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Are the loan loss and fair value components of bank income rationally priced?

by

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Abstract

This paper examines if the market rationally prices the loan loss provisions, and the fair value gains and losses of US banks. We also model the discretionary components of loan loss provisions and fair value gains and losses, and test if the discretionary components are priced differently from their non-discretionary counterparts. We find little evidence that the market misprices operating cash flows, non-discretionary loan loss provisions, or fair value gains and losses (discretionary or otherwise). However we do find evidence of significant mispricing of discretionary loan loss provisions. This evidence remains significant even after controlling for the fact that loan loss provisions are correlated with bank risk.

Keywords

Accruals, Discretionary loan provisions, Fair value gains and losses, Market efficiency

JEL classifications: G12, M41

1. Introduction

This paper examines if the market rationally prices the loan loss provision, and the fair value gain/loss components of reported bank net income. We also model the discretionary components of loan loss provisions and fair value gains and losses, and test if the discretionary components are priced differently from their non-discretionary counterparts.

The research is in the spirit of Sloan (1996) and Xie (2001). Sloan (1996) studies the market pricing of the accruals of industrial firms. Xie (2001) extends Sloan (1996) by partitioning the accruals of industrial firms into discretionary and non-discretionary components.

The main purpose of the present paper is to extend the work of Sloan and Xie to consider the market pricing of key components of the income statement of banks i.e. loan loss provisions and fair value gains and losses. We study loan loss provisions and fair value gains and losses because these two items explain most of the time series volatility in bank net income[1]. In addition fair value accounting and loan loss provisions are two of the most discussed topics in accounting for banks, especially since the recent credit crunch. Given the current very high level of interest in accounting for banks, we believe it is of interest to know whether, and in what respect, the market systematically misprices either of these items.

The paper is related to prior work that finds that the market reacts positively when banks increase their loan provisions (Wahlen, 1994; Beaver and Engel, 1996). These results were interpreted by the authors as a signalling story. High discretionary loan loss provisions were interpreted as the signalling of good news by bank managers. Under the assumption of an informationally efficient market this is the only interpretation of the results that makes any sense. However, another possibility, which we test in this paper, is that the positive reaction to high discretionary loan loss provisions is evidence of mispricing of such provisions. Our evidence supports the mispricing story over the signalling story.

Using the discretionary loan provision literature (Kanagaretnam et al., 2004; Ryan, 2007; Gebhardt & Novotny-Farkas, 2011) to derive the discretionary and non-discretionary loan provisions, we find that the discretionary loan provisions are less persistent than non-discretionary loan provisions and that the earnings persistence attributable to discretionary loan provisions is lower than that attributable to non-discretionary loan provisions.

In market efficiency tests and hedge portfolio tests (Kraft et al., 2007; Xie, 2001; Sloan, 1996), we find that the stock market over-weights loan provisions and in particular discretionary loan provisions. In hedge portfolio tests, investors can earn abnormal returns by taking long positions in banks with lower discretionary loan provisions and short positions in banks with higher discretionary loan provisions. This result is consistent with the discretionary accruals anomaly in Xie (2001).

We document the relationship between risk and discretionary loan provisions. The highest and lowest discretionary loan provision portfolios tend to be the most risky. Thus the discretionary loan provision anomaly occurs in the most risky bank portfolios. A trading

[1] In a regression of the time series standard deviation in bank net income against the time series standard deviation in loan provisions and the time series standard deviation in fair value gains and losses, the adjusted R squared is 51%.

strategy that buys the bank portfolio with the lowest discretionary loan provision and highest risk and sells the portfolio with the highest discretionary loan provision and lowest risk generates abnormal returns in excess of trading on either discretionary loan provision or risk alone. However, risk does not entirely explain the cross-sectional variation in returns to the high and low discretionary loan provisions based on various tests such as Khan (2008).

In addition to loan loss provisions we also consider the pricing of fair value gains and losses. We design a model to disaggregate discretionary fair value gains and losses and non-discretionary fair value gains and losses. Based on this model, we find that the discretionary fair value gains and losses are less persistent than non-discretionary fair value gains.

We then apply the stock market mispricing tests to discretionary and non-discretionary fair value gains and losses. In contrast to discretionary loan loss provisions we find little or no evidence that fair value gains and losses are mispriced.

The remaining sections are organized as follows. Section 2 reviews the literature pertinent to this study. We develop the hypotheses in section 3 and outline the research design in section 4. The empirical results are covered in section 5. Section 6 concludes.

2. Literature Review

The streams of literature relevant to this study straddle the accrual anomaly, loan provisions and fair value accounting.

2.1 Accrual anomaly

The seminal paper of Sloan (1996) reports evidence that rejects the null hypothesis that the market correctly prices accruals. In time series tests of the relative persistence of the cash flows and accruals components of earnings he finds that accruals are significantly less persistent than cash flows. He hypothesises that the market mispricing of accruals is due to the failure of market participants to take into account the lower persistence of accruals in their earnings forecasts. His empirical evidence of accruals mispricing is strongly supportive of this hypothesis. We extend the research in Sloan (1996) to examine if the market rationally prices loan loss provisions and fair value gains and losses in banks.

Since the publication of Sloan (1996) a number of papers have questioned Sloan's interpretation of his results. One stream of literature argues that the accrual anomaly arises due to inadequate controls for risk. The literature that supports the risk argument include Khan (2008) and Wu et al. (2010). Khan (2008) reports that risk measured using a four-factor model based on the Intertemporal Capital Asset Pricing Model explains a substantial portion of the differences in returns between high and low accrual firms. Wu et al. (2010) hypothesise based on q-theory that firms adjust their working capital investments (i.e. accruals) in response to discount rate changes and that this firm behaviour is an important driver of the accrual anomaly. They provide evidence to support their hypothesis but they provide only a partial explanation of the accrual anomaly. They state that they do not intend to refute Sloan's earnings fixation hypothesis but only to provide another plausible explanation for the accrual anomaly. We apply the mimicking portfolio methodology in Khan (2008) to our bank setting and find that the cross sectional variations in average returns to high and low discretionary loan provision banks is not explained by risk.

The mimicking portfolio test result is explained further in section 2. The methodology in Wu et al. (2010) does not apply to banks because the drivers of bank investment behavior differ from that of industrial firms. We do not model bank investment behavior in this paper.

While the need to control for risk is one of the key research design issue highlighted by prior literature, other papers point out that other research design choices can affect the inferences in accrual anomaly studies. There are two separate research design issues brought up in Kraft et al. (2006) and Kraft et al. (2007). Firstly, Kraft et al. (2007) discuss the Mishkin tests used in Sloan (1996). Their argument is that in the Mishkin tests, the results of the second stage returns equation depends on the first stage forecasting equation being correctly specified. When some variables are omitted in the first stage equation, they could reduce the significance of the variables in the second stage equation. When Kraft et al. (2007) add new variables such as lagged returns and sales to the Mishkin test's forecasting and pricing equations, the rational pricing of accruals is not rejected, contrary to Sloan (1996)'s conclusion. They also demonstrate that using OLS (ordinary least squares regression) to model the relation between returns and lagged accounting variables provides the same inferences about rational pricing as using the Mishkin test. In our study, both the OLS and the Mishkin tests consistently show that the market misprices discretionary loan provisions.

Secondly, Kraft et al. (2006) argue that outliers/extreme observations have contributed to the accrual anomaly documented in Sloan (1996). Kraft et al. (2006) conduct robustness tests on the accrual anomaly studies. When they exclude 1% of the sample with extreme accruals, they find an inverted U-shaped relation between the abnormal returns and total accruals/discretionary accruals. This result is inconsistent with the earnings fixation theory in Sloan (1996). However, there are papers that question Kraft et al. (2006). Teoh and Zhang (2011) explain that the data trimming process in Kraft et al. (2006) creates a downward data truncation bias in the mean returns of right-skewed distributions when the extreme positive observations are legitimate. They argue that legitimate data should not be trimmed and the data trimming process can lead to an incorrect rejection of behaviourial explanations for the accrual anomaly. Other research prior to Teoh and Zhang (2011) such as Core (2006) and Kothari et al. (2005) also point out deleting extreme observations in skewed data can create biased results. This debate over the research methodologies in accrual anomaly studies is controversial and is not conclusive yet. We find that the conclusions of our study remain substantially unchanged before and after the winsorization of observations with extreme returns and loan provisions, and report the results using winsorized observations.

While Khan (2008) and Wu et al. (2010) attempt to explain away the total accrual anomaly as a risk effect, other research provides further support for the accrual anomaly in Sloan (1996). In particular Xie (2001) shows that the accrual anomaly effect is stronger for discretionary accruals relative to non-discretionary accruals. Xie (2001) extends Sloan (1996) to investigate if the market rationally prices discretionary accruals. Discretionary accruals are the residuals derived from the Jones (1991) model and a few other models such as the cross-sectional modified Jones model (Dechow et al., 1995). She finds that the market overestimates the one-year-ahead earnings persistence due to discretionary accruals and overprices discretionary accruals. She further reports that the overpricing of total accruals in Sloan (1996) is mainly attributable to discretionary accruals. Khan (2008) and Wu et al. (2010) evaluate the risk effects on total accruals, but not on discretionary accruals. On the other hand, the research design debates in Kraft et al. (2006) and Teoh and Zhang (2011) relate to both total accruals and discretionary accruals. Our research is an extension of Xie (2001) to the loan provisions in banks. The model to determine discretionary loan provisions is based on the discretionary loan provision literature, which is covered in section 2.2.

We distinguish between two streams of literature that explain the accrual anomaly. One stream is the general total accrual anomaly effect reported in Sloan (1996). The general total accrual anomaly relates to the difficulties that investors face in interpreting accrual information, which can exist without earnings management. It is an economics based explanation of the total accrual anomaly due to investor information processing deficit, as a result of a general failure of investors to understand the overall accruals. The other stream is the discretionary accrual anomaly effect documented in Xie (2001). The discretionary accrual anomaly is due to earnings management, in which there is a deliberate attempt by the firm to mislead investors. In this situation, the discretionary accrual anomaly becomes stronger when firms try to mislead investors and accruals become less persistent. This anomaly is due to a localised failure of investors to understand discretionary accruals. Many unsophisticated investors do not trade on the discretionary accrual anomaly and the discretionary accrual anomaly persists because there is less than perfect arbitrage (Battalio et al., 2012). In our study, the only evidence of an anomaly for banks is the discretionary loan provision anomaly indicating that investors have greater difficulty in understanding the discretionary loan provisions. This is more likely a localised failure than a generalised failure and this localised failure is not large enough for the key players in the market to arbitrage away. On the other hand, we find no evidence of discretionary fair value gain/loss anomaly. This is arguably because discretionary fair value gains and losses are easier to detect since unlike discretionary loan losses, they are more transparent.

Sloan (1996) and Xie (2001) argue that the total accrual anomaly and the discretionary accrual anomaly are due to investor fixation on total earnings and a failure by investors to recognize that the accrual components of earnings have lower persistence than cash flows. In the present paper we find that the cash flow component of bank earnings is *less* persistent than loan loss provisions and fair value gains and losses. Thus the anomaly we find cannot be attributed to the lower persistence of loan loss provisions relative to cash flows. However we do find that discretionary loan loss provisions are less persistent than non-discretionary loan provisions, and that abnormal returns are generated by exploiting the lower persistence of discretionary loan loss provisions.

Even when the investors cannot process information due to an information processing deficit, the market efficiency argument is that the investor processing difficulty is irrelevant if there are arbitrageurs. The question is why the market does not arbitrage the accrual anomaly away? Prior research explains that the total and discretionary accrual anomaly persists because there are limits to arbitrage. The large traders avoid taking positions in extreme accrual firms (Lev and Nissim, 2006) and even when they do, their positions are not large enough relative to the majority of trades to eliminate the accrual anomaly (Battalio et al., 2012). Battalio et al. (2012) show that investors who initiate large trades respond to the accrual anomaly but these trades are not sufficient to substantially reduce the magnitude of the accrual anomaly. They find that the vast majority of investors trade based on reasons unrelated to accrual levels. Mashruwala et al. (2006) provide evidence that the firms which exhibit an accrual anomaly have high idiosyncratic risk, low prices and low transactions. This result suggests that high risks and high transaction costs deter investors from taking positions to profit from the accrual anomaly. Lev and Nissim (2006) find that some active institutional investors exploit the accrual anomaly but in general, institutions and individual investors avoid extreme accrual firms, which are smaller, less profitable and more risky. Consistent with these studies, Collins et al. (2003) also show that the stock market more accurately prices the accrual persistence for firms with a high level of institutional owners.

2.2 Bank loan provisions

This section covers the bank loan provisions literature. Prior literature use signalling as a key explanation for the market reaction to loan loss provisions (Elliott et al., 1991; Wahlen, 1994; Beaver and Engel, 1996, Liu et al., 1997). Wahlen (1994) sets out to examine the key research question as to what investors learn from unexpected changes in non-performing loans, loan loss provisions and loan charge-offs. Loan loss provisions incorporate the managerial expectations of loan losses and a discretionary element. He argues that unexpected changes in non-performing loans and unexpected loan charge-offs are correlated with non-discretionary unexpected future loan losses and unexpected loan losses of the current period respectively and investors can estimate the discretionary component of unexpected loan loss provisions. He shows that unexpected changes in non-performing loans and unexpected loan charge-offs are negatively related to stock returns and future cash flows. In addition, Wahlen finds that after conditioning for the unexpected increase in non-performing loans and loan charge-offs, there is a positive relationship between unexpected loan losses and returns as well as between unexpected loan losses and future cash flows. He interprets this result as evidence that the stock market interprets higher discretionary loan loss provisions as managers signalling private 'good news' information. This conclusion assumes market efficiency. In contrast, our study demonstrates that the market misprices loan loss provisions using the methodologies in Sloan (1996) and Xie (2001).

