For banks, fair value adjustments do influence dividend policy[1]

P. de Jager

ABSTRACT

Most researchers who investigate the interplay between fair value accounting (FVA) and the financial crisis look at the time period during the crisis. This paper investigates a potential role for FVA prior to the crisis: If FVA led to increased accounting profits with the recognition of transitory gains through profit and loss during the boom, and if those increased profits provided the rationale for increased dividends, then bank capital became riskier prior to the crisis, and this would have made the system more prone to failure. A study by Goncharov and Van Triest (2011) found no empirical support for an increase in dividends in response to unrealised positive fair value adjustments to income. In contrast, when the setting is limited to only South African banks, this paper finds that South African banks did pay dividends from unrealised transitory gains. This finding is based on a combination of three strands of evidence: a panel regression of the annual dividends declared by the large South African universal banks that showed that those banks probably ignored the unrealised nature of FVA profits when dividends were determined; monthly data from the total South African bank system in a co-integrated regression that showed that unrealised fair value profits from the banking book raised the average level of bank profits materially; and simple descriptive statistics on distributions that showed that South African banks distributed a greater proportion of profits during the critical period of 2004 to 2008 when unrealised fair value profits from the banking book raised the level of bank profits. The finding that South African banks did pay dividends from unrealised transitory gains was also confirmed by bank representatives and the post-financial crisis disclosure of one of the South African banks.

Key words: fair value accounting, dividend policy, earnings persistence, banks

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Dr P. de Jager is a senior lecturer in the Department of Finance and Tax and the African Collaboration for Quantitative Finance and Risk Research (ACQFRR), University of Cape Town. E-mail: phillip.dejager@uct.ac.za

The ongoing financial crisis is the worst global economic downturn since the Great Depression. Understanding its causes and preventing a reoccurrence is of immense social and economic importance.

Excessive write-down of asset values under FVA, which depletes bank capital, has been suggested as a possible cause of the crisis (Veron, 2008; Pozen, 2009:85). The question about the role of FVA in the crisis was taken so seriously by American politicians, that two official investigations following the crisis have already reported on it. The office of the Chief Accountant in the United States Securities and Exchange Commission found that FVA did not appear to have played a significant role in the 2008 bank failures (United States Securities and Exchange Commission, 2008). The National Commission on the Causes of the Financial and Economic Crisis (NCCFEC) in the United States' statutory instructions included an inquiry into "accounting practices, including mark-to-market and fair value rules, and treatment of off-balance sheet vehicles". Their final report does not include accounting as a major role player in the crisis, but the dissenting Wallison report does (NCCFEC, 2011). Academic accounting researchers have also started to investigate the role of FVA during the crisis, and have mostly found that FVA had an insignificant effect (Badertscher, Burks & Easton, 2012; Barth & Landsman, 2010; Laux & Leuz, 2009; Shaffer, 2010).

The above-mentioned studies looked at FVA's role during the crisis and not before the crisis, except for Laux and Leuz (2009:9) who argues "that FVA and asset write-ups allow banks to increase their leverage in booms, which in turn makes the financial system more vulnerable and financial crises more severe". In his review of the evidence of the role of financial reporting in the global financial crisis, Pinnuck (2012) argues numerous times that more attention should be paid to the years preceding the crisis. In the popular press it seems to be common knowledge that FVA allowed the payment of remuneration and dividends from imaginary[2] profits during the boom (Haldane, 2011; Kay, 2009; Kay, 2012; Mundy, 2012; Taylor, 2009; Wood, 2010). The concern that dividends were paid from transitory FVA gains is investigated in this paper.

Using a Russian setting to investigate this question, Goncharov and Van Triest (2011) found that unrealised positive fair value adjustments were not paid out as dividends by companies. Their finding accords with the Lintner model (Lintner, 1956), where only permanent increases in earnings are dividend relevant. Their sample contained most Russian public companies and was not restricted to banks only. By investigating whether unrealised positive fair value adjustments are paid out as dividends in a different setting, namely large South African banks, the aim of this paper is to provide a counterexample to the Russian example. This setting is both

different from but similar to theirs. By focusing solely on banks, those companies most impacted by FVA are investigated with the concurrent disadvantage of a limited number of observations. South African banks are rated third best in the world for "soundness of banks" by the World Economic Forum (2013:347). The South African country setting is similar to that of Russia because it is another BRICS country and a commodity producer.

A behavioural perspective can explain why banks might be more inclined to pay dividends from transitory FVA gains in profits than companies in general. Bank regulators regard a bank with more capital as a safer bank, whilst bank management wants to reduce bank capital to the minimum allowed in order to maximise returns for shareholders and thus remuneration for themselves. During the business cycle upswing that preceded the financial crisis, banks were making record profits, possibly boosted by transitory FVA gains; those profits increased capital. Management needed to do something with that additional capital as it reduced the gearing effect available and thus future profitability. The increase in capital could have been used to fund further loan book expansion as argued by Pinnuck (2012:5), perhaps beyond what the market required, and thus turning banks into aggressive sellers of debt; alternatively, or probably concurrently, the increase in capital could have been partly reduced by paying higher levels of remuneration and dividends.

The aim of this study is thus not to investigate dividend policy *per se,* but to repeat as far as possible the investigation of Goncharov and Van Triest (2011) in a different setting with the implication that the literature review will not be so focused on dividend policy as it is will be on their paper and FVA.

The South African banks context does not allow for a direct test of the dividend relevance of positive FVA gains, unlike the Goncharov and Van Triest (2011) paper, and the investigation thus relies on the following three different strands of evidence: First, a panel regression of the annual dividends of the five large South African universal banks, which make up 90% of the South African banking system, is used in a manner similar to that of Goncharov and Van Triest (2011) to show that the banks probably ignored unrealised transitory FVA gains when dividends were determined. The same assumption was made as in the Goncharov and Van Triest (2011:54) study that these fair value adjustments are transitory. Second, a co-integrated regression of monthly total bank profits is used to show that unrealised fair value entries from the banking book raised bank profits materially, especially in the critical period before the financial crisis (2004 to 2008). Third, simple descriptive statistics on distributions is used to show that the banks did not reduce the proportion of profits paid out as dividends when profits were inflated by FVA gains from the banking book (2004 to 2008).

Interview and financial statement evidence provide a final confirmation of the findings. In contrast to the Goncharov and Van Triest (2011) finding, in South African banks, positive FVA gains are not ignored when dividends are determined.

The paper is structured as follows: Section 2 discusses relevant literature focusing on the Goncharov and Van Triest (2011) paper. Section 3 describes the data and the methods that will be used to address the research question. Section 4 presents, discusses and interprets the results, and section 5 draws conclusions.

Theoretical background

Earnings persistence and dividends

Lintner (1956) proposed a partial adjustment model linking reported earnings with dividends. Companies aim to pay out a certain percentage of permanent or core earnings as dividends. The implication is that dividends can be modelled as a function of past dividends and current earnings. Fama and Babiak (1968) confirmed the model empirically. Similar links between earnings and dividends have been found by DeAngelo, DeAngelo and Skinner (1992) in the United States and by Goergen, Renneboog and Correia da Silva (2005) in Germany. Skinner (2008) found that dividends and share buybacks are complementary in their relationship to earnings.

The Lintner model proposes that managers are reluctant to increase the level of dividend payments unless earnings have increased in a sustainable manner. If fair value gains and losses are transitory, then the Lintner model would suggest that the fair value gains and losses have no distributional consequences.

Fair value accounting

FVA entered into accounting regulations in the 1990s first in the Statement of Financial Accounting Standard (SFAS) No. 115 (FASB, 1993) in the United States and later in International Accounting Standard (IAS) 32, which mandated that some securities be accounted for at their fair value. This was followed by SFAS No. 157 (FASB, 2006) and IAS 39 (IASB, 2005), which both formally defined fair value and the measurement and disclosure of financial instruments. South African accounting standards closely followed the IASB developments and from 1 January 2005, IFRS formally replaced South African Generally Accepted Accounting Practice (GAAP).

Fair value can be broadly defined as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market

participants at the measurement date" (IASB, 2014:Appendix A). Assets and liabilities are categorised into three categories according to the level of subjectivity associated with the inputs to measure their fair values. The definitions that follow are based on the annual financial statements of Investec Bank Limited (Investec Bank Limited, 2012:148). Level 1 or mark-to-market represents unadjusted prices in active markets for identical assets or liabilities. Level 2 represents an in-between category where a direct market price is not used and instead, inputs, observable on markets, are used to determine a price suitable for that particular asset or liability. Level 3 or mark-to-model represents the situation where unobservable inputs are used to derive a fair value. This process usually entails the use of some form of discounted cash-flow model.

Not all value changes in financial instruments held at fair value impact profit and loss. Only value changes in financial instruments that form part of the trading book (including derivatives) as well as value changes in financial instruments designated at fair value impact profit and loss. Fair value changes in available-for-sale financial instruments are posted directly to reserves. This investigation, like Goncharov and Van Triest's (2011) study, focuses exclusively on the changes that are posted through profit and loss. An implication of FVA changes posted through profit and loss is that once those entries form part of retained income, it is impossible to separately identify which part of retained income is realised and which part is unrealised, even though the unrealised part might be riskier. Bank management, who operates in a regulatory regime which does not require the specific tracking of those items (e.g. Russia and Japan require companies to disclose items through profit and loss that are unrealised; this is not required in most Western countries such as South Africa), might treat those reserves as being similar to realised reserves and pay them out as dividends.

