The dividend policy of state-owned banks during an economic crisis

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ABSTRACT

This study examines the dividend policy of Swiss state-owned banks during the recent economic crisis caused by the COVID-19 pandemic. Our empirical analysis shows that these banks had higher pre-crisis dividend payouts than other Swiss banks. While other banks reduced dividend payouts during the crisis, state-owned banks maintained higher dividend levels and consistent payout ratios throughout the economic downturn. Thus, the gap between state-owned banks and other banks increased from 18% before the crisis to 24% during the crisis. Moreover, we document that these higher payouts are not due to higher profitability of state-owned banks. Finally, we find no significant differences in dividend yields except when comparing public and private state-owned banks. Overall, this study provides evidence of the significant influence of dominant state shareholders on banks' financial policies in times of economic crisis.

KEYWORDS: State-owned banks, economic crisis, payout ratio, dividend yield, Switzerland.

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1. INTRODUCTION

Since Modigliani and Miller (1961), several arguments have been put forward to explain firms' payout policies (e.g., Allen and Michaely, 2003; Brav et al., 2005; DeAngelo et al., 2009). Dividend payments can signal the quality of the firm, i.e. they can be interpreted as good news about the future cash flows in a context of asymmetric information between outsiders and insiders (Bhattacharya, 1979; Miller and Rock, 1985). Such payments may also reduce the agency costs arising from conflicts of interest between outsiders and insiders by reducing the amount of cash that could be invested in projects with non-positive net present values (Easterbrook, 1984; Jensen, 1986). Finally, the theory of catering incentives suggests that firms pay dividends to satisfy the demands of their shareholders, and dividend policy adjustments reflect changes in shareholder demand for dividends (Baker and Wurgler, 2004).

In the banking industry, strict regulations also strongly infuence the demand and supply of dividends, as dividend payments negatively affect the liquidity and solvency ratios and increase the risk of noncompliance (Abreu and Gulamhussen, 2013; Kanas, 2013; Onali, 2014; Acharya et al., 2017). Although the existing literature mainly focuses on signaling and agency costs, we believe that the theory of catering incentives is particularly well suited to examine how an economic crisis affects the dividend policy of state-owned banks. This is because the state bears the costs and enjoys the benefits associated with paying high dividends during an economic crisis.

Two opposing arguments can be made regarding a possible change in the demand for dividends by these controlling shareholders during an economic crisis. On the one hand, since the banking industry is highly regulated, the government should demand lower dividends because paying them would affect the liquidity and solvency ratios of the state-owned banks,

increasing the likelihood of a costly refinancing or bailout. The International Monetary Fund (IMF) and the European Central Bank (ECB) made this argument during the recent crisis caused by the COVID-19 pendemic.[1] Moreover, if the state has to issue new shares to increase the banks' capital (to comply with the solvency regulation),[2] the ownership structure of the banks could change significantly. In this case, the pressure coming from the new minority shareholders (e.g., institutional investors) may increase, which could also be a disadvantage for the government.

On the other hand, the dividends paid by these state-owned banks are additional resources for the government that can be injected into the economy to limit the negative consequences of the economic crisis. These additional resources are particularly important during a period of crisis because the taxes paid by companies and individuals decrease. In this case, the demand for dividends should not change, especially if the government prefers smooth dividends. Dividends may even increase if the government needs additional resources to support the economy.

We analyze state-owned banks in Switzerland, a country characterized by strong democratic institutions, where the behavior of state-owned banks may challenge the conventional wisdom that these banks are inherently less efficient or more susceptible to political interference (La Porta et al., 2002; Dinç, 2005; IMF, 2020). For our empirical analysis, we construct a balanced sample of 93 Swiss banks, including 24 state-owned banks. The sample covers the period 2014-2021. In Switzerland, the states (or cantons) are always the majority shareholders of the state-owned banks and, therefore, have the power to set the dividend policy.

[1] The managing director of the IMF declared that "*all stakeholders will ultimately benefit if banks preserve capital instead of paying out to shareholders during the pandemic*" (Financial Times, May 22, 2020, p. 23), while the ECB issued a statement on March 27, 2020, asking banks "*not to pay dividends or buy back shares during COVID-19 pandemic until at least October 1, 2020*." However, Swiss banks are not required to follow the ECB's recommendations as Switzerland is not part of the Eurozone.

[2] A bank can raise capital through an IPO if the bank is not yet listed, or through a seasoned equity offering if the bank is already listed.

Our main findings are as follows. First, the state-owned banks have a higher dividend payout ratio than other banks prior to the economic crisis caused by the COVID 19 pandemic. The difference of about 18% is economically significant and stable. We conclude that Swiss governments generally demand higher dividends than other shareholders. Second, this difference increases by about 6% during the economic crisis, as state-owned banks keep their payout levels constant while other banks' payouts decrease. Thus, our results suggest that Swiss governments are not willing to sacrifice their dividends during the economic crisis, while shareholders of other banks are willing to accept a reduction in their dividends in order to avoid financial difficulties. Third, we document that the higher dividend payout is not caused by higher profitability of state-owned banks, as these banks are less profitable than other banks, controlling for bank fundamentals. Fourth, the analysis of the dividend yield of the Swiss banks shows no significant difference between state-owned banks and other banks. Finally, when comparing listed state-owned banks and private banks (where the state owns 100% of the shares), we find no difference in the payout ratio before and during the economic crisis, but listed state-owned banks have a higher dividend yield before the COVID and this difference increases during the COVID. Overall, minority shareholders of listed state-owned banks therefore benefit from the decision of the Swiss states not to sacrifice their dividends during the economic crisis.

