

# VARIABLES INFLUENCING THE USE OF DERIVATIVES IN SOUTH AFRICA – THE DEVELOPMENT OF A CONCEPTUAL MODEL

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## Abstract

This paper, which is the first in a two-part series, sets out the development of a conceptual model on the variables influencing investors' decisions to use derivatives in their portfolios. Investor-specific variables include: the investor's needs, goals and return expectations, the investor's knowledge of financial markets, familiarity with different asset classes including derivative instruments, and the investor's level of wealth and level of risk tolerance. Market-specific variables include: the level of volatility, standardisation, regulation and liquidity in a market, the level of information available on derivatives, the transparency of price determination, taxes, brokerage costs and product availability.

**Keywords:** variables, instruments, crisis, conceptual model, South Africa, stock exchange, financial markets, investor, volatility, availability, wealth

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## 1. Introduction

In the last three years derivative instruments have made regular headlines given their role in the 2008/2009 global financial crisis. Derivatives, especially over-the-counter traded credit derivatives, such as collateralised debt obligation and credit default swaps, are considered by many as the main culprits of the sub-prime and 2008/2009 global financial crisis. However, these generally unregulated and barely monitored products cannot be blamed exclusively for the crisis, which eventually led to recessions in many developed and developing countries (Shah, 2010).

The main reason for the crisis can be found in interest rates rising from very low levels, and declining housing prices in the United States of America (USA) (Tomlinson and Evans, 2007:50). As a result many debtors were unable to service their debt payments, which led to severe troubles for financial institutions issuing these derivative securities.

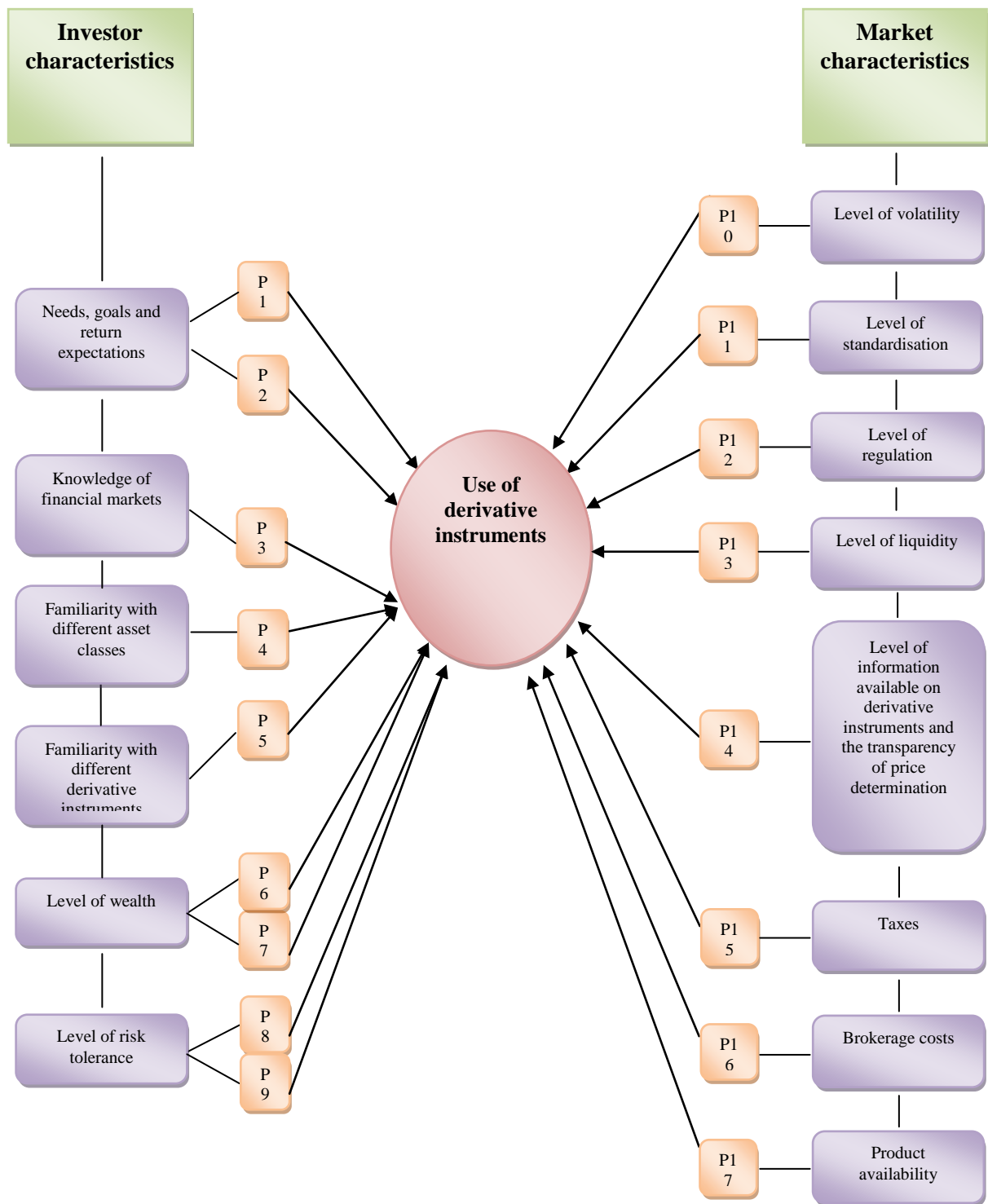
What contributed to the crisis was the fact that many financial institutions in the USA lent money to debtors that were not creditworthy, the so called 'sub-prime loans'. Through securitisation, sub-prime loans were packaged into securities that were sold to investors across the globe. In that way, a market for high risk and complex derivative

instruments was created, which was not regulated or monitored closely enough to identify the systematic risk for the global financial system (McNulty, 2010:61; Steyn, 2010:54; Welp, 2008). The result of reckless lending and trading of credit derivatives was a major decline in equity markets, derivatives markets, economic output and interest rates across the world, coupled with increasing unemployment rates and risk-aversion by investors.

