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Do "white knights" make excessive profits in bank resolution?

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Do “white knights” make excessive profits in bank resolution?

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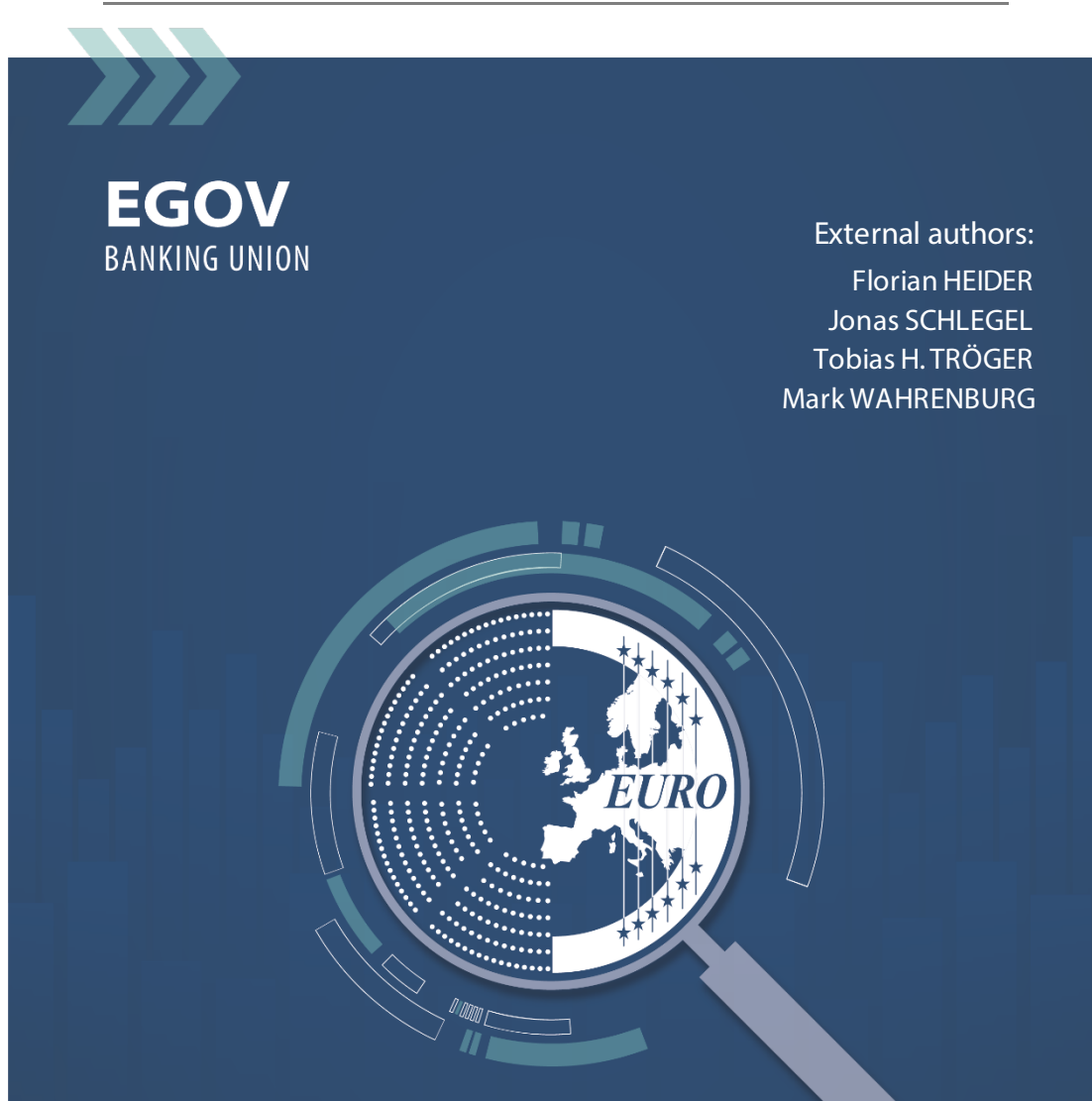
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Do "white knights" make excessive profits in bank resolution?



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Abstract

This study looks at potential windfall profits for the four banking acquisitions in 2023. Based on accounting figures, an FT article states that a total of USD 44bn was left on the table. We see accounting figures as a misleading analysis. By estimating marked-based cumulative abnormal returns (CAR), we find positive abnormal returns in all four cases which when made quantifiable, are around half of the FT's accounting figures. Furthermore, we argue that transparent auctions with enough bidders should be preferred to negotiated bank sales.

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LIST OF ABBREVIATIONS

AR	Abnormal Return
AT1	Additional Tier 1
BATNA	Best Alternative to a Negotiated Agreement
CAR	Cumulative Abnormal Return
CFG	Citizens Financial Group
CRR	Capital Requirements Regulation
DIF	Deposit Insurance Fund
FCB	First Citizen Bank
FDIC	Federal Deposit Insurance Corporation
FINMA	Financial Market Supervisory Authority
FT	Financial Times
FTB	Fifth Third Bank
G-SII	Global Systemically Important Institutions
HOMB	Home BancShares
LSA	Loss sharing agreement
NYCB	New York Community Bank
O-SII	Other Systemically Important Institution
PIA	Public Interest Assessment
SRB	Single Resolution Board
SVB	Silicon Valley Bank
USGAAP	United States Generally Accepted Accounting Principles

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EXECUTIVE SUMMARY

This study explores how to assess the gains to those banks that acquired failed banks in the March 2023 banking crisis. The start of the exploration is a recent article in the Financial Times (“The \$44bn bank bailout bonanza”, September 5th, 2023). The article argues that resolution authorities in those four cases left a total of USD 44bn on the table. The acquiring banks in total booked this sum as profits (or negative goodwill) in their first filings after the acquisitions. The article concludes that “desperation of regulators meant mostly easy money for the buyers.”

We argue that using accounting figures to assess these gains can be misleading because the economic value of acquiring a failed bank can differ significantly from the accounting value. One main driver is for instance unrealised losses, which do not show up in accounting figures, but are crucial to incorporate for acquirers.

To assess the economic value, the study conducts a formal analysis of the stock price reaction around the time it becomes publicly known which institution acquires the failed bank. The study uses the methodology of cumulative abnormal returns (CAR) to control for the effect the acquisition of an individual failed bank has on the entire banking sector (e.g., by removing uncertainty about the willingness of resolution authorities to step in). We find for all four acquisitions positive CARs, which is also in line with previous findings in the literature. When made quantifiable, our marked-based figures are around half of the FT accounting-based figures. The main takeaway is therefore that we assess that “easy money for the buyers” was indeed made, although substantially less than calculated via the FT’s accounting figures.

A large academic literature suggests that when buyers have private information about the good sold, then the seller is better off conducting an auction with many bidders than negotiating a bilateral deal. This suggests that Credit Suisse should have been sold in an auction. Using the U.S. auctions as an empirical counterfactual is not straightforward. First, there is no clean event window in the case of a negotiated deal. Second, while in an auction all cards appear to be on the table, it appears that in the case of Credit Suisse, the shareholders of UBS experienced a gain only several months after once more details came to light. And third, the auctions carried out by the FDIC do not appear to be efficient. Studies find large losses to the FDIC caused by a non-transparent way of how the FDIC evaluates bids and admits banks to participate.

To lower the likelihood of windfall gains for the acquiring banks, **we recommend:**

- Auctions with a sufficient number of bidders should be preferred to a negotiated bank sale. Competing banks during a bidding process are superior to supervisors in detecting a true value of a failed bank and reduces political influence.
- It takes a better and earlier preparation of the auction, which needs to be a part of resolution planning, a core task of resolution authorities. Due diligence materials and information for potential bidders must be prepared early.
- Not only “significantly important banks” but also non-significant banks may need to be prepared to be sold by bank resolution authorities.
- Capital adequacy regulation should be appropriately adjusted to unrealized losses. Supervisors should require banks to build an appropriate provision for unrealized losses which are deducted in the calculation of the available equity capital.

