DERIVATIVES IN SOUTH AFRICA – AN EMPIRICAL INVESTIGATION

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Abstract

This paper, which is the second of a two-part series, presents the empirical findings of testing a number of variables influencing investors' decisions to use derivatives in their portfolios. Five variables were deemed very important by a sample of 21 experts in the financial services industry in South Africa. These were: the level of information available (including the transparency of price determination); investor's knowledge of different derivative instruments; investor's level of risk tolerance; the level of liquidity in the market; and investor's knowledge of and familiarity with financial markets. Education is required to change negative sentiments regarding derivatives and more regulation is called for, especially in over-the-counter markets.

Keywords: derivatives, South Africa, characteristics, variables, proposition, sample, investor, risk tolerance, education, expectations, regulation

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Introduction

In the first article of this series a conceptual model was developed, consisting of 14 variables which could influence South African investors' decisions whether or not to use derivative instruments in their portfolios. Of those 14 variables, six were investor-specific and eight were market-specific. The 14 variables were identified through an extensive literature review and pilot study. The conceptual model is shown in Figure 1, whereas more details on the 17 propositions are contained in Tables 1 and 2.

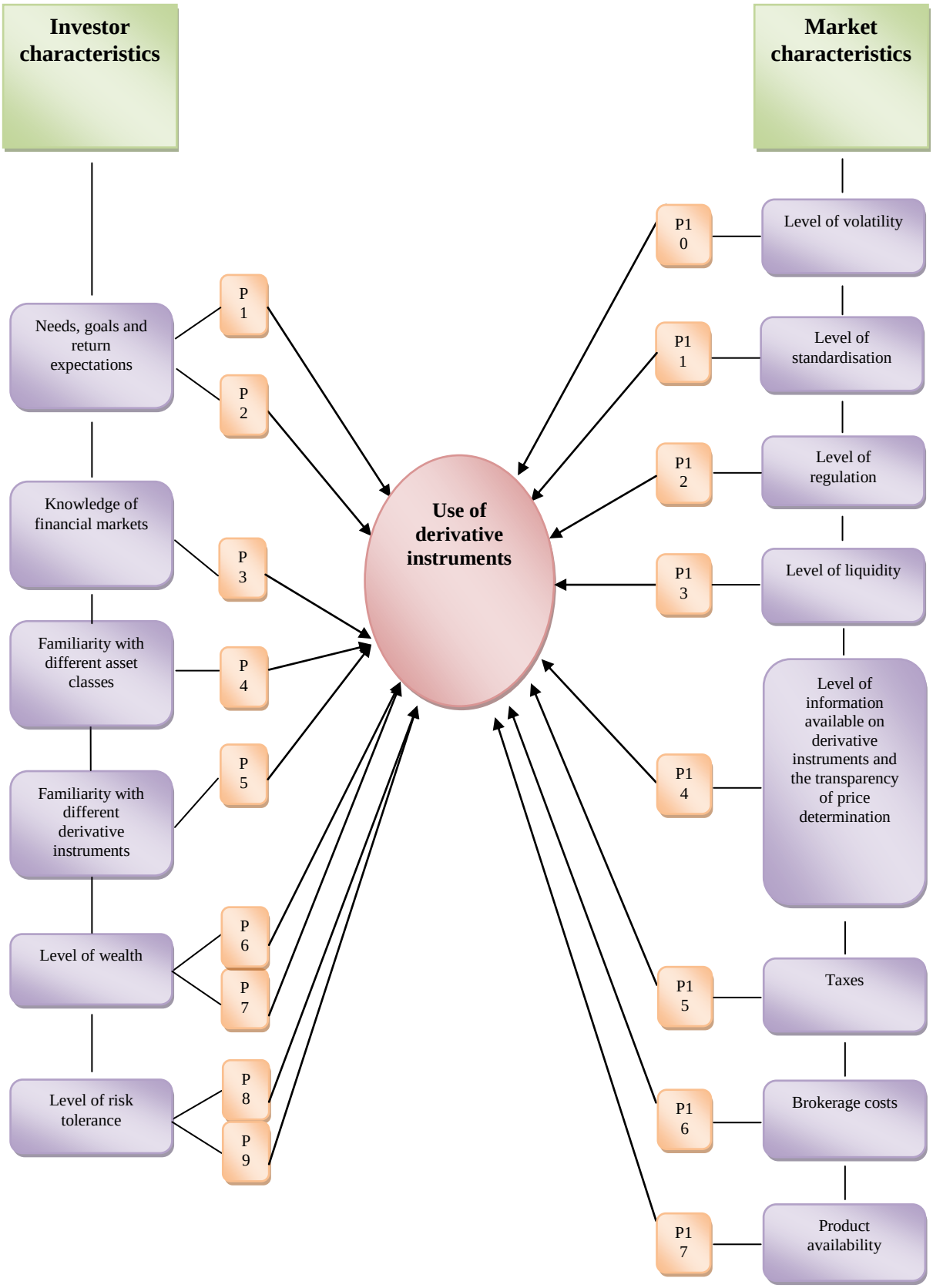

Figure 1. Conceptual model of the variables influencing the use of derivative instruments in South Africa

Table 1. 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 *et al.* (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 *et al.* (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 *et al.* (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)

Source: Researchers' own construct

Table 2. 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 *et al.* (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 *et al.* (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)

Source: Researchers' own construct

2. Reserch Design and Methodology

A phenomenological research paradigm was adopted in this study, given the exploratory nature of the research. Qualitative data were sourced from 21 experts employed in the financial services industry in South Africa. A questionnaire was designed to facilitate semi-structured personal interviews conducted during the period June-July 2010. The questionnaire consisted of closed-ended questions phrased on a five-point Lickert scale where (1) represented *strongly disagree* and (5) *strongly agree*. Respondents were requested to comment on statements with extreme values (1s and 5s). A number of open-ended questions were also included to gain more insight into the topic. The qualitative data sourced in this manner were analysed using grounded theory.