The financial markets and institutions in South Africa did not experience the impact of the 2008/2009 global financial crisis as severely as their European or American counterparts (Pickworth, 2010:30). The main reasons why the South African financial services industry suffered less are that local investors did not make use of complex (credit) derivatives and were more risk-averse than European or American investors (Bisseker, 2010:44). Nevertheless, South Africa was also hit by the crisis and experienced a major decline in the equity and derivatives markets as well as economic growth.

This paper, which is the first in a two-part series, will investigate the reasons why South African investors (both private and institutional) are only making limited use of the derivative products available to them. More specifically, attention will be given to the development of a conceptual model on the variables influencing investors' decisions whether or not to use derivatives in their portfolios.

The variables in this model, which can be categorised as investor or market-specific, are illustrated in Figure 1. A number of propositions which will be tested empirically (the second paper in this series), are discussed in detail in a subsequent section of this paper.



**Figure 1.** Conceptual model of the variables influencing the use of derivative instruments in South Africa

## **2. Research Design and Methodology**

A phenomenological research paradigm was adopted in this study, given the exploratory nature of the research. The conceptual model was developed based on an extensive literature review as well as a pilot study conducted among six experts in the local financial services industry.

Before providing more details on the variables contained in the conceptual model, a brief overview of the role of derivatives in the 2008/2009 global financial crisis will be presented.

## **3. The Role of Derivatives in the 2008/2009 Global Financial Crisis**

Through the securitisation of debt, financial institutions, especially those in the USA, created complex and high-risk credit derivatives. The most prominent credit derivatives developed were collateralised debt obligations and credit default swaps.

Collateralised debt obligations are a special form of asset-backed securities in which financial institutions pool different illiquid debt instruments, such as mortgage loans, credit card loans or consumer credits. In order to make these debts liquid, they are sold to special purpose vehicles which refinance themselves by issuing securities on the pooled assets by selling them to investors (Lucas, Goodman and Fabozzi, 2006:3).

With credit derivatives, buyers and sellers reach a mutual bilateral agreement which provides the seller of the risk (protection buyer) with protection from the credit risk, as the seller transfers the credit risk to the protection seller. Sellers of credit derivatives have to pay a premium to the buyer, which is based on the rating of the bonds or loans and the possible credit default risk. It is essential for both parties to clearly specify the credit default or 'credit event' in terms of its occurrence and its possible cause. This is important as once the 'credit event' occurs or is being triggered, the payments from the protection seller to the buyer are interrupted (Bloss, Ernst and Häcker, 2008:156).

Credit derivatives serve an important purpose. With the transfer of the default risk, they provide protection to buyers (the sellers of the credit risk) with protection against payment defaults in their credit portfolios. Thus, they are instruments used for hedging (Bloss *et al.*, 2008:156).

A special, and the most traded, form of credit derivatives is credit default swaps. Although the name suggests otherwise, credit default swaps are not similar to interest rate or currency swaps. In the case of credit default swaps, cash-flows are not exchanged on certain predetermined dates, but only when certain 'credit events' occur, such as failure by a debtor to pay interest or a complete default by a debtor (Bodie, Kane and Marcus, 2009:810).

Like collateralised debt obligations, credit default swaps also promised high returns at almost no risk, at least according to rating agencies, such as Fitch, Moody's and Standard & Poor's which issued AAA – BBB ratings for most of these products (Beeken and Eversmeier, 2008). In times when interest rates were low, stock markets were at their peaks and bond prices were high, only low returns were available for investors, increasing the demand for these products.

The simultaneous increase of interest rates and decline in housing prices in the USA led to major problems for debtors as they were no longer able to service their loans and mortgages (Tomlinson and Evans, 2007:52). As a result the cash-flows provided from debtors were no longer available for financial institutions and their special purpose vehicles could not service the interest payments of their investors. Many financial institutions therefore had to provide huge amounts of cash themselves to pay investors, which led to severe problems for many financial institutions and some of them went bankrupt.

As evident from the above, derivatives were therefore not the main reason for the crisis, but were the underlying and accelerating factors that contributed to the crisis. For the first time after two decades of continuous growth of 20 percent or more, the global derivatives markets grew only marginally by 0.12 percent in 2009 compared to 2008 (Futures Industry Association, 2010).

The impact the 2008/2009 global financial crisis had on the South African derivatives market will be illustrated in the following section.

## **4. The Impact of the Crisis on the South African Derivatives Market**

The 2008/2009 global financial crisis dealt a major blow to the South African derivatives market. As indicated in Table 1, the total volume of standardised contracts traded on the Johannesburg Securities Exchange (JSE) decreased by 67.6 percent in 2009 compared to 2008, leaving the JSE the 15<sup>th</sup> largest derivatives exchange in the world.

