

STATE-OWNED BANKS AND THE COVID-19  
PANDEMIC: ASSESSING THEIR ROLE AND  
LENDING BEHAVIOR IN TURKISH PROVINCES

A Master's Thesis

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May 2024

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Bilkent University 2024



*To my family*



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The Graduate School of Economics and Social Sciences  
of  
İhsan Doğramacı Bilkent University

by

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In Partial Fulfillment of the Requirements for the Degree of  
MASTER OF SCIENCE IN BUSINESS ADMINISTRATION

THE DEPARTMENT OF  
MANAGEMENT  
İHSAN DOĞRAMACI BİLKENT UNIVERSITY  
ANKARA

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by Soo Youn Kim

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Science in Business Administration.

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## **ABSTRACT**

### **STATE-OWNED BANKS AND THE COVID-19 PANDEMIC: ASSESSING THEIR ROLE AND LENDING BEHAVIOR IN TURKISH PROVINCES**

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May 2024

This thesis investigates the role of state-owned banks in mitigating the impact of the COVID-19 pandemic in Turkish provinces. The research uses quarterly bank loan data to examine whether state-owned banks provided more credit than private banks in response to the crisis. The findings reveal that, following the first COVID-19 case in Türkiye, state-owned banks increased lending to provinces by an average of 17% compared to domestic private banks in the second quarter of 2020. Additionally, state-owned banks attracted more deposits during the same period. The study does not find evidence of politically targeted lending. While the pandemic coincided with a significant decrease in firm closures, this trend is unrelated to state-owned bank lending. State lending is associated with increased credit risk, as evidenced by higher non-performing loans post-pandemic. This research contributes to a better understanding of the role of state-owned banks during crises.

**Keywords:** State-owned Banks; COVID-19; Turkish Provinces; Bank Lending

## ÖZET

### DEVLET BANKALARI VE COVID-19: SALGINININ TÜRKİYE İLLERİNDEKİ ROLLERİNİN VE KREDİ VERME DAVRANIŞLARININ DEĞERLENDİRİLMESİ

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Mayıs 2024

Bu tez, kamu bankalarının Türkiye'deki illerde COVID-19 salgınının etkilerini hafifletmedeki rolünü araştırmaktadır. Araştırma, kamu bankalarının krize tepki olarak özel bankalardan daha fazla kredi sağlayıp sağlamadığını incelemek için üç aylık banka kredisi verilerini kullanmaktadır. Bulgular, Türkiye'deki ilk COVID-19 vakasının ardından, kamu bankalarının 2020'nin ikinci çeyreğinde illere verdikleri kredileri yerli özel bankalara kıyasla ortalama %17 oranında artırdığını ortaya koymaktadır. Ayrıca, kamu bankaları aynı dönemde daha fazla mevduat çekmiştir. Çalışmada siyasi hedefli kredilendirmeye dair bir kanıt bulunamamıştır. Salgın, firma kapanışlarında önemli bir düşüşe denk gelirken, bu eğilim kamu bankalarının kredilendirmesine bağlanmamaktadır. Devlet kredileri, pandemi sonrası daha yüksek takipteki kredilerin de gösterdiği gibi, artan kredi riskiyle ilişkilidir. Bu araştırma, krizler sırasında kamu bankalarının rolünün daha iyi anlaşılmasına katkıda bulunmaktadır.

Anahtar Kelimeler: Devlet Bankaları; COVID-19; Türk İlleri; Banka Kredileri

## ACKNOWLEDGEMENTS

As I conclude this chapter of my master's journey, I would like to express my sincere gratitude to the individuals who have played pivotal roles in making this achievement possible.

I owe an immense debt of gratitude to Prof. Suheyla Özyıldırım, my esteemed academic advisor. Her unwavering guidance and support have been the cornerstone of my academic growth. Prof. Özyıldırım's belief in my potential and capabilities has not only fueled my passion for research but also empowered me to pursue ambitious goals. Throughout my time at Bilkent, she has consistently made herself available, offering invaluable mentorship and guidance.

I am grateful to Prof. Başak Tanyeri Günsür and Prof. Hakan Berument for their valuable contributions as members of my thesis committee, providing insightful comments. Additionally, I wish to extend my heartfelt appreciation to Prof. Başak Tanyeri Günsür for her massive support throughout this journey. Under her mentorship, I learned the importance of perseverance in the face of challenges. She helped me recognize the value of my work and to strive for excellence in all pursuits.

I thank my colleagues and staff members at Bilkent University's Faculty of Business Administration. A special mention goes to Hajar Novinsalari, a wonderful friend who generously shared her office with me and kept me motivated throughout my final semester. I will deeply miss our lunch breaks and discussion. I am also grateful to

Selin Akduman, who broke through my thick bubble and made my time in the program much more enjoyable. Ekin Bayram has been a great friend and colleague since the beginning of my master's journey. I would also like to express my gratitude to Ms. Remin Tantoğlu for her invaluable guidance throughout the program.

I also want to give special thanks to my best friend, Konstantin Tsoi. I was lucky to have you by my side throughout my entire master's journey. Thank you for being considerate and supportive, giving me space when needed and offering help whenever necessary. I'm excited to see what comes next for us as we embark on this new chapter together.

Finally, I owe my deepest thanks to my family for their unwavering love and support. Thank you for believing in my decisions and always cheering me on unconditionally. Even though we were physically apart, your love carried me through this journey. I wouldn't have come this far without you.

## TABLE OF CONTENTS

|                                                                                    |      |
|------------------------------------------------------------------------------------|------|
| ABSTRACT.....                                                                      | i    |
| ÖZET .....                                                                         | ii   |
| ACKNOWLEDGEMENTS.....                                                              | iii  |
| LIST OF TABLES.....                                                                | vii  |
| LIST OF FIGURES .....                                                              | viii |
| CHAPTER 1: INTRODUCTION .....                                                      | 1    |
| CHAPTER 2: LITERATURE REVIEW .....                                                 | 5    |
| 2.1    Government intervention in financial markets .....                          | 5    |
| 2.2    The role of banks during crises.....                                        | 6    |
| 2.3    Banks and politics .....                                                    | 7    |
| 2.4    The role of banks during COVID-19.....                                      | 8    |
| CHAPTER 3: THE BACKGROUND OF TURKISH BANKING SECTOR.....                           | 11   |
| CHAPTER 4: HYPOTHESES DEVELOPMENT .....                                            | 15   |
| CHAPTER 5: DATA AND METHODOLOGY .....                                              | 19   |
| 5.1.    Data .....                                                                 | 19   |
| 5.2.    Methodology .....                                                          | 22   |
| CHAPTER 6: RESULTS.....                                                            | 26   |
| 6.1.    Empirical findings on provincial loan and deposit growth .....             | 26   |
| 6.2.    Empirical findings on political lending by SOBs.....                       | 28   |
| 6.3.    Empirical findings on the impact of SOB lending on firm turnover rate .... | 29   |
| 6.4.    Empirical findings on non-performing loans of SOBs post-pandemic .....     | 31   |
| 6.5.    Robustness.....                                                            | 32   |
| 6.6.    Societal Implications .....                                                | 34   |

|                             |    |
|-----------------------------|----|
| CHAPTER 7: CONCLUSION ..... | 37 |
| REFERENCES .....            | 39 |
| APPENDIX.....               | 43 |



## LIST OF TABLES

|                                                                                                 |    |
|-------------------------------------------------------------------------------------------------|----|
| Deposit banks in Türkiye .....                                                                  | 12 |
| Distribution of deposits and loans by province in 2020 .....                                    | 14 |
| Description of variables .....                                                                  | 20 |
| Summary statistics .....                                                                        | 21 |
| Correlation matrix .....                                                                        | 21 |
| Loan and deposit growth regressions.....                                                        | 27 |
| Loan growth and politics .....                                                                  | 29 |
| Firm turnover estimation results .....                                                          | 30 |
| State-owned banks and non-performing loans.....                                                 | 32 |
| <i>Annualized</i> loan and deposit growth estimation results.....                               | 35 |
| Loan and deposit growth estimation results without including Istanbul .....                     | 36 |
| Bank loans and politics with <i>annualized</i> loan and deposit growths .....                   | 43 |
| Bank loans and politics without including Istanbul .....                                        | 44 |
| Firm turnover estimation results with annualized loan and deposit growth .....                  | 45 |
| Firm turnover estimation results without including Istanbul .....                               | 46 |
| State-owned banks and non-performing loans with <i>annualized</i> loan and deposit growth ..... | 47 |
| State-owned banks and non-performing loans without including Istanbul .....                     | 48 |

## LIST OF FIGURES

|                                                   |    |
|---------------------------------------------------|----|
| Branch number per 100,000 by bank ownership ..... | 13 |
| Aggregate loan ratio by bank ownership .....      | 13 |
| Normalized total loans by bank ownership.....     | 22 |

# **CHAPTER 1**

## **INTRODUCTION**

This thesis investigates the role of state-owned banks (SOBs) in mitigating the impact of the COVID-19 pandemic in Turkish provinces. The research uses quarterly bank loan data to examine whether SOBs provided more credit than private banks in response to the global crisis. Understanding the impact of bank ownership during economic crises is crucial, especially in developing economies with underdeveloped equity markets where banks are the primary funding source.

In the early 1990s, the rise in financial globalization and open capital markets led to the privatization of many banks and the decline in the share of SOBs. In contrast, the presence of foreign banks showed a positive trend. However, these trends were halted or reversed after the Global Financial Crisis in 2008-2009. In developing and emerging economies, SOBs increased from 14% in 2015 to 15-16% over 2016-2020 (Panizza, 2023). This global crisis reignited debates on the importance of SOBs in financial markets.

There are three popular views on government participation in financial markets. First, the “social” view is on the optimistic side, claiming that SOBs help reduce market failures, expand access to financial services for small and medium-sized enterprises (SMEs) (Beck & Demirgüç-Kunt, 2006), and play a stabilizing role during financial crises (Bertay, Demirgüç-Kunt, & Huizinga, 2015; Bosshardt & Cerutti, 2020; Brei &

Schclarek, 2013; Önder & Özyildirim, 2013). Second, the “development” view states that government ownership is positively associated with financial and economic development (Körner & Schnabel, 2011; Önder & Özyildirim, 2010). Finally, the “political” view argues that SOBs make politically motivated investment decisions associated with poor credit allocation (Sapienza, 2004), inefficiency (Cornett, Guo, Khaksari, & Tehranian, 2010), and lower productivity (Bircan & Saka, 2021; La Porta, Lopez-De-Silanes, & Shleifer, 2002), slowing down the economy. The COVID-19 pandemic presents a unique opportunity to investigate how bank ownership influences lending during a global crisis.

Before the onset of the COVID-19 pandemic, the Turkish economy experienced a currency crisis triggered by tensions with the United States over the detention of an American pastor<sup>1</sup> on August 10, 2018. The Turkish lira crashed, losing 35% of its value against the US dollar that year. Consequently, the country faced negative growth and high inflation throughout the first two quarters of 2019. Despite these challenges, strong monetary and fiscal measures, coupled with increased credit supply from state-owned banks, facilitated a swift economic rebound by the end of the final quarter of 2019. However, this period of stability was short-lived, as another challenge was waiting around the corner.

On March 11, 2020, the first case of the COVID-19 pandemic was reported in Türkiye. The government responded to the pandemic by implementing multiple measures, including social distancing, flight restrictions, curfews, and closures of schools, stores, and entertainment venues. As the number of cases declined in May, the government lifted lockdown restrictions, and the economy reopened in June.

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<sup>1</sup> For more information, see: <https://www.aljazeera.com/economy/2018/8/17/turkey-lira-crisis-six-things-you-need-to-know>

However, the second wave of infections hit, bringing back the containment measures in September, which lasted until March 2021<sup>2</sup>.

Due to the lockdowns and restrictions, the economy was severely damaged – GDP contracted by 10% year-on-year in the second quarter of 2020. To stabilize the economy, the government introduced multiple fiscal policies, including loan guarantees to firms and households, loan service deferrals by state-owned banks, tax deferrals for businesses, equity injections to SOBs, and short-term working allowances. The quick response of the government led to a strong rebound in the economy in the third quarter of 2020, with a quarterly GDP growth of 6.4%. At the end of the year, the annual GDP was 1.8%.