Our paper provides important evidence for policy debates on bank ownership and regulation. It also contributes to three strands of the literature. First, we add new evidence to the literature on the dividend policy in the banking industry (e.g., Abreu and Gulamhussen, 2013; Kanas, 2013; Onali, 2014; Floyd et al., 2015; Ashraf et al., 2016; Onali et al., 2016; Lepetit et al., 2018; Koussis and Makrominas, 2019; Tripathy et al., 2021, Cziraki et al, 2024). We document that the Swiss states, which own more than 50% of the shares and voting rights of state-owned banks, typically demand higher dividends and are not willing to sacrifice them during an

economic crisis, even if this increases the likelihood of financial distress and costly refinancing. Thus, we provide some support for the theory of catering incentives (Baker and Wurgler, 2004) by documenting that the dividend policy of banks with a controlling shareholder demanding high and smooth dividends does not change during a crisis, despite the increased potential costs associated with such a dividend policy. Thus, our results also support Lintner (1956) and Brav et al. (2005), as Swiss state-owned banks pay smooth dividends.

Second, we also extend the sparse literature on the dividend policy of state-owned banks (LaPorta et al., 2002; Onali et al., 2016). Since these banks are numerous worldwide (IMF, 2020)[3], and the amount of assets they manage has been increasing since the beginning of the century (EBRD, 2020), they deserve to be thoroughly studied. Previous research documents that they can be very inefficient due to misallocation of resources by managers, especially those under the influence of opportunistic or corrupt politicians (e.g., Dinç, 2005; Claessens et al., 2008; Shen and Lin, 2012). We find that this is not the case in Switzerland, where state-owned banks are no less profitable but pay higher dividends than other banks. However, we acknowledge that our results may be sensitive to the institutional context. In particular, the quality of the Swiss democratic system (i.e., the strong citizen pressure on politicians) strongly limits politicians' opportunism. Moreover, since the Swiss government did not restrict bank payouts during the recent crisis caused by COVID-19 pandemic, we find that state-owned banks did not follow the recommendation of the International Monetary Fund (IMF) or the European Central Bank (ECB) to refrain from paying dividend during the crisis issued.

Finally, we also enrich the scarce literature on the differences between private and listed banks (e.g., Beatty et al., 2002). Michaely and Roberts (2012) document that private nonfinancial firms smooth dividends less than their public counterparts and thus conclude that

[3] The IMF (2020) notes that state-owned banks notably account for a large percentage of banking system assets in the BRIC economies, in some low-income developing countries, and in Germany. Panizza (2024) provides a comprehensive analysis of the evolution and importance of state-owned banks around the world since 1980.

public capital market scrutiny affects firms' propensity to smooth dividends over time. However, to the best of our knowledge, no study has examined the dividend policy of public and private banks during an economic crisis. We find no different change in dividend payout ratios between the two groups of state-owned banks during the crisis, suggesting that the different results may occur for banks facing strong regulatory constraints compared to non-financial firms (Abreu and Gulamhussen, 2013; Kanas, 2013; Onali, 2014; Acharya et al., 2017). However, listed banks have higher dividend yields before the crisis and the difference increases during the crisis. Thus, the dividend demands of the state and institutional investors, such as pension funds, seem to be relatively well aligned in listed state-owned banks during the recent economic crisis.

The rest of this paper is organized as follows. In Section 2, we review the literature and develop our hypothesis. In Section 3, we describe our research design. In Section 4, we present and discuss our results. Finally, we conclude in the last section.

2. Literature review

2.1. Theoretical arguments for dividend payments

Since the publication of Modigliani and Miller's (1961) seminal article, which argued that paying dividends does not affect firm value if the absence of market imperfections, several arguments have been developed to explain why firms pay dividends (Allen and Michaely, 2003; DeAngelo et al., 2009).

First, in the context of asymmetric information, firms could pay dividends to signal their good financial health to the shareholders and to investors (Bhattacharya, 1979; Miller and Rock, 1985). Indeed, such a decision provides some private information about the firms' future cash flows. This signal is credible because it is costly for firms to lie (i.e., to pay high dividends knowing that the future cash flows will be low), since paying dividends reduces firms' liquidity and solvency and thus increases the likelihood of financial distress. Second, when there are

conflicts of interest between insiders (e.g., managers) and outsiders (e.g., institutional investors), paying dividends can reduce these conflicts (Easterbrook, 1984; Jensen, 1986). Indeed, reducing firms' cash levels limits the risk of bad investments (i.e., investments in projects with a negative net present value) by opportunistic managers. Third, some investors demand more dividends and firms comply with this demand (Baker and Wurgler, 2004). There are several reasons for preferring higher dividends. For example, the shareholders feel less impoverished if they receive dividends when the stock prices are falling; the tax paid on dividends is lower than the capital tax paid when an investor sells his shares; compared to share repurchases, the payment of dividends does not affect the ownership structure of firms, which is particularly important for a blockholder concerned with control of the firm.