Prior studies indicate five ways in which FVA can introduce transitory components into earnings. FVA brings the present value of future cash flows into current earnings (Dechow, Myers & Shakespeare, 2010), even though those cash flows might be subject to operational risk. The best example of this practice, often referred to as frontloading of profits, is Enron's recognition of future contract income the moment the contract was signed (Benston, 2006). In the case of securitisation, where the accounting treatment of the transaction is that of secured borrowing, FVA will frontload the interest margin that would have been earned over time (Dechow *et al*., 2010). In addition, FVA might merely pick up a transitory change in the underlying economics of an asset/liability and thus bring transitory effects into profit. Also, not all assets or liabilities are measured at fair value and this failure to match all the fair value changes in the mixed measurement model of accounting can lead to volatility in

earnings (Penman, 2007; Plantin, Sapra & Shin, 2008). Furthermore, bubble prices can be incorporated into accounting via mark-to-market accounting (Penman, 2003). Finally, evidence is emerging that FVA can be used as an earnings management tool, especially when combined with securitisation (Dechow *et al*., 2010).

Goncharov and Van Triest (2011:54) assume that fair value adjustments are transitory, based on previous studies that "suggest managers exhibit over-optimism and tend to overestimate implications of current earnings for future earnings". This study makes the same assumption based on the reasons given above as well as the acknowledgement by the CEO of one of the five large banks in South Africa that FVA gains in earnings are "of lower quality and more difficult to forecast" (Tarrant, 2013).

Goncharov and Van Triest (2011)

Goncharov and Van Triest (2011) examined the impact of positive fair value adjustments on dividend policy and found no empirical support for the concern that dividends increase in response to positive fair value adjustments. Their sample period spanned 2003 to 2006, and their final sample consisted of 4 424 firm-year observations from 1 179 unique companies listed in Russia. Their core model shows that a change in dividends is a function of profitability before the gain through profit and loss from FVA and that the FVA gain actually reduced the dividend paid. All variables were scaled by average total assets. They made use of controls for size, financial leverage, cash holdings and growth.

Important and unique to their study was the fact that "Russian accounting standards mandate mark-to-market accounting for financial investments with changes in fair value reported in net income" (Goncharov & Van Triest, 2011:54). In their regression model they could thus directly test for the relationship between fair value gains in net income and changes in dividends.

A few areas can be identified for improvement in a replicate study. There is no indication in their paper that they controlled for heterogeneity between companies in their regression models. The low R^2 values indicated collaborate this. The use of fixed effects would have had the advantage of better model fit as well as compensating for time invariant omitted variables per firm. It can be argued that the use of a change in dividend model compensates for firm-specific omitted variables that are constant between following years, but this technique does not control for all firm-specific omitted variables. The validity of firm fixed effects in the changes in dividend models in this paper demonstrates this argument. It has already been mentioned that their sample covered most listed Russian companies and was thus not exclusively focused on banks – banks are the companies most impacted by FVA and

thus arguably of greater interest in the context of the research question. And finally, they used the average total assets of each firm to deflate variables used for size, while the usual deflator is rather to use market capitalisation (Easton & Sommers, 2001). In a later paper by Goncharov (Goncharov & Veenman, 2014:25), an argument is made that confirms this point on how to improve the original study: "… we show that market value deflation is essential in market-based tests of dividend displacement and signalling because it controls for 'stale' information in addition to scale (size) differences across firms".

A few papers have taken the Goncharov and Van Triest (2011) study further. In a review paper on the consequences of mandatory IFRS adoption, Brüggemann, Hitz and Sellhorn (2013) argue that IFRS adoption, which increases reliance on FVA, may cause changes in dividend policies. Kochiyama (2011) utilised a unique Japanese setting to investigate whether Japanese companies pay out dividends from revaluation profits on the fair valuation of trading securities. From 2001, with the adoption of IFRS, FVA revaluation profits and losses from trading securities were included as part of net profit in Japan. For the period 2001 to 2006, the Japanese Commerce Law implemented the deduction of revaluation profits from distributable profits, and the study found revaluation reserves for this period not relevant for dividends. However, from 2006 onwards, the Japanese Company Act allowed the revaluation profits as part of distributable reserves and the study found that from 2006 the revaluation reserves were dividend relevant.

This study will repeat as far as possible the Goncharov and Van Triest (2011) study in a different setting. The Japanese example above already shows that the Goncharov and Van Triest (2011) results did not hold in a different setting when the law allowed payments from unrealised FVA gains. For South African banks, there is nothing that prohibits them from making distributions from unrealised FVA gains that ended up in profit and loss.

Why bank managers might pay dividends from transitory FVA gains

Declining return on assets (ROA)

Bank managers operate in an environment where earnings are under pressure because of the entrance of non-banks into the banks' competitive space. At the same time, shareholder activism is increasing, and one way in which bank managers can maintain or achieve the expected return on equity (ROE), even when ROA is decreasing, is to increase leverage. Transitory gains from FVA will increase bank capital and reduce leverage, all else being equal. Paying those gains out as dividends or remuneration will reduce the decrease in leverage.

Agency theory/moral hazard

Another reason for the behaviour of bank managers can be found in agency theory, but not in the normal management versus shareholders sense. The capital provided by shareholders in the average bank forms only a minor part of the total capital utilised in that bank; for example, the average for the five banks included in this study over 17 years was 6.23% of the total. Shareholders have little skin in the game and they face an asymmetric payoff. If the bank performs really well, then the shareholders have an unlimited potential share of the profits, and if the bank fails, then the shareholders can walk away from their small investment in the capital of the bank. More so than at more conservatively financed companies, bank shareholders are incentivised to work together with management to implement strategies that will be detrimental to the creditors of the bank. Strategies that reduce the value of a bank's debt without reducing the bank's total value increase the bank's share price.

The most obvious strategy is for the bank to take on excessive risk. If the risk pays off, then the reward goes to shareholders and management; if the risk does not pay off, then the depositors are left with the result (e.g. see Galai & Masulis, 1976; Jensen & Meckling, 1976). Hillier, Grinblatt and Titman (2008) summarise another three categories of conflict of interest between shareholders and debtholders. Firstly, companies might pass up profitable investments because the firm's debtholders capture most of the benefits of the projects. Secondly, shareholders are incentivised to accept short-term as opposed to long-term projects, even if the latter might be more profitable. Thirdly, shareholders may want to keep a firm operating when the liquidation value of the firm exceeds its operating value.

It can be argued that in reasonably efficient capital markets, debt providers will be aware of these self-interested incentives of shareholders and price their loans appropriately. This raises another agency conflict; management/shareholders/depositors versus the government. If government insures the deposits of a bank directly or indirectly by treating a bank as too-big-to-fail, then depositors have no incentive to monitor the banks actively. Depositors would scramble to provide capital at any return greater than the risk-free interest rate. Hillier *et al.* (2008:581) refer to the savings and loans crisis of the 1980s as an example. Those managers, shareholders and depositors can effectively take on risk with government money and would want to pay profits out as soon as possible.

The theoretical overview has shown that according to ordinary dividend theory, transitory fair value gains through profit and loss should have no effect on dividends paid. FVA was also introduced and briefly explained and five possible ways discussed regarding how FVA can introduce transitory components into earnings. The paper by Goncharov and Van Triest (2011) was then discussed, because the current paper is strongly related to it. Suggestions were made for improvement in a replicate study

in a different setting. Finally, some motivations why bank managers might pay dividends from transitory FVA gains were presented. This leads to the following research question: Did South African banks pay out dividends from FVA increased profits?

The next section will discuss the data used and the tests that will be performed.

Research approach

Banks do not normally disclose what portion of their net profit is unrealised. The study by Goncharov and Van Triest (2011) was able to directly test whether unrealised FVA gains in profit and loss were relevant to dividend decisions owing to a unique disclosure requirement in the Russian setting. A direct test is not possible in the South African setting because no special disclosure requirement exists in South Africa. Hence IFRS 7 *Financial Instruments: Disclosure* (IASB, 2013) does not require disclosure of the realised and unrealised portions of items of income, expense, gains and losses relating to financial instruments. Only the combined total is required.

Three proxies for FVA gains in profit will be considered in this paper instead of a direct measurement. The first proxy will be the difference between net profit after tax and broad cash flow from operations (after tax and working capital adjustments). The second proxy will be the difference between net profit after tax and narrow cash flow from operations (before tax and working capital adjustments). All else being equal, an unrealised gain component of net profit after tax should imply a cash flow from operations that is less than net profit. A negative aspect of these two proxies is that they will contain noise from sources other than only FVA adjustments. The third proxy will be the total of extraordinary items in income identified by fundamental data provider, McGreggor BFA, including some observations of mark-to-market entries. The mark-to-market observations included in the third proxy were few, and this proxy also thus seems to be a noisy measure of FVA gains included in profit.

The first step in the investigation will be to perform a regression analysis, explaining changes in dividend, similar to that done by Goncharov and Van Triest (2011) – this will be called "dividend analysis" in the rest of the paper. Unfortunately, owing to the noisiness of the three proxies for FVA gains, the results will not be as trustworthy as those in the Goncharov and Van Triest (2011) study. To reinforce the argument that FVA led to the recognition of additional gains during the economic upswing, a regression analysis will be performed, with the dependent variable being the monthly net profit after tax of the total South African banking system (2001 to 2010)– This will be referred to as "profit analysis" in the rest of the paper. To reinforce the argument that banks ignored the transitory components of net income,

simple descriptive statistics of the portion of distributable net profit distributed as a dividend for all five banks combined, over the period 1994 to 2010, will be shown with the period immediately preceding the global financial crisis emphasised. Finally, interview and financial statement evidence will be considered.

Next the data for the dividend analysis will be presented, including statistical considerations. Thereafter the data for the profit analysis will be presented, including some statistical considerations.

Data and some statistical considerations: Dividend analysis

Annual financial statement data pertaining to the five largest listed[3] South African banks were obtained. These data were obtained in a standardised format from the fundamental data provider, McGregor BFA, and covered the period 1994 to 2010. This period started in 1994 with the democratisation of South Africa and ended in 2010. These five banks were chosen as they dominate South African banking, all have time-series available for the period under discussion and all have securitised assets in the immediate past. Survivorship bias is not expected to be a problem because this group of banks has been stable throughout the period studied.