In contrast to the signaling study of Wahlen a number of studies argue that banks use discretionary loan provisions opportunistically to manage reported earnings and capital. Ma (1988) provides early evidence that banks smooth income using loan provisions by increasing loan provisions when the operating income is higher. Banks also target a loan provision level to meet the regulatory capital requirement by increasing loan provisions when the current loan charge-off is higher. Collins et al. (1995) investigates how the capital, earnings and tax decisions of banks affect their seven capital raising options: securities gains and losses, loan provisions, loan charge-offs, capital notes, common stock, preferred stock and dividends. They estimate bank specific regressions for each capital raising option on the regulatory capital, earnings and marginal tax rates and provide evidence that banks differ in their responsiveness to capital, earnings and tax incentives. They also provide evidence that US banks use loan provisions to manage earnings and capital. Beatty et al. (1995) differ from Collins et al. (1995) by using simultaneous equations to investigate five capital raising options: loan provisions, loan loss charge-offs, pension settlement, miscellaneous gains and losses and issuances of new securities. They show that loan provisions, loan loss charge-offs and issuances of new securities are used to managed regulatory capital.

Moyer (1990) hypothesises that banks with capital that falls below the regulatory minimum seek to reduce regulatory costs by adjusting loan loss provisions in order to increase capital. She finds evidence to support this hypothesis. Ahmed et al. (1999) make use of the 1990 change in bank capital regulation to test the banks' use of loan provisions to manage capital and earnings. In 1990, the bank capital regulations were changed such that loan loss provisions no longer count as Tier 1 capital and count as total capital limited to 1.25% of risk weighted assets. Ahmed et al. hypothesise that this regulation change reduces (increases) the incentive to manage capital (earnings) using loan provisions and find strong evidence to support the capital management hypothesis but no evidence to support the earnings management hypothesis. Kanagaretnam et al. (2004) examine the different situations when loan provisions are used for earnings management motives. They hypothesise that managers of banks with pre-managed earnings that deviate more (less) from the median are more (less) likely to smooth earnings using loan provisions and find evidence that support this hypothesis. In this paper, we find that discretionary loan provisions are less persistent and lead to lower earnings persistence relative to non-discretionary loan provisions, consistent with the use of discretionary loan provisions for earnings and capital management purposes documented in prior literature.

Relative to academic literature, there have been significantly more debates on the topic of loan loss accounting in the professional practitioner arena among regulators, accounting standard setters and banks. IAS 39 and US GAAP currently use an incurred loan loss accounting approach in which loan losses are recognized when there is objective evidence of the loss event such as the bankruptcy of a borrower (IASB, 2009). The present incurred loan loss accounting standards have been severely criticized for delaying the recognition of loan losses and causing the financial crisis (Turner, 2010). The IASB and the FASB have been working jointly to replace the existing accounting standard with one that takes into account expected loan provisions. However, the accounting standard setters disagree among themselves on the conceptual approach to determine expected loan provisions. For example, the IASB approach is to recognise the credit losses of the good loan book over the life of the loans based on a time-proportional amount of remaining lifetime expected credit losses, and to recognise the credit losses of the bad loan book as the full amount of the remaining lifetime expected credit losses. On the other hand, the FASB approach is to recognise expected credit losses for the foreseeable future for both good and bad loan books (IFRS Foundation, 2011). The definitions of the terms such as 'foreseeable future' and 'expected credit losses' are being debated as well. The IASB and the FASB are at present still trying to reach a consensus on the approach even while European policy makers and banks also have their own views on the right approach. Our research results show that consistent with the fact that loan loss accounting is a difficult to understand topic with much disagreement and controversy, the market is not able to understand and to price the bank loan provisions especially the discretionary loan provisions correctly.

<u>2.3 Fair value accounting</u>

Prior fair value accounting literature show that fair values are value-relevant (Barth, 1994; Barth et al., 1996; Venkatachalam, 1996; Ahmed et al., 2006) and there is little evidence that the market misprices fair value gains and losses. Barth (1994) reports evidence that fair values gains and losses provide incremental explanatory power to realized gains and losses under certain model specifications. Barth et al. (1996) find that the differences between the market values and equity book values can be explained by differences between the disclosed fair value estimates and the book values of loans, securities and long term debt. Venkatachalam (1996) finds that the disclosed fair values of derivatives explain the cross-sectional variation in bank stock prices and provide incremental explanatory power over the notional values of derivatives. Ahmed et al. (2006) make use of the expanded derivative fair value disclosures prior to SFAS 133 and the recognition of derivative fair values after SFAS 133 to study if the investor valuation of derivatives depends on whether the derivatives are recognised or disclosed. They demonstrate that the valuation coefficients on recognized derivatives are significant but not that of disclosed derivatives. Our research finds little evidence that fair value gains and losses are mispriced by the market, a result that is consistent with the prior literature on the value relevance of fair value gains and losses.

If fair values are less reliable than historical costs, fair value gains and losses would cause earnings to become less persistent. Furthermore, if the conclusion in Richardson et al. (2005) that less reliable accruals are mispriced more by the market applies to banks, fair value gains and losses would be mispriced by the market but we find evidence to the contrary. In a BIS working paper, Landsman (2006) cites examples from Barth et al. (1998) and Aboody et al. (2005) to illustrate the situations when fair value accounting becomes more difficult and leads to lower reliability of fair values. In one example, Barth et al. (1998) estimate the fair values of corporate bonds and its components such as conversion, call and put features using a binomial option pricing model. They find that the model estimates of the values of bonds that are not publicly traded lack reliability. The reason is that these values change significantly depending on whether the bonds with available market prices which can be used as inputs to the models are included in the sample. In another example, Aboody et al. (2005) document evidence that managers manipulate disclosed employee stock option fair values by their choices of model inputs. Our study shows that the discretionary fair value gains and losses are less persistent than the non-discretionary fair value gains and losses but the market does not misprice fair value gains and losses (discretionary or otherwise).

US GAAP FAS157 establishes three hierarchical levels of fair value measurements (Epstein et al., 2008). Level one involves the case of assets for which there are quoted prices in active markets. Level two assets require the use of observable inputs for valuation. Level three involves assets that have no observable actual transaction prices available as inputs for the valuation. Fair valuation here is often based on theoretical models for which assumptions need to be made about the value of key model parameters. Song et al. (2010) find that the value relevance decreases for the level three assets relative to levels one and two assets. Mispricing is more likely for the level three assets than for levels one and two assets. However, there are insufficient data on the different levels of assets to carry out this test in our study because FAS157 becomes effective in 2007.

Some financial assets and liabilities such as available-for-sale securities are required to be recognized at amortized cost under the accounting rules. US GAAP FAS159 provides an option (called fair value option) for firms to elect such assets and liabilities for fair valuation to eliminate accounting mismatches. There is some evidence of earnings management in the use of the fair value option by the early adopters (Henry, 2009; Song, 2008). On the other hand, Chang et al. (2011) and Fiechter (2010) show that the regular fair value option adopters choose the fair value option accounting to reduce accounting mismatches and not to manage earnings. In our study, there are insufficient data on the fair value option gains and losses to test if they are mispriced, because FAS159 becomes effective in 2007.

3. Hypotheses Development

We develop the hypotheses largely following the approach in Richardson et al. (2005). Hypotheses 1a to 1d relate to the persistence of the different earnings components: operating cash flow, loan provision (total, discretionary and non-discretionary) and fair value gains and losses (total, discretionary and non-discretionary). Hypotheses 2a to 2d cover the market mispricing tests of the same earnings components. Hypotheses 3a to 3d underline the directional and economic significance of the market mispricing by using a trading strategy to generate abnormal returns from the mispricing.

Sloan (1996) finds that accruals are less persistent than operating cash flows. The accrual items in our bank setting, loan provisions and fair value gains and losses constitute significant components of bank earnings. Nonetheless, operating cash flows from bank financial assets can be volatile because they include the principal cash flows for financial assets, which fluctuate from one period to another and are not persistent. This is consistent with the finding in Dechow et al. (2008) that not all components of operating cash flows are highly persistent. Furthermore, Richardson et al. (2005) classify financial assets including loans and fair valued assets as being accruals of high reliability. Given the uncertainties, whether the persistence of operating cash flows differs from that of loan provisions and fair value gains and losses is an empirical question and we test this in hypotheses 1a and 1b.

H1a (Null):
There is no difference in the persistence of the operating cash flow and loan provision components of earnings.

H1a (Alternative):
There is a difference in the persistence of the operating cash flow and loan provision components of earnings.

H1b (Null):
There is no difference in the persistence of the operating cash flow and the fair value gain/loss components of earnings.

H1b (Alternative):
There is a difference in the persistence of the operating cash flow and the fair value gain/loss components of earnings.

It is an empirical question to be tested whether the operating cash flows from bank financial assets are more persistent than discretionary loan provisions and non-discretionary loan provisions. On the other hand, the economic (non-discretionary) components of the loan provisions are likely to be more persistent then the discretionary element. This is because prior literature on loan provision covered in section 2.2 provides evidence that the discretionary loan provisions can be managed for capital and earnings purposes. When discretionary loan provisions are used for capital and earnings management, they are expected to be less reliable than non-discretionary loan provisions and are expected to lead to lower earnings persistence, following Richardson et al. (2005). This leads to hypothesis 1c.

H1c (Null):

(i) There is no difference in the persistence of the operating cash flows and the discretionary loan provisions.

(ii) There is no difference in the persistence of the operating cash flows and the non-discretionary loan provisions.

(iii) There is no difference in the persistence of the discretionary and the non-discretionary loan provisions.

H1c (Alternative):

(i) There is a difference in the persistence of the operating cash flows and the discretionary loan provisions.

(ii) There is a difference in the persistence of the operating cash flows and the non-discretionary loan provisions.

(iii) The persistence of non-discretionary loan provisions is higher than the persistence of discretionary loan provisions.

The discretionary fair values have a greater potential than non-discretionary fair values to be manipulated, but prior studies have provided little evidence of discretionary fair values being manipulated. Unlike discretionary loan provisions, discretionary fair value gains and losses are more transparent and any manipulation can be more easily detected. Thus, whether there is a difference in the persistence of operating cash flows, discretionary and non-discretionary fair value gains and losses is an empirical question. We test this in hypothesis 1d.

H1d (Null):

(i) There is no difference in the persistence of the operating cash flow and the discretionary fair value gain/loss.

(ii) There is no difference in the persistence of the operating cash flow and the non-discretionary fair value gain/loss.

(iii) There is no difference in the persistence of the discretionary fair value gain/loss and the non-discretionary fair value gain/loss.

H1d (Alternative):

(i) There is a difference in the persistence of the operating cash flow and the discretionary fair value gain/loss.

(ii) There is a difference in the persistence of the operating cash flow and the non-discretionary fair value gain/loss.

(iii) There is a difference in the persistence of the discretionary fair value gain/loss and the non-discretionary fair value gain/loss.

Prior literature provides evidence that accruals in industrial firms are mispriced by the stock market (Sloan, 1996; Collins and Hribar, 2000). The key question we want to investigate is whether the same phenomenon exists in banks. For industrial firms, the accruals are largely driven by changes in sales, current account receivables, account payables and properties, plant and equipment. For banks, a key component of accruals in bank financial statements is loan provisions. If the loan provisions are less persistent than operating cash flows and the same stock market mispricing of accruals in industrial firms also occur in the bank loan provisions, the bank stock prices would over-estimate the persistence of loan provisions. However, there are uncertainties in the persistence of loan provisions relative to operating cash flows in hypothesis 1a. Thus we make no prediction on whether the null would be rejected in hypothesis 2a.

H2a (Null):
The bank stock prices reflect correctly the persistence of loan provisions.

H2a (Alternative):
The bank stock prices over-estimate the persistence of loan provisions.

We also examine if there is market mispricing of fair values. The value relevance studies (Barth, 1994; Barth et al., 1996, Eccher et al., 1996, Venkatachalam, 1996, Nelson, 1996, Ahmed et al., 2006) provide evidence that the stock market captures fair values on investment securities, loans, deposits and off-balance sheet instruments such as derivatives accurately. Based on these studies, we expect the stock market to properly price the fair value gains and losses and not to reject the null of hypothesis 2b.

H2b (Null):
The bank stock prices reflect correctly the persistence of fair value gains and losses.

H2b (Alternative):
The bank stock prices do not reflect correctly the persistence of fair value gains and losses.

Next, we extend the study to determine if the mispricing of discretionary accruals detected in Xie (2001) also applies to discretionary loan provisions in banks. The discretionary accrual anomaly in Xie (2001) demonstrates that when firms manage earnings, the information processing becomes more difficult and the market is more likely to misprice the discretionary accruals relative to the non-discretionary accruals. The literature covered in section 2.2 gives evidence of banks using discretionary loan provisions to smooth income and to manage capital. In these situations, when earnings surprises are positive, the banks would increase discretionary loan provisions to reduce earnings. The higher (more negative) discretionary loan provisions now would reverse in the future and lead to future positive abnormal returns. Based on the evidence in Richardson et al. (2005) that the less reliable accruals are mispriced more by the market than the more reliable accruals, we expect the market to over-estimate the persistence of discretionary loan provisions in banks and this leads to discretionary loan provisions being mispriced.

