

# Bank Bailouts and Fiscal Contingent Liabilities

*Davide S. Mare*

*Martin Melecky*

*Hanna Murina*



**WORLD BANK GROUP**

Finance, Competitiveness and Innovation Global Practice

January 2023

## Abstract

Implicit government guarantees to bail out troubled banks can produce a sizable fiscal contingent liability. Drawing on a rich history of various forms of staggered bailouts, this paper studies the link between bank bailouts and fiscal contingent liabilities using bank-level data for Kazakhstan—an upper-middle-income country in Central Asia. The paper first estimates the probability that a bank in distress is bailed out, conditioning on bank characteristics and financial soundness. Second, it estimates the magnitude of bailout costs depending on the size of banks, their ownership type, financial soundness, and the type of bailout

instrument used by the government. The latter aims to contrast the fiscal contingent liabilities when the government uses bailout instruments without recourse on bank future profits—such as government purchases of bad loans at 100 percent nominal value—versus instruments that do not allow bank owners to socialize losses and privatize gains—such as properly governed and priced senior debt or equity injections. Third, the paper illustrates how the estimations could be used for projecting the expected contingent liabilities from bank bailouts.

---

This paper is a product of the Finance, Competitiveness and Innovation Global Practice. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at <http://www.worldbank.org/prwp>. The authors may be contacted at [dmare@worldbank.org](mailto:dmare@worldbank.org), [mmelecky@worldbank.org](mailto:mmelecky@worldbank.org), and [hannamurina@hotmail.com](mailto:hannamurina@hotmail.com).

*The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.*

# Bank Bailouts and Fiscal Contingent Liabilities\*

Davide S. Mare<sup>a,b</sup>, Martin Melecky<sup>a</sup>, and Hanna Murina<sup>a</sup>

**Keywords:** Bank bailouts; Contingent liabilities; Fiscal cost; Kazakhstan; Problem bank resolution; Systemic importance.

**JEL:** G01; G21; G28; H81

---

\* We thank Tatiana Didier, Mario di Filippo, and the participants of the World Bank author workshop for the Kazakhstan Public Finance Review for helpful comments on earlier drafts of the paper. This paper's findings, interpretations, and conclusions are entirely those of the authors and do not necessarily represent the views of the World Bank Group, their Executive Directors, or the countries they represent. The authors can be contacted at: [dmare@worldbank.org](mailto:dmare@worldbank.org), and [mmelecky@worldbank.org](mailto:mmelecky@worldbank.org).

<sup>a</sup> World Bank.

<sup>b</sup> University of Edinburgh

# 1 Introduction

Governments deploy bank bailouts to mitigate risks of financial instability and reduce the likelihood or severity of recessions that bank distresses and failures often trigger. Bailouts may uphold credit supply and economic conditions by reducing corporate and personal bankruptcies, and thus unemployment. But they have social and fiscal costs. Financial support to distressed banks may impose large redistribution costs on society when taxpayers are not adequately compensated for the risks the government takes or for the funds that bank owners never return (Dell’Ariccia et al. 2022).<sup>b</sup> They can help bankers socialize losses and privatize profits. Past bailouts also raise the expectations of future bailouts and generate fiscal contingent liabilities. They can feed the moral hazard incentives of banks, reduce market discipline, and impact competition. Ultimately, rescuing distressed banks can distort the allocation of savings/capital in the economy because they could be partially allocated based on the political and regulatory connections of banks. Bailouts can also decrease confidence in banks and be politically unpopular, including because they are perceived by the citizens as unfair (Berger and Roman, 2017), and can sometimes lead to sovereign debt problems or even civil unrest (Berger and Roman, 2020).

This paper studies the link between bailouts and bank size, ownership, and financial soundness, using bank-level data from Kazakhstan from 2009 to 2021. Kazakhstan is a particularly interesting country for this type of analysis because of repeated bouts of financial instability and the staggered bank bailouts using several types of public interventions. The country has experienced two waves of financial crises since 2008 because of commodity price shocks, economic concentration in extractive industries, weak governance, and an underdeveloped financial sector, among other challenges. The economic crisis triggered by COVID-19 also renewed pressure on banks and the banking system. From 2009 to 2021, the banking system comprised between 26 and 40 operating banks and witnessed 41 bank instabilities declared by the bank supervisor.<sup>c</sup> Out of these cases of financial distress, 23 were resolved through bank bailouts using public money. The bailouts were staggered over time and used different instruments (equity injection, debt or deposit funding, and purchases of non-performing loans in most cases at 100 percent of the nominal value).<sup>d</sup> The cost of bailouts thus varied widely.

The decision tree of bank bailouts used in this paper is described in Figure 1. A bank can face a shock and enter financial distress/instability. Depending on its characteristics, it can be bailed out using public money or not. It is not rescued if it either recovers through its own efforts, supervisory intervention, or exits the market because it is acquired by or merged with another bank,

---

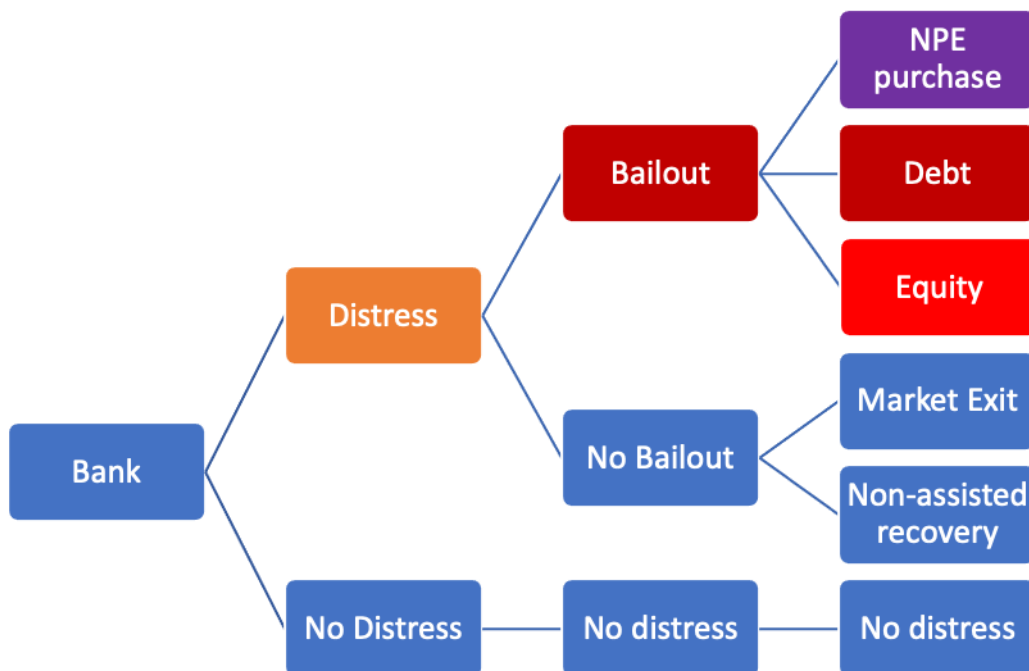
<sup>b</sup> Dell’Ariccia et al. 2022 show that divestiture takes a long time and recouping the full cost can be questioned including because of alternative costs such as forgone investment in education or health care.

<sup>c</sup> During 2009-2021, there were 24 banks with instabilities and 41 actions to tackle the instabilities. Twelve banks were terminated with license withdrawal, including two banks that have been transformed into non-banks, and 10 banks liquidated or are in the process of liquidation. Data sources for bank instabilities resolved with bailout actions are described in section 4.1.

<sup>d</sup> Just in one case, the price paid to acquire non-performing loans was lower than the full nominal value: the purchase of BTA’s non-performing assets (transaction value of KZT 2.6 tln in 2017). The purchase was at about a 50% discount to the gross value according to the Kazakh Ministry of Finance (<https://informburo.kz/novosti/fond-problemnyh-kreditov-pereplatil-za-aktivy-bta-23-trln-tenge-v-minfine-razyasnili-situaciyu.html>).

its license is withdrawn by the regulator, or it files for voluntary liquidation. If the bank is provided with financial support, it could be through equity injections (light red box), government-financed debt or deposits (dark red box); or through government purchases of non-performing exposures (loans) significantly above market price or even the 100 percent nominal value (purple box).

**Figure 1: An illustrative decision tree of bank bailouts in Kazakhstan**



Source: Authors' elaboration.

To gain new insights into the link between bank bailouts and fiscal contingent liabilities and develop a tool for projecting such contingent liabilities, this paper draws on a rich history of various forms of staggered bailouts in Kazakhstan. It studies the link between bank bailouts and fiscal contingent liabilities using bank-level data for Kazakhstan. The paper first estimates the probability that a bank in distress is bailed out, conditioning on bank characteristics such as financial soundness (CAMEL indicators), ownership type (state, politically exposed persons), and systemic importance (size).<sup>°</sup> Second, it estimates the extent of bailout costs depending on the size of banks, their ownership type, financial soundness, and the type of bailout instrument used by the government. The latter aims to contrast the fiscal contingent liabilities when the government uses bailout instruments without taxpayer recourse on bank future profits—such as government purchases of bad loans at 100 percent of the nominal value—versus instruments that do not allow bank owners to socialize losses and privatize gains—such as properly governed and priced senior debt or equity injections. Third, the paper illustrates how the estimations could be used for projecting the expected contingent liabilities from bank bailouts.

<sup>°</sup> CAMEL is an abbreviation for Capitalization, Asset quality, Management, Earnings, and Liquidity capturing a useful supervisory framework that has been used by many countries around the world to monitor bank financial soundness. See more discussion of this framework in the data section.

We find that larger banks are more likely to experience a bailout which could be counterintuitive because of their business diversification and economies of scale—but moral hazard could be one underlying explanation given the history of bailouts in Kazakhstan. Foreign-owned banks get bailed out much less than other domestic banks (keeping size constant). Similarly, banks owned by local politically exposed persons (PEPs) get and resolved through private solutions much less than other domestic banks (keeping size constant)—perhaps owing to their better management, on the one hand, and preferential political/ business connections, on the other hand. Interestingly, ownership by the state significantly increases the likelihood that public money will be deployed to stabilize troubled banks. Our estimations confirm that bigger banks in distress are more costly to stabilize. But we also find that if a troubled bank is state-owned, the bailout cost increases, on average, by 21 billion tenge. Moreover, if the applied bailout instrument is a debt financing of the distressed bank, the public expenditure increases relative to using an equity injection by, on average, 57 billion tenge. The costliest by far are bailouts using purchases of non-performing loans in which case the relative cost hikes, on average, by 133 billion tenge. The significance of the variables controlling for bank financial soundness—in particular, capitalization, provisioning, and profitability—suggests that sounder banks are much less costly to stabilize (rehabilitate) and highlights the importance of independent and credible supervision of banks.

The rest of the paper is organized as follows. Section 2 and Section 3 provide a literature review and an overview of bank bailouts in Kazakhstan. Section 4 describes the data and the summary statistics. Section 5 presents the estimation methodology. Section 6 discusses the estimation results and projected fiscal contingent liabilities from bank bailouts for 2022-23. Section 7 concludes and offers some policy recommendations.

## **2 Literature review**

Many studies investigate the outcomes of government intervention to rescue banks in distress. The aim is to identify whether bailout programs are effective in restoring banking sector stability while mitigating the negative effects of government intervention, especially on bank risk-taking behavior (Claessens et al., 2011). While the overarching goal of intervention is to restore financial soundness and market confidence, government support of distressed financial institutions has an indirect effect on real outcomes, ameliorating or preventing the negative effects following shocks to the supply of credit (Laeven and Valencia, 2013). Yet, banks may also react by increasing risk-taking anticipating government intervention in case of distress (e.g., Farhi and Tirole, 2012; Dam and Koetter, 2012; Duchin and Sosyura, 2014). Distressed institutions can also perpetrate lending to unprofitable firms to avoid the recognition of losses (Giannetti and Simonov, 2013). Government support can also have a bearing on competition, favoring its recipients such as by increasing the net worth of distressed institutions without increasing borrowing costs (e.g., Calderon and Schaeck, 2016).

