Chinese Walls in German Banks*

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Abstract

Analysts in a bank's research department cover both firms that have no relationship with the bank as well as companies in which the bank has a strategic interest. Officially, banks must establish Chinese Walls around their research departments to allow the analysts to work independently and to avoid the flow of insider information. We examine analyst behavior under long-term bank-firm relationships using ownership data and analysts' earnings per share forecasts on German companies from 1994 to 2001. We find evidence that is consistent with analysts reconciling their employer's interest with their own career concerns. They seem to use their information advantage strategically by releasing favorable and thereby more precise reports when the market underestimates earnings. In order not to jeopardize the bank-client relationship, they suppress negative information when the market is too optimistic. Combining situations where the market over- and underestimates earnings we can replicate the unconditional positive bias in analyst forecasts found in the previous literature. Despite the bias in affiliated analysts' forecasts, they nonetheless selectively communicate valuable information to investors.

JEL Codes: G19, G21, G24

Keywords: Chinese walls, analyst forecasts, universal banking

1 Introduction

Recent events where analysts have been accused of issuing favorable analyst reports highlighted potential conflicts of interest and given rise to calls for more independent research.[1] In this paper we cast some doubt on whether impenetrable Chinese Walls that separate analysts from the rest of the bank are in investors' best interests.

We analyze how commercial bank relationships affect financial analysts' reporting strategies arguing that an overall bias in affiliated analysts' forecasts is consistent with affiliated analysts selectively reporting valuable information to investors. We argue that affiliated analysts strategically release their inside information on firms with close ties to the bank, balancing the goals of having a good track record with the conflicts of interest resulting from the banks' other business. Whenever the median analyst's estimate of a firm's earnings is too pessimistic, affiliated analysts reveal their superior information and give a positive, more precise forecast. This will please the banks client as well as improve the analyst's track record. However, when most other analysts are too optimistic about future prospects of the firm, affiliated analysts seem to herd with other analysts by replicating the forecasts of their peers. We find that forecasts of affiliated analysts are either as good as the forecasts of other analysts (when the consensus overestimates earnings) or better than the others (when the average analyst is too pessimistic). From a policy perspective, it is therefore not certain whether investors would benefit from a stricter separation of banking and research.

We use data from Germany, where banks' business relationships with their corporate clients are tight and often described as "housebank" relationships. A typical example of a long-term relationship is the one between Deutsche Bank

[1] "Nobody expects a guaranteed profit. But what every investor expects and deserves is honest investment advice - advice and analysis that is untainted by conflicts of interest." Elliot Spitzer at a news conference outside the New York Stock Exchange, Dec 2002

and Daimler-Chrysler, which has existed for nearly 80 years.[2] German banks are able to build up and maintain a lot of client specific knowledge during the course of the bank-firm relationship, which may give them a sustainable informational advantage compared to other banks. In the U.S., with a more transaction oriented banking system, banks will collect a lot of information on a client during the transaction (e.g., an underwriting process) but as time passes, this client-specific knowledge becomes less valuable when no further ties to the firm exist. We believe that Germany due to the long term and tight bank-relationships is an ideal testing ground for our research.

Financial analysts in a bank's research department should issue independent forecasts firms' future earnings to guide investors. However, several groups within the bank might pressure analysts to publish positive reports on the bank's clients. Loan officers could be concerned that they lose business to rival banks after a downgrade in an analyst's report, investment bankers want to increase fee revenue,[3] and management might want to push the prices of the shares in the bank's own portfolio. Analysts will have to balance these interests of their employers with their own career concerns. High quality research will help them to advance in their career and get hired by more prestigious broker houses.[4] We find evidence that is consistent with financial analysts trying to reconcile private career concerns with their employer's interest by conditioning their forecast behavior on the current consensus.

Looking at the unconditional bias in our sample, i.e., combining situations where the consensus over- and underestimates earnings, we can replicate the over-

[2]Deutsche Bank through its subsidiaries Württembergische Vereinsbank and Rheinische Creditbank was the housebank of the two firms that merged to Daimler-Benz AG in 1926. The CEO of Deutsche Bank has been chairman of the Daimler-Benz supervisory board from 1926 until the present day. Half of the equity that Deutsche Bank now owns in Daimler-Chrysler was acquired in the 1920s and the other half in the 1950s. As of December 2002, Deutsche Bank owns 12 percent of the shares and is the largest single shareholder (see Breuer (1998)).

[3]see Michaely and Womack (1999) or Dugar and Nathan (1995).

[4]see Hong and Kubik (2003) or Hong, Kubik, and Solomon (2000).

all unconditional positive bias in affiliated analysts' forecasts documented in the previous literature.[5] This positive bias has been seen as an indication of severe conflicts of interest that might adversely affect investors. While we confirm a conflict of interest in our research, our results raise the question of whether biased forecasts harm investors or whether they merely result from analysts selectively communicating valuable information to investors.

Our paper extends previous research in two ways. First, to the best of our knowledge our study documents for the first time the asymmetry in affiliated analysts' forecast behavior conditional on other analysts' forecasts. We can offer an explanation of the bias in affiliated analysts' research that was found in the literature that is consistent with empirical evidence on analysts' career concerns. Second, we look at analyst behavior in a universal banking context with long-term and very intense bank-firm relationships. Bank-firm relationships in Germany often occur at multiple levels. Firms borrow money from banks, which in turn hold equity in these firms, have seats on the supervisory boards, and exert influence through proxy votes in shareholders meetings.[6]

[5]This bias has been well documented for underwriter-analysts. Michaely and Womack (1999) find that stocks recommended by underwriters perform worse than stocks recommended by independent analysts. Underwriter analysts also issue buy recommendations more often for firms with poor performance subsequent to the IPO. Dunbar, Hwang, and Shastri (1999) also support the hypothesis of conflict of interest for underwriters' buy recommendations made shortly after the IPO. However, non-initial buy recommendations by underwriters lead to positive stock market reactions, indicating that these analysts have superior information. See also Dugar and Nathan (1995), Dechow, Hutton, and Sloan (2000), and Lin and McNichols (1998), who examine seasoned equity offerings. Ljungqvist, Marston, Starks, Wei, and Yan (2005) also find that analysts are subject to investment banking and brokerage pressure and show that the presence of institutional investors creates an incentive for analysts to publish unbiased or less biased research. Examining a large sample of U.S. equity and debt offerings, Ljungqvist, Marston, and Wilhelm (forthcoming) find that aggressive analyst recommendations do not increase a bank's probability of winning an underwriting deal.