In contrast to the behaviourial explanations in Sloan (1996) and Xie (2001), the signalling theory in the loan provision literature assumes market efficiency. Wahlen (1994) finds that the stock market reacts positively to discretionary loan provisions and deduces that the stock market interprets higher discretionary loan provisions as bank managers signalling private good news information on higher future positive cash flows. This positive relation between discretionary loan provisions and stock market prices is supported by Beaver and Engel (1996). The signalling theory in Wahlen (1994) assumes that the market is efficient and does not misprice discretionary loan provisions. There is a tension between the signalling theory and the market mispricing theory on the relation between discretionary loan provision and returns.

We predict that the discretionary accrual anomaly in Xie (2001) extends to the bank setting and hypothesise that the stock market over-values the discretionary loan provisions, but we are uncertain as to whether the market misprices the non-discretionary loan provisions. This leads to hypothesis 2c.

H2c (Null):
(i) The bank stock prices reflect correctly the persistence of discretionary loan provisions.
(ii) The bank stock prices reflect correctly the persistence of non-discretionary loan provisions.

H2c (Alternative):
(i) The bank stock prices over-estimate the persistence of discretionary loan provisions.
(ii) The bank stock prices do not reflect correctly the persistence of non-discretionary loan provisions.

We next examine if the market misprices discretionary and non-discretionary fair value gains and losses. The non-discretionary fair value gains and losses is the economic component of fair values that are driven by market factors including short and long term interest rates (Barth, 1994), US dollar exchange rates (Ahmed et al., 2011) and corporate bond index. The discretionary fair value gains and losses are the component of fair values not driven by these market factors (refer to equation 2 in the Methodology section 4.1 on the derivation of discretionary and non-discretionary fair value gains and losses). There is little prior evidence on whether discretionary fair value gains and losses are manipulated. Based on the value relevance studies, the pricing should correctly capture any differences in earnings persistence due to discretionary and non-discretionary fair value gain and losses and we should expect not to reject the null of hypothesis 2d.

H2d (Null):
(i) The bank stock prices reflect correctly the persistence of discretionary fair value gains and losses.
(ii) The bank stock prices reflect correctly the persistence of non-discretionary fair value gains and losses.

H2d (Alternative):
(i) The bank stock prices do not reflect correctly the persistence of discretionary fair value gains and losses.
(ii) The bank stock prices do not reflect correctly the persistence of non-discretionary fair value gains and losses.

Following Sloan (1996) and Xie (2001), we carry out hedge portfolio tests on the economic significance and direction of any mispricing in hypotheses 3a to 3d. If the loan provisions and/or fair value gains and losses are mispriced, the investors should be able to exploit this mispricing by buying (selling) the bank stocks which are under-weighted (over-weighted) by the stock market. Given that in hypothesis 2a we are uncertain as to whether the market over-estimates the persistence of loan provisions, we make no prediction in hypothesis 3a.

H3a (Null):
A trading strategy taking a long position in the stock of banks reporting lower loan provisions and a short position in the stock of banks reporting higher loan provisions does not generate positive abnormal stock returns.

H3a (Alternative):
A trading strategy taking a long position in the stock of banks reporting lower loan provisions and a short position in the stock of banks reporting higher loan provisions generates positive abnormal stock returns.

On the other hand, we do not expect market mispricing of fair value gains and losses in hypothesis 2b. Thus we expect not to reject hypothesis 3b.

H3b (Null):
A trading strategy taking a long position in the stock of banks reporting higher fair value gains and a short position in the stock of banks reporting lower fair value gains does not generate abnormal stock returns.

H3b (Alternative):
A trading strategy taking a long position in the stock of banks reporting higher fair value gains and a short position in the stock of banks reporting lower fair value gains generates abnormal stock returns.

We expect the market to over-estimate the persistence of discretionary loan provisions, but make no prediction on the non-discretionary loan provisions in hypothesis 2c. Thus, the investors are expected to profit from buying stocks with low discretionary loan provisions and selling stocks with high discretionary loan provisions. We make no prediction on whether the same hedge portfolio strategy on non-discretionary loan provisions yields positive abnormal returns. This is stated in hypothesis 3c.

H3c (Null):
(i) A trading strategy taking a long position in the stock of banks reporting lower discretionary loan provisions and a short position in the stock of banks reporting higher discretionary loan provisions does not generate positive abnormal stock returns.
(ii) A trading strategy taking a long position in the stock of banks reporting lower non-discretionary loan provisions and a short position in the stock of banks reporting higher non-discretionary loan provisions does not generate positive abnormal stock returns.

H3c (Alternative):
(i) A trading strategy taking a long position in the stock of banks reporting lower discretionary loan provisions and a short position in the stock of banks reporting higher discretionary loan provisions generates positive abnormal stock returns.
(ii) A trading strategy taking a long position in the stock of banks reporting lower non-discretionary loan provisions and a short position in the stock of banks reporting higher non-discretionary loan provisions generates positive abnormal stock returns.

For discretionary and non-discretionary fair value gains and losses, our prediction in hypotheses 2d is that there is no market mispricing. Hence, we expect the same trading strategy not to generate abnormal returns and do not expect to reject the null of hypothesis 3d.

H3d (Null):

(i) A trading strategy taking a long position in the stock of banks reporting higher discretionary fair value gains and a short position in the stock of banks reporting lower discretionary fair value gains does not generate abnormal stock returns.

(ii) A trading strategy taking a long position in the stock of banks reporting higher non-discretionary fair value gains and a short position in the stock of banks reporting lower non-discretionary fair value gains does not generate abnormal stock returns.

H3d (Alternative):

(i) A trading strategy taking a long position in the stock of banks reporting higher discretionary fair value gains and a short position in the stock of banks reporting lower discretionary fair value gains generates abnormal stock returns.

(ii) A trading strategy taking a long position in the stock of banks reporting higher non-discretionary fair value gains and a short position in the stock of banks reporting lower non-discretionary fair value gains generates abnormal stock returns.

4. Research Design

4.1 Methodology

In this section, we explain the methodologies to disaggregate discretionary and non-discretionary loan provisions, to disaggregate discretionary and non-discretionary fair value gains and losses and the market mispricing tests in Sloan (1996), Xie (2001) and Kraft et al. (2007).

Discretionary and non-discretionary loan provision equation

The equation to derive discretionary loan provisions follows prior literature (Beaver and Engel, 1996; Kanagaretnam et al., 2004; Ryan, 2007; Gebhardt & Novotny-Farkas, 2011) and is stated as follows:

$$LL_{it} = a_0 + a_1 LLA_{it-1} + a_2 NPL_{it} + a_3 \Delta NPL_{it} + a_4 \Delta LOAN_{it} + a_5 Chargeoff_{it} + \varepsilon_{it} \quad (1)$$

where for bank i in period t:

LL_{it} = *loan loss provisions*

LLA_{it-1} = *beginning balance of loan loss allowances*

NPL_{it} = *Nonperforming loans. A loan is classified as non-performing when the loan is in default, doubtful or payments have been missed and outstanding for 90 days or more*

ΔNPL_{it} = *change in nonperforming loans from prior year to current year.*

$\Delta LOAN_{it}$ = *change in total loans outstanding from prior year to current year.*

$Chargeoff_{it}$ = *loan chargeoffs*

The scalars of all variables are beginning total assets

The variables *LLA, NPL,* ΔNPL, $\Delta LOAN$ and *Chargeoff* control for the non-discretionary components of the loans. α_2, α_3 and α_5 are expected to be negative because loan loss provisions should be more negative when the non-performing loan level is higher, when there is an increase in non-performing loans and when loan charge-offs are higher. Current loan charge-offs provide information about future loan defaults and hence should relate negatively to loan provisions (Beaver and Engel, 1996). The loan provision is shown in the same direction as that in the prior accrual anomaly papers by Xie (2001) and Sloan (1996): higher (lower) loan provisions refer to a decrease (increase) in loan loss allowance between prior year and current year. The loan provision is drawn from the income statement account so as to avoid the measurement errors in estimating accruals which can be introduced when accruals are measured as the change in successive balance sheet accounts (Hribar and Collins, 2002).

Equation 1 is run for each year on the entire Bank Compustat sample with data available for all variables in the equation. This is similar to the way the discretionary accrual model in Jones (1991) is implemented in Xie (2001). The residuals and predicted values from the equation are the discretionary loan provisions and non-discretionary loan provisions respectively.

Discretionary and non-discretionary fair value gain and loss equation

We next design an equation to derive the discretionary fair value gains and losses and non-discretionary fair value gains and losses by regressing fair value gains and losses on market factors and exposures. The key market rates that influence the banks' fair value gains and losses include long term interest rates, foreign exchange rates, short term interest rates and corporate bond rates. These are the economic (non-discretionary) components of fair value gains and losses. The market factors used in our model are 10 year US dollar treasury bond rates (Barth, 1994), US Nominal Broad Dollar Index by the Federal Reserve (Ahmed et al., 2011), Federal Reserve fund rates to measure short term interest rates and Dow Jones Corporate Bond Index to measure the corporate bond yields. We identify the main fair value exposure data available in Bank Compustat as investment security assets and trading assets. Equation 2 to derive the discretionary and non-discretionary fair value gains and losses is stated as follows:

$$\begin{aligned} FV_{it} = {} & a_0 + a_1 FV_{it-1} + a_2 Invtsec_{it} + a_3 Tradasset_{it} + a_4 USbd10y_{it} + a_5 USDexch_{it} + a_6 Fedfund_{it} \\ & + a_7 Corpindex_{it} + a_8 Invtsec_{it} * USbd10y_{it} + a_9 Invtsec_{it} * USDexch_{it} + a_{10} Invtsec_{it} * Fedfund_{it} \\ & + a_{11} Invtsec_{it} * Corpindex_{it} + a_{12} Tradasset_{it} * USbd10y_{it} + a_{13} Tradasset_{it} * USDexch_{it} \\ & + a_{14} Tradasset_{it} * Fedfund_{it} + a_{15} Tradasset_{it} * Corpindex_{it} + \varepsilon_{it} \qquad (2) \end{aligned}$$

where for bank i in period t :

$FV_{it} =$ *fair value gains / losses*

$FV_{it-1} =$ *fair value gains / losses of prior year*

$Invtsec_{it} =$ *Investment securities*

$Tradasset_{it} =$ *Trading assets*

$USbd10y_{it} =$ 10 year US dollar treasury bond rates

$USDexch_{it} =$ US Nominal Broad Dollar Index by the Federal Reserve

$Fedfund_{it} =$ Federal Reserve fund rates

$Corpindex_{it} =$ Dow Jones Corporate Bond Index

The scalars of all variables are beginning total assets

Equation 2 is estimated for all banks from Bank Compustat with data available for all variables in the equation. The residuals and predicted values from the equation are the discretionary and non-discretionary fair value gains and losses respectively.

The Mishkin test

Mishkin (1983) develops a framework to test the rational expectations hypothesis in macroeconomics (hereafter the Mishkin test). The application of Mishkin tests in Sloan (1996) and Xie (2001) are adapted in our studies with the following equations:

$$NI_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 LLres_t + \alpha_3 LLpre_t + \alpha_4 FVres_t + \alpha_5 FVpre_t + \alpha_6 Returnvol_t + \upsilon_{t+1} \quad (3)$$

$$Areturns_{t+1} = \gamma + \beta(NI_{t+1} - \alpha_0 - \alpha_1^{*} CFO_t - \alpha_2^{*} LLres_t - \alpha_3^{*} LLpre_t - \alpha_4^{*} FVres_t - \alpha_5^{*} FVpre_t - \alpha_6^{*} Returnvol_t) + \varepsilon_{t+1} \quad (4)$$

NI_{t+1} = net income at time t+1; CFO_t= operating cash flows at time t; $LLres_t$ = discretionary loan provisions at time t; $LLpre_t$ = non-discretionary loan provisions at time t; $FVres_t$ = discretionary fair value gains and losses at time t; $FVpre_t$ = non-discretionary fair value gains and losses at time t; $Returnvol_t$ = risk measured by return volatility at time t based on Laeven and Levine (2009); $Areturns_{t+1}$ = abnormal returns at time t+1.

The bank return is the change in market value from prior year to current year, divided by the prior year market value. The buy-and-hold bank returns are computed beginning six months after the fiscal year-end through the sixth month of the subsequent year (e.g. July 1, 2001 through June 30, 2002 for a firm reporting December 31, 2000). The abnormal return is the difference between the buy-and-hold bank return and the market value-weighted bank return.

Equation (3) is a forecasting equation that estimates the forecasting coefficients (αs) of operating cash flows, discretionary loan provisions, non-discretionary loan provisions, discretionary fair value gains and losses, non-discretionary fair value gains and losses and return volatilities for predicting one-year-ahead earnings. Equation (4) is a valuation equation that estimates the valuation coefficients (α^{*}s) that the market assigns to the same earnings components. Equations (3) and (4) are estimated using the nonlinear generalized least squares estimation procedure using two stages.