In general, government action can take different forms—such as direct capital injections in distressed institutions, liability guarantees, relief through the purchase of impaired assets, and funding liquidity support—which may have different implications for the long-term stability of

the banking sector (Hryckiewicz, 2014). Each form of intervention entails a consideration of the benefits and the potential costs—be it in terms of fiscal costs or real outcomes (Veronesi and Zingales, 2010). Direct capital injections are needed because, during financial distress, capital buffers are depleted, and banks may find it difficult to raise new capital in public markets or through private investors. Nonetheless, recapitalization dilutes existing shareholders increasing their moral hazard incentives (Besanko and Kanatas, 1996; Bayazitova and Shivdasani, 2012) and the benefits of bank recapitalization should be weighed against the implicit transfer to banks' debt holders (Philippon and Schnabl, 2013). Guarantees may be an alternative form of tackling financial distress, especially for governments that are fiscally constrained (Acharya et al., 2021). Guarantees on liabilities do not involve an immediate outlay of resources to cover losses while reducing uncertainty and helping distressed institutions with their funding. On the negative side, guarantees may spur moral hazard because they can incentivize banks to extend credit to the riskiest borrowers (Gropp et al., 2014) and exacerbate risk-shifting incentives that end up in “gambles for resurrection” (Kane and Klingebiel, 2004; Caprio et al., 2010). Asset management interventions such as the purchase of non-performing assets are deployed to restore the soundness and profitability of viable financial institutions. Yet, appraising the value of non-performing assets is challenging during crises and often a too-high purchasing price involves a transfer of money from taxpayers to distressed institutions. Similarly, funding liquidity support can be employed to bridge temporary funding shortages but often ends up being used to keep banks in distress alive.

Very few studies look at the cost of government intervention (e.g., Laeven and Valencia, 2020; Dell’Ariccia et al., 2022) and how political economy issues and links between the political establishment and the banking sector influence government interventions. Blau et al. (2013) suggest that politically connected banks were more likely to be a recipient of government support in the U.S. during the Global Financial Crisis (GFC). Likewise, these authors posit that a greater amount was granted to political-connected banks. Similarly, Grossman and Woll (2014) argue that the type and magnitude of bank bailouts are influenced by the close relationship between policy makers and bank management. Interventions during banking crises may be also related to the strategic negotiation between bank supervisors and creditors of distressed banks, with the outcome of the negotiation depending critically on the threat of liquidation of insolvent banks (Bernard et al., 2022). Government intervention may also depend on the character of domestic institutions (e.g., central bank independence) and international constraints (Rosas, 2006). Yet, there is scant evidence on whether these mechanisms are at play in emerging markets and what are the costs involved in rescuing distressed financial institutions. This issue is particularly relevant for these types of countries because political concerns play a great role in resolving bank failures (Brown and Dinc, 2005). Therefore, we contribute to the literature by investigating the following research question:

*H1: Are the systemic importance and/or the ownership type important determinants in explaining government bailouts versus the market resolution of bank distress?*

A gap in the literature that we try to fill concerns the assessment of the cost of government interventions depending on the type of financial tool (structuring) of the intervention—in addition to individual bank characteristics. The fiscal cost and contingent liabilities borne by the

government over time can depend on the financial tool used to resolve bank distress and how much risk the government assumes with the deployment of that particular tool. We study this question in the context of a developing country that has witnessed repeated episodes of bank bailouts over the last 20 years. In doing this, we distinguish the varying forms of government interventions and quantify the costs associated with each type of financial tool (structure). Finally, we project the contingent liabilities associated with government intervention depending on the type of intervention. In sum, we investigate the following hypothesis:

*H2: Do the costs of bank bailouts vary significantly depending on the bailout instrument(s) used by the government?*

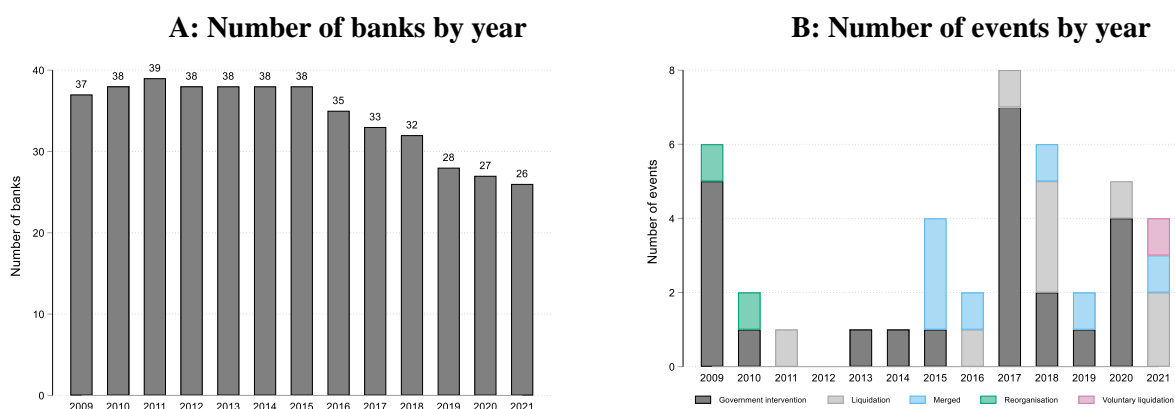
### **3 Overview of bank bailouts in Kazakhstan**

Over time, Kazakhstan has experienced major bouts of financial instability triggered by developments in the world crude prices and the exchange rate volatility. A conjunction of the fall in the price of crude oil and currency pressures led to a transition to a free-floating exchange rate in 2015, triggering a banking crisis. This crisis came on top of previous turbulence experienced during and in the aftermath of the Global Financial Crisis. The onset of the Covid-19 crisis globally did not spare Kazakhstan. Additional asset quality pressures because of pandemic-related lockdowns and disruptions, including in trade, put many companies and consumers under pressure. High legacy non-performing exposures (NPEs), weak governance and risk management at banks, as well as lax underwriting standards generated an opaque situation in the banking sector further clouded by numerous forbearance measures to cope with the Covid-19 crisis. Bank closures, mergers, and bailouts followed. Most recently, the regulator took proactive measures to decrease NPE levels in the banking sector, and largely succeeded.

One goal of our analysis is to identify the different tools through which bank distress has been resolved in Kazakhstan. We identify two main types of resolution: government intervention versus private/market resolutions (henceforth, the private/market solution). Within each type, there are different forms such as equity injection for government intervention and liquidation for the private/market solution (see section 2 for a detailed explanation).

A total of 42 unique banks operated in Kazakhstan from January 2009 to August 2021, ranging from the maximum of 40 banks operating in 2010 to a minimum of 26 banks in 2021 (Figure 2, panel A). Out of all banks observed over the period 2009-2021, 24 were subject either to government intervention, or to some form of private/market solution such as liquidation, merger, or other resolution events. These events represent an extraordinary course of action that, in Kazakhstan's case, entailed the resolution of financial distress. Out of the 24 banks subject to resolution of distress, 16 experienced just 1 event, 3 banks were subject to 2 events, 2 banks to 3 events, 2 banks to 4 events, and one bank to 6 events. These 42 resolutions of financial distress could occur multiple times in a year for the same bank, where the most frequent action was government intervention in the form of bailouts (23 cases) followed by forced liquidation (9 cases), mergers (7 events), reorganization (2 events), and voluntary liquidation (1 event).

**Figure 2: Number of banks and events over the sample period (2009-2021)**



Source: Own elaboration using data from the National Bank of Kazakhstan, National Wealth Fund Samruk-Kazyna, the Kazakhstan Sustainability Fund, and public news reports.

Note: In Panel A, the total number of banks is taken over each year, i.e., if a bank exits the market in a year, it is still counted in the total number of banks. In Panel B, government intervention is the sum of the events where the provision of equity, purchase of non-performing exposures, and the extension of credit to ailing institutions were recorded.

We classify as a government intervention any action undertaken by the Kazakh government that involves a public sector expenditure associated with helping troubled banks. The cost differs depending on the type of government intervention. We identify three main tools employed to rescue distressed banks: equity injections; purchase of non-performing exposures (NPEs); and provision of funding in the form of debt financing or bank deposits (Figure 2, panel B). NPE purchase and provision of funding, if fairly priced, are more NPE reduction and liquidity tools (that are preventing or reducing insolvency concerns). The deviations from fair pricing generated a direct impact on capital and are the reasons for bailout classification. Over time, the type of tools deployed to rescue financial institutions varied and the cost to the government associated with such bailouts did too. Specifically, early in the observation period, equity injections were used to restore bank financial stability (6 interventions between 2009 and 2010). Since 2013, the acquisition of non-performing exposures (7 interventions) and the provision of debt or deposit funding (10 interventions) were used to rescue ailing banks. The cost of government intervention was particularly large in 2017 when the rescue of one bank entailed the acquisition of a large non-performing exposure to the tune of 2.6 trillion tenge. In terms of frequency, 6 banks were bailed out once, 2 banks twice, 3 banks thrice, and 1 bank 5 times. Out of the 12 banks supported by public money, only 7 are still active—the rest were merged into other banks, closed, or liquidated.

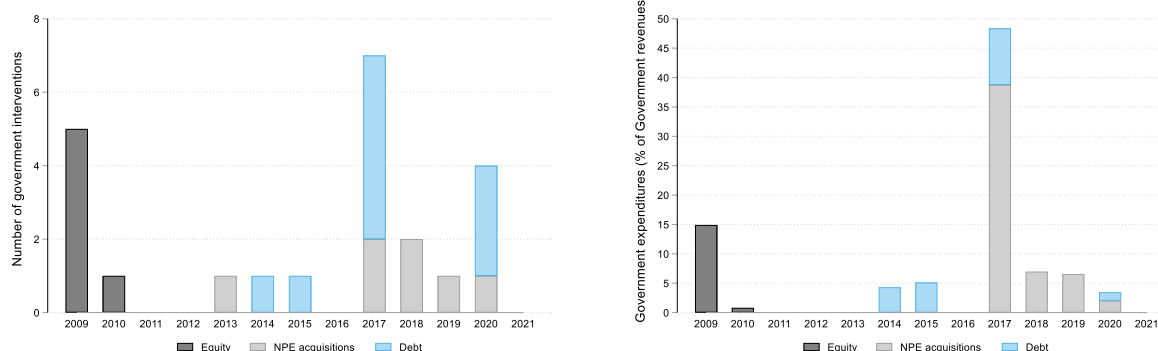
Interestingly, the average interval between receiving the 1<sup>st</sup> bailout and the eventual bank exit is almost 4 years. The average interval between the 2<sup>nd</sup> bailout and the eventual closure is 2.5 years. The average interval between receiving the 1<sup>st</sup> and 2<sup>nd</sup> bailout is close to 5 years. This suggests that public bailouts of banks were often ineffective in rehabilitating bank financial stability in the medium to long term.

The (quasi)fiscal expenditures on government bailouts of troubled banks in our sample first spiked in 2009 to reach almost 15 percent of total tax revenues in the same year (Figure 3, Panel B). A few years later, 2014 and 2015 saw spikes in government support of over 9 percent of total

tax revenues when combined. In 2017, the bailout cost reached peaked at around 48 percent of total government tax revenues. Years 2018 and 2019 continued with high-cost bailouts by historical standards of around 7 percent of government tax revenues each year. Even 2020, witnessed public bailouts through NPE purchases at 100 percent of the loans' nominal value and financing of underpriced bank bonds, costing around 3 percent of government tax revenues.

**Figure 3: Frequency and cost of government intervention over time**

**A: Number of government interventions by year**      **B: Cost of government intervention (% of total tax revenue)**



Source: Own elaboration using data from the National Bank of Kazakhstan, National Wealth Fund Samruk-Kazyna, the Kazakhstan Sustainability Fund, public news reports, and the World Bank.

Note: In Panel B, we report the cumulative government expenditures on bailouts in a given year.

Quasi-fiscal entities played a crucial role in the structuring of bank bailouts. The most recent purchases by the Problem Loan Fund (PLF) of bank non-performing loans at 100 percent of their nominal value—while their market price can be often lower than 10-20 cents on the dollar<sup>f</sup>—have been the costliest bailout options for the general government (Figure 4). They directly benefited bank shareholders without any claim on the future profits of banks that bankers later received in the form of dividends. The recoveries from the NPE purchases have been minuscule and the prospects for further recoveries deteriorating with time. The procedural steps in a bailout using the PLF purchases of bank NPEs at 100 percent of the nominal value are described in table A1.B in the annex.