While these different frameworks provide valuable insights into the determinants of dividend payouts, a survey of U.S. financial executives conducted by Brav et al. (2005) suggests that managers' views do not strongly support the agency, signaling, and clientele hypotheses of payout policy. Instead, a key factor influencing dividend policy is the perceived stability of future dividends, which supports Lintner (1956).

2.2. The influence of ownership structure on dividend policy

A number of studies also show that the ownership structure of firms has a strong influence on dividend policy (Faccio et al., 2001; La Porta et al., 2000). For example, Faccio et al. (2001) find that the presence of blockholders is a key issue for minority shareholders in many firms in East Asia and in Western Europe. This is because a blockholder has a strong influence on the composition of the board of directors by using its large voting rights at the annual general meeting to elect members who favor its interests. These affiliated directors will propose dividends in line with the demands of the blockholders.

However, La Porta et al. (2000) argue that the influence of blockholders is sensitive to the institutional context. In their analysis of 4,000 firms from 33 countries with different levels of

minority shareholder rights, they find that firms pay higher dividends when there is strong pressure from minority shareholders to distribute cash. In line with this idea, it has been documented that the demand for dividends by blockholders is sensitive to regulation. In particular, the prudential regulation in the banking sector requires to maintain certain liquidity and solvency ratios. Since dividend payments affect these ratios (e.g., Kanas, 2013; Onaly, 2014; Ashraf et al., 2016; Acharya et al., 2017), blockholders' discretion is more constrained in this industry.

We also note that previous research has discussed the fact that not all blockholders are the same. For example, a family, a financial investor (i.e., a private equity firm), or the government do not have the same preferences and, therefore, do not necessarily demand the same dividends (Faccio et al., 2001; La Porta et al., 2000). For example, Onali et al. (2016) show that government ownership and the presence of a government official on a bank's board of directors reduce dividend payout ratios, suggesting that the government has an incentive to prioritize the interests of creditors over the interests of minority shareholders. While we agree with this idea, we also consider the fact that, when a governement is a majority shareholder, it has the power and incentives to demand more dividends, as these additional resources could be used to finance more public goods and services.

2.3. The impact of an economic crisis on the dividend policy of banks

An interesting question has received less attention in the literature: What happens to bank's dividend policy when the economy suffers from a shock? A priori, one might expect that banks reduce their dividends to comply with prudential ratios, in particular to avoid costly refinancing. A few papers have examined this issue during the global financial crisis that occurred in the years 2007-2009.

Abreu and Gulamhussen (2013) find that the reduction of agency conflicts and costs explains the dividend payouts of U.S. banks before and during the financial crisis, while the signaling hypothesis is relevant for dividend policy only during the financial crisis. Floyd et al. (2015)

analyze the payout policies of U.S. industrial firms and banks over the period 1980-2012. They report that banks have a higher payout propensity than industrial firms. On average 38.4% of industrials firms either pay dividends, repurchase their shares, or both, while this proportion is 86.4% for banks. They find that banks did not reduce their dividends during the financial crisis while they significantly reduced their buybacks during this period. The authors claim that their results are consistent with the idea that banks use their dividends to signal their financial strength, which is particularly important during a financial crisis. In their comparison of EU and US banks, Koussis and Makrominas (2019) find that dividend smoothing practices were implemented on both continents before and after the global financial crisis and that these practices were more pronounced among European banks. Their results support agency-based explanations of bank dividend behavior, and the asymmetric information explanations are stronger for EU countries where smaller banks appear to smooth more.

Tripathy et al. (2021) find that dividends are positively associated with banks' future financial health. This positive association is more pronounced for banks with lower capital adequacy, especially during the financial crisis. The authors conclude that U.S. banks in distress use dividends to convey private information about their financial health. Cziraki et al. (2024) provide a detailed analysis of the US banks payouts during the 2007-2009 crisis. They find that average bank payouts were higher in 2007 than before, while the payouts in 2008 were in line with the pre-2007 levels. They also examine the stock market reaction to dividend change announcements and find no significant abnormal returns for banks that announced dividend cuts during and before the crisis. They further analyze the relationship between dividend changes and future performance during the crisis and document a significant relationship between dividend growth and future ROA. Finally, they examine cross-sectional heterogeneity in banks' characteristics, ownership, and funding structure to shed light on possible motives

underlying payout policies during the crisis. Overall, the literature concludes that banks did not reduce their dividends during the 2007-2009 financial crisis.

To the best of our knowledge, no research has yet specifically examined the possible change in the dividend policy of state-owned banks when the economy suffers from a shock. Focusing on these banks is important because they are numerous around the world (IMF, 2020), and because the governments may demand different levels of dividends.