**Table 1.** The largest global derivatives exchanges in 2008 and 2009

Rank	Exchange	Number of total contracts traded in 2009	Number of total contracts traded in 2008	% Change
1	Korea Exchange	3 102 891 777	2 865 482 319	8.30%
2	Eurex	2 647 406 849	3 172 704 773	-16.60%
3	Chicago Mercantile Exchange Group	2 589 551 487	3 277 630 030	-21.00%
4	NYSE Euronext	1 729 965 293	1 675 791 242	3.20%
5	Chicago Board of Options Exchange	1 135 920 178	1 194 516 467	-4.90%
6	BMandF Bovespa	920 377 678	741 889 113	24.10%
7	National Stock Exchange of India	918 507 122	601 599 920	52.70%
8	Nasdaq OMX Group	814 639 771	722 107 905	12.80%
9	Russian Trading Systems Stock Exchange	474 440 043	238 220 708	99.20%
10	Shanghai Futures Exchange	434 864 068	140 263 185	210.00%
...	...	...	...	...
15	Johannesburg Stock Exchange	166 592 373	513 584 004	-67.60%

Source: Adapted from Futures Industry Association (2010)

This major decline was predominantly a result of the fall of single stock futures traded (Futures Industry Association, 2010) (Table 2).

**Table 2.** Number of single stock futures traded in 2009 and 2008

Rank	Exchange	Number of contracts traded in 2009	Number of contracts traded in 2008	% Change
1	NYSE Euronext	165 796 059	124 468 809	33.2%
2	National Stock Exchange India	161 053 345	225 777 205	-28.7%
3	Eurex	113 751 549	130 210 348	-12.6%
4	Johannesburg Stock Exchange	88 866 925	420 344 791	-78.8%
5	BME Spanish Exchanges	37 509 467	46 237 747	-18.9%

Source: Adapted from World Federation of Exchanges - 2009 market highlights (2010)

In 2008, the JSE was the leading global derivatives exchange in terms of volumes traded in single stock futures. Due to the 2008/2009 global financial crisis the contracts traded contracted by 78.8 percent in 2009 compared to 2008, resulting in the JSE slipping from first to fourth place (World Federation of Exchanges - 2009 market highlights, 2010).

Other standardised equity derivative products' trading volumes, such as single stock options, index options and futures, Can-Do options, dividend futures and variance futures (South African Volatility Index Square) also declined between 13 percent and 30 percent year-on-year. The only exceptions were Can-Do futures which experienced a substantial growth in volumes traded (JSE, 2009a; JSE, 2009b; JSE, 2008a; JSE, 2008b).

Despite the introduction of new underlying commodities, such as gold, crude oil and platinum,

the Agricultural Division of the JSE also experienced a major decline in futures and options traded (JSE, 2010).

The main reasons why the local derivatives market declined sharply in 2009 were an increase in risk-aversion by local, but predominantly foreign investors who played a large role in the South African derivatives, equity and bond markets, and the fact that many local investors lost large sums of money in the derivatives market. Furthermore, an overall decline in equity markets across the world led to many investors pulling out of emerging equity and derivatives markets in general.

However, it is necessary to mention that contracts for difference, already a very popular market overseas, especially in Europe and the USA, is also gaining in popularity in South Africa. These over-the-counter traded products are preferred by

many investors to futures and options as they are more transparent and easier to understand.

Credit derivatives do not play a major role in the South African financial services industry and were hardly used by local investors prior or after the 2008/2009 global financial crisis. The main reasons for that are that South African investors are protected by exchange controls that do not allow them to invest large portions of their assets in overseas products. Furthermore, the local credit derivatives market is very immature and credit derivative products are hardly available (Selby, 2008:10).

The following section will focus on the variables influencing investors' decisions whether or not to use derivatives in their portfolios.

## 5. The Variables Influencing the Use of Derivatives in Portfolios

As indicated in the conceptual model (Figure 1), there are six investor-specific and eight market-specific variables that could influence investors' decisions whether or not to use derivatives in their portfolios. Each of these variables, along with their suggested propositions, will be discussed next.

### 5.1 Investor-specific variables

The investor-specific variables are outlined in Table 3.

**Table 3.** Summary of investor specific variables

Variables	Propositions	Supporting references
The investor's needs, goals and return expectations	P1: Investors with clearly defined investment goals and return expectations are more likely to use derivative instruments. P2: Investors with high return expectations are more likely to use derivative instruments.	Jooste (2010); Venter (2010); Chen (2008); Maier (2004); Cummins, Phillips and Smith (1998)
The investor's knowledge of financial markets	P3: Investors who have a greater knowledge of financial markets are more likely to include derivative instruments in their portfolios.	Martin <i>et al.</i> (2009); Mayo (2008); Stultz (1996); Mian (1996)
Familiarity with different asset classes	P4: Investors who have a greater knowledge of different asset classes are more likely to include derivative instruments in their portfolios.	Martin <i>et al.</i> (2009); Mayo (2008); Stultz (1996); Mian (1996)
Familiarity with derivative instruments	P5: Investors who have a greater knowledge of different derivative instruments are more likely to include derivative instruments in their portfolios.	Martin <i>et al.</i> (2009); Mayo (2008); Stultz (1996); Mian (1996)
The investor's level of wealth	P6: High net worth private investors are more likely to use derivative instruments than less affluent private investors. P7: Institutional investors with higher levels of assets under management are more likely to use derivative instruments than smaller institutional investors.	Bartram, Brown and Fehle (2003)
The investor's level of risk tolerance	P8: Risk-averse investors are more likely to use derivative instruments for hedging purposes than risk-seeking investors. P9: Risk-seeking investors are more likely to use derivative instruments for speculating purposes than risk-averse investors.	Maier (2004); Hentschel and Smith Jr. (1997)

### 5.1.1 Investors' needs, goals and return expectations

Investors' needs, expectations and investment goals are closely linked to each other. When creating portfolios investors first think about the needs they have in terms of capital preservation, capital growth and/or income. After that they formulate their investment goals, which are reflected in their return expectations.