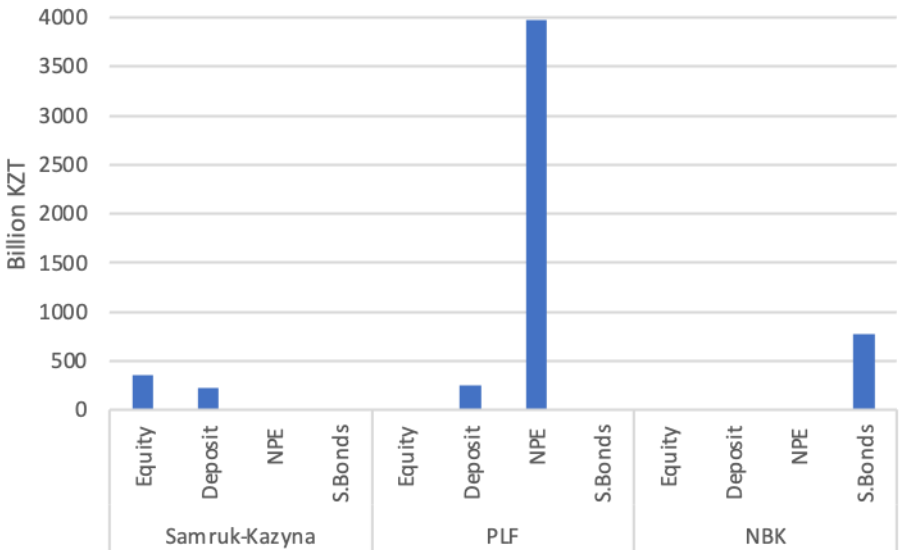
The use of debt bailouts through NBK's Kazakhstan Sustainability Fund has been the second most recent type of bailout used by the government. Injecting public money against senior debt issuance by the banks is a more disciplining bailout for bankers but still a very soft one—especially, if the debt is underpriced. For example, the bailout of the AFT bank in 2020 was structured based on a debt with a coupon of 0.1 percent—with little return for the taxpayer money and a subsidized loan to the ATF bank. A similar bailout approach has been applied through

<sup>f</sup> Fair value to purchase price ranged from the case of BTA at 10%, to Tsesna-1 at 10%, to Tsesna-2 at 20%, and to ATF at 20%: PLF's audited consolidated financial statements: as of 2018, pp. 40-45, [https://www.fpl.kz/media/file/2018\\_con\\_fin.pdf](https://www.fpl.kz/media/file/2018_con_fin.pdf), as of 2019, pp. 39-41, [https://www.fpl.kz/media/file/2019\\_con\\_fin.pdf](https://www.fpl.kz/media/file/2019_con_fin.pdf), as of 2020, pp. 39-42, [https://www.fpl.kz/media/file/Консолидированная\\_FS\\_2020\\_RUS.pdf](https://www.fpl.kz/media/file/Консолидированная_FS_2020_RUS.pdf)

Samruk Kazyna and PLF deposits which were placed in banks at well below the market rate and, for example, in the case of Kazcom bank ultimately at as low as a 0.1 percent interest rate.

The equity injections performed by Samruk Kazyna as a form of public bailouts could be considered a fairer and more equitable bailout option—because they reduced/diluted the ownership stakes of bankers that brought the bank into distress and require them to pay back dividends on the injected equity. This way taxpayers yield some return to cover the alternative costs. However, even if yielding some dividends, the bankers may not have been adequately disciplined by writing down their shares before the public money was injected into the banks. During 2009-2010, Samruk-Kazyna (SK) performed several equity bailouts. Depending on the solvency situation and the amount of needed capital increase, SK invested and gained varying equity stakes in the troubled banks, while the original shareholders experienced a proportionate decrease in their stakes. There were 5 banks and 6 equity injections (see table A2 in the annex). Only the Halyk bank survived after these bailouts and divestments of state shares—its majority shareholder (a politically exposed person (PEP) and close family) acquired the stakes from SK in 2011. Through these bailout interventions and SK exits, the PEPs increased their stake in the Halyk bank, while the other shareholders were diluted. In the six bailouts through equity injections that took place between 2009-2010, the government took ownership stakes of between 20 and 82 percent in the troubled banks that lasted on average 3.2 years and produced an average annual dividend of 1.5 percent. However, the internal rate of return—considering capital gains—averaged -3 percent.

**Figure 4: Expenditures on government intervention by bail-out agent and type of instrument**



Note: Own elaboration using data from the National Bank of Kazakhstan, National Wealth Fund Samruk-Kazyna, the Kazakhstan Sustainability Fund, and public news reports.

Globally, the general principles for bailing out banks with public money are that the shareholders and large creditors must bear losses first before taxpayers and that taxpayers must have recourse to the future profits of the bailed-out banks to realize a meaningful return that can cover the alternative cost of, for example, not increasing sovereign borrowing and indebtedness or investing the taxpayer money into public education or health care.

The general bank resolution authority in Kazakhstan was nested in NBK until its financial regulatory, supervisory, and resolution functions were transferred into a new government agency, the Agency for Financial Regulation and Market Development (AFR) in early 2020. At the same time, the new bank resolution law became effective in early 2020 intending to discipline the use of public funds in bank resolution, introduce strong principles of fairness, and reduce the moral hazard incentives of bankers. In parallel, a new Financial Stability Committee (FSC) was established comprising representatives of NBK, AFR, MNE, MOF, and the Presidential Administration. The responsibility of the FSC concerning troubled bank resolution is to endorse the appropriate use of public funds in cases when systemically important banks in distress need to be resolved/recovered. The FSC with inputs from AFR and NBK first determines the systemic importance at the time of distress—which could be unconditional (through the cycle) or conditional (given the current state of the market). Second, it determines the best course of policy action if a systemically important bank in distress needs to be resolved. It determines the public support instruments to be used and their terms. The combination of the bank resolution law and the FSC serves as a public safeguard against the misuse of public money in resolving troubled (private) banks.

The beginning of 2020 was thus expected to mark the beginning of a new era of using public funds in bank resolution fairly and appropriately—following the global sound practice. However, the bailout of ATF through its merger with Jysan and associated government bailout expenditures have not fully met these expectations. The government purchased 174 billion tenge of ATF’s NPEs at 100 percent of their nominal value, 75 billion tenge of ATF bonds were purchased by NBK Sustainability Fund with a coupon of 0.1 percent, and 100 billion tenge face value of ATF bonds issued in 2017 were restructured with coupon rate revised from 5.5 percent to 0.1 percent and repayment shifted from 2032 to 2040.

Because of the prevailing bank bailout practices, the public bill for rescuing troubled banks reached 6.3 trillion tenge over 2009-2020 (Figure A1 in the annex). These expenses in terms of present value as of 2020 were high at 8.2 trillion tenge—mostly thanks to the PLF purchases of bank NPEs at 100 percent of their nominal value. And the estimated recoveries were low at 1.9 trillion which corresponds to a recovery rate of about 24 percent—including both realized and expected future recoveries. Halyk and Jysan banks absorbed the highest bailout expense and produced the lowest post-bailout recovery rate. This wedge mainly results from, for the public sector, unprofitable NPE acquisitions that accompanied the mergers with BTA, Qazkom, and Tsesna banks.

#### **4 Data and descriptive statistics**

In this section, we describe the data sources and the variables used in the analyses. We collect three main categories of data: data on bank financial indicators; data on bailout actions; and data on changes in bank ownership and major corporate events. The information covers the universe of banks operating in Kazakhstan between January 2008 and August 2021,<sup>g</sup> for a total number of 483 observations. Where possible, data is collected on a monthly frequency and then aggregated at the annual level.

---

<sup>g</sup> The observation period for the dependent variable is 2009-2021. Since we use a one-year lag in the independent variables, information for these variables is collected from 2008 onwards.

#### 4.1 Data sources

Data on bank financial indicators are gathered from their public disclosures available on the website of the National Bank of Kazakhstan (NBK). This published bank information contains monthly data on the balance-sheet information,<sup>h</sup> key items of the financial position of banks,<sup>i</sup> prudential ratios, and prudential capital adequacy.<sup>j</sup> The financial items are based on unconsolidated reporting according to the International Financial Reporting Standards (IFRS), which were introduced in Kazakhstan in 2004.

The data on bailout actions contain hand-collected information primarily from the financial reporting of the public sector institutions, depending on their participation in the bailouts. Where possible, the bailout actions have been verified through disclosures in the audited financial statements of the banks. The information on equity bailouts comes primarily from annual reports of the National Wealth Fund Samruk-Kazyna<sup>k</sup> and official stock market announcements by KASE (the stock exchange) about the terms of equity divestments of the Temir, Alliance, and Halyk banks. The information on subordinated bond instruments is retrieved from the audited financial reports of the National Bank of Kazakhstan<sup>l</sup> and its subsidiary—the Kazakhstan Sustainability Fund.<sup>m</sup> The data on bailout actions in the form of acquisitions of non-performing assets is retrieved from the financial reporting of the Problem Loan Fund.<sup>n</sup> The bailout actions with long-term deposits at preferential terms are also described in the audited financial statements of Samruk-Kazyna and the Problem Loan Fund.

The data on bank ownership and major corporate events consists of hand-collected annual information primarily using the disclosed notes of the audited financial statements of banks and, only in some cases supplemented with news media reports and information from other IFIs for cross-checking. The ownership classification has been designed to reflect differences in bank operations that stem from shareholder profiles. There are 4 groups: foreign (state-owned and private) banks, local state-owned banks, local private banks, and PEP family-associated banks.<sup>o</sup>

In general, for bank mergers, there are three important dates: (1) the announcement of possible transaction and application with the relevant authorities to receive their approval, (2) the closing of the transaction when ownership rights are transferred, and (3) the transfer of assets and liabilities. In our analysis, to identify a merger or acquisition, we consider the second date—that is, the closing of the transaction, while the date when the financials of the target institution are not compiled anymore is usually later. The bank financials during the transition period between the announcement and the closing, a period which usually lasts several months, are included in the dataset. We use these dates because, although institutions are not merged, the new owner is in

---

<sup>h</sup> <https://www.nationalbank.kz/file/download/72713>.

<sup>i</sup> <https://www.nationalbank.kz/file/download/72716>.

<sup>j</sup> <https://www.nationalbank.kz/file/download/72707>.

<sup>k</sup> <https://sk.kz/investors/financial-performance/?lang=en>.

<sup>l</sup> <https://www.nationalbank.kz/en/news/godovoy-otchet-nbk>.

<sup>m</sup> <https://www.kfu.kz/index.php/ru/otchjotnost>.

<sup>n</sup> <https://www.fpl.kz/en/audit> and <https://www.fpl.kz/en/godovoi-otchet>.

<sup>o</sup> Our classification has been informally cross-checked against that of some IFIs operating in Kazakhstan.

charge and managing the assets as it sees fit—which is apparent from the many changes in the assets of the acquired and not yet merged banks.

In cases of bank liquidations, there are two important dates: (1) announcement of a regulatory action that may suspend some of the licensed operations and/or impose certain restrictions on bank activity, (2) withdrawal of the banking license. The dataset of bank financials recognizes the second date and right after that date, the financials of the exiting banks are excluded. The bank financials during the transition period between the first and the second date, which may last up to several months, are included in the datasets.

#### 4.2 *Frequency and cost of financial distress*

The first variable of interest in our study is the occurrence of financial distress and the cost of resolving this distress. We define broadly an event of “acute” distress as the occurrence of either government support or private/market solutions that terminate the operations of a bank. Although the latter is a debated typology in the literature, in the case of Kazakhstan, an explicit recognition of an extraordinary operation to resolve financial instability is authorized and issued by the National Bank of Kazakhstan. The defining feature of an “acute” event of distress is an action taken for the main purpose of stabilizing the financial sector. Therefore, our scope does not include monetary or fiscal policy actions aimed at supporting the broader Kazakh economy. This definition presents some limitations as we are unable to include cases of vulnerabilities that are solved in a non-assisted way. Yet, resolution events are responses to events of distress and are observable. We, therefore, opt to classify banks in distress if there is a measurable objective ex-post outcome of this distress which can be related to cases of acute financial distress.

We further separate bank financial distresses into bailouts and private exits. The first one, “*bail-out*”, captures support provided by the government in the form of equity injection, purchase of non-performing exposures, and provision of funding; the second one, “private exit”, accounts for instability resolved through private/market solutions such as mergers and acquisitions, voluntary liquidations, and forced supervisory closures.<sup>p</sup> In each year for each bank, the variable takes one of three values: 2 if a government expense is recorded, that is there is a transfer of some net expected value from taxpayers to bank shareholders (Metrick and Schmelzing, 2021); 1 if there is a private/market solution to bank distress; and 0 for all the years a bank is operating before undergoing a specific event. We also compute a variable “expenditure” that quantifies the direct monetary spending on government intervention. It takes a positive value for a bank in a year when the government payments are recorded and 0 otherwise.