As mentioned in the introduction, this part of the study will attempt to duplicate as closely as possible the key model used by Goncharov and Van Triest (2011:60). Similarly, the dependent variable in this study will be the change in dividend declared by bank *i* in year *t* (ΔDIV_{it}). DIV_{it-1} is the first explanatory variable and is the previous year's dividend for that bank. The next two independent variables are net profit after tax of bank *i* in year *t* before the proxies for FVA adjustments ($NPBPROXY?_{it}$) and net profit after tax of bank *i* in year *t-1* before the proxies for FVA adjustments ($NPBPROXY?_{it-1}$). Because the independent variable of interest in the Goncharov and Van Triest (2011) study is not available for this study, the following three proxies will be considered instead: $PROXY1_{it}$ is the difference between NP_{it} and broad cash generated by operations (after tax and working capital changes) by bank *i* in year *t*; $PROXY2_{it}$ is the difference between NP_{it} and narrow cash generated by operations (before tax and working capital changes) by bank *i* in year *t*; and $PROXY3_{it}$ is the total of extraordinary items identified by fundamental data provider McGreggor BFA, including some (incomplete) observations of mark-to-market entries. All of these variables have been deflated for size by using average market capitalisation. All of the same control variables in Goncharov and Van Triest (2011) will be used, except for the cash balance variable, because liquidity is not normally a constraint on a bank, and in the Goncharov and Van Triest (2011:60) results, this was the only control variable that was not statistically significant. $SIZE_{it}$ is the natural logarithm of total assets of bank *i* in year *t*. LEV_{it} is financial leverage defined as the ratio of total debt

to total assets of bank *i* in year *t*. $GROWTH_{it}$ is the growth in total assets of bank *i* in year *t*. The changes are summarised in Table 1 below.

Table 1: List of variables used in the main regression of the Goncharov and Van riest (2001:60) study compared to the list of the variables that will be used in this study

Category	Goncharov and Van Triest	This study
Dependent	ΔDIV_{it} – change in dividends in year *t* for company *i*	ΔDIV_{it} – change in dividends in year *t* for bank *i*
Independent	DIV_{it-1} is the dividend in year *t-1* for company *i*	DIV_{it-1} is the dividend in year *t-1* for bank *i*
	$NIBREV_{it}$ – is net income year *t* for company *i* before fair value adjustments	$NPBPROXY?_{it}$ – is net profit after tax in year *t* for bank *i* before the proxies for FVA adjustments
	$NIBREV_{it-1}$ – is net income year *t-1* for company *i* before fair value adjustments	$NPBPROXY?_{it-1}$ – is net profit after tax in year *t-1* for bank i before the proxies for FVA adjustments
	REV_{it} – is positive fair value adjustments due to revaluations of short-term and long-term financial assets in year t for company *i*	$PROXY1_{it}$ – difference between net profit after tax and a broad measure of cash generated in year *t* for bank *i*
		$PROXY2_{it}$ – difference between net profit after tax and a narrow measure of cash generated in year *t* for bank *i*
		$PROXY3_{it}$ – Data provider total of extraordinary items including mark-to-market values in year t for bank i
Controls	$SIZE_{it}$ – is the natuaral logarithm of total assets in year *t* for company *i*	$SIZE_{it}$ – is the natuaral logarithm of total assets in year t for bank i
	LEV_{it} – is financial leverage defined as a ratio of total debt to total assets in year *t* for company *i*	LEV_{it} – is financial leverage defined as a ratio of total debt to total assets in year *t* for bank *i*
	$GROWTH_{it}$ – is percentage change in sales in year *t* for company *i*	$GROWTH_{it}$ – is percentage change in total assets in year *t* for bank *i*
	$CASH_{it}$ – is cash balance defined as cash scaled by average total assets in year *t* for company *i*	

Table 2 presents descriptive statistics for selected income and balance sheet variables that will be used in the panel data regression. All of the variables, except for the control variables, are deflated by the average market capitalisation of the bank for that financial year.

Table 2: Pooled descriptive statistics of the variables included in the dividend analysis

Unadjusted for outliers					
Variable	**Mean**	**Median**	**Std. deviation**	**Minimum**	**Maximum**
DIVit	0.03322	0.03387	0.01181	0.00126	0.05528
$NPBFPROXY1_{it}$	0.18386	0.16322	0.19495	-0.39186	1.21019
$NPBFPROXY2_{it}$	0.11527	0.09302	0.16567	-0.24734	0.45633
$NPBFPROXY3_{it}$	0.08921	0.09169	0.10129	-0.45913	0.28667
$PROXY1_{it}$	-0.08687	-0.05351	0.20336	-1.11592	0.38752
$PROXY2_{it}$	-0.01827	-0.00788	0.16535	-0.43862	0.32822
$PROXY3_{it}$	0.00778	0.00088	0.11155	-0.30420	0.57559
$SIZE_{it}$	19.26953	19.39181	1.07155	16.18955	21.12349
LEV_{it}	0.94199	0.94462	0.01938	0.88975	0.98512
$GROWTH_{it}$	0.27925	0.17125	0.66510	-0.32430	5.52809
95% Winsorised					
Variable	**Mean**	**Median**	**Std. deviation**	**Minimum**	**Maximum**
DIV_{it}	0.03323	0.03387	0.01175	0.00228	0.05486
$NPBFPROXY1_{it}$	0.17963	0.16322	0.14958	-0.22168	0.57842
$NPBFPROXY2_{it}$	0.11600	0.09302	0.16192	-0.17327	0.45633
$NPBFPROXY3_{it}$	0.09526	0.09097	0.08263	-0.15126	0.28667
$PROXY1_{it}$	-0.08035	-0.05351	0.15913	-0.48415	0.23118
$PROXY2_{it}$	-0.01672	-0.00788	0.15648	-0.29939	0.25415
$PROXY3_{it}$	0.00402	0.00088	0.08708	-0.20247	0.24897
$SIZE_{it}$	19.26897	19.39181	1.06655	16.26456	21.00414
LEV_{it}	0.94211	0.94462	0.01873	0.90467	0.98113
$GROWTH_{it}$	0.20626	0.17125	0.08708	-0.20247	0.24897

Note: The data sample represents 17 annual observations from 1994 until 2010 for the five largest South African banks. Fundamental data supplier BFA McGreggor was the source of the data. DIV_{it} is dividends in year *t* for bank *i*. $NPBFPROXY1_{it}$ is net profit after tax in year *t* for bank *i* before $PROXY1_{it}$. $NPBFPROXY2_{it}$ is net profit after tax in year *t* for bank *i* before $PROXY2_{it}$. $NPBFPROXY3_{it}$ is net profit after tax in year *t* for bank *i* before $PROXY3_{it}$. $PROXY1_{it}$ is the difference between net profit after tax and a broad measure of cash generated from operations in year *t* for bank *i*. $PROXY2_{it}$ is the difference between net profit after tax and a narrow measure of cash generated from operations in year *t* for bank *i*. $PROXY3_{it}$ is the total of extraordinary items including mark-to-market values identified by BFA McGreggor in year *t* for bank *i*. All of these preceding variables have been deflated for size by using average market capitalisation. $SIZE_{it}$ is the natuaral logarithm of total assets in year *t* for bank *i*. LEV_{it} is financial leverage defined as the ratio of total debt to total assets in year *t* for bank *i*. $GROWTH_{it}$ is the percentage change in total assets in year *t* for bank *i*. In the bottom half of the table a winsorisation[4] of 95% has been applied to all the variables.

Owing to the fact that the data above are from five different banks and not collated, it is to be expected that there will be some individual bank heterogeneity in the relationships and that some form of panel regression might be called for.

Panel regression: Dividend analysis

Panel data regressions first and foremost allow one to formally model the heterogeneity across groups that are typically present in panel data (Green, 2008:334; Baltagi, 2005:4). In addition, panel data regressions provide more robust information, more variability, less collinearity among variables and more degrees of freedom (Baltagi, 2005). A first step in using panel data regression would be to test the errors resulting from a normal regression (where the data consists of observations from cross-sections over time) for heteroscedasticity. If heteroscedasticity is found, one should test for the appropriateness or not of fixed or random effects. Not controlling, where appropriate, for individual fixed effects or random effects in a data panel can lead to an omitted variable bias problem and inconsistent estimates of the regression parameters.

In choosing between fixed effects or random effects, Baltagi (2005:19) advises researchers to not simply interpret a rejection of the Hausman (1978) test as an adoption of the fixed effects model. That is why it is appropriate to consider what each model is for. According to Baltagi (2005:12), the fixed effects model is an appropriate specification when focusing on a specific set of companies, and inference is restricted to that set of companies, whereas the random effects model is appropriate if one is drawing individuals randomly from a large population (Baltagi, 2005:14; De Jager, 2008). Because the dividend analysis regression is only concerned with the specific five banks in the study and not with a larger population, the fixed effects model is more appropriate. This line of argument is used in a number of recent accounting panel data studies (e.g. Oliveira, Rodrigues & Craig, 2010:246; Setia-Atmaja, Haman & Tanewski, 2011:238).

