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Value relevance of banks' cash flows from operations☆

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ABSTRACT

This study examines the value relevance of banks' cash flows from operations. While banks are required to provide statements of cash flows under Generally Accepted Accounting Principles (GAAP), banks have long argued that cash flow information is not useful for the banking industry. Using a sample of banks from 2004 to 2014, we find that banks' cash flows from operations are predictive of future earnings and cash flows. Applying a modified Ohlson's (1995) valuation model, we document that banks' cash flows from operations are positively and significantly associated with share prices. Furthermore, we find the usefulness of banks' cash flows to vary depending on three important bank characteristics: profitability, capital adequacy, and credit risk. Taken together, these findings suggest that banks' cash flows from operations provide useful information to investors in valuing banks' equity. This study contributes novel empirical findings that enhance our understanding of the predictive ability and valuation usefulness of banks' operating cash flows.

1. Introduction

This study examines whether banks' cash flows from operations predict future cash flows and earnings, and whether the market incorporates such information into the price. The usefulness of cash flow information, as provided in banks' statements of cash flows, was hotly debated during the due process of Statement of Financial Accounting Standards (SFAS) 95, *Statement of Cash Flows* (Accounting Standard Codification [ASC] 230) issued in 1987. Banks asserted that a statement of cash flows would be meaningless for their industry because cash could be viewed as a product of lending ac7tivities, and the nature of banks' cash flows are significantly different from nonfinancial enterprises (paragraph 58, SFAS 95, Financial Accounting Standards Board (FASB), 1987). In contrast, the FASB argued that "a bank needs cash for essentially the same reasons a manufacturer does—to invest in its operations, to pay its obligations, and to provide returns to its investors" (paragraph 59, SFAS 95, FASB, 1987). As a result, the FASB included banks within the scope of SFAS 95, which made reporting a statement of cash flows a requirement. More recently, in February 2010 during the deliberation on the FASB/IASB joint Financial Statement Presentation project, working group members again questioned the usefulness of the statement of cash flows for financial service entities (FASB, 2010a). Taking advantage of bank cash flows data in Compustat since 2004, the objective of this study is to provide large-sample evidence on the predictive ability and the value relevance of banks' cash flows from operations.

According to the Statement of Financial Accounting Concepts No. 8, information about an entity's cash flows helps investors to assess the entity's operations and its ability to generate future net cash flows (paragraph OB20, FASB, 2010b). Generally, cash flows from operations are considered an important input that equity investors incorporate when valuing a company. Many prior studies investigate the usefulness of cash flows by examining the ability of earnings, cash flow, and accrual components to predict future outcomes—and the extent to which they are reflected in share prices (e.g., Ryan, Tucker, & and Zarowin, 2006; Cheng, Ferris, Hsieh, & Su, 2005; Elshandidy, 2014; Schaberl & Victoravich, 2015; Dimitropoulos, Asteriou, & Koumanakos, 2010). Most studies do not include the banking industry in their analyses, and the valuation usefulness of banks' cash flows from operations is less studied. There are several reasons for this. First, data on banks' cash flows from operations only became available on Compustat in 2004, so earlier studies were not able to utilize banks' cash flows data at the time of the research (Sloan, 1996; Barth, Beaver, Hand, & Landsman, 1999; Cheng, Liu, & Schaefer, 1997). Second, some models concerning the relation of earnings, cash flows and accruals are developed to reflect industrial firms' activities (Bowen, Burgstahler and

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Daley, 1987; Dechow, 1994; Barth, Cram and Nelson, 2001).[1] However, one exception is Ryan, Tucker, and Zarowin (2006), who—using hand-collected data—examine 37 U.S. banks with large amounts of trading assets. Although not the focus of their study, part of their analyses suggests that cash flows from operations are associated with future cash flows from operations and that the market incorporates this information into price. In addition, Dimitropoulos, Asteriou, and Koumanakos (2010) examine a sample of 11 Greek bank institutions and find that cash flow levels explain stock returns, incremental to earnings.

Given the debate on the usefulness of banks' cash flow information and the small amount of prior literature in this area, the objective of this study is to provide large-sample evidence on the value relevance of banks' cash flows from operations. Using a sample of publicly traded bank holding companies from the years 2004 to 2014, we examine whether banks' cash flows aid investors in equity valuation. Decomposing earnings into cash flows and accruals, we first demonstrate the predictive ability of cash flows for future earnings and future operating cash flows, after controlling for the predictive ability of accruals. Next, we examine whether the market incorporates banks' cash flow information into equity valuation using a modified version of Ohlson's (1995) model of the valuation of earnings and book value that partitions earnings into cash flows and accruals. By estimating regressions of share price on cash flows from operations, accruals, and book value of equity, we find a positive and significant association between share price and cash flows from operations. This suggests cash flow information is an important input in share price valuation. The positive association holds after partitioning accruals into provisions for loan losses and other accruals. Furthermore, we find that cash flows are more value relevant for banks with a profit relative to those with a loss, for banks with higher Tier 1 capital ratios, and for banks with lower credit risk. Taken together, the findings suggest that banks' cash flows from operations provide useful information to investors.

Our study extends Ryan et al. (2006) in several meaningful ways. First, we examine a broader cross-section of banks—over 400 banks each year—in contrast to Ryan et al. (2006)'s sample of 37 large banks with significant trading assets, which may not be representative of an average bank. Second, their sample period of 1991–2003 does not capture recent changes in the regulatory and economic environment nor the 2007–2009 financial crisis period, which our sample period of 2004–2014 does. Lastly, we examine whether cash flow provides different levels of information depending on several bank characteristics.

Our study makes several contributions. First, by showing that banks' cash flows are value relevant, our study sheds light on the debate among banks and standard setters concerning the usefulness of banks' cash flow information to investors. During the deliberation on the FASB/IASB joint Financial Statement Presentation project in 2010, working group members questioned the usefulness of the statement of cash flows for financial services entities. Our study could assist the FASB in future deliberations regarding the financial service industry's use of the statement of cash flows.[2] Our findings also provide bank financial statement users a better understanding of the predictive ability and valuation of banks' operating cash flows.

Second, the results from this study contribute to the literature on the valuation implications of cash flows (e.g., Barth, Beaver, Hand, & Landsman, 1999; Barth, Cram, & Nelson, 2001; Bowen, Burgstahler, & Daley, 1987; Cheng, Liu, & Schaefer, 1997; Sloan, 1996). By showing the predictive ability of banks' cash flows and the extent to which cash flows are priced into equity valuation, we extend the literature on the relation of cash flows and equity values.[3] In addition, some academics have argued (but have not empirically tested in a large sample) that cash flow amounts are not important for the banking industry (Mulford & Comiskey, 2009; Ryan, 2002).[4] Using a sample of publicly traded bank holding companies from 2004 to 2014, our empirical findings suggest the contrary.

We organize the remainder of the paper as follows. Section 2 provides institutional background on banks' cash flows from operating activities and develops hypotheses. In Section 3, we describe the research design and sample selection. In Section 4, we report the main empirical results of the hypotheses. Section 5 presents additional analysis. Section 6 concludes.

2. Institutional background and hypotheses development

2.1. Institutional background on Banks' cash flows from operations

Cash flows from operating activities are generally the cash effects of transactions that enter into the determination of net income (ASC 230-10-20). For a bank, the determination of net income involves two major elements: revenues, which consist of net interest income (i.e., interest income minus interest expense) and noninterest income, and expenses, which consist of provisions for loan losses, noninterest expense, and income tax expense.[5] Relatedly, a bank's cash flows from operations are the difference between cash inflows and outflows from operating activities. A bank's cash inflows from operations primarily consist of cash receipts related to interest income (e.g., interest revenues received on loans, leases, and investment securities) and noninterest income (e.g., fees and commissions received). A bank's cash outflows from operations primarily consist of cash payments related to interest expense (e.g., interest paid to depositors and other creditors), noninterest expense (e.g., cash paid to suppliers and employees), and income taxes. In addition, for banks that carry securities in a trading account and/or engage in the origination, purchase, and/or sale of loans, cash flows from operating activities include cash flows from the purchase and sale of trading securities and loans held for sale (ASC 230-10-45-18 through 45-21).[6]

When arriving at operating cash flows, banks typically use the indirect method, under which net income is converted to net cash flows from operations by removing the effects of income statement

[1] Similar to prior literature, we use the terms cash flows, operating cash flows, and cash flows from operations interchangeably.

[2] The FASB had a joint project with the International Accounting Standards Board (IASB) on Financial Statement Presentation from 2002 to 2011. During their joint meeting in February 2010, the Boards discussed whether financial services entities should be required to use the direct method when preparing a statement of cash flows (FASB, 2010a). The Boards have yet to return to the financial statement presentation project when the requisite capacity allows (FASB, 2011).

[3] Using pre–loan loss earnings to approximate bank cash flows (due to the unavailability of banks' operating cash flow information on Compustat), Wahlen (1994) provided some evidence that the change in cash flows for banks are associated with future changes in cash flows.

[4] A contemporaneous working paper, Gao, Li and O'Hanlon (2015), applies a different approach and examines the informativeness of disaggregated items in the statements of cash flows of banks and nonfinancial companies. Gao et al. conclude that disaggregated items in banks' statements of cash flows are of limited informativeness and are less informative than those of nonfinancial companies.

[5] More specifically, net interest income is the difference between interest income from loans and leases, investment securities, etc., and interest expense from depositors and other creditors. Noninterest income includes service charges on deposit accounts, trust and investment fees, mortgage banking revenues, and gains or losses from trading activities. Noninterest expense includes salaries, occupancy, marketing, depreciation, and amortization.

[6] The FASB concluded that cash flows from purchases and sales of trading securities should be reported as operating cash flows because securities in trading accounts are similar to inventory in other businesses (paragraph 26 of SFAS 102, 1989). The Board also concluded that cash flows resulting from the purchase or origination and sale of loans that were specifically acquired for resale should be reported as operating cash flows because these loans are similar to inventory in other businesses (paragraph 27 of SFAS 102, 1989). Furthermore, the Board decided that cash receipts resulting from sales of loans that were specifically acquired for resale should be classified as operating cash flows and that cash receipts resulting from sales of loans that were not specifically acquired for resale should be classified as investing cash flows. In order to achieve greater comparability, a subsequent change in the purpose of holding these loans (e.g., a change from trading to holding these loans) does not change the classification of cash receipts from sales of these loans (paragraph 9 of SFAS 102, FASB, 1989).

transactions that do not result in changes in cash. These effects can be classified into four categories. The first is adjusting net income to remove noncash periodic charges to expenses, such as provision for loan losses, depreciation, and amortization (ASC 230-10-45-28). The second is adjusting the net income of all items whose cash effects are related to investing or financing cash flows, including gains or losses on the sale of investment securities (which relate to investing activities), gains or losses on the sale of property, plant and equipment (which relate to investing activities), and gains or losses on the extinguishment of debt (which relate to financing activities) (ASC 230-10-45-28). The third is adjusting the net income for the effects of all deferrals of past operating cash receipts and payments, including net changes in interest receivable, interest payable, trading assets, and taxes payable (ASC 230-10-45-28). Fourthly, cash receipts and payments resulting from the purchase and sale of trading assets and loans held for sale are classified as operating cash flows (ASC 230-10-45-18 through 45-21). Appendix A provides an example of the statement of cash flows.