This thesis aims to address (1) the “social” aspect of SOBs by investigating how the ownership of banks played a significant role in benefiting the economy during the COVID-19 pandemic and (2) the “political” aspect by examining whether provinces’ political affiliation influenced SOB’s lending behavior.

The analysis uses Turkish loan data at the quarterly province level from 2018Q1 to 2022Q4. The study focuses on 81 Turkish provinces. This geographical breakdown allows a thorough examination of banks’ potentially heterogeneous lending behavior across provinces. Moreover, the dataset’s quarterly frequency enables a more granular analysis of the COVID-19 pandemic, particularly during its peak in the second quarter of 2020.

The results of this thesis reveal that SOBs played a stabilizing role by lending on average 17% more than private banks during COVID-19. This significant increase in

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<sup>2</sup> Source: IMF Policy Tracker (<https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#T>)

credit supply might be partially due to SOBs' ability to attract more deposits as perceived safe institutions. However, findings do not provide evidence that SOBs engaged in political lending, favoring provinces aligned with the ruling party. Furthermore, this study investigates whether SOB loans aided businesses survive during the peak period of the pandemic (second quarter of 2020). While firm closures were lower during COVID-19, this trend was not directly linked to SOB lending. Moreover, although SOBs stabilized the economy through countercyclical lending, they experienced a significant increase in their non-performing loan ratios post-pandemic.

Overall, the findings suggest that SOBs provide countercyclical lending to mitigate market failures, but this may come at the expense of their future financial health. The significant increase in non-performing loans could impede SOBs' ability to assist the economy in the future. Therefore, policymakers should consider measures to support and incentivize continued lending by SOBs during periods of uncertainty.

Concurrently, strengthening regulatory oversight of SOB lending practices is crucial to mitigate potential risks and ensure the soundness of the banking sector.

In light of these findings, this thesis contributes to a better understanding of the role of SOBs in economic stability. By gaining insights into the role, policymakers can develop strategies for promoting financial resilience in the face of future challenges.

The remainder of the paper proceeds as follows. Chapter 2 provides a literature review. Chapter 3 presents background on the Turkish banking sector. Chapter 4 develops the hypotheses. Chapter 5 describes the data and empirical methodology. Chapter 6 discusses the results, and Chapter 7 concludes.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Government intervention in financial markets**

It is widely known that liquid and efficient financial intermediaries, such as banks or equity markets, are essential factors for economic growth (Beck & Levine, 2002; Levine & Zervos, 1998; Papaioannou, 2007). A strong banking system is crucial for promoting growth. Although the significance of a healthy banking system is unquestionable, whether the government ownership of banks influences economic development remains a critical discussion. La Porta et al. (2002) catalyzed more research on the role of state-owned banks by examining their impact on economic growth and financial stability. Their seminal paper reveals that government ownership of banks tends to be more prevalent in low-income countries with underdeveloped financial systems (consistent with Barth, Caprio, & Levine, 2013). They also find adverse effects associated with SOBs, including slower financial system development and hindrances to economic growth and productivity.

Conversely, some studies claim that state-owned banks can reduce market failures by supporting projects deemed unprofitable by private banks, thereby generating social value (Brei & Schclarek, 2015; Yeyati, Micco, Panizza, Detragiache, & Repetto, 2007). The debate gained further momentum in the wake of the Global Financial Crisis (GFC) of 2008-2009, during which economies suffered from severe credit

crunch. The literature on the role of SOBs in stabilizing the economy surged, highlighting their potential to provide countercyclical support. Unlike private or foreign banks, SOBs have an obligation to prevent market failures during economic downturns. Moreover, SOBs tend to be less affected by macroeconomic shocks due to their access to government funds (Ivashina & Scharfstein, 2010).

Empirical studies have emerged to assess SOBs' role across various contexts, including business cycles, economic crises, natural disasters, and electoral cycles. However, the findings are mixed, necessitating further research to contribute to the ongoing debate about government involvement in the financial sector. The following section summarizes previous empirical findings about banks in diverse settings.

## **2.2 The role of banks during crises**

### **2.2.1 Cross-country studies**

Different strands of studies exploring the role of banks exist in the literature. Like this study, several papers investigate whether banks behaved any differently during crises. Bosshardt and Cerutti (2020) investigate why public banks provided more loans during the GFC across 25 emerging economies. They find that public banks provided more loans to fulfill their social role of stabilizing the economy and not because they had stronger bank fundamentals or access to funds. Bertay et al. (2015) use a worldwide sample of 1633 banks from 111 countries for the period 1999-2010 to examine the lending behavior of state-owned banks over the business cycle. They provide evidence that SOBs are less procyclical than their private counterparts, lending more during financial crises. However, further research is necessary to determine if the substantial credit provision of SOBs during economic downturns is efficiently extended to bank-dependent firms or misallocated to serve political

objectives. My paper tries to address the opposing viewpoints on SOBs' "social" and "political" roles.

### **2.2.2 Country-specific studies**

There are also within-country studies investigating the banks' lending behavior during crises. Coleman and Feler (2015) conduct a province-level study examining 2601 localities in Brazil to study the effects of bank ownership on lending during the GFC. They discover that SOBs lent more than their private counterparts during and after the crisis; however, their loans were distributed inefficiently, politically motivated, and associated with lower productivity growth. Barone, De Blasio, and Mocetti (2018) investigate how the credit crunch during the GFC impacted Italian local economies. Focusing on the 110 Italian provinces over the 2008-2011 period, their analysis reveals that the reduction in credit supply adversely affected the real economy. Chava and Purnanandam (2011) exploit the Russian crisis of the Fall of 1998 to examine how an exogenous shock to the U.S. banking system affected firms. They find that bank-dependent firms suffered substantially more than firms that had access to the public-debt market.

### **2.3 Banks and politics**

This paper contributes to the literature on how government ownership of banks influences lending. Dinc (2005) conducts a cross-country analysis in major emerging markets over the period 1994-2000 and reveals that SOB lending is correlated with the electoral cycle. Cole (2009) and Carvalho (2014) also show that SOBs' lending during national elections was politically targeted in India and Brazil, respectively. Consistent results were found for Germany around local elections (Englmaier & Stowasser, 2017). These studies suggest that governments use SOBs to meet their political objectives.

Focusing on Türkiye, Önder and Özyildirim (2013) employ annual province-level loan data of SOBs and private banks for the period 1992-2010 to analyze the role of SOBs during crises and election years. They find that during times of crises (GFC and domestic crises) and in years with local elections, the proportion of SOBs' presence in the credit market is notably prominent compared to their presence in non-crisis and non-election periods. Thus, they find evidence that supports both the “social” and “political” views on SOBs.

Bircan and Saka (2021) further investigate the effects of political misalignment on bank lending. They conduct a regional study in Türkiye to explore how SOBs behave around local elections. They reveal that SOBs increased their lending significantly during the local elections, and provinces with incumbent mayors supporting the ruling party received more credit than unaligned provinces. Additionally, firms in the politically aligned provinces had more access to loans than their unaligned counterparts.

In the above papers, the analysis occurs around the elections, focusing on the “tactical redistribution” of targeted redistribution theory. This thesis expands the literature by focusing on how SOBs change their lending behavior during the economic crisis (COVID-19), aiming to analyze the “patronage” strategy of targeted redistribution theory. I will elaborate more on the hypotheses development in Chapter 4.

## **2.4 The role of banks during COVID-19**

This thesis aims to contribute to the growing literature on COVID-19 and corporate finance. Shabir, Jiang, Wang, and Işık (2023) conduct a cross-country analysis including 106 countries to study COVID-19's impact on the banking sector. Their study shows that the pandemic had significantly negative impacts on bank

performance and stability around the world. Colak and Öztekin (2020) examine 125 countries and find that the severity of the pandemic is associated with a significant decrease in loan growth globally. Berger and Demirgüç-Kunt (2021) provide a review of COVID-19 banking research and compare the COVID-19 crisis with the GFC in the context of the U.S. They state that compared to the GFC, banks had stronger balance sheets prior to the pandemic, enabling them to provide loans during economic slowdown.

There are several country-specific studies investigating the role of SOBs during the COVID-19 pandemic. Li (2022) compares the lending behaviors of SOBs and credit cooperatives during the pandemic in Germany and finds that SOBs extended significantly less credit than credit cooperatives. Furthermore, SOBs are associated with credit misallocation – favoring the politically aligned regions and not the regions that are more desperate for loans. Susanto, Octavio, Risfandy, and Wardani (2023) compare the lending of SOBs and private banks in Indonesia and document that both public and private banks lent less during COVID-19, although public banks decreased lending less than private ones. In the case of the U.S., there are studies investigating the effectiveness of the Paycheck Protection Program (PPP) in stabilizing the economy during the pandemic. PPP funds alleviated the shortfall of unequal loan access between large and small firms by extending credit to SMEs (Bartik et al., 2020; Chodorow-Reich, Darmouni, Luck, & Plosser 2022).

For the case of Türkiye, Akgunduz, Cilasun, Dursun-de Neef, Hacıhasanoglu, and Yarba (2023) investigate how negative shocks spread across industries via private banks. By using monthly bank-firm level loan data and exploiting the COVID-19 pandemic, they show that banks that had exposure to the affected industries responded to the pandemic by decreasing their loan supply to both affected and unaffected

industries. Their findings demonstrate how banks transmit external shocks to the rest of the economy. However, to the best of my knowledge, this is the first study to examine the role of SOBs during the COVID-19 pandemic at a province level in Türkiye.



## **CHAPTER 3**

### **THE BACKGROUND OF TURKISH BANKING SECTOR**

#### **DURING 2018-2022**

The Turkish banking system comprises three primary categories: deposit banks, development and investment banks, and participation banks. For the purpose of this study, we focus on deposit banks, which constitute a significant portion, holding 87% of total banking assets as of 2019<sup>3</sup>. Deposit banks are further classified based on ownership, including state-owned banks, private domestic banks (henceforth, private banks), and foreign banks. At the end of 2019, the share of total assets held by state-owned banks, private banks, and foreign banks were 34%, 31%, and 22%, respectively. Ever since the reform in 2001, state-owned banks have abided by the same standards and regulations as private banks, leading to a significant improvement in the institutional quality of the Turkish banking sector (Özkan-Günay, Günay, & Günay, 2013).

Table 1 presents some of the characteristics of Turkish deposit banks for years 2018, 2020, and 2022 (covering the sample period of this analysis). There are 3 state-owned banks, 8 private banks, and 21 foreign banks in Türkiye. These deposit banks are the primary source of funding in the economy and provide financial services through

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<sup>3</sup> I chose to report bank statistics from 2019 as it is the year preceding the COVID-19 pandemic.

branches across all 81 provinces in the country. Table 1 shows that state-owned banks have consistently increased their workforce over the sample period, while private banks have decreased their employee number. Foreign banks reduced their workforce in 2020 then gradually started increasing it again by 2022. Moreover, the return on assets (ROA) for all banks contracted during COVID-19 in 2020. However, by 2022, the ROA of private and foreign banks rebounded significantly compared to that of state-owned banks.