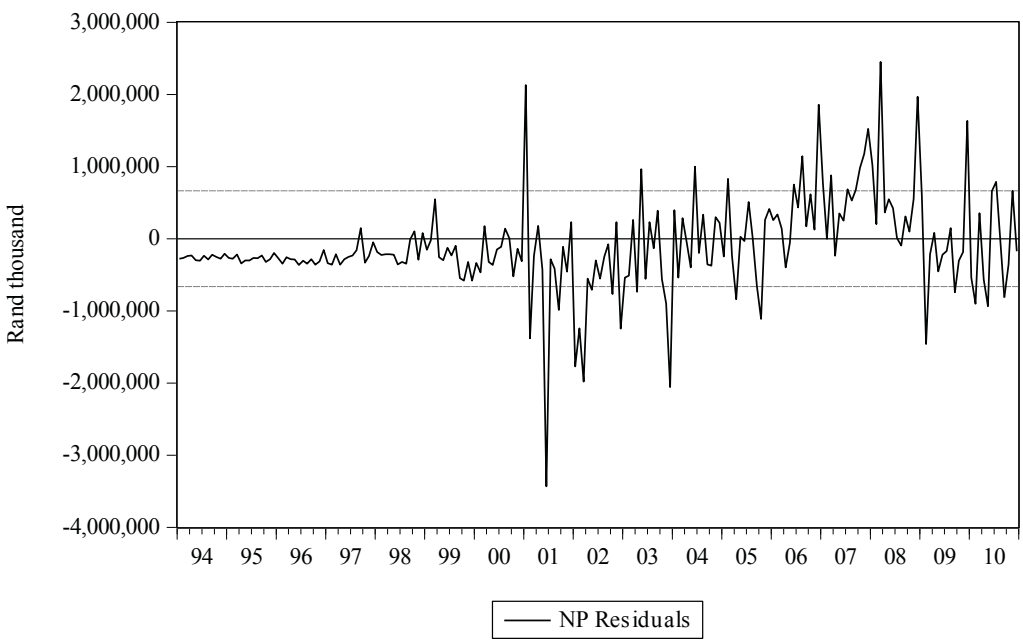
Data and some statistical considerations: Profit analysis

The Bank Supervision Department of the South African Reserve Bank (SARB) collects certain data on a monthly basis from all banks registered or licensed with the Department. In 2010 there were 17 banks, two mutual banks, 13 branches of international banks and 41 representative offices registered or licensed with the Department (Bank Supervision Department of the SARB, 2011:82). Monthly income statement data, collated for all banks, are available on their website. From 1994 to December 2007 the income statement was known as the DI 200 return, and

from January 2008 it was known as the BA 120 return. This date coincided with the introduction of the Basel II Capital Accord in South Africa.

The content of the DI 200 return and the BA 120 return are not identical, but the item "net profit after tax" (NP_t) appears in both these reports and, after consideration of the sequence and the content of the reports, the meaning of this term is deemed to be reasonably equivalent in both reports.

The augmented Dickey-Fuller test (Dickey & Fuller, 1979) indicates that the NP_t time-series is not stationary, but possibly trend stationary. A simple time trend and exponential time trend were fitted to the data and it was found that an exponential time trend fitted NP_t better. An even better data fit (as measured by R^2 and the information criteria indicators) was obtained by replacing the time trend with nominal gross domestic product (GDP_t), also a non-stationary time-series obtained from the SARB. Econometric literature (Brooks, 2008) indicates that non-stationary data should not be used in a regression, unless a linear combination of the variables is stationary. The implication of co-integration is that the two variables are bound by some relationship in the long run (Brooks, 2008:336). The Engle-Granger and Phillips-Ouliaris residual-based tests for co-integration both indicate co-integration; NP_t and GDP_t move together.



Note: The data sample represents monthly observations from January 1994 to December 2010. NP_t is net profit after tax combined for all banks in the South African system. GDP_t is nominal gross domestic product for South Africa.

Figure 1: Stationary residuals obtained by regressing NP_t on GDP_t

A stationary series was obtained by combining NP_t and GDP_t. The residual series shown in Figure 1 above reveals that for the period immediately before the financial crisis, NP_t was, on average, above the level predicted by its relationship with GDP_t (first large oval in Figure 1).[5] For the period following the start of the financial crisis, NP_t was, on average, slightly lower than the level predicted by its relationship with GDP_t (second large oval in Figure 1). The points indicated by small ovals are all December data points. The ovals in Figure 1 represent where dummy variables will be utilised in the final regressions. The up spike in 2001 is because of mark-to-market adjustments from the banking book entering profit in January 2001. This is possibly due to the adoption of the local equivalent of IAS 39 on that date. Harder to explain is the down spike in June 2001 which was of a similar absolute size to the up spike; this was due to negative mark-to-market adjustments from the banking book entering profit. The possibility that these extreme movements might have unduly influenced the results of the profit analysis was tested in the robustness checks done on the profit analysis.

In addition to NP_t and GDP_t, a time-series for mark-to-market gains or losses, included in NP_t, was obtained from the DI 200 returns before January 2008. From 1994 to December 2000, the mark-to-market entry was the total for the banking book and the trading book combined. From January 2001 to December 2007, it was possible to split the mark-to-market entry between a banking book portion and a trading book portion. From January 2008, only a FVA gain or loss on the banking book was available. At that time, all FVA gains or losses on the trading book were combined with realised gains or losses on the trading book as the bank regulator assumed these to be closely equivalent (Bakoro, De Jager & Parsons, 2013). The following two mark-to-market time-series ($M2M1_t$ and $M2M2_t$) were built. The first of these, $M2M1_t$, is the combination of the following: (1) 1994 to 2000, the total mark-to-market entries; (2) 2001 to 2007, the banking book mark-to-market entries; and (3) for 2008 onwards, the fair value entries from the banking book. The second of these, $M2M2_t$, is the combination of the following: (4) 1994 to 2000, the total mark-to-market entries; (5) 2001 to 2007, the combined banking *and trading book* mark-to-market entries; and (6) for 2008 onwards, the fair value entries from the banking book. The only difference is thus in 2001 to 2007. Both $M2M1_t$ and $M2M2_t$ were found to be stationary.

The regression explaining NP_t (table 6) is based on the observations from January 2001 to December 2010 only, owing to the unavailability of mark-to-market/fair value entries from the banking book as explained above, and the frequent changes in South African accounting standards during the late 1990s, with the South African

version of IAS 39 being implemented with effect from January 2001. Descriptive statistics for the profit analysis follow in Table 3.

Table 3: Descriptive statistics of the variables included in the profit analysis

Unadjusted for outliers					
Variable	**Mean**	**Median**	**Std. deviation**	**Minimum**	**Maximum**
NP_t	1727461	1774856	1115036	-2424046	4610448
GDP_t	146400	137522	45007	80841	234498
$M2M1_t$	103705	144582	623516	-2094497	3842738
$M2M2_t$	138491	116278	1050894	-2569457	4453024
95% Winsorised					
Variable	**Mean**	**Median**	**Std. deviation**	**Minimum**	**Maximum**
NP_t	1728438	1774856	1033362	-707186	3718659
$M2M1_t$	80612	144582	436714	-1229786	882181
$M2M2_t$	120295	116278	937604	-1817987	2735176

Note: The data sample represents 120 months of observations from January 2001 to December 2010. NP_t is the monthly net profit after tax of all the banks in South Africa combined. GDP_t is the monthly nominal GDP figure of South Africa. $M2M1_t$ is the monthly mark-to-market/FVA entries through profit and loss from the banking book. $M2M2_t$ is $M2M1_t$ + the monthly mark-to-market entries through profit and loss from the trading book for the period January 2001 to December 2007. NP_t and the $M2M_ts$ have been winsorised at 95% in the bottom half of the table because of the presence of large outliers.

Single equation co-integrating regression: profit analysis

The co-integrating relationship between *NP* and *GDP* implies that a long-run relationship exists between these two variables. The interaction between the financial and the real sectors of the economy is often procyclical (positive feedback mechanisms) (Bank for International Settlements, 2008). Because of this, one would expect *NP* to overshoot its long-run relationship with *GDP* during the economic upswing and to undershoot during the downturn because of the natural procyclical nature of bank lending (Kusano, 2011:6); FVA is not required to play any part in this overshooting or undershooting. This total overshooting or undershooting will be quantified by using three period dummies. A dummy variable (*DUMMY1)* will be used for the period January 2001 to June 2004, which helps one understand the base case in which the economy is not in a strong upswing. The next dummy variable (*DUMMY2)* will be for the period July 2004 to September 2008 to signify a period when the economy was in a strong upswing, with FVA under IFRS fully implemented and the South African banks actively securitising assets. The final period dummy variable (*DUMMY3*) will be for the period that started in September

2008 with the collapse of Lehman Brothers and the world economy entering a state of shock.

In order to examine the effect of mark-to-market/FVA on the overshooting/undershooting of *NP*, the coefficients of the period dummies, before *M2M* is added to the regression, can be compared to the coefficients of the period dummies after *M2M* was added to the regression. If the coefficients of the overshooting/undershooting dummies are found to change materially, then the effect of *M2M* was to influence the average level of the overshooting/undershooting. A major advantage of this test is that it allows for derivative profits/losses in the trading book to hedge movements in other parts of the banks as *NP* is the final profit figure after any losses or profits have been cancelled out by counter-derivative movements. *M2M* can only have explanatory power for *NP* if no cancellation occurred.

Next, the results for the dividend analysis will be presented and discussed. The results for the profit analysis will then be presented and explained.

Results and discussion

Dividend analysis

The following initial model was fitted to the data:

$$\Delta DIV_{it} = \alpha_0 + \alpha_1 DIV_{it-1} + \alpha_2 PROFITBFPROXY?_{it} + \alpha_3 PROFITBFPROXY?_{it-1} + \alpha_4 PROXY?_{it} + \alpha_5 CONTROLS_{it} + \varepsilon_{it}, \quad (1)$$

where i and t represent banks and years. ΔDIV_{it} is the change in dividends. $\alpha_1 DIV_{it-1}$ is the dividend in the previous year. $PROFITBFPROXY?_{it}$ and $PROFITBFPROXY?_{it-1}$ are the current year and the previous year net profit after tax before the proxy variables. $PROXY?_{it}$ represents one of three possible proxies for the Goncharov and Van Triest (2011) FVA gain in profits presented in Table 1. When presenting the results for model (1), only the results for the model with the best fitting proxy variable (of the three possible proxies) will be presented (based on R-squared). $CONTROLS_{it}$ represents the Goncharov and Van Triest (2011) control variables in Table 1. This initial model is a pooled model without fixed effects.

