

**The Effects of Pilot Financial Deregulation in China:
Evidence from Shanghai's Free-Trade Zone**
Ingyu Chiou, Zhenghong Hou, and Yifan Liu

Abstract

On September 27, 2013, the Chinese government officially launched a new free-trade zone (FTZ) in Shanghai as a laboratory for remaking the country's financial and other sectors. This paper uses the event-study methodology to investigate how the stock prices of 16 Chinese banks are affected before, at, and after the announcement of the FTZ. Our findings are as follows. First, the mean abnormal return of 16 sample banks in each of the $[-1, 0]$ and $[0, 0]$ windows is positive but not statistically significant. This is not consistent with our hypothesis that financial deregulation tends to increase bank value. We suggest that reform uncertainty, increased competition, and information leakage may be possible explanations. Second, in each of the $[-1, 0]$ and $[0, 0]$ windows, the average abnormal return of regional banks is higher than that of Big 4 banks. This is not consistent with our prediction that financial deregulation often benefits large banks more than small banks. This inconsistency may be due to the fact that regional banks are normally more innovative and have more strategic freedom. Finally, in cross-sectional analysis, we find that the total assets (size) variable has little to do with the abnormal return and that the abnormal return is inversely related to the return on equity (profitability) variable. These two results are not consistent with our hypotheses.

I. Introduction

On September 27, 2013, the Chinese government officially launched a new free-trade zone (FTZ) in Shanghai as a laboratory for remaking the country's financial and other sectors. The China (Shanghai) Pilot Free Trade Zone (the full name) clearly indicates that the project is not only an initiative to speed up the transformation and development of Shanghai, the major financial center in China, but also part of the national reform and competition-enhancing strategy. This is a major step in opening up key areas of the country's economy to more competition and private capital.

While the rules are short on details, the government tries its best in small ways to make it look serious this time. Allowing freer flows of cross-border capital would be instrumental in developing the Yuan, China's currency, as an international currency and moving Shanghai forward to become an international financial center. However, the ambitious project also comes with risks, because opening up the flood gates may also allow cash to rush out of the country as the economy slows down and jitters rise over the nation's banking system.

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This paper is different from previous papers in financial deregulation or free trade zones in that we investigate how the stock prices of listed Chinese financial institutions are affected before, at, and after the announcement of the free trade zone in Shanghai. Specifically, our research employs the event study methodology to investigate the abnormal stock returns for financial institutions. Further analysis of how firm characteristics are related to abnormal stock returns will be performed through multivariate regression models. Among the questions to be addressed: As measured by stock market reactions, how valuable is the financial deregulation? Do more profitable banks benefit more than less profitable banks? Do state-owned banks benefit more than non-state-owned banks? Do banks with more international operations benefit more than banks with little international operations? Do large banks benefit more than smaller banks?

Our first result indicates that the mean abnormal return of 16 sample banks in each of the $[-1, 0]$ and $[0, 0]$ windows is positive but not statistically significant. This does not support our hypothesis that financial deregulation tends to increase bank value. We suggest that reform uncertainty, increased competition, and information leakage may be possible explanations. The second result shows that, in each of the $[-1, 0]$ and $[0, 0]$ windows, the average abnormal return of regional banks is higher than that of Big 4 banks. This is not consistent with our prediction that financial deregulation often benefits large banks more than small banks. This inconsistency may be due to the fact that regional banks are normally more innovative and have more strategic freedom.

In cross-sectional analysis, we find that the total assets (size) variable has little to do with the abnormal return. This evidence does not support Hypothesis 2, which predicts large banks will gain more than small banks. Interestingly, the abnormal return is inversely related to the return on equity (profitability) variable. This is not consistent with Hypothesis 3. Our explanation is that most profits of Chinese banks come from their monopoly-like power and government protection. The announcement of the Shanghai Free Trade Zone, however, will allow foreign financial institutions to compete with domestic banks. This is considered as bad news by stock investors.

The remainder of this paper is organized as follows. Section II discusses the related literature. In Section III, we describe the hypotheses, data, and methodology. Section IV presents and discusses empirical results. We summarize and conclude in Section V.