According to HSBC-Trinkhaus (2010), investors' needs and investment goals are primarily reflected by the expected returns. In order to meet the expected returns, investors have to choose the appropriate asset classes and determine how much of their money they are going to invest in them. A basic rule is that the higher the potential returns of assets are, the higher the risk associated with them. Thus, the higher the income needs investors have to derive from their investment, the more risky asset classes and securities they have to use.

Investors in the accumulation phase generally prefer more risky investments as they want to accumulate as much capital as possible and increase their monetary wealth. Investors therefore follow a capital appreciation strategy and will predominantly use derivative products for speculating rather than hedging. Although this strategy is very risky, investors can realise considerable profits due to the leverage and flexibility derivatives offer (Lundell, 2007).

Investors in the consolidation phase generally prefer less risky asset classes and securities. As derivatives are considered risky, investors with a capital preservation strategy will typically use them less frequently for speculation, but rather for hedging.

Investors in the spending phase generally do not have a need to use derivatives for speculation as they should have obtained enough funds to cover their living expenses. In order to protect their capital, investors in the spending phase can use derivatives for hedging, but as they generally prefer less risky assets and securities, they generally do not use them at all. This might be a bit different in South Africa as only about ten percent of the population will be able to retire and maintain their living standards with the funds they are currently saving and investing (Jooste, 2010:59).

As derivatives offer the potential for high returns in a short period of time due to their leverage effect, investors with high return expectations and a short investment horizon are generally more interested in derivative instruments than investors with long-term investment objectives. In addition, investors, regardless of which phase of the life cycle they are in, can use

derivative instruments for hedging purposes, thus avoiding major declines in returns due to unfavourable market developments. Nevertheless, investors should be careful when using derivative instruments in order to satisfy their return expectations and meet their investment goals, as these products bear risk.

Independent studies conducted by Cummins, Phillips and Smith (1998:51) and Chen (2008) show that institutional investors, who cannot afford or who are not willing to lose returns, prefer to use derivative instruments to hedge their long positions in their portfolios. Although they will suffer a decline in returns, it will not lead to major capital depreciations due to their hedging strategy, as return losses in the underlying long positions will be off-set by the hedging strategy's positive returns. The benefit of the hedging strategy is that investors avoid major return declines which could cost them a lot of money.

Private investors can also make use of derivative instruments to protect their portfolios of potential declines in returns which in effect will reduce their incomes and living standards. Considering the independent studies of Cummins *et al.* (1998) and Chen (2008), the different phases of the investor life cycle and the different investment strategies to achieve the investors' goals, the following two propositions can be made:

*P1: Investors with clearly defined investment goals and return expectations are more likely to use derivative instruments.*

*P2: Investors with high return expectations are more likely to use derivative instruments.*

### 5.1.2 The investor's knowledge of and familiarity with financial markets and different asset classes (including derivatives)

Once investors have formulated their income and distribution needs and established their investment goals and return expectations, the next step is to decide which asset classes are most suitable for their portfolios. Investors' knowledge and familiarity with financial markets and different asset classes play an important role in this regard as investors need to understand what the dangers and benefits of each asset class and financial security are (Martin, Rojas, Erausquin, Yupanqui, Vera and Bauer, 2009:73).

Investors with greater knowledge and experience in dealing with different asset classes

and securities are generally aware of derivative instruments and that they are useful in assisting in managing portfolios. With derivatives, investors can obtain financial securities that are completely uncorrelated to other asset classes, thus providing investors with hedging opportunities not possible with other asset classes. Furthermore, derivatives are useful instruments for diversification as they offer pay-out profiles that are different from ordinary asset classes, such as equities or bonds (Bloss *et al.*, 2008:7; Lundell, 2007).

It is not only asset classes and securities that need to be understood by investors but also the financial markets. There are several political, economic and social variables, such as rules and regulations, interest rate changes, and the general economic situation or strikes and wars, that influence financial markets. Investors need to understand how all those variables impact on different financial markets, not only locally but also abroad, in order to make sound investment decisions.

Derivative instruments are more risky and more complex financial securities available, and are not appropriate for every investor. The mere fact that derivative products are derived from an underlying asset makes them more difficult to understand than other asset classes. In addition, investors also have the opportunity to profit from depreciating prices of the underlying asset with futures or options that are sold short (Lundell, 2007). Investors who use derivatives more frequently will generally have more experience and knowledge about them and understand how to use them properly in a portfolio.

Although other asset classes, such as equities and bonds, offer a large variety of securities to choose from, there are many more derivative instruments that investors can make use of. Thus, it is essential to understand what effects a derivative instrument can have in a portfolio and for what purpose it is used. Otherwise they will not achieve their investment goals and their strategy will work against them (Steinbrenner, 2001:26).