[6]The supervisory board (Aufsichtsrat) of German firms consists of representatives of the firm owners and the employees and is appointed by the shareholders' meeting. See Franks and Mayer (2001) and Becht and Boehmer (1999) for the institutional features and an analysis of the German governance system.

The rest of the paper is composed as follows: Section 2 describes the sample, Section 3 presents the results of the empirical analysis, and Section 4 concludes.

2 Data

There is no publicly available information on lending relationships in Germany, so we choose ownership to measure the degree of relationship between a bank and a firm. When German banks have a long-term strategic interest in a corporation, they often hold an equity stake.[7] A significant equity stake implies voting power at the firm's shareholder meetings and seats on the supervisory board. The degree of ownership in a company also often underestimates the actual direct control rights that a bank has on a firm. The typical, pyramid type governance structure in German corporations allows banks to control companies by holding only a small equity stake.[8] Thus, whenever we find equity ownership of a bank in a company, there might be influence on the analysts' behavior. We define an *affiliated* analyst as an analyst whose broker firm owns a stake in that firm.

Our study covers the fiscal years from 1994 to 2001.[9] For every year in the sample, we collect data on equity stakes in publicly traded German companies of nine large German banks, which are actively involved in both strategic stock

[7] In our analysis we will therefore miss some bank-firm relationships where the bank has no equity stake and classify these banks' analysts as independent. This will, however, only weaken the empirical support for our hypothesis.

[8] For example, a bank may hold 51 percent of company A, which in turn holds 51 percent of company B. The bank then controls B but only holds 26 percent of B's equity. In this study, we look at ultimate ownership, i.e., the sum of direct and indirect holdings.

[9] Under §41 of the German security trading law WpHG, which is the national implementation of the EU Transparency Directive (88/627/EEC), disclosure of block-ownership above 5 percent became mandatory in 1995 (Becht and Boehmer (1999)). We start our sample in 1994 as we found no significant changes between (voluntary) ownership reports from 1994 and the reports from 1995.

investments and analyst forecast activities. These banks are Bayerische Landesbank, BHF Bank, Commerzbank, Deutsche Bank, DG Bank, Dresdner Bank, HypoVereinsbank, Nord/LB, and WestLB.[10] Based on balance sheet information from the year 2001 and the reports of Deutsche Bundesbank, the banks in our sample hold 44.61 percent of all banks' total assets. They own equity stakes in non-financial companies worth € 33.4 billion (book value) which is more than 91 percent of all equity owned by German banks.[11] Ownership data are hand collected, from banks' annual reports, "wer gehört zu wem?" (which is published regularly by Commerzbank), and the Bundesanstalt für Finanzdienstleistungsaufsicht at www.bafin.de. From these ownership data, we construct a dummy variable reflecting the existence of an equity stake.[12]

For analyst forecasts, we use the I/B/E/S International Detail History database, as of August 2002. This database collects analyst forecasts on a forecast by forecast basis (as opposed to consensus forecasts). We use annual earnings per share (EPS) forecasts; quarterly earnings reports became mandatory listing requirements on the main market of the German stock exchange only in 2001. For

[10] HypoVereinsbank was founded in 1998. Before 1998 we use separate data for its predecessors Bayerische Hypotheken- und Wechselbank and Bayerische Vereinsbank.

[11] The German Bundesbank publishes a summary statistic of the book value of all non-bank equity holdings by German banks, comprising listed as well as non listed corporations. We do not know what fraction of equity stakes in listed companies we cover, but we believe that we include most of the banks with stakes in listed companies in our analysis. The German banking law limits the stake that a bank can take in a corporation with 15 percent of the bank's equity (§12 KWG-German banking law). Since listed companies are generally larger, smaller banks are effectively precluded from owning significant stakes in listed companies. For wholly owned brokerage subsidiaries of these nine banks, we assume the same bank-firm relationship between the broker and a firm as between the bank and the firm.

[12] The use of dummy variables instead of the actual stakes is justified by the observation that banks' officially reported shareholdings frequently do not reflect the true extent of control exercised (see Lehmann and Weigand (2000)). To check for robustness, we repeat the empirical analysis using the actual stake as a measure of bank influence, which confirms the results found in the paper. We also repeat our analysis with two dummy variables distinguishing holdings up to 25 percent and ownership in stakes of 25 percent or more and find our results confirmed. Franks and Mayer (2001) also use a cutoff point of 25 percent in their analysis of corporate governance in Germany. The results are available from the authors upon request.

each forecast in the I/B/E/S database, we select the broker who made the forecast, the value of the forecast, the estimate date, the forecast period end date (defined as end of the fiscal year for which the forecast was made) and the subsequently realized EPS. We exclude forecasts made by *Boerse online*, *Das Wertpapier* and *Going Public Media*, as these companies are publishing houses or information providers that collect forecasts from other brokers. We drop forecasts made longer than three years prior to the end of the forecast period (period end date), because very long-term forecasts exhibit considerable noise and are rare. We include forecasts made up to three months after the period end date, because actual earnings per share for a given year are typically reported several months after the fiscal year ends.[13]

When analyzing analyst behavior, two possible sources of sample selection bias arise. First, banks choose to become and remain shareholders and thus our distinction between affiliated and non-affiliated analysts is endogenous. Banks may prefer to start a relationship with companies where they have more positive views on future earnings or have some form of industry expertise, which allows them to make more precise forecasts. In this case, one would expect to find, on average, overly optimistic or more precise forecasts by affiliated brokers. This bias because of endogenous bank-firm relationships is especially pronounced when we see many formations of new, short-term bank-firm relationships, such as in a transaction oriented banking system.[14] In our sample, we see very few formations of new business relationships.[15] German banking is characterized by housebank

[13]We made sure not to include any forecasts made after the actual earnings were announced. Under current regulation, firms have to file annual reports within four month after the end of the fiscal year.