1. INTRODUCTION

Many banks experienced a massive outflow of deposits in spring 2023. Four banks failed because of these outflows. The competent regulators ultimately sold the failing institutions to other banks:

- Credit Suisse was acquired on March 19 by UBS,
- Signature Bank was closed by supervisors on March 12 and acquired by Flagstar Bank, a subsidiary of New York Community Bancorp on March 20,
- Silicon Valley Bank (SVB) was closed by supervisors on March 10 and acquired by First Citizens Bank on March 27,
- First Republic Bank was acquired on May 1st by JP Morgan

These transactions resulted in **massive losses for bank shareholders, bank bondholders, the Federal Deposit Insurance Corporation (FDIC) and risks for Swiss taxpayers via state guarantees.** The shareholders of all four failing banks experienced a complete or almost complete loss of their investment. In the case of Credit Suisse, investors in subordinated bonds (the "Additional Tier 1 (AT1)" – capital) lost their investment because of a decision of the Swiss Financial Market Supervisory Authority (FINMA) to write down these bonds. Bondholders of First Republic Bank and Silicon Valley Bank were also wiped out.¹ In contrast, neither insured nor uninsured depositors of Silicon Valley Bank (SVB) and Signature Bank incurred any losses. Instead, regulators vowed to pay all depositors back in full after invoking the so called "systemic risk exception".²

The failures will also cause yet uncertain losses for the FDIC. For instance, the FDIC's Deposit Insurance Fund (DIF) expects costs of approximately \$ 20 bn from the failure of SVB.³ These losses have two different sources:

- a) Loss sharing agreements (LSAs) with the acquirer, for instance, the FDIC agreed to reimburse First Citizens for half of any losses above \$5 billion on Silicon Valley Bank's portfolio of commercial loans.⁴
- b) Assets not transferred to the acquiring bank and kept by the FDIC. For example, roughly \$90 billion in Silicon Valley Bank's securities and other assets were not included in the sale and remain under FDIC control.⁵

Although the U.S. taxpayer will not be liable for any losses, all American bank depositors will ultimately bear the losses incurred by the FDIC because banks will need to pass on the costs inflicted on the deposit insurance system to their customers which the FDIC will ultimately recover from insured banks.

A recent article in the Financial Times (FT) by Sujeet Indap (FT, 2023), suggests that bad decisions by banking resolution authorities may be responsible at least for parts of these losses. The article argues that desperate supervisors in search for a quick fix of the problem sell failing banks at bargain prices to acquiring banks and offer two arguments:

¹ <https://www.ifre.com/story/3884781/bondholders-at-first-republic-svb-face-zero-recovery-f0tmjvbyqgw#:~:text=If%20it%20fails%2C%20the%20California,ever%20got%20back%20a%20penny.>

² <https://www.nytimes.com/2023/05/01/business/first-republic-stock-deposits-sale.html#:~:text=The%20stock%20will%20be%20delisted,corporate%20debt%20or%20preferred%20stock.>

³ <https://www.fdic.gov/news/press-releases/2023/pr23023.html>

⁴ <https://www.bloomberg.com/news/articles/2023-03-27/fdic-grants-first-citizens-rare-70-billion-credit-line-for-svb#xi4y7vzkq>

⁵ <https://www.fdic.gov/news/press-releases/2023/pr23023.html>

1. Acquiring banks enjoy large accounting profits from these transactions.
2. Acquiring banks enjoy substantial share price increases from these transactions.

Indeed, all four transactions apparently were **executed in an extremely fast manner**. For example, Silicon Valley Bank was acquired by First Citizens Bank just 17 days after the FDIC seized control. Signature Bank was closed by regulators on March 12, 2023, and sold just eight days later. For First Republic Bank, the second-largest bank failure in U.S. history, the time frame was even tighter: Only two days after the FDIC decided that the bank had run out of time to find a private solution, it was sold to JP Morgan.⁶

The chapter structure is outlined as follows: In Chapter 2, we will investigate and criticize the arguments of the article in more detail. Chapter 3 presents our own data analysis and compares it with the results of the article. Chapter 4 looks at the benefits of auction processes in bank resolution. Chapter 5 concludes our analysis and outlines lessons for bank resolution in the future.

2. ACCOUNTING PROFITS FOR ACQUIRING BANKS

Sujeet Indap notices in a Financial Times article (FT, 2023) that the four transactions resulted in a staggering aggregate profit of \$44bn for the four acquiring banks. The most significant part comes from the takeover of Credit Suisse: UBS reported a realized profit of \$29bn from the acquisition of distressed Credit Suisse - the "deal of the century" for UBS, as the article notes. The three U.S. bank failures added another \$15 bn of reported profits at the acquiring banks. The article suggests that the supervisors had been rushing into quickfire sales ("authorities desperate to find a buyer quickly") which resulted in low purchase prices ("bargain purchases prices", "buyers could largely dictate the deal terms"). FT (2023) concludes that buyers were the big beneficiaries of these deals: "Exploiting the desperation of regulators meant mostly easy money for the buyers."

We are convinced that Indap's reasoning is misleading. While he is perfectly correct about the transactions' effects on the buyers' earnings and balance sheet equity, the interpretation of the accounting profits is flawed. To see why, let us consider a simple stylized example.

Figure 1: A stylized bank balance sheet

Before		After	
Assets	Liabilities	Assets	Liabilities
Bonds \$100	Deposits \$80	Bonds \$80	Deposits \$80
	Equity \$20	Unrealised losses \$20	Equity \$20

Assume that a bank's assets consist only of bonds. These bonds have been purchased for \$100 and are recorded on the bank's balance sheet at the purchase price of \$100. The bank finances the bonds with \$20 of equity and \$80 of uninsured deposits.

⁶ <https://www.reuters.com/business/finance/how-jpmorgans-dimon-won-first-republic-deal-2023-05-02/>

Suppose the market value of the bond falls to \$ 80 because of increasing interest rates in the market. In economic terms, the equity has been wiped out and the bank is insolvent. Under United States Generally Accepted Accounting Principles (USGAAP) or International Financial Reporting Standards (IFRS) the event may trigger two completely different consequences on the banks' financial statement:

- a. If the bonds are in the trading book or "available for sale", the book value of the bonds must be written down and the equity is wiped out. In this scenario, the accounting figures reflect the economic value of the bank in our stylized example.
- b. If the bank intends to hold the bonds until maturity, the "hold to maturity" accounting rules prevent any write down. Both the balance sheet and the earnings statement remain unaffected. The bonds are still recorded on the balance sheet at the original purchase price of \$100. The bank has "unrealized losses from bond holdings" of \$20. Such unrealized losses were the root cause of the banking crisis in the U.S. In March 2023, aggregated unrealized losses in the U.S. banking system on "held-to-maturity" Treasury bonds and mortgage-backed securities were estimated at \$600 billion.⁷

To understand the (misleading) reasoning of FT (2023), let us consider the impact of falling bond prices on the financial statement of the failing bank and the acquiring bank.

First note that after the bond price declines to \$80, uninsured depositors would bear any further bond price declines and thus are well advised to withdraw their money and run the bank. In perfectly liquid markets, the bank would sell its bonds for \$80 and pay back the depositors. In the real world, this is not possible.⁸ Therefore, the FDIC takes over the failing bank and arranges for the sale of its assets to another institution for the fair market value of \$80. The FDIC usually prefers to transfer both the assets and the deposits to the acquiring bank. In this case, the acquiring bank makes a net payment of € 0 because assets and liabilities are both worth \$80.