Table 1 reports the summary of each dependent variable over time. We observe 41 events of distress over the period 2009-2021, 18 private/market resolution events, and 23 government bailouts. The annual event rate (percentage) for our sample is 9.2 percent, suggesting that

---

<sup>p</sup> Indeed, private market solutions may be the result of strategic choices of acquirers and target institutions. Yet, in the case of Kazakhstan, we checked that these operations were carried out because of the distress of the credit institutions subject to such events.

approximately 1 in 1,211 banks experienced at least one episode of distress each year.<sup>9</sup> The cumulative expenditures are 5.6 trillion Kazakh tenge, which corresponds to 8.4 percent of the cumulative share of tax revenues over the period 2009-2021, and about 8 percent of the country's gross domestic product in 2020.

**Table 1: Overview of the dependent variables employed in the analysis**

Variable	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
<b>Distress</b>														
No event	32	36	38	38	37	37	34	33	26	27	27	24	22	411
Event	5	2	1	0	1	1	4	2	7	5	1	3	4	36
Total	37	38	39	38	38	38	38	35	33	32	28	27	26	447
<b>Resolution</b>														
Operating	18	20	21	21	20	20	17	16	9	10	10	7	5	194
Private/Market	1	1	1	0	0	0	3	2	1	3	0	1	4	17
Bail-out	4	1	0	0	1	1	1	0	6	2	1	2	0	19
Total	23	22	22	21	21	21	21	18	16	15	11	10	9	230
<b>Cost</b>														
Cost	332	24	0	0	0	220	250	0	3294	550	604	296	0	
Cumulative	332	356	356	356	356	576	826	826	4120	4670	5274	5570	5570	
Cost ss % of GDP	2%	0%	0%	0%	0%	1%	1%	0%	6%	1%	1%	0%	0%	
Cost as % of tax revenue	15%	1%	0%	0%	0%	4%	5%	0%	48%	7%	7%	4%	0%	

*Source:* Own elaboration using data from the National Bank of Kazakhstan and audited financial statements of the banks supplemented with news reports. The total number of banks as of the start of the calendar year.

*Note:* The variable distress is computed considering all banks in the sample. We define an event as a bank-year observation where a bank is subject either to government intervention or private/market resolution of distress. The variable resolution is computed considering banks in the sample that have been subjected at least once to a resolution event over the period 2009-2021. The category operating refers to bank-year observations where a bank is not subject to an event in a specific year. Private resolution refers to bank-year observations where a bank is subject either to liquidation, merger, or reorganization in a specific year. The category bail-out captures bank-year observations where a bank is subject to government intervention in a specific year. The variable cost captures government expenditures related to bank bailouts.

### 4.3 Ownership type, systemic importance, and other control variables

We are interested in analyzing how the ownership type and systemic importance affect the likelihood of distress, the use of specific resolution tools, and the associated costs. Because of the small sample size and the need to populate each category of ownership type over time, we select a parsimonious set of ownership types. Namely, if a bank is owned with a stake that is greater than 50 percent and ultimate operational control: (1) by private local shareholders or with the largest stake and operational control over the bank, the bank is classified as “*private local*”; (2) by a restricted number of shareholders connected to PEP family, the bank is classified as “*PEP*”; (3) by

<sup>9</sup> Note that if a bank experienced multiple events of distress in one year, it is just counted once. Therefore, although 41 events of resolution happened during 2009-2021, just 36 are reported in Table 2.

foreign shareholders—either foreign government or private shareholders—the bank is classified as *foreign-owned*; and (4) by the Kazakhstan government, the bank is classified as “*state local*.” Table 2 reports the total number of observations in the sample and the breakdown over time of the number of banks by ownership type.

A sufficiently important bank can be rescued because of the large ramifications within the banking system (Freixas and Rochet, 2013). Systemic importance is a multidimensional concept (Financial Stability Board et al., 2009) that is often proxied using bank size (Drehmann and Tarashev, 2011), computed as the natural logarithm of bank total assets (*size*). We follow this practice in the literature.

We also include additional controls that may explain the likelihood and severity (cost) of resolution. To that effect, we employ the traditional *CAMEL* framework.<sup>†</sup> Through *C*, we account for *capital* adequacy using the variable total regulatory capital to risk-weighted assets. Through *A*, we control for *asset* quality measured by the ratio of loan loss provisions to total gross loans. Through *M*, we control for *management* quality using the ratio of overhead costs to total income. Through *E*, we control for *earnings* (profitability) using interest margin divided by total assets. Through *L*, we control for *liquidity* which is captured through the ratio of liquid assets to deposits. Due to the lag structure of the empirical model, data for CAMEL variables are drawn from 2008 through 2020. Furthermore, we compute annual averages for the indicators for each bank using the monthly information. Finally, we include macroeconomic variables to account for the overall economic conditions of the economy that may explain a rise in systemic risk. To keep a parsimonious specification, we source the data through the World Bank’s Development Indicators and consider real GDP growth and inflation rate.

**Table 2: Bank ownership in Kazakhstan between January 2009 and August 2021**

Ownership	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Private	14	11	12	11	13	13	14	15	13	12	8	5	4	145
PEP	4	5	5	5	5	6	7	7	8	7	7	8	8	82
Foreign	15	17	17	17	15	14	13	12	11	12	12	13	13	181
State	4	5	5	5	5	5	4	1	1	1	1	1	1	39
Total	37	38	39	38	38	38	38	35	33	32	28	27	26	447

Source: Own elaboration using data from the audited financial statements of the banks supplemented with news reports.

Note: The number of banks is taken over each year, i.e., if a bank exits the market in a year, it is still counted in the total number of banks per category in that year.

The sample of banks subject to at least one event of distress is smaller (253 observations) and the incidence of cases of resolution of distress is around 21 percent (see Table A3 in the Annex). The expenditures on resolving distress show high variability. The median public expenditure on bank bailout is 100 billion tenge while the maximum is more than 2.6 trillion tenge. Around 40 percent of the banks investigated in the study are foreign-owned, the largest share by numbers and years. Turning to bank controls, banks appear in general well-capitalized, though the

<sup>†</sup> See Mare (2015) for a detailed explanation of the CAMEL framework.

high values of the ratio of regulatory capital to risk-weighted assets are due to relatively low levels of risk-weighted assets. This may reflect a lack of lending to small and medium-sized enterprises (SMEs), perhaps the riskiest lending category from the viewpoint of most banks. Moreover, there appears to be a negative and strong association between bank size and bank capitalization and liquidity. This may suggest moral hazard incentives because large banks appear to rely on an implicit government guarantee against losses thanks to their systemic importance or political connections. Overall, banks show poor performance over the sample period because the mean interest margin over total assets stands on average at minus 0.3 percent.

## 5 Estimation methodology

To quantify the association between systemic importance, ownership, bank distress, and the cost of bank resolution, we employ different estimation techniques. We exploit the patterns of interventions across time to estimate the probability of government intervention and its determinants, focusing on the role of systemic importance and bank ownership type. We also estimate the cost associated with government intervention and how this cost may be related to similar variables.

We first investigate whether the typology of bank distress resolution, namely government intervention or private/market solution, can be associated with bank size or ownership type. We use a multinomial logit model to estimate the following relationships:

$$Prob(y = j) = \frac{e^{\sum_{k=1}^K \beta_{j,k} X_k}}{1 + \sum_{j=1}^{J-1} e^{\sum_{k=1}^K \beta_{j,k} X_k}} \quad (1)$$

where  $j \in \{0,1,2\}$  are three distinct values of the dependent variable “*event only*”. For each bank, the years preceding the event are set to 0, the base category.  $X$  is a vector of regressands including nine predictors all lagged by one year to ease endogeneity concerns, except for ownership. Specifically, bank size and three (contemporaneous) ownership variables (the omitted base category is *private local*) are our main variables of interest. The remaining bank-level covariates are five financial ratios controlling for banks’ financial soundness. We also control for macroeconomic determinants that may be relevant to control for the bunching of bailouts given by the rise of systemic banking risk and include real GDP growth and inflation. Standard errors are clustered at the bank level. This specification allows identifying differences in the relationship between bank size and ownership type as possible predictors of the type of government intervention that is deployed to resolve distress at troubled banks.

Because we observe bank private/market resolutions and bailouts only if a bank experiences distress, we need to adjust equation (1) for this possible selection bias. That is, we need to account for the fact that unobservable or unmeasured factors in equation (1) may be

correlated with the error term. To correct for this potential bias, we compute the inverse Mills ratio using the following probit model:

$$Prob(Y = 1|\mathbf{Z}) = \Phi(\beta\mathbf{Z}) \quad (2)$$

where the variable selection takes the value of 1 if a bank experiences distress between 2009 and 2021, and 0 otherwise. The variables in  $\mathbf{Z}$  explaining selection are the CAMEL variables employed as controls in equation (1), return on assets, and the macroeconomic variables.<sup>s</sup> All explanatory variables are lagged by one year.

In the second step, we analyze the determinants of the cost of government intervention, using the following TOBIT model specification:

$$\log L(\beta, \sigma^2) = \sum_{i \in I_0} \log \left[ 1 - \Phi \left( \frac{\beta X_i}{\sigma} \right) \right] + \sum_{i \in I_1} \log \left[ \frac{1}{\sqrt{2\pi\sigma^2}} \exp \left\{ -\frac{1}{2} \frac{(y_i - \beta X_i)^2}{\sigma^2} \right\} \right] \quad (3)$$

where  $\sum_{i \in I_0} \log \left[ 1 - \Phi \left( \frac{\beta X_i}{\sigma} \right) \right]$  is the contribution to the likelihood functions of the years in which a bank is not subject to government intervention; and  $\sum_{i \in I_1} \log \left[ \frac{1}{\sqrt{2\pi\sigma^2}} \exp \left\{ -\frac{1}{2} \frac{(y_i - \beta X_i)^2}{\sigma^2} \right\} \right]$  is the contribution to the likelihood function of the cases in which a government expense is recorded.  $X$  is the vector of the nine predictors, as per equation (1). As in equation (1), we include the inverse Mills ratio but this time the selection variable is computed considering whether a bank is bailed out by the government or not.

## 6 Are bailouts driven by systemic importance and/or political links related to the type of bank ownership?

This section summarizes the results of our empirical analyses. We first estimate the conditional probability of bank distress using a probit model. We then focus on banks subject to distress to estimate the probability of receiving government assistance (versus the probability of resolution of bank distress through a private/market solution) using the multinomial logit model adjusting for possible selection bias using the inverse Mills ratio constructed based on the probit regression estimates. We then estimate the fiscal cost of bank bailouts using the Tobit model—again adjusting for possible selection bias. To project future contingent liabilities for 2022-23, the paper combines the estimation results from steps 1-3 with the most up-to-date data from the financial statements of banks.

---

<sup>s</sup> Note that we need at least one extra relevant regressand in equation 2 relative to equation 1 for identification.

### 6.1 What are the factors that can predict bank distress followed by resolution?

We begin by estimating the probability of bank distress using bank-level data. The results are summarized in Table 3. The CAMEL control estimates indicate that greater bank capitalization decreases the likelihood of distress. A higher interest margin predicts a greater likelihood of distress which could suggest that banks which take more risk and charge higher spreads or banks exposed to lower competition are less capable of coping with (larger) shocks. Return on assets is another factor predicting distress, indicating that more profitable banks may better manage their risks and better cope with shocks. The estimation results highlight the role of timely and credible supervision to mitigate the likelihood of bank distress. Macroeconomic variables do not seem to correlate with individual bank distress significantly (at the 5 percent level)—even though they may still be relevant for capturing the overall banking systemic risk.

**Table 3: Estimation of the probability of bank entering distress**

VARIABLES	(1) Distress
Regulatory Capital / Total Assets <sub>t-1</sub>	-0.014** (0.006)
Provisions / Gross Loans <sub>t-1</sub>	0.001 (0.004)
Interest Margin / Total Assets <sub>t-1</sub>	0.102*** (0.038)
Liquidity Ratio <sub>t-1</sub>	-0.000 (0.001)
Overhead Costs / Income <sub>t-1</sub>	-0.004 (0.003)
ROA <sub>t-1</sub>	-0.370*** (0.106)
Inflation rate	0.015 (0.012)
Real GDP growth	0.028* (0.014)
Constant	0.663** (0.330)
Observations	442
McFadden's adjusted R-Squared	0.142

Note: This table reports the estimation of equation 2. We consider all banks in the sample. Because data is not available for some of the independent variables, the total number of observations is 442 instead of 447. Standard errors clustered at the bank level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

### 6.2 Which types of troubled banks get bailed out more often?

Next, we distinguish two distinct approaches to resolving bank distress, namely, between government bailout support versus private/market solutions and we try to estimate the candidate

determinants of the past choices between the two approaches using the multinomial logit model. The estimation results of the multinomial logit applied to the bank-level data are summarized in Table 4. The coefficients express the relationship between each independent variable and the log odds of staying a normal course (being a healthy bank in a given period) versus private/market exit (Table 4, column 1) and versus government bailout using public money (Table 4, column 2).