2.4. Possible impact of an economic crisis on the dividend policy of state-owned banks

Since Switzerland has a large number of state-owned banks, we examine the impact of the recent economic crisis caused by the COVID-19 pandemic in this country. Two opposing arguments can be made for a change in the demand for dividend by the Swiss states, which are the majority shareholders of the Swiss state-owned banks.

On the one hand, the dividends demanded by the states should decrease because their payment affects the solvency and liquidity ratios, which may ultimately lead to financial distress, especially if the crisis is prolonged and significantly penalizes economic activity. Financial distress means that the shareholders (i.e., the Swiss states) have to recapitalize the banks, which is costly. Moreover, during an economic crisis, loan requests may increase (Dursun-de Neef and Schandlbauer, 2021) and banks need to keep cash to be able to satisfy customers, which should also reduce the dividend payments.

On the other hand, the Swiss states could demand the same level or even higher dividends during the economic crisis for two reasons. First, dividends are important for states that need additional resources to mitigate the economic downturn, especially as taxes paid by firms (such as income taxes) and individuals (such as value-added taxes) are expected to decline in such a context. In other words, higher dividends substitute for lower taxes in the government's budget. Second, since the risk of bankruptcy for state-owned banks is zero (i.e., the Swiss government will act as lender of last resort), the dividend policy can be used as a positive signal to attract

new investors and customers.

Finally, it can be argued that an economic crisis does not affect the dividend policy of state-owned banks for two reasons. First, the perceived benefits of receiving more dividends (i.e., additional resources to finance public goods and services and the willingness to attract new customers and investors) may be equal to the perceived costs (i.e., the increased probability of refinancing in case of financial distress and the need for cash to grant new loans during the economic crisis). Second, Swiss governments may prefer smooth earnings in the long run (Lintner, 1956; Brav et al., 2005) and want to avoid changes in the dividend policy that need to be reversed in the near future, as this could be interpreted as a bad signal by the various stakeholders.

Overall, it is not clear *ex ante* whether the demand for dividends by the Swiss states changes during an economic crisis. Thus, we formulate the following null hypothesis: *The dividend policy of state-owned banks does not change during an economic crisis*.

3. Research design

3.1. The Swiss banking landscape and the economic crisis

At the end of December 2021, the official statistics of the Swiss National Bank list 239 financial institutions with a banking license. The banks can be divided into several groups: two global systemically important banks (UBS and Credit Suisse), cantonal banks, regional and savings banks, private banks, foreign-owned banks, and other banks. Swiss banks are mostly universal banks, offering all banking services with some exceptions (private banks). They are primarily supervised by the Swiss Financial Market Supervisory Authority (FINMA), which is responsible for ensuring that banks comply with regulatory requirements and maintain financial stability.

Switzerland is a federal state consisting of 26 cantons and half-cantons. Most cantons have a state-owned bank (i.e., a cantonal bank). These banks are controlled by the Swiss cantons,

either partially (if they are listed on the stock exchange) or completely (if they are private). The canton also guarantees the bank's liability. The purpose of cantonal banks is to promote the cantonal economy, although they must adhere to commercial principles. Cantonal banks vary in terms of size and are engaged in in the full range of banking activities, with an emphasis on deposit-taking and lending. They operate primarily in the market of their home canton. It is also important to note that these banks pay dividends to their shareholders, but they do not buy back their own stocks.[4]

Switzerland was hit early and hard by COVID-19. The first confirmed case was reported on February 24, 2020, and on March 16, 2020, the federal government declared a national state of emergency, closing all shops, restaurants, bars and entertainment venues and schools. The government also introduced checks at all borders, with entry restrictions in place. The number of active and new cases dropped sharply from the end of April 2020. However, the economy was affected by several periods of restrictions and lockdowns due to the spread of the virus until the end of 2021. During this period, Swiss GDP fell by 2.5% in 2020 and it recovered to pre-crisis levels by mid-2021 (OECD, 2022). The contraction of the Swiss GDP during the covid crisis was of the same magnitude as that caused by the global financial crisis in 2009. During the crisis, neither the government nor the FINMA imposed restrictions on bank payouts. Banks were completely free to set their dividend policy as they saw fit.

3.2. The sample

In order to analyze the impact of government ownership on bank dividend policy during the recent economic crisis caused by the COVID-19 lockup, we first consider the 239 financial institutions holding a banking license in Switzerland as of December 31, 2021. We remove four very large banks (UBS, Credit Suisse, Raiffeisen and PostFinance) due to their specific

[4] The few academic papers on Swiss banks have essentially examined their efficiency without looking specifically at the cantonal banks. See for instance Blatter and Fuster (2022), Dietrich and Wanzenried (2011) and Rime and Stiroh (2003).

characteristics. We also remove financial institutions for which data were not available for the period 2014-2021 as well as (subsidiaries of) foreign banks. Our final balanced sample includes 93 banks domiciled in Switzerland, including the 24 state-owned banks, for the period 2014-2021, for a total of 744 bank-year observations. All data were collected by hand, as financial data for the numerous non-listed Swiss banks are not available in standard research databases.