**Table 1:** Deposit banks in Türkiye.

|                                       | State-owned banks |        |        | Private banks |        |        | Foreign banks |        |        |
|---------------------------------------|-------------------|--------|--------|---------------|--------|--------|---------------|--------|--------|
|                                       | 2018              | 2020   | 2022   | 2018          | 2020   | 2022   | 2018          | 2020   | 2022   |
| <b>Panel A:</b><br><i>composition</i> |                   |        |        |               |        |        |               |        |        |
| Number of banks                       | 3                 | 3      | 3      | 8             | 8      | 8      | 21            | 21     | 21     |
| Number of branches                    | 3,718             | 3,701  | 3,745  | 3,963         | 3,644  | 3,495  | 2,718         | 2,529  | 2,347  |
| Number of employees                   | 60,195            | 61,592 | 62,226 | 72,025        | 67,523 | 67,377 | 54,478        | 52,155 | 53,084 |
| <b>Panel B:</b><br><i>performance</i> |                   |        |        |               |        |        |               |        |        |
| Return on assets                      | 1.3               | 0.8    | 1.8    | 1.6           | 1.3    | 5.7    | 1.7           | 1.2    | 4.6    |
| Equity/assets                         | 9.2               | 7.9    | 7.4    | 11.8          | 11.4   | 12.7   | 11.6          | 11.3   | 10.9   |
| Loans/total assets                    | 67.6              | 64.2   | 56.9   | 61.0          | 61.0   | 54.2   | 61            | 63.6   | 57.1   |

Source: Turkish Banking Association

Figure 1 illustrates the trend in the number of branches per 100,000 population beginning from 2007Q4. The number of branches has been showing a declining trend for private and foreign banks since 2015. Conversely, the number of branches for state-owned banks has been steadily increasing. Figure 2 shows that the market share of state-owned banks has steadily increased, exceeding 50% in 2018, with a noticeable surge during the pandemic. Conversely, the presence of private and foreign banks in the loan market has decreased in recent years.

**Figure 1** Branch number per 100,000 by bank ownership. The red line marks the onset of COVID-19.

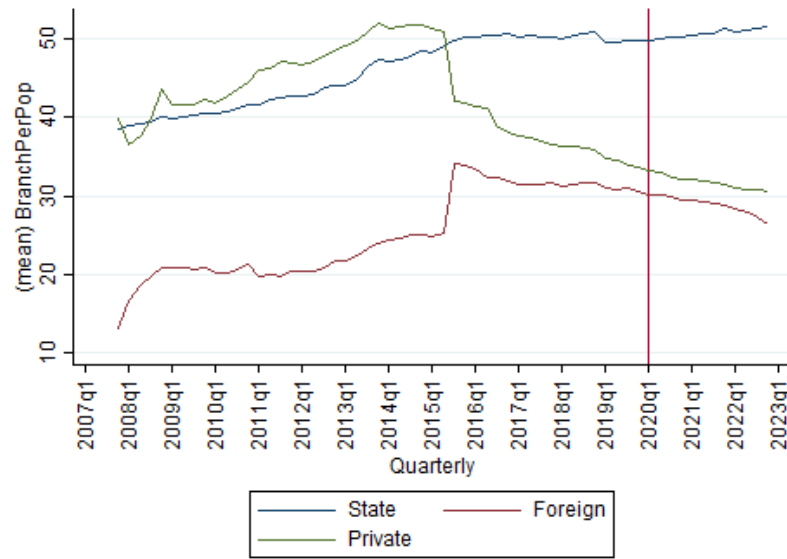
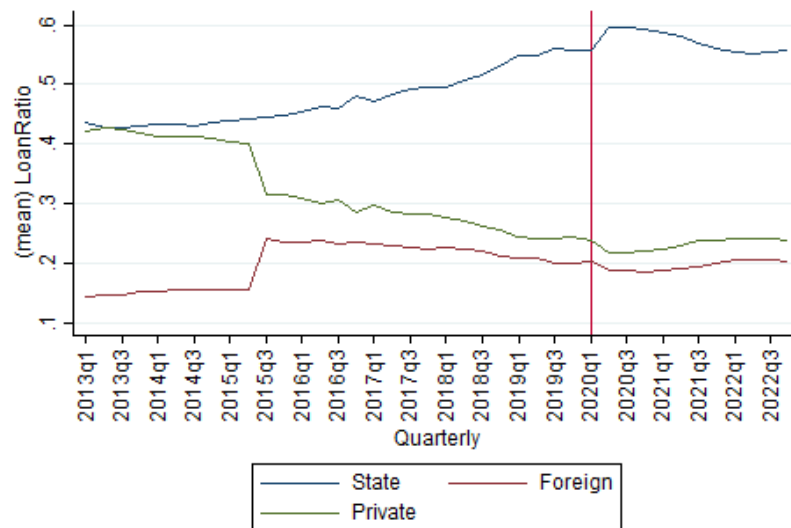


**Figure 2** Aggregate loan ratio by bank ownership. The red line marks the onset of COVID-19.



Among provinces, Istanbul stands out with a significant portion of loans and deposits compared to others. Table 2 illustrates this gap by showing that in 2020, Istanbul provided 46% of total deposits and 41% of total loans. Ankara accounted for 15% of total deposits and 13% of total loans. Istanbul’s population is also triple the population in Ankara. Given Istanbul’s considerable size, I conduct a robustness check by excluding it from my sample to mitigate the potential influence of this outlier province, as discussed in the Results chapter.

**Table 2:** Distribution of deposits and loans by province in 2020. The top ten provinces are listed in order of deposit and loan amount. Panel A reports the deposits and Panel B presents the loans. The loans exclude “non-performing loans” and “special provisions.”

| <b>Panel A:</b><br>Provinces | Deposits<br>(Million TRY) | Distribution<br>(%) |
|------------------------------|---------------------------|---------------------|
| Istanbul                     | 1,504,018                 | 46.3                |
| Ankara                       | 472,851                   | 14.6                |
| Izmir                        | 187,861                   | 5.8                 |
| Antalya                      | 91,054                    | 2.8                 |
| Bursa                        | 85,423                    | 2.6                 |
| Kocaeli (Izmit)              | 58,254                    | 1.8                 |
| Adana                        | 50,432                    | 1.6                 |
| Muğla                        | 42,342                    | 1.3                 |
| Içel (Mersin)                | 41,565                    | 1.3                 |
| Gaziantep                    | 40,212                    | 1.2                 |
| <b>Panel B:</b><br>Provinces | Loans<br>(Million TRY)    | Distribution<br>(%) |
| Istanbul                     | 1,330,750                 | 41.0                |
| Ankara                       | 424,251                   | 13.1                |
| Izmir                        | 182,213                   | 5.6                 |
| Antalya                      | 138,295                   | 4.3                 |
| Bursa                        | 91,036                    | 2.8                 |
| Gaziantep                    | 76,740                    | 2.4                 |
| Kocaeli (Izmit)              | 64,998                    | 2.0                 |
| Denizli                      | 62,322                    | 1.9                 |
| Konya                        | 60,353                    | 1.9                 |
| Adana                        | 55,454                    | 1.7                 |

Source: Turkish Banking Association

## **CHAPTER 4**

### **HYPOTHESES DEVELOPMENT**

Financial theory posits that the willingness of investors and financial intermediaries to extend capital depends on factors such as uncertainty and risk (Pástor & Veronesi, 2013). Banks tend to adopt a more cautious approach to lending during economic instability to minimize their risk exposure. Brei and Schclarek (2015) suggest that public banks might be more willing than private banks to engage in riskier lending practices to counteract the negative spillovers of financial shocks to the real economy in times of crisis. Several factors may explain this inclination of SOBs to expand credit during crises.

First, SOBs have a dual objective of maximizing profits and promoting economic stability (Brei & Schclarek, 2015; Micco & Panizza, 2006). This dual mandate may incentivize SOBs to maintain or even increase lending during crises to fulfill their societal role in stabilizing the economy. Second, SOBs may be more resilient to deposit withdrawals and bank runs during crises due to the state's ability to access additional funds for recapitalization (Bosshardt & Cerutti, 2020; Brei & Schclarek, 2015). Bosshardt and Cerutti (2020) provide evidence of a “flight to safety” behavior among depositors during periods of uncertainty by showing that public banks experienced significant growth in their deposits during the GFC. Susanto et al. (2023) further support this view, asserting that SOBs benefit from low refinancing costs and

implicit government guarantees, enabling them to maintain stable deposit levels during crises.

Furthermore, studies examining the lending behavior of foreign banks show that they provide credit during domestic crises in host countries but reduce their credit provision during global crises (Allen, Jackowicz, & Kowalewski, 2013). Based on the above arguments, I propose the first set of my hypotheses:

***H1a:*** *There is no significant difference in the amount of loans provided by state-owned banks compared to private counterparts across provinces during COVID-19.*

***H1b:*** *There is no significant difference in the level of deposits attracted by state-owned banks compared to private counterparts across provinces during COVID-19.*

Next, I examine the “political” view of SOBs. In political literature, the targeted redistribution theory consists of two distinct strategies. Firstly, “tactical redistribution” refers to securing electoral gains by targeting politically competitive regions around elections (Dixit & Londregan, 1996). In contrast, “patronage” involves rewarding supporters irrespective of the electoral period (Cox & McCubbins, 1986). Previous empirical research provides evidence of how SOBs engage in tactical redistribution strategies by increasing lending during elections (Bircan & Saka, 2021; Önder & Özyildirim, 2013). However, there is a notable lack of studies on government involvement in patronage strategies. Therefore, this paper aims to bridge this gap in the literature by examining SOBs’ lending behavior during crises. Specifically, I aim to identify whether provinces aligned with the ruling party receive preferential treatment in terms of higher credit provisions compared to unaligned provinces as a form of reward. Consequently, my second hypothesis is as follows:

**H2:** *There is no significant difference in the lending patterns of state-owned banks between politically aligned and unaligned provinces.*

Previous studies highlight the role of SOBs in mitigating market failures by extending credit to SMEs (Beck & Demirguc-Kunt, 2006; Pagano & Zechner, 2022). Especially during crises marked by heightened uncertainty, banks often impose stricter borrowing criteria toward SMEs compared to larger firms (Chodorow-Reich et al., 2022). Thus, government lending may serve to bridge the gap existing in the credit market. However, the credit expansion from SOBs might not be efficiently allocated, resulting in the survival of “zombie firms” (Caballero, Hoshi, Kashyap, 2008).

Sustaining these unprofitable enterprises could potentially dampen productivity, thereby negatively impacting the real economy. In Türkiye, where SMEs constitute 99.8% of registered firms, I predict that an increase in SOB lending will correspond to lower firm births and lower firm deaths across provinces. Therefore, my third hypothesis is as follows:

**H3:** *There is no significant association between state-owned bank lending and the firm turnover rate during COVID-19.*

Moreover, the rapid expansion of credit by SOBs during COVID-19 may pose challenges to bank profitability in the long run. Having priority to stabilize the economy, SOBs might lend to borrowers without a rigid screening process, lending to risky borrowers with higher chances of default (Bosshardt & Cerutti, 2020).

Furthermore, a surge in loan supply is often accompanied by increased loan losses in the future (Keeton, 1999). Therefore, SOB lending during COVID-19 may result in higher non-performing loans (NPL) when firms or consumers default on their loans.

Therefore, I postulate my last hypothesis:

**H4:** *There is no significant difference in the post-pandemic credit risk, as measured by the non-performing loan (NPL) ratio, between state-owned banks and private banks.*



## CHAPTER 5

### DATA AND METHODOLOGY

This section discusses the data and empirical strategy used to investigate the effects of bank ownership on the supply of credit and economic outcomes across provinces in Türkiye.

#### 5.1. Data

This study uses Turkish data at the quarterly province level for the analysis. The sample comprises 81 provinces across Türkiye with bank data of 3 state, 9 private, and 21 foreign banks between 2018Q1 and 2022Q4. The bank data, including loan, deposit, and non-performing loan (NPL), were provided by the Banking Regulation and Supervision Agency's (BRSA) FinTürk database. The database reports quarterly data by province, which is available from 2007Q4. Bank loan data excludes loan amounts extended by the banks to other banks and represents consumer and corporate lending. This granular quarterly data facilitates a more detailed analysis of banks' lending behavior during the peak of the COVID-19 pandemic.

Annual GDP and GDP per capita by province are retrieved from the Turkish Statistical Institute (TürkStat). Since my analysis is quarterly, I convert the annual GDP and GDP per capita to quarterly using the Denton's interpolation method.<sup>4</sup> Firm

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<sup>4</sup> Due to the unavailability of quarterly GDP data at the province level, I used the Denton method to interpolate the annual GDP and GDP per capita to quarterly frequency. I used quarterly provincial export data obtained from TürkStat as the indicator series, which contribute their pattern to the

turnover data is obtained from TOBB – the Union of Chambers and Commodity Exchanges of Türkiye. TOBB provides a monthly number of closed, established, and liquidated enterprises in Türkiye. However, liquidation data is not applicable for all firm types (e.g., sole proprietorships). Thus, I classify liquidated firms as closed enterprises. Additionally, I aggregate the firm turnover data into quarterly figures by averaging the number of firms over the respective periods.