2.2. Hypotheses development

In this section, we develop hypotheses on the predictive ability and valuation usefulness of banks' cash flows from operations.

2.2.1. Hypothesis 1: predictive ability

Over the long run, a bank must generate positive cash flows from its operating activities to continue operations (paragraph 59, SFAS No. 95). A bank's cash flows from operations provide information about cash receipts and payments from various operating activities during a period, which helps users understand the bank's interest income, noninterest income, interest expense, and noninterest expense and which may assist users in forming expectations about future cash flows and earnings. This is in line with the FASB's view that information about an entity's cash flows during a period helps users access the entity's ability to generate prospective net cash inflows (FASB, 2010b, SFAC No. 8). Dechow (1994) finds that cash flows are a useful measure of firm performance. Sloan (1996) finds the earnings performance attributable to the accrual component of earnings to exhibit lower persistence than that attributable to the cash flow component of earnings. Wahlen (1994) proxies for cash flows by removing the loan loss provision (a bank's largest accrual) from net income and provides preliminary evidence that unexpected future changes in the cash flow proxy relate to current changes in cash flows, although it is not the focus of his study. Ryan et al. (2006) find a positive relationship between future performance and operating cash flows using a small sample of large banks.

However, banks argued in their SFAS 95 comment letters that a statement of cash flows would be meaningless for their industry because cash could be viewed as a product of banks' lending activities and, therefore, that banks' activities did not allow cash flows to be classified into operating, investing, and financing categories. Some academics agreed with the banks (Mulford & Comiskey, 2009; Ryan, 2002) that cash flow classifications seemed arbitrary and questioned the importance of banks' cash flows from operations.[7] Further, although a bank provides a wealth of information about its financial condition and performance through regulatory reporting, banking regulators do not require a statement of cash flows in a bank's report of condition and income or a holding company's consolidated financial statements. In addition, some analysts note that they do not use information in banks' cash flows from operations in their valuation modeling (FASB/IASB Staff Paper, 2010, p. 2).[8]

To summarize, whether a bank's cash flows from operations can aid investors in predicting future financial performance is debated. Because earnings and cash flows are two important measures of a firm's financial performance, we propose Hypothesis 1 as follows, stated in the alternative form:

Hypothesis 1. Banks' cash flows from operations predict future earnings and cash flows.

2.2.2. Hypothesis 2: value relevance

Accounting information is considered to be value relevant if it has a predicted association with equity market values (Barth et al., 2001). Prior literature examining fundamental financial variables, such as earnings and cash flows, suggests that these variables are useful in security valuation (Collins & Kothari, 1989; Penman & Sougiannis, 1998).

The prior academic literature generally focuses on the value relevance of accruals vis-à-vis cash flows. Barth et al. (1999) find that accruals and cash flows predict future abnormal earnings and explain the market value of equity. Prior studies do not include banks in their analysis due to data availability (Barth et al., 1999; Sloan, 1996) or because the models were developed with nonfinancial companies in mind (Dechow, 1994). One exception is Dimitropoulos et al. (2010), which examines the stock returns-earnings association in 11 Greek bank institutions and finds that the cash flow level provides incremental value relevance beyond earnings.

While the studies described in the preceding paragraph provide support for the view that operating cash flows are an important financial measure, these cash flow amounts are perceived as being much less important for financial companies (Mulford & Comiskey, 2009). The lesser importance stems from the fact that a bank's assets are comprised mostly of financial assets, and the classification of cash flows into operating, investing, and financing categories is seemingly arbitrary (Ryan, 2002). Moreover, respondents to the FASB/IASB discussion paper on Financial Statement Presentation note that analysts may not use information in banks' statements of cash flows as part of their modeling (FASB/IASB Staff Paper, 2010, p.2).

Taken together, these studies do not answer the empirical question of whether operating bank cash flows provide information relevant to firm value beyond earnings. We propose the following hypothesis, stated in the alternative form.

Hypothesis 2. Banks' cash flows from operations provide value-relevant information to investors.

2.2.3. Hypothesis 3: moderating effects

Assuming we find that cash flows from operations are value relevant, we expect the valuation usefulness of the information to vary based on banks' economic characteristics, including profitability, capital adequacy, and credit risk.[9]

First, profitability, or the ability to generate positive earnings, indicates a bank's ability to remain competitive and helps a bank absorb losses and augment capital. Prior research shows that losses are perceived as temporary by investors due to investors' liquidation option, and thus losses have a weaker association with share price than profits (Hayn, 1995). Because cash flows from operations are a major

[7] Mulford and Comiskey (2009) examine cash flow reporting practices for the fifteen largest publicly traded U.S. commercial banks. Utilizing hand-collected information from financial statement notes, they adjust operating cash flows primarily for noncash transfers between different cash flow classifications and for mergers and acquisitions, and they discuss how these adjustments increase or decrease reported operating cash flows. They do not test whether operating cash flows (adjusted or unadjusted) relate to future financial performance or stock valuation.

[8] This is consistent with the fact that analysts provide much fewer cash flow forecasts for banks than for companies in nonfinancial, nonutilities industries. From 2004 to 2014, IBES analysts provided cash flow forecasts for 21.4% of banks in the IBES database, compared to 55.7% for nonfinancial, nonutilities companies (untabulated).

[9] We select these three bank characteristics because they are part of the Federal Deposit Insurance Corporation (FDIC) CAMELS components (capital adequacy, asset quality, management, earnings, liquidity, and sensitivity to market risk) and because the effects of profitability, leverage, and risk on a firm's valuation have been well-documented in prior literature. However, in general, prior literature on value relevance does not distinguish between banks and nonbanks (Beatty & Liao, 2014).

component of earnings, we expect the association between cash flows from operations and share price to be weaker for an unprofitable bank than for a profitable bank. The above argument leads to the following hypothesis.

Hypothesis 3a. Cash flows from operations provide more value relevant-information for a profitable bank than for an unprofitable bank.

Second, a bank's capital adequacy absorbs losses, restricts excessive asset growth, and protects depositors (FDIC, 2015). Bank regulators establish regulatory capital requirements to promote a stronger banking industry. Prior literature suggests that highly leveraged firms have lower valuation multiples because these firms have greater financial risk and increases in earnings may go to creditors rather than shareholders (Dhaliwal, Lee and Fargher, 1991). In a similar vein, we expect the valuation multiples of cash flows to be higher for banks with higher capital ratios than for banks with lower capital ratios, because the latter have greater financial and regulatory risk, and thus have higher discount rates. The above argument leads to the following hypothesis.

Hypothesis 3b. Cash flows from operations provide more value-relevant information for banks with higher capital ratios than for banks with lower capital ratios.

Third, banks are intermediaries for many types of risk in the capital market—credit risk, interest rate risk, prepayment risk, exchange rate risk, liquidity risk, and others. The credit risk of loan portfolios is one of the most critical areas in determining the overall risk of a bank. We expect the valuation usefulness of cash flows to be lower for banks with greater credit risk because current cash flows will be perceived as being less persistent due to a greater likelihood of loss, resulting in higher discount rate. The above argument leads to the following hypothesis.

Hypothesis 3c. Cash flows from operations provide more value-relevant information for banks with lower credit risk than for banks with higher credit risk.

3. Research design and sample selection

3.1. Research design

3.1.1. Hypothesis 1: Predictive ability

With respect to Hypothesis 1, we examine the ability of banks' cash flows from operations to predict future earnings and cash flows. The basic premise of accrual accounting is that current earnings are predictive of future earnings and cash flows. Using a regression model similar to Sloan (1996), we decompose current earnings into cash flows and accruals, and estimate the following basic model (1) to predict one-year ahead earnings[10]:

$$EARN_{t+1} = \beta_0 + \beta_1\, CFO_t + \beta_2\, ACC_t + \varepsilon \tag{1}$$

where t spans 2004–2013, and $t + 1$ spans 2005–2014. $EARN_{t+1}$ is a bank's earnings before discontinued operations and extraordinary items, scaled by lagged total assets. CFO_t is cash flows from operations scaled by lagged total assets. In the basic model (1), ACC_t is total accruals measured as the difference between $EARN_t$ and CFO_t ($ACC_t = EARN_t - CFO_t$). Regarding Hypothesis 1, a positive coefficient on CFO_t supports the ability of cash flows to predict future earnings. Prior literature suggests that accruals exhibit lower persistence than cash flows (e.g., Sloan, 1996). Therefore, we expect the coefficient on CFO_t to be greater than that on ACC_t. In model (1) and all subsequent equations, we control for year fixed effects and cluster standard errors by bank.

Next, following prior literature (e.g., Barth et al., 2001), we disaggregate total accruals (ACC_t) into separate components. Because provisions for loan losses are the most significant accrual for banks (Beatty & Liao, 2014; Wahlen, 1994), we decompose total accruals (ACC_t) into loan loss provisions (PLL_t) and other accruals ($Other\_ACC_t$), leading to the extended model (2):

$$EARN_{t+1} = \gamma_0 + \gamma_1\, CFO_t + \gamma_2\, PLL_t + \gamma_3\, OtherACC_t + \varepsilon \tag{2}$$

A positive coefficient on CFO_t in model (2) is consistent with the ability of cash flows to predict future earnings. Turning to the control variables, PLL_t is provisions for loan losses scaled by lagged total assets. To be consistent with prior literature that examines loan loss provisions (e.g., Beaver, Eger, Ryan, & Wolfson, 1989; Wahlen, 1994), we designate PLL_t to be a positive amount (unless a bank reverses its provisions). We predict a negative association between the amount of provisions for loan losses (PLL_t) and future earnings ($EARN_{t+1}$) because provisions for loan losses are typically recorded as accrued expenses on the income statement to reflect the current period increase in the level of expected future loan losses. Other accruals ($Other\_ACC_t$) include depreciation and amortization expenses, provisions for deferred taxes, and changes in interest payables and receivables, among other items. We estimate the variable $Other\_ACC_t$ using the sum of ACC_t and PLL_t ($ACC_t + PLL_t$). PLL_t has a plus sign because it is an expense but designated as a positive amount. *Ex ante*, the sign of the coefficient of $Other\_ACC_t$ is unclear because it is an aggregation of different accounting items that may have different associations with future earnings.

To examine the ability of cash flows to predict future cash flows, we estimate the following basic model (3) and extended model (4) of one-year-ahead cash flows:

$$CFO_{t+1} = \beta_0 + \beta_1\, CFO_t + \beta_2\, ACC_t + \varepsilon \tag{3}$$

$$CFO_{t+1} = \gamma_0 + \gamma_1\, CFO_t + \gamma_2\, PLL_t + \gamma_3\, OtherACC_t + \varepsilon \tag{4}$$

Based on Hypothesis 1, positive coefficients on CFO_t in models (3) and (4) indicate that current period cash flows have the ability to predict future cash flows.

Based on prior literature showing that current-period accruals predict future cash flows (Dechow, Kothari, & Watts, 1998; Barth et al., 2001; Doyle, Lundholm & Soliman, 2003), we include ACC_t in Eq. (3), and PLL_t and $Other\_ACC_t$ in Eq. (4).