In the 13 cantonal banks that are listed on the Swiss stock exchange (i.e., public state-owned banks), the local governments hold more than 50% of the shares and voting rights, with the remaining shares held by minority shareholders. However, the Swiss government holds 100% of the shares and voting rights in the 11 non-listed state-owned banks. The existence of these two groups of banks allows us to examine in additional analyses whether stock market pressure (i.e., pressure from institutional investors) influences the dividend policy of state-owned public banks. Since the banks in our sample did not buy back any of their own shares during the period under review, our analysis focuses exclusively on dividend policy.

3.3. The model

To analyze the impact of the economic crisis on dividend policy, we use a difference-in-differences approach, which is relevant because we have an exogenous shock. In fact, the economic crisis started when the COVID-19 pandemic was officially announced by the World Health Organization in March 2020 and Switzerland experienced its first lockdown. Our main model allows us to analyze a possible change in dividend policy during this economic crisis for our treated group (state-owned banks). The control group consists of all other banks. We estimate the parameters of the equation (1):

$$DIVIDEND = \alpha 1\ SB + \alpha 2\ CRISIS + \alpha 3\ SB\ \#\ CRISIS + CONTROLS + Fixed\ effects \quad (1)$$

In this model, *DIVIDEND* captures the bank's dividend policy (i.e., dividend payout or dividend yield). *SB* equals 1 if the bank is a state-owned bank and 0 otherwise. *CRISIS* is equal to 1 for the fiscal years 2020 and 2021 (i.e., dividends paid in 2021 and 2022) and 0 otherwise

(i.e., the pre-crisis period).[5] All control variables are defined in Section 3.5 and Appendix A summarizes all variable definitions. A negative (positive) coefficient α3 would indicate that state-owned banks (SBs) decreased (increased) their dividends during the crisis relative to the pre-crisis period and relative to changes in the dividend policies of all other banks. A non-significant coefficient α3 would support the idea that the demand for dividends by SBs did not change relative to other banks during the crisis. It would also reflect a preference for smooth dividends, which is important for many firms (Lintner, 1956; Brav et al., 2005).

We estimate several specifications of equation (1). Some of them include bank fixed effects to mitigate concerns about omitted variable bias, thus absorbing the coefficients of SB, while some others include year fixed effects, thus absorbing the coefficient of CRISIS. We also control for validity of the parallel trend assumption. To do so, we replace the interaction variable *SB # CRISIS* in equation (1) with several interaction variables *SB # YEAR*$_t$ (*t=2014 to 2021*). The parallel trend assumption is plausible if the coefficients on these interaction variables are not statistically significant before the economic crisis.

3.4. Dependent variables

To capture the banks' dividend policies, we use two measures: the payout ratio which is equal to the dividends paid divided by the net income; and the dividend yield which is equal to the dividends paid divided by the total equity.[6] The descriptive statistics in Panel A of Table 1 show an average dividend yield of 2%. On average, dividends paid represent 41.7% of the net income. However, in Panel B we document that SBs are more generous to their shareholders than other banks. On average, their dividend yield is 3.3% (vs. 1.6% for other banks) and their

[5] Since the pandemic was announced in March 2020, there is some doubt about the impact on the dividend payment decided by the Annual General Meeting at that time. Therefore, we perform some additional analyses to control for different definitions of the crisis period. Our results are presented in an additional analysis and are qualitatively similar.

[6] Most of the the banks in our sample are private. Thus, we use the book value of equity because no market value of the shares is available. The values of the dividend yields found in our study are therefore not directly comparable with those found in prior research. We acknowledge that it is a limitation of our study.

payout ratio is 61% (vs. 35.1% for other banks). The differences between the two types of banks are significantly different for both the mean and the median of the distribution. Thus, these descriptive results suggest that the Swiss states demand significantly higher dividends, probably because these additional resources help finance public goods and services. However, this is only an intermediate conclusion based on univariate statistics, and we still need to take into account the different characteristics of SBs and non-SBs to reach a more reliable conclusion.

Panel B also shows that SBs are more efficient and profitable than other banks as they have significantly higher average ROEs (5.5% vs 3.6% for other banks) as well as median ROEs. These results suggest that Swiss SBs are not inefficient, because there is no (or less) misallocation of resources by managers, especially those under the influence of opportunistic or corrupt politicians (e.g., Dinç, 2005; Claessens et al., 2008; Shen and Lin, 2012). We attribute this finding to the quality of the Swiss semi-direct democratic system, as citizens exert strong pressure on politicians (through *referendums* and *initiatives*), which ultimately curbs politicians' opportunism and leads to a good performance of state-owned banks. This is indirectly confirmed by the low level of perceived corruption in Switzerland. Throughout our sample period, the country has consistently ranked among the top seven countries in the world (out of 180) according to Transparency International Corruption Perceptions Index (2021). However, as with dividends, the results for efficiency results need to be confirmed in a regression analysis that takes into account bank fundamentals.

Panel C suggests that state-owned banks listed banks have significantly higher dividend yields than the private state-owned banks. However, we do not find a significant difference in the payout ratio between these two groups of banks. This finding may indicate that the pressure from the financial market may lead to an increase in dividend payments by state-owned banks.