It is not only the strategy that needs to be understood in order to use derivative instruments properly, but also the features of every derivative product. Generally, investors who have more experience and knowledge regarding derivative instruments make better investment decisions, as they know how to apply different derivative products for different market situations and for different investment strategies.

Based on the above, the following propositions will be empirically tested:

*P3: Investors who have a greater knowledge of financial markets are more likely to include derivative instruments in their portfolios.*

*P4: Investors who have a greater knowledge of different asset classes are more likely to include derivative instruments in their portfolios.*

*P5: Investors who have a greater knowledge of different derivative instruments are more likely to include derivative instruments in their portfolios.*

### **5.1.3 The investors' levels of wealth**

The decision how much to invest in each asset class and security is determined by the investor's available monetary funds. The wealth of private investors generally depends on the phase of the investor life cycle in which they are currently.

Investors in the accumulation phase certainly have more possibilities to offset short-term losses due to their long-term investment horizon than investors in the consolidation or spending phase. On the other hand, these investors typically do not have as many financial resources available as investors in the other two phases, as they are just starting their capital wealth accumulation. Thus, their financial flexibility is limited in respect of buying and selling securities and coping with losses. Their financial cushion is generally very limited in the beginning (Reilly and Brown, 2003:37).

In order to prevent major losses, investors can make use of diversification, rebalancing or active portfolio management with very accurate market timing (Brigham and Ehrhardt, 2005:141). Another possibility relates to the use of derivative instruments to insure the portfolio against short-term market risks. Although less affluent investors can also make use of derivative products, they are often limited in applying proper hedging strategies due to their liquidity constraints (Lundell, 2007).

Derivative instruments are less expensive than direct investments in underlying assets. Derivatives therefore offer a low-cost possibility for less affluent investors to participate in market movements of shares, bonds, currencies or commodities. Furthermore, less affluent investors gain access to markets that were hard to enter before, such as the commodity markets (Commerzbank, 2006:19).

Derivative instruments are risky because of their volatility and leverage, and can lead to major losses, which, in case of futures contracts, are unlimited. Investors, private or institutional, have to consider potential returns and capital losses, and the extent to which they can cope with them financially.

Considering the risk and volatility of derivatives as well as the possibility of large



(unlimited) financial losses and the studies conducted by the International Swaps and Derivatives Association (2009) and Bartram, Brown and Fehle (2003:40), the following propositions can be stated:

*P6: High net worth private investors are more likely to use derivative instruments than less affluent private investors.*

*P7: Institutional investors with higher levels of assets under management are more likely to use derivative instruments than smaller institutional investors.*

#### **5.1.4 The investor's level of risk tolerance**

The extent to which investors are willing to expose themselves to risks is referred to as 'risk tolerance'. Investors' risk tolerance is basically investors' willingness to accept risks in order to achieve a certain return. There are three types of investors, namely risk-averse investors, risk-neutral investors and risk-seeking investors (Maier, 2004:17). As investors have certain investment needs, goals and return expectations they, need to find asset classes that can satisfy their needs and yield the expected returns. The asset classes identified during the asset allocation process might be suitable for investors' needs and investment goals as well as return expectations. However, too often the identified asset classes or securities bear risks that investors are not willing to take or cannot afford to take.

The risk of an asset class or security is determined by two major variables. The first is the volatility. The greater the up and down swings of an asset class or security, the greater the potential risk that investors can experience losses, but also the greater the chance of high returns. The second factor is the expected return of an asset class, and is closely related to the first variable. Equities and derivative instruments offer high returns, but their price fluctuations are greater than those of bonds or

money market instruments. In general, money market instruments and bonds issued by governments are considered the safest asset classes, as government receives taxes and can pay back debts (Bodie *et al.*, 2009:747; Brigham and Ehrhardt, 2005:163).

It is not only the asset classes and securities investors should take into consideration when making investment decisions and determining their level of risk tolerance, but also the country and market they are going to invest in, as different countries bear different risks. Investing in emerging markets is more risky than investing in developed countries' markets due to the greater volatility that emerging markets are exposed to (Bodie *et al.*, 2009:871).

Despite the fact that derivative instruments are often considered complex and volatile, they are suitable for investment strategies of all three groups of investors (risk-seeking, risk-averse and risk-neutral). Derivative instruments can be used either for speculation or hedging as their leverage offers great return possibilities and they can provide positive returns in declining markets (Bloss *et al.*, 2008:7).

Considering the study of Hentschel and Smith Jr. (1997:305) as well as the assumption that private investors are typically risk-averse, whereas institutional investors are risk-seeking, the following propositions can be made:

*P8: Risk-averse investors are more likely to use derivative instruments for hedging purposes than risk-seeking investors.*

*P9: Risk-seeking investors are more likely to use derivative instruments for speculating purposes than risk-averse investors.*

#### **5.2 Market-specific variables**

The market-specific variables that could impact on investors' decisions to use derivatives are outlined in Table 4.