[14]Michaely and Womack (1999) address this problem by surveying 26 investment professionals, who mainly see conflict of interest and not self selection as the source of overly optimistic forecasts. Hamao and Hoshi (2000) use a two-stage regression analysis to compensate for selection bias.

[15]Note also that our measure of bank-firm relationship is very conservative. Even when a bank sells its equity stake or if the stake falls below the reporting threshold, i.e., due to a SEO, there might still be a vital banking relationship. In our sample we have only three cases, where a bank

relationships and bank-firm relationships are long term. In the eight years of our sample, the median bank-firm relationship has a duration of seven years.[16] We are not able to fully control for this source of bias, but we increase robustness of our analysis by our sample selection strategy outlined below, where we control for bank and firm characteristics.

Second, the decision whether a bank covers a specific stock or not is endogenous. McNichols and O'Brien (1997) show that analysts tend to cover stocks, where they have a more optimistic view.[17] Ljungqvist, Marston, and Wilhelm (forthcoming) control for selection bias by including the probability that a bank covers a firm in their econometric specification. To control for possible selection bias we follow the procedure of Ljungqvist, Marston, Starks, Wei, and Yan (2005) and also check our results for robustness with respect to selection using the Heckman (1979) model.[18]

While identifying the sample of forecasts by affiliated analysts is straight forward, there are several possibilities to select the control sample. One possibility is to use all forecasts where no ownership relation exists. However, this would lead to an extremely unbalanced sample. Therefore, we compare forecasts of affiliated analysts with the following two control groups.

First, a comparison can be made with forecasts for the same set of firms issued by non-affiliated brokers. To construct this sample, we select all companies where at least one of the nine banks has an equity stake. For these firms, we use forecasts

sold a stake and another bank bought a stake in company within three years.

[16] This is also consistent with Gorton and Schmid (2000), who find that "German banks are not actively managing equity portfolios." They document that large block holdings by major German banks did not change significantly during the period 1972 to 1990.

[17] See also Francis and Willis (2001), who find that selection bias is present even in regular analyst activity (i.e., without a bank-firm relationship.)

[18] While we include random effects throughout our empirical analysis, we estimate the Heckman (1979) model without random effects for the same reasons as in Ljungqvist, Marston, Starks, Wei, and Yan (2005).

from all brokers that do not have an equity stake as a control for the affiliated analysts. The sample that includes this comparison group will be referred to as *all banks sample*.

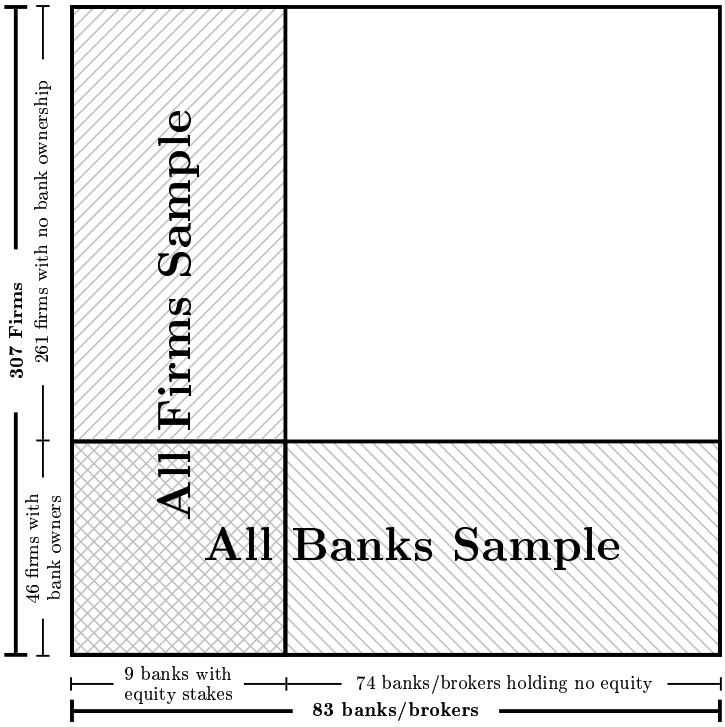
Analyst behavior might be influenced by firm, analyst, bank and time specific effects. A natural way to set up the econometric analysis would be using a four way panel model, which is currently not feasible as discussed in Ljungqvist, Marston, Starks, Wei, and Yan (2005). We follow the literature and estimate our model using one of the three random effects at a time. However, our sample selection strategy allows us to control for additional common characteristics. The analysis using the all banks sample is robust with respect to special characteristics that are common to companies where banks own equity stakes.

Second, we construct a control sample that is robust with respect to special characteristics of the nine banks that own equity stakes. We include all forecasts published by these banks for all German companies. If this sample shows that forecasts are different for corporations in which the analyst's firm owns equity stakes, this cannot be due to the special nature of the banks making the forecasts, as only forecasts by these banks are used as a control group. This data set will be referred to as *all firms sample*. Figure 1 illustrates the composition of the samples.[19]

To obtain the final samples, we drop all observations where realized earnings per share are not available. We also purge the data set of observations where the currency is neither Deutsch mark nor euro, because the forecast may contain a currency forecast as well. We eliminate approximately 20 percent of the initial sample, leaving us with 39,191 observations in the *all banks sample* and 44,779 observations in the *all firms sample*.

[19]Note that even in the area at the bottom left of Figure 1, not all observations are forecasts made by an affiliated broker, as each one of the nine banks (and its broker subsidiaries) generally only owns equity stakes in a few of the 46 companies where at least one bank is owner.