3. Sample Description

All of the respondents in this sample were male, and most of them were employed at Cadiz. Other financial services providers where interviews were conducted include were: Barnard Jacobs Mellet, BoE Private Clients, Futuregrowth, Investec, Novare Investments, Peregrine Securities, PSG Konsult, Quantum Investments, Sasfin and Standard Bank. These companies are active in the asset management, stock broking, banking, and hedge fund industries. The respondents' positions ranged from managing director to chief investment officer, head of trading, risk manager, trader, portfolio manager, equity adviser, accountant and research analyst. All of them worked with derivative instruments on a daily basis.

As indicated in Table 3, the majority of respondents were younger than 30 and were highly qualified. Six respondents were Chartered Financial Advisers and one was a Fellow of the Institute of Actuaries.

Table 3. Sample description

Age	**N**	**%**
20-29	9	42.86
30-39	8	38.10
40-49	4	19.05
Total	**21**	**100.00**
Level of education		
Matric / Grade 12	1	4.76
Bachelors' degree	4	19.05
Honours' degree	11	52.38
Masters' degree	4	19.05
Doctorate	1	4.76
Total	**21**	**100.00**
Number of years experience in the financial services sector		
0-5	8	38.10
6-10	6	28.57
11-15	5	23.81
16-25	2	9.52
Total	**21**	**100.00**
Number of years experience with derivative instruments		
0-5	11	52.38
6-10	3	14.29
11-15	5	23.81
16-25	2	9.52
Total	**21**	**100.00**

More than half of the respondents (52.38%) had been dealing with derivative products for less than five years. Although the derivatives market in South Africa has been operating since 1987, it is a fairly new industry which has grown in popularity only in recent years.

4. Empirical Findings: Investor-Specific Variables Influencing the Use of Derivatives in Portfolios

In Table 4 descriptive statistics are provided on the investor-specific variables. More details are presented in the sections that follow.

Table 4. Descriptive statistics: Investor-specific variables

				Frequency distribution				
Proposition	**Mean score**	**Importance of variable[(a)]**	**Standard deviation**	**1 (strongly disagree)**	**2 (disagree)**	**3 (neutral)**	**4 (agree)**	**5 (strongly agree)**
P1: Investors with clearly identified investment goals and return expectations are more likely to use derivative instruments.	3.86	High	1.27	10%	5%	14%	33%	39%
P2: Investors with high return expectations are more likely to use derivative instruments.	3.90	High	1.30	10%	5%	14%	29%	43%
P3: Investors who have a greater knowledge of financial markets are more likely to use derivative instruments in their portfolios.	4.29	Very high	1.34	10%	5%	5%	10%	71%
P4: Investors who have a greater knowledge of different asset classes are more likely to use derivative instruments in their portfolios.	3.43	Neutral	1.12	5%	14%	33%	29%	19%
P5: Investors who have a greater knowledge of different derivative instruments are more likely to use derivative instruments in their portfolios.	4.52	Very high	0.92	5%	0%	0%	29%	67%
P6: High net worth private investors are more likely to use derivative instruments than less affluent private investors.	3.29	Neutral	1.30	14%	5%	43%	14%	24%
P7: Institutional investors with higher levels of assets under management are more likely to use derivative instruments than smaller institutional investors.	2.86	Neutral	1.42	24%	19%	19%	24%	14%
P8: Risk-averse investors are more likely to use derivative instruments for hedging purposes than risk-seeking investors.	3.71	High	1.34	10%	14%	5%	38%	33%
P9: Risk-seeking investors are more likely to use derivative instruments for speculating purposes that risk-averse investors.	4.48	Very high	0.68	0%	0%	10%	33%	57%

(a) The following categorisation was used:
- Mean scores ranging from $1.0 \leq M < 1.8$: Very low importance
- Mean scores ranging from $1.8 \leq M < 2.6$: Low importance
- Mean scores ranging from $2.6 \leq M \leq 3.4$: Neutral
- Mean scores ranging from $3.4 < M \leq 4.2$: High importance
- Mean scores ranging from $4.2 < M \leq 5.0$: Very high importance

4.1 The investor's need, goals and return expectations

The first two propositions dealt with investors' needs, goals and return expectations. The researchers proposed that investors with clearly identified investment goals and return expectations (Proposition 1) and investors with high return expectations (Proposition 2) are more likely to use derivative instruments in their portfolios.

Both propositions were confirmed by the empirical results of this study as the modes for Proposition 1 and 2 were 5.00 (*strongly agree*), the medians 4.00 (*agree*) and the means 3.86 and 3.90, respectively.

Although two respondents strongly disagreed and said that the use of derivatives primarily depended on the investor's mandate, the majority of respondents confirmed these first two propositions. The findings of this study also correlate closely with the studies of Chen (2008) and Cummins, Phillips and Smith (1998:51) who showed that clearly identified investment goals and high return expectations are important variables for investors who need to decide on whether or not to use derivative instruments in their portfolios.

4.2 The investor's knowledge of and familiarity with financial markets and different asset classes

The third and fourth propositions concentrated on the investor's knowledge and familiarity with financial markets as well as different asset classes in general. It was proposed that investors who have greater knowledge of financial markets (Proposition 3) and different asset classes (Proposition 4) are more likely to use derivative instruments in their portfolios than their less-informed counterparts.