**Table 4.** Summary of market-specific variables

Variables	Propositions	Supporting references
The level of volatility in a market	P10: Investors are more likely to use derivative instruments when markets exhibit a great deal of volatility.	Bodie, Kane and Marcus (2009); Brigham and Ehrhardt (2005); Maier (2004); Steinbrenner (2001)
The level of standardisation in a market (ease of trading)	P11a: Investors are more likely to use derivatives which are standardised. P11b: Investors are more likely to use derivatives which are traded on organized (not over-the-counter) markets.	Bloss Ernst and Häcker (2008); Steinbrenner (2001); Michie and Grieve Smith (1995)
The level of regulation in a market	P12: Investors are more likely to use derivative instruments in well regulated markets.	Bisseker (2010); Bloss <i>et al.</i> (2008); Faerman, McCaffrey and van Slyke (2001); Michie and Grieve Smith (1995)
The level of information available on derivatives and the transparency of price determination in a market	P13: Investors are more likely to use derivative instruments in markets where information is readily available and price determination is transparent.	Wurgler (1999); Thorbecke (1995)
The level of liquidity in a market	P14: Investors are more inclined to use derivative instruments in markets that offer high levels of liquidity.	Brink (2010); Amante, Araujo and Jeanneau (2007); Firer <i>et al.</i> (2004)
Taxes	P15: Investors are more likely to use derivative instruments the lower the taxes are.	Mayo (2008); Loeb (2007); Coghill (2005); Steinbrenner (2001)
Brokerage costs	P16: Investors are more likely to use derivative instruments the lower the transaction costs are.	Steinbrenner (2001)
Product availability	P17: Investors are more likely to use derivative instruments in markets where numerous products are available.	Fischer (2007)

### 5.2.1 The level of volatility in a market

One major feature with which investors can differentiate the risk of a market is volatility. The greater the up and down price fluctuations of the market are, the greater the risk involved in investing in it. The volatility of markets is influenced by several factors, such as the general economic conditions, interest rates or investor confidence (Brigham and Ehrhardt, 2005:162).

Investors creating portfolios and selecting asset classes must determine whether or not their risk tolerance allows them to invest in more volatile, more risky markets. Investors also have to consider which asset classes will provide them with their expected returns. Thus, they have to identify how these asset classes are currently performing and what variables influence future developments (Mayo, 2008:146).

Derivative instruments are financial products that are certainly beneficial in markets with high volatility, as investors can apply different strategies, such as protective puts, straddles, strangles or collars. Such strategies allow investors to profit from uncertain market movements, as their pay-out profiles are structured in such a way that profits can be made

in increasing but also declining markets (Bloss *et al.*, 2008:59).

Nevertheless, investors have to keep in mind that derivative instruments are used for rather short-term strategies, thus they are only efficient in temporary market conditions. Furthermore, derivative instruments should only be used for hedging strategies when investors feel that their long positions could suffer losses. Hedging strategies are less efficient in times of low volatility and bull markets.

According to Steinbrenner (2001:322), risk-averse investors generally seek more protection (hedging) in highly volatile markets, and although less volatile markets with upward trends offer better investment conditions for risk-seeking and risk-neutral investors for speculation, they also offer high return possibilities in volatile markets.

Derivatives are therefore suitable for both strategies and market conditions, and the following proposition can be stated:

*P10: Investors are more likely to use derivative instruments when markets exhibit a great deal of volatility.*

### **5.2.2 The level of standardisation in a market**

When making investment decisions, investors should not only ask themselves what asset classes are most appropriate for their portfolios in order to achieve their expected returns, but also how different markets can be accessed. There are markets that are only open to large institutional investors due to the volumes and values of transactions.

Ease of trading is another central issue investors should consider before making an investment. This refers to the liquidity a market or security provides, and thus the possibility to buy and sell securities fast and easily. It is of little use for investors when they purchase a security which gains in value but the liquidity and volumes traded are too little to sell them at a profit (Steinbrenner, 2001:177). This often happens with growth shares, new listings or companies that have limited free flow in terms of shares issued.

Another point to consider is the trading platform. Investors who prefer a standardised and regulated trading platform should trade over exchanges. The default and counterparty risks are also limited on regulated exchanges due to the exchanges' clearing houses which monitor clients' solvency. Regulated exchanges and standardised products also offer the advantage of actual prices and a greater variety of trading partners (Bloss *et al.*, 2008:6; Steinbrenner, 2001:87).

Although high liquidity, easy access to markets and standardised products are important for all asset classes, it becomes even more important for investors using derivative instruments. Because of the fact that the prices of derivatives are determined by the price movement of an underlying asset, they strongly depend on current price movements. Furthermore, their values are influenced by several other factors, such as volatility, maturity and interest rates (Bloss *et al.*, 2008:37). Investors who use derivative instruments, either for speculation or hedging, need to respond to market developments on a regular basis. Therefore derivatives need to be monitored continuously in order to avoid major losses and to properly protect the portfolios of investors.

The greater the standardisation of derivative instruments, the better they are understood by investors as product-specific features, such as strike price, underlying asset and maturity can be determined by anybody interested in trading in such products. Furthermore, investors are generally more aware of the possible risks involved in standardised products, as all product and contract features are public (Michie and Grieve Smith, 1995:224).

Considering the 2008/2009 global financial crisis, the fact that derivative instruments are volatile short-term investments that investors need to trade continuously in order to experience major losses and

that product standardisation improves the understanding of the risk involved in securities, the following can be proposed:

*P11a: Investors are more likely to use derivatives which are standardised.*

*P11b: Investors are more likely to use derivatives which are traded on organized (not over-the-counter) markets.*

### **5.2.3 The level of regulation in a market**

A variable that is closely linked to the level of standardisation of a market is the level of regulation prevalent in a market. Regulated markets offer investors standardised products, accessible trading platforms with certain rules and regulations, and are monitored by independent bodies. Regulated markets generally increase the safety and protection of investors (Bloss *et al.*, 2008:6). For the purpose of this study the level of regulation is referred to as 'the degree to which a market offers protection for investors', thus making trading safer and reducing the risk of default of counterparties.