Figure 1: Samples Used for Analysis.



3 Empirical analysis

Following Ljungqvist, Marston, Starks, Wei, and Yan (2005) we measure analyst bias as

$$INNO = \frac{FORVAL - CONS}{\sigma_{FORVAL}} \tag{1}$$

where *FORVAL* is the individual forecast, *CONS* the consensus forecast prevailing at the time when the individual forecast was issued and σ_{FORVAL} the standard deviation of all analysts' deviations over the 3-months time span for which the consensus forecast is calculated.[20]

[20]For each forecast we calculate the consensus forecast prevailing at the time t that the forecast was made as the median of all individual forecasts issued between the period of three months and

To measure the precision of an analyst's forecast we need some ex-post measure of forecast performance. Similar to Ljungqvist, Marston, Starks, Wei, and Yan (2005) we define the absolute forecast error as

$$AE = \frac{|FORVAL - ACTVAL|}{\sigma_{FORVAL}}, \tag{2}$$

We scale the difference between forecast and actual value again by the standard deviation of the forecasts to reflect the economic uncertainty at the time of the forecast. In the regression analysis we relate the absolute forecast error to the absolute error of the consensus prevailing at the time of the forecast, which is defined as:

$$AECONS = \frac{|CONS - ACTVAL|}{\sigma_{FORVAL}}, \tag{3}$$

The Literature has analyzed several factors influencing the quality of analyst forecasts. One is career concerns, which we control for with two variables: experience of the analyst and the prestige of the broker where the analyst works. I/B/E/S does not provide us with the number of years that an analyst has worked in the profession. We follow Hong, Kubik, and Solomon (2000) and count the number of years that an analyst has been contributing forecasts to the I/B/E/S database. However, there are only a few brokers issuing forecasts for the German market in the database in the years before our sample starts, and the number of analysts increases over time. To avoid an underestimation of experience for analysts whose brokerage firms have been added to the database at a later point in time, we start counting in 1989 and set the maximum experience at a level of four years. We

two days before t. When a forecast is made, e.g., on June 19th, we compute the consensus as median of all forecasts between April 19th and June 16th. We have a time varying consensus, and only incorporate information that is available at the time of the forecast. We calculate the consensus forecast before assigning forecasts to the *all firms* or the *all banks* subsamples, using all forecasts except those issued by *Boerse online*, *Das Wertpapier*, and *Going Public Media*. That is, we make use of the whole rectangle of Figure 1. Standard deviations close to zero lead to huge innovations. Therefore we winsorize the measure *INNO* at the 1 and 99 percentiles, leading to a minimum *INNO* of -4.159 and a maximum *INNO* of 3.296.

also control for the prestige of a broker. In Germany, there are no well recognized rankings like the "Institutional Investor" ranking used by Hong and Kubik (2003) to identify prestigious brokers. We therefore follow a procedure similar to Hong, Kubik, and Solomon (2000) and identify the most prestigious brokers as the top 5 percent with respect to the number of analysts employed. We set the prestigious broker dummy equal to one, whenever 24 or more analysts work for the broker (Hong, Kubik, and Solomon (2000) use a cut-off of 25 analysts).[21] To control for the size of a broker on the German market, we calculate the number of German companies for which the broker publishes forecasts in any calendar year.[22]

We also control for coverage, which we construct by counting the number of brokers that issue forecasts for a specific company in a given year. Finally, we consider that forecasts for the EPS of a specific company-year become more precise as time goes by. Therefore, we calculate the time difference between the date when a forecast was published and the end date of the fiscal year for which the forecast has been made.

3.1 Summary statistics

Table 1 shows the summary statistics for the various variables. Panel A, which is referring to the *all banks sample*, indicates that forecasts and realized values of Earnings per Shares (EPS) are indeed noisy variables. The median forecast EPS is € 1.59, while the median actual EPS over the period is only € 1.43. The median forecast error is 2.41 percent. This shows that analysts tend to overestimate earnings, a feature documented by many prior studies, for instance by Chopra (1998).

[21] Five out of the nine banks owning equity stakes are classified as prestigious brokers.

[22] Even though the last two measures are similar, we do not seem to run into problems of collinearity. The correlation between the size of the broker and the prestigious broker dummy is only 0.0813 in the all firms sample. Prestigious brokers cover on average 148 firms while non prestigious brokers cover on average 140 firms. The difference is not significant.

Mean as well as median *INNO* is negative, indicating that analysts start out overly optimistic and decrease their forecasts over time. One measure of forecast precision is the absolute error, as defined in Equation 2. A forecast is, on average, 2.81 standard deviations away from the actual value. The median time difference between a forecast and the forecast period end date is 0.88 years (321 days). 4.7 percent of forecasts are made by brokers who own equity stakes. The average analyst has an experience of 3.12 years. More than half of the forecasts are issued by experienced analysts (the median of experience is at the maximum value of four years). About 6 percent of the analysts work for a prestigious broker. The median broker in the *all banks sample* covers 111 firms. The median firm is covered by 35 analysts. The summary statistics for these variables in Panel B, referring to the *all firms sample*, are very similar. The absolute error is a little higher, with a mean of 2.88 standard deviations. The median broker covers more firms (142), in line with the sample selection strategy of including only forecasts by the nine large German banks. The median coverage of the firms in this sample is lower (29), due to the larger number of firms (and therefore inclusion of smaller companies) as compared to the *all banks sample*.

3.2 Strategic behavior

To test for affiliated analysts' reporting strategies, we have to take a closer look at their incentives. Whenever there are holes in Chinese Walls, affiliated analysts may face a conflict of interest and possess superior information. Analysts working for these brokers face a tradeoff when deciding whether to make use of their information advantage. First, for reputation, remuneration, and career concerns they will try to issue as precise forecasts as possible.[23] In particular, they should avoid issuing wrong forecasts. Second, they might want to follow the interests of the

[23] see for example Hong, Kubik, and Solomon (2000) and Hong and Kubik (2003).