In the first stage, equations (3) and (4) are estimated without imposing any constraints on the αs and the α^{*}s. In the second stage, to test if the valuation coefficients differ significantly from the forecasting coefficients, the rational pricing constraints that $\alpha_q = \alpha_q^{*}$ (q=1 to 6) are imposed. This constraint requires that stock prices correctly anticipate the performance of earnings persistence. Mishkin shows that the following likelihood ratio statistic is asymptotically $\chi^2(q)$ distributed under the null hypothesis that the market rationally prices the earnings components according to their associations with one-year-ahead earnings.

$$2NLn(SSR^{c} / SSR^{u})$$

q = number of rational pricing constraints imposed
N = number of sample observations
Ln = natural logarithm operator
SSR^{c} = the sum of squared residuals from the constrained regressions in the second stage
SSR^{u}= the sum of squared residuals from the unconstrained regressions in the first stage

The hypothesis that the market rationally prices one or more earnings components (i.e. $\alpha_q = \alpha_q^{*}$, q=1 to 6) is rejected if the likelihood ratio statistic is sufficiently large.

Kraft et al. (2007) suggest that using the ordinary least squares regression to regress future returns on the cash flows and accruals would give similar inferences as the Mishkin tests. We apply the methodology in Kraft et al. (2007) and regress one-year ahead abnormal returns on current operating cash flows, discretionary loan provisions, non-discretionary loan provisions, discretionary fair value gains and losses, non-discretionary fair value gains and losses and risk, in addition to using the Mishkin tests.

4.2 Sample selection

The sample covers all US listed banks in Bank Compustat. The sample period is 1996 to 2009. The accounting data on net income, loan provisions, fair value gains and losses and operating cash flows are obtained from Bank Compustat. The operating cash data (Bank Compustat item "Operating Activities – Net Cash Flow") in Bank Compustat is limited to the period 2004 to 2009. Additional operating cash data are hand-collected from the regulatory filing 10k reports in the SEC Edgar database, consistent with the process in Ryan et al. (2006). The loan provision is data item 'Provision for credit loss' in Bank Compustat. The fair value gains and losses are the sum of investment securities gains and losses (Bank Compustat data item "Investment securities gain (loss) Total") and trading gains and losses (Bank Compustat data item "Trading/Dealing securities gain (loss)"). The loan provisions and fair value gains and losses are income statement items instead of being derived from changes in balance sheet positions to avoid the measurement problems documented in Hribar and Collins (2002). The earnings components are scaled by beginning total assets.

The bank stock price and share outstanding data to calculate bank market values and bank stock returns are extracted from CRSP database. The daily stock returns to calculate return volatility are sourced from CRSP database. We use all the banks in Bank Compustat with bank stock prices to calculate the market value weighted returns used to calculate abnormal returns.

Based on the above selection criteria, the overall sample size over the 14 year period from 1996 to 2009 to run equations 3 and 4 are 4476. This is an average of 320 banks per year, from a lowest of 128 in 1996 to a highest of 442 in 2009. The number of bank observations increases over the years because the accounting and market data becomes more available in later years. Firms that are delisted, become bankrupt or merged in later years are included in the sample to avoid survivorship bias. Missing returns are set to zero based on the methodology in Kraft et al. (2006) to avoid selection bias because they find that banks with missing returns typically exhibit poor earnings performance. The movements in the sample across years are shown in appendix A.

The data on loan loss allowances, non-performing loans, loan loss charge-offs and loans to run equation 1 are hand-collected from either the regulatory filing 10k report, annual report or Compustat database. In order to run equation 2, the accounting data on investment securities and trading assets are sourced from Computat while the market data on 10 year US dollar treasury bond rates, US nominal broad dollar index, Federal Reserve fund rates and Dow Jones corporate bond index are obtained from Datastream. The equations (1) and (2) are run based on all available data, which give sample sizes of 10042 and 8261 respectively.

5. Empirical Results

5.1 Descriptive statistics and correlations

Table 2 panel A provides the descriptive statistics of the key variables. In our bank sample, the mean total return is -5.7%, the mean net income is 0.7% of total assets and the mean operating cash flow is 1.3% of total assets. On the other hand, in Xie (2001), the total return is 15.1%, average net income is 2.5% of total assets and average operating cash flow is 6.9% of total assets. The differences are that our bank sample covers 1996 to 2009 while Xie (2001) examines industrial firms for the period 1971 to 1992. The low average return, net income and operating cash flow of our bank sample is largely attributable to the financial crisis years 2008 and 2009. From the mean operating cash flow and the mean net income in table 2, we can derive the operating cash flow as a percentage of net income to be 1.8 (1.3%/0.7%) for banks. From the mean operating cash flow and the mean net income in Xie (2001), we estimate the operating cash flow as a percentage of net income to be 2.8 (6.9%/2.5%) for industrial firms. This shows that the operating cash flow as a proportion of net income is lower in banks than in industrial firms.

[Insert Table 2]

The loan provision is 0.4% of total assets and has a standard deviation of 0.6%, compared to the average of about 0.74% of total assets in Kanagaretnam et al. (2004). The difference is likely because Kanagaretnam et al. (2004) covers a different time period of 1980 to 1997. On the other hand, the average fair value gains and losses from investment securities and trading assets in our bank sample are 0.02% of total assets. The average discretionary loan provision and non-discretionary loan provision are 0.01% and 0.4% of total assets respectively. Although the average discretionary loan provision is small, the absolute magnitude (not tabulated here) is 29% of net income. The latter is larger than the average 16% of earnings for discretionary accruals in the industrial firm sample of Xie (2001) and demonstrates the significance of discretionary loan provisions.

Panels B and C report the statistics of variables used in the discretionary loan provision and discretionary fair value gain/loss equations (equations (1) and (2) in section 4.1) respectively. The loan loss allowances and non-performing loans are 0.9% and 1% of total assets respectively. The non-performing loans are higher than loan loss allowances because non-performing loans generally include past due loans which may not be classified as loan loss allowances. The average loan loss charge-off is very small but its maximum is 1.5% of total assets. The investment securities are significantly higher than trading assets.

Table 3 panel A reports the correlations for the variables in the main regression tests. The correlations of net income with operating cash flows, fair value gains and losses and total loan provisions are 0.13, 0.17 and 0.40 respectively. This provides evidence that the earning performance of banks is more closely related to the loan provisions and fair value gains and losses, rather than operating cash flows. The correlation of returns with net income is positive while the correlation of returns with loan provisions is negative.

[Insert Table 3]

When we disaggregate loan provisions and fair value gains and losses into discretionary and non-discretionary components, the correlations of net income with the non-discretionary components are larger than that with the discretionary components. The correlation between net income and non-discretionary loan provisions is higher than that between net income and discretionary loan provisions. This result is consistent with the last column of table 7. The last column of table 7 shows the results from regression of net income on lagged operating cash flows, lagged discretionary loan provisions, lagged non-discretionary loan provisions, lagged discretionary fair value gains and losses and non-discretionary fair value gains and losses. In this regression of table 7, the coefficient of lagged non-discretionary loan provisions is higher than the coefficient of discretionary loan provisions.

At the same time, the correlation between net income and non-discretionary fair value gains and losses is higher than that between net income and discretionary fair value gains and losses. This result is also consistent with the last column of table 7, which shows that the coefficient of non-discretionary fair value gains and losses is higher than the coefficient of discretionary fair value gains and losses.

In addition, the negative correlation between return volatility and non-discretionary loan provisions shows that the economic components of loan provisions are negatively related to risk. This negative relationship between return volatility and non-discretionary loan provisions is further illustrated in table 12

Table 3 panels B and C report the correlations for the variables in the discretionary loan provision regressions and the discretionary fair value gain/loss regressions respectively. The loan provisions are highly negatively correlated with the components non-performing loans (level and change) and loan loss charge-offs, as predicted in equation 1. The highly statistically significant correlations show that the levels and changes of non-performing loans and loan loss charge-offs are strong drivers of loan provisions, a point further supported by table 4. The positive correlation of fair value gains and losses with the lagged fair value gains and losses is statistically significant, consistent with the persistence of fair value gains and losses, which is further demonstrated in table 6 panel B. Fair value gains and losses are also positively correlated with investment securities, trading assets, US nominal broad dollar index and Dow Jones corporate bond index in equation 2.

5.2. Main results

Derivation of discretionary loan provisions and discretionary fair value gains and losses

This section reports the results of equations 1 and 2 in section 4.1 that are used to derive the discretionary and non-discretionary components of loan provisions and fair value gains and losses. The results for the discretionary loan provision equation are reported in table 4. The coefficients of non-performing loans and loan loss charge-offs are negative and statistically significant, consistent with the predictions based on prior literature (Kanagaretnam et al., 2004, Gebhardt and Novotny-Farkas, 2011). The average of the adjusted R squared over the 1996-2009 period is 31%, higher than the 23% in Jones (1991) discretionary accrual model.

[Insert Table 4]

The results for the discretionary fair value gain and loss equation are reported in table 5. The positive coefficient of lagged fair value gains and losses shows that fair value gains and losses are persistent. The fair value gains and losses are positively related to the corporate bond index, the long term interest rates (10 year US government bond rates) and US dollar exchange rates but are negatively related to the short term interest rates (Federal Reserve fund interest rates). The investment securities give higher fair value gains when US dollar strengthens against other currencies (positive coefficient of the interaction between *Invtsec* and *USDexch*). The investment securities and trading assets yield higher fair value gains when the corporate bond index increases which indicate an improvement in bond credit risks (positive coefficients of the interactions between *Invtsec* and *Corpindex* and between *Tradasset* and *Corpindex*). The second column of table 5 shows that the adjusted R squared of the discretionary fair value gain and loss model is 21%., which is close to the 23% R squared in Jones (1991) discretionary accrual model.

[Insert Table 5]

<u>Persistence Tests</u>

The persistence of operating cash flows, loan provisions (total, discretionary and non-discretionary) and fair value gains and losses (total, discretionary and non-discretionary) are reported in table 6 panels A and B. The persistence of the total loan provisions and the non-discretionary loan provisions are both higher than the persistence of operating cash flows, hence any loan provision anomaly detected cannot be attributed to the lower persistence of loan provisions relative to operating cash flows. The result rejects the null hypothesis 1a that there is no difference in the persistence of operating cash flows and total loan provisions. This result also rejects the null hypothesis 1c(ii) that there is no difference in the persistence of operating cash flows and non-discretionary loan provisions.

[Insert Table 6]

The coefficient of the non-discretionary loan provisions is substantially higher than that of the discretionary loan provisions, a result which is consistent with Xie (2001). This result provides evidence to support the alternative of hypothesis 1c(iii) that the persistence of non-discretionary loan provisions is higher than the persistence of discretionary loan provisions. The lower persistence of discretionary loan provisions than non-discretionary loan provisions is likely attributable to the use of discretionary loan provisions for earnings management and capital management ((Ma, 1988; Moyer, 1990; Collins et al., 1995; Beatty et al., 1995; Ahmed et al., 1999; Kanagaretnam et al., 2004).

On the other hand, the persistence of discretionary loan provisions and the operating cash flows are similar, giving little evidence to reject the null hypothesis 1c(i) that there is no difference in the persistence of the operating cash flows and the discretionary loan provisions.

The total and the non-discretionary fair value gains and losses are more persistent than the operating cash flows. This result gives evidence to reject the null hypothesis 1b that there is no difference in the persistence of the operating cash flow and the total fair value gain/loss. Furthermore, the result also gives evidence to reject the null hypothesis 1d(ii) that there is no difference in the persistence of the operating cash flow and the non-discretionary fair value gain/loss.

The operating cash flows are more persistent than the discretionary fair value gains and losses. This result provides evidence to reject the null hypotheses 1d(i) that there is no difference in the persistence of the operating cash flow and the discretionary fair value gain/loss.

The non-discretionary fair value gains and losses are more persistent than the discretionary fair value gains and losses. This result gives evidence to reject the null hypotheses 1d(iii) that there is no difference in the persistence of the discretionary fair value gain/loss and the non-discretionary fair value gain/loss.

In summary, table 6 shows that non-discretionary loan provisions are the most persistent, followed by non-discretionary fair value gain/loss, operating cash flows and discretionary loan provisions, while the discretionary fair value gain/loss is the least persistent.

Table 7 shows the results when earnings are regressed on the lagged earnings components. The coefficients of the lagged non-discretionary loan provision (non-discretionary fair value gains and losses) are substantially higher than that of the lagged discretionary loan provision (discretionary fair value gains and losses). The differences in coefficients are statistically significant at the 1% level.

[Insert Table 7]

The difference in coefficients of 0.52 between the discretionary and the non-discretionary loan provisions is much larger than the difference between the coefficients of discretionary accruals and non-discretionary accruals of 0.13 in Xie (2001). In the next section, we investigate if the market prices correctly the persistence of discretionary and non-discretionary loan provisions and fair value gains and losses.

Abnormal return regressions and Mishkin tests

Kraft et al. (2007) suggest that one alternative to the Mishkin test is to directly regress one-year ahead abnormal returns on the accounting variables of interest. They demonstrate that the parameter estimates and test statistics of this regression are asymptotically equivalent to that in the Mishkin tests. These accounting variables in our research are current operating cash flows, discretionary loan provisions, non-discretionary loan provisions, discretionary fair value gains and losses and non-discretionary fair value gains and losses.