An important aspect of regulation in a market is the trading platform's clearing house. The clearing house of the stock exchange monitors every trade and the solvency of investors, in order to identify potential risks of default. Other important tasks of the clearing house include the processing, back-up and settlement of transactions. Monitoring trades and solvency of investors is of utmost importance with derivative trading as investors can experience high potential losses, especially with futures trading.

It is important for financial markets to have independent bodies governing them. Such governing bodies as the Financial Services Board in South Africa or the Securities and Exchange Commission in the USA are watchdogs that ensure that investors are protected. They also impose trading rules and investigate abnormal trading behaviour.

According to studies conducted by Faerman, McCaffrey and van Slyke (2001:372) as well as Michie and Grieve Smith (1995:224), the ultimate goal of tighter rules and regulations is to avoid hidden counterparty risks, protect investors even more, and prevent financial markets from possible futures collapse. Thus, the following proposition can be made:

*P12: Investors are more likely to use derivative instruments in well regulated markets.*

### 5.2.4 The level of information available on derivatives and the transparency of determination in a market

In order to make sound investment decisions, investors need to know how the company or government they purchase assets and securities from is performing at the time, and what the future expectations of all are (Organisation for Economic Co-operation and Development, 2006:12).

It is important that investment markets are transparent and continuously provide information about prices. Only with prices that are current can investors determine whether there is still value in a particular asset class and to what extent the asset class and individual securities are under- or overvalued. In addition, it is only possible with continuous and transparent price findings for investors to trade regularly and to react to current market trends (Maier, 2004:108).

Transparency and access to information give all investors the same opportunities, implying that nobody will be disadvantaged. What can happen to investors should they not get proper and transparent information about securities was seen in 2008/2009 during the global financial crisis. Although rating agencies provided complex and risky securities with investment grades, those products left investors with huge losses.

Investors can only make efficient use of derivative instruments if they understand the market dynamics and have the necessary technological tools and information available to use them (Steinbrenner, 2001:98).

Transparency of derivative products is essential because without it investors may end up buying securities that are complex, high risk and not suitable for their risk-return profile. Without transparency investors are exposed to dangers of paying prices that do not reflect the current intrinsic value of a security. Investors need to be informed as to how prices are determined in order to avoid overpriced investment.

Considering the studies of Wurgler (1999) and Thorbecke (1995) as well as the effects of the 2008/2009 global financial crisis and the excessive use of derivative instruments traded in over-the-counter markets with very little or no price and information transparency, the following proposition can be made:

*P13: Investors are more likely to use derivative instruments in markets where information is readily available and price determination is transparent.*

### 5.2.5 The level of liquidity in a market

'Liquidity' in financial markets generally refers to the ease of trading financial securities speedily and without excessive deviations from the current competitive price. Thus, liquid financial markets offer investors the possibility to trade securities frequently and at times when they want to purchase or sell financial products with little or no loss in value (Firer, Ross, Westerfield and Bradford, 2004:25).

Markets with low or little liquidity carry major risks for investors. The main problem or constraint in markets with low liquidity is that investors are often not able to purchase or sell securities they want to, as no counterparty is available or interested in buying or selling at the current prices. This in turn leads to limited trading activities and insufficient price determinations (Brink, 2010:22; Bodie *et al.*, 2009:955).

Regulated and standardised markets, such as stock exchanges, generally provide investors with a substantial level of liquidity. Although there are individual securities which are traded less frequently, the JSE can be considered a liquid market.

Just how problematic illiquid markets can become for investors was evident in the 2008/2009 global financial markets when the markets for credit derivatives dried up. Investors were no longer able to sell credit defaults swaps or collateralised debt obligations as there were no counterparties to purchase them. As a result investors had to write off their investments, and experienced major losses.

According to Securities Industry and Futures Market Association (2010), the advantages of liquid markets for investors are twofold. Firstly, they can gain access to and trade securities readily once they expect to make profits on them. Secondly, they can exit markets easily and sell their assets once they expect them to decline in value, or if they need to invest the proceeds somewhere else. In addition, easier trading conditions lead to a reduction in the liquidity risk premium demanded by investors.

There are five major characteristics of a liquid financial market, namely depth, tightness, resilience, timely dependable clearance, and settlement. Without the necessary liquidity investors might end up with securities in their portfolios that they are unable to sell at the current market prices. This is a particular problem for investors who make use of derivative instruments. Derivatives increase and decline in value at a fast pace, and investors wish to realise profits once their derivative products develop favourably and not wait until prices decline. If investors are unable to sell derivative products quickly, they expose themselves to greater risk should markets develop unfavourably.

The following proposition will thus be empirically tested:

*P14: Investors are more inclined to use derivative instruments in markets that offer high levels of liquidity.*

### **5.2.6 Taxes and brokerage fees**

Taxes and transaction costs generally reduce the rate of return investors derive from their investments, which they have to consider during their asset allocation decisions. In general, transaction costs are a percentage of the volume traded. Stock exchanges often charge a principal amount that all investors have to pay regardless of the volume traded, and an execution fee per contract traded (Steinbrenner, 2001:130). Transaction costs can add up to a large portion of the trade investors have to consider when planning to invest.