Table 1: Summary Statistics.

Forecast and actual earnings per share (EPS) are given in euro. *INNO* is the difference between an individual EPS forecast and the prevailing consensus forecast, divided by the standard deviation of forecasts . Absolute error is the absolute value of the difference between forecast and actual EPS, divided by standard deviation of forecasts . Experience is the number of years an analyst is present in the I/B/E/S database prior to the forecast, winsorized at four years. Prestigious broker dummy equals one if at least 24 analysts are affiliated with the broker and zero otherwise. Size of broker is the number of German companies in the I/B/E/S database covered by a broker, calculated annually. The affiliated broker dummy equals one if a broker holds a significant equity stake in the firm for which the forecast is made and zero otherwise. Small stake dummy is one if a broker owns an equity stake of less than 25 percent in the company for which the forecast is made and zero otherwise. Similarly, the large stake dummy is one when a broker owns a stake of at least 25 percent in the company. Size of the stake is the percentage of equity held by the broker. Coverage is the number of brokers issuing forecasts for a company in a given year. Time difference, measured in years, is the difference between the date when a forecast is made and the last day of the period for which the forecast is made (period end date).

Panel A: All Banks Sample. ($n = 39,191$)

Variable	Mean	St. Dev.	Median	5% quantile	95% quantile
Forecast EPS	2.45	3.63	1.59	0.35	8.67
Actual EPS	1.02	8.30	1.43	-1.76	7.07
Innovation	-0.083	1.069	-0.024	-1.903	1.689
Absolute Error	2.81	3.54	1.65	0.09	10.21
Absolute Error Consensus	2.82	3.57	1.67	0.11	10.54
Experience	3.12	1.37	4.00	0.00	4.00
Prestigious broker dummy	0.06	0.23	0.00	0.00	1.00
Size of broker	110.49	44.82	111.00	32.00	182.00
Affiliated broker dummy	0.05	0.23	0.00	0.00	1.00
Small stake dummy	0.05	0.21	0.00	0.00	0.00
Large stake dummy	0.01	0.08	0.00	0.00	0.00
Size of stake	0.01	0.03	0.00	0.00	0.05
Coverage	32.90	9.16	35.00	16.00	45.00
Time difference	0.91	0.64	0.88	-0.09	1.90

Panel B: All Firms Sample. ($n = 44,779$)

	Mean	St. Dev.	Median	5% quantile	95% quantile
Forecast EPS	2.66	4.29	1.62	0.23	10.58
Actual EPS	1.54	6.57	1.35	-1.74	8.20
Innovation	-0.070	1.023	-0.012	-1.829	1.644
Absolute Error	2.88	3.64	1.70	0.08	10.29
Absolute Error Consensus	2.93	3.68	1.71	0.10	10.48
Experience	3.08	1.43	4.00	0.00	4.00
Prestigious broker dummy	0.08	0.27	0.00	0.00	1.00
Size of broker	140.26	34.56	142.00	80.00	189.00
Affiliated broker dummy	0.05	0.21	0.00	0.00	0.00
Small stake dummy	0.04	0.20	0.00	0.00	0.00
Large stake dummy	0.01	0.08	0.00	0.00	0.00
Size of stake	0.01	0.03	0.00	0.00	0.00
Coverage	28.40	11.46	29.00	8.00	45.00
Time difference	0.90	0.63	0.88	-0.10	1.88

Table 2: Forecast innovations by optimism of consensus.

Mean (first line) and median (second line) forecast innovations for independent and affiliated brokers, grouped by pessimistic (left column) or overly optimistic (right column) consensus forecasts. Innovation is the difference between an individual EPS forecast and the prevailing consensus forecast, divided by the standard deviation of forecasts minus the consensus forecast. The third line of each cell is the number of observations. Panel A reports the measures for the *all banks sample*, Panel B for the *all firms sample*.

Panel A: All Banks Sample. ($n = 39,191$)

	Consensus	
	underestimates	overestimates
independent	0.106	-0.253
	0.053	-0.194
	(16,794)	(20,294)
affiliated	0.284	-0.189
	0.183	-0.170
	(957)	(1,146)
t-test of means		
difference	-0.178	-0.064
std. error	0.033	0.033
t-stat	-5.323	-1.932
Prob.	0.000	0.053

Panel B: All Firms Sample. ($n = 44,779$)

	Consensus	
	underestimates	overestimates
independent	0.152	-0.229
	0.082	-0.151
	(17,066)	(25,610)
affiliated	0.291	-0.186
	0.188	-0.170
	(963)	(1,140)
t-test of means		
difference	-0.139	-0.0641
std. error	0.032	0.031
t-stat	-4.373	-1.377
Prob.	0.000	0.169

bank, which in many cases could mean issuing optimistic forecasts. A possible way out of this conflict could be to report their superior information to the public only if the consensus is too pessimistic and to replicate other analysts' forecasts when the consensus is too optimistic. This behavior reconciles the interests of having average forecasts with higher precision and not publishing bad news about the bank's clients.

We therefore divide the sample into two parts: a first subsample, where the consensus overestimates actual EPS, and a second subsample where the consensus underestimates EPS. Table 2 shows mean and median *INNO* for affiliated and non-affiliated analysts for the two sub-samples. On average, analysts shift the consensus in the right direction, which causes the precision of forecasts to improve over time.[24] Median innovations are positive when the consensus underestimates earnings. However, we can see that the median innovation for affiliated analysts is at least twice as high as for independent brokers and the difference is statistically significant. When the consensus overestimates earnings, both groups of analysts have similar innovations with no significant difference.