Table 8 reports the results when one-year abnormal returns are regressed on the accounting variables. In columns 1 and 2 of table 8, the coefficients of *LLtminus1* are negative and statistically significant. This result shows that loan provisions are over-weighted by the market because positive loan provisions lead to negative abnormal returns in the next period. Nonetheless, table 6 shows that the loan provisions are found to be more persistent than operating cash flows. We could not attribute the mispricing of loan provisions to the lower persistence of loan provisions compared to operating cash flows. Thus, we are unable to reject the null hypothesis 2a that the bank stock prices reflect correctly the persistence of loan provisions.

[Insert Table 8]

In the first column of table 8, the coefficient of fair value gains and losses are not statistically significant. This result provides little evidence to reject the null hypothesis 2b that the bank stock prices reflect correctly the persistence of fair value gains and losses. In the second, third and fourth columns, fair value gains/losses are further disaggregated into discretionary fair value gains/losses and non-discretionary fair value gains/losses. The coefficients of discretionary fair value gains/losses and non-discretionary fair value gains/losses are not statistically significant. The statistically insignificant coefficient of discretionary fair value gains/losses provide little evidence to reject the null hypothesis 2d(i) that the bank stock prices reflect correctly the persistence of discretionary fair value gains/losses. The statistically insignificant coefficient of non-discretionary fair value gains/losses provide little evidence to reject the null hypotheses 2d(ii) that the bank stock prices reflect correctly the persistence of non-discretionary fair value gains/losses. These results are consistent with prior literature that documents the value relevance of fair values (Barth, 1994; Barth et al., 1996; Venkatachalam, 1996; Ahmed et al., 2006).

In the third and the fourth columns of table 8, the total loan provisions are disaggregated into discretionary loan provisions and non-discretionary loan provisions. The coefficient of the discretionary loan provisions is negative and statistically significant in both columns. The negative and statistically significant coefficient of discretionary loan provision shows that discretionary loan provisions are over-weighted by the market. Panel A of table 6 shows that discretionary loan provisions are less persistent than non-discretionary loan provisions. At the same time, table 7 shows that the earnings performance attributable to the discretionary loan provisions is lower than the earnings performance attributable to the non-discretionary loan provisions. Thus these results provide evidence to support the alternative hypothesis 2c(i) that the bank stock prices over-estimates the persistence of discretionary loan provisions. These results are consistent with Xie (2001) and prior literature that reports discretionary loan provisions being used for earnings management and capital management (Ma, 1988; Moyer, 1990; Collins et al., 1995; Beatty et al., 1995; Ahmed et al., 1999; Kanagaretnam et al., 2004).

In the fourth column of table 8, when a bank risk measure *Returnvol* is added to the equation, the coefficient of non-discretionary loan provision is not statistically significant. The statistically insignificant coefficient of non-discretionary loan provision provides little evidence to reject the null hypotheses 2c(ii) that the bank stock prices reflect correctly the persistence of non-discretionary loan provisions.

Table 9 reports the Mishkin test results from estimating the systems in equations 3 and 4. Panel A of table 9 reports the coefficient estimates for equations 3 and 4 obtained in the first stage. For discretionary loan provisions, the valuation coefficient of 1.379 is higher than the forecasting coefficient of 0.239. The likelihood ratio statistic of 11.817 reported in panel B is statistically significant at the 0.001 level, showing that the overpricing of discretionary loan provisions is statistically significant. This result provides further evidence to support the alternative hypothesis 2c(i) that the bank stock prices over-estimate the persistence of discretionary loan provisions, a result that is consistent with table 8.[2] In table 8, the coefficient of the discretionary loan provisions is negative and statistically significant indicating that discretionary loan provisions are over-weighted by the stock market.

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[2] The results still hold after the addition of controls such as size (natural logarithm of market value) and corporate governance measure (separation of the CEO and Chairman position) in un-tabulated results.

[Insert Table 9]

For the non-discretionary loan provisions, panel B of table 9 reports a likelihood ratio statistic of 2.614, which is statistically not significant. This result provides little evidence to reject the null hypothesis 2c(ii) that the bank stock prices reflect correctly the persistence of non-discretionary loan provisions. This result is consistent with table 8 that shows the coefficient of non-discretionary loan provision is not statistically significant in the regression of abnormal returns on the accounting variables.

For the discretionary fair value gains/losses, panel B of table 9 shows a likelihood ratio statistic of 0.002, which is statistically not significant. This result provides little evidence to reject the null hypothesis 2d(i) that the bank stock prices reflect correctly the persistence of discretionary fair value gains and losses. This result is also consistent with table 8.

For the non-discretionary fair value gains/losses, panel A of table 9 reports the valuation coefficient of -5.857, which is lower than the forecasting coefficient of 2.307. The likelihood ratio statistic of 18.757 reported in panel B indicates that the underpricing of non-discretionary fair value gain/loss is statistically significant at the 0.000 level. Nonetheless, this result is inconsistent with table 8. In table 8, the statistically insignificant coefficient of non-discretionary fair value gains/losses provide little evidence to reject the null hypotheses 2d(ii) that the bank stock prices reflect correctly the persistence of non-discretionary fair value gains/losses.

Hedge Portfolio Tests

We group banks into portfolio deciles each year based on their ranking of loan provisions, and form a hedge portfolio that is long in the most negative loan provisions and short in the most positive loan provisions. Table 10 reports the average of the 14 annual abnormal returns for each loan provision decile over the 1996-2009 sample period and the abnormal returns to the hedge portfolio. The abnormal returns of the lowest and the highest loan provision portfolios are -6.7% and -14.3% respectively. The hedge portfolio yields positive abnormal returns of 7.6% at the 1.4% statistical significance level. This result provides evidence to support the alternative hypothesis 3a that a trading strategy taking a long position in the stock of banks reporting lower loan provisions and a short position in the stock of banks reporting higher loan provisions generates positive abnormal stock returns.

[Insert Table 10]

Table 11 panel A reports the results when the hedge portfolio test is repeated by ranking bank portfolios based on fair value gains and losses. The difference in abnormal returns between the highest and the lowest fair value gain portfolios is not statistically significant. The result shows that the hedge portfolio trading strategy based on fair value gains and losses does not generate abnormal returns. This is consistent with the value relevance of fair value gains and losses in prior studies (Barth et al., 1994; Barth et al., 1996) and the results of table 8. This result provides little evidence to reject the null hypothesis 3b that a trading strategy taking a long position in the stock of banks reporting higher fair value gains and a short position in the stock of banks reporting lower fair value gains does not generate abnormal stock returns. .

[Insert Table 11]

Panel B of table 11 shows that the abnormal return is highest (lowest) for the most (least) risky portfolios, consistent with required returns being positively related to risk. One possibility is that the discretionary loan provision anomaly is explained by risk, which we investigate in the next section "Additional analysis on risk".

We next form the hedge portfolios based on the ranking of discretionary loan provisions and non-discretionary loan provisions. Table 12 panel A reports the hedge portfolio test results. The abnormal returns of the lowest and the highest discretionary loan provision portfolios are -5.9% and -14.6% respectively. The hedge portfolio return (difference in abnormal returns between the highest and the lowest discretionary loan provision portfolios) is 8.7% and statistically significant at 1%. This result gives evidence to support the alternative hypothesis 3c(i) that a trading strategy taking a long position in the stock of banks reporting lower discretionary loan provisions and a short position in the stock of banks reporting higher discretionary loan provisions generates positive abnormal stock returns. This result is also similar to that in Xie (2001), who documents statistically significant hedge portfolio returns of 11% for the discretionary accruals.

[Insert Table 12]

Consistent with Xie (2001), the hedge portfolio return for the non-discretionary loan provision portfolio is smaller than that for discretionary loan provision portfolio, at 5.4% and is not statistically significant at the 5% level (see table 12 panel B). This result provides little evidence to reject the null hypothesis 3c(ii) that a trading strategy taking a long position in the stock of banks reporting lower non-discretionary loan provisions and a short position in the stock of banks reporting higher non-discretionary loan provisions does not generate positive abnormal stock returns. The evidence is also consistent with tables 8 and 9 that indicate the stock market does not misprice non-discretionary loan provisions.

There is a U-shaped relationship between risk and discretionary loan provisions in table 12 panel A. The portfolios with the lowest and the highest discretionary loan provisions (deciles 1, 2, 9 and 10) are the most risky. The high risk of bank stocks with extreme discretionary loan provisions is probably the reason why the discretionary loan provision anomaly is not arbitraged away. This reason is consistent with Mashruwala et al. (2006) who report that firms which exhibit an accrual anomaly have high idiosyncratic risk. Further tests are carried out in the section "Additional analysis on risk" to test if risk explains the discretionary loan provision anomaly. On the other hand, there is a monotonic decrease in risk from the lowest to the highest non-discretionary loan provision portfolios (see table 12 panel B), consistent with risk being negatively related to the non-discretionary loan provisions.

Table 13 shows the annual breakdown of abnormal returns for each discretionary loan provision decile. This table shows that the negative abnormal returns are largely driven by 1996, 1997, 1999, 2006 and 2007[3]. In 10 out of the 14 years in the 1996 to 2009 period, the

[3] The inferences to hypothesis 3c(i) that hedge portfolios formed based on discretionary loan provisions give positive abnormal returns remain unaffected when these years are excluded in un-tabulated results.

highest discretionary loan provision decile has lower abnormal returns than the lowest discretionary loan provision decile.

[Insert Table 13]

Next, table 14 reports the results when hedge portfolios are formed based on the discretionary and the non-discretionary fair value gains and losses. Panel A shows that the abnormal returns to the hedge portfolios formed using the highest and the lowest discretionary fair value gains and losses are not statistically significant at 5%. This result provides little evidence to reject the null hypothesis 3d(i) that a trading strategy taking a long position in the stock of banks reporting higher discretionary fair value gains and a short position in the stock of banks reporting lower discretionary fair value gains does not generate abnormal stock returns.

[Insert Table 14]

Similarly, the abnormal returns to the hedge portfolios formed based on the highest and the lowest non-discretionary fair value gains and losses are not statistically significant at 5% in table 14 panel B. This result provides little evidence to reject the null hypothesis 3d(ii) that a trading strategy taking a long position in the stock of banks reporting higher non-discretionary fair value gains and a short position in the stock of banks reporting lower non-discretionary fair value gains does not generate abnormal stock returns.

<u>Additional analysis on risk</u>
In tables 15 to 16, further analysis are carried out to examine if bank risk has an effect on the results of hedge portfolios based on discretionary loan provisions reported in table 12. Table 15 shows that the return difference between the highest and the lowest discretionary loan provision quintiles is mainly concentrated in the higher risk quintiles 3, 4 and 5. The difference is statistically significant at 7% for risk quintiles 3 and 5 and statistically significant at 1% for risk quintile 4. These results are consistent with the U-shaped relationship between risk and discretionary loan provisions documented in table 12 panel A. In table 12 panel A, the portfolios with the lowest and the highest discretionary loan provisions (deciles 1, 2, 9 and 10) are the most risky.

[Insert Table 15]

The return difference between the high risk/low discretionary loan provision and the low risk/high discretionary loan provision portfolios is 14.8% and statistically significant at the 1% level. This is a significant increase from 8.7% return in the pure discretionary loan provision trading strategy. This shows that the returns can be enhanced by complementing the discretionary loan provision trading strategy with one that takes into account risk.

In order to examine if risk explains the discretionary loan provision anomaly reported earlier, we employ the mimicking portfolio methodology in Khan (2008) and Chan and Chen (1991). This test is illustrated in figure 1. First, discretionary loan provision and risk quintiles are formed from independent sorts on discretionary loan provision and return volatility. The portfolio HH is formed by taking the intersection of banks in the highest risk quintile and the two highest discretionary loan provision quintiles. Portfolio LL is formed from the intersection of banks in the lowest risk quintile and the two lowest discretionary loan provision quintiles. Hence, banks in portfolio HH have strictly higher risk and higher discretionary loan provisions than banks in portfolio LL. The return to HH minus the return to LL is called Riskdif. The discretionary loan provision index DLPdif is formed by taking the return to the lowest discretionary loan provision quintile portfolio (L) minus the return to the highest discretionary loan provision quintile portfolio (H). A positive correlation between Riskdif and DLPdif would suggest that the trading strategy on discretionary loan provisions would also be trading on bank risks. The negative correlation between Riskdif and DLPdif in table 16 is statistically not significantly different from negative one. This result demonstrates that risk does not explain the cross sectional variation in average returns to the highest and the lowest discretionary loan provision portfolios.

[Insert Table 16]

6. Conclusion

We extend the prior literature on the accrual anomaly and discretionary accrual anomaly (Sloan, 1996; Xie, 2001) to the setting of loan provisions in banks. The regression of abnormal returns on lagged earnings components provides evidence of stock market overweighting loan provisions. The hedge portfolio test shows that investors can profit from selling bank stocks with highest loan provisions and buying bank stocks with lowest loan provisions. However, as the loan provisions are more persistent than operating cash flows, this loan provision anomaly cannot be attributed to the lower persistence of loan provisions relative to operating cash flows.