3.1.2. Hypothesis 2: value relevance

To examine Hypothesis 2 concerning the valuation usefulness of cash flows, we implement a valuation model from a modified Ohlson (1995) model, as developed in Collins, Pincus and Xie (1999)[11]:

$$P = \beta_0 + \beta_1\, EPS + \beta_2\, BVPS + \varepsilon \tag{5}$$

where P is price per share three months after fiscal year-end adjusted for stock splits and dividends, EPS is earnings per share, and $BVPS$ is book value of common equity per share at the beginning of the fiscal year. $BVPS$ is included because book value of equity is a value-relevant proxy for expected future normal earnings (Ohlson, 1995) and for abandonment value (e.g., Berger, Ofek, & Swary, 1996).

To investigate the valuation usefulness of operating cash flows, we partition earnings into operating cash flows and total accruals. Substituting EPS with ($CFOPS + ACCPS$) in Eq. (5), we have:

[10] Prior research suggests that earnings better predict future cash flows and future earnings than current cash flows for industrial firms (e.g., Dechow, Kothari & Watts, 1998; Barth et al., 2001). Our main analyses focus on whether banks' cash flows are useful to investors and do not address the question about the relative usefulness of banks' cash flows versus earnings. Our additional analysis in Section 5 does shed light on this question by controlling for current earnings in the regressions.

[11] The valuation model in Collins et al. (1999) is a modified version of Ohlson's (1995) model. Collins et al. (1999) demonstrate that Ohlson's (1995) book value-abnormal earnings model can be re-expressed as a function of current earnings and lagged book value. The advantage of the Collins et al. (1999) valuation model is that it does not require an estimation of abnormal earnings (which requires an estimated long-term return on equities).

$$P = \beta_0 + \beta_1\, CFOPS + \beta_2\, ACCPS + \beta_3\, BVPS + \varepsilon \tag{6}$$

where *CFOPS* is cash flows from operations per share, *ACCPS* is total accruals per share, calculated as the difference between earnings per share and cash flows from operations per share (*ACCPS* = *EPS* − *CFOPS*). All variables are adjusted for stock splits and dividends. We use the estimated parameters and explanatory power of model (6) as indicators of the valuation usefulness of operating cash flows. Based on Hypothesis 2, a positive coefficient on *CFOPS* supports the value relevance of banks' cash flows. Further, we expect a positive coefficient on *BVPS* because Collins, Pincus, and Xie (1999) demonstrate the value relevance of book value per share.

In the extended model, we decompose total accruals into provisions for loan losses and other accruals to estimate the following:

$$P = \gamma_0 + \gamma_1\, CFOPS + \gamma_2\, PLLPS + \gamma_3\, Other ACCPS + \gamma_4\, BVPS + \varepsilon \tag{7}$$

where *PLLPS* is provisions for loan losses per share, designated as a positive amount (unless a bank reverses its provisions). *Other_ACCPS* is other accruals per share (*Other_ACCPS* = *ACCPS* + *PLLPS*). We expect to find significant coefficients on *PLLPS* and on *Other_ACCPS* if the market incorporates that information into stock price.[12]

Our sample period (from 2004 to 2014) witnessed expansionary, recessionary and recovery periods for the economy and the banking sector. To examine the robustness of our results, we partition the sample period into three subperiods: pre–financial crisis (2004–2006), financial crisis (2007–2009), and post–financial crisis (2010–2014). In the expansionary period prior to the financial crisis (2004–2006), banks increased lending activities, recorded lower levels of loan loss provisions, and had higher profitability (Lee & Rose, 2010; Balla, Rose, & Romero, 2012). During the financial crisis (2007–2009), when the economy fell into recession, banks reduced lending, rapidly increased loan loss provisions, and were less profitable. During the post–financial crisis period (2010–2014), banks' lending expanded and the level of loan loss provisions was lowered, yet historically low interest rates created pressure on banks' cash flows and profitability (Balasubramanyan & Madias, 2015).

3.1.3. Hypothesis 3: moderating effects

If we find cash flows from operations are value relevant, we can investigate the moderating effects of profitability, capital adequacy, and credit risk on the valuation of cash flows. We use an indicator variable of profit or loss to measure profitability (e.g., Hayn, 1995). We use the Tier 1 risk-based capital ratio to measure capital adequacy (e.g., Beatty & Liao, 2011). Further, we use nonperforming loans to measure credit risk. Nonperforming loans are loans that are past due 90 days or more and are a relatively nondiscretionary indicator of credit risk (e.g., Beatty & Liao, 2011).

We divide banks into subsamples based on profits or losses, median values of Tier 1 capital ratios, and median values of nonperforming loans relative to total loans after allowances, respectively. We re-estimate valuation models (6) and (7) for each subsample and compare the coefficients on the cash flow per share variables.

Next, to examine whether the valuation usefulness of cash flows varies significantly with bank characteristics, we estimate the combined models (8) and (9):

$$P = \beta_0 + \beta_1\, CFOPS + \beta_2\, ACCPS + \beta_3\, BVPS + \beta_4\, Effect + \beta_5\, CFOPS^*\, Effect + \beta_6\, ACCPS^*\, Effect + \beta_7\, BVPS^*\, Effect + \varepsilon \tag{8}$$

$$P = \gamma_0 + \gamma_1\, CFOPS + \gamma_2\, PLLPS + \gamma_3\, Other ACCPS + \gamma_4\, BVPS + \gamma_5\, Effect + \gamma_6\, CFOPS^*\, Effect + \gamma_7\, PLLPS^*\, Effect + \gamma_8\, Other ACCPS^*\, Effect + \gamma_9\, BVPS^*\, Effect + \varepsilon \tag{9}$$

where *Effect* is an indicator variable proxying for the moderating effect of profit/loss (*Profit*), capital ratio (*HighTier1*), and nonperforming loans (*HighNPL*). *Profit* equals one for banks that report positive earnings, zero otherwise; *HighTier1* equals one if a bank's Tier 1 risk-based capital ratio is greater than the median value each year; *HighNPL* equals one if a bank's nonperforming loans to total loans ratio is greater than the median value each year. We expect positive coefficients on *CFOPS * Profit* and on *CFOPS * HighTier1*, and a negative coefficient on *CFOPS * HighNPL*, because the valuation usefulness of cash flows is likely to be higher for profitable and more highly capitalized firms, and to be lower for firms with greater credit risk.

3.2. Sample

Table 1, Panel A summarizes the sample selection process. We start with merging Compustat North America Security Monthly and Fundamentals Annual databases. Our sample period starts in fiscal year 2004 because Compustat started collecting statement of cash flows data for banks in 2004. We require the necessary data to calculate price per share (*P*), earnings per share (*EPS*), and book value per share (*BVPS*) adjusted for stock splits and dividends, yielding 5858 bank-year observations. We delete 944 bank-years not listed on a major stock exchange (i.e., NYSE, NASDAQ or AMEX). We merge the resulting dataset with Compustat Bank Fundamentals Annual, eliminating eight bank-years. We further remove nine bank-years where provisions for loan losses were missing, resulting in 4897 bank-years for the valuation models. For the predictability models, we require one-year-forward earnings ($EARN_{t+1}$) and cash flows from operations (CFO_{t+1}), resulting in 4233 bank-years. We winsorize all variables at the first and 99th percentiles to reduce the influence of outliers.

Panel B of Table 1 displays the bank-year observations by year for the sample used in the valuation model. The number of banks decreased gradually from 515 in 2004 to 414 in 2014, reflecting mergers and acquisitions in the banking industry as well as bank failures during the financial crisis.

4. Empirical results

4.1. Results on Hypothesis 1: predictive ability

4.1.1. Descriptive statistics

Table 2 examines the predictive ability of banks' cash flows to predict future earnings and cash flows. Panel A of Table 2 presents the distributions of the variables in the predictive models. Earnings before discontinued operations and extraordinary items, scaled by lagged total assets, between 2005 and 2014 ($EARN_{t+1}$) has a mean of 0.59% and a standard deviation of 0.99%, while cash flows from operations scaled by lagged total assets (CFO_{t+1}) has a mean of 1.30% and a standard deviation of 1.38%. Total accruals (ACC_t), or the difference between $EARN_t$ and CFO_t, has a mean of − 0.72%, consisting of provisions for loan loss scaled by lagged total assets (mean = 0.50%) and other accruals (mean = − 0.20%). Untabulated results show that the ratio of the mean of the absolute values of provisions for loan loss to the mean of the absolute values of total accruals is 43.90% and that the provisions are the largest component of total accruals, consistent with prior studies (Beatty & Liao, 2014; Wahlen, 1994). Panel B of Table 2 reports

[12] The sign of the coefficient on *PLLPS* in the price regression model (7) is unclear a priori for the following reasons. On one hand, *PLLPS* may be negatively associated with stock price because provisions are an expense and reflect future loan losses. On the other hand, based on findings in Beaver et al. (1989) and Wahlen (1994) that investors interpret provisions as revelations of bank managers' private information, there may be a positive coefficient on *PLLPS*. However, in the 2000s, some banks may have changed their provisioning estimation and informativeness of provisions due to regulatory supervision–e.g., SEC's investigation of SunTrust Bank; the issuance of Staff Accounting Bulletin 102 in 2001 (Beck & Narayanamoorthy, 2013; Balla, Rose & Romero 2012). Furthermore, it has been argued that the misapplication or inherent properties of the incurred loss model resulted in varying degrees of delayed loan loss recognition for the period leading up to the financial crisis (Beatty & Liao, 2011; Financial Stability Forum, 2009). If that is the case, we may not find a positive coefficient on *PLLPS*.

Table 1
Sample.

Panel A: sample selection	
	Number of obs.
Bank-years with SICH between 6020 and 6036 in Compustat North America Security Monthly and Fundamentals Annual with data items necessary to calculate price (*P*), earnings per share (*EPS*), and book value per share (*BVPS*) from fiscal years 2004 to 2014	5858
Less: bank-years not listed in NYSE, NASDAQ or AMEX	− 944
Less: bank-years not in Compustat Bank Fundamentals Annual	− 8
Less: bank-years missing the data item provisions for loan losses (*PLL*) in Compustat Bank Fundamentals Annual	− 9
Total bank-year observations to estimate the valuation model (Table 3)	4897
Bank-year observations with one-year-forward and one-year-lagged values to estimate the predictability model (Table 2)	4233
Panel B: Frequency by fiscal year for bank-years in the valuation model.	
Fiscal year	Number of obs.
2004	515
2005	494
2006	461
2007	441
2008	432
2009	436
2010	430
2011	434
2012	423
2013	417
2014	414
Total	4897

the Pearson correlation coefficients. Panel B provides univariate evidence that CFO predicts future *EARN* and *CFO*. ACC_t ($Other\_ACC_t$) and CFO_t are highly negatively associated with a Pearson correlation coefficient of − 0.78 (− 0.87).[13]

4.1.2. Regression results

In Panel C of Table 2, we report the results of models (1) and (2) examining the ability of banks' cash flows to predict one-year-ahead earnings. Across the entire sample period and subperiods, in both the basic model (1) and extended model (2), we consistently find significantly positive coefficients on CFO_t, suggesting that banks' cash flows are predictive of future earnings. In the basic model (1), we consistently find significantly positive coefficients on ACC_t, suggesting that accruals are also predictive of future earnings. Furthermore, in all periods, the coefficients on CFO_t are significantly greater than the coefficients on ACC_t, suggesting the superior ability of cash flows to accruals in predicting earnings. In the extended model (2), we find significantly negative coefficients on PLL_t, indicating that higher loan loss provisions are associated with lower future earnings.