Cross-sectional and period fixed effects were tested for and found to be valid for model (2). These test results are available in the appendix. Fixed effects were implemented in models (2) to (7).

$$\Delta DIV_{it} = \alpha_0 + \alpha_1 DIV_{it-1} + \alpha_2 PROFITBFPROXY1_{it} + \alpha_3 PROFITBFPROXY1_{it-1} + \alpha_4 PROXY1_{it} + \alpha_5 CONTROLS_{it} + \mu_i + \alpha_t + \varepsilon_{it}, \quad (2)$$

Changing to $PROXY2_{it}$ from $PROXY1_{it}$ gives the following model:

$$\Delta DIV_{it} = \alpha_0 + \alpha_1 DIV_{it-1} + \alpha_2 PROFITBFPROXY2_{it} + \alpha_3 PROFITBFPROXY2_{it-1} + \alpha_4 PROXY2_{it} + \alpha_5 CONTROLS_{it} + \mu_i + \lambda_t + \varepsilon_{it}, \quad (3)$$

Changing to $PROXY3_{it}$ from $PROXY2_{it}$ gives the following model:

$$\Delta DIV_{it} = \alpha_0 + \alpha_1 DIV_{it-1} + \alpha_2 PROFITBFPROXY3_{it} + \alpha_3 PROFITBFPROXY3_{it-1} + \alpha_4 PROXY3_{it} + \alpha_5 CONTROLS_{it} + \mu_i + \lambda_t + \varepsilon_{it}, \quad (4)$$

According to Table 2, outliers seem not to be a major issue for the dividend analysis. Nevertheless model (5) is model (2) with trimmed observations, model (6) is model (3) with trimmed observations and model (7) is model (4) with trimmed observations. The results are presented in Table 4.

Consistent with the Lintner framework and the findings of the Goncharov and Van Triest (2011:60) study, the results consistently indicate a negative coefficient on lagged dividends and positive coefficients on income with statistical significance. Lagged income is mostly negative and not significant, unlike what was found in Goncharov and Van Triest's (2011:60) study. In contrast to the findings of Goncharov and Van Triest (2011:59), who reported a negative association between fair value adjustments and the change in dividends, no significant negative relationships between the proxy variables and the change in dividends were evident For models (2) to (7), in four out of six times, slightly significant positive coefficients for the dummy variables were found. The control variables were mostly insignificant, especially in the models with fixed effects. Statistical tests indicated that model (1) suffers from heteroscedasticity and that period and cross-sectional fixed effects are more appropriate. Coefficient estimates from (1) are thus unreliable.

The results from models (2) to (7) indicate that the change in dividend of a specific large bank can be explained by the following five factors: firstly, the bank declaring the dividend, secondly, the immediate preceding dividend, and thirdly, the current and previous profitability of the bank. The fourth factor is the specific year in which the dividend was declared and this can be interpreted as arising from competitive pressure; after all, if the bank peer group was declaring large dividends, then the individual banks would tend to conform. The final factor, in some cases, is the proxy for transitory FVA adjustments of the bank; FVA adjustments increase the change in dividends.

Model (3) for the untrimmed models and model (6) for the trimmed models had the best model fit as measured by R-squared. As representatives of models (2) to (7),the residuals of these two models were tested for serial correlation and heteroscedasticity within each cross-section; neither of these was found to be present. The LM test for serial correlation given fixed effects has a value of 0.83 for model (3) and a value of 0.95 for model (6); the 95% critical value is 1.96. The null hypothesis of no serial

Table 4: Regression results of bank dividend models (1) to (7)

	Not winsorised observations				95% winsorised observations		
Regressor	**Model (1)**	**Model (2)**	**Model (3)**	**Model (4)**	**Model (5)**	**Model (6)**	**Model (7)**
DIVit-1	-0.6078*** (-4.64)	-0.7342*** (-6.15)	-0.7900*** (-5.98)	-0.7904*** (-6.19)	-0.8276*** (-6.68)	-0.8332*** (-6.57)	-0.8388*** (-6.94)
NPBFPROXY?it	0.0496* (1.92)	0.0477** (2.06)	0.0465* (1.83)	0.0478* (1.77)	0.06322** (2.13)	0.0634** (2.10)	0.0747** (2.25)
NPBFPROXY?it-1	-0.0174** (-2.51)	-0.0091* (-1.70)	-0.0179** (-2.04)	0.0086 (1.17)	-0.0130 (-1.32)	-0.0196** (-2.08)	-0.0011 (-0.08)
PROXY1it	NA	0.0413* (1.69)	NA	NA	0.0596* (1.93)	NA	NA
PROXY2it	0.0272 (1.09)	NA	0.0340 (1.31)	NA	NA	0.0519* (1.71)	NA
PROXY3it	NA	NA	NA	0.0354 (1.42)	NA	NA	0.0515* (1.69)
SIZEit	0.0046*** (3.24)	0.0037 (-1.23)	-0.0021 (-0.83)	-0.0034 (-1.32)	0.0044 (-1.65)	-0.0020 (-0.87)	-0.0032 (-1.35)
LEVit	0.0436 (0.73)	-0.0430 (-0.70)	-0.0838 (-1.20)	-0.0410 (-0.63)	-0.0435 (-0.67)	-0.0847 (-1.17)	-0.0471 (-0.67)
GROWTHit	0.0006 (0.96)	0.0017* (1.88)	0.0015* (1.72)	0.0013 (1.47)	0.0064 (1.13)	0.0051 (0.91	0.0071 (1.21)
c	-0.1125* (-1.92)	0.1324* (1.72)	0.1428* (1.73)	0.1248 (1.54)	0.1493** (2.10)	0.1421* (1.75)	0.1251 (1.52)
Fixed effects	No	Yes (cross-sectional and period)	Yes (cross-sectional and period)	Yes (cross-sectional and period)	Yes (cross-sectional and period)	Yes (cross-sectional and period)	Yes (cross-sectional and period)
White diagonal standard errors and covariance (d.f. corrected)							
N	80	80	80	80	80	80	80
R-sq	0.4579	0.6686	0.6804	0.6617	0.6852	0.7024	0.6830
adj. R-sq	0.4051	0.5060	0.5236	0.4958	0.5308	0.5565	0.5274

Note: Change in dividends (ΔDIV_{it}) is the regressand. The data sample consists of 16 annual observations from 1994 to 2010 for the five largest South African banks. Fundamental data supplier BFA McGreggor was the source of the data. DIV_{it-1} is dividends in year *t-1* for bank *i*. $NPBFPROXY1_{it}$ is net profit after tax in year *t* for bank *i* before $PROXY1_{it}$. $NPBFPROXY1_{it-1}$ is net profit after tax in year *t-1* for bank *i* before $PROXY1_{it-1}$. $NPBFPROXY2_{it}$ is net profit after tax in year *t* for bank *i* before $PROXY2_{it}$. $NPBFPROXY2_{it-1}$ is net profit after tax in year *t-1* for bank *i* before $PROXY2_{it-1}$. $NPBFPROXY3_{it}$ is net profit after tax in year *t* for bank *i* before $PROXY3_{it}$. $NPBFPROXY3_{it-1}$ is net profit after tax in year *t-1* for bank *i* before $PROXY3_{it-1}$. $PROXY1_{it}$ is the difference between net profit after tax and a broad measure of cash generated from operations in year *t* for bank *i*. $PROXY2_{it}$ is the difference between net profit after tax and a narrow measure of cash generated from operations in year *t* for bank *i*. $PROXY3_{it}$ is the total of extraordinary items including mark-to-market values identified by BFA McGreggor in year *t* for bank *i*. All of these preceding variables have been deflated for size by using the average market capitalisation. $SIZE_{it}$ is the natural logarithm of total assets in year *t* for bank *i*. LEV_{it} is financial leverage defined as the ratio of total debt to total assets in year *t* for bank *i*. $GROWTH_{it}$ is the percentage change in total assets in year *t* for bank *i*. In the second half of the table a winsorisation of 95% has been applied to all the variables.

*,**,***, significant at the threshold of 10%, 5% and 1%, respectively (t-test). T-values are shown in parentheses.

correlation cannot be rejected. The LM statistic of the test for heteroscedasticity has a value of 19.614 for model (3) and a value of 19.337 for model (6), less than the 5% critical value of 106.395 (Chi-square (N-1) distributed) and the null hypothesis of homoscedasticity cannot be rejected. Robust standard errors and covariance clustered across the cross-sections are thus not strictly necessary (Thompson, 2011:6).

Thompson (2011) wrote a paper describing a method for computing standard errors that are robust to correlation along two dimensions, as is often found in corporate finance data. Thomson (2011:4) reminds readers that double-clustering comes at a cost of incorrect statistical inference if the error structure does not support the double-clustering choice. He shows that if a panel is unbalanced (in this case it is with 16 years and only five companies) it is more important to cluster along the dimension with fewer observations, and double-clustering is unnecessary. However, in this instance, the errors showed no serial correlation and heteroscedasticity within each cross-section and clustering across cross-sections is also unnecessary. To maintain comparability and to make the conclusions more conservative, we thus used White diagonal standard errors and covariance across all the panel data models because it is robust to observation-specific heteroscedasticity in the disturbances. The residuals of models (3) and (6) are available in the appendix.