When loan provisions are further disaggregated into discretionary and non-discretionary components based on the models in prior discretionary loan provisioning literature such as Kanagaretnam et al. (2004), the abnormal return regression and Mishkin tests show that the market over-weights discretionary loan provisions. The hedge portfolio test shows that investors can make abnormal profits from selling portfolios with the highest discretionary loan provisions and buying portfolios with the lowest discretionary loan provisions. We also find that the discretionary loan provisions have low persistence. Thus we can attribute the discretionary loan provision anomaly to the low persistence of discretionary loan provisions. On the other hand, there is little evidence that the market misprices non-discretionary loan provisions and fair value gains and losses (discretionary or otherwise).

In conclusion, our study documents the existence of loan provision anomaly and discretionary loan provision anomaly, similar to the accrual anomaly in Sloan (1996) and the discretionary accrual anomaly in Xie (2001). We could attribute the discretionary loan provision anomaly to the lack of persistence of discretionary loan provisions but the persistence explanation cannot be applied to the loan provision anomaly. This result provides market inefficiency as an alternative explanation to the signalling theory on the positive relation between discretionary loan provisions and bank stock returns. We find that risk is higher in the extreme discretionary loan provision portfolios. Buying bank stocks with low discretionary loan provision/high risk and selling stocks with high discretionary loan provision/low risk enhances the returns compared to a pure trading strategy on discretionary loan provision anomaly. Further tests show that risk does not explain the discretionary loan provision anomaly.

The policy implication of our paper is that the capital markets are struggling with understanding the loan provisions of banks, in particular their discretionary loan provisions. As a result, the market misprices discretionary loan provisions. There is a need for standard setters to focus their attention on loan provisions and to increase the transparency and the understandability of bank loan provisions reported to the markets. On the other hand, there is little evidence of fair value gains/losses being mispriced. This indicates that the capital market has a better understanding of the fair value numbers being reported by banks.

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Table 1: Variable Definition

Name	Definition
NI	Net income scaled by beginning total assets
CFO	Net operating cash flow scaled by beginning total assets
FV	Fair value gains and losses scaled by beginning total assets
FVres	Discretionary fair value gains and losses scaled by beginning total assets
FVpre	Non-discretionary fair value gains and losses scaled by beginning total assets
LL	Loan loss provisions scaled by beginning total assets.
LLres	Discretionary loan provisions scaled by beginning total assets
LLpre	Non-discretionary loan provisions scaled by beginning total assets
Returns	Returns at t+1. Return is the change in market value from prior year to current year, divided by the prior year market value.
Areturns	Difference between the buy-and-hold bank return and the market value-weighted bank return at t+1
CFOtminus1	CFO lagged by one year
FVtminus1	FV lagged by one year
FVrestminus1	FVres lagged by one year
FVpretminus1	FVpre lagged by one year
LLtminus1	LL lagged by one year
LLrestminus1	LLres lagged by one year
LLpretminus1	LLpre lagged by one year
LLA	Loan loss allowance for prior year scaled by beginning total assets
NPL	Non-performing/impaired loans scaled by beginning total assets
ΔNPL	Change in non-performing loans from prior year to current year, scaled by beginning total assets
ΔLoan	Change in total loans from prior year to current year, scaled by beginning total assets
Chargeoff	Loan charge-offs scaled by beginning total assets
Invtsec	Investment security assets scaled by beginning total assets
Tradasset	Trading assets scaled by beginning total assets
USbd10y	10 year US government bond yield rates (long term rates)
USDexch	US Nominal Broad Dollar Index by the Federal Reserve (trade weighted US dollar index)
Fedfund	Federal Reserve fund interest rates (short term rates)
Corpindex	Dow Jones Corporate Bond Index, an equally weighted basket of 96 recently issued investment-grade corporate bonds with laddered maturities. The index measures the return of readily tradable, high-grade U.S. corporate bonds.
Returnvol	Daily return standard deviation average for each lagging bank/year as an indicator of each bank's risk taking i.e. match against the same year as LLrestiminus1

Table 2: Descriptive Statistics

Panel A: Main regression test variables

Variable	Obs	Mean	Std. Dev.	Min	Max	Median	Skewness
Returns	4476	-0.057	0.683	-2.696	1.925	0.000	-1.455
NI	4476	0.007	0.011	-0.099	0.077	0.009	-2.722
CFOtminus1	4476	0.013	0.020	-0.087	0.129	0.014	0.250
FVtminus1	4476	0.0002	0.002	-0.007	0.007	0.0000	-0.837
FVrestminus1	4476	-0.0000	0.001	-0.007	0.009	0.0000	-0.793
FVpretminus1	4476	0.0001	0.001	-0.003	0.005	0.0002	0.495
LLtminus1	4476	-0.004	0.006	-0.037	0.001	-0.002	-3.390
LLrestminus1	4476	0.0001	0.004	-0.037	0.025	0.0003	-1.905
LLpretminus1	4476	-0.004	0.005	-0.037	0.001	-0.002	-3.037
Returnvol	4476	0.404	0.253	0.000	2.863	0.330	2.551

The above table gives descriptive statistics for the main regression test variables.

Panel B: Discretionary loan provision regression variables

Variable	Obs	Mean	Std. Dev.	Min	Max	Median	Skewness
LLA	10042	0.009	0.004	0.001	0.033	0.008	1.871
NPL	10042	0.010	0.013	0.000	0.086	0.006	3.242
ΔNPL	10042	0.002	0.008	-0.024	0.046	0.0004	2.441
ΔLoan	10042	0.093	0.132	-0.152	0.712	0.065	2.132
Chargeoff	10042	0.000	0.002	0.000	0.015	0.000	5.268

The above table gives descriptive statistics for the discretionary loan provision regressions.

Panel C: Discretionary fair value regression variables

Variable	Obs	Mean	Std. Dev.	Min	Max	Median	Skewness
Invtsec	8261	0.239	0.140	0.011	0.708	0.216	0.876
Tradasset	8261	0.003	0.021	0.000	0.197	0.000	7.519
USbd10y	8261	4.717	0.972	3.196	6.571	4.627	0.257
USDexch	8261	111.590	8.996	92.631	126.798	110.837	0.183
Fedfund	8261	3.320	2.022	0.159	6.259	3.887	-0.194
Corpindex	8261	105.254	5.524	95.391	116.381	104.988	0.299

The above table gives descriptive statistics for the discretionary fair value regressions.

The variables are defined in table 1 and have been winsorized at the 1% and 99% levels. Panel A indicates the main sample for the key regression tests. Panels B and C show the samples used in the estimation equations to derive discretionary loan provision and discretionary fair value gains and losses.

Table 3: Correlation Table
Panel A: Correlations for variables in Main regression test (obs=4476)

	NI	CFOtmminus1	Fvtminus1	Fvrestminus1	Fvpretminus1	LLtminus1	Llrestminus1	LLpretminus1	Returns
NI	1.00								
CFOtminus1	**0.13**	1.00							
Fvtminus1	**0.17**	-0.01	1.00						
Fvrestminus1	**0.06**	-0.00	**0.86**	1.00					
Fvpretminus1	**0.25**	-0.00	**0.45**	-0.00	1.00				
LLtminus1	**0.40**	**0.04**	**0.04**	**-0.04**	**0.17**	1.00			
Llrestminus1	**0.07**	-0.02	-0.01	0.01	-0.02	**0.57**	1.00		
Llpretminus1	**0.43**	**0.07**	**0.06**	**-0.05**	**0.22**	**0.80**	-0.03	1.00	
Returns	**0.13**	0.02	0.02	0.01	0.02	**-0.12**	**-0.06**	**-0.10**	1.00
Returnvol	**-0.38**	**-0.10**	**-0.15**	-0.00	**-0.31**	**-0.58**	**-0.06**	**-0.66**	**0.09**

Panel A presents the correlation matrix of the variables used in the main regression tests.

Panel B: Correlations for variables in Discretionary Loan provision regression test (obs=10042)

	LL	LLA	NPL	ΔNPL	ΔLoan
LL	1.00				
LLA	**-0.34**	1.00			
NPL	**-0.66**	**0.37**	1.00		
ΔNPL	**-0.54**	**0.03**	**0.70**	1.00	
ΔLoan	0.03	**-0.03**	**-0.12**	**0.03**	1.00
Chargeoff	**-0.18**	**0.15**	**0.03**	0.02	**-0.04**

Panel B presents the correlation matrix of the variables used in the discretionary loan provision regressions.

Panel C: Correlations for variables in Discretionary Fair value regression test (obs=8261)

	FV	FVtminus1	Invtsec	Tradasset	USbd10y	USDexch	Fedfund
FV	1.00						
FVtminus1	**0.34**	1.00					
Invtsec	**0.09**	**0.07**	1.00				
Tradasset	**0.19**	**0.22**	**-0.11**	1.00			
USbd10y	**0.04**	**0.09**	**0.15**	**-0.04**	1.00		
USDexch	**0.14**	**0.11**	**0.08**	-0.01	**0.08**	1.00	
Fedfund	-0.01	**0.07**	**0.07**	-0.02	**0.87**	**-0.03**	1.00
Corpindex	**0.09**	0.02	**-0.07**	0.02	**-0.70**	**-0.15**	**-0.63**

Panel C presents the correlation matrix of the variables used in the discretionary fair value regressions. Correlations in bold are statistically significant at the 1% level for all tables.

Table 4: Yearly regressions to derive discretionary and non-discretionary loan provisions

Dependent: LL Independent	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
LLA	-0.085 (0.062)	-0.084 (0.069)	-0.211 (0.000)	-0.225 (0.001)	-0.225 (0.000)	-0.350 (0.000)	-0.257 (0.000)	-0.126 (0.013)	-0.064 (0.130)	-0.008 (0.827)	-0.084 (0.016)	-0.249 (0.000)	-0.542 (0.000)	-0.860 (0.000)
NPL	-0.096 (0.001)	-0.069 (0.003)	-0.090 (0.008)	-0.141 (0.002)	-0.111 (0.001)	-0.129 (0.000)	-0.143 (0.000)	-0.074 (0.009)	-0.062 (0.049)	-0.130 (0.000)	-0.095 (0.000)	-0.224 (0.000)	-0.177 (0.000)	-0.123 (0.000)
ΔNPL	-0.028 (0.585)	-0.067 (0.174)	-0.090 (0.093)	-0.086 (0.375)	-0.140 (0.002)	-0.043 (0.451)	-0.140 (0.007)	-0.020 (0.708)	-0.029 (0.412)	-0.024 (0.594)	0.002 (0.944)	-0.018 (0.642)	-0.149 (0.012)	0.126 (0.000)
ΔLoan	-0.002 (0.107)	0.000 (0.995)	-0.004 (0.015)	-0.006 (0.010)	-0.003 (0.007)	-0.005 (0.004)	-0.003 (0.046)	-0.005 (0.000)	-0.006 (0.000)	-0.007 (0.000)	-0.005 (0.000)	-0.004 (0.045)	0.003 (0.492)	0.002 (0.507)
Chargeoff	-0.413 (0.002)	-0.436 (0.000)	-0.379 (0.000)	-0.408 (0.030)	-0.311 (0.004)	-0.613 (0.000)	-0.398 (0.001)	-0.335 (0.000)	-0.151 (0.043)	-0.265 (0.000)	-0.325 (0.000)	-0.499 (0.000)	-0.796 (0.000)	-0.303 (0.000)
Intercept	-0.000 (0.635)	-0.001 (0.009)	0.000 (0.329)	-0.001 (0.047)	0.000 (0.311)	0.001 (0.006)	0.000 (0.348)	-0.000 (0.212)	-0.000 (0.270)	-0.000 (0.151)	0.000 (0.809)	0.002 (0.001)	0.002 (0.018)	-0.004 (0.000)
Adjusted R^2	0.219	0.170	0.304	0.275	0.295	0.364	0.346	0.166	0.140	0.167	0.178	0.456	0.569	0.628
Obs.	708	699	643	710	812	775	800	776	751	731	712	670	634	621

Figures in brackets are p values.

Table 5: Regressions to derive discretionary and non-discretionary fair value gains and losses

Dependent:	FV		FV	
Independent:				
FVtminus1			0.3178	(0.000)
Invtsec	-0.0161	(0.026)	-0.0167	(0.017)
Tradasset	-0.1640	(0.010)	-0.1275	(0.037)
USbd10y	0.0003	(0.000)	0.0008	(0.000)
USDexch	0.0000	(0.000)	0.0000	(0.003)
Fedfund	0.0000	(0.098)	-0.0001	(0.004)
Corpindex	0.0000	(0.000)	0.0001	(0.000)
Invtsec * USbd10y	0.0006	(0.069)	0.0005	(0.071)
Invtsec & USDexch	0.0000	(0.027)	0.0000	(0.049)
Invtsec * Fedfund	-0.0002	(0.096)	-0.0002	(0.070)
Invtsec * Corpindex	0.0001	(0.025)	0.0001	(0.010)
Tradasset * USbd10y	0.0038	(0.556)	0.0067	(0.248)
Tradasset * USDexch	0.0001	(0.695)	-0.0001	(0.778)
Tradasset * Fedfund	0.0013	(0.541)	-0.0007	(0.709)
Tradasset * Corpindex	0.0014	(0.002)	0.0011	(0.007)
Year Dummies	No		Yes	
Intercept	-0.0077	(0.000)	-0.0153	(0.000)
Adjusted R	0.1124		0.2142	
Obs.	8261		8261	

Table 5 shows pooled regressions of fair value gains and losses on lagged fair value gains and losses, investment securities, trading assets and market data to derive discretionary and non-discretionary fair value gains and losses[4] . All variables are winsorized at the 1% and 99% levels. Figures in brackets are p values.