II. Literature Review

Financial liberalization has been one of contentious issues debated for a long time. While many scholars advocate the importance of interventions in financial markets, others argue against them. Stiglitz (1999) supports the view that developing countries put some limits on capital inflows in financial markets. Rodrik (1998 & 2000) suggest that financial liberalization could lead to financial crashes and recommend controls on capital outflows. On the other hand, several papers support financial liberalization based on market data, arguing that financial liberalization makes

financial systems more efficient (Obstfeld 1998, Stulz 1999, and Mishkin 2001). A comprehensive study on the impact of financial liberalization on capital markets suggests that both sides may be partially correct by showing that financial liberalization can lead to more stable markets in the long run, but in the short run, it is often followed by more pronounced boom-bust cycles (Kaminsky and Schmukler 2003).

The banking sectors of many industrialized countries have gone through various forms of deregulation. The effects of such measures are mixed (Kumbhakar et al, 2001). Bank deregulation continues to be of interest to academics. Barrell and Davis (2007) study the impact of financial liberalization on consumption in seven OECD countries, including the Canada, France, Germany, Japan, Sweden, United Kingdom, and the U.S. By investigating the effects of branch deregulation on the distribution of income in the U.S. from the 1970s to the 1990s, Beck, Levine, and Levkov (2010) suggest that deregulation could have an impact on the distribution of income. Kroszner and Strahan (1999) study the factors affecting bank deregulation and suggest that national technological innovations helped to drive the progress of branch deregulation in the banking industry at the state level in the U.S. Income distributional considerations, rather than efficiency considerations, played a central role in bank regulations (Barth, Caprio, and Levine 2006). In addition, Carow and Heron (2002) show that the stock market reacts differently among financial sectors and companies of various sizes, after examining the effects of the passage of the Financial Services Modernization Act of 1999, which removed most of the remaining barriers to financial companies.

The financial sector continues to play a vital role in the economic growth of a country. In under-developed capital markets such as China's, banks often serve as the main channel of financing. It is therefore essential to make the banking system more efficient and effective. Ho (2012) investigates the effects of banking reforms in China, initiated in 1978, on consumers. He finds that while there is a welfare gain from increased consumer participation in the deposit market, the welfare of existing consumers suffers due to declined service quality. In order to evaluate the ability of tests that use stock return data to detect the effects of regulation, Binder (1985) studies twenty major regulatory changes in the U.S. and find that the tests have limited ability to detect the impact of deregulation as the stock market often anticipates the announcements of regulatory changes.

Still, some papers use the event study methodology to examine how the stock prices of non-financial firms or financial institutions react to the announcements of free-trade zone entry, free trade agreements, or financial deregulation. Hanson and Song (1998) test the shareholder wealth effects of the NAFTA (North America Free Trade Agreement). They conclude that the U.S. and Mexican stock markets responded positively to the NAFTA. Chiou and White (2005) investigate the wealth effects of deregulation-induced strategic alliances among financial institutions in Japan. They find that the announcement of a strategic alliance, in general, increases the value of the partner institutions. More recently, Marciniak (2011) shows that the announcement of corporate investment projects in Poland's special economic zone (SEZ), equivalent to the free trade zone, lead to positive and significant stock price responses.

In sum, although there are winners and losers in banking deregulation, the majority of empirical studies tend to show that banks gain from competition-enhanced reforms. Also, a free trade agreement is beneficial to firms covered by this agreement. In addition, new investments in a free trade zone are normally perceived by investors as positive moves.

III. Hypotheses, Data, and Methodology

A. Hypotheses

The establishment of a free trade zone (FTZ) in Shanghai, China, which is a strategic measure to open up key areas of China's economy to more competition, will allow for freer flows of cross-border capital, help to develop the Yuan (Chinese currency) as an international currency, and make Shanghai an international financial center. Within this FTZ, banks can operate more freely, potentially increasing future revenues. Based on our previous discussions, we propose the following hypotheses.

First, when banks are allowed to do more businesses and operate more freely, more revenues can be generated. As a result, deregulation most likely leads to positive effects on banks.

Hypothesis 1: Because the announcement of banking deregulation is an important event, we expect the stock market to react significantly positively.

Second, large banks, which are normally state-owned in China, have more resources and better connections to the government than small banks do. So, deregulation may do more good to large banks than to small banks.

Hypothesis 2: In the announcement of deregulation, the stock market reacts more favorably to large banks than to small banks.

Third, more profitable banks normally can move quickly to capitalize new opportunities. Also, they are more likely to get regulatory approval for doing new business. So, deregulation may benefit more profitable banks than less profitable banks.

Hypothesis 3: In the announcement of deregulation, the stock market reacts more favorably to more profitable banks than to less profitable banks.