In Panel D of Table 2, we report the results of examining the ability of banks' cash flows to predict one-year ahead cash flows in models (3) and (4). Similar to the results in Panel C, across the entire sample period and the subperiods, we find positively significant coefficients on CFO_t in both the basic model (3) and extended model (4), suggesting that banks' cash flows are predictive of future cash flows. In the basic model (3), we find significantly positive coefficients on ACC_t for the full sample period and for pre– and post–financial crisis periods, but the coefficient on ACC_t is not significant during the financial crisis period. Based on the *F*-tests for differences between coefficients, we find that in all periods, the coefficients on CFO_t are significantly greater than the coefficients on ACC_t at the 1% levels, suggesting the superior ability of cash flows to accruals in predicting earnings.

In the extended model (4), the coefficients on PLL_t are not significant during the pre– and post–financial crisis periods. However, they are significantly positive in 2007 and 2009, as well as the full sample period. Untabulated cross-sectional regression analysis by year suggests that these significantly positive coefficients on PLL_t are driven by the cross-sectional result of the year 2009.[14] Furthermore, untabulated descriptive statistics find that loan loss provisions scaled by total lagged assets (PLL_t) have a mean of 1.25% in 2009, up from 0.76% in 2008 and 0.25% in 2007, suggesting that banks continued to elevate loan loss provisioning in 2009. On the other hand, one-year-ahead cash flows scaled by total lagged assets (CFO_{t+1}) have a mean of 1.37% in 2009, up from 0.68% in 2008 and 1.21% in 2007, suggesting a recovery of revenue related cash receipts after the financial crisis in 2010. The upward trends of both loan loss provisions and one-year-ahead cash flows result in a positive association between *PLL* and CFO_{t+1} in 2009.

4.2. Results on Hypothesis 2: value relevance

4.2.1. Descriptive statistics

In Table 3, Panel A, we report the distributions of the variables in the valuation models for years 2004 to 2014. All values are in U.S. dollars. The average share price measured three months after fiscal year-end is 24.00, with a standard deviation of 31.61. The average earnings per share is 0.97 with a standard deviation of 2.96, which is comprised of cash flows per share (mean = 2.50) and total accruals per share (mean = − 1.61). The average book value of equity per share is 19.73 with a standard deviation of 33.38. In the extended model, we decompose total accruals into loan loss provisions (mean = 1.22) and other accruals (mean = − 0.44).

Panel B of Table 3 reports Pearson correlation coefficients. *Price* is positively (negatively) related to *CFOPS* (*ACCPS*), and *CFOPS* and *ACCPS* (*Other_ACCPS*) are highly and negatively associated, with a Pearson correlation coefficient of − 0.76 (− 0.63).[15]

4.2.2. Regression results

Panel C and Panel D of Table 3 display the results from examining the valuation usefulness of cash flows from operations using the basic model (6) and extended model (7), respectively. With respect to the basic model (6), we find significantly positive coefficients on cash flows per share (*CFOPS*) and total accruals per share (*ACCPS*) in the full sample period and subsample periods, suggesting that cash flows and total accruals are value relevant, supporting Hypothesis 2. Furthermore, *F*-tests suggest that the coefficients on cash flows per share are greater than those on total accruals per share, suggesting that the valuation usefulness of total accruals is weaker than that of cash flows from operations (Sloan, 1996). Consistent with prior literature (Collins et al., 1999; Ohlson, 1995), we find positive and significant coefficients on *BVPS*.

With respect to the extended model (7), where total accruals are decomposed into loan loss provisions and other accruals, for the full sample and the subsample periods, we continue to find significantly positive coefficients on cash flows per share (*CFOPS*), suggesting the value relevance of cash flows.

Turning to the coefficients on *PLLPS*, we find negatively significant coefficients for the full sample period and the subsample periods of

[13] Untabulated results show that when ACC_t ($Other\_ACC_t$) is not included in the predictability regression models (1) through (4), the inferences on CFO_t are qualitatively similar.

[14] Untabulated cross-sectional regressions by year of extended model (4) find a negative coefficient on PLL_t at a 10% significance level in 2006 and a positive coefficient on PLL_t at a one percent significance level in 2009, whereas the coefficients in other years are not significant.

[15] Untabulated results show that when *ACCPS* (*Other_ACCPS*) is not included in valuation models (6) and (7), the inferences on *CFOPS* are qualitatively similar.

Table 2
Predictive ability of banks' cash flows for future earnings and future cash flows.

Panel A: Variable distributions

	N	Mean	Std Dev	25th Pctl	50th Pctl	75th Pctl
$EARN_{t+1}$	4233	0.0059	0.0099	0.0037	0.0078	0.011
CFO_{t+1}	4233	0.0130	0.0138	0.0088	0.0135	0.0181
CFO_t	4233	0.0133	0.0146	0.0089	0.0138	0.0186
ACC_t	4233	−0.0072	0.0168	−0.0111	−0.0055	−0.0016
PLL_t	4233	0.0050	0.0069	0.0011	0.0025	0.0058
$Other\_ACC_t$	4233	−0.0020	0.0149	−0.0062	−0.0024	0.0013

Panel B: Pearson correlation coefficients ($N = 4233$)

	CFO_{t+1}	CFO_t	ACC_t	PLL_t	$Other\_ACC_t$
$EARN_{t+1}$	**0.176**	**0.155**	**0.210**	**−0.428**	0.027
CFO_{t+1}		**0.197**	**−0.100**	**0.037**	**−0.095**
CFO_t			**−0.777**	**−0.050**	**−0.871**
ACC_t				**−0.386**	**0.889**
PLL_t					**0.054**

Panel C: Predicting future earnings – Basic model (1) and extended model (2)
Basic model: $EARN_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 ACC_t + \varepsilon$ (1)
Extended model: $EARN_{t+1} = \gamma_0 + \gamma_1 CFO_t + \gamma_2 PLL_t + \gamma_3 Other\_ACC_t + \varepsilon$ (2)

		2004–2013		2004–2006		2007–2009		2010–2013	
		(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
CFO_t	+	0.492***	0.459***	0.653***	0.710***	0.526***	0.401***	0.410***	0.432***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ACC_t	?	0.449***		0.604***		0.467***		0.388***	
		(0.000)		(0.000)		(0.000)		(0.000)	
PLL_t	–		−0.593***		−0.648***		−0.745***		−0.405***
			(0.000)		(0.000)		(0.000)		(0.000)
$Other\_ACC_t$	?		0.426***		0.692***		0.333***		0.424***
			(0.000)		(0.000)		(0.000)		(0.000)
Year fixed effect		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2		0.552	0.562	0.880	0.888	0.221	0.266	0.615	0.617
N		4233	4233	1344	1344	1266	1266	1623	1623
F-test ($\beta_1 = \beta_2$) statistic		102.95***		44.69***		77.89***		42.47***	

Panel D: Predicting future cash flows – Basic model (3) and extended model (4)
Basic model: $CFO_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 ACC_t + \varepsilon$ (3)
Extended model: $CFO_{t+1} = \gamma_0 + \gamma_1 CFO_t + \gamma_2 PLL_t + \gamma_3 Other\_ACC_t + \varepsilon$ (4)

		2004–2013		2004–2006		2007–2009		2010–2013	
		(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
CFO_t	+	0.309***	0.428***	0.557***	0.624***	0.338***	0.456***	0.258***	0.364***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ACC_t	?	0.116***		0.313***		−0.012		0.197***	
		(0.000)		(0.001)		(0. 722)		(0.000)	
PLL_t	?		0.102**		0.005		0.169***		0.028
			(0.019)		(0.980)		(0.003)		(0.633)
$Other\_ACC_t$	?		0.257***		0.403***		0.127***		0.322***
			(0.000)		(0.000)		(0.004)		(0.000)
Year fixed effect		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2		0.520	0.527	0.585	0.589	0.481	0.491	0.521	0.524
N		4233	4233	1344	1344	1266	1266	1623	1623
F-test ($\beta_1 = \beta_2$) statistic		28.10***		16.24***		13.35***		19.39***	

Coefficients with *p*-values at the 5% significance levels or less are bolded.
***, **, and * represent 1%, 5%, and 10% significance, respectively. *p*-values are one-sided for variables with predicted signs and two-sided otherwise. Standard errors are clustered at the bank level. See Appendix B for variable definitions.

2007–2009 and 2010–2014, suggesting that higher loan loss provisions per share are associated with lower stock valuation. However, we do not find a significant coefficient on *PLLPS* from 2004 to 2006, suggesting that loan loss provisions were not value relevant during that period. This is consistent with the criticism that the incurred loss model resulted in delayed loan loss provisioning for the years leading to the financial crisis (Beatty & Liao, 2011; Financial Stability Forum, 2009). We find positive and significant coefficients on *Other_ACCPS* and *BVPS* for the full sample period and across different subsample periods.

Table 3
Valuation of banks' operating cash flows.

Panel A: Variable distributions of main regression variables

	N	Mean	Std Dev	25th Pctl	50th Pctl	75th Pctl
P	4897	23.996	31.614	10.355	16.580	25.740
EPS	4897	0.965	2.962	0.370	0.980	1.680
CFOPS	4897	2.503	4.548	0.873	1.733	2.929
ACCPS	4897	− 1.613	5.185	− 1.669	− 0.679	− 0.171
BVPS	4897	19.731	33.377	8.769	12.824	18.466
PLLPS	4897	1.221	3.824	0.103	0.29	0.823
Other_ACCPS	4897	− 0.443	3.843	− 0.908	− 0.296	0.136

Panel B: Pearson correlation coefficients of main regression variables ($N = 4897$)

	EPS	*CFOPS*	*ACCPS*	*BVPS*	*PLLPS*	*Other_ACCPS*
P	**0.507**	**0.590**	**− 0.262**	**0.751**	**0.394**	**− 0.045**
EPS		0.184	0.380	0.071	− 0.391	0.172
CFOPS			− 0.762	0.564	0.442	− 0.634
ACCPS				− 0.494	− 0.685	0.742
BVPS					0.730	− 0.119
PLLPS						− 0.131

Panel C: Variable distributions of moderating variables (Tables 4, 5 and 6)

	N	Mean	Std Dev	25th Pctl	50th Pctl	75th Pctl
Profit	4897	0.871	0.335	1.000	1.000	1.000
Tier1_capr	4739	0.123	0.034	0.100	0.118	0.141
NPL_pctg	4857	0.024	0.028	0.006	0.014	0.031

Panel D: Valuation of cash flows – Basic model (6) and extended model (7)

Basic model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \varepsilon$ (6)

Extended model: $P = \gamma_0 + \gamma_1 CFOPS + \gamma_2 PLLPS + \gamma_3 Other\_ACCPS + \gamma_4 BVPS + \varepsilon$ (7)

		2004–2014		2004–2006		2007–2009		2010–2014	
		(6)	(7)	(6)	(7)	(6)	(7)	(6)	(7)
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
CFOPS	+	4.143*** (0.000)	3.678*** (0.000)	5.594*** (0.000)	5.592*** (0.000)	2.601*** (0.000)	2.167*** (0.000)	4.318*** (0.000)	4.098*** (0.000)
ACCPS	?	3.037*** (0.000)		3.972*** (0.001)		1.982*** (0.000)		3.266*** (0.000)	
PLLPS	?		− 2.273*** (0.000)		− 0.699 (0.630)		− 1.895*** (0.000)		− 2.170*** (0.001)
Other_ACCPS	?		2.730*** (0.000)		4.192*** (0.000)		1.738*** (0.000)		3.234*** (0.000)
BVPS	+	0.626*** (0.000)	0.657*** (0.000)	0.660*** (0.000)	0.550*** (0.000)	0.564*** (0.000)	0.626*** (0.000)	0.531*** (0.000)	0.508*** (0.000)
Year fixed effect		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2		0.843	0.841	0.887	0.890	0.845	0.850	0.785	0.788
N		4897	4897	1470	1470	1309	1309	2118	2118
F-test ($\beta_1 = \beta_2$) statistic		36.01***		22.69***		20.59***		27.30***	

Coefficients with *p*-values at the 5% significance levels or less are bolded.
***, **, and * represent 1%, 5%, and 10% significance, respectively. *p*-values are one-sided for variables with predicted signs and two-sided otherwise. Standard errors are clustered at the bank level. See Appendix B for variable definitions.