[INSERT TABLE 1]

Table 2 shows the evolution of Swiss banks' dividend policies of over time. It highlights two important facts. First, the dividend yields and payouts (in %) of SBs are always higher than those of non-SBs throughout the sample period. Second, dividend yields and payouts do not appear to have fallen sharply during the crisis, as all banks appear to be smoothing their dividends. Third, the median values of the dividend payouts are larger for private state-owned banks than for listed banks, while an opposite result is found for the dividend yields of these two groups of banks.

[INSERT TABLE 2]

3.5. Control variables

In line with previous research, we include a number of control variables in our model. Size is the natural logarithm of total assets, and it captures the size of banks. Since larger banks benefit from greater economies of scale and hold more diversified asset portfolios of (i.e., they have a lower risk), we expect that larger banks to have better financial performance and thus pay higher dividends than smaller banks. Loans is the ratio of loans to total assets. We expect that banks with more loans to hold less liquidity and therefore pay lower dividends. Deposits is the ratio of total deposits to total assets. Since deposits are short-term funds that can be withdrawn by depositors at any time, we expect that banks with more deposits to hold more liquidity and pay lower dividends. Equity is the ratio of shareholders' equity to total assets. Since this ratio is a proxy for bank solvency, we expect that more solvent banks to pay higher dividends. Finally, Loss is a dummy variable equal to 1 if the net income is negative and 0 otherwise. Firms with a poor performance should pay lower dividends.

Descriptive statistics for the control variables are presented in Table 1.[7] While state-owned banks are significantly larger than other banks, no significant difference is found for the average values of loans, deposits and equity. However, the median values of the loans and deposits

[7] In an untabulated table, we show that the low number of non-payers is stable during the period 2014-2021.

variables are significantly larger for non-SBs while the median values of loans and equity are significantly larger for private SBs.

4. Results

4.1. Main results

We perform a difference-in-difference analysis, which is relevant because the economic shock induced by the COVID-19 is exogenous, a fact generally accepted in the previous literature (e.g., Albuquerque et al., 2020). Before discussing the main results, we present the results of a cross-sectional analysis and our test of the parallel trend assumption.

4.1.1. Cross-sectional analysis

In our difference-in-difference analysis, we include bank fixed effects to capture unobservable factors that may affect the dividend policy. Thus, the variable SB disappears from the model. This does not allow us to measure the magnitude of the difference in the payout ratio between SBs and the other banks. A cross-sectional analysis without bank fixed effects can measure this difference. We therefore perform such an analysis in a first step and the results are presented in Table 3.

[INSERT TABLE 3]

Column 1 of Table 3 shows that SBs have a higher payout ratio of 24.8% when analyzing all banks in the sample over the entire period. Column 2 shows that this difference is equal to 24% in the six years prior to the crisis (2014-2019), suggesting that the payout ratio did not change significantly during the crisis. In a second analysis, we exclude cooperative banks from our sample because, although these banks also pay dividends, their objective is broader than increasing the welfare of their shareholder base. Indeed, these financial institutions are owned and controlled by their members, who are also their customers. McKillop et al. (2020) highlight in their literature review that cooperative banks generally aim to maximize member benefits, by offering more favorable loan and deposit rates, which often results in lower profitability and

dividend payouts than other non-SBs.

The results in columns 3 and 4, which are based on a subsample that excludes cooperative banks, confirm this assumption as we find a difference of 18.3% between SBs and non-SBs over the entire analysis period, suggesting that when we exclude cooperative banks the gap in dividend payouts between the two types type of banks is narrower. Overall, we conclude that SBs have higher payout ratios, and the difference (between 18% and 24% depending on the control group) is statistically and economically significant. Table 3 also shows that payout ratios are lower when banks have more deposits, because banks have to hold more cash to meet unanticipated withdrawals, and when banks report a loss.

4.1.2. Parallel trend assumption

We also perform a test of the parallel trend assumption, which is necessary to conduct a difference-in-differences approach. The results are reported in Appendix B. Column 1 shows that the difference in the dividend payout of SBs does not change during the pre-crisis period (i.e., the coefficients on the interaction variables are never statistically significant during the years 2015 to 2018, for dividend decisions made during the shareholders' general meetings of the first semesters of the years 2016 to 2019). Similar results are obtained when we exclude cooperative banks from our sample (column 2). Thus, the parallel trend is plausible (Chen and Garriott, 2020; Lobo et al., 2024). Since the adjusted R-squared are consistent with those found in previous research, we consider our models to be well-specified.

4.1.3. Difference-in-differences analysis

The results of our main analysis are reported in Table 4. In column 1, the coefficient of 0.056 on our interaction variable *SB # CRISIS* is statistically significant, indicating that the payout ratio is higher for SBs during the crisis period, when compared to the pre-crisis period and to the changes in the dividend policy of non-SBs.