B. Data

We compiled the daily stock prices of 16 banks (14 listed in Shanghai and 2 listed in Shenzhen) and 2 market indices (SSE Composite Index and Shenzhen Component Index) in China from the Yahoo Finance Historical Prices database over the period October 2012-November 2013. Thus, we collected 251 prices and calculated 250 returns for each bank and each market index. To conduct cross-sectional analysis, we also compiled total assets and return-on-equity data from Capital IQ.

C. Methodology

We employed the event-study methodology to measure a specific event's economic impact on the value of a firm by using the financial market data of the firm (MacKinlay 1997). The rationale behind the methodology is that in the marketplace, the effects of such event should be reflected immediately in security prices, which is consistent with the semi-strong form of the efficiency market hypothesis.

Following Mikkelsen and Partch (1988), we measure the wealth effects of the pilot free trade zone announcement on banks in China. For each stock, daily returns are calculated for the pre-event estimation period [day -219 to day -21], the examination period [day -20 to day +10], and the post-event estimation period [day +11 to day +30]. Then, we calculate the cumulative standardized abnormal returns and their P-values for different event windows. The abnormal return, AR_{it} , for a day during an examination period is estimated using the following equation:

$$(1) \quad AR_{it} = R_{it} - (\alpha_i + \beta_i * R_{mt})$$

Where R_{it} is the return of Stock i on day t , R_{mt} is the return of the market on day t , and α_i and β_i are the intercept and slope (beta) coefficient estimates of the market model regression. The significance of the abnormal return is determined by the following Z-statistic:

$$(2) \quad Z = \frac{1}{\sqrt{N}} \sum_{i=1}^N \left[\frac{\sum_{t=t_1}^{t_2} AR_{it}}{\sqrt{\text{Var} \sum_{t=t_1}^{t_2} AR_{it}}} \right]$$

where t_1 is the first day of the examination period window, t_2 is the last day of the examination period window, N is the number of observations, and the denominator is the square root of the variance of the cumulated prediction error of Stock i . The variance is defined as:

$$(3) \quad \text{Var} \sum_{t=t_1}^{t_2} AR_{it} = V_i^2 \left[T + \frac{T^2}{ED} + \frac{(\sum_{t=t_1}^{t_2} R_{mt} - TR_m)^2}{\sum_{t=1}^{T-1} (R_{mt} - R_m)^2} \right]$$

where

V_i^2 = the residual variance of Stock i 's market model regression,

T = the number of days in an examination period,

ED = the number of days in the estimation period,

R_{mt} = the market return on day t , and

\bar{R}_{mt} = the mean market return during the estimation period.

In order to test the second and third hypotheses, we regress the $CAR(i,j)$, the cumulative standardized abnormal return, on the total assets and return on equity variables. The multivariate regression model is as follows:

$$(4) CAR(i, j) = \beta_1 + \beta_2 * \ln(TA) + \beta_3 * ROE + \varepsilon$$

Where

$CAR(i, j)$ = the cumulative standardized abnormal return of event window $[i, j]$,

$\ln(TA)$ = the natural logarithm of total assets one year before the event window,

ROE = the return on equity one year before the event window.

IV. Major Findings and Interpretations

We use various event windows ([day -4, -2], [day -1, 0], [day 0], [day 0, 1], [day -1, 1], and [day 2, 4]) to analyze the abnormal returns related to the announcement of the free trade zone in day 0. The test results are shown in Table 1.

In day 0, Panel A (with all 16 banks in the sample) shows a positive mean abnormal return, which is not statistically significant. In the [-1, 0] window, a positive, but not statistically significant, mean abnormal return is associated with the whole sample of 16 banks. The results from these two event windows are not consistent with Hypothesis 1 that predicts financial deregulation should increase the value of banks. One explanation could be that during the examination period, non-economic factors influenced investors' decision-making because the new leaders of China are making efforts to reform the country's financial system, bringing more uncertainty to the market. Another possible reason could be that the performance of these banks relies heavily on their oligopolistic advantages in a highly regulated financial market, and the launching of a pilot free trade zone introduces more competition and threatens their profits. Also, information leakage might occur long before the announcement date, because the banks in

our sample are mainly state-controlled institutions, which have advantageous access to critical information. This is consistent with the explanation of Binder (1985).