**Table 3:** Description of variables.

| Variable name         | Variable descriptions                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------------|
| LoanGrowth (%)        | Percentage change of credit-to-nominal GDP of bank b in province p between quarter t and t-1         |
| DepositGrowth (%)     | Percentage change of deposit-to-nominal GDP of bank b in province p between quarter t and t-1        |
| L.DepositGrowth (%)   | Lagged percentage change of deposit-to-nominal GDP of bank b in province p between quarter t and t-1 |
| L.LoanGrowth (%)      | Lagged percentage change of credit-to-nominal GDP of bank b in province p between quarter t and t-1  |
| LoanGrowth_q (%)      | Percentage change of credit-to-nominal GDP of bank b in province p between quarter t and t-4         |
| DepositGrowth_q (%)   | Percentage change of deposit-to-nominal GDP of bank b in province p between quarter t and t-4        |
| L.DepositGrowth_q (%) | Lagged percentage change of deposit-to-nominal GDP of bank b in province p between quarter t and t-4 |
| L.LoanGrowth_q (%)    | Lagged percentage change of credit-to-nominal GDP of bank b in province p between quarter t and t-4  |
| L.NPL_Ratio           | Lagged non-performing loans (NPL) over total loans of bank b in province p in quarter t              |
| L.lnreal_quarterlyGDP | Lagged logarithm of real quarterly GDP by province                                                   |
| L.lnGDPpc_q_USD       | Lagged logarithm of quarterly GDP per capita by province                                             |
| state                 | Dummy for state banks                                                                                |
| foreign               | Dummy for foreign banks                                                                              |
| covid                 | Dummy for covid period, April-June 2020 (2020q2)                                                     |
| postcovid             | Dummy for post-covid period, starting from April 2020 (2020q2-)                                      |
| akp                   | Dummy for AK Party aligned provinces based on 2019 local elections in Türkiye                        |
| ln_established        | Logarithm of the quarterly average number of established firms                                       |
| ln_closed             | Logarithm of the quarterly average number of closed firms (includes liquidated firms)                |

interpolation. To prevent negative values, I took the logarithm of export data and employed STATA's Denton package, written by Baum & Hristakeva (2021), to derive quarterly GDP and GDP per capita at the province level.

My final data set comprises balanced panel data of 4,860 observations. Table 3 describes the variables, and Table 4 provides summary statistics. Table 5 presents the correlation matrix of the main variables used in this study.

**Table 4:** Summary statistics.

| <b>Panel A:</b> Summary statistics of bank variables by ownership. |      |        |         |        |         |         |
|--------------------------------------------------------------------|------|--------|---------|--------|---------|---------|
|                                                                    | Obs. | Mean   | Median  | Std.   | Min.    | Max.    |
| <b>Foreign</b>                                                     |      |        |         |        |         |         |
| LoanGrowth (%)                                                     | 1620 | -1.668 | -1.476  | 9.002  | -36.712 | 69.664  |
| LoanGrowth_q (%)                                                   | 1620 | -8.073 | -8.823  | 17.899 | -59.791 | 109.496 |
| DepositGrowth (%)                                                  | 1620 | .278   | .591    | 10.214 | -52.057 | 92.692  |
| DepositGrowth_q (%)                                                | 1620 | 1.004  | 1.581   | 20.639 | -50.938 | 194.937 |
| NPL Ratio                                                          | 1620 | .055   | .05     | .027   | .009    | .193    |
| <b>Private</b>                                                     |      |        |         |        |         |         |
| LoanGrowth (%)                                                     | 1620 | -2.021 | -1.964  | 8.25   | -36.375 | 45.702  |
| LoanGrowth_q (%)                                                   | 1620 | -9.32  | -10.109 | 16.981 | -55.917 | 82.8    |
| DepositGrowth (%)                                                  | 1620 | .458   | .539    | 10.331 | -51.046 | 81.418  |
| DepositGrowth_q (%)                                                | 1620 | -.589  | -.815   | 16.071 | -44.972 | 106.979 |
| NPL_Ratio                                                          | 1620 | .05    | .045    | .027   | .008    | .26     |
| <b>State</b>                                                       |      |        |         |        |         |         |
| LoanGrowth (%)                                                     | 1620 | -.43   | -.466   | 10.366 | -37.665 | 79.085  |
| LoanGrowth_q (%)                                                   | 1620 | -2.169 | .261    | 22.95  | -59.246 | 91.231  |
| DepositGrowth (%)                                                  | 1620 | 1.311  | 1.443   | 10.208 | -57.945 | 107.479 |
| DepositGrowth_q (%)                                                | 1620 | 3.721  | 4.442   | 20.44  | -67.791 | 81.363  |
| NPL_Ratio                                                          | 1620 | .024   | .023    | .011   | .005    | .068    |
| <b>Panel B:</b> Summary statistics of non-bank variables.          |      |        |         |        |         |         |
|                                                                    | Obs. | Mean   | Median  | Std.   | Min.    | Max.    |
| lnreal_quarterlyGDP                                                | 4860 | 14.661 | 14.446  | 1.104  | 12.515  | 18.968  |
| lnGDPpc_q_USD                                                      | 4860 | 7.437  | 7.423   | .352   | 6.532   | 8.433   |
| ln established                                                     | 4860 | 2.55   | 2.325   | 1.329  | -1.099  | 7.677   |
| ln closed                                                          | 4851 | 1.636  | 1.492   | 1.311  | -2.197  | 7.082   |

**Table 5:** Correlation matrix.

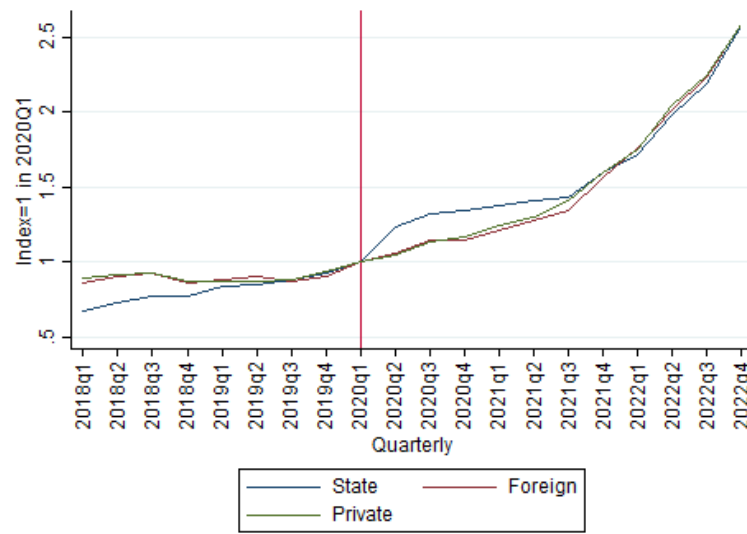
| Variables                 | (1)   | (2)   | (3)   | (4)   | (5)   | (6)  | (7)  | (8)  | (9)  |
|---------------------------|-------|-------|-------|-------|-------|------|------|------|------|
| (1) LoanGrowth            | 1.00  |       |       |       |       |      |      |      |      |
| (2) DepositGrowth         | 0.54  | 1.00  |       |       |       |      |      |      |      |
| (3) L.LoanGrowth          | 0.24  | 0.16  | 1.00  |       |       |      |      |      |      |
| (4) L.DepositGrowth       | 0.10  | -0.09 | 0.53  | 1.00  |       |      |      |      |      |
| (5) L.NPL_Ratio           | -0.01 | 0.03  | -0.02 | 0.05  | 1.00  |      |      |      |      |
| (6) L.lnreal_quarterlyGDP | -0.02 | -0.01 | -0.02 | -0.03 | -0.04 | 1.00 |      |      |      |
| (7) L.lnGDPpc_q_USD       | -0.00 | -0.00 | -0.08 | -0.07 | -0.20 | 0.52 | 1.00 |      |      |
| (8) ln_established        | 0.02  | -0.00 | -0.00 | -0.02 | 0.01  | 0.88 | 0.43 | 1.00 |      |
| (9) ln_closed             | -0.03 | -0.03 | -0.07 | -0.05 | -0.03 | 0.87 | 0.50 | 0.91 | 1.00 |

## 5.2. Methodology

### 5.2.1. Parallel trend assumption

This paper employs difference-in-differences (DiD) to estimate the effects of bank ownership on lending during the COVID-19 pandemic. DiD relies on the parallel trend assumption that in the absence of the shock (COVID-19), the state-owned, private, and foreign banks show similar lending patterns across provinces. Figure 3

**Figure 3** Normalized total loans by bank ownership. The red line marks the onset of COVID-19.



visually shows that this assumption is likely to hold. The graph plots the average volume of total loans by bank ownership. The loan series are normalized to equal to 1 on the onset of the COVID-19 pandemic (index value = 1 in 2020Q1). All three banks seem to have shown similar lending behavior before the shock, supporting the assumption of parallel trends.

### 5.2.2. Fixed effects regression

To assess the relationship between bank ownership and lending behavior during the pandemic, I employ two DiD techniques – the ordinary least squares (OLS) and the generalized method of moments (GMM). First, I employ fixed effects OLS regression with the following specification:

$$LoanGrowth_{b,p,t} = \beta(state_{b,p,t} \times covid_t) + \mu(foreign_{b,p,t} \times covid_t) + \gamma X_{b,p,t-1} + \theta_p + \lambda_t + \varepsilon_{b,p,t}, \quad (1)$$

where  $LoanGrowth_{b,p,t}$  is a percentage change of credit-to-nominal GDP of bank  $b$  in province  $p$  between quarter  $t$  and  $t-1$ ,  $state_{b,p,t}$  is an indicator for whether a bank is state-owned,  $foreign_{b,p,t}$  is an indicator for whether a bank is foreign-owned,  $covid_t$  is an indicator for the COVID-19 shock in 2020Q2, and  $X_{b,p,t-1}$  is a set of control variables including deposit growth, NPL ratio, real quarterly GDP, and GDP per capita. The control variables are lagged by one quarter to mitigate reverse causality bias.  $\theta_p$  is a province fixed effects included to absorb any time-invariant trends across provinces (e.g., level of development), and  $\lambda_t$  is a quarter fixed effects that controls for time-varying but province-invariant unobserved factors (e.g., regulatory changes in the Turkish banking industry). Standard errors are clustered by province.

The coefficient  $\beta$  on the interaction between the state and covid dummy represents the difference in lending between the SOBs and private banks during the pandemic versus the non-pandemic period. Following Bosshardt and Cerutti's (2020) approach, I include the interaction term with the foreign indicator to enable comparisons between SOBs and private banks.

To examine whether SOBs engaged in political lending to reward the loyal provinces, the following equation is estimated:

$$LoanGrowth_{b,p,t} = \beta(state_{b,p,t} \times covid_t \times akp_p) + \mu(foreign_{b,p,t} \times covid_t \times akp_p) + \gamma X_{b,p,t-1} + \theta_p + \lambda_t + \varepsilon_{b,p,t}, \quad (2)$$

where  $akp_p$  is an indicator for provinces with AK Party mayors and  $\beta$  captures whether SOBs lent differently to provinces with politically aligned incumbent mayors at the onset of COVID-19. For equation (2), the sample period begins in 2019Q2 and ends in 2022Q4. This is because the local election took place in 2019Q1, and this study aims to investigate whether the provinces that voted for the ruling party benefited during the crisis as a “reward” for their loyalty.

Furthermore, to explore whether SOB lending affected firm establishments or closures during the pandemic, I estimate the following equations:

$$\ln established_{p,t} = \beta(state_{b,p,t} \times covid_t) + \mu(foreign_{b,p,t} \times covid_t) + \gamma X_{b,p,t-1} + \theta_p + \lambda_t + \varepsilon_{b,p,t}, \quad (3)$$

$$\ln closed_{p,t} = \beta(state_{b,p,t} \times covid_t) + \mu(foreign_{b,p,t} \times covid_t) + \gamma X_{b,p,t-1} + \theta_p + \lambda_t + \varepsilon_{b,p,t}, \quad (4)$$

where  $\ln established_{b,p,t}$  denotes the logarithm of the average number of firms established in province  $p$  at quarter  $t$ , and  $\ln closed_{p,t}$  denotes the logarithm of the average number of firms closed in province  $p$  at quarter  $t$ .