**Table 4: Likelihood of market exit or M&A versus public bailout**

Variables	(1) Private exit	(2) Bail-out
Size <sub>t-1</sub>	0.017 (0.221)	1.393*** (0.359)
PEP	-1.716 (1.223)	-0.682 (0.669)
Foreign	-0.703 (0.568)	-16.369*** (0.704)
State Local	0.447 (0.834)	3.428*** (1.322)
Regulatory Capital / Total Assets <sub>t-1</sub>	0.025 (0.016)	-0.216*** (0.080)
Provisions / Gross Loans <sub>t-1</sub>	-0.014 (0.016)	-0.132* (0.069)
Interest Margin / Total Assets <sub>t-1</sub>	0.003 (0.039)	0.045 (0.168)
Liquidity Ratio <sub>t-1</sub>	-0.001 (0.002)	0.044** (0.018)
Overhead Costs / Income <sub>t-1</sub>	-0.004 (0.023)	0.028** (0.012)
Inverse Mills ratio	-4.540** (2.004)	-7.324 (6.215)
Inflation rate	0.048 (0.115)	-0.451*** (0.154)
Real GDP growth	-0.262** (0.106)	-0.480*** (0.159)
Constant	-0.416 (3.105)	-19.302*** (5.733)
Observations	442	442

Note: This table reports the estimation of equation 1. The normal course (i.e., no event) is the most frequent group and it is therefore chosen as the reference group. The inverse Mills ratio is obtained after estimating a probit model where the dependent variable is exiting or not exiting. We can reject the null hypothesis that the difference in coefficients is not systematic at the 1 percent level (Hausman specification test). Because data is not available for some of the independent variables, the total number of observations is 442 instead of 447. Standard errors clustered at the bank level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Panel A (column 1 of Table 4) suggests that banks owned by PEP families are associated with a 20-unit decrease in the relative log odds of being subject to a private/market exit compared to a period in which the distressed bank is financially sound (holding other variables constant). This implies that the probability of a bank exiting the market through a private/market solution relative to the likelihood of the bank being financially stable decreases for (PEP family-owned) banks—but the statistical significance of this variable decreases with the inclusion of the real GDP growth. Higher real GDP growth—the upturn of the business cycle—decreases the probability of bank distress. No other control variable appears statistically significant in explaining the likelihood of private/market solutions relative to the normal course of a bank staying healthy. The inverse of the Mills ratio is estimated significantly negative, suggesting that unobservable factors that increase the probability of bank bailout may also decrease the probability of private market exit.

Panel B (column 2 of Table 4) suggests that larger banks by assets are significantly more likely to be bailed out, conditioning on our other bank characteristics. This finding reflects the hypothesis that bank size is one major attribute of systemic importance and when a large bank is in trouble it can count on public support—but the form of public support is the crucial aspect of market discipline and fairness.

Controlling for size and financial soundness, foreign-owned banks (state or private) are significantly less likely to be bailed out using Kazakh taxpayer money than are domestic private banks—which may be bailed out quite frequently as a counterfactual (the base category). The same can be said about PEP-family controlled banks because their coefficient is not statistically different from zero—that of domestic private banks. As expected, domestic state banks are significantly more likely to be bailed out if needed and this finding illustrates the (implicit) contingent fiscal liability that state ownership of SOEs—both financial and non-financial ones—generates (Melecky, 2021).

Among the control variables, bank capitalization and provisioning for expected credit losses (only at the 10% level) decrease the relative log odds of being bailed out using public money. By contrast, banks with greater overhead costs (less efficient ones) and banks accumulating liquidity—a behavior often indicating problems with loan repayment before their actual recognition—are more likely to be bailed out. Simply, healthier and more competitive banks may not require public resources to recover when in trouble—and active and timely supervision of financial soundness plays a crucial role in safeguarding taxpayer money.

Macroeconomic development, both real GDP growth and inflation, appears significant in explaining bailout probability. The negative estimated coefficients on both variables suggest that higher real GDP growth (demand shock) and inflation (price shock) decrease the probability that troubled (distressed) banks will need to be bailed out by the state.

Overall estimates in Table 4 suggest that systemic importance is a relevant factor in explaining public bailouts, but state ownership also significantly increases the likelihood that public money will be deployed to stabilize troubled banks. By contrast, foreign ownership reduces the probability of using taxpayer money to stabilize individual troubled banks and thus the occurrence of fiscal contingent liabilities from bank bailouts. There is some indication that bank

ownership by PEP families may be a factor predicting that the bank if distressed is unlikely to exit the market through a private market solution or supervisory/resolution action, but the significance of this finding is not robust to the inclusion of real GDP growth in the regression.

### 6.3 *How large can the direct fiscal costs of bank bailouts be?*

This section analyzes the relationship between systemic importance, ownership, bailout structuring (financial tools), and public expenditure on bank bailouts using the Tobit model (Table 5). It is not necessarily obvious that the same determinants for the probability of bank distress, or government intervention, determine also the size of the cost of each intervention (Rosas, 2006). The estimation in Table 5 adjusts for possible selection bias using the inverse Mills ratio constructed based on the first-stage regression. The estimation results of the first-stage regression are reported in the Annex in Table A4.

Table 5 shows that, across estimation methods, we obtain consistent results in terms of the statistical significance of explanatory variables. The exception is the state ownership variable which becomes insignificant when running a linear panel regression for log-transformed (compressed scale) costs and including bank-level fixed effects. This may be expected as ownership does not vary greatly over time and bank fixed effects thus absorb most of the variation in these variables. The magnitude of coefficients varies between column 2 and column 3 in Table 5. This is also expected because total bail-out costs are a censored variable and panel regression models produce inconsistent estimates of the coefficients which may not approach the "true" population parameters while increasing the sample size.

The estimated coefficient on the *size* variable is positively and statistically significant, indicating that bigger banks are more costly to stabilize using public resources. The average marginal effect of size on the public expenditure for a bank bailout is 17.6 billion tenge (Table 5, Column 1). A one percent increase in the size of a troubled bank implies, on average, a 5.6 billion tenge of additional bailout expenditure. This result is in line with evidence for the U.S. banks following the GFC where systemically important banks were more likely to receive (large) government equity infusions (Bayazitova and Shivdasani, 2012). If the troubled bank is state-owned, the marginal cost increases significantly by an additional 22 billion tenge.

If the bailout instrument is debt financing of the distressed bank, the additional cost relative to an equity injection reaches on average about 53 billion tenge. But the costliest by far are bailouts using purchases of non-performing exposures (loans) in which cases the additional bailout expenditure compared with equity injections can reach, on average, 160 billion tenge.

The significance of the variables controlling for bank financial soundness—in particular, accumulated provisions and capitalization—suggests that banks with greater buffers against losses require much less public expenditure to stabilize (rehabilitate) and highlights the importance of independent and credible supervision of banks. The sign of the inverse of Mills ratio is estimated as negative, implying that unobservable factors that increase the probability of bank bailout may also decrease the cost of bailouts—however, the coefficient appears insignificant in the Tobit regressions.

**Table 5: Determinants of the total cost of government intervention**

Variables	(1) TOBIT MARGINS Total Cost	(2) TOBIT ln(Total Cost)	(3) PANEL REG ln(Total Cost)
Size <sub>t-1</sub>	14.981*** (5.771)	2.071*** (0.351)	0.173** (0.068)
PEP	-0.644 (4.491)	-0.073 (0.833)	-0.149 (0.156)
State Local	21.923*** (7.293)	5.475*** (0.756)	0.382 (0.432)
NPE Bail Out	159.371** (71.359)	7.722*** (1.128)	4.370*** (1.435)
Debt Bail Out	53.413*** (15.337)	7.098*** (0.883)	4.253*** (0.224)
Regulatory Capital / Total Assets <sub>t-1</sub>	-0.808 (0.997)	-0.230** (0.108)	0.021*** (0.005)
Provisions / Gross Loans <sub>t-1</sub>	-1.228** (0.521)	-0.289*** (0.059)	-0.005** (0.002)
Interest Margin / Total Assets <sub>t-1</sub>	-0.620 (0.659)	-0.154* (0.090)	0.006 (0.005)
Liquidity Ratio <sub>t-1</sub>	0.009 (0.171)	0.044* (0.026)	-0.001*** (0.000)
Overhead Costs / Income <sub>t-1</sub>	0.051 (0.066)	0.009 (0.015)	0.002** (0.001)
Inverse Mills ratio	-40.267 (24.938)	-6.148 (6.537)	-0.652*** (0.148)
Inflation rate	0.490 (0.382)	-0.105 (0.064)	-5.306** (2.180)
Real GDP growth	-1.286 (1.593)	-0.336 (0.289)	1.018** (0.418)
Observations	442	442	442
Bank FE	No	No	Yes
Time FE	No	No	Yes

Note: This table reports the estimation of equation 3. Column 1 reports the average partial effects obtained after a Tobit regression. Column 2 reports the coefficients after running a Tobit regression with the dependent variable computed as the natural logarithm of the total cost of government intervention. Column 3 reports the coefficients of a panel regression with the dependent variable computed as the natural logarithm of the total cost of government intervention, controlling for bank and time fixed effects. Because data is not available for some of the independent variables, the total number of observations is 442 instead of 447. Standard errors clustered at the bank level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

#### 6.4 *Projecting expected contingent fiscal liabilities from bank bailouts for 2022-23*

Next, we proceed with the projections of fiscal contingent liabilities from bank bailouts by combining the estimates of the likelihood of bailing out a troubled bank with the average cost of a bank bailout depending on the applied bailout instrument. Specifically, we predict “annual” fiscal contingent liabilities from bank bailouts using the financial statement data for each bank from October 2022 published by the National Bank of Kazakhstan (NBK). We follow these steps:

- a) Obtain the October 2022 bank-level financial statement data
- b) Compute the likelihood of a bailout for each bank using estimated equation (2)
- c) Compute the average bailout expenditure for each bank using estimated equation (3)
- d) Use the bank financial data and the predicted probabilities and expenditures obtained in the b), and c) steps. The expected annual contingent liability per bank is obtained by multiplying the predictions from (2) and (3) for each bank. We then sum across banks to get the projected total annual government contingent liability from bank bailouts.
- e) Simulate the cost of bailout intervention using a)-d) under a more conservative scenario taking a more adverse value of coefficients (the value of the coefficient plus/minus a standard deviation, depending on the sign of the coefficient), and report a range of the projected fiscal contingent liabilities.

Multiplying the probability of bailout and public expenditure in case of the bailout (in less and more conservative scenarios), the projected (forecasted based on in-sample estimates) total fiscal contingent liabilities from bank bailouts range between 2.5 trillion and 4.9 trillion tenge (US\$5.9 billion and US\$11.4 billion)<sup>t</sup> or 29 to 55 percent of planned tax revenues for 2022.<sup>u</sup> The projected average contingent liability from rescuing one troubled bank is 116 billion to 223 billion tenge. Between 6 to 8 banks can generate material fiscal contingent liabilities. The anonymized calculation and projected fiscal contingent liabilities per bank are reported in Table 6.

---

<sup>t</sup> We use the exchange rate of 431.8 tenge for one US dollar, which is the value observed by the end of 2021.

<sup>u</sup> The planned tax revenue for 2022 is 8.9 trillion tenge (<https://kapital.kz/economic/104431/kakiye-izmeneniya-planiruyut-v-vesti-v-byudzheta-na-2022-god.html>).