To confirm strategic behavior by analysts, we regress the innovation *INNO* on the affiliated broker dummy as well as the time difference between the time of the forecast and the end of the fiscal year, firm coverage, and the size of the broker. We also control for analysts' career concerns by including a dummy variable for prestigious brokers and the analysts' experience.[25] We use a panel random effects estimator, but our results are also robust with respect to analyst, firm, and broker

[24]The median absolute error of the forecasts, *AE*, of all forecast being made within three month of the end of the fiscal year is 1.05, whereas the median is 1.92 for all forecasts issued more than 12 and less that 15 month before the end of the fiscal year. For each forecast we calculate a forecast specific consensus as the median of all forecasts in the three months before the forecast. Therefore we can see that analysts can improve the consensus over time as new information comes out and allows analysts to make more precise forecasts.

[25]We count the number of years that an analyst has contributed forecasts to the I/B/E/S database, caped at four years.

fixed effects.[26] We run this regression on the *all banks sample* to see whether for the same firms, forecasts by affiliated brokers are systematically different from forecasts of independent brokers. We also run the same regression on the *all firms sample* to see whether the same brokers behave differently toward firms in which they have a significant equity stake compared with those in which they have no equity stakes.

The results in Table 3 are consistent with strategic behavior by affiliated brokers. Their forecasts are 0.1451 standard deviations higher (0.1513 standard deviations for the all firms sample) when the consensus is too pessimistic about a firm. When the consensus overestimates earnings, we do not find any significant difference between forecast behaviors of affiliated versus non-affiliated analysts. Although time effects are already partially incorporated in the innovations via the consensus and in the standard deviation of forecasts, the time difference between the issue date of an individual forecast and the company's fiscal period end date is highly significant. Long term forecasts are further away from realized earnings. They are lower when the consensus is too pessimistic and higher when the consensus is already too high. Analysts working for the top-broker firms are less optimistic and more experienced brokers issue more positive forecasts when the consensus already overestimates earnings.

The findings presented in Table 3 support the hypothesis of strategic behavior. While affiliated analysts possess superior information, they do not always convey

[26]To check for robustness, we also regress the absolute percentage forecast error defined as $APFE = 100|\frac{FORVAL-ACTVAL}{ACTVAL}|$ on the absolute percentage forecast error of the consensus and the explanatory variables from Table 3 using panel estimators with winsorizing as well as using median regression. With the latter specification we want to make sure that our results are not influenced by the way outliers are eliminated (see also Ahmed, Lobo, and Zhang (2001)). Our results are robust with respect to these specifications. We also check our results for robustness by including company fundamentals such as total assets and market to book ratio in our econometric analysis. While company characteristics may be important in explaining forecast precision and bias in general, we have no reason to believe that publicly available information will contribute toward explaining an analyst's forecast relative to the consensus.

Table 3: Regression Estimates Explaining Innovation of Forecasts.

Panel regressions with broker specific random effects. Dependent variable is the innovation $INNO$ in forecasts, measured as forecast minus consensus forecast, divided by the standard deviation of forecast minus consensus forecast. The dependent variable is winsorized at the 0.01 and 0.99 percentiles. Regressors are experience of the analyst measured in years of presence in the I/B/E/S database, a prestigious broker dummy that equals one for brokers employing at least 24 analysts, the size of the broker measured by the number of German companies covered by a broker, an affiliated broker dummy indicating whether a forecast was made by an affiliated broker, coverage of firms measured by the number of brokers issuing forecasts, the time difference in years between the issue date of a forecast and the forecast period end date, the coverage of a company measured by the number of brokers in I/B/E/S following a company, and time difference, measured in years, as the difference between the date when a forecast is made and the last day of the period for which the forecast is made (period end date). Panel A reports the regression results for the *all banks sample*, Panel B for the *all firms sample*. ** and * denote significance at the 1 percent and 5 percent levels, respectively.

Panel A: All Banks Sample.

	Consensus		whole
	underestimates	overestimates	sample
	$n = 17,751$	$n = 21,440$	$n = 39,191$
	$R^2 = 0.0643$	$R^2 = 0.0638$	$R^2 = 0.0565$
Experience	0.0078	0.0259**	0.0125**
	(1.30)	(4.14)	(2.81)
Prest. Broker	-0.0691	-0.1352**	-0.1017**
	(-1.83)	(-3.56)	(-3.71)
Size of broker	0.0001	0.0003	0.0002
	(0.21)	(0.98)	(0.94)
Affiliated broker	0.1451**	0.0442	0.0895**
	(3.51)	(1.15)	(3.13)
Coverage	-0.0020*	0.0026**	0.0040**
	(-2.15)	(3.24)	(6.47)
Time Difference	-0.0412**	0.1402**	0.0392**
	(-3.46)	(12.06)	(4.63)
Constant	0.1696**	-0.5100**	-0.2884**
	(2.80)	(-9.65)	(-6.06)

Panel B: All Firms Sample.

	Consensus		whole
	underestimates	overestimates	sample
	$n = 18,029$	$n = 26,750$	$n = 44,779$
	$R^2 = 0.0045$	$R^2 = 0.0412$	$R^2 = 0.0398$
Experience	0.0060	0.0290**	0.0159**
	(1.08)	(5.43)	(3.95)
Prest. Broker	-0.0524	-0.1003**	-0.1032**
	(-1.84)	(-3.62)	(-4.93)
Size of broker	0.0010**	0.0007**	0.0004*
	(4.36)	(2.93)	(2.17)
Affiliated broker	0.1513**	0.0060	0.0760**
	(4.74)	(0.19)	(3.26)
Coverage	-0.0015*	0.0062**	0.0053**
	(-2.18)	(11.02)	(12.00)
Time Difference	-0.0426**	0.1691**	0.0648**
	(-3.79)	(16.82)	(8.46)
Constant	0.0822	-0.7145**	-0.3765**
	(1.87)	(-14.40)	(-10.83)

this information to the public. The results are also confirmed in the *all firms sample*.