To study how stock market reactions vary across different types of banks, we classify 16 banks into 3 categories: Big 4 banks ($n = 4$), national banks ($n = 9$), and regional (relatively small) banks ($n = 3$). For the mean abnormal return in day 0, regional banks have the highest value while Big 4 banks have the lowest value. For the mean abnormal return in $[-1, 0]$, regional banks still have the highest value while Big 4 banks have the lowest value. It seems that all else being equal, the stock market expected regional banks to benefit more in financial deregulation than Big 4 banks. These results are not consistent with Hypothesis 2 that predicts large banks will benefit more than small banks. It is possible that because regional banks are not government-owned, they may have more strategic freedom in banking activities. For instance, they do not have obligations to fund government-owned enterprises, which tend to secure low interest-rate loans, squeezing the profit margin of lending banks. Also, private-sector owned regional banks may have to be more innovative so that they can compete with larger government-owned banks. As a result, the stock market reacted more favorably to regional banks.

Table 2 shows the results of the multivariate regression model. In the $[-1, 0]$ and $[0, 0]$ windows, the coefficients of the total assets variable are not significant at the 5% level. This evidence does not support Hypothesis 2, which predicts large banks will gain more than small banks. In all 6 windows, the coefficients of the return on equity variables are all negative, indicating the abnormal return is inversely related to profitability. This is not consistent with Hypothesis 3. In particular, the coefficient of the return on equity variable in the $[-1, 0]$ window is negative and significant at the 1% level. One reason could be that most profits of Chinese banks come from their monopoly-like power and government protection. The announcement of the Shanghai Free Trade Zone, however, will allow foreign financial institutions to compete with domestic banks. This is considered as bad news by stock investors.

V. Summary and Conclusion

This paper studies how the stock prices of listed Chinese banks are affected before, at, and after the announcement of the free trade zone in Shanghai. Our research employs the event study methodology to investigate the abnormal stock returns of these banks.

We find that in each of the $[-1, 0]$ and $[0, 0]$ windows, the average abnormal return for all 16 banks in the sample is positive but not statistically significant. These results are not consistent with Hypothesis 1 that predicts financial deregulation should be value-enhancing for banks. Reform uncertainty, increased competition, and information leakage may be possible explanations.

We also find that in each of the $[-1, 0]$ and $[0, 0]$ windows, the average abnormal return of regional banks is higher than that of Big 4 banks. This is not consistent with Hypothesis 2 that predicts financial deregulation should benefit large banks more than small banks. This

inconsistency may be due to the fact that regional banks are normally more innovative and have more strategic freedom.

In cross-sectional analysis, our results indicate that the total assets (size) variable has little to do with the abnormal return and that the abnormal return is inversely related to the return on equity (profitability) variable. These two findings do not support Hypotheses 2 and 3, respectively. One explanation is that most profits of Chinese banks are derived from their monopoly-like power and government protection. The launch of the Shanghai Free Trade Zone will introduce more competition from foreign financial institutions, which is considered as bad news by stock investors.

Overall, although we expected that the announcement of the free trade zone in Shanghai should be value-enhancing for banks in China, most empirical results do not support our predictions.

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Table 1 Abnormal returns of four samples over different event windows

n = sample size

Event window [-1, 0]: from day -1 to day 0 (the announcement day)

Event window	[-4, -2]	[-1, 0]	[0, 0]	[0, 1]	[-1, 1]	[2, 4]

Panel 1: All Banks (n = 16)						
Mean Abnormal Return	-1.19	0.21	0.14	-0.31	-0.11	-0.50
Z Statistic	-5.31	0.96	0.45	-1.05	-0.33	-2.75
Significance		***				***
Panel 2: "Big 4" Banks (n = 4)						
Mean Abnormal Return	-0.31	0.13	0.00	-0.12	0.01	-0.25
Z Statistic	-1.17	0.53	0.06	-0.42	0.06	-0.95
Significance						
Panel 3: National Banks (n = 9)						
Mean Abnormal Return	-1.49	0.16	0.14	-0.37	-0.19	-0.64
Z Statistic	-4.35	0.35	0.30	-0.70	-0.46	-2.48
Significance		***				**
Panel 4: Regional Banks (n = 3)						
Mean Abnormal Return	-1.44	0.49	0.33	-0.36	-0.03	-0.41
Z Statistic	-3.38	1.00	0.45	-0.73	-0.04	-0.97
Significance		***				

Note: ***, **, and * indicate the statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 2 Results of cross-sectional analysis

$$CAR(i, j) = \beta_1 + \beta_2 * \ln(TA) + \beta_3 * ROE + \varepsilon$$

Where

CAR(i, j) = the cumulative standardized abnormal return of event window [i, j],

ln(TA) = the natural logarithm of total assets one year before the event window, and