Lastly, to study the effects of SOB lending on NPL ratio post-pandemic, I specify the following model:

$$NPL\ Ratio_{b,p,t} = \beta(state_{b,p,t} \times postcovid_t) + \mu(foreign_{b,p,t} \times postcovid_t) + \gamma X_{b,p,t-1} + \theta_p + \lambda_t + \varepsilon_{b,p,t}, \quad (5)$$

Where  $NPL\ Ratio_{b,p,t}$  is the NPL ratio for bank  $b$  in province  $p$  at quarter  $t$ , and  $postcovid_t$  is an indicator for the post COVID-19 period starting from 2020Q2.

### 5.2.3. General method of moments

OLS has limitations in addressing endogeneity, as it can lead to biased estimations due to omitted variables, serial correlation, measurement error, and simultaneity. To overcome this concern, I employ the system GMM estimation developed by Arellano and Bover (1995) and Blundell and Bond (1998). System GMM is recognized for its ability to correct endogeneity in potentially endogenous explanatory variables while also controlling for time-invariant but province-specific effects. Furthermore, GMM allows the inclusion of a lagged dependent variable in the specification to capture its persistence into the subsequent quarter. I estimate the following dynamic model:

$$Y_{b,p,t} = Y_{b,p,t-1} + \beta(state_{b,p,t} \times covid_t) + \mu(foreign_{b,p,t} \times covid_t) + \gamma X_{b,p,t-1} + \lambda_t + \varepsilon_{b,p,t}, \quad (6)$$

where  $Y_{b,p,t}$  is loan growth, deposit growth, NPL ratio, or the logarithm of average number of firms established or closed, consistent with the preceding OLS equations.  $Y_{b,p,t-1}$  denotes the lagged dependent variable. In the GMM estimation, the lagged dependent variable as well as the control variables including GDP, GDP per capita, NPL ratio, and deposit growth are all treated as endogenous<sup>5</sup>. The standard errors are clustered at the province level, and I include time dummies.

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<sup>5</sup> One may raise a concern that the control variables, including GDP, GDP per capita, and NPL ratio, are nonstationary, which could lead to spurious results. However, the panel data used in this study has a small T (time dimension) and a large N (number of cross-sectional units). A larger N compared to T can reduce some concerns related to nonstationarity.

## CHAPTER 6

### RESULTS

This section discusses the results from testing the hypotheses introduced in Chapter 4.

#### 6.1. Empirical findings on provincial loan and deposit growth

Table 6 presents the results for testing H1a and H1b by estimating equations (1) and (6) for loan and deposit growth of banks across 81 provinces for the sample period 2018Q1-2022Q4. The dependent variable of columns (1) and (2) is loan growth and deposit growth in columns (3) and (4). In columns (1) and (2), both OLS and GMM coefficient estimates suggest that SOBs increased lending significantly relative to private banks in 2020Q2, the quarter following the first COVID-19 case in Türkiye. According to OLS, SOBs provided 17% more credit to provinces during the pandemic than their private counterparts. Foreign banks did not differ significantly from private banks.

Additionally, the coefficient on the lagged dependent variable, *L.LoanGrowth*, is positive and statistically significant at 10% level. This observation indicates the persistence of loan growth into the subsequent quarter. The lagged real quarterly GDP also shows a positive and significant association with loan growth. This relationship is intuitive, as GDP is a proxy for economic growth of a province; thus, a higher GDP might correspond with increased demand for loans.

**Table 6:** Loan and deposit growth regressions. This table presents OLS and GMM results from estimating equations (1) and (6) for the sample period 2018Q1-2022Q4. Standard errors, clustered at the province level, are reported in parentheses. \* indicates statistical significance at the 10% level, \*\* indicates significance at the 5% level, and \*\*\* indicates significance at the 1% level.

| <i>Dependent variable:</i> | <i>Loan Growth</i>   |                      | <i>Deposit Growth</i> |                       |
|----------------------------|----------------------|----------------------|-----------------------|-----------------------|
|                            | GMM<br>(1)           | OLS<br>(2)           | GMM<br>(3)            | OLS<br>(4)            |
| state x covid              | 20.678***<br>(6.747) | 17.206***<br>(0.898) | 13.669**<br>(5.926)   | 7.678***<br>(1.183)   |
| foreign x covid            | 0.900<br>(8.560)     | 1.177<br>(1.127)     | -4.062<br>(8.431)     | -3.050***<br>(0.981)  |
| covid                      |                      | 0.445<br>(1.583)     |                       | 4.182***<br>(1.497)   |
| L.LoanGrowth               | 0.088*<br>(0.052)    |                      | 0.141***<br>(0.038)   | 0.005<br>(0.027)      |
| L.DepositGrowth            | -0.005<br>(0.015)    | -0.006<br>(0.017)    | -0.222***<br>(0.042)  |                       |
| L.NPL_Ratio                | 39.431<br>(29.779)   | -4.235<br>(8.595)    | 47.028<br>(33.066)    | 5.202<br>(12.251)     |
| L.lnreal_quarterlyGDP      | 68.152**<br>(26.471) | 22.357**<br>(9.848)  | 62.694**<br>(24.210)  | 27.512***<br>(10.025) |
| L.lnGDPpc_q_USD            | 23.960<br>(18.816)   | 3.148<br>(6.160)     | 19.733<br>(16.820)    | -1.239<br>(6.774)     |
| Observations               | 4617                 | 4617                 | 4617                  | 4617                  |
| Number of instruments      | 113                  |                      | 113                   |                       |
| AB AR(1) test - p value    | 0.000                |                      | 0.000                 |                       |
| AB AR(2) test - p value    | 0.197                |                      | 0.992                 |                       |
| Hansen test - p value      | 0.911                |                      | 0.877                 |                       |
| Adj. R-squared             |                      | 0.580                |                       | 0.400                 |
| Province FE                |                      | Yes                  |                       | Yes                   |
| Time FE                    |                      | Yes                  |                       | Yes                   |

The adjusted R-squared in the OLS regression shows that the model explains 58% of the variation in loan growth. For the GMM estimation, the Arellano-Bond tests for first and second order autocorrelation of the residuals (AR(1) and AR(2)) are used to assess serial correlation. Their p-values suggest the presence of first order serial correlation but not second order serial correlation of the residuals, as should be the case. The Hansen test evaluates the validity of instruments used in the GMM estimation, and a large p-value suggests that the instruments are appropriate. Overall,

the findings from both OLS and GMM estimations successfully reject H1a and support the “social” aspect of SOBs in reducing market failure during crises.

Next, to examine whether deposits influenced banks’ lending decisions during COVID-19, I replace the dependent variable in equation (1) with deposit growth and include lagged loan growth as a control variable. Columns (3) and (4) demonstrate that SOBs attracted significantly more deposits than private banks during the pandemic. This surge in deposits for SOBs may be explained by depositors’ “flight to safety” behavior, as mentioned by Bosshardt and Cerutti (2020). Since the government is behind SOBs, depositors might consider them as a safer institution to keep their money during uncertainty (Coleman & Feler, 2015). Hence, the results reject H1b and provide evidence that SOBs may be able to expand their credit due to having more access to funds during the crisis.

## **6.2. Empirical findings on political lending by SOBs**

To investigate whether governments use SOBs to meet their political objectives, I estimate equation (2), which includes a triple interaction term with the *akp* dummy. The *akp* dummy equals 1 for provinces where a mayor representing the AK Party won the local election in 2019. Since the local election occurred in 2019Q1, this analysis’s sample period starts from 2019Q2. Table 7 reports the results with loan growth as the dependent variable – both GMM and OLS present insignificant coefficient estimates for the triple interaction term. Provinces with AK Party mayors did not experience higher loan growth relative to non-aligned provinces during COVID-19. Hence, I fail to reject the null hypothesis.

Previous findings prove how SOBs engage in tactical redistribution strategies by lending more around elections (Bircan & Saka, 2021; Önder & Özyildirim, 2013). However, the results of this study show that SOBs are not involved in patronage

strategies that reward supporters for their loyalty. Although the findings do not rule out the political engagement of SOBs, they show that SOBs did not misallocate credit for political incentives during the COVID-19 pandemic in the short run.

**Table 7:** Loan growth and politics. This table presents results from estimating equation (2) using GMM and OLS for the sample period 2019q2-2022q4. Standard errors, clustered at the province level, are reported in parentheses. \* indicates statistical significance at the 10% level, \*\* indicates significance at the 5% level, and \*\*\* indicates significance at the 1% level.

| <i>Dependent variable:</i> | <i>Loan Growth</i>  |                     |
|----------------------------|---------------------|---------------------|
|                            | GMM<br>(1)          | OLS<br>(2)          |
| state x covid x akp        | 91.833<br>(60.961)  | 1.302<br>(1.749)    |
| foreign x covid x akp      | 84.288<br>(56.529)  | 2.201<br>(2.373)    |
| L.LoanGrowth               | 0.058<br>(0.048)    |                     |
| L.DepositGrowth            | 0.012<br>(0.019)    | 0.024<br>(0.017)    |
| L.NPL_Ratio                | 10.233<br>(31.602)  | -15.036<br>(10.785) |
| L.lnreal_quarterlyGDP      | 48.422*<br>(26.884) | 23.444*<br>(12.422) |
| L.lnGDPpc_q_USD            | 18.489<br>(19.143)  | 7.112<br>(7.281)    |
| Observations               | 3402                | 3402                |
| Number of instruments      | 202                 |                     |
| AB AR(1) test - p value    | 0.001               |                     |
| AB AR(2) test - p value    | 0.847               |                     |
| Hansen test - p value      | 1.000               |                     |
| Adj. R-squared             |                     | 0.645               |
| Province FE                |                     | Yes                 |
| Time FE                    |                     | Yes                 |

### 6.3. Empirical findings on the impact of SOB lending on firm turnover rate

Table 8 reports the results for estimating equations (3) and (4) to test H3. The dependent variables are the logarithms of the quarterly average number of firms established in columns (1) and (2), and the average number of firms closed in columns (3) and (4). Coefficients on the interaction term  $state \times covid$  for both dependent variables are negative but not statistically significant. This finding suggests

that SOBs and private banks had similar effects on the turnover rate of firms.

However, the coefficient on *covid* is negative and significant at 1% when the

dependent variable is *ln\_closed*. This result indicates that, on average, there were

**Table 8:** Firm turnover estimation results. This table presents results from estimating equations (3) and (4) using GMM and OLS for the sample period 2018q1-2022q4. Standard errors, clustered at the province level, are reported in parentheses. \* indicates statistical significance at the 10% level, \*\* indicates significance at the 5% level, and \*\*\* indicates significance at the 1% level.

| <i>Dependent variable:</i> | <i>ln_established</i> |                      | <i>ln_closed</i>     |                      |
|----------------------------|-----------------------|----------------------|----------------------|----------------------|
|                            | GMM<br>(1)            | OLS<br>(2)           | GMM<br>(3)           | OLS<br>(4)           |
| state x covid              | -0.085<br>(0.116)     | -0.002<br>(0.003)    | -0.146<br>(0.191)    | -0.003<br>(0.006)    |
| foreign x covid            | -0.031<br>(0.143)     | -0.004<br>(0.003)    | 0.031<br>(0.233)     | 0.000<br>(0.005)     |
| covid                      | -0.007<br>(0.095)     | -0.413***<br>(0.049) | -0.801***<br>(0.170) | -0.285***<br>(0.077) |
| L.ln_established           | 0.107*<br>(0.056)     |                      |                      |                      |
| L.ln_closed                |                       |                      | 0.041<br>(0.036)     |                      |
| L.LoanGrowth               | 0.002*<br>(0.001)     | 0.001*<br>(0.001)    | -0.000<br>(0.001)    | 0.000<br>(0.001)     |
| L.DepositGrowth            | -0.000<br>(0.000)     | -0.000<br>(0.000)    | 0.000<br>(0.001)     | -0.000<br>(0.001)    |
| L.NPL_Ratio                | -0.803<br>(0.492)     | -0.225<br>(0.284)    | -0.757<br>(0.782)    | -0.304<br>(0.520)    |
| L.lnreal_quarterlyGDP      | 0.941<br>(0.641)      | 0.753**<br>(0.370)   | 0.549<br>(0.801)     | 0.977***<br>(0.272)  |
| L.lnGDPpc_q_USD            | -0.185<br>(0.533)     | -0.363<br>(0.260)    | -0.844<br>(0.711)    | -0.862***<br>(0.276) |
| Observations               | 4617                  | 4617                 | 4599                 | 4608                 |
| Number of instruments      | 132                   |                      | 132                  |                      |
| AB AR(1) test - p value    | 0.000                 |                      | 0.000                |                      |
| AB AR(2) test - p value    | 0.134                 |                      | 0.151                |                      |
| Hansen test - p value      | 1.000                 |                      | 0.999                |                      |
| Adj. R-squared             |                       | 0.577                |                      | 0.484                |
| Province FE                |                       | Yes                  |                      | Yes                  |
| Time FE                    |                       | Yes                  |                      | Yes                  |

fewer firm closures across provinces during the COVID-19 period. While my findings do not establish a significant relationship between SOBs and firm turnover rates, there appears to be another factor at play that facilitates firm survival during the pandemic.