It is of course possible that behaviour might have changed over the course of the 16 years in the panel. The following robustness check was performed: Significant changes occurred during the period 1994 to 2010 in accounting and banking regulations and the dividend analysis results were thus tested for stability by splitting the sample in two and testing for the period 2001 to 2010 for models (3) and (6) (the best fitting models). In the case of model (3), fit improved from adjusted R-squared of 0.5236 to 0.5412. The significant regressors remained the same as well as the signs on their coefficients, except for the growth control variable that was no longer significant. What did not change was that the proxy variable remained insignificant with a positive coefficient. In the case of model (6), the fit improved from adjusted R-squared of 0.5595 to 0.5986. The significant regressors remained the same as well as the signs on their coefficients, except for the proxy variable, which was no longer significant. It seems as if the mixed result across the panel for the proxy variables is not valid for the period 2001 to 2010.

The findings in this paper up to this point only served to illustrate a contrast with the results of Goncharov and Van Triest's (2011) study; the FVA adjustment items in this paper do not have statistically significant negative coefficients. This evidence does not imply that the South African banks were paying dividends from FVA profits as the profit measures used in models (1) to (7) excluded the proxies for FVA gains and the proxies for the FVA gains were not statistically significant – hence there was nothing in the results of the regression models to indicate that FVA gains were

increasing dividend payments. If the South African banks were using total profit, including FVA gains, when they determined their annual dividends, then the models above could be improved by replacing profit before FVA gains with profit after FVA gains. By replacing the $NPBFPROXY?_{it}$ and $NPBFPROXY?_{it-1}$ variables with NP_{it} and NP_{it-1} in all the models, the results shown in Table 5 are obtained, where ΔDIV_{it} could be influenced by profit after tax inclusive of FVA gains.

Model fit has improved in all the models and the most for the untrimmed models compared to Table 4. The average improvement in adjusted R-squared for these three models was 11.03%. The untrimmed models now fit the data better than the trimmed models. When comparing the coefficients of the untrimmed models above with the coefficients of the untrimmed models in Table 4 the following is evident: In all three models, the coefficient on the current year profit variable has increased and has become more statistically significant. Readers are reminded that the profit variables are now larger than they were in Table 4, but the coefficients have increased. All else being equal, if profit excluding FVA gains was used to justify dividend changes, then the coefficients should have decreased. The coefficients of the lagged profit variables are now all positive and significant as in Goncharov and Van Triest's (2011:60) study. The coefficients of all three proxy variables are now rounded equal to zero and statistically insignificant. The change in dividends is better explained by total profit levels rather than profit levels before the proxy variables, one of which was the total of extraordinary gains included in profit. Hence South African banks are using profit levels inclusive of FVA gains to justify increased dividend payouts.

The dividend results were presented to representatives of the banks involved in the study, their auditors and bank supervisors at a meeting of the Banking Project Group at the South African Institute of Chartered Accountants in Johannesburg on 21 July 2010. In reaction to the conclusion that banks ignore the unrealised and possibly transitory nature of some of their profits when they determine their dividend payouts, the bank representatives responded by agreeing with that conclusion, but with the proviso that they believe the effect to be immaterial. The question whether FVA impacts bank profits materially is the topic of the profit analysis that follows.

Profit analysis

The following model was fitted to the data:

$$NP_t = \alpha_0 GDP_t + \alpha_1 DUMMY1_t + \alpha_2 DUMMY2_t + \alpha_3 DUMMY3_t + REPORTING_t + \varepsilon_t \qquad (8)$$

Table 5: Regression results of bank dividend models (1) to (7) with the $NPBFPROXY?_{it}$ and $NPBFPROXY?_{it-1}$ variables replaced by NP_{it} and NP_{it-1}

	Not winsorised observations				95% winsorised observations		
Regressor	**Model (1)**	**Model (2)**	**Model (3)**	**Model (4)**	**Model (5)**	**Model (6)**	**Model (7)**
DIV_{it-1}	-0.6400*** (-5.02)	-0.9327*** (-7.49)	-0.9282*** (-7.12)	-0.9187*** (-7.04)	-0.9929*** (-6.34)	-0.9667*** (-6.16)	-0.9504*** (-6.35)
NP_{it}	0.0442** (2.20)	0.0467**(2.62)	0.0498** (2.65)	0.0568*** (2.90)	0.0535** (2.01)	0.0561** (2.09)	0.0691** (2.37)
NP_{it-1}	0.00448* (1.93)	0.0687***(4.26)	0.0684*** (4.03)	0.06626*** (3.83)	0.0607** (2.38)	0.0601** (2.61)	0.0463** (1.99)
$PROXY1_{it}$	-0.0107** (-2.28)	0.0000 (1.05)	NA	NA	0.0071 (0.92)	NA	NA
$PROXY2_{it}$	NA	NA	0.0000 (0.22)	NA	NA	0.0059 (0.96)	NA
$PROXY3_{it}$	NA	NA	NA	-0.0072 (-0.79)	NA	NA	-0.0151 (-1.00)
$SIZE_{it}$	0.0043*** (3.03)	-0.0059** (-2.38)	-0.0063** (-2.46)	-0.0062** (2.56)	-0.0064** (-2.31)	-0.0055** (-2.33)	-0.0047* (-1.97)
LEV_{it}	0.1194** (2.28)	-0.0075 (-0.12)	-0057 (-0.09)	0.0013 (0.02)	-0.0253 (-0.39)	0.0172 (-0.24)	-0.0280 (-0.39)
$GROWTH_{it}$	0.0007 (1.43)	0.0018** (2.34)	0.0015** (2.52)	0.0020** (2.56)	0.0078 (1.38)	0.0089 (1.54)	0.0095 (1.63)
c	-0.1847*** (-3.14)	0.1411* (1.70)	0.1467* (1.78)	0.1381 (1.60)	0.1691** (2.04)	0.1435* (1.73)	0.1368 (1.53)
Fixed effects	No	Yes (cross-sectional and period)	Yes (cross-sectional and period)	Yes (cross-sectional and period)	Yes (cross-sectional and period)	Yes (cross-sectional and period)	Yes (cross-sectional and period)
White diagonal standard errors and covariance (d.f. corrected)							
N	80	80	80	80	80	80	80
R-sq	0.4935	0.7468	0.7419	0.7441	0.7055	0.7044	0.7067
adj. R-sq	0.4443	0.6226	0.6152	0.6186	0.5610	0.5595	0.5629

Note: Change in dividends (ΔDIV_{it}) is the regressand. The data sample consists of 16 annual observations from 1994 to 2010 for the five largest South African banks. Fundamental data supplier BFA McGreggor was the source of the data. DIV_{it-1} is dividends in year *t-1* for bank *i*. NP_{it} is net profit after tax in year *t* for bank i_{it}. NP_{it-1} is net profit after tax in year *t-1* for bank *i*. $PROXY1_{it}$ is the difference between net profit after tax and a broad measure of cash generated from operations in year *t* for bank *i*. $PROXY2_{it}$ is the difference between net profit after tax and a narrow measure of cash generated from operations in year *t* for bank *i*. $PROXY3_{it}$ is the total of extraordinary items including mark-to-market values identified by BFA McGreggor in year *t* for bank *i*. All of these preceding variables have been deflated for size by using the average market capitalisation. $SIZE_{it}$ is the natural logarithm of total assets in year *t* for bank *i*. LEV_{it} is financial leverage defined as the ratio of total debt to total assets in year *t* for bank *i*. $GROWTH_{it}$ is the percentage change in total assets in year *t* for bank *i*. In the second half of the table, a winsorisation of 95% has been applied to all the variables.

*,**,***, significant at the threshold of 10%, 5% and 1%, respectively (t-test). T-values are shown in parentheses.

where t represents months and $REPORTING_t$ represents a dummy variable indicating financial year-end months.[6] In the next model, $M2M1_t$ was added.

$$NP_t = \alpha_0 GDP_t + \alpha_1 DUMMY1_t + \alpha_2 DUMMY2_t + \alpha_3 DUMMY3_t + REPORTING_t + M2M1_t + \varepsilon_t \quad (9)$$

Table 6: Reports of the regression results for the total bank profits (NP_t) models (8) to (11)

	Not winsorised observations		95% winsorised observations	
Regressor	**Model (8) – excluding M2M1$_t$**	**Model (9) – including M2M1$_t$**	**Model (10) – excluding M2M1$_t$**	**Model (11) – including M2M1$_t$**
GDP_t	21.6578*** (6.07)	19.9274*** (6.14)	20.6331*** (6.76)	18.9418*** (6.12)
$DUMMY1_t$	-1391651*** (-3.78)	-1270649*** (-3.53)	-1244439*** (-3.59)	-1104219*** (-3.22)
$DUMMY2_t$	-1222375** (-2.21)	-1005551** (-2.09)	-1075174**(-2.30)	-871963* (-1.88)
$DUMMY3_t$	-2184408*** (-2.89)	-1838761*** (-2.71)	-1988642*** (-3.08)	-1650989** (-2.55)
$REPORTING_t$	1645599*** (4.62)	1514520*** (9.60)	1431475*** (9.81)	1311466*** (12.61)
$M2M1_t$	NA	0.4413** (2.05)	NA	0.4984*** (2.98)
N	120	120	120	120
R-sq	0.628	0.6867	0.6521	0.6948
adj. R-sq	0.6151	0.6729	0.6400	0.6815
% increase in $DUMMY1_t$		9%		11%
% increase in $DUMMY2_t$		18%		19%
% increase in $DUMMY3_t$		16%		17%
% decrease in $REPORTING_t$		8%		8%

Note: The data sample represents 120 months of observations from January 2001 to December 2010. The regressand is NP_t–the monthly net profit after tax of all the banks in South Africa combined. GDP_t is the monthly nominal GDP figure of South Africa. $DUMMY1_t$ is a dummy variable for the period January 2001 to June 2004. $DUMMY2_t$ is a dummy variable for the period July 2004 to September 2008. $DUMMY3_t$ is a dummy variable for the period October 2008 to December 2010. $REPORTING_t$ represents a dummy variable indicating financial year-end months. $M2M1_t$ is the monthly mark-to-market/FVA entries through profit and loss from the banking book. Model (3) is model (1) with trimmed outliers. Model (4) is model (2) with trimmed outliers. Trimmed samples pulled in observations beyond the 2.5th and 97.5th percentiles. The percentage increase on the $DUMMY_t$ variables is the increase in the coefficient on the $DUMMY_t$ variables divided by the coefficient on the $DUMMY_t$ variables before $M2M1_t$ was added to model (1) or model (3).