Both mean scores (4.29 and 3.43 respectively) were in excess of 4.2, suggesting that investors viewed these statements as very important. Again, two respondents strongly disagreed and argued that a greater knowledge of financial markets did not necessarily mean investors were more likely to use derivatives in their portfolios, but that it mainly depended on investors' needs and return expectations. Nevertheless, the majority of the respondents said that knowledge of financial markets was essential, and once investors had that, they were more likely to use derivative instruments in their portfolios.

One respondent strongly disagreed with Proposition 4 and said that the knowledge of different asset classes did not necessarily influence investors'

decision-making, whereas four respondents strongly agreed and indicated that the more knowledgeable investors were about different asset classes the more likely it was that they would use them. As the majority of respondents had a neutral view, this proposition could not be confirmed completely.

Although the empirical findings relating to Proposition 3 correspond with literature, the empirical results of Proposition 4 contradict the works of Martin, Rojas, Erausquin, Yupanqui, Vera and Bauer (2009:73-86), Marx, Nortjé, Mpofu and Venter (2006:3), Maier (2004:191) and Reilly and Brown (2003:52-54) as these authors argue that knowledge of financial markets and different asset classes plays a central role when deciding whether or not to use derivative instruments in investors' portfolios.

4.3 Investor's familiarity with different derivative instruments

Proposition 5 was concerned with an investor's familiarity with different derivative instruments. It was proposed that investors who are more familiar with derivative products are more likely to use them in their portfolios than their less knowledgeable counterparts.

The empirical results confirmed Proposition 5, as the majority of respondents saw this variable as decisive for investors when deciding whether or not to use derivative instruments in their portfolios. The median and mode of Proposition 5 were 5 (*strongly agree*) with a mean score of 4.52, indicating that investors who are familiar with derivative instruments are more likely to use them in their portfolios.

The empirical findings of this study also strongly correspond with the works of Martin *et al.* (2009), Mian (1996) and Stulz (1996) whose research has shown that investors with more knowledge about derivative instruments are more likely to use them, as they understand them and know what the benefits and dangers of these products are.

4.4 The investor's level of wealth

The propositions made in the conceptual model relating to investor's level of wealth were that high net worth private investors (Proposition 6) and institutional investors with higher levels of asset under management (Proposition 7) are more likely to use derivative products in their portfolios than their less affluent private and smaller institutional counterparts.

The general perception among respondents was that an investor's level of wealth does not play a central role when it comes to deciding whether or not to use derivatives in their portfolios, implying that neither of the propositions could be confirmed. This confirms a survey conducted by UK property consultants Knight Frank and Citi Private Bank in 2010 which shows that, on average, high net worth individuals hold only one percent of their total investment funds in derivative products (Fife, 2010).

As with Proposition 6, responses relating to Proposition 7 ranged from *strongly agree* to *strongly disagree*. One respondent who strongly agreed pointed out that institutional investors with high levels under management employed more people and had more skills in terms of analysing and trading, thus they were more likely to deal with and use derivatives in their portfolios.

Several respondents on the other hand strongly disagreed, and indicated that size and derivative usage were completely uncorrelated. In general, respondents had a neutral view on this variable, with a mode of 4.00 (*agree*) and a median of 3.00 (*neutral*). The mean score for Proposition 7 was 2.86, the second lowest for all the investor variables, thus indicating that high levels of assets under management were not an influencing variable.

This finding also contradicts the findings of studies undertaken by the International Swaps and Derivatives Association (2009) as well as Bartram, Brown and Fehle (2003:1-69), who consider wealth and level of asset under management as an important variable in the decision-making process.

4.5 The investor's levels of risk tolerance

The final investor-specific variable considered in the conceptual model was the investor's risk tolerance. Here it was proposed that risk-averse investors are more likely to use derivative instruments for hedging purposes than risk-seeking investors (Proposition 8) and that risk-seeking investors are more likely to use derivative instruments for speculating purposes than risk-averse investors (Proposition 9).

As many investors, especially private investors, are considered to be risk-averse, it could be expected that they would use derivative instruments fairly often for hedging their portfolios against potential downside risks. The mode and median of 4 for Proposition 8 both confirmed that initial supposition. Nevertheless, a mean score of only 3.71 indicates that the proposition made by the researchers was accepted, and also confirms the work of Hentschel and Smith Jr. (1997:305-346). Not all respondents, however, confirmed this. One respondent pointed out that risk-averse investors should consider derivatives more in general for hedging purposes but that they hardly do so as they often do not have the necessary knowledge and financial means to apply proper hedging strategies.

Proposition 9, on the other hand, provided empirical results that show that risk-seeking investors are more likely to use derivative instruments for speculative investment purposes. The mode and

median were both 5.00 (*strongly agree*) and the mean score was 4.48, thus indicating that this variable is of very high importance. The empirical findings of this study also confirm the work of Lundell (2007), who states that risk-seeking investors use derivative instruments fairly often in order to maximise returns and speculate on short-term trends.

5. Empirical Findings: Market-Specific Variables Influencing the Use of Derivatives in Portfolios

Descriptive statistics on the various market-specific variables that could influence investors' decisions regarding the use of derivatives are presented in Table 5. These findings are discussed in the sections that follow thereafter.