Now let us have a closer look at the acquiring bank's balance sheet and earnings statement after the transaction. FT (2023) states that the buyers took over the targets for an "effective purchase price far less than the target's book equity value". In our example, the buyer indeed receives a book equity value of \$20 while the purchase price is \$0 if the losses are related to "hold to maturity-assets". The author further states, that the excess of net asset value exceeded the purchase price and created "negative goodwill" that boosted the equity capital of the buyer. In our example, the buyer receives \$100 in assets (unadjusted book value) and \$80 in deposits (liabilities), resulting in an increase of the net asset value of \$20. Since the purchase price is \$0, the buyer enjoys "negative goodwill" of \$20 (assuming no adjustments) and an associated accounting profit of \$20. If this profit is not paid out as a dividend, it will lead to a \$20 increase in book equity.

The example shows: even if the acquiring bank pays a fair price for the failed institution, it will "enjoy" a substantial accounting profit and a book equity boost if impaired assets are reported at unadjusted book value. This profit is not the result of a "bargain purchases price" but the effect of our current accounting regime for hold-to-maturity securities on the bank's balance sheet.

Our example highlights a critical deficiency of the Basel III framework and its European implementation in the Capital Requirements Regulation (CRR): the bank in our example has regulatory capital of \$20

⁷ <https://www.cnn.com/2023/03/12/regulators-unveil-plan-to-stem-damage-from-svb-collapse.html>

⁸ Forced sales of large portfolios within short time (fire sales) would cause additional price erosion. This would not only result in further losses for the selling banks, but might also result in a vicious cycle where other market participants are forced to joining the sell-off due to margin calls.

although equity in economic terms is zero. Unrealized losses on hold-to-maturity assets are disregarded in the current framework.⁹ Therefore, the bank in our example can comply with capital adequacy rules, despite being economically insolvent.¹⁰

The accounting rules for takeovers do not change the picture. The failed bank's equity of \$20 is "transferred" to the acquiring bank. However, the "boost in equity" that FT (2023) notes is not a boost from a banking policy perspective. It represents a mere shift of a balance sheet item – that may or may not reflect economic value – from one reporting entity to another.

Our example shows that "negative goodwill" and the associated accounting profits accruing at the acquirers of failed banks cannot be regarded as evidence that buyers paid "bargain prices". These effects also occur when transaction prices are fair if applicable accounting rules do not compel the adjustment of impaired assets' book values.

Accounting profits are no good indicator for a "bargain price" also for a different reason: They are the result of discretionary decisions by bank managers. In the case of UBS, the profit from the purchase of Credit Suisse would have been even larger if "purchase price adjustments" had not led to the write down of selected Credit Suisse assets and thus reduced the "negative goodwill."¹¹ This raises a deeper question on how to capture the value of a bank in general and how to capture it in resolution.

However, even though balance sheet data is inadequate for a meaningful economic assessment, it could still be true that the price acquiring banks paid in the 2023 transactions was too low. To investigate this, we look at stock price reactions, instead of (potentially misleading) accounting earnings.

3. SHARE PRICE GAINS FOR ACQUIRING BANKS

FT (2023) also notes that acquiring banks' stock prices soared after the takeovers. These share price gains may indicate that the purchase prices were too low and created windfall gains for the acquiring banks and their shareholders.

However, the argument is only convincing if there are no other, more compelling reasons for the observed stock price reactions. Regulatory action towards one bank can cause a revaluation of other banks. For instance, the acquisition of a failed bank might relieve stress and reduce uncertainty within the banking sector, which should result in an increase in the share price of the acquirer, but also of other banks. Swary (1986) empirically investigated the effect of FDIC decisions during the Continental Illinois Bank crisis of 1983 (Continental was the 8th largest US bank) and demonstrates significant stock price reactions of other banks. Looking exclusively at the share price performance of the acquirers is therefore not sufficient to make conclusive statements about who gained and who lost in the respective transactions. By calculating cumulative abnormal returns (CARs) and converting them into Dollar-terms, we are able to make the CARs quantifiable. This allows us to compare the accounting results by the FT (2023) with our market-based approach.

⁹ The prudential filters that seek to align own funds calculated under applicable financial reporting standards with prudential requirements do not address the issue, see CRR, art. 33 et seq.; Tröger (2022); Löw and Vogt (2022).

¹⁰ Our example is stylized to make the basic point that the account value of a bank can diverge significantly from its economic value. In reality, bank balance sheets are more complex so that the stark thresholds of our example are fuzzier.

¹¹ UBS Second Quarter 2023 Fixed Income investor presentation, <https://www.ubs.com/global/de/media/display-page-ndp/en-20230824-ir-preavis-2q23.html>.

Box 1: Event Studies

We are not interested in simple returns, but in abnormal returns. To measure these, we make use of the event study methodology. An event study argues that if equity markets are efficient, new information is directly priced in.

$$AR_{it} = R_{it} - E(R_{it})$$

$$E(R_{it}) = \hat{\alpha}_i + \hat{\beta}_i R_{bt}$$

Abnormal returns (ARs) are defined as return minus the expected return. The expected return is estimated via a regression on a bank benchmark for one hundred business days before the event. For the U.S. cases, we use the KBW Nasdaq Bank Index and for the UBS case the STOXX Europe 600 Banks.

$$CAR_i(T1, T2) = \sum_{t=T1}^{T2} AR_{it}$$

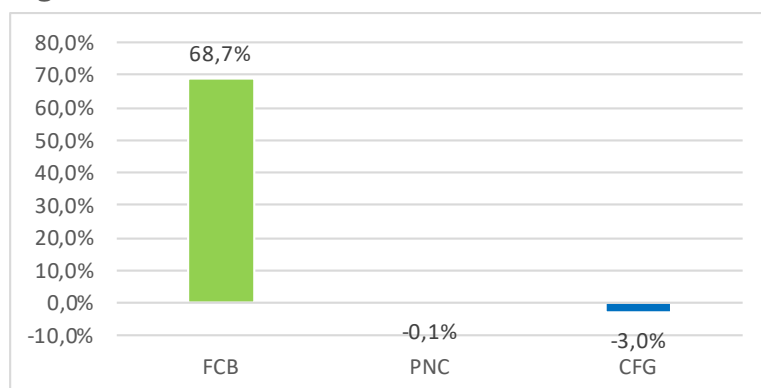
The event window is defined as the time where the relevant new information reaches the public, which means, that for our cases the event window starts when a bank gets known as a potential acquirer (Friday if during the weekend) and ends on the day when all information about the buyer and the price is made public. By summing abnormal returns over the event window, we finally estimate Cumulative Abnormal Returns (CARs).

Fortunately, the FDIC made the auction losers public as well, so that we are not only able to construct CARs of the acquirer, but also of the unsuccessful bidders. This opens-up an additional great opportunity for comparisons and makes our findings more robust.