Potential explanations could involve non-bank-related government schemes to support businesses during challenging economic times.

The coefficient estimates of the control variables appear plausible. *L.LoanGrowth* has a significant and positive relationship with the number of newly established firms, suggesting that higher loan growth in the previous quarter leads to more openings for new companies. Furthermore, while the GDP from the previous quarter is positively associated with both the number of firm openings and closures, GDP per capita demonstrates a negative relationship with these variables. This interesting finding might imply that overall economic growth in provinces contributes to a higher firm turnover rate, with new firms opening and bad firms closing. However, an increase in individual wealth (GDP per capita) appears to enhance the survival rate for businesses.

#### **6.4. Empirical findings on non-performing loans of SOBs post-pandemic**

In the last set of estimations, I examine the NPL of SOBs. I postulate that SOBs might prioritize stabilizing the economy over their long-term profitability or the associated risks, leading them to continue extending loans even during the crisis.

Table 9 presents the results of equation (5), with the NPL ratio as the dependent variable and *postcovid* indicating the post-COVID-19 period beginning from 2020Q2. GMM and OLS estimations reveal a notable decline in NPL ratios following the pandemic. Conversely, SOBs exhibit a significant increase in their NPL ratios compared to private banks in the post-pandemic period. These results successfully reject the null hypothesis and suggest that SOBs face heightened credit risks after providing countercyclical funding at the onset of COVID-19 consistent with the findings of Bosshardt and Cerutti (2020). The rise in NPLs might jeopardize SOBs' ability to stabilize the economy in the future.

**Table 9:** State-owned banks and non-performing loans. This table presents results from estimating equation (5) using GMM and OLS for the sample period 2018q1-2022q4. Standard errors, clustered at the province level, are reported in parentheses. \* indicates statistical significance at the 10% level, \*\* indicates significance at the 5% level, and \*\*\* indicates significance at the 1% level.

| <i>Dependent variable:</i> | <i>NPL Ratio</i>     |                      |
|----------------------------|----------------------|----------------------|
|                            | GMM<br>(1)           | OLS<br>(2)           |
| state x postcovid          | 0.013***<br>(0.003)  | 0.007***<br>(0.001)  |
| foreign x postcovid        | -0.002<br>(0.003)    | -0.006***<br>(0.002) |
| postcovid                  | -0.013***<br>(0.003) | -0.012***<br>(0.003) |
| L.NPL Ratio                | 0.811***<br>(0.049)  |                      |
| L.Loan Growth              | -0.000<br>(0.000)    | -0.000***<br>(0.000) |
| L.Deposit Growth           | 0.000<br>(0.000)     | 0.000<br>(0.000)     |
| L.ln real quarterly GDP    | 0.007<br>(0.017)     | 0.002<br>(0.024)     |
| L.lnGDPpc_q_USD            | -0.016<br>(0.016)    | -0.019<br>(0.020)    |
| Observations               | 4617                 | 4617                 |
| Number of instruments      | 113                  |                      |
| AB AR(1) test - p value    | 0.002                |                      |
| AB AR(2) test - p value    | 0.197                |                      |
| Hansen test - p value      | 0.872                |                      |
| Adj. R-squared             |                      | 0.499                |
| Province FE                |                      | Yes                  |
| Time FE                    |                      | Yes                  |

## 6.5. Robustness

In this section, I conduct a robustness check by employing both OLS and GMM estimators, similar to my main analysis, but with two separate modifications. First, I replace the loan and deposit growth variables with alternative metrics – the annualized quarterly percentage change of loans and deposits denoted as LoanGrowth\_q and DepositGrowth\_q (refer to Table 3 for detailed variable descriptions). This alternative specification aims to control any seasonality inherent in quarterly data.

Table 10 shows the OLS and GMM results from estimating equations (1) and (6) with the annualized loan and deposit growth variables. Although the coefficient of the *state*  $\times$  *covid* term in column (2) reduced to 12%, its overall significance and implications remain consistent with the baseline results. Furthermore, other estimates also align with the main results, indicating robustness across different specifications.

Second, to further add robustness to the analysis, I run regressions (using the baseline loan and deposit growth variables) without including Istanbul in the sample. As discussed in Chapter 3, Istanbul is distinct in its size and role in the Turkish economy, accounting for over 40% of loans and deposits among provinces. Therefore, to examine whether the presence of Istanbul significantly affects my findings, I exclude the city from the sample to assess its potential influence as an outlier.

Table 11 presents the regression results from estimating equation (1) and (6) without including Istanbul. The coefficient of *state*  $\times$  *covid* in column (2) is positive and significant, aligning with the main findings. According to the OLS estimates, SOBs increased their lending by 17% more than private banks during the COVID-19 pandemic. Additionally, columns (3) and (4) show that SOBs attracted significantly more deposits than private banks during the crisis, aligning with the baseline results.

Tables displaying the results for the remaining equations for robustness can be found in the Appendix. Overall, the findings obtained using the annualized growth variables and excluding Istanbul from the sample remain consistent with the main findings, thereby solidifying the conclusions drawn in this thesis.

## **6.6. Societal Implications**

This thesis contributes to a better understanding of the role of SOBs in economic stability with important societal implications. This research highlights their crucial role in supporting societal resilience by revealing the countercyclical lending behavior of SOBs during economic uncertainty, particularly during the COVID-19 pandemic. The findings suggest that SOBs play a vital role in mitigating the impacts of the pandemic by providing increased credit to businesses and households across provinces. Furthermore, this study also brings attention to the potential risks to SOBs' financial health post-crisis period, suggesting stronger regulatory oversight to ensure the soundness of the banking sector.

**Table 10:** Annualized loan and deposit growth estimation results. This table presents OLS and GMM results from estimating equations (1) and (6) for the sample period 2018Q1-2022Q4. Standard errors, clustered at the province level, are reported in parentheses. \* indicates statistical significance at the 10% level, \*\* indicates significance at the 5% level, and \*\*\* indicates significance at the 1% level.

| <i>Dependent variable:</i>   | <i>Loan Growth<sub>q</sub></i> |                         | <i>Deposit Growth<sub>q</sub></i> |                      |
|------------------------------|--------------------------------|-------------------------|-----------------------------------|----------------------|
| Method:                      | GMM<br>(1)                     | OLS<br>(2)              | GMM<br>(3)                        | OLS<br>(4)           |
| state x covid                | 29.756***<br>(9.410)           | 12.172***<br>(1.473)    | 44.053***<br>(12.897)             | 10.123***<br>(1.493) |
| foreign x covid              | -1.038<br>(10.265)             | -3.162*<br>(1.709)      | 15.229<br>(13.538)                | 2.083<br>(1.763)     |
| covid                        | 11.279*<br>(6.068)             | 0.779<br>(3.259)        |                                   | 10.694***<br>(2.584) |
| L.LoanGrowth <sub>q</sub>    | 0.892***<br>(0.043)            |                         | 0.142***<br>(0.039)               | 0.232***<br>(0.037)  |
| L.DepositGrowth <sub>q</sub> | -0.043<br>(0.030)              | 0.157***<br>(0.045)     | 0.620***<br>(0.049)               |                      |
| L.NPL_Ratio                  | 88.353*<br>(44.924)            | -228.101***<br>(33.832) | 98.710**<br>(48.382)              | 36.480<br>(32.723)   |
| L.lnreal_quarterlyGDP        | 51.783*<br>(27.321)            | 19.430<br>(18.345)      | 62.553**<br>(30.791)              | -0.213<br>(18.420)   |
| L.lnGDPpc_q_USD              | 44.143*<br>(22.484)            | -39.887***<br>(12.984)  | 33.848<br>(22.210)                | -13.896<br>(14.193)  |
| Observations                 | 4617                           | 4617                    | 4617                              | 4617                 |
| Number of instruments        | 113.000                        |                         | 113.000                           |                      |
| AB AR(1) test - p value      | 0.000                          |                         | 0.000                             |                      |
| AB AR(2) test - p value      | 0.688                          |                         | 0.323                             |                      |
| Hansen test - p value        | 0.707                          |                         | 0.876                             |                      |
| Adj. R-squared               |                                | 0.677                   |                                   | 0.603                |
| Province FE                  |                                | Yes                     |                                   | Yes                  |
| Time FE                      |                                | Yes                     |                                   | Yes                  |

**Table 11:** Loan and deposit growth estimation results without including Istanbul. This table presents OLS and GMM results from estimating equations (1) and (6) for the sample period 2018Q1-2022Q4. Standard errors, clustered at the province level, are reported in parentheses. \* indicates statistical significance at the 10% level, \*\* indicates significance at the 5% level, and \*\*\* indicates significance at the 1% level.

| <i>Dependent variable:</i> | <i>Loan Growth</i>    |                      | <i>Deposit Growth</i> |                       |
|----------------------------|-----------------------|----------------------|-----------------------|-----------------------|
|                            | GMM                   | OLS                  | GMM                   | OLS                   |
| Method:                    | (1)                   | (2)                  | (3)                   | (4)                   |
| state x covid              | 20.619***<br>(6.972)  | 17.366***<br>(0.896) | 13.470**<br>(5.875)   | 7.287***<br>(1.130)   |
| foreign x covid            | 0.539<br>(8.676)      | 1.159<br>(1.141)     | -4.249<br>(8.218)     | -3.155***<br>(0.988)  |
| covid                      |                       | 0.262<br>(1.589)     |                       | 4.320***<br>(1.505)   |
| L.LoanGrowth               | 0.090*<br>(0.053)     |                      | 0.142***<br>(0.038)   | 0.005<br>(0.027)      |
| L.DepositGrowth            | -0.005<br>(0.015)     | -0.005<br>(0.017)    | -0.221***<br>(0.042)  |                       |
| L.NPL_Ratio                | 42.080<br>(30.729)    | -3.936<br>(8.674)    | 45.085<br>(34.777)    | 4.975<br>(12.311)     |
| L.lnreal_quarterlyGDP      | 72.447***<br>(26.633) | 23.444**<br>(9.919)  | 65.781***<br>(24.914) | 27.733***<br>(10.143) |
| L.lnGDPpc_q_USD            | 20.756<br>(19.071)    | 2.305<br>(6.142)     | 16.224<br>(17.359)    | -1.389<br>(6.836)     |
| Observations               | 4560                  | 4560                 | 4560                  | 4560                  |
| Number of instruments      | 113.000               |                      | 113.000               |                       |
| AB AR(1) test - p value    | 0.000                 |                      | 0.000                 |                       |
| AB AR(2) test - p value    | 0.208                 |                      | 1.000                 |                       |
| Hansen test - p value      | 0.927                 |                      | 0.895                 |                       |
| Adj. R-squared             |                       | 0.579                |                       | 0.398                 |
| Province FE                |                       | Yes                  |                       | Yes                   |
| Time FE                    |                       | Yes                  |                       | Yes                   |

## **CHAPTER 7**

### **CONCLUSION**

The COVID-19 pandemic offers a unique opportunity to examine the role of SOBs during crises. This thesis conducts a provincial study investigating whether the SOBs behaved differently from private and foreign banks by providing countercyclical lending to stabilize the economy in times of uncertainty.