*,**,***, significant at the threshold of 10%, 5% and 1%, respectively (t-test). T-values are shown in parentheses.

The results for model (8) indicate that the dummy variables introduced in equation (8) for the period of overshooting/undershooting and for the upward adjustment of financial year-end profits around the financial crisis, were successful in capturing some of the variation in the relationship between bank sector net profit and nominal GDP. Results relating to the first of the two research questions posed in the introduction (about profits) are obtained when $M2M1_t$ is added to the equation.

Model fit improves materially and the coefficient on $M2M1_t$ is highly significant with the interpretation that $M2M1_t$ specifically helps to explain the volatility evident in the NP_t series.

The introduction of mark-to-market/fair value entries from the banking book helps to explain the level of bank profit earned during the period; note that the coefficient is less than one because not all of the *before-tax* $M2M1_t$ series ends up in the *after-tax* NP_t series. The introduction of $M2M1_t$ also reduces the coefficient on GDP_t slightly and changes the dummy coefficients by various amounts. The percentage changes to the dummy coefficients are presented at the bottom of Table 6 and can be interpreted as follows: The introduction of mark-to-market/fair value entries from the banking book to the model leads to an increase in average profit levels across all periods and the increase during the overshooting period just before the financial crisis ($DUMMY2_t$) is materially more than the increase during the preceding period. The impact on the undershooting period ($DUMMY3_t$) is to make the extent of the undershooting less extreme[7] and the impact on the financial year-end dummy variable ($REPORTING_t$) is to lessen the need to increase profits at year-end by other means. These results are consistent with the view that bankers use mark-to-market/fair value entries to increase average profit levels where possible and resist decreases in average profit levels where possible (this is similar to the way in which Enron managers used mark-to-market – Gwilliam & Jackson, 2008:265) Moreover, it is consistent with the view that bankers use mark-to-market/fair value entries to facilitate hitting the "right" profit level at year-end.

Winsorised samples were used in models (10) and (11) because of the presence of outliers in the data. The results were slightly stronger (better fit) and proved robust. The residuals from equation (11) were analysed for serial correlation and heteroscedasticity. The Breusch-Godfrey serial correlation LM test returned probabilities (0.4145; 0.3921), which implied that the residuals were not serially correlated. The White heteroscedasticity test returned probabilities (0.0003; 0.0011; 0.0000), which implied that the residuals were heteroscedastic. White heteroscedastic-consistent standard errors and covariance were thus used for all models in Table 6, as suggested in econometrics texts (Brooks, 2008:152; Gujarati, 2003: 418). The residuals of model (11) are available in the appendix.

A robustness check was done by using the alternative $M2M_t$ time-series, $M2M2_t$. As noted in section 4.3 above, the difference is that $M2M2_t$, for the period January 2001 to December 2007, contained the sum of mark-to-market entries from the trading book and mark-to-market entries from the banking book, whereas during this period, $M2M1_t$ only contained mark-to-market entries from the banking book. Model fit declined from model (11)'s adjusted R-squared of 0.6815 to 0.6483 and the

coefficient on $M2M2_t$ was not significant (p-value of 0.1924). An interpretation is that the mark-to-market entries from the trading book add little to the volatility of total bank profit because these mostly hedge volatility found elsewhere in the bank. Mark-to-market/fair value entries from the banking book add volatility to net profit and are not hedged away.

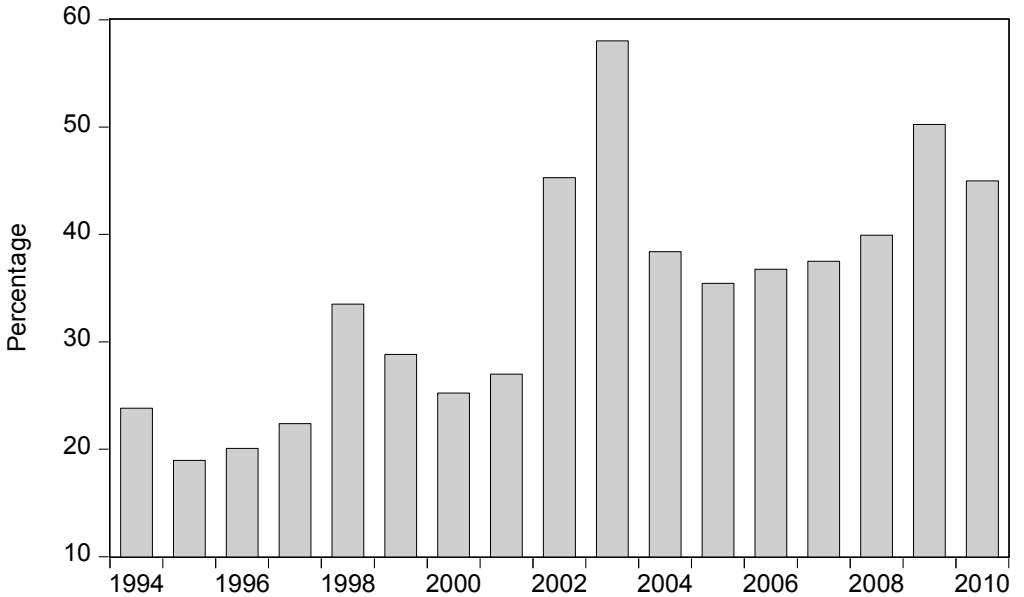
The findings indicate that mark-to-market/FVA entries from the banking book influence net profit of the South African banking sector materially. The resultant estimate of the transitory component of net profit after tax for the five largest South African banks for the years 2004 to 2008 is $0.19/0.9^8=0.21$.

Figure 2 shows that the large South African banks had been paying out increasing portions of profit after tax as dividends over the period 1994 to 2010. All else being equal, one might expect that during the boom years (2004 to 2008) a lesser portion of profits would have been paid out as some of those profits were shown to be transitory in the profit analysis (21%).

General discussion

The dividend analysis showed that South African banks ignore transitory FVA gains when determining dividends, but those gains might be immaterial. The profit analysis showed that FVA gains from the banking book, especially for the period 2004 to 2008, with an estimated increase of 21%, materially raised profit levels. If the South African banks had ignored these transitory elements of earnings when determining dividends, then, all else being equal, the proportion of profit paid out in the period 2004 until 2008 would have decreased. Figure 2 shows an increase.

An issue in the profit analysis that warrants discussion, the finding that FVA led to less extreme undershooting (the impact on $DUMMY3_t$) is initially counter intuitive in the sense that FVA might be expected to amplify, more or less equally, both the upside and the downside of the cycle (procyclicality). These results thus warrant an explanation. First, the impact on the undershooting dummy is smaller than that on the overshooting dummy. Second, banks have "shock absorbers" available to them in the FVA rules to avoid these write-downs; they can argue that market prices are not correct and move to mark-to-model values and/or reclassify items held at "fair value" to "held at cost". This process was facilitated from October 2008, when accounting standards were changed to allow for the reclassification of financial instruments from "carried at fair value" to "carried at cost". Bischof, Brüggemann and Daske (2010) and Fiechter and Meyer (2011) found that banks made ample use of these opportunities. Third, realised FVA losses that would have materialised when banks sold FVA assets would not have been captured in the FVA income statement line.



Note: The period emphasised is the period covered by $DUMMY2_t$ in the profit regression that indicated that FVA entries from the banking book increased bank profit levels by 21%; all else being equal, a decreasing percentage of profit available for distribution paid out as a dividend would have been more appropriate.

Figure 2: The percentage of total bank profit available for distribution paid out as a dividend (combined totals for the sample of 5 banks)

Final models for both the profit analysis and the dividend analysis fitted the data well as indicated by high R^2 values and statistical significance. Results also proved robust during robustness tests. The reader is reminded of the link between the profit analysis and the dividend analysis. Thus, even though the profit analysis used total South African banking system data and not individual bank data, the link with bank-specific dividend policy is that 90% of the South African banking system consists of the five banks covered by the dividend analysis. The finding that profit levels are increased by FVA during the business cycle upswing is thus directly relevant for the five banks in the dividend analysis where it was found that those banks, when setting their dividends, did not seem to take into consideration the fact that FVA gains might possibly only be transitory.

Possible caveats include the fact that the banks in the study are all large universal banks. It is conceivable that the effects noted were due to the systemically important nature of these banks and that smaller banks might be less inclined to distribute unrealised profits. In addition, most large South African companies have set up black empowerment schemes in which restricted shares were issued to previously

disadvantaged individuals. The schemes usually involved payment over time for these shares, with payment made from the dividends earned. Thus the decision to pay a large dividend can be influenced by the need to ensure that black economic empowerment shareholders are adequately funded.

These caveats do fade slightly when the following changes in the annual financial report of one of the banks in the study are considered: The change confirms the conclusion that South African banks ignore transitory FVA gains in profit when determining dividends. The following paragraph first appeared in the 2010 financial statements of the particular bank and should be seen in the context of the drive for sustainability following the financial crisis: "The total capital plan includes a dividend policy, which is set in order to ensure sustainable dividend cover based on sustainable normalised earnings. This also takes into account volatile earnings brought on by FVA …" (Firstrand Limited, 2012:134). Whereas Goncharov and Van Triest (2011:63) found that "… in all likelihood fair value adjustments lead to lower dividend pay-outs", the results in this paper indicate that in all likelihood, fair value adjustments for banks lead to higher dividend payouts.