3.1. The four acquisition cases in 2023**First Citizen Bank (FCB) takes over Silicon Valley Bank (SVB)**

SVB was closed on 10.03.2023 by the FDIC. The first information on potential bidders came out on 19.03.2023 (Sunday) and on 27.03.2023, it was announced that First Citizen Bank (FCB) will be the acquirer. Besides FCB, 19 financial institutions bid for SVB.¹²

Figure 2: Cumulative Abnormal Returns – First Citizen Bank (FCB)

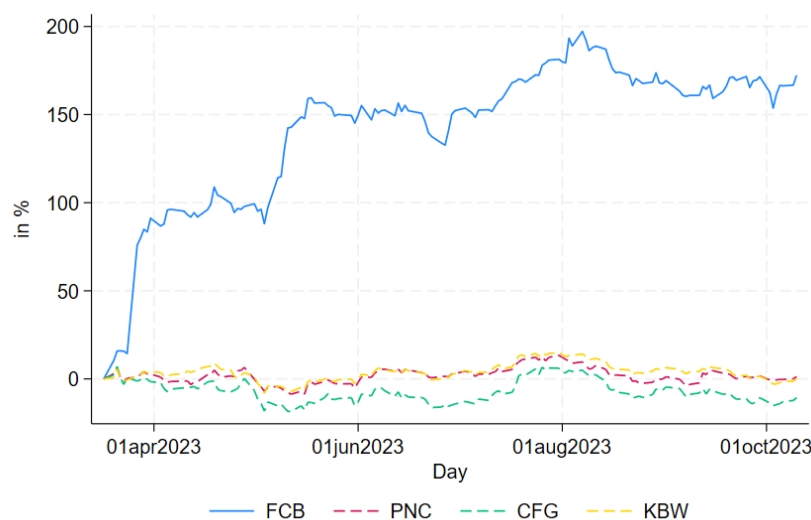


Note: Figure 2 presents the cumulative abnormal return for First Citizen Bank (FCB, as well as for two selected bidders. The event window is 19.03.2023-27.03.2023. The U.S. bank benchmark is KBW Nasdaq Bank Index. The regression is based on the one hundred business days prior to the event window. Source: Yahoo, authors' calculations.

¹² <https://www.fdic.gov/resources/resolutions/bank-failures/failed-bank-list/svb-bid-summary.html>

First Citizen Bank (FCB) represents a cumulative abnormal return of 68.7% (Figure 2). This means that FCB's share price increased by 68.7% more than its baseline estimates within the event window. Results are not driven by baseline estimations, because FCB's simple total return within this window is 68% while the benchmark's return was only 2.2%. Out of the 19 competing bidders, we present exemplary PNC Bank and Citizens Bank, a subsidiary of Citizens Financial Group (CFG). Both bidders are not able to present positive CARs during the event window against the benchmark estimation.

Figure 3: Long-Run Impact – First Citizen Bank (FCB)



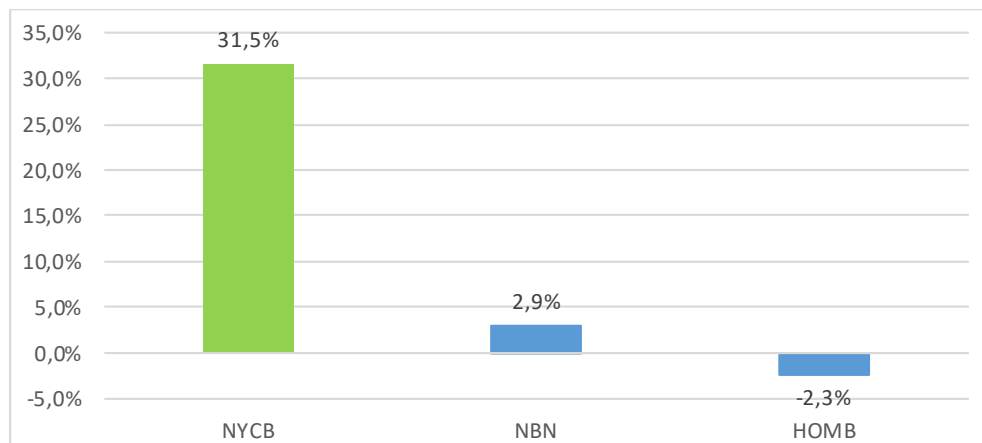
Note: Figure 3 presents the share price performance of First Citizen Bank (FCB), PNC Bank (PNC), Citizens Financial Group (CFG) and the U.S. bank benchmark index KBW Nasdaq Bank Index (KBW). Start date is the event window start date, 19.03.2023. Source: Yahoo, authors' calculations.

Besides short-term abnormal returns, we look at the long-term impacts of the acquirer, two competing bidders and the U.S. benchmark index (Figure 3). This gives us a better picture if outperformance during the event window could be sustained over time. In general, long-run impact should be seen with more cautions as the longer the analysed window, the more noise it contains. We find that FCB was not only clearly able to outperform other bidders and the benchmark during the event window, but also in the longer run.

Flagstar Bank (New York Community Bank (NYBC)) takes over Signature Bank

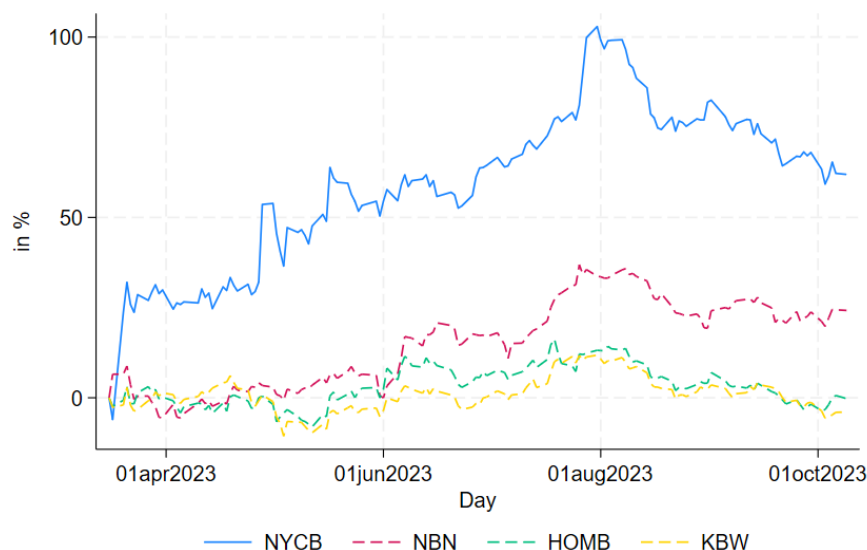
Signature Bank was closed on 12.03.2023 by the FDIC. First information on potential bidders came out on 17.03.2023 (Friday) and on Monday, 20.03.2023, it was announced that Flagstar Bank, fully owned by New York Community Bank (NYBC) won the bid and took over Signature Bank. Auction losers were Centennial Bank, the operating name of Home BancShares (HOMB), Northeast Bank (NBN) and First Citizens Bank. 13 As First Citizens Bank won the bid for SVB at the same time, we do not include it in the analysis, because isolating the distinct effect of one of the two concurrent auctions is impossible.

¹³ <https://www.fdic.gov/resources/resolutions/bank-failures/failed-bank-list/signature-bid-summary.html>

Figure 4: Cumulative Abnormal Returns – Flagstar Bank (NYBC)

Note: Figure 4 presents the cumulative abnormal return for New York Community Bank (NYBC), Northeast Bank (NBN) and Home BancShares (HOMB). The event window is 17.03.2023-20.03.2023. The U.S. bank benchmark is KBW Nasdaq Bank Index. The regression is based on the one hundred business days prior to the event window. Source: Yahoo, authors' calculations.

As in the case of SVB, the results appear very clear. NYCB presents a CAR of 31.5% while the CAR of the two unsuccessful bidders is close to zero. Results are again not driven by our baseline estimations as the simple total return of NYBC was 27% within this window, while the benchmark's return was in negative territory with -4.5%.