3.3 Implications of analysts' strategy

The strategic behavior of brokers has implications for analysts' overall bias and forecast performance. In Section 3.2, we found that affiliated analysts tend to release positive forecasts when the consensus is pessimistic and to replicate the consensus otherwise. Thus, on average, when we combine situations where the consensus is above and below the realized earnings, we will find that affiliated analysts are positively biased. In column 3 of Table 3, we can see that for the entire sample, on average, affiliated brokers in the all banks sample issue forecasts that are 0.09 standard deviations above the consensus (0.076 standard deviations for the all firms sample). This bias, which we also find in our sample, has been documented in many previous studies. While many previous papers, similar to this one, confirm conflicts of interest, in our analysis it is not clear whether the leakages in the Chinese Walls actually harm investors. Affiliated analysts push the consensus upwards when it is too low, and thus communicate valuable information to the market.

To verify the intuition that affiliated brokers' forecasts are actually more precise, we regress the absolute error *AE* of an analysts forecast as defined in Equation 2 on the absolute error of the consensus prevailing at that time and on the same set of variables as in Section 3.2. We perform our analysis on the entire sample and on the two sub-samples. For robustness, we investigate again both the *all banks* and the *all firms* samples.

For both samples the evidence presented in Table 4 is consistent with superior information by affiliated brokers, as they issue more precise forecasts relative to

Table 4: Panel Regression Explaining the Absolute Forecast Error.

Panel regressions with broker specific random effects. Dependent variable is the absolute forecast error, measured as the absolute value of the difference between forecast and actual EPS, divided by the standard deviation of forecasts. The dependent variable is winsorized at the 0.01 and 0.99 percentiles. Regressors are the absolute forecast error of the consensus, measured as the absolute value of the difference between consensus and actual EPS, divided by the standard deviation of forecasts, experience of the analyst measured in years of presence in the I/B/E/S database, a prestigious broker dummy that equals one for brokers employing at least 24 analysts, the size of the broker measured by the number of German companies covered by a broker, an affiliated broker dummy indicating whether a forecast was made by an affiliated broker, coverage of firms measured by the number of brokers issuing forecasts, the time difference in years between the issue date of a forecast and the forecast period end date, the coverage of a company measured by the number of brokers in I/B/E/S following a company, and time difference, measured in years, as the difference between the date when a forecast is made and the last day of the period for which the forecast is made (period end date). Panel A reports the regression results for the *all banks sample*, Panel B for the *all firms sample*. ** and * denote significance at the 1 percent and 5 percent level, respectively.

Panel A: All Banks Sample.

	Consensus		whole
	underestimates	overestimates	sample
	$n = 17,751$	$n = 21,440$	$n = 39,191$
	$R^2 = 0.8292$	$R^2 = 0.9061$	$R^2 = 0.8860$
AE Consensus	0.9362**	0.9375**	0.9359**
	(295.64)	(446.23)	(547.33)
Experience	0.0102	0.0180**	0.0129**
	(1.60)	(2.66)	(2.77)
Prest. Broker	-0.0108	-0.1704**	-0.0957**
	(-0.28)	(-4.18)	(-3.42)
Size of broker	-0.0011**	-0.0009**	-0.0010**
	(-5.74)	(-4.41)	(-7.13)
Affiliated broker	-0.1295**	0.0686	-0.0187
	(-3.37)	(1.80)	(-0.69)
Coverage	-0.0027**	0.0022*	0.0009
	(-2.59)	(2.40)	(1.32)
Time Difference	0.0102	0.0180**	0.0129**
	(1.60)	(2.66)	(2.77)
Constant	0.4079**	-0.0023	0.1657**
	(7.83)	(-0.05)	(4.66)

Panel B: All Firms Sample.

	Consensus		whole
	underestimates	overestimates	sample
	$n = 18,029$	$n = 26,750$	$n = 44,779$
	$R^2 = 0.8795$	$R^2 = 0.9169$	$R^2 = 0.9078$
AE Consensus	0.9323**	0.9429**	0.9390**
	(366.90)	(538.26)	(662.68)
Experience	-0.0010	0.0307**	0.0186**
	(-0.16)	(5.05)	(4.20)
Prest. Broker	0.0159	-0.1317**	-0.0808**
	(0.52)	(-4.18)	(-3.51)
Size of broker	-0.0002	0.0007**	0.0003
	(-0.99)	(2.57)	(1.65)
Affiliated broker	-0.1049**	0.0081	-0.0454
	(-3.06)	(0.22)	(-1.78)
Coverage	-0.0016*	0.0041**	0.0023**
	(-2.20)	(6.48)	(4.79)
Time Difference	-0.0010	0.0307**	0.0186**
	(-0.16)	(5.05)	(4.20)
Constant	0.2343**	-0.3552**	-0.1316**
	(4.95)	(-6.14)	(-3.09)

the consensus than non-affiliated analysts. In the *all banks sample*, affiliated analysts have an absolute forecast error that is 0.13 standard deviations lower relative to non-affiliated brokers whenever the consensus underestimates earnings which is consistent with and information advantage. In the *all firms sample*, we find that affiliated brokers' forecasts are 0.10 standard deviations closer to realized earnings, when the consensus is too low. We find that forecasts from affiliated brokers are statistically not different than forecasts from their peers when the consensus overestimates earnings as well as for the whole sample. The absolute error of the consensus forecast plays a decisive role in explaining the magnitude of absolute forecast errors. To sum up, affiliated analysts sometimes give more precise forecasts and sometimes publish earnings estimates that are comparable to other analysts. Although they are, on average, positively biased, they convey new information to financial markets.