The payment of dividends from unrealised FVA profits during the upswing would have weakened the actual capital position of the South African banks. Capital represented by liquid assets left the system as dividends to be replaced by risky capital gains on less liquid assets – effectively reducing the quality of capital.

Conclusion

Previous researchers have attempted to establish a link between FVA and the financial crisis by looking at the crisis period itself, only to find little indication of a link. This paper argues that the link is in fact to be found by looking at the period preceding the crisis.

What if transitory FVA gains increased profits during the boom and distributions were made from those transitory effects? That would imply a weaker financial system entering the crisis.

A Russian study that investigated this question could test directly for the distributionary consequences of unrealised FVA gains because of a unique Russian disclosure requirement. This paper could not test directly whether unrealised FVA gains are relevant when setting dividends because IFRS 7 does not require the disclosure of realised versus unrealised income statement items. Hence the conclusions of this study depend on three strands of evidence combined.

A panel data regression of the change in dividends of the five largest South African banks shows that unrealised FVA gains were probably ignored when these

banks made dividend decisions. This was also confirmed at a meeting of the Banking Project Group and from the financial statements of the banks following the crisis. The materiality of transitory FVA gains in profit was shown with a co-integrated regression of the monthly net profit of the total South African banking system; FVA entries from the banking book increased profits materially. The proportion of profits paid out as dividends showed that the banks did not decrease their dividends in response.

This example shows that when unrealised FVA gains are posted through profit and loss and end up in retained earnings, managers treat the new capital as risk free.

Endnotes

1. This paper was titled in response to the article by Gonharov and Van Triest (2011), "Do fair value adjustments influence dividend policy".
2. The terms used include "imaginary profits", "spurious profits" and "unreliable gains".
3. The data used in the dividend analysis and the profit analysis relate to different entities within the same banking group. The profit regressions use data from the registered banking entities in each banking group, while the dividend regressions use data from the listed entities in each banking group. In all instances, the banking entity in each group represents most of the activity within each listed entity. In 2010, the percentage of the listed banking group made up of the banking entity in that group ranged from 64% to 96% when measured by total shareholders' equity.
4. Winsorising is the transformation of statistics by limiting extreme values in the statistical data to reduce the effect of possible spurious outliers.
5. The use of dummies to capture the overshooting and undershooting of profits ignores the possibility that GDP_t itself was inflated prior to the global financial crisis, as can be seen in the following quotation from the *Financial Times*: "… GDP in 2007 was an illusion, wildly inflated by the debt bubble" (Melville, 2012). A plausible implication is that the dummies will underestimate the relationship.
6. Three of the four largest banks, representing more than 80% of the industry, have December year-ends with the remaining "big four" banks having a December interim reporting date. With the advent of the financial crisis and the downturn, it is to be expected that banks will try and report as positive a result as possible. For the period before the advent of the financial crisis, it can be argued that for remuneration and bonus considerations, banks also wanted to report as positive a result as possible. This dummy was symmetrically applied around September 2008 for two periods before and two periods after.
7. Less extreme undershooting might seem counter-intuitive. Empirical evidence shows that banks overvalued their financial assets during the crisis (Laux & Leuz, 2009:32; Huizinga & Laeven, 2009). See also the discussion section to follow.

8. The five largest South African banks represent about 90% of the South African bank market by assets and are the main users of FVA among the South African banks.

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Appendix

Additional evidence of statistical work done

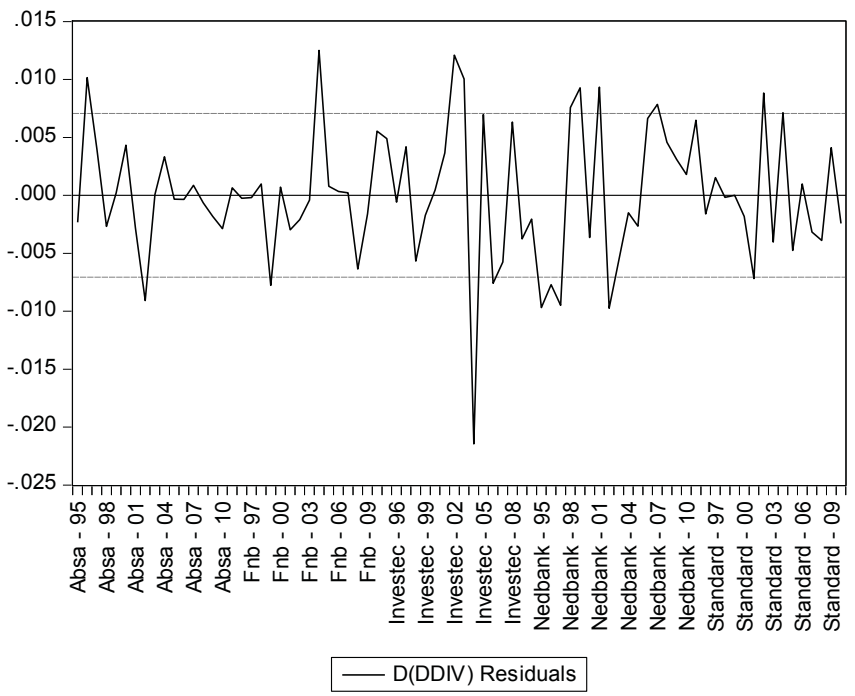
Redundant fixed effects tests

Equation: Untitled

Test cross-section and period fixed effects

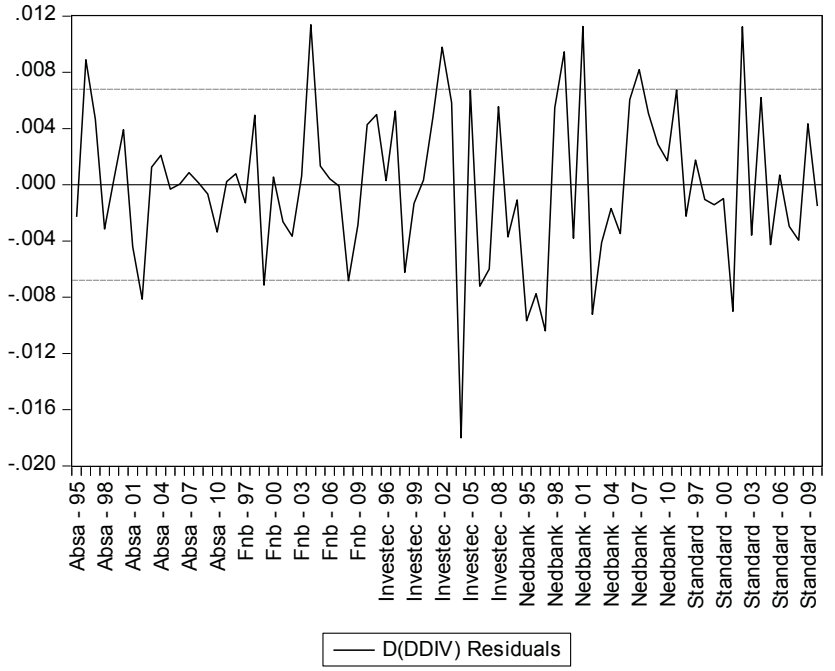
Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.870575	(4,53)	0.1293
Cross-section Chi-square	10.564708	4	0.0319
Period F	1.945666	(15,53)	0.0388
Period Chi-square	35.094454	15	0.0024
Cross-section/Period F	1.834715	(19,53)	0.0427
Cross-section/Period Chi-square	40.435844	19	0.0029

Appendix figure 1: Validity of fixed effects tests for model (2) of the dividend analysis.



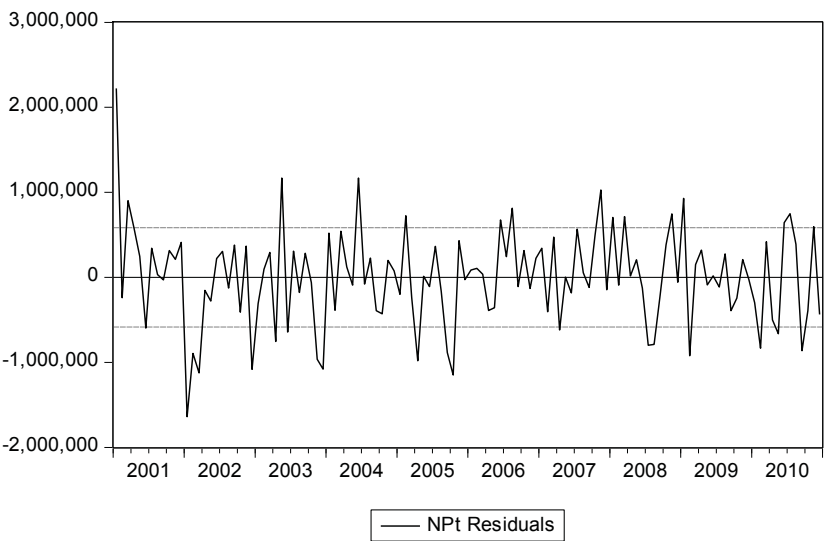
Note: Apart from the Investec (2004) outlier, the residuals seem to be reasonably well behaved with no obvious patterns visible

Appendix figure 2: The residuals of model (3) of the dividend analysis.



Note: Apart from a few outliers, the residuals seem to be reasonably well behaved with no obvious patterns visible.

Appendix figure 3: The residuals of model (6) of the dividend analysis



Note: Apart from a few outliers, the residuals seem to be reasonably well behaved with no obvious patterns visible.

Appendix figure 4: The residuals of model (11) of the profit analysis