[4] Cross section regressions or regressions based on rolling 2 years cannot be run because many variables are dropped in these regressions.

Table 6: Persistence of operating cash flow, loan provision, discretionary loan provision, non-discretionary loan provision, fair value gains and losses, discretionary fair value gains and losses, non-discretionary fair value gains and losses

Panel A

Dependent:	CFO		LL		LLres		LLpre	
Independent:								
CFOtminus1	**0.245**	**(0.000)**						
LLtminus1			**0.650**	**(0.000)**				
LLrestminus1					**0.280**	**(0.000)**		
LLpretminus1							**0.827**	**(0.000)**
Year Dummies	Yes		Yes		Yes		Yes	
Intercept	0.008	(0.000)	-0.001	(0.000)	-0.000	(0.855)	-0.001	(0.000)
Adjusted R^2	0.100		0.536		0.061		0.755	
Obs.	4476		4476		4476		4476	

Panel B

Dependent:	FV		FVres		FVpre	
Independent:						
Fvtminus1	**0.351**	**(0.000)**				
FVrestminus1			0.004	(0.902)		
FVpretminus1					**0.528**	**(0.000)**
Year Dummies	Yes		Yes		Yes	
Intercept	0.000	(0.000)	-0.000	(0.680)	0.000	(0.000)
Adjusted R^2	0.202		-0.002		0.533	
Obs.	4476		4476		4476	

Table 6 panel A tests the persistence of operating cash flow, loan provisions, discretionary loan provisions and non-discretionary loan provisions . Panel B tests the persistence of fair value gains and losses, discretionary fair value gains and losses and non-discretionary fair value gains and losses. All variables are winsorized at the 1% and 99% levels. Figures in brackets are p values.

Table 7: Regressions of net income on lagged loan provision, operating cash flow, fair value gains and losses and discretionary/non-discretionary loan provisions/fair value gains and losses, bank risk

Dependent:	NI		NI		NI		NI	
Independent:								
CFOtminus1	**0.066**	**(0.000)**	**0.066**	**(0.000)**	**0.061**	**(0.000)**	**0.058**	**(0.000)**
FVtminus1	**1.090**	**(0.010)**						
FVrestminus1			**0.638**	**(0.001)**	**0.686**	**(0.000)**	**0.659**	**(0.000)**
FVpretminus1			**3.026**	**(0.000)**	**2.636**	**(0.000)**	**2.373**	**(0.000)**
LLtminus1	**0.721**	**(0.000)**	**0.680**	**(0.000)**				
LLrestminus1					**0.281**	**(0.001)**	**0.256**	**(0.000)**
LLpretminus1					**0.903**	**(0.000)**	**0.774**	**(0.000)**
Returnvol							**-0.004**	**(0.000)**
Year Dummies	Yes		Yes		Yes		Yes	
Intercept	0.009	(0.000)	0.009	(0.000)	0.010	(0.000)	0.011	(0.000)
Adjusted R	0.193		0.211		0.237		0.241	
Obs.	4476		4476		4476		4476	

Table 7 shows regressions of net income on lagged loan provisions, operating cash flows, fair value gains and losses, discretionary and non-discretionary loan provisions and fair values. All variables are winsorized at the 1% and 99% levels. Figures in brackets are p values.

Table 8: Regressions of abnormal returns on lagged operating cash flow, loan provision, fair value gains and losses, bank risk

Dependent:	Areturns		Areturns		Areturns		Areturns	
Independent:								
CFOtminus1	0.305	(0.375)	0.314	(0.361)	0.316	(0.359)	0.337	(0.330)
FVtminus1	1.923	(0.714)						
FVrestminus1			-0.158	(0.978)	-0.025	(0.996)	0.159	(0.978)
FVpretminus1			7.697	(0.600)	7.590	(0.605)	8.583	(0.564)
LLtminus1	**-6.599**	**(0.003)**	**-6.618**	**(0.003)**				
LLrestminus1					**-7.114**	**(0.020)**	**-6.741**	**(0.031)**
LLpretminus1					**-5.979**	**(0.037)**	-4.848	(0.129)
Returnvol							0.072	(0.262)
Year Dummies	Yes		Yes		Yes		Yes	
Intercept	-0.478	(0.000)	-0.480	(0.000)	-0.479	(0.000)	-0.507	(0.000)
Adjusted R	0.090		0.089		0.089		0.093	
Obs.	4476		4476		4476		4476	

Table 8 shows regressions of abnormal returns on lagged operating cash flows, loan provisions, fair value gains and losses, discretionary and non-discretionary loan provisions and fair values. All variables are winsorized at the 1% and 99% levels. Figures in brackets are p values.

Table 9: Mishkin test of the market pricing of operating cash flows, discretionary loan provisions, non-discretionary loan provisions, discretionary fair value gains and losses, non-discretionary fair value gains and losses and bank risk with respect to their implications for one-year ahead earnings

Panel A: Market pricing of Earnings components with respect to their implications for one-year ahead earnings

$NI_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 LLres_t + \alpha_3 LLpre_t + \alpha_4 FVres_t + \alpha_5 FVpre_t + \alpha_6 Returnvol_t + \upsilon_{t+1}$

$Areturns_{t+1} = \gamma + \beta\,(NI_{t+1} - \alpha_0 - \alpha_1^{*} CFO_t - \alpha_2^{*} LLres_t - \alpha_3^{*} LLpre_t - \alpha_4^{*} FVres_t - \alpha_5^{*} FVpre_t - \alpha_6^{*} Returnvol_t) + \varepsilon_{t+1}$

Forecasting coefficients			Valuation coefficients		
Parameter	Estimate	Std. error	Parameter	Estimate	Std. error
α_1CFO	0.056	0.007	α_1^{*}CFO	-0.006	0.055
α_2LLres	**0.239**	0.040	α_2^{*}LLres	**1.379**	0.329
α_3LLpre	0.750	0.040	α_3^{*}LLpre	1.242	0.302
α_4FVres	0.658	0.109	α_4^{*}FVres	0.625	0.817
α_5Fvpre	**2.307**	0.218	α_5^{*}FVpre	**-5.857**	1.873
α_6Returnvol	-0.005	0.001	α_6^{*}Returnvol	-0.006	0.006

Panel B: Market efficiency tests

Null hypothesis	Chi2	P value
$\alpha_1 = \alpha_1^{*}$	1.250	0.264
$\alpha_2 = \alpha_2^{*}$	**11.817**	**0.001**
$\alpha_3 = \alpha_3^{*}$	2.614	0.106
$\alpha_4 = \alpha_4^{*}$	0.002	0.968
$\alpha_5 = \alpha_5^{*}$	**18.757**	**0.000**
$\alpha_6 = \alpha_6^{*}$	0.026	0.873

Table 10: Abnormal returns for portfolios ranked by loan provisions

Portfolios ranked by loan provisions (1 = lowest, 10 = highest loan provisions)	Abnormal returns at t+1
1	**-0.067**
2	-0.026
3	-0.089
4	-0.074
5	-0.058
6	-0.088
7	-0.106
8	-0.098
9	-0.131
10	**-0.143**
Difference bet. deciles 1 and 10 p value	**-0.076 (0.014)**
Difference bet. deciles 1 and 2 p value	0.041 (0.224)
Difference bet. deciles 2 and 3 p value	**-0.063 (0.034)**
Difference bet. deciles 3 and 4 p value	0.015 (0.585)
Difference bet. deciles 4 and 5 p value	0.016 (0.583)
Difference bet. deciles 5 and 6 p value	-0.030 (0.256)
Difference bet. deciles 6 and 7 p value	-0.017 (0.448)
Difference bet. deciles 7 and 8 p value	0.007 (0.749)
Difference bet. deciles 8 and 9 p value	-0.033 (0.197)
Difference bet. deciles 9 and 10 p value	-0.012 (0.661)
Obs.	4476

Figures in brackets are p values in tests of significant difference from zero and difference between portfolio deciles.

Table 11: Abnormal returns for portfolios ranked by fair value gains and losses and risk

Panel A

Portfolios ranked by fair value gain (1 = lowest, 10 = highest fair value gain)	Abnormal returns at t+1
1	-0.075
2	-0.100
3	-0.089
4	-0.090
5	-0.120
6	-0.127
7	-0.092
8	-0.073
9	-0.088
10	-0.029
Deciles 1 and 10 p value	0.046 (0.108)
Deciles 1 and 2 p value	-0.025 (0.375)
Deciles 2 and 3 p value	0.011 (0.698)
Deciles 3 and 4 p value	-0.001 (0.968)
Deciles 4 and 5 p value	-0.030 (0.272)
Deciles 5 and 6 p value	-0.007 (0.804)
Deciles 6 and 7 p value	0.035 (0.209)
Deciles 7 and 8 p value	0.019 (0.469)
Deciles 8 and 9 p value	-0.015 (0.557)
Deciles 9 and 10 p value	0.059 (0.027)
Obs.	4476

Figures in brackets are p values in tests of significant difference from zero and difference between portfolio deciles.

Panel B

Portfolios ranked by return volatility (1 = lowest, 10 = highest return volatility)	Abnormal returns at t+1
1	**-0.108**
2	-0.121
3	-0.116
4	-0.108
5	-0.082
6	-0.105
7	-0.081
8	-0.072
9	-0.059
10	**-0.044**
Deciles 1 and 10 p value	**0.064 (0.048)**
Deciles 1 and 2 p value	-0.013 (0.601)
Deciles 2 and 3 p value	0.005 (0.824)
Deciles 3 and 4 p value	0.008 (0.743)
Deciles 4 and 5 p value	0.026 (0.318)
Deciles 5 and 6 p value	-0.023 (0.345)
Deciles 6 and 7 p value	0.024 (0.362)
Deciles 7 and 8 p value	0.009 (0.724)
Deciles 8 and 9 p value	0.013 (0.677)
Deciles 9 and 10 p value	0.015 (0.648)
Obs.	4476

Figures in brackets are p values in tests of significant difference from zero and difference between portfolio deciles.

Table 12: Abnormal returns and risk for portfolios ranked by discretionary and non-discretionary loan provisions

Panel A

Portfolios ranked by discretionary loan provisions (1 = lowest, 10 = highest discretionary loan provisions)	Abnormal returns at t+1	Returnvol
1	**-0.059**	0.459
2	-0.032	0.433
3	-0.012	0.399
4	-0.093	0.396
5	-0.083	0.380
6	-0.123	0.384
7	-0.091	0.386
8	-0.135	0.380
9	-0.105	0.416
10	**-0.146**	0.431
Difference bet. deciles 1 and 10 p value	**-0.087 (0.006)**	-0.028 (0.136)
Difference bet. deciles 1 and 2 p value	0.027 (0.409)	-0.026 (0.175)
Difference bet. deciles 2 and 3 p value	0.021 (0.500)	-0.034 (0.063)
Difference bet. deciles 3 and 4 p value	**-0.081 (0.003)**	-0.003 (0.810)
Difference bet. deciles 4 and 5 p value	0.009 (0.715)	**-0.016 (0.308)**
Difference bet. deciles 5 and 6 p value	-0.040 (0.123)	-0.004 (0.808)
Difference bet. deciles 6 and 7 p value	0.032 (0.186)	0.002 (0.858)
Difference bet. deciles 7 and 8 p value	**-0.044 (0.056)**	-0.006 (0.673)
Difference bet. deciles 8 and 9 p value	0.030 (0.233)	**0.036 (0.032)**
Difference bet. deciles 9 and 10 p value	-0.041 (0.155)	0.015 (0.401)
Obs.	4476	4476

Panel B

Portfolios ranked by non-discretionary loan provisions (1 = lowest, 10 = highest non-discretionary loan provisions)	Abnormal returns at t+1	Returnvol
1	-0.063	0.499
2	-0.080	0.440
3	-0.094	0.433
4	-0.104	0.408
5	-0.103	0.404
6	-0.085	0.400
7	-0.088	0.378
8	-0.046	0.382
9	-0.097	0.368
10	-0.117	0.354
Deciles 1 and 10 p value	-0.054 (0.082)	**-0.145 (0.000)**
Deciles 1 and 2 p value	-0.017 (0.606)	**-0.059 (0.010)**
Deciles 2 and 3 p value	-0.014 (0.625)	-0.013 (0.681)
Deciles 3 and 4 p value	-0.010 (0.730)	-0.025 (0.129)
Deciles 4 and 5 p value	0.001 (0.977)	-0.004 (0.814)
Deciles 5 and 6 p value	0.018 (0.488)	-0.004 (0.783)
Deciles 6 and 7 p value	-0.003 (0.903)	-0.022 (0.158)
Deciles 7 and 8 p value	0.042 (0.110)	0.004 (0.813)
Deciles 8 and 9 p value	**-0.051 (0.037)**	-0.014 (0.287)
Deciles 9 and 10 p value	-0.020 (0.400)	-0.014 (0.272)
Obs.	4476	4476

Figures in brackets are p values in tests of significant difference from zero and difference between portfolio deciles.