Table 5. Descriptive statistics: Market-specific variables

				Frequency distribution				
Proposition	**Mean score**	**Importance of variable[(a)]**	**Standard deviation**	**1 (strongly disagree)**	**2 (disagree)**	**3 (neutral)**	**4 (agree)**	**5 (strongly agree)**
P10: Investors are more likely to use derivative instruments when markets exhibit a great deal of volatility.	3.38	Neutral	1.24	10%	14%	24%	33%	19%
P11a: Investors are more likely to use derivatives which are standardised.	4.00	High	1.04	0%	14%	10%	38%	38%
P11b: Investors are more likely to use derivatives which are traded on organized (not over-the-counter) markets.	4.05	High	0.97	0%	10%	14%	38%	38%
P12: Investors are more likely to use derivative instruments in well-regulated markets.	4.05	High	0.97	0%	10%	14%	38%	38%
P13: Investors are more likely to use derivative instruments in markets where information is readily available and price determination is transparent.	4.57	Very high	0.59	0%	0%	5%	33%	62%
P14: Investors are more inclined to use derivative instruments in markets that offer high levels of liquidity.	4.33	Very high	0.79	14%	29%	33%	14%	10%
P15: Investors are more likely to use derivative instruments the lower the taxes are.	2.76	Neutral	1.17	10%	10%	10%	29%	43%
P16: Investors are more likely to use derivative instruments the lower the transaction costs are.	3.86	High	1.35	0%	5%	5%	43%	48%
P17: Investors are more likely to use derivative instruments in markets where numerous products are available.	3.81	High	0.92	5%	0%	24%	52%	19%

(a) The following categorisation was used:
- Mean scores ranging from $1.0 \leq M < 1.8$: Very low importance
- Mean scores ranging from $1.8 \leq M < 2.6$: Low importance
- Mean scores ranging from $2.6 \leq M \leq 3.4$: Neutral
- Mean scores ranging from $3.4 < M \leq 4.2$: High importance
- Mean scores ranging from $4.2 < M \leq 5.0$: Very high importance

5.1 The level of volatility in a market

The prices of derivatives, especially options, strongly depend on the implied volatility of a market. Thus, it was proposed by the researchers that investors are more likely to use derivative instruments when markets exhibit a great deal of volatility (Proposition 10).

Respondents both strongly agreed and strongly disagreed with Proposition 10 by stating that the higher the level of volatility in a market, the greater the chances for investors to benefit from their derivative instruments as more opportunities for profits arise. They argued that this was especially true in the case of futures contracts. Other respondents pointed out that the higher the level of volatility, the higher the prices of derivative products, owing to the implied volatility. This could lead to major losses once volatility comes down and prices decline.

Ten of the respondents (48%) also indicated that a certain level of volatility is necessary for trading, thus offering investors possibilities for profit-making and positive returns in up or downward moving markets. The mode and median for Proposition 10 were both 4.00 (*agree*), but the mean score of 3.38 indicates that there were also many respondents who did not see the level of volatility a market offers as a very important variable when it comes for investors deciding whether or not to use derivatives in their portfolios. This proposition can therefore not be accepted.

5.2 The level of standardisation in a market

Standardised markets offer investors the possibility to trade similar products on an organised exchange which controls the counterparty risks through its clearing house. Not only is the trading risk reduced for investors, but they also have more information about different products. Therefore, it was proposed that investors are more likely to use derivatives which are standardised and traded on organised (not over-the-counter) markets (Proposition 11).

This proposition can be confirmed, as most respondents (76%) indicated that standardised products and organised markets are important variables for investors when deciding whether or not to use derivatives in their portfolios. Several respondents suggested that through standardisation product trading would become easier, prices would be determined more frequently and counterparty risks would be reduced.

The statements were substantiated by the quantitative data which showed a mode, median and mean score of 4.00 (*agree*) for standardised products (P11a). Respondents agreed even more to the importance of the variable of organised markets (P11b) with mode at 5.00 (*strongly agree*), mean score at 4.05 and median at 4.00 (*agree*).

5.3 The level of regulation in a market

In general, investors prefer well-regulated markets where enough transparency and liquidity are provided in order to reduce counterparty risks. Stock exchanges are generally considered to be well-regulated trading places, whereas over-the-counter markets are far less or not regulated at all. Other factors that contribute to market regulation are rules and regulations that are in place and protect investors and governing bodies to ensure that all market participants comply with these rules. As a result, it was proposed that investors are more likely to use derivative instruments in well-regulated markets (Proposition 12).

Although two respondents disagreed and three respondents had a neutral view on this variable, the remaining 16 respondents agreed or strongly agreed that market regulation is important and investors are more likely to use complex products, such as derivatives in well regulated markets. The mode of the variable was 5.00 with the mean score of 4.05 and a median of 4.00. The standard deviation (0.97) was fairly low, indicating that most respondents held similar views.

The empirical results relating to this proposition are in line with the studies conducted by Faerman, McCaffrey and van Slyke (2001) and Michie and Grieve Smith (1995), who emphasised that well-regulated markets generally increase protection for investors by reducing hidden counterparty risks.

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

According to Wurgler (1999), more information about derivative instruments and greater transparency of risks lead to a more efficient price determination which supports investors in distinguishing good from bad investments. Thorbecke (1995) states that an increase in transparency between dealers and end users (investors) and continuous price determination would maintain the benefits derivative products offer for investors while reducing the dangers, mainly counterparty risks, to them. Furthermore, the 2008/2009 global financial crisis showed that a lack of information and transparency in markets can have devastating effects not only on the specific markets, but on economies as a whole.

As a result, the level of information available on derivatives and the transparency of price determination in a market were identified as an important variable for investors' decision-making. The proposition made was that investors are more likely to use derivative instruments in markets where information is readily available and price determination is transparent (Proposition 13).