**Table 6: Projected annual fiscal contingent liabilities from bank bailouts**

Bank	Probability of bailout	Expected loss Equity (billion KZT) (lower range)	Expected loss Debt (billion KZT) (lower range)	Expected loss NPE (billion KZT) (lower range)	Expected loss Equity (billion KZT) (upper range)	Expected loss Debt (billion KZT) (upper range)	Expected loss NPE (billion KZT) (upper range)
1	19%	1,618	1,795	1,889	2,733	2,960	3,098
2	6%	526	585	616	874	950	996
3	3%	218	244	257	372	405	425
4	2%	142	157	165	241	261	273
5	0%	30	34	36	52	57	59
6	0%	23	26	28	41	45	48
7	0%	5	5	6	8	9	10
8	0%	1	1	1	2	2	2
9	0%	0	0	0	0	0	0
10	0%	0	0	0	0	0	0
11	0%	0	0	0	0	0	0
12	0%	0	0	0	0	0	0
13	0%	0	0	0	0	0	0
14	0%	0	0	0	0	0	0
15	0%	0	0	0	0	0	0
16	0%	0	0	0	0	0	0
17	0%	0	0	0	0	0	0
18	0%	0	0	0	0	0	0
19	0%	0	0	0	0	0	0
20	0%	0	0	0	0	0	0
21	0%	0	0	0	0	0	0
22	0%	0	0	0	0	0	0

Note: The probability of bail-out is the conditional probability of bailout given distress multiplied by the probability of distress obtained from the probit model estimation (equation 1). It is computed using estimated regression equation (2) for banks that were subject to government intervention while requiring that all independent variables used in the calculation are statistically significant at least at the 10 percent level. The lower-range estimated cost is obtained as the predicted value using estimated regression equation (3) while imposing that all independent variables used in the calculation are statistically significant at least at the 10 percent level. The upper-range estimated cost is obtained using all statistically significant predictors and considering the mean estimated coefficients plus one standard error. The lower-range expected loss is calculated as the product of bailout probability, and the estimated cost of bailout. The upper-range expected loss is calculated as the product of the bailout, and the upper-range estimated cost.

## 7 Conclusion

This paper analyzes the link between bank bailouts and fiscal contingent liabilities in Kazakhstan. It shows that government interventions intensified during times of stress—namely during 2009-10, 2013-15, and 2017-20. The most fiscally costly was the period 2017-20 during which the most expensive approaches to resolving troubled banks were used. These approaches bail out bank owners without any or little recourse of the taxpayers on future profits of the banks that went to the pockets of the shareholders/owners and created moral hazard incentives for repeated bailouts—which did happen later on. Despite the introduction of an improved bank resolution law and the establishment of a new financial stability committee (FSC) to safeguard the appropriate deployment of public funds in bank resolution in 2020, the year turned out to be the third costliest bailout year during 2009-2020. Moreover, the use of the Problem Loan Fund (PLF) to buy non-performing exposures (NPEs) from troubled banks at 100 percent of the nominal value failed the expectations of many market observers about the positive effects of the new law and the FSC establishment.

Our estimations suggest that, while systemic importance (proxied by bank size by assets) helps explain bank bailouts, the ownership by the state significantly increases the likelihood that public money will be deployed to stabilize such troubled banks. The likelihood of using public money to stabilize banks is inversely related to foreign ownership of banks. Our estimations confirm that bigger banks in distress are more costly to stabilize. We also find that if a troubled bank is state-owned, the bailout expenditure increases by 22 billion tenge on average. Moreover, if the applied bailout instrument is a debt financing of the distressed bank (as opposed to equity injection), the public expenditure on bailouts increases by 53 billion tenge. The costliest by far are bailouts using purchases of non-performing loans in which case the additional public expenditure hikes, on average, by 160 billion tenge—relative to using an equity injection. The significance of the variables controlling for bank financial soundness—in particular, capitalization, provisioning, and profitability—suggest that sounder banks are much less costly to stabilize (rehabilitate) and highlights the importance of independent and credible supervision of banks.

The analytical results have important policy implications. Using the bailout instruments allowed by the bank resolution law in non-market terms and a non-transparent manner creates moral hazard incentives on the side of banks and frustrations of the taxpayers and the public at large with how state resources are deployed when there are urgent alternative needs for development spending. Purchases of non-performing exposures (NPEs) of banks and stabilization of banks through debt instruments, if fairly priced (market to market or economic value), are permissible bank stabilization tools that reduce insolvency and systemic concerns as deemed socially desirable. However, it is the deviations from fair pricing that generate a direct impact on capital, unfair advantage, and negative redistribution costs for the taxpayers. The bank resolution law may need to be amended to limit the use of public funds to strictly systemically important banks on or close to market terms, with appropriate repercussions to the owners that mismanaged the bank and/or with an appropriate claim of the state on future profits of the bailed-out bank. The Financial Stability Committee may need to be de-politicized by reducing the representation of the government and increasing the share of representatives from technocratic independent agencies

(NBK and AFR) and possibly publish its decision on the use of public funds for the resolution of troubled systemically important banks (possibly with a needed time lag). The regulator could intensify fair and timely supervision including using forward-looking stress tests based on regular asset quality reviews (AQRs) to ascertain a credible baseline for the stress test. Policy makers can consider using greater capital surcharges for *unconditionally* systemically important banks and greater counter-cyclical capital buffers (capital surcharges) to more proactively and throughout the credit cycle limit the occurrence of unstable or failing *conditionally* systemically important banks. The fiscal authority and public debt managers need to regularly project fiscal contingent liabilities for the general government that can come from fiscal or quasi-fiscal structures and consolidate them properly at the general government level to ensure bank bailouts do not endanger public debt sustainability and avoid crowding out effects of bailouts on other essential developmental expenditures such as education, health, and infrastructure.

## References

- Acharya, V. V., Borchert, L., Jager, M., Steffen, S., 2021. Kicking the can down the road: Government interventions in the European banking sector. *Rev. Financ. Stud.* 34, 4090–4131. <https://doi.org/10.1093/rfs/hhab002>
- Bayazitova, D., Shivdasani, A., 2012. Assessing TARP. *Rev. Financ. Stud.* 25, 377–407. <https://doi.org/10.1093/rfs/hhr121>
- Berger, A.N., Roman, R.A., 2020. *TARP and other Bank Bailouts and Bail-Ins around the World*, 1st ed. Academic Press.
- Berger, A.N., Roman, R.A., 2017. Did Saving Wall Street Really Save Main Street? The Real Effects of TARP on Local Economic Conditions. *J. Financ. Quant. Anal.* 52, 1827–1867. <https://doi.org/10.1017/S002210901700062X>
- Bernard, B., Capponi, A., Stiglitz, J.E., 2022. Bail-ins and bail-outs: Incentives, connectivity, and systemic stability. *J. Polit. Econ.* <https://doi.org/10.1086/719758>
- Besanko, D., Kanatas, G., 1996. The regulation of bank capital: Do capital standards promote bank safety? *J. Financ. Intermediation* 5, 160–183. <https://doi.org/10.1006/jfin.1996.0009>
- Blau, B.M., Brough, T.J., Thomas, D.W., 2013. Corporate lobbying, political connections, and the bailout of banks. *J. Bank. Financ.* 37, 3007–3017. <https://doi.org/10.1016/j.jbankfin.2013.04.005>
- Brown, C.O., Dinc, I.S., 2005. The Politics of Bank Failures: Evidence from Emerging Markets. *Q. J. Econ.* 120, 1413–1444. <https://doi.org/10.1162/003355305775097506>
- Calderon, C., Schaeck, K., 2016. The Effects of Government Interventions in the Financial Sector on Banking Competition and the Evolution of Zombie Banks. *J. Financ. Quant. Anal.* 51, 1391–1436. <https://doi.org/10.1017/S0022109016000478>
- Caprio, G., Demirgüç-Kunt, A., Kane, E.J., 2010. The 2007 Meltdown in structured securitization: Searching for lessons, not scapegoats. *World Bank Res. Obs.* 25, 125–155. <https://doi.org/10.1093/wbro/lkp029>
- Claessens, S., Pazarbasioglu, C., Laeven, L., Dobler, M., Valencia, F., Nedelescu, O., Seal, K., 2011. Crisis management and resolution: Early lessons from the financial crisis (No. SDN/11/05), IMF Staff Discussion Note. Washington, DC, USA.
- Dam, L., Koetter, M., 2012. Bank bailouts and moral hazard: Evidence from Germany. *Rev. Financ. Stud.* 25, 2343–2380. <https://doi.org/10.1093/rfs/hhs056>
- Dell’Ariccia, G., Igan, D., Mauro, P., Moussawi, H., Tieman, A.F., Zdzienicka, A., 2022. The long shadow of public interventions in the financial sector. *IMF Econ. Rev.* <https://doi.org/10.1057/s41308-022-00158-8>
- Drehmann, M., Tarashev, N., 2011. Systemic importance: some simple indicators. *BIS Q. Rev.* 1.
- Duchin, R., Sosyura, D., 2014. Safer ratios, riskier portfolios: Banks' response to government aid. *J. financ. econ.* 113, 1–28. <https://doi.org/10.1016/J.JFINECO.2014.03.005>

- Farhi, E., Tirole, J., 2012. Collective moral hazard, maturity mismatch, and systemic bailouts. *Am. Econ. Rev.* <https://doi.org/10.1257/aer.102.1.60>
- Financial Stability Board, Bank for International Settlements, The International Monetary Fund, 2009. Guidance to assess the systemic importance of financial institutions, markets and instruments: Initial considerations.
- Freixas, X., Rochet, J.-C., 2013. Taming Systemically Important Financial Institutions. *J. Money, Credit Bank.* 45, 37–58. <https://doi.org/10.1111/jmcb.12036>
- Giannetti, M., Simonov, A., 2013. On the Real Effects of Bank Bailouts : Micro Evidence from Japan. *Am. Econ. J. Macroecon.* 5, 135–167.
- Gropp, R., Gruendl, C., Guettler, A., 2014. The impact of public guarantees on bank risk-taking: Evidence from a natural experiment. *Rev. Financ.* 18, 457–488. <https://doi.org/10.1093/rof/rft014>
- Grossman, E., Woll, C., 2014. Saving the banks: The political economy of bailouts. *Comp. Polit. Stud.* 47, 574–600. <https://doi.org/10.1177/0010414013488540>
- Hryckiewicz, A., 2014. What do we know about the impact of government interventions in the banking sector? An assessment of various bailout programs on bank behavior. *J. Bank. Financ.* 46, 246–265. <https://doi.org/10.1016/j.jbankfin.2014.05.009>
- Kane, E.J., Klingebiel, D., 2004. Alternatives to blanket guarantees for containing a systemic crisis. *J. Financ. Stab.* 1, 31–63. <https://doi.org/10.1016/j.jfs.2004.06.002>
- Laeven, L., Valencia, F., 2020. Systemic banking crises database II. *IMF Econ. Rev.* 68, 307–361. <https://doi.org/https://doi.org/10.1057/s41308-020-00107-3>
- Laeven, L., Valencia, F., 2013. The Real Effects of Financial Sector Interventions during Crises. *J. Money, Credit Bank.* 45, 147–177. <https://doi.org/10.1111/j.1538-4616.2012.00565.x>
- Mare, D.S., 2015. Contribution of macroeconomic factors to the prediction of small bank failures. *J. Int. Financ. Mark. Institutions Money* 39, 25–39. <https://doi.org/10.1016/j.intfin.2015.05.005>
- Melecky, M., 2021. Hidden debt: Solutions to avert the next financial crisis in South Asia. World Bank, Washington DC, USA.
- Metrick, A., Schmelzing, P., 2021. Banking-Crisis Interventions, 1257-2019 (No. 29281), NBER Working Paper. Cambridge, MA. <https://doi.org/10.3386/w29281>
- Philippon, T., Schnabl, P., 2013. Efficient Recapitalization. *J. Finance* 68, 1–42. <https://doi.org/10.1111/j.1540-6261.2012.01793.x>
- Rosas, G., 2006. Bagehot or Bailout? An Analysis of Government Responses to Banking Crises. *Am. J. Pol. Sci.* 50, 175–191. <https://doi.org/10.1111/j.1540-5907.2006.00177.x>
- Veronesi, P., Zingales, L., 2010. Paulson’s gift. *J. financ. econ.* 97, 339–368. <https://doi.org/10.1016/j.jfineco.2010.03.011>

## Annex

### Tables

**Table A1: Exhibit of government intervention through different entities**

**Panel A: Equity bailouts by Samruk-Kazyna, the national wealth fund**

<i>Step</i>	<i>Bank</i>	<i>Samruk-Kazyna (SK)</i>
0	Capital deficit identified for a systemic or otherwise important bank	
1		The terms for share capital injection are determined (price per share, share options)
2	Shareholders agree on the terms of share capital injection	
3		Payment for the shares, SK becomes minority / controlling shareholder
4	Capital adequacy improves, bank follows the agreed development plan	
5		Exit scenarios are developed and incorporated in the strategic plan of bank development
6	Bank facilitates the implementation of SK exit path	

Source: Authors elaboration.

Note: Starting from 2020 the Banking law requires that stakes of the existing shareholder are written-off in case of equity bailout procedure

**Panel B: Acquisition of non-performing exposures (loans, foreclosed assets) by the Problem Loan Fund**

<i>Step</i>	<i>Bank</i>	<i>Problem Loan Fund (PLF)</i>
0	Capital deficit identified for a systemic or otherwise important bank	
1		PLF accumulates resources: equity capital increase, bond issues
2	NPE portfolio size and transaction value are determined by capital /liquidity needs (not fair value)	
3		Transaction value may vary from balance sheet (net of provisions) to nominal value of the underlying assets
4	The transaction decreases total assets and NPE level	
5		Full transfer of risks and benefits to PLF. Immediate loss recognition (transaction value minus fair value based on independent appraisal)
6	Immediate profit recognition (transaction value minus balance sheet value), capital adequacy improves	

Source: Authors elaboration.