Figure 5: Long-Run Impact – New York Community Bank (NYBC)

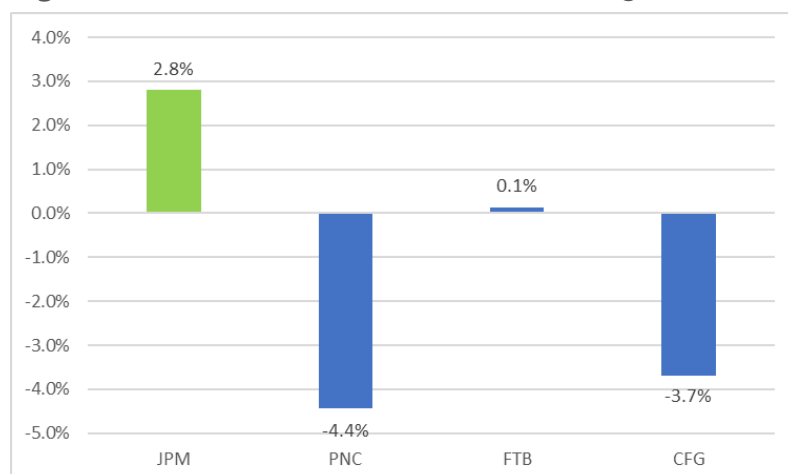
Note: Figure 5 presents the share price performance of New York Community Bank (NYBC), Northeast Bank (NBN) and Home BancShares (HOMB) and the U.S. bank benchmark index KBW Nasdaq Bank Index (KBW). Start date is the event window start date, 17.03.2023. Source: Yahoo, authors' calculations.

We look again at the performance from the event window start date. Like First Citizen Bank in the case of SVB, we see that NYBC was not only clearly able to outperform other bidders and the bank benchmark during the event window, but also in the longer run (Figure 5). This highlights that the acquirer was able to sustain its outperformance overtime.

JP Morgan takes over First Republic Bank

First Republic was taken over by the FDIC on 28.04.2023 (Friday), the auction took place during the weekend and on Monday, 01.05.2023, it was announced that JP Morgan won the bid. Competing bidders were PNC Bank, Fifth Third Bank (FTB) and Citizens Bank, a subsidiary of Citizens Financial Group (CFG).¹⁴

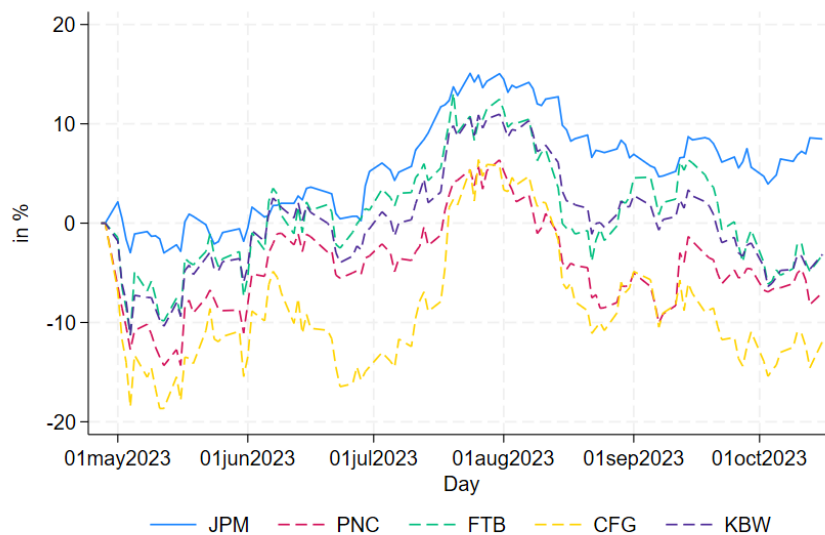
Figure 6: Cumulative Abnormal Returns – JP Morgan (JPM)



Note: Figure 6 presents the Cumulative Abnormal Return for JP Morgan (JPM), PNC Bank (PNC), Fifth Third Bank (FTB) and Citizens Financial Group (CFG). The event window is 28.04.2023-01.05.2023. The U.S. bank benchmark is KBW Nasdaq Bank Index. The regression is based on the one hundred business days prior to the event window. Source: Yahoo, authors' calculations.

JPM presents a positive CAR of 2.8%, which is much less than the positive CAR for the winning banks in acquisition of SVB and Signature Bank respectively. The divergence is mostly driven by market capitalisation as JPM is much bigger than First Citizen Bank and New York Community Bank. In value (dollar) terms, the gain to JPMorgan is actually larger (see section 3.2). As in the other cases, the CAR of 2.8% is measured against a bank benchmark index and, also as before, the CARs of losing bidders are zero or negative. Again, the results are not driven by our CAR methodology. The simple total return of JPM within this window is 3%, while the return of the bank benchmark index was only -0.2%.

¹⁴ <https://www.fdic.gov/resources/resolutions/bank-failures/failed-bank-list/first-republic-bid-summary.html>

Figure 7: Long-Run Impact – JP Morgan (JPM)

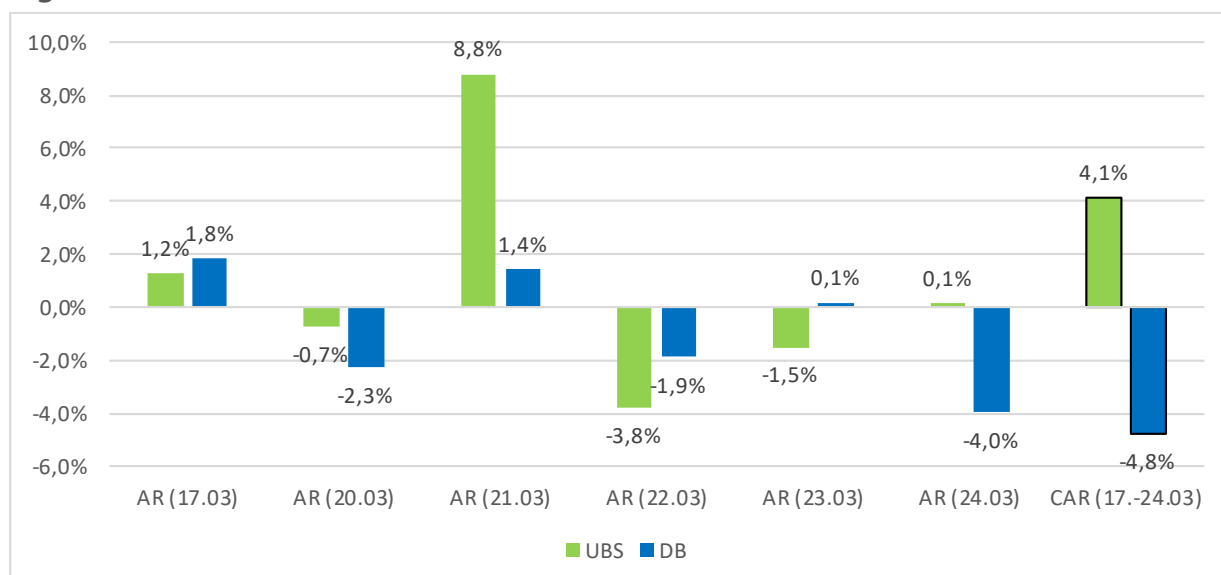
Note: Figure 7 presents the share price performance for JPMorgan Chase (JPM), PNC Bank (PNC), Fifth Third Bank (FTB), Citizens Financial Group (CFG) and the U.S. bank benchmark index KBW Nasdaq Bank Index (KBW). Start date is the event window start date, 28.04.2023. Source: Yahoo, authors' calculations.

The long-run impact (Figure 7) again is in line with the short-run CAR (Figure 6). While less extreme than in the cases of SVB and Signature Bank, JPMorgan Chase does still outperform other bidders and the U.S. bank benchmark, for instance by around 10% until October. Note that we are not arguing that this effect is exclusively driven by First Republic's acquisition.