4.3. Results on Hypothesis 3: moderating effects

4.3.1. Moderating effect of profitability

In this subsection, we discuss the moderating effects of profitability on the valuation usefulness of cash flows. The descriptive statistics reported in Panel C of Table 3 show that from 2004 to 2014, 87.11% of bank-years have positive earnings ($EPS > 0$). Untabulated results show that this percentage varies over the subsample periods 2004–2006 (97.89%), 2007–2009 (75.78%), and 2010–2014 (86.64%).

Table 4, Panel A reports the results for the basic valuation model (6) and combined model (8). For profitable banks, the valuation of cash flows is positive and significant across all sample periods. For unprofitable banks, the valuation of cash flows is positive and significant for the full sample period and the 2007–2009 and 2010–2014 subsample periods, but is negative for the pre–financial crisis period. The explanatory power of cash flows for profitable banks are greater than that for unprofitable banks across all sample periods. For the combined model, we find the coefficients on *CFOPS* * *PROFIT* positively significant across all sample periods, suggesting that the valuation usefulness of *CFOPS* is greater for profitable banks than for unprofitable banks.

Panel B of Table 4 reports the results for the extended valuation model (7) and combined model (9). The coefficients on *CFOPS* have the same signs and significance levels as in models (6) and (8) in Panel A, except that in Panel B, the coefficients on *CFOPS* for unprofitable banks are more significant in the 2010–2014 subsample period. In the combined model (9), we find the coefficients on *CFOPS* * *PROFIT* positively significant across all sample periods. This provides corroborating

Table 4
Moderating effect of profitability.

Panel A: Basic mode

Basic model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \varepsilon$ (6)

Combined model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \beta_4 Profit + \beta_5 CFOPS{*}\ Profit + \beta_6 ACCPS{*}\ Profit + \beta_7 BVPS{*}\ Profit + \varepsilon$ (8)

		Profit = 1				Profit = 0				Combined			
		2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
CFOPS	+	5.369***	5.655***	4.156***	4.908***	1.352***	− 2.477*	1.364***	1.456*	1.435***	− 2.358*	1.463***	1.434*
		(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.065)	(0.002)	(0.091)	(0.000)	(0.053)	(0.001)	(0.089)
ACCPS	?	4.350***	4.014***	3.339***	4.478***	0.731***	− 1.935	1.019***	0.341	0.794***	− 1.884	1.099***	0.342
		(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.146)	(0.000)	(0.335)	(0.000)	(0.124)	(0.000)	(0.325)
BVPS	+	0.670***	0.657***	0.619***	0.856***	0.381***	0.297	0.462***	0.183***	0.388***	0.284	0.469***	0.184***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.194)	(0.000)	(0.001)	(0.000)	(0.168)	(0.000)	(0.001)
Profit	?									− 2.707**	0.472	− 0.366	− 5.907***
										(0.034)	(0.885)	(0.805)	(0.000)
*CFOPS * Profit*	+									3.929***	8.014***	2.627***	3.473**
										(0.000)	(0.000)	(0.001)	(0.012)
*ACCPS * Profit*	?									3.554***	5.898***	2.202***	4.130***
										(0.000)	(0.001)	(0.008)	(0.001)
*BVPS * Profit*	?									0.282***	0.373	0.152*	0.672***
										(0.000)	(0.260)	(0.067)	(0.000)
Yr FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2		0.886	0.888	0.913	0.878	0.684	0.792	0.761	0.522	0.869	0.887	0.867	0.851
N		4266	1439	992	1835	631	31	317	283	4897	1470	1309	2118

Panel B: Extended model
Extended model: $P = \gamma_0 + \gamma_1 CFOPS + \gamma_2 PLLPS + \gamma_3 Other\_ACCPS + \gamma_4 BVPS + \varepsilon$ (7)
Combined model: $P = \gamma_0 + \gamma_1 CFOPS + \gamma_2 PLLPS + \gamma_3 Other\_ACCPS + \gamma_4 BVPS + \gamma_5 Profit + \gamma_6 CFOPS{*}\ Profit + \gamma_7 PLLPS{*}\ Profit + \gamma_8 Other\_ACCPS * Profit + \gamma_9 BVPS * Profit + \varepsilon$ (9)

		Profit = 1				Profit = 0				Combined			
		2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
CFOPS	+	4.434***	5.653***	2.575***	4.441***	1.395***	− 1.984*	1.298***	1.733***	1.459***	− 2.044**	1.367***	1.706***
		(0.000)	(0.000)	(0.002)	(0.000)	(0.001)	(0.055)	(0.001)	(0.002)	(0.000)	(0.034)	(0.001)	(0.001)
PLLPS	?	− 2.359***	− 0.669	− 1.986**	− 3.632***	− 0.348	2.586	− 1.038***	0.694	− 0.417*	2.107	− 1.157***	0.661
		(0.007)	(0.650)	(0.048)	(0.004)	(0.165)	(0.416)	(0.001)	(0.161)	(0.094)	(0.415)	(0.000)	(0.161)
Other_ACCPS	?	3.482***	4.266***	1.751**	4.129***	1.084***	− 1.138	1.266***	1.076***	1.110***	− 1.252*	1.290***	1.076***
		(0.000)	(0.001)	(0.048)	(0.000)	(0.000)	(0.142)	(0.000)	(0.000)	(0.000)	(0.083)	(0.000)	(0.000)
BVPS	+	0.689***	0.543***	0.685***	0.885***	0.368***	0.307	0.511***	0.088**	0.379***	0.291	0.526***	0.090**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.178)	(0.000)	(0.049)	(0.000)	(0.171)	(0.000)	(0.041)
Profit	?									− 2.266	0.885	0.904	− 5.328***
										(0.106)	(0.787)	(0.541)	(0.001)
*CFOPS * Profit*	+									2.979***	7.697***	1.192*	2.729***
										(0.001)	(0.000)	(0.087)	(0.009)
*PLLPS * Profit*	?									− 1.925***	− 2.776	− 0.769	− 4.231***
										(0.008)	(0.351)	(0.458)	(0.001)
*Other_ACCPS * Profit*	?									2.382***	5.517***	0.491	3.043***
										(0.003)	(0.000)	(0.563)	(0.003)
BVPS Profit*	?									0.308***	0.252	0.155	0.793***
										(0.000)	(0.457)	(0.110)	(0.000)

(continued on next page)

Table 4 (*continued*)

Panel A: Basic mode

Basic model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \varepsilon$ (6)

Combined model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \beta_4 Profit + \beta_5 CFOPS^{*} Profit + \beta_6 ACCPS^{*} Profit + \beta_7 BVPS^{*} Profit + \varepsilon$ (8)

	Profit = 1				Profit = 0				Combined			
	2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014
	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
Yr FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.879	0.891	0.901	0.881	0.700	0.782	0.780	0.586	0.860	0.850	0.849	0.848
N	4266	1439	992	1835	631	31	317	283	4897	1470	1309	2118

***, **, and * represent 1%, 5%, and 10% significance, respectively. *p*-values are one-sided for variables with predicted signs and two-sided otherwise. Standard errors are clustered at the bank level. See Appendix B for variable definitions.

evidence that the valuation usefulness of *CFOPS* is greater for profitable banks than unprofitable banks.[16]

4.3.2. Moderating effect of capital adequacy

In this subsection, we discuss the results related to the moderating effects of capital adequacy, proxied by the Tier 1 risk-based capital ratio. The descriptive statistics reported in Panel C of Table 3 show that from 2004 to 2014, the mean (median) values of the Tier 1 capital ratio is 12.33% (11.82%). Untabulated descriptive statistics show that the medians of Tier 1 capital ratios during pre–financial crisis, financial crisis, and post–financial crisis periods are 11.82%, 11.02%, 10.97%, and 12.94%, respectively. We partition bank-years into high Tier 1 capital group (*HighTier1 = 1*) and low Tier 1 capital group (*HighTier1 = 0*) based on whether a bank's Tier 1 capital ratio is higher or lower than the median value each year.[17]

As shown in Table 5, Panel A, we first estimate the models for two groups of banks, those with high and low Tier 1 capital ratios, separately. For both groups, the valuations of cash flows are positive and significant across all sample periods. Next, we estimate the valuation model for the combined sample. The significantly positive coefficients on *CFOPS * HighTier1* suggest that, across different sample periods, cash flows of banks with high Tier 1 capital ratios have a greater valuation multiple than banks with low Tier 1 capital ratios. The explanatory power for banks with high Tier 1 capital ratios is greater than that for banks with low Tier 1 capital ratios across all sample periods.

Panel B of Table 5 reports the results in models (7) and (9). The coefficients on *CFOPS* in the separate groups and the coefficients on *CFOPS * HighTier1* yield similar inferences on the basic models (6) and (8), except that the coefficient becomes insignificant during the financial crisis subperiod.

4.3.3. Moderating effect of credit risk

In this subsection, we discuss the results related to the moderating effects of credit risk on the value relevance of cash flows. We proxy for credit risk using the percentage of nonperforming loans to total loans. The descriptive statistics reported in Panel C of Table 3 show that from 2004 to 2014, the mean (median) value of the percentage of nonperforming loans is 2.38% (1.38%). Untabulated descriptive statistics show that the medians of nonperforming loans to total loans during the full sample, pre–financial crisis, financial crisis, and post–financial crisis periods are 1.38%, 0.46%, 1.66%, and 2.43%, respectively. We partition bank-years into high and low nonperforming loan groups based on whether the percentage of nonperforming loans to total loans is higher (lower) than the median value each year.[18]

In Table 6, Panel A, we report the results in the basic model (6) and combined model (8). We find a statistically positive coefficient on *CFOPS* in the full sample periods and each subsample period for both high and low nonperforming loan banks. Next, we estimate the valuation model for the combined sample of all banks. We expect to find a negative coefficient on the interaction between *CFOPS* and *HighNPL* if the market regards cash flows from operations as less useful when the

[16] Our sample has a small percentage of loss bank-years (*PROFIT* = 0). To alleviate the concern that our results are driven by profitable banks, we define an indicator variable *HighROA* equal to one if the ratio of earnings before extraordinary items to total assets is greater than its annual median values and zero otherwise. We replace *PROFIT* with *HighROA* and re-estimate the value-relevance models. Untabulated results suggest that our inferences on H3a hold for the full sample period of 2004–2014, as well as the subsample periods of 2004–2006 and 2007–2009. We thank an anonymous reviewer for the suggestion.