My main result is that SOBs significantly increased lending during COVID-19, providing 17% more credit to provinces than private banks. SOBs also attracted significantly more deposits than private banks during the pandemic, potentially due to their perceived safety. These findings support SOBs' "social" aspect in reducing market failures and stabilizing the economy during crises.

Previous findings show that SOBs can be politically motivated in credit allocation, reducing productivity and inefficiency. The results of this study provide no evidence suggesting that SOBs engaged in political lending during the pandemic. Provinces with AK Party mayors did not experience higher loan growth than non-aligned provinces.

Moreover, the analysis reveals a significant reduction in firm closures across provinces during COVID-19; however, this result was not connected to SOB lending, suggesting the influence of other factors beyond bank loans. One potential explanation could be the presence of Credit Guarantee Funds (known as "Kredi

Garanti Fonu" or KGF) in Türkiye, which were established to support small and medium-sized enterprises (SMEs) by providing loan guarantees. Further research is warranted to explore how the operation of KGF may have influenced bank lending practices and the overall firm turnover rate during the pandemic.

In addition, although SOBs played a crucial role in stabilizing the economy by offering countercyclical lending, it came with a significant cost to their financial health. SOBs experienced a significant increase in their NPL ratios compared to private banks in the aftermath of the pandemic. The surge of NPLs poses a significant challenge to SOB's profitability, potentially hindering their ability to mitigate future crises effectively.

Overall, this paper provides valuable insights into the behavior of SOBs during the COVID-19 pandemic in Turkish provinces, contributing to the long-held discussion on the impact of government ownership of banks on the economy. Future research avenues could explore the consequences of the pandemic-induced rise in NPLs on the overall financial performance of SOBs. Additionally, investigating whether SOBs became more reliant on federally supplied funds in response to the crisis would be fruitful.

## REFERENCES

- Akgunduz, Y. E., Cilasun, S. M., Dursun-de Neef, Ö., Hacıhasanoglu, Y., & Yarba, İ. (2023). How do Banks Propagate Economic Shocks? *SSRN Electronic Journal*. <https://doi.org/10.2139/SSRN.3933697>
- Allen, F., Jackowicz, K., & Kowalewski, O. (2013). The Effects of Foreign and Government Ownership on Bank Lending Behavior During a Crisis in Central and Eastern Europe. *SSRN Electronic Journal*. <https://doi.org/10.2139/SSRN.2287081>
- Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, 68(1), 29–51. <https://ideas.repec.org/a/eee/econom/v68y1995i1p29-51.html>
- Barone, G., de Blasio, G., & Mocetti, S. (2018). The real effects of credit crunch in the great recession: Evidence from Italian provinces. *Regional Science and Urban Economics*, 70, 352–359. <https://doi.org/10.1016/J.REGSCIURBECO.2017.10.003>
- Barth, J. R., Caprio, G., & Levine, R. (2013). Bank regulation and supervision in 180 countries from 1999 to 2011. *Journal of Financial Economic Policy*, 5(2), 111–219. <https://doi.org/10.1108/17576381311329661>
- Bartik, A. W., Cullen, Z. B., Glaeser, E. L., Luca, M., Stanton, C. T., & Sunderam, A. (2020). The targeting and impact of paycheck protection program loans to small businesses. *National Bureau of Economic Research*, No. 27623.
- Baum, C., & Hristakeva, S. (2021). *DENTON: Stata module to interpolate a flow or stock series from low-frequency totals via proportional Denton method*. <https://EconPapers.repec.org/RePEc:boc:bocode:s422501>
- Beck, T., & Demirgüç-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, 30(11), 2931–2943. <https://doi.org/10.1016/J.JBANKFIN.2006.05.009>
- Beck, T., & Levine, R. (2002). Industry growth and capital allocation: does having a market-or bank-based system matter? *Journal of Financial Economics*, 64, 147–180.
- Berger, A. N., & Demirgüç-Kunt, A. (2021). Banking research in the time of COVID-19. *Journal of Financial Stability*, 57, 100939. <https://doi.org/10.1016/J.JFS.2021.100939>
- Bertay, A. C., Demirgüç-Kunt, A., & Huizinga, H. (2015). Bank ownership and credit over the business cycle: Is lending by state banks less procyclical? *Journal of*

- Banking & Finance*, 50, 326–339.  
<https://doi.org/10.1016/J.JBANKFIN.2014.03.012>
- Bircan, Ç., & Saka, O. (2021). Lending Cycles and Real Outcomes: Costs of Political Misalignment. *The Economic Journal*, 131(639), 2763–2796.  
<https://doi.org/10.1093/EJ/UEAB020>
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115–143.  
<https://ideas.repec.org/a/eee/econom/v87y1998i1p115-143.html>
- Bosshardt, J., & Cerutti, E. (2020). Why Did Public Banks Lend More During the Global Financial Crisis? *IMF Working Paper*, 20/84.
- Brei, M., & Schclarek, A. (2013). Public bank lending in times of crisis. *Journal of Financial Stability*, 9, 820–830. <https://doi.org/10.1016/j.jfs.2013.01.002>
- Brei, M., & Schclarek, A. (2015). A theoretical model of bank lending: Does ownership matter in times of crisis? *Journal of Banking & Finance*, 50, 298–307.  
<https://doi.org/https://doi.org/10.1016/j.jbankfin.2014.03.038>
- Caballero, R. J., Hoshi, T., & Kashyap, A. K. (2008). Zombie Lending and Depressed Restructuring in Japan. *American Economic Review*, 98(5), 1943–1977.  
<https://doi.org/10.1257/aer.98.5.1943>
- Carvalho, D. (2014). The Real Effects of Government-Owned Banks: Evidence from an Emerging Market. *The Journal of Finance*, 69(2), 577–609.  
<https://doi.org/https://doi.org/10.1111/jofi.12130>
- Chava, S., & Purnanandam, A. (2011). The effect of banking crisis on bank-dependent borrowers. *Journal of Financial Economics*, 99(1), 116–135.  
<https://doi.org/10.1016/J.JFINECO.2010.08.006>
- Chodorow-Reich, G., Darmouni, O., Luck, S., & Plosser, M. (2022). Bank liquidity provision across the firm size distribution. *Journal of Financial Economics*, 144(3), 908–932. <https://doi.org/10.1016/J.JFINECO.2021.06.035>
- Colak, G., & Öztekin, Ö. (2020). The Impact of COVID-19 Pandemic on Bank Lending Around the World. *SSRN Electronic Journal*.  
<https://doi.org/10.2139/SSRN.3712668>
- Cole, S. (2009). Fixing Market Failures or Fixing Elections? Agricultural Credit in India. *American Economic Journal: Applied Economics*, 1(1), 219–250.  
<http://www.jstor.org/stable/25760153>
- Coleman, N., & Feler, L. (2015). Bank ownership, lending, and local economic performance during the 2008–2009 financial crisis. *Journal of Monetary Economics*, 71, 50–66. <https://doi.org/10.1016/J.JMONECO.2014.11.001>
- Cornett, M. M., Guo, L., Khaksari, S., & Tehranian, H. (2010). The impact of state ownership on performance differences in privately-owned versus state-owned

- banks: An international comparison. *Journal of Financial Intermediation*, 19(1), 74–94. <https://doi.org/10.1016/J.JFI.2008.09.005>
- Cox, G. W., & McCubbins, M. D. (1986). Electoral Politics as a Redistributive Game. *The Journal of Politics*, 48(2), 370–389. <http://www.jstor.org/stable/2131098>
- Dixit, A., & Londregan, J. (1996). The Determinants of Success of Special Interests in Redistributive Politics. *The Journal of Politics*, 58(4), 1132–1155. <http://www.jstor.org/stable/2960152>
- Englmaier, F., & Stowasser, T. (2017). Electoral Cycles in Savings Bank Lending. *Journal of the European Economic Association*, 15(2), 296–354. <https://doi.org/10.1093/JEEA/JVW005>
- Ivashina, V., & Scharfstein, D. (2010). Bank lending during the financial crisis of 2008. *Journal of Financial Economics*, 97(3), 319–338. <https://doi.org/10.1016/J.JFINECO.2009.12.001>
- Keeton, W. R. (1999). Does faster loan growth lead to higher loan losses? *Economic Review-Federal Reserve Bank of Kansas City*, 84(2), 57.
- Körner, T., & Schnabel, I. (2011). Public ownership of banks and economic growth: The impact of country heterogeneity. *Economics of Transition*, 19(3), 407–441. <https://doi.org/10.1111/J.1468-0351.2011.00421.X>
- La Porta, R., Lopez-De-Silanes, F., & Shleifer, A. (2002). Government Ownership of Banks. *The Journal of Finance*, 57(1), 265–301. <https://doi.org/10.1111/1540-6261.00422>
- Levine, R., & Zervos, S. (1998). Stock Markets, Banks, and Economic Growth. *The American Economic Review*, 88(3), 537–558.
- Li, X. (2022). The Role of State-Owned Banks in Crises: Evidence from German Banks during COVID-19. *SSRN Electronic Journal*. <https://doi.org/10.2139/SSRN.4019602>
- Micco, A., & Panizza, U. (2006). Bank ownership and lending behavior. *Economics Letters*, 93(2), 248–254. <https://doi.org/10.1016/J.ECONLET.2006.05.009>
- Önder, Z., & Özyildirim, S. (2010). Banks, regional development disparity and growth: evidence from Turkey. *Cambridge Journal of Economics*, 34(6), 975–1000. <https://doi.org/10.1093/CJE/BEP077>
- Önder, Z., & Özyildirim, S. (2013). Role of bank credit on local growth: Do politics and crisis matter? *Journal of Financial Stability*, 9(1), 13–25. <https://doi.org/10.1016/J.JFS.2012.12.002>
- Özkan-Günay, E. N., Günay, Z. N., & Günay, G. (2013). The Impact of Regulatory Policies on Risk Taking and Scale Efficiency of Commercial Banks in an Emerging Banking Sector. *Emerging Markets Finance and Trade*, 49(sup5), 80–98. <https://doi.org/10.2753/REE1540-496X4905S505>

- Pagano, M., & Zechner, J. (2022). COVID-19 and corporate finance. *The Review of Corporate Finance Studies*, 11(4), 849–879.
- Panizza, U. (2023). Bank Ownership Around the World. *IHEID Working Papers*.
- Papaioannou, E. (2007). Finance and Growth: A Macroeconomic Assessment of the Evidence from a European Angle. *SSRN Electronic Journal*.  
<https://doi.org/10.2139/SSRN.1001457>
- Pástor, L., & Veronesi, P. (2013). Political uncertainty and risk premia. *Journal of Financial Economics*, 110(3), 520–545.  
<https://doi.org/10.1016/J.JFINECO.2013.08.007>
- Sapienza, P. (2004). The effects of government ownership on bank lending. *Journal of Financial Economics*, 72(2), 357–384.  
<https://doi.org/10.1016/J.JFINECO.2002.10.002>
- Shabir, M., Jiang, P., Wang, W., & Işık, Ö. (2023). COVID-19 pandemic impact on banking sector: A cross-country analysis. *Journal of Multinational Financial Management*, 67, 100784. <https://doi.org/10.1016/J.MULFIN.2023.100784>
- Susanto, A. A., Octavio, D. Q., Risfandy, T., & Wardani, D. T. K. (2023). Public ownership and local bank lending at the time of the Covid-19 pandemic: Evidence from Indonesia. *Pacific-Basin Finance Journal*, 80, 102072.  
<https://doi.org/10.1016/J.PACFIN.2023.102072>
- Yeyati, E. L., Micco, A., Panizza, U., Detragiache, E., & Repetto, A. (2007). A Reappraisal of State-Owned Banks. *Economía*, 7(2), 209–259.  
<http://www.jstor.org/stable/20060495>