UBS takes over Credit Suisse

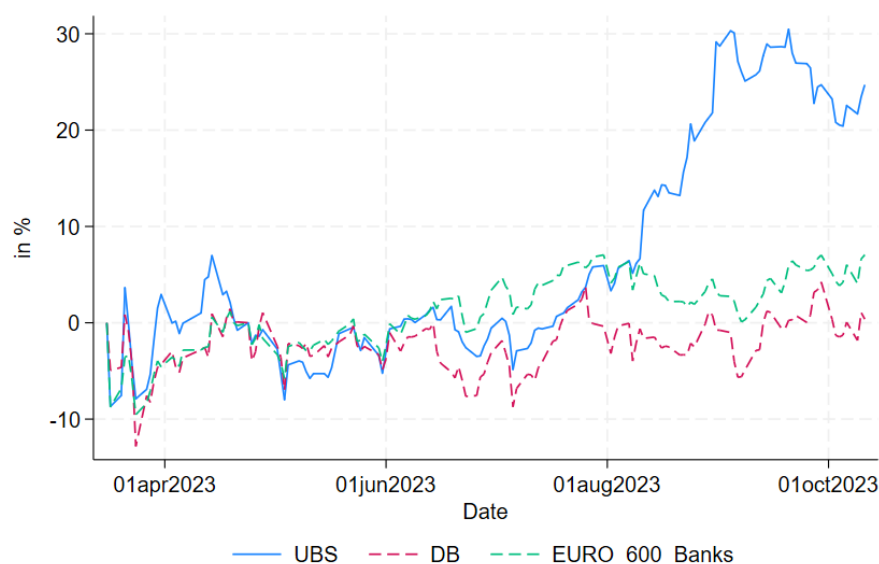
Credit Suisse struggled for several weeks until FINMA forced a deal between UBS and Credit Suisse during a dramatic Weekend (17.-19.03.2023).¹⁵ As the takeover was obviously rushed, a lot of uncertainty about the takeover details and legal considerations (see e.g., AT1 bonds) existed after the markets opened on Monday, 20.03.2023. This makes it more difficult to define the correct event window. As FINMA neither set up an auction nor negotiated with other banks than UBS, a direct comparison to competing bidders is not possible either.

¹⁵ For detailed information on the Credit Suisse case see https://too-big-to-fail.ch/en_US/

Figure 8: (Cumulative Abnormal) Returns – UBS

Note: Figure 8 presents the Abnormal Returns and the Cumulative Abnormal Returns for UBS and Deutsche Bank (DB). The event window is 17.03.2023-24.03.2023. The bank benchmark is STOXX Europe 600 Banks. The regression is based on the one hundred business days prior to the event window. Source: Yahoo, Refinitiv Eikon, authors' calculations.

To be as transparent as possible, we present the daily abnormal returns (ARs) from Friday (17.03) until Friday (24.03) as well as the CAR for the full event window (Figure 8). One can see that the main effect appears on Tuesday (21.03), followed by some mean reversion in the following days. To get a better picture of the returns, we add Deutsche Bank (DB) as a comparable bank. UBS' CAR is 4.1%, while DB even presents a negative CAR. As mentioned, due to uncertainty of the event window, the 4.1% figure should be seen with caution.

Figure 9: Long-Run Impact – UBS

Note: Figure 9 presents the share price performance for UBS, Deutsche Bank (DB) and the bank benchmark STOXX Europe 600 Banks (EURO_600_Banks). Start date is the event window start date, 17.03.2023. Source: Yahoo, Refinitiv Eikon, authors' calculations.

During the first three months after the event, UBS presents no clear outperformance (Figure 9). Nevertheless, a clear and persistent outperformance against DB and the STOXX Europe 600 Banks starts in July 2023.

A candidate event for explaining the outperformance as of the beginning of August is the resolution of uncertainty about the economic value of the acquisition for UBS with a series of positive news. First, UBS terminates all Federal guarantees on 11.08.2023¹⁶. Second, on 31.08.2023, UBS presents the Q2 numbers that announce the profits from the acquisition and then prompt the FT article.¹⁷

3.2. Comparison of the economic gain for acquirers

In this section, we compare the economic gains of the acquirers across the four cases. The basis for the comparison is the CAR we calculate for each case. By multiplying the CAR with the market capitalization of the acquirer on the day before the start of the event window, we obtain the dollar value of the gains for the shareholders of the acquirer.

The dollar value of the CAR can be interpreted as a transfer to the acquirers' shareholders at the expense of the failed institutions' equity- and unsecured debtholders (and possibly taxpayers if the authorities assume losses). In an ideal situation, the authorities, who have seized control of the failed bank, have all the information and all the bargaining power, should be able to avoid any gains to the acquirers' shareholders. Such an outcome is, however, unrealistic, and the value of the gain, which results from a too-low selling price, can be interpreted as "money left on the table" by the authorities.

In the four acquisitions of failed banks in the aftermath of the March crisis, the gain to the shareholders of the acquirer lies between \$1.56 bn for NYCB (who took over Signature Bank) and \$11.17 bn for JP Morgan (who took over First Republic Bank) (see Table 1). The result emphasises the importance of presenting the CARs in dollar values because the smallest CAR (JP Morgan) represents the largest gain to shareholders in economic terms.

Table 1: Comparison of economic gains for acquirers

	FCB (SVB)	NYCB (Signature)	JPM (First Republic)	UBS (Credit Suisse)
CAR	68.7%	31.5%	2.8%	4.1%
Market Capitalisation of acquirer (in \$bn)	6.9	5.0	398.8	61.9
CAR in \$bn	4.7	1.6	11.2	2.5
FT accounting results (in \$bn)	9.8	2.1	2.7	28.9
Total assets acquired (in \$bn)	72 ¹⁸	38 ¹⁹	229 ²⁰	575
Discount relative to acquired assets	6.6%	4.1%	4.9%	0.4%

Source: Yahoo, Refinitiv Eikon, FT, authors' calculations.

¹⁶ <https://www.efd.admin.ch/efd/en/home/financial-affairs/ubs-takeover-credit-suisse%20/time-line-cs-ubs.html>

¹⁷ For completeness, UBS settled a case with the U.S. Justice Department in mid-August.

¹⁸ Value is already discounted by \$ 16.5 bn. For more information see <https://www.fdic.gov/news/press-releases/2023/pr23023.html>.

¹⁹ Value is already discounted by \$ 2.7 bn. For more information see <https://www.fdic.gov/news/press-releases/2023/pr23021.html>.

²⁰ <https://www.fdic.gov/news/press-releases/2023/pr23034.html>.

An advantage of computing CARs and then converting them into gains to shareholders is the ability to compare the gains to the accounting profits reported in FT (2023). In total, our estimation of gains (\$20bn) is much smaller than the accounting profits (\$44bn). Except for the takeover of First Republic Bank by JP Morgan, the gains to shareholders are significantly smaller.

If we compare the economic significance of the gains to the acquirers' shareholders in the three U.S. cases in terms of the discount on acquired assets, then the gains are surprisingly similar. In each case, the dollar value of the gain divided by the assets acquired is between 4.1% and 6.6%. While JP Morgan's shareholders gained \$11bn – much more than in the other two U.S. cases (\$4.7bn and \$1.6bn), it also bought a much larger bank with failed assets of \$229bn (versus \$109bn and \$38bn in the other two cases, respectively).

The case of UBS's acquisition of Credit Suisse is different. The gain to shareholders, as measured using the dollar value of the CAR, is only \$2.5bn and the discount on acquired assets is only 0.4%. In contrast, FT (2023) reports a much larger accounting profit of \$29bn.

This result comes as a surprise. The three U.S cases present higher CARs in Dollar values and much higher discounts relative to the acquired assets in comparison to the UBS. While the U.S cases were acquired via an auction process, FINMA solely negotiated with UBS, which should in theory lead to higher negotiating power for UBS and finally result in higher CARs in comparison to the U.S cases.