[17] In untabulated results, we partition bank-years based on the annual mean values of Tier 1 risk-based capital ratio and find qualitatively similar results. In addition, we examine alternative measures of capital adequacy, including the sum of Tier 1 and Tier 2 risk-based capital ratios as well as the total risk-based capital ratio, and find largely similar results.

[18] In untabulated results, we partition bank-years based on the annual mean values of nonperforming loan percentages and find qualitatively similar results.

Table 5
Moderating effect of tier 1 capital.

Panel A: Basic model

Basic model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \varepsilon$ (6)

Combined model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \beta_4 HighTier1 + \beta_5 CFOPS{*}\ HighTier1 + \beta_6 ACCPS{*}\ HighTier1 + \beta_7 BVPS{*}\ HighTier1 + \varepsilon$ (8)

		HighTier1 = 1				HighTier1 = 0				Combined			
		2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
CFOPS	+	5.567***	8.143***	3.471***	6.078***	3.470***	4.966***	2.004***	3.238***	3.588***	4.964***	2.096***	3.274***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ACCPS	?	4.074***	**5.736*****	3.234***	4.466***	2.564***	3.424***	1.415***	2.539***	2.686***	3.422***	1.499***	2.584***
		(0.000)	**(0.000)**	(0.000)	(0.000)	(0.000)	(0.005)	(0.000)	(0.000)	(0.000)	(0.005)	(0.000)	(0.000)
BVPS	+	0.654***	0.546***	0.736***	0.538***	0.608***	0.677***	0.514***	0.467***	0.609***	0.676***	0.516***	0.468***
		(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
HighTier1	?									− 3.853***	− 6.000***	− 1.742	− 4.965**
										(0.000)	(0.001)	(0.172)	(0.042)
*CFOPS * HighTier1*	+									1.819***	3.191***	1.245**	2.768***
										(0.001)	(0.006)	(0.032)	(0.004)
*ACCPS * HighTier1*	?									1.245***	2.315**	1.658***	1.822**
										(0.004)	(0.018)	(0.000)	(0.014)
*BVPS * HighTier1*	?									0.052	− 0.133	0.223***	0.070
										(0.481)	(0.472)	(0.001)	(0.689)
Yr FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2		0.893	0.921	0.896	0.883	0.832	0.887	0.838	0.740	0.855	0.899	0.862	0.816
N		2368	664	649	1055	2371	668	650	1053	4739	1332	1299	2108

Panel B: Extended model
Extended model: $P = \gamma_0 + \gamma_1 CFOPS + \gamma_2 PLLPS + \gamma_3 Other\_ACCPS + \gamma_4 BVPS + \varepsilon$ (7)
Combined model: $P = \gamma_0 + \gamma_1 CFOPS + \gamma_2 PLLPS + \gamma_3 Other\_ACCPS + \gamma_4 BVPS + \gamma_5 HighTier1 + \gamma_6 CFOPS{*}\ HighTier1 + \gamma_7 PLLPS{*}\ HighTier1 + \gamma_8 Other\_ACCPS{*}\ HighTier1 + \gamma_9 BVPS{*}\ HighTier1 + \varepsilon$ (9)

		HighTier1 = 1				HighTier1 = 0				Combined			
		2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
CFOPS	+	4.769***	8.287***	2.457***	6.157***	3.090***	5.157***	1.805***	2.866***	3.137***	5.157***	1.856***	2.859***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PLLPS	?	− 3.534***	− 1.975	− 3.379***	− 3.706***	− 1.939***	− 0.698	− 1.251***	− 1.673**	− 2.129***	− 0.697	− 1.382***	− 1.769**
		(0.000)	(0.449)	(0.000)	(0.000)	(0.000)	(0.652)	(0.000)	(0.036)	(0.000)	(0.651)	(0.000)	(0.021)
Other_ACCPS	?	3.136***	6.044***	2.109***	4.435***	2.331***	3.831***	1.451***	2.287***	2.358***	3.830***	1.473***	2.284***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.007)	(0.000)	(0.000)	(0.000)	(0.006)	(0.000)	(0.000)
BVPS	+	0.710***	0.403**	0.863***	0.515***	0.643***	0.577***	0.547***	0.460***	0.656***	0.577***	0.557***	0.469***
		(0.000)	(0.045)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
HighTier1	?									− 3.153**	− 5.331***	− 1.387	− 5.012**
										(0.013)	(0.000)	(0.256)	(0.038)
*CFOPS * HighTier1*	+									1.542**	3.129**	0.520	3.271***
										(0.012)	(0.029)	(0.231)	(0.002)
*PLLPS * HighTier1*	?									− 1.159*	− 1.289	− 1.817***	− 1.772**
										(0.060)	(0.620)	(0.004)	(0.041)
*Other_ACCPS * HighTier1*	?									0.762	2.202	0.672	2.128**
										(0.207)	(0.194)	(0.316)	(0.018)
*BVPS * HighTier1*	?									0.048	− 0.174	0.295***	0.042
										(0.688)	(0.450)	(0.004)	(0.831)

(continued on next page)

Table 5 *(continued)*

Panel A: Basic model

Basic model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \varepsilon$ (6)

Combined model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \beta_4 HighTier1 + \beta_5 CFOPS{*}\ HighTier1 + \beta_6 ACCPS{*}\ HighTier1 + \beta_7 BVPS{*}\ HighTier1 + \varepsilon$ (8)

	HighTier1 = 1				HighTier1 = 0				Combined			
	2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014
	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
Yr FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.885	0.923	0.898	0.879	0.830	0.892	0.844	0.739	0.850	0.902	0.865	0.813
N	2368	664	649	1055	2371	668	650	1053	4739	1332	1299	2108

***, **, and * represent 1%, 5%, and 10% significance, respectively. *p*-values are one-sided for variables with predicted signs and two-sided otherwise. Standard errors are clustered at the bank level. See Appendix B for variable definitions.

firm exhibits higher levels of credit risk. For the full sample period, we find a significant negative coefficient on *CFOPS * HighNPL*. We also find a significant negative coefficient during each of the subsample periods with the exception of 2004–2006, when the coefficient has the predicted sign but is not significant. The results provide some evidence that the market relies more on cash flow information for banks with lower credit risk.

Panel B of Table 6 reports the results for the extended model (7) and combined model (9). The coefficients on *CFOPS* in the separate groups and the coefficients on *CFOPS * HighNPL* yield similar inferences to models (6) and (8).

5. Additional analyses

5.1. Alternative model estimation of controlling for current earnings

In our main analyses, we examine the differential ability of banks' cash flows and accruals to predict future earnings (similar to Sloan, 1996) and future cash flows, and to explain stock price. Our first set of additional analyses examines whether banks' cash flows predict future earnings and cash flows incrementally to current earnings by controlling for current earnings in the regression models.[19] Specifically, we estimate models (10) and (11) by replacing ACC_t with $EARN_t$ in models (1) and (3):

$$EARN_{t+1} = \beta_0 + \beta_1\ CFO_t + \beta_2\ EARN_t + \varepsilon \quad (10)$$

$$CFO_{t+1} = \beta_0 + \beta_1\ CFO_t + \beta_2\ EARN_t + \varepsilon \quad (11)$$

Panel A of Table 7 reports the results from models (10) and (11). In model (10), our variable of interest, CFO_t, exhibits a positive and significant association with future earnings ($EARN_{t+1}$) after controlling for current earnings. The model predicting future earnings performs poorly during the financial crisis period of 2007–2009, as evidenced by the adjusted R-squared value of 0.251, compared to 0.894 for the pre–financial crisis period and 0.626 for the post–financial crisis period. The low adjusted R-squared value for the financial crisis period of 2007–2009 can be attributed to the fact that banks' earnings plummeted during the financial crisis but recovered in subsequent years.

Turning to model (11) for predicting future cash flows (CFO_{t+1}), the coefficients on CFO_t are positive and significant after controlling for current earnings during the pre–financial crisis period and the financial crisis period but insignificant during the post–financial crisis period.

Next, we examine whether banks' cash flows are value relevant after controlling for earnings. We estimate model (12) by replacing *ACCPS* with *EPS* in model (6):

$$P = \beta_0 + \beta_1\ CFOPS + \beta_2\ EPS + \beta_3\ BVPS + \varepsilon \quad (12)$$

Panel B of Table 7 reports the results. Our variable of interest, *CFOPS,* is positive and significant in each of the sample periods. These analyses provide additional support that banks' cash flows provide useful information to market participants.

5.2. Cash flows and accruals adjusted for loans held for sale and trading securities

Ryan et al. (2006) argue that loans held for sale and trading securities are economically a hybrid of operating and nonoperating activities. Thus, in order to obtain "ordinary" operating components of cash flows and accruals, Ryan et al. (2006) adjusted cash flows from operating activities and accruals for changes in loans held for sale and changes in trading securities.

[19] Dechow et al. (1998) predict and find that current earnings better predict future cash flows than current cash flows for a sample of industrial firms. In their sample, current cash flows exhibit only modest incremental predictive power in forecasting one-year-ahead earnings after controlling for current earnings.

Table 6
Moderating Effect of Nonperforming Loans (NPL).