Table 13: Yearly abnormal returns for portfolios ranked by discretionary loan provisions

1 = lowest, 10 = highest discretionary LL)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1	-0.102	-0.403	0.010	-0.226	0.063	0.030	0.102	0.021	0.125	-0.135	-0.118	-0.180	-0.122	-0.063
2	0.059	-0.391	-0.216	-0.131	0.112	0.183	0.146	-0.003	0.085	-0.119	-0.139	-0.200	-0.121	0.122
3	-0.006	-0.443	-0.025	-0.010	0.303	0.192	0.006	0.055	-0.042	-0.098	-0.128	-0.066	-0.047	0.037
4	-0.070	-0.428	-0.207	-0.127	0.086	0.123	-0.036	-0.094	0.049	-0.162	-0.078	-0.155	-0.282	-0.052
5	-0.180	-0.447	-0.155	-0.302	0.189	0.053	0.072	-0.004	-0.058	-0.102	0.015	-0.140	-0.225	-0.118
6	-0.276	-0.480	-0.252	-0.223	0.068	0.058	-0.032	-0.091	-0.060	-0.131	-0.065	-0.213	-0.193	-0.117
7	-0.008	-0.507	-0.146	-0.006	0.127	0.042	0.010	-0.101	-0.013	-0.177	-0.009	-0.231	-0.193	-0.105
8	-0.093	-0.466	-0.191	-0.186	-0.022	0.055	-0.019	-0.100	0.012	-0.163	-0.076	-0.236	-0.304	-0.203
9	0.122	-0.417	-0.203	-0.271	-0.069	0.068	0.006	0.005	-0.065	-0.190	-0.015	-.1955	-0.202	-0.108
10	-0.128	-0.592	-0.150	-0.075	0.019	0.052	0.131	-0.013	-0.110	-0.186	-0.090	-0.321	-0.279	-0.342
Deciles 1 & 10	(0.848)	(0.082)	(0.252)	(0.338)	(0.639)	(0.751)	(0.790)	(0.677)	(0.003)	(0.888)	(0.591)	(0.165)	(0.327)	(0.087)
Deciles 1 & 2	(0.363)	(0.915)	(0.094)	(0.544)	(0.626)	(0.019)	(0.634)	(0.784)	(0.709)	(0.767)	(0.697)	(0.830)	(0.994)	(0.273)
Deciles 2 & 3	(0.711)	(0.532)	(0.056)	(0.350)	(0.130)	(0.936)	(0.127)	(0.473)	(0.160)	(0.826)	(0.837)	(0.071)	(0.541)	(0.605)
Deciles 3 & 4	(0.656)	(0.848)	(0.066)	(0.414)	(0.059)	(0.497)	(0.543)	(0.006)	(0.188)	(0.477)	(0.339)	(0.137)	(0.037)	(0.492)
Deciles 4 & 5	(0.311)	(0.840)	(0.347)	(0.169)	(0.333)	(0.252)	(0.135)	(0.064)	(0.098)	(0.201)	(0.238)	(0.800)	(0.626)	(0.610)
Deciles 5 & 6	(0.536)	(0.728)	(0.105)	(0.278)	(0.312)	(0.921)	(0.187)	(0.077)	(0.954)	(0.564)	(0.341)	(0.282)	(0.824)	(0.998)
Deciles 6 & 7	(0.152)	(0.733)	(0.191)	(0.057)	(0.546)	(0.815)	(0.578)	(0.788)	(0.342)	(0.270)	(0.334)	(0.775)	(0.995)	(0.916)
Deciles 7 & 8	(0.491)	(0.624)	(0.549)	(0.121)	(0.066)	(0.868)	(0.634)	(0.988)	(0.655)	(0.689)	(0.154)	(0.948)	(0.305)	(0.374)
Deciles 8 & 9	(0.224)	(0.606)	(0.823)	(0.295)	(0.484)	(0.836)	(0.697)	(0.169)	(0.204)	(0.391)	(0.452)	(0.597)	(0.428)	(0.449)
Deciles 9 & 10	(0.167)	(0.057)	(0.399)	(0.103)	(0.273)	(0.809)	(0.241)	(0.840)	(0.399)	(0.888)	(0.359)	(0.147)	(0.568)	(0.136)
Obs.	128	188	231	262	304	322	349	344	364	385	387	385	385	442

This table shows the yearly abnormal returns for each portfolio ranked by discretionary loan provisions, a yearly breakdown of table 12 panel A.

Table 14: Abnormal returns for portfolios ranked by discretionary and non-discretionary fair value gains and losses

Panel A

Portfolios ranked by discretionary fair value gains and losses (1 = lowest, 10 = highest discretionary fair value gains and losses)	Abnormal returns at t+1
1	-0.092
2	-0.094
3	-0.110
4	-0.110
5	-0.079
6	-0.081
7	-0.127
8	-0.079
9	-0.072
10	-0.041
Difference bet. deciles 1 and 10 p value	0.051 (0.068)
Difference bet. deciles 1 and 2 p value	-0.002 (0.940)
Difference bet. deciles 2 and 3 p value	-0.016 (0.543)
Difference bet. deciles 3 and 4 p value	0.000 (0.999)
Difference bet. deciles 4 and 5 p value	0.031 (0.296)
Difference bet. deciles 5 and 6 p value	-0.002 (0.948)
Difference bet. deciles 6 and 7 p value	-0.046 (0.104)
Difference bet. deciles 7 and 8 p value	0.048 (0.072)
Difference bet. deciles 8 and 9 p value	0.007 (0.783)
Difference bet. deciles 9 and 10 p value	0.031 (0.266)
Obs.	4476

Panel B

Portfolios ranked by non-discretionary fair value gains and losses (1 = lowest, 10 = highest non-discretionary fair value gains and losses)	Abnormal returns at t+1
1	-0.113
2	-0.033
3	-0.117
4	-0.079
5	-0.102
6	-0.112
7	-0.066
8	-0.096
9	-0.098
10	-0.068
Deciles 1 and 10 p value	0.045 (0.104)
Deciles 1 and 2 p value	0.080 (0.005)
Deciles 2 and 3 p value	-0.084 (0.004)
Deciles 3 and 4 p value	0.038 (0.151)
Deciles 4 and 5 p value	-0.023 (0.381)
Deciles 5 and 6 p value	-0.010 (0.711)
Deciles 6 and 7 p value	0.046 (0.120)
Deciles 7 and 8 p value	-0.030 (0.313)
Deciles 8 and 9 p value	-0.002 (0.923)
Deciles 9 and 10 p value	0.030 (0.245)
Obs.	4476

Figures in brackets are p values in tests of significant difference from zero and difference between portfolio deciles.

Table 15: Abnormal returns for portfolios based on discretionary loan provision and bank risk

Abnormal returns at t+1

	Low DLP - 1	2	3	4	High DLP - 5	High minus Low	P value
Low returnvol - 1	-0.116	-0.046	-0.132	-0.124	-0.148	-0.032	(0.496)
2	-0.122	-0.069	-0.121	-0.108	-0.140	-0.018	(0.667)
3	-0.034	-0.096	-0.099	-0.119	-0.117	-0.083	(0.069)
4	-0.009	-0.059	-0.116	-0.089	-0.126	**-0.117**	**(0.015)**
High returnvol - 5	-0.000	0.012	-0.071	-0.124	-0.099	-0.099	(0.068)
High minus Low	**0.116**	0.058	0.061	0.000	0.049		
P value	**(0.053)**	(0.237)	(0.184)	(0.997)	(0.331)		
High returnvol/ Low DLP minus Low returnvol/High DLP	**0.148**						
P value	**(0.004)**						

This table shows the abnormal returns for each discretionary (DLP) quintile and return volatility quintile. The column 'High minus Low' shows the difference in returns between the highest and lowest discretionary loan provision portfolios for each risk (return volatility) quintile. The row 'High minus Low' shows the difference in returns between the highest and lowest risk (return volatility) portfolios for each discretionary loan provision quintile. Figures in brackets are p values in tests of significant difference from zero.

Table 16: Mimicking portfolios for Khan (2008), Chan and Chen (1991) tests

Panel A: Descriptive statistics

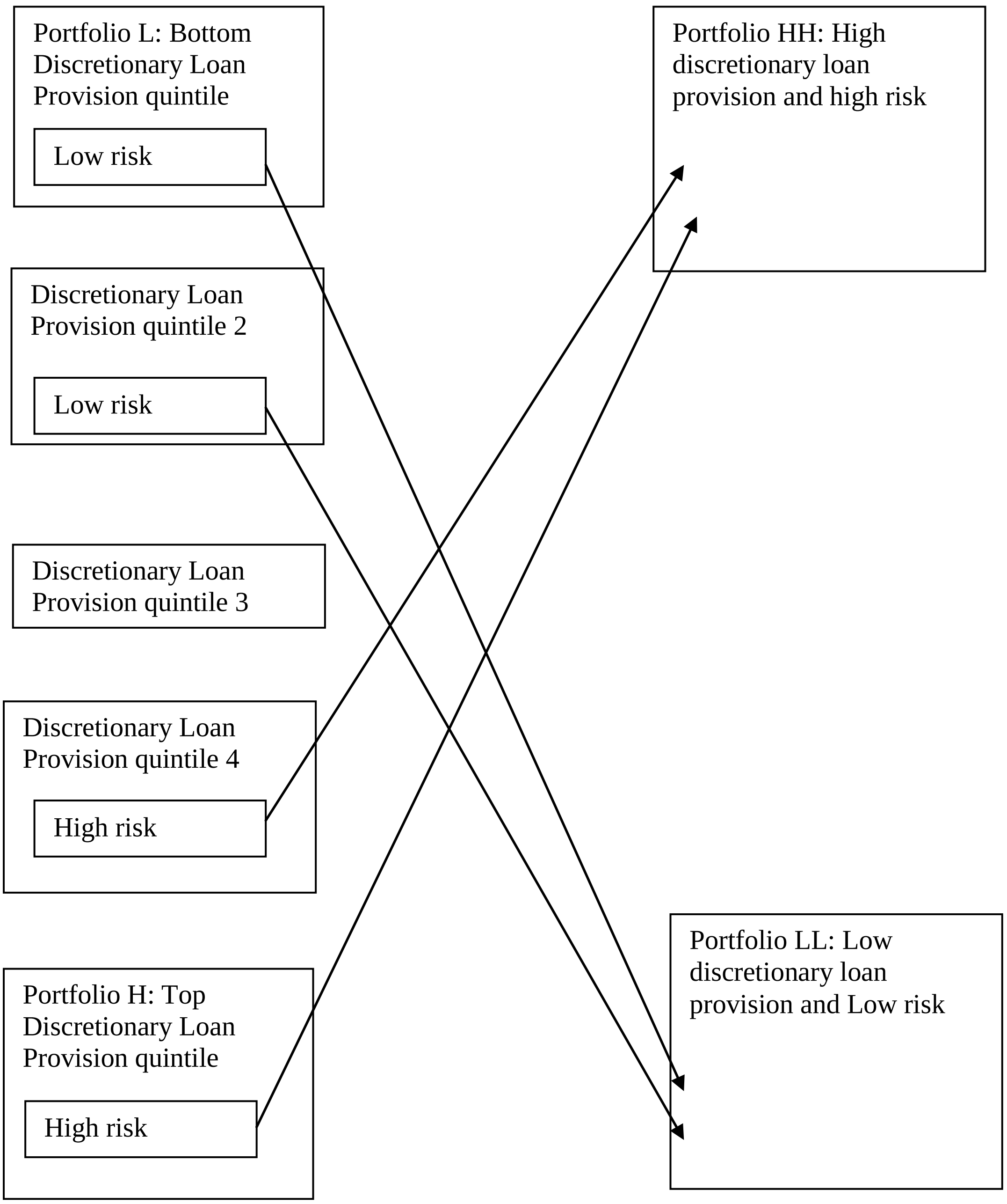
Variable	Obs	Mean	Std. Dev.	Min	Max	Median	Skewness
DLPdif	14	0.036	0.043	-0.041	0.127	0.034	0.344
Riskdif	14	-0.020	0.104	-0.260	0.122	0.006	-1.057

Panel B: Correlation matrix

	DLPdif	Riskdif
DLPdif	1.000	
Riskdif	-0.527	1.000

This table shows the descriptive statistics and correlation of the returns to two mimicking portfolios for the 14 years from 1996 to 2009. DLPdif is the return on low discretionary loan provision minus high discretionary loan provision portfolios. Riskdif is the return on high risk (return volatility) and high discretionary loan provision minus low risk and low discretionary loan provision portfolios.

Fig 1: Composition of mimicking portfolios L, H, LL and HH in Khan (2008), Chan and Chen (1991) tests



Appendix A: Movements in sample size across years

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
C/f total		128	188	231	262	304	322	349	344	364	385	387	385	385
Drop		0	22	30	33	25	27	46	29	31	39	31	36	36
Survive (C/f total minus Drop)		128	166	201	229	279	295	303	315	333	346	356	349	349
New		60	65	61	75	43	54	41	49	52	41	29	36	93
Total	128	188	231	262	304	322	349	344	364	385	387	385	385	442
Drop breakdown														
Bankruptcy				1			1						5	1
Forced delisting e.g. low price, insufficient equity, stop trading					1	1	1	2		2	1	1	4	14
Delisting at company request e.g. gone private			1		2			1			1	2	2	2
Missing data in Compustat[5]			3	5	7	4	7	10	7	1	9	14	19	9
Merger			18	24	23	20	18	33	22	28	28	14	6	10

[5] This excludes cases where missing returns are set to zero based on Kraft et al. (2006).