What factors can explain this unintuitive finding? An easy explanation would be that auction processes are less helpful for efficient bank mergers in resolution than bi-lateral negotiations. We do not follow this explanation. Firstly, and most importantly, we only have one observation, which does not allow for any generalisations. Secondly, Credit Suisse faced different issues than the U.S cases with an already declining share price for several years. This indicates that issues within the bank were much more complex than solely unrealised losses due to interest rate increases. Thirdly, UBS announced several times before (already on 14.01.2023²¹) and after the takeover that they had no interest in rescuing Credit Suisse so that the deal was clearly perceived by the market as a forced deal with significant risks for UBS shareholders. This stands in stark contrast to the U.S cases where those who had an interest in the acquisition could bid freely. Fourthly, the takeover was rushed and its conditions remained opaque. It might be that due to the intransparency and legal uncertainty focusing on a narrow event is not useful in this case (recall that the CARs for UBS vary a lot depending on what days we chose for the event window, see Figure 8). When we consider the stock price performance of UBS for a longer period since the take-over, larger gains to shareholders materialize. In particular, the UBS share price jumps up in August 2023, which can be explained by the realization of positive news about the acquisition of Credit Suisse (see also the last paragraph of Section 3.1). Between the start of the event window for the CAR analysis and 01.09.2023, UBS generated an absolute return of 24%, while the return of the bank index benchmark² was -4%. In dollar terms, this outperformance of 28% represents a gain to UBS shareholders of \$17.3bn. This is much larger than the short-term CAR of \$2.5bn, but still considerably smaller than the accounting profits of \$29bn in FT (2023).

Overall, the evidence of the economic gains to shareholders complements the discussion in Section 2. The profit that appears in the accounting numbers of the acquirer of a failed bank is not informative about the economic value of the acquisition. One way to shed light on the economic value is to examine the gain of the acquirers' shareholders when they get to know about the acquisition. This gain is much smaller than the accounting profit in three out of the four acquisitions we examine. Only the gain to JP Morgan's shareholders is (considerably) larger than the accounting profit it reports. In this study, we cannot examine the precise reasons for this difference, but JP Morgan dominates the U.S.

²¹ <https://www.reuters.com/markets/deals/ubs-has-no-desire-buy-credit-suisse-chairman-tells-newspaper-2023-0114/#:~:text=%22We%20have%20no%20desire%20to,of%20Credit%20Suisse%20made%20sense.>

banking sector. It clearly signaled its intent to take over some regional bank and the eventual acquisition of First Republic Bank was seen as a breakthrough by its shareholders.

Our analysis of the three auctions in the U.S. shows that the gain to the acquirers' shareholders materializes immediately after the auction. On average, they acquire the failed assets at a discount of 4-6%. Over the longer term, the gains continue to grow but a considerable part of the overall gain occurs in the short run. In the case of the negotiated takeover of Credit Suisse by UBS, which was forced by the Suisse authorities, there is hardly any immediate gain to UBS' shareholders (and moreover, there is quite some variation in the short-run gain because there is no clear "event window"). It is only after several months, when there is more certainty about the consequences of the acquisition, that the share price of UBS outperforms.

Our findings in section 2 and 3 point to a bigger question which is beyond the scope of this study. We argued that a market-based approach is preferable to an accounting-based approach when assessing the acquisition of distressed banks. Our analysis uses both the CAR methodology with a short event window as well as the evolution of stock prices over a longer horizon. The CAR approach requires a well-defined event window in which all relevant information becomes known. While this is more likely to be the case in auctions, it may or may not be the case in negotiated deals. We argue that the small stock price reaction in the case of UBS is more likely to reflect the latter – not all relevant information becomes known within a few days – than it is a sign of an efficient process. Looking at the performance of UBS' share price over a longer period, with its jumps in August when more information about the acquisition becomes available, supports our interpretation.

4. THE USE OF AUCTIONS IN BANK RESOLUTION: THEORY AND EVIDENCE

The FDIC uses auctions regularly to resolve failed banks. After the financial crisis of 2008, the FDIC resolved many failed banks by selling them to other banks through competitive auctions. The resolution process is usually initiated before the failed bank is taken over by another bank. It is typically set off when a bank becomes critically undercapitalized. The FDIC will then collect all relevant information and give potential and approved bidders access to this information. Bidders then have a very short period of time, often two or three days, to prepare and submit their bid. In the vast majority of the cases, the resolution takes the form of "Purchase & Assumption" where the buyer purchases all or some of the failed bank's assets but assumes all deposit liabilities. At the outset, the FDIC approach resembles a first-price sealed bid auction where bidders hand in the amount at which they are willing to buy the bank, the bids are not known to other bidders, and the highest price wins. In reality, the process is much more complicated because the FDIC can offer also parts of the bank for sale, add loss-sharing agreements or repurchase clauses. For a more detailed description of the process in the U.S. see the recent papers by Granja et al. (2017) and Allen et al. (2023).

Economic theory favours using auctions instead of negotiations when authorities want to sell a failed bank to a healthy one. The basic intuition is that when bidders have private information about the value of the object on sale, as is likely the case when acquiring a failed bank, using an auction compels bidders to reveal some of this information. This information revelation leads to more efficient outcomes because bidders earn a lower information rent – akin to a monopoly rent – in an auction. For example, Bulow and Klemperer (1996) show that the benefit of having one more bidder (in an auction) outweighs the benefit of any extra bargaining power for the seller (in a bi-lateral negotiation). Suppose, for example, the auction is a simple English auction where the price rises until one of the banks drops out, then the action of leaving the auction reveals some of the private information. This basic logic

carries over to more complex settings. The information revelation benefits the uninformed seller (e.g., the FDIC acting on behalf of the failed banks' equity holders and unsecured creditors as well as taxpayers).

Empirically, if there are more competitors in the FDIC sealed-bid purchase and assumption, the bid levels of all bidders increase. Moreover, the bids in the FDIC auctions are consistent with the above mentioned private-value model but also with a common value component, i.e., the FDIC and bidding banks do agree to a considerable extent on the value of the failed bank (Giliberto and Varaiya, 1989).

On these grounds, it would have been economically better to use an auction in the resolution of Credit Suisse instead of the negotiated sale to UBS. In an auction, UBS would have had to bid against other potential buyers.²² Both UBS and these other banks have private information on the value of Credit Suisse. More specifically, the private information is not just about the value of Credit Suisse on its own, but also about how the assets and liabilities of Credit Suisse fit with the potential buyer's existing business strategy.

A growing number of researchers have investigated stock price reactions around FDIC auctions. This literature helps us to interpret the observed stock price reactions in the case of the four recent bank failures. Cowan and Salotti (2015) analyse failed bank takeovers after the financial crisis of 2008 and find that stockholders of acquiring banks obtain a 3.23% average two-day announcement-period CAR. They conclude that acquiring firms enjoy considerable wealth transfers as the FDIC accepts bids below the fair value of failed banks. Similar evidence was found in earlier studies of bank resolutions in the 1980s by James and Wier (1987). Moreover, for the period from 2007 to 2013, Granja et al. (2017) report an average cost to the FDIC of 28% of failed assets when selling a failed bank. Even though the numbers are not directly comparable because the 28% is based on FDIC reporting of all losses and CARs capture the gain for the acquirers' shareholders, the available evidence points in the same direction: the FDIC auctions appear inefficient.

But why do bids fail to reach the fair value and why is the FDIC accepting these low bids? Granja et al. (2017) explain the gains to acquirers with the observation that the highest valuing bidder is often undercapitalized. Lacking financial resources then result in a sale at a lower price to a lower valuing bank with stronger capitalization. The paper shows that failed banks are predominantly sold to bidders within the same county, with similar assets and business lines. If these banks are undercapitalized, the FDIC will not be able to receive an adequate price for the failed bank. Allen et al. (2023) analyse the details of the auction design used by the FDIC and find that higher prices could be received with a better auction design. The FDIC uses scoring auctions with different bid components. Bidders are uncertain about how the FDIC trades off different bid components. The paper argues that FDIC resolution costs could be reduced by roughly 30% after a change in auction design. Igan et al. (2022) investigate the impact of lobbying activity by banks on the outcome of FDIC auctions and the losses incurred by the FDIC. The paper finds that lobbying by bidding banks results in a higher probability of winning an auction and larger bank resolution costs for the FDIC. Granja (2013) identifies another reason for acquiring banks gains (FDIC losses): Transparency. Better transparency (the paper uses SEC registration as a measure) reduces the cost of bank resolution by an economically important amount of 20%. The result indicates that acquiring banks gain from a lack of transparency and can achieve bargain prices in auctions that lack transparency.