Panel A: Basic model

Basic model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \varepsilon$ (6)

Combined model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \beta_4 HighNPL + \beta_5 CFOPS{*}\ HighNPL + \beta_6 ACCPS{*}\ HighNPL + \beta_7 BVPS{*}\ HighNPL + \varepsilon$ (8)

		HighNPL = 1				HighNPL = 0				Combined			
		2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
CFOPS	+	3.528***	5.858***	1.959***	3.112***	6.063***	6.024***	5.268***	8.743***	5.939***	6.022***	5.003***	8.720***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ACCPS	?	2.503***	4.526***	1.367***	2.044***	5.031***	3.757**	4.478***	8.579***	4.901***	3.757**	4.239***	8.522***
		(0.000)	(0.006)	(0.000)	(0.000)	(0.000)	(0.012)	(0.000)	(0.000)	(0.000)	(0.012)	(0.000)	(0.000)
BVPS	+	0.620***	0.741***	0.522***	0.430***	0.550***	0.509***	0.599***	0.453***	0.554***	0.509***	0.607***	0.453***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
HighNPL	?									− 0.530	− 4.014	0.248	2.721
										(0.676)	(0.200)	(0.830)	(0.112)
*CFOPS * HighNPL*	–									− 2.326**	− 0.164	− 2.926***	− 5.625***
										(0.019)	(0.475)	(0.000)	(0.000)
*ACCPS * HighNPL*	?									− 2.294**	0.771	− 2.750***	− 6.464***
										(0.041)	(0.727)	(0.000)	(0.000)
*BVPS * HighNPL*	?									0.068	0.233	− 0.080	− 0.021
										(0.390)	(0.158)	(0.268)	(0.881)
Yr FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2		0.826	0.900	0.827	0.742	0.888	0.880	0.933	0.905	0.853	0.892	0.864	0.843
N		2432	729	650	1053	2425	726	649	1050	4857	1455	1299	2103

Panel B: Extended model
Extended model: $P = \gamma_0 + \gamma_1 CFOPS + \gamma_2 PLLPS + \gamma_3 Other\_ACCPS + \gamma_4 BVPS + \varepsilon$ (7)
Combined model: $P = \gamma_0 + \gamma_1 CFOPS + \gamma_2 PLLPS + \gamma_3 Other\_ACCPS + \gamma_4 BVPS + \gamma_5 HighNPL + \gamma_6 CFOPS{*}\ HighNPL + \gamma_7 PLLPS{*}\ HighNPL + \gamma_8 Other\_ACCPS * HighNPL + \gamma_9 BVPS * HighNPL + \varepsilon$ (9)

		HighNPL = 1				HighNPL = 0				Combined			
		2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
CFOPS	+	3.094***	5.671***	1.741***	3.035***	5.228***	6.250***	4.969***	6.849***	5.168***	6.249***	4.691***	6.782***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
PLLPS	?	− 2.122***	− 2.300	− 1.292***	− 0.906	− 2.054*	− 0.079	− 4.512***	− 7.916***	− 1.946*	− 0.078	− 3.824***	− 7.448***
		(0.000)	(0.160)	(0.000)	(0.167)	(0.093)	(0.962)	(0.000)	(0.000)	(0.098)	(0.963)	(0.001)	(0.000)
Other_ACCPS	?	2.288***	4.758***	1.430***	2.202***	4.104***	4.071**	4.498***	6.290***	4.054***	4.070**	4.269***	6.216***
		(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.023)	(0.000)	(0.000)	(0.000)	(0.023)	(0.000)	(0.000)
BVPS	+	0.682***	0.731***	0.572***	0.362***	0.515***	0.367**	0.558***	0.568***	0.516***	0.367**	0.553***	0.562***
		(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.049)	(0.000)	(0.001)	(0.000)	(0.049)	(0.000)	(0.001)
HighNPL	?									− 1.671	− 5.107*	− 1.260	1.977
										(0.159)	(0.051)	(0.276)	(0.284)
*CFOPS * HighNPL*	–									− 2.045**	− 0.579	− 2.888***	− 3.753***
										(0.032)	(0.401)	(0.000)	(0.006)
*PLLPS * HighNPL*	?									− 0.292	− 2.221	2.346**	6.403***
										(0.798)	(0.358)	(0.043)	(0.000)
*Other_ACCPS * HighNPL*	?									− 1.735	0.686	− 2.806***	− 4.008***
										(0.124)	(0.771)	(0.000)	(0.003)
*BVPS * HighNPL*	?									0.175	0.363	0.036	− 0.189
										(0.161)	(0.225)	(0.714)	(0.314)

(continued on next page)

Table 6 *(continued)*

Panel A: Basic model

Basic model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \varepsilon$ (6)

Combined model: $P = \beta_0 + \beta_1 CFOPS + \beta_2 ACCPS + \beta_3 BVPS + \beta_4 HighNPL + \beta_5 CFOPS^{*} HighNPL + \beta_6 ACCPS^{*} HighNPL + \beta_7 BVPS^{*} HighNPL + \varepsilon$ (8)

	HighNPL = 1				HighNPL = 0				Combined			
	2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014	2004–2014	2004–2006	2007–2009	2010–2014
	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
Yr FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.828	0.907	0.836	0.750	0.875	0.883	0.919	0.879	0.849	0.897	0.864	0.829
N	2432	729	650	1053	2425	726	649	1050	4857	1455	1299	2103

***, **, and * represent 1%, 5%, and 10% significance, respectively. *p*-values are one-sided for variables with predicted signs and two-sided otherwise. Standard errors are clustered at the bank level. See Appendix B for variable definitions.

We follow Ryan et al. (2006) and estimate "ordinary" cash flows from operations (*OCFO*) as follows:

$$OCFO = CFO + \Delta LHS + \Delta Trading$$

where ΔLHS is the annual change in loans held for sale, scaled by total assets at last fiscal year-end, obtained from Compustat. $\Delta Trading$ is the annual change in net trading assets, scaled by total assets at last fiscal year-end. Net trading assets are defined as trading assets (item BHCK3545) minus trading liabilities (item BHCK3548), obtained from bank regulatory report FR Y9-C.[20] Untabulated descriptive statistics show that *OCFO* has a mean (median) of 0.015 (0.015) and a standard deviation of 0.01 during the full sample period. The Pearson correlation coefficient between *CFO* and *OCFO* is 0.53.

We replace *CFO* in predictability Eqs. (1)–(4) with *OCFO*. As shown in Table 8, Panels A and B, the coefficients on $OCFO_t$ are positive and significant at the one percent level across all columns in both panels, providing corroborating evidence on the ability of operating cash flows to predict future earnings and future cash flows.

For the valuation models, we also adjust cash flows per share and accruals per share for changes in loans held for sale and changes in trading securities. Specifically, we define "ordinary" cash flows from operations per share (*OCFOPS*) as follows:

$$OCFOPS = CFOPS + \Delta LHSPS + \Delta TradingPS$$

where ΔLHS_PS is the annual change in loans held for sale, scaled by the number of common shares outstanding and adjusted for stock splits and dividends; $\Delta Trading\_PS$ is the annual change in net trading assets, scaled by the number of common shares outstanding and adjusted for stock splits and dividends. Untabulated descriptive statistics show that *OCFOPS* has a mean (median) of 3.17 (1.99) and a standard deviation of 5.53. The Pearson correlation coefficient between *CFOPS* and *OCFOPS* is 0.83.

We replace *CFOPS* in valuation Eqs. (6)–(7) with *OCFOPS*. As displayed in Panel C of Table 8, the coefficients on *OCFOPS* are positive and significant at the one percent level, corroborating evidence in Table 3 that cash flows are valuation useful.

5.3. Controlling for net cash flows from investing/financing activities

As a robustness check, we control for net cash flows from investing/financing activities. Specifically, we define the following two variables: *CFI* (*CFF*) is net cash flows from investing (financing) activities scaled by total assets at last fiscal year-end; *CFIPS* (*CFFPS*) is net cash flows from investing (financing) activities scaled by the number of common shares outstanding and adjusted for stock splits and dividends.

CFI (*CFF*) has a mean of − 0.05 (0.04) with a standard deviation of 0.09 (0.09), and *CFIPS* (*CFFPS*) has a mean of − 9.28 (8.08) with a standard deviation of 25.30 (25.77). The Pearson correlation coefficient between *CFI* and *CFF* (between *CFIPS* and *CFFPS*) is − 0.91 (− 0.91), suggesting that net cash flows from banks' investing and financing activities are highly and negatively correlated.[21]

Due to high multicollinearity between *CFI* and *CFF*, we control for either *CFI* or *CFF* (but not both) in the predictability regression equations. Similarly, we control for either *CFIPS* or *CFFPS* (but not both) in the valuation regressions. In untabulated results, we re-estimate the predictability and valuation regressions, and find our inferences remain unchanged.

5.4. Predicting two-year-ahead and three-year-ahead earnings and cash flows

In our analysis thus far, we have examined the ability of cash flows from operations to predict one-year-ahead earnings and cash flows. In untabulated sensitivity analysis, we examine the ability of cash flows to predict two-year-ahead or three-year-ahead earnings and cash flows. Specifically, we replace the dependent variables $EARN_{t+1}$ and

Table 7
Robustness test – controlling for current earnings.

Panel A: Predicting future earnings and cash flows

$EARN_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 EARN_t + \varepsilon$ (10)

$CFO_{t+1} = \beta_0 + \beta_1 CFO_t + \beta_2 EARN_t + \varepsilon$ (11)

		(10) Dependent variable = $EARN_{t+1}$				(11) Dependent variable = CFO_{t+1}			
		2004–2013	2004–2006	2007–2009	2010–2013	2004–2013	2004–2006	2007–2009	2010–2013
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
CFO_t	+	0.025***	0.014*	0.037*	0.014*	0.188***	0.215***	0.349***	0.059
		(0.005)	(0.073)	(0.089)	(0.100)	(0.000)	(0.008)	(0.000)	(0.214)
$EARN_t$	+	0.536***	0.722***	0.566***	0.451***	0.146***	0.463***	0.002	0.204***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.484)	(0.000)
Year FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2		0.570	0.894	0.251	0.626	0.521	0.592	0.481	0.519
N		4233	1344	1266	1623	4233	1344	1266	1623

Panel B: Valuation of cash flows

$P = \beta_0 + \beta_1 CFOPS + \beta_2 EPS + \beta_3 BVPS + \varepsilon$ (12)

		2004–2013	2004–2006	2007–2009	2010–2013
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
CFOPS	+	1.109***	0.488***	0.795***	0.809***
		(0.000)	(0.004)	(0.001)	(0.001)
EPS	+	4.335***	12.476***	2.797***	4.138***
		(0.000)	(0.000)	(0.000)	(0.000)
BVPS	+	0.598***	0.242***	0.570***	0.584***
		(0.000)	(0.000)	(0.000)	(0.000)
Year fixed effect		Yes	Yes	Yes	Yes
Adjusted R^2		0.874	0.951	0.864	0.820
N		4897	1470	1309	2118

***, **, and * represent 1%, 5%, and 10% significance, respectively. *p*-values are one-sided for variables with predicted signs and two-sided otherwise. Standard errors are clustered at the bank level. See Appendix B for variable definitions.

Table 8
Robustness test – adjusting for changes in loans held for sale and changes in net trading assets.