The empirical results revealed an unambiguous opinion among respondents. All 21 agreed or strongly agreed that, in markets where price determination is transparent, investors are more likely to invest in such markets, especially when it comes to derivative instruments. This variable provided the highest mean score (4.57) and the lowest standard deviation (0.59) of all variables contained in the conceptual model. The mode and median were both 5.00 (*strongly agree*), indicating that investors had similar opinions and that this proposition can be confirmed.

5.5 The level of liquidity in a market

More liquid markets allow investors to trade frequently and close positions whenever they need to as the number of counterparts (investors) is generally greater (Firer, Ross, Westerfield and Bradford, 2004:25). Thus, it was proposed that investors are more inclined to use derivative instruments in markets that offer high levels of liquidity (Proposition 14).

The variables relating to liquidity and transparency of markets are closely linked because the more liquid markets are, the more investors are trading, the more frequently prices are determined and the greater the transparency in the market. This can also be supported by the fact that the majority of respondents felt that liquidity is of very high importance for investors when it comes to deciding whether or not to use derivatives in portfolios. The empirical results revealed a mode of 5.00 (*strongly agree*), a mean score of 4.33 and a mode of 4.00 (*agree*).

The empirical results confirm recent publications by the Securities Industry and Financial Markets Association (2010) and Amante, Araujo and Jeanneau (2007:74-76), who state that liquidity is of major importance for investors as it

offers numerous benefits, such as easier trading and price finding.

5.6 Taxes and brokerage fees

The sixth and seventh market-specific variables identified as possible contributors to investors' decision-making process are taxes and brokerage fees. According to Mayo (2008), Loeb (2007) and Coghill (2005), taxes should be considered by investors when deciding on investments, but should not be the deciding factor whether or not to invest. Pile (2010), on the other hand, argues that taxes can become significant costs, therefore they should be reduced wherever possible.

The same can be said for brokerage fees. Both variables are costs that reduce investors' possible returns. The lower the taxes and fees investors have to pay, the better the returns. Thus, Proposition 15 and Proposition 16 state that the lower taxes, such as income or capital gains taxes and the lower transaction costs are, the more likely investors are to use derivative instruments.

In the case of taxes, only five respondents agreed and saw taxes as a variable that investors consider when deciding on derivatives, whereas 16 respondents did not see taxes as a major factor influencing investors in their decisions, with one respondent indicating that taxes are irrelevant for investors' decision-making.

A median and mode of 3.00 (*neutral*) and a mean score of 2.76 also indicate that respondents did not feel that taxes are an issue for investors when it comes to using derivative instruments. This finding proves that tax considerations should not play the primary role when deciding on investments and which financial securities to include in a portfolio. Therefore, Proposition 15 cannot be accepted.

Brokerage fees, thus transaction costs, on the other hand are, according to the respondents of this study, a major variable regarding investors' decision-making. This is evident from scores of 5.00 (*strongly agree*) for mode, 4.00 (*agree*) for median and 3.86 for mean, all of which indicate that transaction costs are of high importance for investors.

The main reasons for that are, as pointed out by several respondents, that investors are cost-sensitive and they do not want to pay large fees for investments, that lower transaction costs would encourage more people to trade, thus increasing liquidity in markets, and that it is a competitive market which would give investors with lower transaction costs a competitive edge. The three respondents who disagreed pointed out that transaction costs for the derivative instruments are not as important for investors' decision-making as the costs associated with buying the underlying asset directly.

5.7 Product availability

A larger choice of products generally attracts more investors as they find suitable and appropriate investments for their particular needs. Furthermore, with the development of improved information and communication technologies as well as the creation of new products, investors, especially private retail investors, gain access to markets which were previously hard to enter, such as the commodities market (Commerzbank, 2006:17). Thus, it was proposed that investors are more likely to use derivative instruments in markets where numerous products are available (Proposition 17).

This proposition was confirmed by respondents in this sample with a mode and median of 4.00 (*agree*) and a mean score of 3.81. The majority of respondents (71%) agreed by stating that more products would make markets more attractive to investors and that a broad choice is important for investors. The standard deviation in this case is also quite low (0.92).

One respondent indicated that numerous products are not necessarily an important variable for investors; it takes too long to screen all possible alternatives so it is hard to differentiate between the products, and too many products would lead to decrease in liquidity, thus worsening trading. Another respondent stressed the fact that the number of products available to investors generally increases with the number of investors trading and demanding specific products, therefore only increasing product availability would not necessarily lead to more investors and improved markets.

6. Summary and Conclusions

In order to test the conceptual model, the researchers conducted semi-structured personal interviews with 21 carefully selected respondents in the South African financial services industry. All respondents worked with derivative instruments on a daily basis, and were highly educated and experienced. An in-depth literature review and pilot study revealed 14 variables which could have an impact on investors' decision-making processes.

Of the 14 variables five were **very important** for investors, namely the level of information available (including the transparency of price determination); investor's knowledge of different derivative instruments; investor's level of risk tolerance; the level of liquidity in the market; and investor's knowledge and familiarity with financial markets. The variables considered **important** to investors were the level of regulation; the level of standardisation of products; investor's needs, goals and return expectations; transaction costs and product availability.

