exchange rate (ZAR/USD)	n/a	n/a	0.11	1.59	0.02	0.54	-0.12	-2.03**
GDP Growth rate	n/a	n/a	-0.05	-1.28	0.10	2.54***	-0.04	-1.17
Inflation rate	n/a	n/a	-0.09	-2.53***	-0.00	-0.19	0.10	2.70***
Lending rate	n/a	n/a	0.00	0.18	0.05	2.47***	-0.06	-2.31**

8 Due to the relatively small number of observations in our sample Stata 12.0 was unable to estimate the marginal effects of the various independent variables on the IPO exit.