[INSERT TABLE 4]

These results are not driven by the definition of the crisis period or the control group. In fact, column 2 shows that including the fiscal year 2019 in the crisis period (i.e., dividend decisions are made during the shareholders' general meeting of the first half of 2020) does not change our results. This analysis is relevant considering that the AGM will place after March 2020. Thus, it is possible that some banks decided to reduce the dividend payout when the crisis had already started, influenced by the ECB statement issued of March 27, 2020, which asked banks "*not to pay dividends or buy back shares during the COVID-19 pandemic until at least October 1, 2020*." Column 3 shows similar results when the cooperative banks are excluded. The coefficient on *SB # CRISIS* is still positive and significant (0.062) when analyzing this subsample of banks. Overall, we conclude that the difference in dividend payouts between SBs and other banks increased by about 6% during the crisis. According to the evolution of payouts documented in Table 2, it seems reasonable to conclude that it was not the SBs that increased their payouts during the crisis, but rather the other banks that reduced their payouts in response to the crisis, thus widening the payout gap.

4.2. Analysis of the dividend yield

We also analyze the dividend yield (i.e., net income/equity), which is another common measure of dividend policy. However, we note that our measure is not directly comparable to the standard measure used in the literature, because many of the banks in our sample are not listed on a stock exchange, and therefore we use the book value of equity instead of the market value of equity. Therefore, the results of this analysis should be treated with caution.

The results of the cross-sectional regressions reported in Table 5 do not show that the dividend yield of state-owned banks differs from the dividend yield of other banks. This conclusion is similar whether we consider the entire period (columns 1 and 3) or only the pre-crisis years (columns 2 and 4), or whether we focus on the full sample (columns 1 and 2) or on the subsample that excludes cooperative banks (columns 3 and 4). Regarding bank

characteristics, we find similar results as for the dividend payout and a negative impact of the level of deposits and the occurrence of a loss on dividend yield. However, we also find that the size of a bank has a positive effect on the dividend yield, while the level of loans has a negative effect.

[INSERT TABLE 5]

The results reported in Appendix C suggest that the parallel trend assumption is also plausible for the dividend yield (Chen and Garriott, 2020; Lobo et al., 2024), as the difference in the dividend yield of SBs and non-SBs does not change during the pre-crisis period (i.e., the coefficients on the interaction variables are never statistically significant during the years 2015 to 2018, for dividend decisions made during the AGM of the first semesters of the years 2016 to 2019).

However, our difference-in-differences analysis in Table 6 suggests that the dividend yield of SBs increased during the crisis period (by about 0.3%), for both definitions of the crisis period (columns 1 and 2) and for the full sample (columns 1 and 2) and the subsample excluding cooperative banks (column 3). This result is significant at the 10% level. Overall, this result confirms that Swiss state-owned banks became more generous to their shareholders during the crisis compared to the other Swiss banks. In terms of dividend payout, however, it is likely that the SBs kept their dividend yield constant while other banks slightly reduced their dividend yields, as can be seen in Table 2.

[INSERT TABLE 6]

4.3. Analysis of publicly listed vs private state-owned banks

In order to better understand what drives the demand for dividends by the Swiss states, we also compare the payout ratios and dividend yields of listed SBs with those of private SBs. In particular, this analysis allows us to examine whether the presence of minority shareholders or the stock market pressure has an impact on the dividend policy of these banks during a crisis.

The cross-sectional analysis in Table 7 shows that, while listed banks do not have higher dividend payouts than private banks (column 1), the dividend yields are significantly higher as indicated by the coefficient of 0.005 on *SB_LISTED* in column 2.[8] This result may suggest that capital market pressures lead listed banks to be somewhat more generous than private banks.

[INSERT TABLE 7]

The results of the difference-in-differences analysis in Table 8 show that the payout ratio of listed SBs did not change more than that of non-listed SBs, but a positive and significant coefficient (at the 10% level) is found on *SB_LISTED # CRISIS* in column 4, which defines an extended crisis period over fiscal years 2019-2021, while this coefficient is not significant in column (3) when we consider the standard crisis period over fiscal years 2020-2021.

Overall, considering all the results for public and private SBs, we conclude that the dividend policy differs between the two groups of banks only in terms of dividend yield. Indeed, dividend yields are significantly higher for listed public banks while payout ratios are similar. This suggests that governments and minority shareholders are satisfied with the level of dividend payouts of SBs, which is high compared to other banks, but the management of listed SBs also considers stock market pressure in determining their dividend policy and the level of dividend yield. However, there is no significant difference between the dividend policies of the two types of SBs in times of crisis.

[INSERT TABLE 8]

4.4. Additional analysis: Financial performance of state-owned banks

One could argue that the dividend payout ratio of SBs is higher than that of other banks because of their better financial performance. This seems to be consistent with the results of the univariate tests presented in Table 2, which shows significantly higher return on equity (ROE) for these banks. However, these tests do not control for bank characteristics that affect on

[8] Since all SBs have positive net income, the variable LOSS is not included in the models.

profitability. We therefore conduct a cross-sectional analysis using the same control variables as those used for dividend policies. The results are shown in Table 9.