Of the 17 propositions formulated in the conceptual model, 12 could be accepted. These were:

- *P1: Investors with clearly identified 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.*
- *P3: Investors who have a greater knowledge of financial markets are more likely to use derivative instruments in their portfolios.*
- *P5: Investors who have a greater knowledge of different derivative instruments are more likely to use derivative instruments in their portfolios.*
- *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.*
- *P11: Investors are more likely to use derivatives which are standardised and traded on organised (not over-the-counter) markets.*
- *P12: Investors are more likely to use derivative instruments in well-regulated markets.*
- *P13: Investors are more likely to use derivative instruments in markets where information is readily available and price determination is transparent.*
- *P14: Investors are more inclined to use derivative instruments in markets that offer high levels of liquidity.*
- *P16: Investors are more likely to use derivative instruments the lower the transaction costs are.*
- *P17: Investors are more likely to use derivative instruments in markets where numerous products are available.*

The propositions that could not be accepted were:

- *P4: Investors who have a greater knowledge of different asset classes are more likely to use derivative instruments in their portfolios.*
- *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.*
- *P10: Investors are more likely to use derivative instruments when markets exhibit a great deal of volatility.*
- *P15: Investors are more likely to use derivative instruments the lower the taxes are.*

Figure 2 shows the importance, according to results of the empirical investigation, of the different variables, highlighted in the following colours:

Very important variable

Important variable

Less important variable

Whether a proposition could be accepted is highlighted in the following colours:

Proposition could be accepted

Proposition could not be accepted

Figure 2 shows that the literature on derivatives usage was largely confirmed by the empirical findings of this study as the majority of propositions could be accepted and the majority of variables identified in the conceptual model were indeed seen as important for investors.

An open-ended question revealed that a number of other variables were also seen as influencing investors' decision whether to use derivatives in their portfolios. These included the investment mandate and clients' needs, the platform derivatives can be traded on, foreign exchange limits, pricing, the counterparty risk involved in the transaction, and the future prospects of the underlying asset.

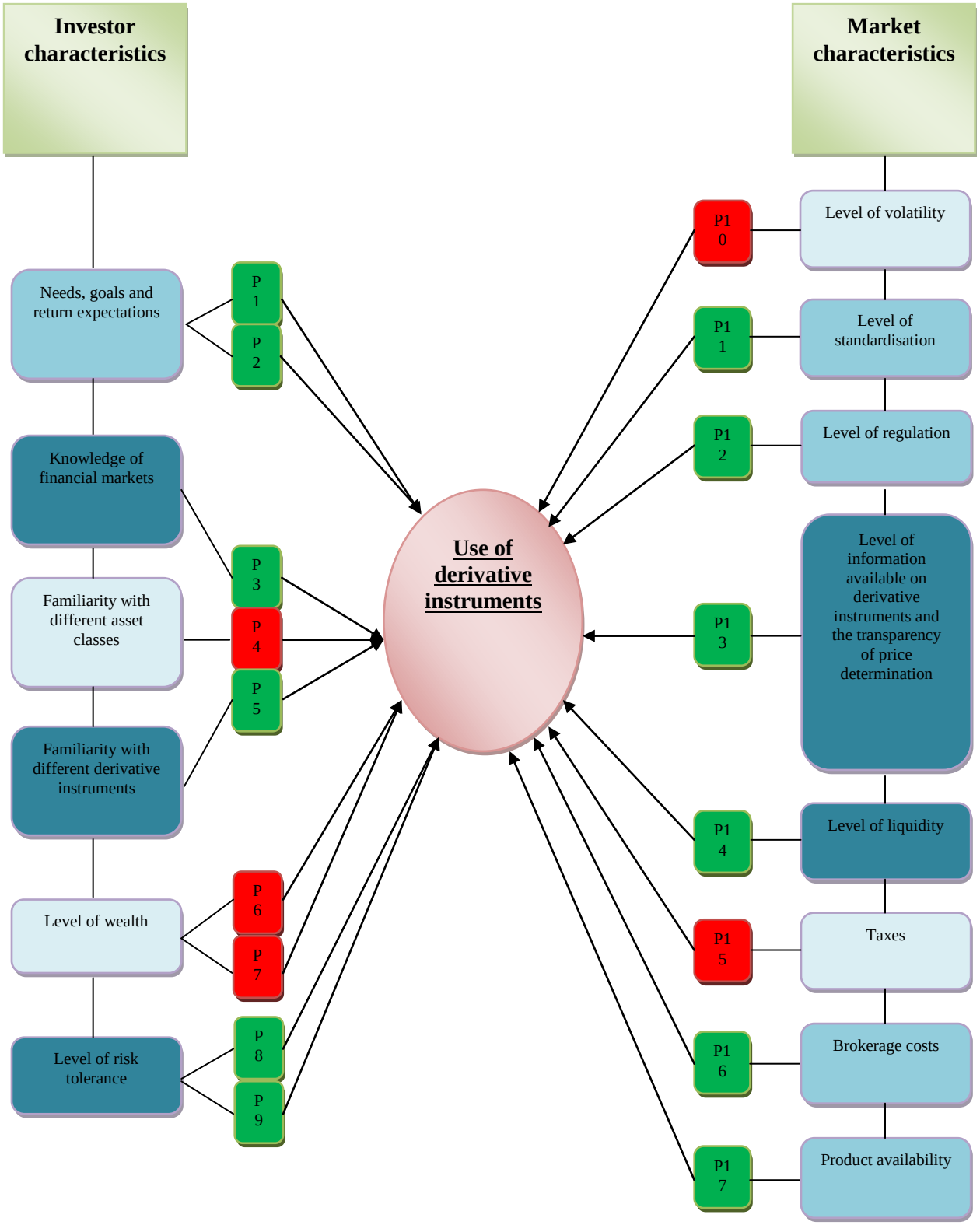

Figure 2. Empirical model

7. Recommendations

There are eight recommendations that can be made, each focusing on a specific field that needs to be targeted in order to increase awareness about derivative instruments in South Africa.