**Panel C: Quasi-bailouts through deposits at preferential terms by Samruk-Kazyna and the Problem Loan Fund**

<i>Step</i>	<i>Bank</i>	<i>PLF, SK</i>
0	Bank faces liquidity and solvency difficulties	
1		PLF (SK) supports the bank in negotiations with its creditors on the restructuring plan and proposes a deposit at preferential terms
2	Bank concludes negotiations with creditors about the restructuring deal	
3		Implementation of the restructuring plan, deposit is transferred to the bank
4	Proceeds from the deposit are used for priority liquidity needs	
5		Immediate loss recognition on the deposit due to below-market % rate
6	Capital adequacy improves with immediate profit recognition from below-market % rate <sup>[1]</sup>	

Source: Authors elaboration.

Note: On the date of the transaction the bank recognizes income from the discount to the nominal value of the liability. The amount is calculated based on discounting at market interest rate of the deposit cash flows. Detailed disclosures of the income recognition are usually included in the notes to audited financial statements

**Panel D: Bailouts through subordinated bond issues by the National Bank of Kazakhstan through Kazakhstan Sustainability Fund**

<i>Step</i>	<i>Bank</i>	<i>NBK, Kazakhstan Sustainability Fund (KFU)</i>
0	Capital deficit is identified for selected banks <sup>[1]</sup> e.g. in AQR and stress-test.	
1		Bailout program is proposed (defined maturity, % rate, covenants, other terms <sup>[2]</sup> ) to selected banks with capital deficit
2	Bank agrees to participate in the bailout program and submits the application	
3		Bank applications are considered and confirmed or rejected
4	Bank issues special subordinated bonds in line with the program terms	
5		KFU acquires the bond issue and recognizes in the portfolio at fair value through profit/ loss (FVPL), immediate loss is recognized
6	Capital adequacy improves: (1) Tier2 with subordinated debt added, (2) Tier1 with immediate profit recognition from below-market % rate <sup>[3]</sup>	

Source: Authors elaboration.

Note: <sup>[1]</sup> Small and mid-sized banks may also be selected to participate in the program, e.g. in 2017 - RBC, CentreCredit and in 2020 – Nurbank. <sup>[2]</sup> The program assumes that the capital raised is used on acquisitions of national sovereign debt, divestment possible only upon special consent. <sup>[3]</sup> On the date of the transaction the bank recognizes income from discount to the nominal value of the liability. The amount is calculated based on discounting at the market interest rate of the deposit cash flows. Detailed disclosures of the income recognition are included in the notes to the audited financial statements.

**Table A2: Financial disclosures and recovery estimates of bailout actions****Panel A. Summary results of bailout actions**

Survived bank	Year	Troubled bank	Bailout type	Bailout agent	Bailout payments	Net cost, NPV as of 2020 @10%	Present value of expenses	Present value of recovery	Recovery rate
<b>Halyk total</b>					3,198	-4,184	-5,088	903	18%
Halyk	2009	Halyk	Equity	Samruk-Kazyna	60	-1	-184	183	100%
Halyk	2009	BTA	Equity	Samruk-Kazyna	212	-381	-660	278	42%
Halyk	2009	Qazcom	Equity	Samruk-Kazyna	36	-40	-109	69	64%
Halyk	2015	Qazcom	Deposit	PLF	250	-329	-424	95	22%
Halyk	2017	BTA	NPE	PLF	2,640	-3,434	-3,711	277	7%
<b>Jysan total</b>					1,503	-1,508	-1,802	294	16%
Jysan	2013	ATF	NPE	PLF	0.2	n.a.	n.a.	n.a.	n.a.
Jysan	2017	ATF	S.Bonds	NBK	100	-106	-136	29	22%
Jysan	2017	Tsesna	S.Bonds	NBK	100	-61	-135	74	55%
Jysan	2018	Tsesna	NPE	PLF	450	-516	-558	42	7%
Jysan	2019	Tsesna	NPE	PLF	604	-618	-723	105	15%
Jysan	2020	ATF	NPE	PLF	174	-148	-174	26	15%
Jysan	2020	ATF	S.Bonds	NBK	75	-58	-75	17	23%
<b>Forte total</b>					268	-179	-529	350	66%
Forte	2009	Alliance	Equity	Samruk-Kazyna	24	-64	-75	11	15%
Forte	2010	Temir	Equity	Samruk-Kazyna	24	30	-61	91	149%
Forte	2014	Alliance	Deposit	Samruk-Kazyna	220	-145	-394	248	63%
<b>Other banks</b>					601	-396	-789	394	50%
RBK	2017	RBK	S.Bonds	NBK	244	-149	-328	179	55%
Eurasian	2017	Eurasian	S.Bonds	NBK	150	-92	-203	111	55%
CenterCredit	2017	CenterCredit	S.Bonds	NBK	60	-37	-81	44	55%
Liquidated	2018	Astana	NPE	PLF	100	-95	-127	33	26%
Nurbank	2020	Nurbank	S.Bonds	NBK	47	-23	-50	27	55%
<b>All banks</b>					<b>5,570</b>	<b>-6,267</b>	<b>-8,209</b>	<b>1,942</b>	<b>24%</b>
<b>Grouped by bailout type</b>									
Equity					356	-456	-1,088	633	58%
NPE					3,968	-4,811	-5,294	483	9%
S.Bonds					776	-526	-1,008	482	48%
Deposit					470	-474	-818	343	42%
<b>Grouped by bailout agent</b>									
Samruk-Kazyna					516	-600	-1,298	698	54%
PLF					4,278	-5,141	-5,902	761	13%
NBK					776	-526	-1,008	482	48%

## Panel B: Equity bailouts by Samruk-Kazyna

Bank	Capital injection, billion KZT	Date	Acquired stake	IRR, %	Comments on divestments
BTA	212	Feb. 2009	81.5% incl. bail-in restructuring <sup>[1]</sup> in 2010	-58%	to Qazkom in Feb.2014
Alliance	24	Feb. 2009	67.0% incl. bail-in restructuring <sup>[1]</sup> in 2010	20%	to Forte bank in two transactions: Dec 2014, Feb 2015
Halyk	27	Mar. 2009	19.9% stake	41%	to Almex Group and Halyk bank in Mar. 2011
Halyk	33	Mar. 2009	preferred shares: 53.6% stake	8%	to Halyk bank in three transactions: May 2012, Jul. 2012, Apr. 2014
Qazkom	36	May 2009	21.2% stake	1%	(1) 11% stake to Qazkom bank for 38 billion tenge in Sep. 2014, (2) 11% stake to Halyk bank for 1 tenge in Jul. 2017
Temir	24	Dec. 2010	79.9% stake	-28%	to Forte bank in May 2014
Total	356			-3%	

Note: <sup>[1]</sup> Bail-in restructuring resulted in conversion of some of the creditors into shareholders that affected the stakes of the capital injection.

## Panel C: Bank classification as State Local based on controlling stake

Bank	Stake received in ordinary (preferred) shares	State agency responsible	Period	Bank classification
BTA	82%	Samruk-Kazyna	2009-2014	State local
Halyk	20% (54%)	Samruk-Kazyna	2009-2011	Private local
Alliance	67%	Samruk-Kazyna	2009-2014	State local
Qazkom	21%	Samruk-Kazyna	2009-2017	Private local
Temir	80%	Samruk-Kazyna	2010-2014	State local
Otbasy	100%	Baiterek	2003-now	State local
Astana <sup>[1]</sup>	90% in management	Samruk-Kazyna	2010-2014	State local

Note: <sup>[1]</sup> 90% stake in Astana bank was transferred to Samruk-Kazyna in trust management in 2010.

**Panel D: Value losses of debt instruments from below-market interest rates**

	Bailout expense	Expense date	Coupon rate	Maturity (years)	Discounted cash flows on bailout date		Recovery rate	
					@10%	@15%	@10%	@15%
Sub. bonds	776				367	238	48%	31%
ATF <sup>[1]</sup>	100	18/10/2017	0.1%	20	22	14	22%	14%
Eurasian	150	18/10/2017	4.0%	15	82	54	55%	36%
Tsesna	100	26/10/2017	4.0%	15	55	36	55%	36%
RBK	244	22/11/2017	4.0%	15	133	88	55%	36%
CenterCredit	60	3/11/2017	4.0%	15	33	22	55%	36%
Nurbank	47	29/04/2020	4.0%	15	26	17	55%	36%
ATF	60	22/12/2020	0.1%	15	15	8	25%	13%
ATF	15	22/12/2020	0.1%	20	2	1	16%	7%
Deposits	470				195	133	42%	29%
Qazcom <sup>[2]</sup>	250	15/06/2015	0,1%	20	56	35	22%	14%
Alliance	220	19/11/2014	4,0%	10	139	98	63%	45%

Note: <sup>[1]</sup> Subordinated bond issue initial terms had 15 years maturity and 4% coupon rate. In 2020 it was restructured for 20 years maturity and 0.1% coupon rate. <sup>[2]</sup> Deposit initial terms had 10 years maturity and 5.5% interest rate. The terms were revised in June 2017 for 20 years maturity and 0.1% interest rate.

**Table A3: Summary statistics****Panel A: Descriptive statistics**

<b>Variable</b>	<b>N</b>	<b>mean</b>	<b>sd</b>	<b>min</b>	<b>max</b>
<i>Dependent</i>					
Distress	447	0.081	0.272	0	1
Resolution	230	0.239	0.590	0	2
Cost	447	12.460	132.324	0	2640
<i>Main independent by ownership</i>					
<i>Private local</i>					
Size	145	18.627	1.949	14.453	22.352
Regulatory Capital / Total Assets (%)	145	30.367	24.962	1.317	100.000
Provisions / Gross Loans (%)	145	7.592	8.682	0.091	75.750
Interest Margin / Total Assets (%)	145	0.364	2.039	-15.835	7.372
Liquidity Ratio (%)	145	52.003	95.847	1.768	639.385
Overhead Costs / Income (%)	145	16.396	30.169	0.068	214.604
<i>PEP</i>					
Size	82	20.369	1.310	16.294	23.067
Regulatory Capital / Total Assets (%)	82	27.533	21.198	9.067	100.000
Provisions / Gross Loans (%)	82	13.713	45.764	0.007	414.715
Interest Margin / Total Assets (%)	82	0.672	1.708	-6.996	4.845
Liquidity Ratio (%)	82	33.985	30.345	7.945	200.278
Overhead Costs / Income (%)	82	20.429	30.718	0.540	214.236
<i>Foreign</i>					
Size	181	18.107	1.732	14.376	22.016
Regulatory Capital / Total Assets (%)	181	57.753	33.759	12.042	100.000
Provisions / Gross Loans (%)	181	4.253	6.257	0.000	44.727
Interest Margin / Total Assets (%)	181	1.325	1.832	-3.282	10.314
Liquidity Ratio (%)	181	106.816	114.244	16.167	639.385
Overhead Costs / Income (%)	181	19.209	35.896	0.006	214.604
<i>State local</i>					
Size	39	19.712	1.353	16.352	21.724
Regulatory Capital / Total Assets (%)	39	26.457	28.181	-40.275	96.483
Provisions / Gross Loans (%)	39	29.463	39.658	0.118	138.579
Interest Margin / Total Assets (%)	39	-2.224	15.186	-52.372	37.577
Liquidity Ratio (%)	39	18.635	14.093	5.061	69.700
Overhead Costs / Income (%)	39	9.651	22.864	0.002	120.492

**Panel B: Correlation matrix**

Variable		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Distress	[1]								
Resolution	[2]	0.945*	1						
Cost	[3]	0.324*	0.398*	1					
Size	[4]	0.127*	0.203*	0.131*	1				
Regulatory Capital / Total Assets (%)	[5]	-0.136*	-0.155*	-0.065	-0.600*	1			
Provisions / Gross Loans (%)	[6]	0.285*	0.306*	0.130*	0.208*	-0.219*	1		
Interest Margin / Total Assets (%)	[7]	-0.314*	-0.331*	-0.181*	0.005	0.079*	-0.591*	1	
Liquidity Ratio (%)	[8]	-0.054	-0.057	-0.047	-0.537*	0.605*	-0.148*	0.026	1
Overhead Costs / Income (%)	[9]	0.078*	0.147*	0.056	0.166*	-0.022	0.105*	-0.074	-0.065