Panel A: Predicting future earnings

Basic model: $EARN_{t+1} = \beta_0 + \beta_1 OCFO_t + \beta_2 ACC_t + \varepsilon$ (13)

Extended model: $EARN_{t+1} = \gamma_0 + \gamma_1 OCFO_t + \gamma_2 PLL_t + \gamma_3 Other\_ACC_t + \varepsilon$ (14)

		2004–2013		2004–2006		2007–2009		2010–2013	
		(13)	(14)	(13)	(14)	(13)	(14)	(13)	(14)
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
$OCFO_t$	+	0.311***	0.313***	0.376***	0.397***	0.350***	0.343***	0.236***	0.240***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ACC_t	?	0.187***		0.084***		0.307***		0.141***	
		(0.000)		(0.001)		(0.000)		(0.000)	
PLL_t	–		− 0.631***		− 0.540***		− 0.779***		− 0.439***
			(0.000)		(0.000)		(0.000)		(0.000)
$Other\_ACC_t$	?		0.109***		0.087***		0.159***		0.088***
			(0.000)		(0.001)		(0.000)		(0.000)
Year fixed effect		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2		0.510	0.562	0.863	0.869	0.160	0.252	0.621	0.652
N		2726	2726	876	876	810	810	1040	1040

Panel B: Predicting future cash flows
Basic model: $OCFO_{t+1} = \beta_0 + \beta_1 OCFO_t + \beta_2 ACC_t + \varepsilon$ (15)
Extended model: $OCFO_{t+1} = \gamma_0 + \gamma_1 OCFO_t + \gamma_2 PLL_t + \gamma_3 Other\_ACC_t + \varepsilon$ (16)

		2004–2013		2004–2006		2007–2009		2010–2013	
		(15)	(16)	(15)	(16)	(15)	(16)	(15)	(16)
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
$OCFO_t$	+	0.427***	0.430***	0.444***	0.437***	0.310***	0.319***	0.517***	0.518***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ACC_t	?	0.031**		0.107***		0.010		0.011	
		(0.014)		(0.003)		(0.639)		(0.507)	
PLL_t	?		0.102***		0.053		0.163***		0.033
			(0.001)		(0.705)		(0.000)		(0.415)
$Other\_ACC_t$	?		0.060***		0.110***		0.080***		0.020
			(0.000)		(0.004)		(0.003)		(0.338)
Year fixed effect		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2		0.808	0.810	0.821	0.821	0.748	0.757	0.847	0.847
N		2682	2682	844	844	805	805	1033	1033

Panel C: Valuation of cash flows
Basic model: $P = \beta_0 + \beta_1 OCFOPS + \beta_2 ACCPS + \beta_3 BVPS + \varepsilon$ (17)
Extended model: $P = \gamma_0 + \gamma_1 OCFOPS + \gamma_2 PLLPS + \gamma_3 Other\_ACCPS + \gamma_4 BVPS + \varepsilon$ (18)

		2004–2014		2004–2006		2007–2009		2010–2014	
		Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)	Coeff (*p*-value)
OCFOPS	+	2.806***	2.912***	4.905***	5.272***	1.758***	1.779***	2.520***	2.781***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
ACCPS	?	1.812***		1.979***		1.686***		1.214***	
		(0.000)		(0.007)		(0.000)		(0.000)	
PLLPS	?		− 3.377***		− 6.254***		− 2.282***		− 2.720***
			(0.000)		(0.001)		(0.000)		(0.000)
Other_ACCPS	?		1.006***		0.641		1.410***		0.667***
			(0.000)		(0.196)		(0.000)		(0.005)
BVPS	+	0.554***	0.691***	0.416***	0.650***	0.556***	0.647***	0.514***	0.598***
		(0.000)	(0.000)	(0.009)	(0.000)	(0.000)	(0.000)	(0.003)	(0.001)
Year fixed effect		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2		0.835	0.854	0.878	0.901	0.844	0.865	0.797	0.811
N		3128	3128	950	950	834	834	1344	1344

***, **, and * represent 1%, 5%, and 10% significance, respectively. *p*-values are one-sided for variables with predicted signs and two-sided otherwise. Standard errors are clustered at the bank level. See Appendix B for variable definitions.

CFO_{t+1} in predictability Eqs. (1)–(4) with the average of the next two years' or three years' earnings and cash flows, respectively, and our inferences remain unchanged.

6. Conclusion

The usefulness of the statement of cash flows for banks has been

[20] Because Compustat only has a data item for trading assets (tdst) but not for trading liabilities, we obtain trading assets and liabilities from FR Y9-C. Merging the dataset from FR Y9-C and the Compustat/CRSP dataset described in Table 1 results in the smaller sample size used in Table 8.

[21] The Pearson correlation coefficients of *CFO* with *CFI* or *CFF* are < 0.20, and the Pearson correlation coefficients of *CFOPS* with *CFIPS* or *CFFPS* are < 0.50.

debated by standard setters, investors, and practitioners. Under SFAS No. 95 (ASC 230), all firms, including banks, are required to present a statement of cash flows. However, banks have long argued that the statement of cash flows would not be useful and that their unique business model does not fit into the concept of operating cash flows. The objective of this paper is to examine the valuation usefulness of operating cash flow information provided by banks. Using a sample of bank-years from 2004 to 2014, we first examine whether a bank's cash flows from operations are predictive of the bank's ability to generate future net cash flows and earnings. Next, we investigate whether the market incorporates this information when valuing share price.

Our findings are as follows. First, current operating cash flows are predictive of future operating cash flows and future earnings. We estimate cross-sectional regressions of future cash flows from operations and earnings, respectively, on cash flows from operations and accruals and find a positive and significant relation. This indicates that operating cash flows contain information beyond accruals that is associated with future cash flows and earnings.

Second, we find evidence that the market incorporates operating cash flows information into its value estimates. We estimate cross-sectional regressions of share price on cash flows from operations, accruals, and book value and find a positive and significant relationship between share price and cash flows from operations. This finding is consistent with the prediction that SFAS No. 95 provides useful incremental information for investors' equity valuations.

Third, we find that value relevance of operating cash flows varies with bank characteristics. The market incorporates operating cash flows more when firms report profits than when they report losses. The market incorporates operating cash flows less when firms have higher Tier 1 capital ratios than when they have lower Tier 1 capital ratios. The market also incorporates operating cash flows less when firms have a higher percentage of nonperforming loans than when they have a lower percentage of nonperforming loans.

This study contributes to prior research by providing an empirical analysis of the usefulness of one of the main financial statements in an industry previously not examined. Our findings expand our understanding of the role of statement of cash flows information for banks in the capital markets.

Appendix A. Statement of cash flows

1st source bank (Ticker: SRCE)	
Consolidated statements of cash flow	
Year Ended December 31 (Dollars in thousands)	2010
Operating activities:	
Net income	$41,244
Adjustments to reconcile net income to net cash provided by operating activities:	
Provision for loan and lease losses	19,207
Depreciation of premises and equipment	4132
Depreciation of equipment owned and leased to others	20,715
Amortization of investment security premiums and accretion of discounts, net	1576
Amortization of mortgage servicing rights	3277
Mortgage servicing asset (recoveries)/impairment	(1)
Deferred income taxes	(1055)
Investment securities and other investment (gains) losses	(2293)
Originations/purchases of loans held for sale, net of principal collected	(411,541)
Proceeds from the sales of loans held for sale	412,019
Net gain on sale of loans held for sale	(6427)
Change in trading account securities	(13)
Change in interest receivable	1969
Change in interest payable	(4728)
Change in other assets	4025
Change in other liabilities	8387
Other	2700
Net change in operating activities	93,193
Investing activities:	
Proceeds from sales of investment securities	83,089
Proceeds from maturities of investment securities	431,137
Purchases of investment securities	(572,172)
Net change in short-term and other investments	106,276
Loans sold or participated to others	19,311
Net change in loans and leases	(17,353)
Net change in equipment owned under operating leases	(1850)
Purchases of premises and equipment	(2515)
Net change in investing activities	45,923
Financing activities:	
Net change in demand deposits, NOW accounts and savings accounts	126,079
Net change in certificates of deposit	(155,798)
Net change in short-term borrowings	5879
Proceeds from issuance of long-term debt	16,163
Payments on subordinated notes	–

Payments on long-term debt	(11,134)
Net proceeds from issuance of treasury stock	2873
Acquisition of treasury stock	(2142)
Net proceeds from issuance of preferred stock & common stock warrants	–
Redemption of preferred stock	(111,000)
Cash dividends paid on preferred stock	(5519)
Cash dividends paid on common stock	(15,076)
Net change in financing activities	(149,675)
Net change in cash and cash equivalents	(10,559)
Cash and cash equivalents, beginning of year	72,872
Cash and cash equivalents, end of year	$62,313

Appendix B. Variable definitions

Variable	Definition
P	Stock price three months after fiscal year-end plus dividends per share, adjusted for stock splits and dividends (Compustat, (prccm + dvc/cshpri)/ajex)
CFO	Operating cash flows (Compustat, oancf), scaled by total assets at the end of last fiscal year (Compustat, at)
EARN	Earnings excluding extraordinary items and discontinued operations (Compustat, ib), scaled by total assets at the end of last fiscal year (Compustat, at)
ACC	Accruals scaled by total assets at the end of last fiscal year *(ACC = EARN − CFO)*
PLL	Provisions for loan losses (Compustat, pll, typically a positive value in Compustat) scaled by total assets at the end of last fiscal year (Compustat, at)
Other_ACC	Accruals other than provisions for loan losses scaled by total assets at the end of last fiscal year (*Other_ACC = ACC + PLL*)
EPS	Earnings per share (basic) excluding extraordinary items and discontinued operations, adjusted for stock splits and dividends (Compustat, epspx/ajex)
BVPS	Book value of common equity at the end of last fiscal year, divided by the number of common shares outstanding and adjusted for stock splits and dividends at the end of last fiscal year (Compustat, ceq/(cshpri * ajex))
CFOPS	Cash flows from operating activities divided by the number of common shares outstanding and adjusted for stock splits and dividends (Compustat, oancf/(cshpri * ajex))
ACCPS	Accruals per share (*ACCPS = EPS − CFOPS*)
PLLPS	Provisions for loan losses divided by the number of common shares outstanding and adjusted for stock splits and dividends (Compustat, pll/(cshpri * ajex), where pll is typically a positive value in Compustat)
Other_ACCPS	Accruals other than provisions for loan losses per share (*Other_ACCPS = ACCPS + PLLPS*)
Profit	An indicator variable equal to one for firms that report *EPS* > 0 and zero otherwise (Compustat, epspx/ajex)
Tier1_capr	Tier 1 risk-based capital ratio (Compustat, capr1/100)
HighTier1	An indicator variable equal to one if Tier 1 risk-based capital ratio is greater than the median value each year (Compustat, capr1) and zero otherwise
NPL_pctg	Percentage of nonperforming loan (Compustat, npat/lntal)
HighNPL	An indicator variable equal to one if nonperforming loan as a percentage of total loans is greater than the median value each year (Compustat, npat/lntal) and zero otherwise
ΔLHS	Annual change in loans held for sale (Compustat, invch * (− 1)), scaled by total assets at the end of last fiscal year (Compustat, at)
ΔTrading	Annual change in net trading assets, i.e., trading assets (FR Y9-C, BHCK3545) minus trading liabilities (FR Y9-C, BHCK3548), scaled by total assets at the end of last fiscal year (Compustat, at)
OCFO	"ordinary" operating cash flows, estimated following Ryan et al. (2006): *OCFO = CFO + ΔLHS + ΔTrading*
ΔLHS_PS	Annual change in loans held for sale (Compustat, invch * (− 1)), scaled by the number of common shares outstanding and adjusted for stock splits and dividends (Compustat, cshpri * ajex)
ΔTrading_PS	Annual change in net trading assets, which are trading assets (FR Y9-C, BHCK3545) minus trading liabilities (FR Y9-C, BHCK3548), scaled by the number of common shares outstanding and adjusted for stock splits and dividends (Compustat, cshpri * ajex)
OCFOPS	"ordinary" operating cash flows per share: *OCFOPS = CFOPS + ΔLHS_PS + ΔTrading_PS*
CFI	Net cash flow from investing activities (Compustat, ivncf) scaled by total assets at the end of last fiscal year (Compustat, at)
CFF	Net cash flow from financing activities (Compustat, fincf) scaled by total assets at the end of last fiscal year (Compustat, at)
CFIPS	Net cash flow from investing activities (Compustat, ivncf) scaled by the number of common shares outstanding and adjusted for stock splits and dividends (Compustat, cshpri * ajex)
CFFPS	Net cash flow from financing activities (Compustat, fincf) scaled by the number of common shares outstanding and adjusted for stock splits and dividends (Compustat, cshpri * ajex)

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