7.1 Change the current negative sentiment of investors regarding derivatives

Derivative instruments have the stigma of being complex and risky products which are often the cause of turmoil in financial markets (Siems 1997). There are several examples in the past that support the critics' arguments. Furthermore, derivatives are certainly not suitable for all investors as they might not fit their risk-return profile. Nevertheless, derivative products serve a very useful purpose, namely hedging. Once investors understand the concept of hedging and know how to use derivative products properly the negative arguments will no longer hold true.

The development of the global derivatives market over the past 20 years shows that these products are used and accepted in different industries around the world and serve a useful purpose. In order to make market participants, particularly retail investors, realise what potential benefits derivatives have and what the purpose of these products is, it is necessary to change the negative image surrounding derivatives.

7.2 Educate investors properly about derivative instruments

Changing the current negative sentiment towards derivatives requires that different stakeholders in the financial services industry educate investors about derivative instruments.

A possible solution is that education facilities (e.g. universities) and financial market-related organisations, such as the Association for Savings and Investments South Africa (ASISA) or the Investment Management Association South Africa (IMASA) provide short courses and seminars to provide investors with basic and advanced knowledge about derivatives. Educators need to explain in particular the dangers and benefits of these products. The better investors are educated, the easier it will become for them to understand more complex derivative products and strategies.

The JSE, commercial, investment and merchant banks, asset management as well as stockbroking companies offering derivatives could also increase investors' knowledge about derivatives and educate them properly about the products they offer. It will be only beneficial for these financial institutions as better educated investors will trade more, which will result in more revenue.

This can be done through booklets describing the derivative instruments available, what their features are, how they can be applied, and what the dangers and benefits of the products are. It is also beneficial to provide investors with examples and all the costs associated with trading derivatives. Furthermore, financial institutions offering and trading derivatives should have links on their websites which contain information regarding the derivatives they trade and other financial institutions or organisations that trade them regularly.

In this way, investors will be offered opportunities to increase their knowledge by themselves and the responsibility will not lie only with the financial institutions offering derivative products.

Financial planners and advisers are also important stakeholders as they predominantly deal with private investors. By giving half-hearted advice, financial planners will not convince investors to use derivative instruments on a regular basis. If investors (particularly private investors) are not properly educated about the potential danger and benefits these products offer, they might, more likely than not, use them in a wrong way and experience high losses. As a result investors will continue to shy away from these products and the negative image will remain. It is necessary to show investors how to apply derivatives properly for hedging strategies and what possibilities these instruments offer them.

Therefore, it is also recommended that universities that offer Financial Planning qualifications, such as the Nelson Mandela Metropolitan University, the University of the Free State, Stellenbosch University and others, give ample consideration to investment management as a module, and derivatives as a topic in this module.

With so many derivative products available, investors need proper advice on which product(s) will suit their needs and risk-return profiles the most. Again, it is of little benefit for financial advisers and institutions to promote and sell expensive products to investors that they do not need or that do not meet their risk profile. With inappropriate products investors might end up losing a lot of money, which will probably lead them to avoid such products in future.

Options and futures are straight-forward, and investors should be able to understand the characteristics and nature of these products fairly quickly. Thus, these products should be promoted and applied initially.

The JSE already provides short online courses on its website regarding the use of

derivative instruments and how they can be applied. Such short introductions should be provided by all financial institutions trading and offering derivatives, to explain the basics to investors.

It would certainly be beneficial for universities, financial market-related organisations and even companies in the financial services industry to invite representatives from the JSE or companies that deal with derivatives on a daily basis to hold lectures or seminars to give a practical insight on derivative instruments and how they are used.

Nevertheless, it is impossible for only financial institutions, the local stock and derivatives exchange and financial market-related organisations to educate investors about derivative instruments. Investors themselves must also familiarise themselves with derivatives before they use them. As one respondent in this study pointed out, investors need to know what they trade.

With the latest developments in the Internet, it is possible for investors to source information about derivative instruments from all over the world and to educate themselves about these products. Many financial institutions offer free trading simulators, which can be downloaded from their websites, for a certain period of time, so that investors can familiarise themselves with different derivative products and other financial securities by trading them on an artificial account.

7.3 Explain the differences between the various derivative products and derivatives markets

It is also necessary to explain to investors the differences between the derivative products available to them and the differences in trading on regulated exchanges and over-the-counter markets in order for them to understand the risks and benefits of different products and markets.

There are not only benefits investors can derive from derivative instruments. It is even more important that investors should be educated about the potential dangers involved in trading derivatives, especially the leverage that derivatives offer and the different variables that influence derivatives' prices. Investors also need to understand that futures contracts and contracts for difference, unlike options, have an unlimited downside risk which can lead to huge losses. In order to limit losses, it is recommended that investors initially use options or place 'stop-loss' orders with their futures and contracts for difference positions.

Furthermore, it is necessary to make investors aware of the fact that there are derivatives which are traded on regulated exchanges and over-the-counter markets. Regulated exchanges offer standardised products, and the counterparty risk is monitored by a clearing house, thus making trading safer for investors. Over-the-counter markets are not regulated by governing bodies, investors create non-standardised products with individual features and there is no clearing house monitoring counterparty risks. Again, in order to minimise losses, investors should initially trade on regulated exchanges with standardised products and familiarise themselves with derivatives markets.