The CARs in two of our cases, FCB and NYCB, are considerably larger (even though we recall that in terms of the discount on failed assets, all cases are surprisingly comparable). The CARs in the case of

²² A further complication arises when the authorities want to have a "national" solution. In the U.S. context it is much easier to find bidders for a failed bank than in the Swiss context. In fact, there may not have been another suitable bidder.

JPM and UBS are similar to the ones found in the literature. Zhou (2023) investigates the stock price reactions of losing bidders and, like us, finds that they on average experience small negative abnormal returns.

We can only speculate in this study why the CARs in the case of FCB and NYCB are an order of magnitude larger. One possibility is that these bank sales occurred in an environment that lacked competition among competing bidders. Another plausible explanation is that the FDIC had other objectives than maximizing the sale price. For example, the FDIC may have had a preference to curb the market power of banks by admitting only smaller banks to the auction.

For example, after the acquisition of First Republic by J.P. Morgan, the largest bank in the U.S., not only the shares of J.P. Morgan but also shares of other large banks rose. In contrast, shares of mid-sized banks tended to fall. The sale occurred after the auctions won by FCB and NYCB and may have informed the market that the authorities had given up their resistance to further growth of large significant institutions through acquisitions of other banks and thus caused a general share price increase of large banks at the expense of smaller banks.

Finally, all four sales appear to have been conducted with short preparation time. This may have hindered the compilation of necessary information and prevented rigorous due diligence by competing bidders.

5. LESSONS FOR BANK RESOLUTIONS OF THE FUTURE

All four failed banks were resolved in a similar manner: they were sold to an acquiring bank rather hastily. The authorities appear to have been taken by surprise because the failure was not caused by a direct undercapitalization²³ but by illiquidity. Bank failures caused by undercapitalization unfold more slowly – usually the resolution ends a gradual process of capital depletion, and the authorities have plenty of time to prepare the resolution process. The four bank failures in 2023 were the result of illiquidity, which is more difficult to predict. All four banks experienced a bank run: they were unable to meet the sudden withdrawals by depositors. Illiquidity is difficult to anticipate and seems to have come as a surprise to banks and authorities alike.²⁴ The situation required quick and immediate action by the authorities. As a result, the sales processes resembled a fire sale and may have resulted in higher than necessary resolution costs for investors and the general public.

FT (2023) argues that soaring accounting profits and sharply rising share prices of the acquiring banks are evidence of overly depressed sale prices. We believe that the extraordinary accounting profits resulting from bank takeovers do not support this conclusion. They are the result of a wedge between the book value and the market value of the banks' assets and as such cannot be used to distinguish a fair sale price from an underpricing. However, we find evidence consistent with the underpricing claim of FT (2023): The analysis of the abnormal stock returns of the acquiring banks and the other bidding banks provides evidence that the winning bidders indeed made a "good deal" and paid a price that was below market value.

The FDIC is required by law to resolve failed institutions in the least costly manner. Did the FDIC violate this principle? The answer depends on whether a lower-cost alternative was available. US Senator Timothy Scott claimed in a Senate Banking Committee hearing that US regulators "appear to have been

²³ For instance, SVB was undercapitalized economically due to unrealised losses, but not in accounting terms.

²⁴ Supervisors kept their eyes closed on unrealised losses, but as they did, liquidity was the final driving force.

asleep at the wheel²⁵ and argues that lower resolution costs would have occurred if supervisors had taken due supervisory action earlier and initiated the sales process earlier and before the banks' failures. While earlier initiation and better preparation of the bank sale certainly would have resulted in more accurate pricing, it is far from clear whether this was a viable option for supervisors.

We draw the following conclusions for banking regulation and supervision from these bank failures:

- 1) **Auctions should be preferred to a negotiated bank sale.** Research shows that resolution costs are lower when there is competition among potential bidders. The resolution of Credit Suisse may have been more costly (or at least risky for the taxpayer via state guarantees) than necessary because there was no politically viable alternative to selling the bank to UBS. Ex-post transparent auctions are critical to minimize the perils of political influence in decision-making.
- 2) **Better and earlier preparation of the auction.** Banking supervisors and resolution authorities need to be adequately prepared for a bank resolution that comes unexpectedly and suddenly as the result of a bank run. Assets that are carved out because of valuation uncertainties need to be identified. Due diligence materials and information for potential bidders must be prepared early – long before the auction starts and even before the decision to sell the bank in an auction is ultimately decided. Living wills and resolution plans should enable the authorities to initiate a professionally managed sale process and due diligence. The essential preparatory work needs to be a part of resolution planning, a core task of resolution authorities, including the Single Resolution Board (SRB). To avoid hold-up scenarios, resolution authorities also need to carefully prepare the “Best Alternative to a Negotiated Agreement” (BATNA). The current crisis management and deposit insurance framework (CMDI) allows for an effective pre-packaging purchase and assumption/sale of business resolutions. However, it inevitably falls short of preventing bank runs, which have the “advantage” of pulling the trigger on weak banks where supervisors still hesitate. But bank runs often generate widespread panic that extends beyond the weak bank well into the entire banking system. Widespread panics are costly and may rush authorities into hasty, inefficient solutions (Heider et al., 2023).
- 3) **Not only “significantly important banks” but also non-significant banks may need to be prepared to be sold by bank resolution authorities.** For example, SVB was not designated as a global systemically important (G-SII) or other systemically important institution (O-SII) by the relevant authorities in 2022. SVB was large but was not considered to be complex enough and interconnected enough to warrant significant institution status. If such a bank were to fail in Europe, the national laws would apply as the SRB de facto only has jurisdiction over significant institutions because of the public interest assessment (PIA) (see Tröger & Kotovskaya 2022). There is little doubt that regular bankruptcy would have created massive uncertainty and systemic risk. The authorities decided to guarantee all deposits of the failing banks because they were concerned about the potential negative impact on the financial system and the economy. More importantly, without the FDIC as a resolution authority, bankruptcy proceedings would have been inevitable. The Lehman Brothers case reminds us that this is a “no go” – with or without protection for large depositors. In the absence of the FDIC, the U.S. authorities would have been forced to bail out the bank to avoid formal bankruptcy – an outcome that likely would have been much more costly to society. Europe is well advised to anticipate the impossibility of initiating bankruptcy proceedings for large, but insignificant banks.
- 4) **Capital adequacy regulation should be appropriately adjusted to unrealized losses.** Unrealized losses on held-to-maturity securities are not deducted from regulatory capital under the Basel III framework. This makes it possible that a bank is economically insolvent and at the same time seems to be adequately capitalized. Supervisors should require banks to build an appropriate provision for unrealized losses which are deducted in the calculation of the available equity capital.

²⁵ Financial Times, “Top Republican accuses regulators of being ‘asleep at the wheel’ over SVB”, 28.3.2023, <https://www.ft.com/content/6eb89388-39f6-46a-c81de-82da5d9ec336>

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This study looks at potential windfall profits for the four banking acquisitions in 2023. Based on accounting figures, an FT article states that a total of USD 44bn was left on the table. We see accounting figures as a misleading analysis. By estimating marked-based cumulative abnormal returns (CAR), we find positive abnormal returns in all four cases which when made quantifiable, are around half of the FT's accounting figures. Furthermore, we argue that transparent auctions with enough bidders should be preferred to negotiated bank sales.

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