Source: Own elaboration using data from the audited financial statements of the banks

**Table A4: Estimation Results for First-Stage /Selection Probit Regression for Bailouts**

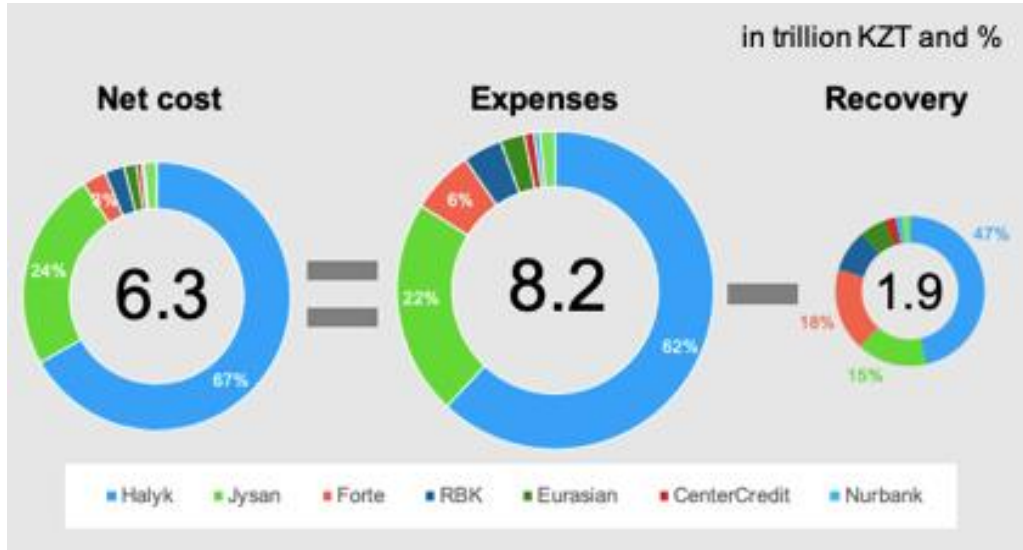
VARIABLES	(1) Bailout (1/0)
Regulatory Capital / Total Assets <sub>t-1</sub>	-0.035*** (0.005)
Provisions / Gross Loans <sub>t-1</sub>	0.029*** (0.006)
Interest Margin / Total Assets <sub>t-1</sub>	0.134** (0.068)
Liquidity Ratio <sub>t-1</sub>	0.003** (0.001)
Overhead Costs / Income <sub>t-1</sub>	-0.005 (0.004)
ROA <sub>t-1</sub>	-0.112*** (0.033)
Constant	0.338** (0.147)
Observations	441

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Figures

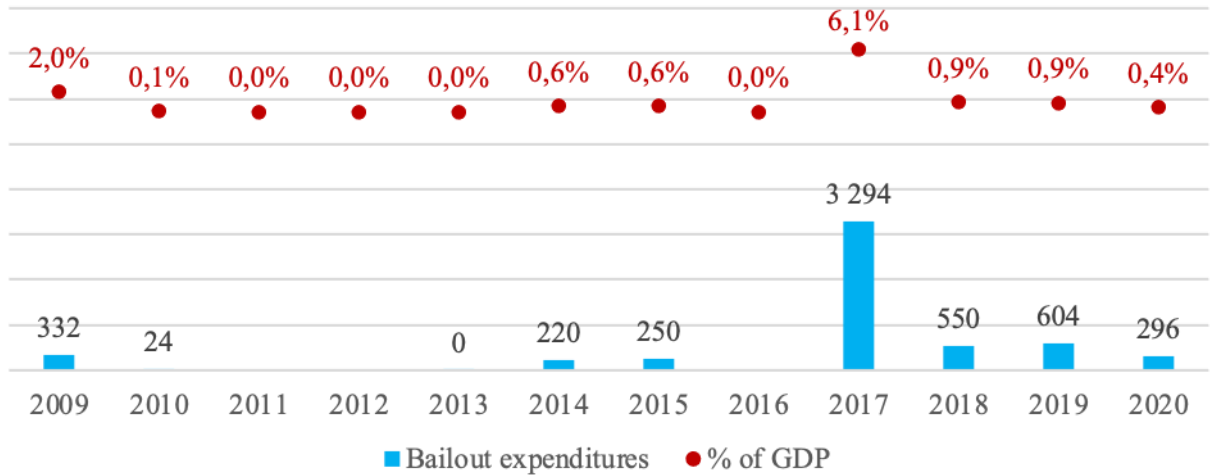
**Figure A1: Aggregate expenditures and net cost of bailouts during 2009-2020**

**Panel A: Total bailout net cost in terms of 2020 Present Value**



Note: The total expected recovery rate is 23.7%, including 10.2% realized recovery and 13.5% expected in the future. The net cost is the difference between all present value (discounted) cash outflows for bailout actions and present value received (realized) and expected (unrealized) cash inflows from bailout actions. These cash flows are discounted at 10% (estimate for sovereign debt interest rate) and as of December 31, 2020. Cash outflows: cash payments for bond issue acquisitions, equity injections, payments for loan portfolio acquisitions, payments for deposit placed with the banks. Cash inflows: receipts from sale of the equity stakes, expected receipts from deposit and bond repayments, interest payments for debt instruments, expected income from NPEs estimated based on fair value of purchased non-performing loans (according to independent appraisal).

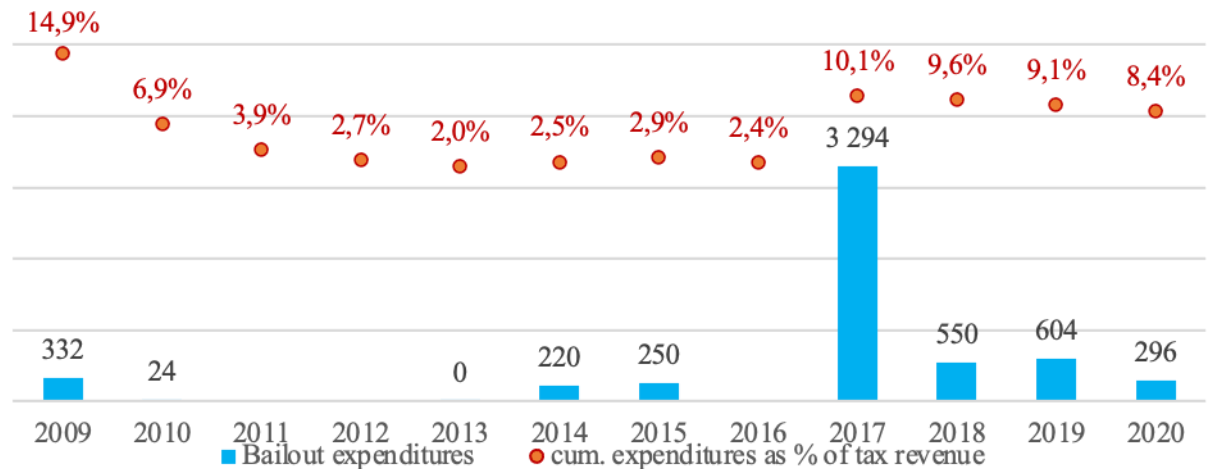
**Panel B: Bailout expenditures in billion KZT and as % of GDP of the respective years**



Source: Republic of Kazakhstan Bureau of National statistics, <https://stat.gov.kz/api/getFile/?docId=ESTAT101984> (GDP data).

Note: 11.5% is the sum of all bailout spending in terms of % of GDP during 2009-2020. Alternatively, the present value (PV) of the respective bailout expenses is 11.6% of GDP-2020 and PV of the post bailout income is 2.8% of GDP-2020 (1.2% realized plus 1.6% unrealized) The aggregate bailout net cost may increase from 8.9% of GDP-2020 to 10.4% of GDP-2020 if the expected recovery from bailout actions fails to realize, including 0.7% from NPE sales, 0.6% from subordinated bonds, 0.3% from deposits.

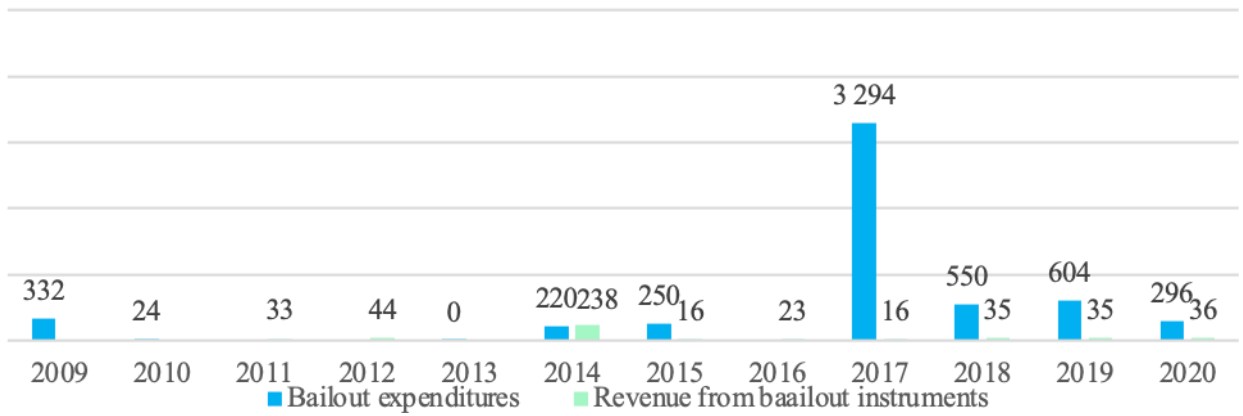
**Panel C: Bailout expenditures in billion KZT and as % of cumulative share in tax revenues**



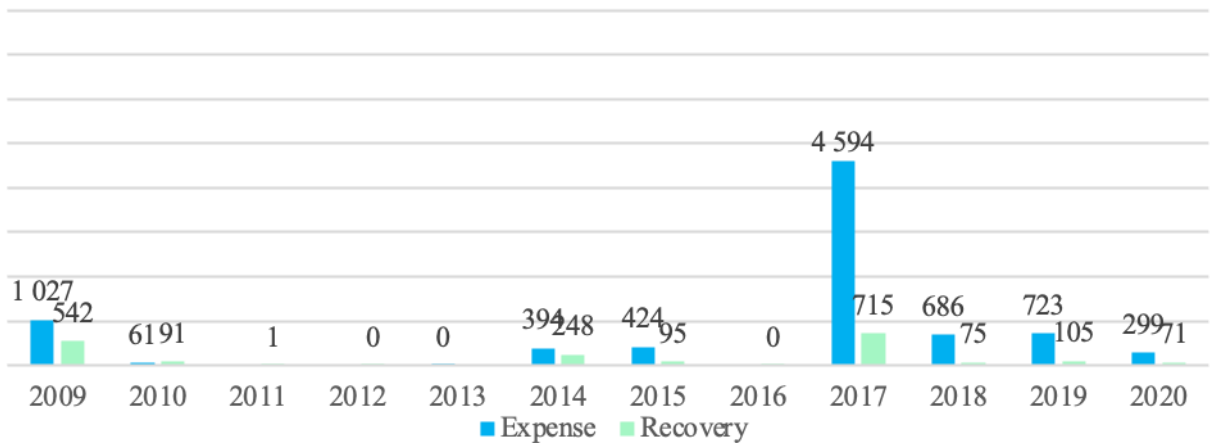
Note: The extraordinary high bailout spending in 2017 was equivalent to 48% of tax revenue in that year and caused a significant jump in the cumulative share. The cumulative received revenue from bailout instruments amounted to KZT 0.5 trillion or 0.7% in cumulative tax revenues. This revenue includes KZT 0.31 trillion from equity bailouts and KZT 0.16 trillion interest income from bonds and deposits.

Source for tax revenue: Ministry of Finance of Kazakhstan, <https://kgd.gov.kz/ru/content/fakticheskie-postupleniya-po-nalogam-i-platezham-v-gosudarstvennyy-byudzhet-za-2002-2018-gg>.

**Panel D: Bailout expenditures and received recovery from bailout instruments, in billion KZT**



**Panel E: Bailout expenses and post bailout respective recovery (received and expected) in terms of Present Value as of 2020, in billion KZT**



Note: The recovery is allocated to the years when the respective bailout expenses were incurred. The discount rate is set at 10 percent.

<https://kgd.gov.kz/ru/content/fakticheskie-postupleniya-po-nalogam-i-platezham-v-gosudarstvennyy-byudzhet-za-2002-2018-gg>