7.4 Change in investors' investment attitudes

The 2008/2009 global financial crisis is an example of misaligned remuneration structures, greed, short-term investment horizons and return goals as well as excessive and uncontrolled usage of derivative instruments that offered high returns at almost no risk. As it turned out, those high returns were associated with even greater risks. This being so, it is essential that financial institutions and investors focus on sustainable long-term investments and avoid using complex derivative instruments that offer returns that are not in proportion to their risks.

Excessive trading and speculation can also lead to unrealistic price developments in underlying assets. This was evident from the crude oil, wheat and maize prices prior to the 2008/2009 financial crisis which reached new highs because of speculation, and not based on fundamental judgment or simple supply and demand functions (McNulty, 2010:83).

7.5 Need for diversification

It is important that investors do not solely rely on derivatives, but create and manage portfolios that are made up of different asset classes, and use derivatives as tools for managing these asset classes. Unfortunately many investors are greedy and only see the high returns offered by derivatives, but forget about the risks involved in these products. Once again, this points to a greatly needed change in attitude.

As pointed out by several respondents in this study, derivatives are useful tools and they should be used more often in managing portfolios. The respondents also emphasised that investors should shift their focus from using these products solely for speculation purposes, and use them more often for hedging strategies.

7.6 Regulate over-the-counter markets and increase transparency

Many derivatives, such as swaps, forward rate agreements, contracts for difference and credit derivatives are predominantly traded over-the-counter, thus in markets that are not regulated. This being the case, it would be beneficial if governing bodies and financial regulators increased the transparency in over-the-counter markets, especially in over-the-counter products. With more transparency, financial institutions, particularly overseas, might not have taken such enormous positions in collateralised debt obligations and credit default swaps had they known the status of the underlying assets (mortgage loans).

As pointed out in this study, transparency is one of the key requirements of a well-functioning financial market, be it in a developed or emerging markets country. South Africa already has a well-regulated financial market compared to other emerging markets, but an increase in transparency, especially for derivative instruments, would help this market to develop faster.

It is not only over-the-counter markets that should be more transparent, but also regulated exchanges and brokers. Exchanges and brokers derive derivative prices from different pricing models and input variables. To make trading more transparent, both parties should provide information about how they determine the value of the different variables, especially the implied volatility. An increase in transparency would result in better trading conditions, more investors trading derivative products, and as a result more liquidity.

It is also essential that derivatives markets are monitored and policed closely by regulators in order to make market manipulation and reckless trading impossible, and therefore to make the derivatives market an attractive trading platform for investors.

Liquid, standardised products should be the initial choice for inexperienced and private investors. The main reasons for this are that these products are safer, because the product features are known, prices are determined regularly, counterparty risks are monitored, and they can be traded almost all the time. Institutional investors might not always find suitable products on a regulated exchange. Therefore, over-the-counter markets offer many possibilities of constructing a product for their personal needs.

7.7 Increase product range

In order to make markets more attractive to local investors, the JSE should consider increasing their product range in terms of underlying assets. However, this has to be done carefully as new products generally lack liquidity in the beginning. It would therefore be beneficial if the JSE were to introduce and regulate new products that are already popular in other markets, such as contracts for difference or spreads.

The better and the more competitive the prices investors receive are, the more likely they are to participate in trading and as a result liquidity will increase in the markets and products. This is certainly an area where financial institutions offering derivatives, in particular banks and stockbrokers, should become more flexible and accommodating, as well as allowing investors to trade smaller volumes, even though these smaller volumes will not offer them as much revenue as larger trades.

7.8 Reduce transaction costs and brokerage fees

Another point to consider is that investors are cost-sensitive. This being so, a reduction in transaction costs would certainly be beneficial for the local derivatives markets as investors would trade more frequently. This is evident from the fact that many local investors use cost-efficient online trading platforms, offered by different local financial institutions more and more, rather than expensive brokers (Harris, 2010:44; Van Vuuren, 2010:62). This has also been an ongoing trend in developed countries in Europe and the USA for years, and suggests that investors also need to be educated in terms of which trading platforms are available to them.

Suggestions for Future Research

As is evident from the empirical investigation, in-depth research on derivative instruments in South Africa is certainly beneficial as it will serve to increase knowledge about these products and markets.

With additional research and reporting about derivative instruments, it should also be possible to demystify them and create a more positive image of these products among market participants. Derivatives are here to stay, as one respondent of this study pointed out, so investors should familiarise themselves with them and use them whenever they provide benefits to their portfolios.

From a research point of view, the study revealed some interesting aspects relating to variables that influence investors in their decision-making process whether or not to include derivatives in their portfolios. The study has also provided interesting views regarding the use of hedging strategies by investors, the involvement of derivatives in the recent financial crisis, and the

main reasons why investors use derivatives. Future research can refine and extend the conceptual model and test it with a larger sample of respondents.

The most interesting finding of the latter is that private investors, despite their perceived risk-aversion, predominantly use derivative instruments for trading and speculating purposes rather than hedging purposes. It would be an interesting investigation whether this is because derivatives offer a cost-efficient way for private investors to invest in equities, commodities and exchange rates, or if there is a general lack of knowledge regarding hedging strategies among private investors.

In addition, the study showed that the local credit derivatives market hardly exists. There must be some reasons why local financial institutions have not participated in securitisation as much as their overseas counterparts and why that market (fortunately) never took off in South Africa. This being the case, the current state of the local credit derivatives market could be investigated, too.

It would certainly be beneficial to investigate further why there is such a lack of knowledge about derivative instruments among, both private and institutional investors, and what might be efficient ways for increasing the knowledge about derivatives among them.

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