Investors who decide to include derivative instruments in their portfolio should be aware of the fact that transaction costs reduce the leverage effect of derivative products (Steinbrenner, 2001:157). However, investors typically pay less transaction costs when using derivatives than for a direct investment in the underlying asset.

Investors who plan to invest in derivative instruments are generally more exposed to transaction costs than investors who invest in equities, bonds or money market instruments. The reason for that is that investors tend to invest in derivatives for the short-term and often buy and sell different contracts in order to achieve high returns (speculation) or protect the portfolio properly against unfavourable market developments (hedging).

Taxes are another aspect investors should consider when planning their portfolio and the asset classes they want to include.

Mayo (2008:117), Loeb (2007:184) and Coghil (2005), all state that taxes should generally be considered when making investment decisions, but that they should not be the primary consideration. They further argue that only capital gains and wealth taxes are relevant taxes to consider. However, they emphasise that investment goals and principles should always outweigh tax considerations. Pile (2010) also suggests that investors have to consider taxes when deciding on investment as these can become significant costs, and they should be reduced wherever possible.

Taxes and transaction costs generally reduce the rate of return investors derive from their investments, which they have to consider during their asset allocation decisions. Investors who plan to invest in derivative instruments are generally more exposed to transaction costs than investors who invest in equities, bonds or money market instruments. The reason for that is that investors tend to invest in derivatives for the short-term, and often buy and sell different contracts in order to achieve high returns

(speculation) or protect the portfolio properly against unfavourable market developments (hedging).

Investors who prefer equities and bonds and hardly have any exposure to derivative products typically invest for a longer time horizon, thus they purchase and sell securities less frequently. This leads to fewer transactions and fees to be paid by investors. It is generally worth paying the transaction costs and using derivative instruments for hedging and speculation purposes, as the returns tend to compensate investors.

As the tax rate (capital gains tax) is similar for all investors, they can only save transaction costs by comparing different stock exchanges' and brokers' fees. As South Africa only has a single derivatives exchange whose fees are similar for all investors, the only possibility of reducing transaction costs is to find brokers with the lowest fees available. The disadvantage of transaction costs is certainly that investors may have insufficient funds to adequately hedge their portfolio against unfavourable market developments, and as a result do not use derivative instruments. Based on the above, the following propositions can be formulated:

*P15: Investors are more likely to use derivative instruments the lower the taxes are.*

*P16: Investors are more likely to use derivative instruments the lower the transaction costs are.*

### **5.2.7 Product availability**

The advantage of greater product availability is that markets generally attract more investors as they find products that are appealing and satisfy their return expectations. With a wider product variety and more investors investing in a particular security, market liquidity generally increases, thus improving trading conditions and price determination as well as security for investors.

Owing to a wider range of available products, investors gain access to markets which were previously difficult for them to access. A relevant example is the introduction of futures and options on various commodities. Before financial institutions introduced such derivative instruments it was difficult for private retail investors to access the highly lucrative commodities market. Another advantage of greater product availability is that investors have more securities with which to diversify their portfolios (Fischer, 2007:22), thus allowing investors to use asset classes and securities that protect their returns and even generate profits in bear markets.

A disadvantage of continuously increasing the product range is that investors tend to have too many options available and cannot screen all investment alternatives efficiently. This can possibly

lead to ineffective investments and high losses, especially concerning derivative instruments (Steinbrenner, 2001:80).

By increasing the product range, financial institutions have to make sure that there is sufficient demand for their latest products and that investors are willing to invest in it. If this is not the case, investors will end up in markets with very little trading activity and infrequent price determinations, thus reduced liquidity. This in turn increases the risks investors are exposed to, as their portfolios may then include investments that develop unfavourably and they are unable to sell (HSBC-Trinkhaus, 2007:13).

Based on the above, the following proposition is formulated:

*P17: Investors are more likely to use derivative instruments in markets where numerous products are available.*

## **Summary**

The 2008/2009 global financial crisis had a severe impact on the global economy and financial markets. Although derivative instruments were blamed as the main culprits of the crisis, it is necessary to understand that the foundation of the crisis lay in reckless lending to often non-creditworthy debtors, declining housing prices, and increasing interest rates in the USA.

Derivative instruments, especially credit derivatives, and barely regulated and monitored over-the-counter markets may not have caused the crisis, but are factors that contributed to and accelerated the crisis.

The South African derivatives market experienced the full impact of the crisis, with trading volumes of standardised products decreasing by almost 70 percent. The market most affected was the single stock futures market. Once the world's leading derivatives exchange for single stock futures trading, the JSE fell to fourth place after trading volumes decreased by almost 80 percent in 2009 compared to the previous year.

South African investors in general are rather reserved when it comes to investments in derivative instruments, compared to investors in Europe or America. This is despite sound rules and regulations in a well-protected financial market. In order to understand why many South African investors shy away from investment in derivative instruments, a conceptual model was developed which focuses on variables that possibly have an impact on investors' decisions whether or not to use derivatives in their portfolios.

In the conceptual model, six investor-specific variables and eight market-specific variables have been identified, and 17 propositions, relating to the variables have been made. In order to empirically test

the conceptual model and the propositions semi-structured personal interviews with 21 experts in the South African financial services industry were conducted in the period between June and July 2010. The empirical findings are reported in the second paper in this series.

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