## APPENDIX

**Table A1:** Bank loans and politics with annualized loan and deposit growths. This table presents results from estimating equation (2) using GMM and OLS for the sample period 2019q2-2022q4. Standard errors, clustered at the province level, are reported in parentheses. \* indicates statistical significance at the 10% level, \*\* indicates significance at the 5% level, and \*\*\* indicates significance at the 1% level.

| <i>Dependent variable:</i>   | <i>Loan Growth<sub>q</sub></i> |                         |
|------------------------------|--------------------------------|-------------------------|
|                              | GMM                            | OLS                     |
| state x covid x akp          | 136.739<br>(123.943)           | 1.402<br>(2.549)        |
| foreign x covid x akp        | 75.157<br>(178.917)            | -1.521<br>(2.992)       |
| L.LoanGrowth <sub>q</sub>    | 0.818***<br>(0.044)            |                         |
| L.DepositGrowth <sub>q</sub> | -0.041<br>(0.041)              | 0.223***<br>(0.046)     |
| L.NPL_Ratio                  | 29.524<br>(47.144)             | -276.778***<br>(40.561) |
| L.lnreal_quarterlyGDP        | 39.640<br>(27.005)             | 10.742<br>(22.568)      |
| L.lnGDPpc_q_USD              | 25.645<br>(22.561)             | -25.955*<br>(14.613)    |
| Observations                 | 3402                           | 3402                    |
| Number of instruments        | 202                            |                         |
| AB AR(1) test - p value      | 0.051                          |                         |
| AB AR(2) test - p value      | 0.722                          |                         |
| Hansen test - p value        | 1.000                          |                         |
| Adj. R-squared               |                                | 0.755                   |
| Province FE                  |                                | Yes                     |
| Time FE                      |                                | Yes                     |

**Table A2:** Bank loans and politics without including Istanbul. This table presents results from estimating equation (2) using GMM and OLS for the sample period 2019q2-2022q4. Standard errors, clustered at the province level, are reported in parentheses. \* indicates statistical significance at the 10% level, \*\* indicates significance at the 5% level, and \*\*\* indicates significance at the 1% level.

| <i>Dependent variable:</i> | <i>Loan Growth</i>  |                     |
|----------------------------|---------------------|---------------------|
|                            | GMM                 | OLS                 |
| state x covid x akp        | 86.014<br>(58.014)  | 1.016<br>(1.749)    |
| foreign x covid x akp      | 79.060<br>(55.542)  | 2.250<br>(2.387)    |
| L.LoanGrowth               | 0.056<br>(0.049)    |                     |
| L.DepositGrowth            | 0.013<br>(0.020)    | 0.025<br>(0.017)    |
| L.NPL_Ratio                | 14.186<br>(33.668)  | -14.840<br>(10.888) |
| L.lnreal_quarterlyGDP      | 52.310*<br>(27.530) | 24.702*<br>(12.575) |
| L.lnGDPpc_q_USD            | 15.596<br>(18.835)  | 6.257<br>(7.297)    |
| Observations               | 3360                | 3360                |
| Number of instruments      | 202                 |                     |
| AB AR(1) test - p value    | 0.001               |                     |
| AB AR(2) test - p value    | 0.802               |                     |
| Hansen test - p value      | 1.000               |                     |
| Adj. R-squared             |                     | 0.645               |
| Province FE                |                     | Yes                 |
| Time FE                    |                     | Yes                 |

**Table A3:** Firm turnover estimation results with *annualized* loan and deposit growth. This table presents results from estimating equations (3) and (4) using GMM and OLS for the sample period 2018q1-2022q4. Standard errors, clustered at the province level, are reported in parentheses. \* indicates statistical significance at the 10% level, \*\* indicates significance at the 5% level, and \*\*\* indicates significance at the 1% level.

| <i>Dependent variable:</i> | <i>ln_established</i> |                      | <i>ln_closed</i>  |                      |
|----------------------------|-----------------------|----------------------|-------------------|----------------------|
|                            | GMM                   | OLS                  | GMM               | OLS                  |
| state x covid              | 0.015<br>(0.153)      | 0.000<br>(0.004)     | -0.254<br>(0.207) | -0.005<br>(0.006)    |
| foreign x covid            | 0.056<br>(0.219)      | -0.001<br>(0.003)    | -0.088<br>(0.268) | 0.001<br>(0.002)     |
| covid                      | -0.031<br>(0.133)     | -0.412***<br>(0.048) |                   | -0.284***<br>(0.078) |
| L.ln_established           | 0.114*<br>(0.059)     |                      |                   |                      |
| L.ln_closed                |                       |                      | 0.044<br>(0.033)  |                      |
| L.LoanGrowth               | 0.000<br>(0.001)      | 0.000<br>(0.000)     | -0.001<br>(0.001) | -0.000<br>(0.000)    |
| L.DepositGrowth            | 0.001<br>(0.000)      | 0.001<br>(0.001)     | -0.000<br>(0.000) | -0.000<br>(0.000)    |
| L.NPL_Ratio                | -0.794<br>(0.641)     | -0.262<br>(0.299)    | -1.265<br>(0.975) | -0.344<br>(0.494)    |
| L.lnreal_quarterlyGDP      | 0.578<br>(0.498)      | 0.757**<br>(0.359)   | -0.142<br>(0.776) | 0.967***<br>(0.276)  |
| L.lnGDPpc_q_USD            | 0.105<br>(0.489)      | -0.335<br>(0.257)    | -0.187<br>(0.772) | -0.879***<br>(0.282) |
| Observations               | 4617                  | 4617                 | 4599              | 4608                 |
| Number of instruments      | 132                   |                      | 132               |                      |
| AB AR(1) test - p value    | 0.000                 |                      | 0.000             |                      |
| AB AR(2) test - p value    | 0.175                 |                      | 0.163             |                      |
| Hansen test - p value      | 1.000                 |                      | 1.000             |                      |
| Adj. R-squared             |                       | 0.577                |                   | 0.484                |
| Province FE                |                       | Yes                  |                   | Yes                  |
| Time FE                    |                       | Yes                  |                   | Yes                  |

**Table A4:** Firm turnover estimation results without including Istanbul. This table presents results from estimating equations (3) and (4) using GMM and OLS for the sample period 2018q1-2022q4. Standard errors, clustered at the province level, are reported in parentheses. \* indicates statistical significance at the 10% level, \*\* indicates significance at the 5% level, and \*\*\* indicates significance at the 1% level.

| <i>Dependent variable:</i> | <i>ln_established</i> |                      | <i>ln_closed</i>     |                      |
|----------------------------|-----------------------|----------------------|----------------------|----------------------|
|                            | GMM                   | OLS                  | GMM                  | OLS                  |
| state x covid              | -0.060<br>(0.119)     | -0.002<br>(0.003)    | -0.208<br>(0.168)    | -0.003<br>(0.006)    |
| foreign x covid            | -0.017<br>(0.144)     | -0.004<br>(0.003)    | -0.017<br>(0.216)    | 0.000<br>(0.005)     |
| covid                      |                       | -0.411***<br>(0.049) | -1.066***<br>(0.140) | -0.289***<br>(0.078) |
| L.ln_established           | 0.110*<br>(0.057)     |                      |                      |                      |
| L.ln_closed                |                       |                      | 0.045<br>(0.031)     |                      |
| L.LoanGrowth               | 0.002*<br>(0.001)     | 0.001*<br>(0.001)    | -0.000<br>(0.001)    | 0.000<br>(0.001)     |
| L.DepositGrowth            | 0.000<br>(0.000)      | -0.000<br>(0.000)    | 0.000<br>(0.001)     | -0.000<br>(0.001)    |
| L.NPL_Ratio                | -0.798*<br>(0.476)    | -0.221<br>(0.284)    | -1.104<br>(0.715)    | -0.313<br>(0.523)    |
| L.lnreal_quarterlyGDP      | 0.817<br>(0.638)      | 0.747**<br>(0.375)   | 0.228<br>(0.856)     | 0.968***<br>(0.275)  |
| L.lnGDPpc_q_USD            | -0.101<br>(0.534)     | -0.366<br>(0.262)    | -0.504<br>(0.698)    | -0.847***<br>(0.278) |
| Observations               | 4560                  | 4560                 | 4542                 | 4551                 |
| Number of instruments      | 132                   |                      | 132                  |                      |
| AB AR(1) test - p value    | 0.000                 |                      | 0.000                |                      |
| AB AR(2) test - p value    | 0.175                 |                      | 0.166                |                      |
| Hansen test - p value      | 1.000                 |                      | 1.000                |                      |
| Adj. R-squared             |                       | 0.577                |                      | 0.483                |
| Province FE                |                       | Yes                  |                      | Yes                  |
| Time FE                    |                       | Yes                  |                      | Yes                  |

**Table A5:** State-owned banks and non-performing loans with annualized loan and deposit growth. This table presents results from estimating equation (5) using GMM and OLS for the sample period 2018q1-2022q4. Standard errors, clustered at the province level, are reported in parentheses. \* indicates statistical significance at the 10% level, \*\* indicates significance at the 5% level, and \*\*\* indicates significance at the 1% level.

| <i>Dependent variable:</i> | <i>NPL Ratio</i>     |                      |
|----------------------------|----------------------|----------------------|
|                            | GMM                  | OLS                  |
| state x postcovid          | 0.011***<br>(0.004)  | 0.003**<br>(0.001)   |
| foreign x postcovid        | -0.002<br>(0.003)    | -0.007***<br>(0.002) |
| postcovid                  | -0.013***<br>(0.003) | -0.019***<br>(0.003) |
| L.NPL Ratio                | 0.858***<br>(0.047)  |                      |
| L.Loan Growth              | 0.000<br>(0.000)     | -0.000***<br>(0.000) |
| L.Deposit Growth           | 0.000<br>(0.000)     | 0.000**<br>(0.000)   |
| L.ln real quarterly GDP    | 0.019<br>(0.014)     | 0.008<br>(0.024)     |
| L.lnGDPpc_q_USD            | -0.020*<br>(0.012)   | -0.036*<br>(0.019)   |
| Observations               | 4617                 | 4617                 |
| Number of instruments      | 113                  |                      |
| AB AR(1) test - p value    | 0.002                |                      |
| AB AR(2) test - p value    | 0.186                |                      |
| Hansen test - p value      | 0.845                |                      |
| Adj. R-squared             |                      | 0.529                |
| Province FE                |                      | Yes                  |
| Time FE                    |                      | Yes                  |

**Table A6:** State-owned banks and non-performing loans without including Istanbul. This table presents results from estimating equation (5) using GMM and OLS for the sample period 2018q1-2022q4. Standard errors, clustered at the province level, are reported in parentheses. \* indicates statistical significance at the 10% level, \*\* indicates significance at the 5% level, and \*\*\* indicates significance at the 1% level.

| <i>Dependent variable:</i> | <i>NPL Ratio</i>     |                      |
|----------------------------|----------------------|----------------------|
|                            | GMM                  | OLS                  |
| state x postcovid          | 0.013***<br>(0.003)  | 0.007***<br>(0.001)  |
| foreign x postcovid        | -0.002<br>(0.003)    | -0.006***<br>(0.002) |
| postcovid                  | -0.013***<br>(0.003) | -0.012***<br>(0.003) |
| L.NPL Ratio                | 0.811***<br>(0.047)  |                      |
| L.Loan Growth              | -0.000<br>(0.000)    | -0.000***<br>(0.000) |
| L.Deposit Growth           | 0.000<br>(0.000)     | 0.000<br>(0.000)     |
| L.ln real quarterly GDP    | 0.003<br>(0.017)     | 0.001<br>(0.025)     |
| L.lnGDPpc_q_USD            | -0.015<br>(0.015)    | -0.018<br>(0.020)    |
| Observations               | 4560                 | 4560                 |
| Number of instruments      | 113                  |                      |
| AB AR(1) test - p value    | 0.002                |                      |
| AB AR(2) test - p value    | 0.204                |                      |
| Hansen test - p value      | 0.939                |                      |
| Adj. R-squared             |                      | 0.499                |
| Province FE                |                      | Yes                  |
| Time FE                    |                      | Yes                  |