3.4 Endogenous Coverage Selection

The analysts' decision whether or not to cover a specific stock is endogenous and it might be that our findings are due to strategic coverage decisions. Following Ljungqvist, Marston, Starks, Wei, and Yan (2005) we control for endogenous coverage using a Heckman (1979) model without random effects. To do so, we restrict ourselves to quarterly observations, creating a dataset where we use only the last earnings forecast per quarter from a bank for a firm. We want to control for endogenous coverage again along the lines of our sample construction strategy. For all firms that are in the all banks sample, we construct a dataset observing the coverage decision in every possible bank-firm quarter. Similarly we observe the coverage decision of all brokers in the all firms sample. Again our sample construction strategy should give us additional robustness when the coverage decision of the banks owning equity stakes or for the firms being partly owned by banks is made on different premises. We run the two stage regression version of

the Heckman (1979) model on the extended all banks and all firms sample. Following Ljungqvist, Marston, and Wilhelm (forthcoming) we include the fraction of the firms covered by a bank in each industry in the selection equation as well as size of the broker, coverage of the firm, and the affiliated broker dummy. Columns (3) and (6) of Table 5 report the results for the extended all banks and all firms samples respectively. Looking at the selection equation we can see that a bank-firm relationship increases the probability of coverage. For the whole sample we see again that affiliated analysts give more positive forecasts. Subsequently we split the sample again conditional on the consensus keeping the inverse Mills ratio from the unconditional regressions. The results in columns (1) and (2) for the all banks sample and (4) and (5) for the all firms sample are consistent with our previous findings.

Similar to Ljungqvist, Marston, Starks, Wei, and Yan (2005) we also check our results for robustness looking at the five most actively covered firms in each industry assuming that banks have less discretion on whether or not to cover these stocks. We repeat the analysis of Table 3 and find our results confirmed.[27]

4 Conclusion

Banks must establish Chinese Walls around equity research departments to prevent spillovers of information and to avoid possible conflicts of interest influencing analyst forecasts. We test analyst forecasts for evidence that both information from other business lines and pressure on analysts find their way to research departments in universal banks. Insights in information processing and interests of universal banks is regaining importance due to the transition of the U.S. regulatory framework toward universal banking. The ideal testing ground for our analysis is

[27] We omit the results for brevity but they are available from the authors upon request.

Table 5: Heckman selection model.

Second stage regressors are defined as in Table 3. First stage regressors are the size of the broker measured as the number of German companies covered by a broker, an affiliated broker dummy indicating whether a forecast was made by an affiliated broker, coverage of firms measured by the number of brokers issuing forecasts, and the fraction of firms covered by a broker for aech 3-digit industry. Fixed effects (broker dummies) not reported in the table. In constrast to the other tables, only one observation per firm/broker/quarter is used. ** and * denote significance at the 1 percent and 5 percent levels, respectively.

	All banks sample			All firms sample		
	Consensus		whole	Consensus		whole
	underestimates	overestimates	sample	underestimates	overestimates	sample
	(1)	(2)	(3)	(4)	(5)	(6)
Nr. of observations	12,915	15,467	109,335	13,360	19,608	127,071
Uncensored obs			80,953			94,103
Censored obs			28,382			32,968
Innovation equation						
Experience	0.0074	0.0345**	0.0170**	0.0076	0.0221**	0.0133**
	(1.07)	(4.78)	(3.35)	(1.19)	(3.69)	(2.87)
Prest. Broker	-0.1435**	-0.1143**	-0.1314**	-0.0627*	-0.1080**	-0.1101**
	(-3.39)	(-2.61)	(-4.21)	(-1.96)	(-3.60)	(-4.52)
Size of broker	0.0007	0.0015**	0.0009**	0.0015**	-0.0002	0.0009**
	(1.43)	(3.43)	(2.70)	(5.00)	(-0.89)	(3.53)
Affiliated broker	0.1034*	0.0249	0.0733*	0.1074**	0.0640	0.0700**
	(2.17)	(0.55)	(2.20)	(2.68)	(1.60)	(2.56)
Coverage	0.0001	0.0063**	0.0075**	0.0018	0.0086**	0.0096**
	(0.08)	(4.98)	(7.91)	(0.74)	(3.98)	(10.54)
Time Difference	-0.0466**	0.1597**	0.0461**	-0.0590**	0.1723**	0.0628**
	(-3.37)	(11.75)	(4.67)	(-4.43)	(14.67)	(7.04)
Constant	0.0290	-0.9633**	-0.5711	-0.0920	-0.8116**	-0.6084**
	(0.31)	(-10.41)	(-0.55)	(-0.81)	(-8.14)	(-7.62)
Selection equation						
Industry fraction			1.4540**			1.2946**
			(50.10)			(48.13)
Size of broker			0.0115**			0.0073**
			(64.60)			(53.76)
Coverage			0.0730**			0.0902**
			(120.84)			(169.16)
Affiliated broker			0.1626**			0.1937**
			(5.94)			(7.20)
Constant			-2.9050**			-2.8114**
			(-187.29)			(-179.71)
Mills / Lambda	0.0618*	0.1069**	0.0885**	0.0290	0.1698**	0.0940**
	(2.25)	(3.81)	(4.19)	(0.90)	(6.00)	(4.49)

Germany, where the relationship between banks and their corporate customers has traditionally been very tight and is often described as a “housebank” relationship. Frequently, these housebanks even dominate corporations in shareholder meetings through large equity stakes and additional proxy votes from small shareholders.

Our analysis shows that affiliated brokers possess superior information and face conflicts of interest. To reconcile better forecast quality with favorable earnings estimates for bank clients, analysts exhibit strategic behavior. Affiliated analysts are more likely to announce forecasts that are an improvement to the consensus if the consensus underestimates actual earnings. When the consensus is overly optimistic, affiliated analysts tend to hide among other analysts. When we combine situations where the consensus over- and underestimates, we can replicate the overall bias of affiliated analysts found in the previous literature. However, we document that this bias is the result of affiliated analysts selectively communicating valuable information to investors.

Thus, although we find evidence that is consistent with information flowing at least partly to analysts in research departments despite Chinese Walls, it is not clear that investors are harmed by affiliated analysts’ reporting strategy. Affiliated analysts sometimes issue more precise forecasts and sometimes issue forecasts that are as good as forecasts by other analysts. Policymakers and bank regulators should be aware of the conflicts of interest that financial analysts face, but in our opinion we cannot conclude that small investors are worse off simply by virtue of biased reports from affiliated analysts.

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