We run the analysis for both crisis periods (with and without fiscal year 2019) and for both samples (with and without cooperative banks). The control variables have similar results in all specifications, indicating a significantly positive relationship between ROE and size, while there is a negative relationship with the level of loans and deposits. The occurrence of losses is also negatively related to the level of ROE. The coefficient on SBs is significantly negative, implying that SBs are less profitable. This result is robust to all specifications (definition of the crisis period and exclusion of cooperative banks from the sample). However, we obtain larger (more negative) coefficients for the sample without cooperatives indicating that these banks are also less profitable, and this widens the gap between the ROE of SBs and non-SBs.

Our findings of lower ROE could be interpreted as evidence in favor of the “political view” of SBs explored in La Porta et al. (2022). This view postulates that government ownership of banks is a mechanism used by politicians to pursue their own goals (e.g. financing of supporters), resulting in resource misallocation and economic inefficiency. It could also be argued that the lower profitability of SBs is evidence in favor of the "agency view," which states that even with the best of intentions, the agency costs associated with a government bureaucracy (i.e., the conflict of interest between the government and the bureaucrats charged with managing SBs) can lead to operational inefficiencies and misallocations (Hart et al., 1997). However, we believe that in the specific case of Switzerland, with strong democratic institutions, the political view may not apply as politicians would be quickly removed from their positions. The lower financial performance of SBs is more likely to be explained by the fact that these banks have broader objectives than maximizing the welfare of their shareholders.

[INSERT TABLE 9]

We also conduct a difference-in-differences analysis to document a possible change in ROE during the crisis. Table 10 shows that the ROE was lower for all banks during the crisis as indicated by the significant negative coefficient (at the 10% level) on *CRISIS* for all three specifications. We do not document any change in the ROE of SBs during the crisis and conclude that SBs are generous to their majority shareholders (i.e., the Swiss states), as they are less profitable but have higher dividend payouts. This finding is even more interesting during the crisis, as SBs did not become more profitable relative to the other banks but their payout ratio remained at the same level while that of other banks decreased.

[INSERT TABLE 10]

5. Conclusion

This paper investigates how state ownership affects banks' dividend policies during an economic crisis by analyzing a balanced sample of 93 Swiss banks, including the 24 state-owned banks, over the period 2014-2021. Our findings provide several important insights into the dividend policy of state-owned banks and their response to economic shocks.

First, we document that Swiss state-owned banks have consistently higher dividend payout ratios than other banks, with a difference of about 18% that remains stable over time. This finding suggests that Swiss states, as majority shareholders, generally demand higher dividends than other types of bank shareholders. Second, during the economic crisis caused by the COVID-19 blockade, this difference increased by about 6%, as state-owned banks maintained their payout levels while other banks reduced their dividends. This suggest that Swiss states were not willing to sacrifice their dividend income during the economic downturn, despite potential financial risks and regulatory considerations. These results support the theory of catering incentives by showing the importance of controlling shareholders' demand for dividend policy. They are also consistent with agency theory, as maintaining higher payouts reduces agency problems, which may be more severe for state-owned firms. Third, after controlling for

bank fundamentals, we find that state-owned banks are less profitable (i.e., they have lower ROEs) than other banks, despite maintaining higher dividend payouts. We attribute this lower profitability not to inefficiency or political interference, but rather to these banks' broader objectives that extend beyond maximizing shareholder value. Fourth, our analysis shows no significant difference in dividend yields between state-owned banks and other banks before the crisis, although the dividend yields of state-owned banks increased slightly relative to other banks during the crisis period. Finally, when comparing public and private state-owned banks, we find that listed SBs have higher dividend yields than private ones, while payout ratios remain similar. This suggests that stock market pressures influence dividend policy decisions of listed SBs, especially with respect to dividend yields.

Our findings contribute to the literature on bank dividend policy, government ownership of banks, and the differences between public and private banks. The results suggest that majority state ownership significantly influences dividend policy, especially during economic crises, as Swiss states balance their need for dividend income against the financial stability of banks. Future research could explore whether similar patterns exist in other countries with different institutional contexts and levels of democratic development.

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Table 1. Descriptive statistics

Panels A and B show the descriptive statistics for balanced sample of 93 private and public Swiss banks for the period 2014-2021. Panel C is based on 24 public and private state-owned banks (SBs) for the period 2014-2021. All variable definitions are provided in Appendix A. In panels B and C, we analyze the differences between two groups of banks with a t-test (column Mean) and and Mann-Whitney test (column p.50); *** p<0.01, ** p<0.05, * p<0.1.

Panel A. Full sample (744 observations)

Variable	Mean	SD	p.25	p.50	p.75
Payout ratio	0.417	0.262	0.225	0.437	0.613
Dividend yield	0.020	0.027	0.007	0.013	0.026
ROE	0.041	0.035	0.024	0.033	0.052
Size	14.471	1.640	13.166	14.118	15.465
Loans	0.760	0.209	0.770	0.828	0.863
Deposits	0.669	0.142	0.626	0.676	0.738
Equity	0.088	0.030	0.074	0.085	0.093

Panel B. State-owned banks (SBs) vs other banks

	SBs *(192 observations)*		Non-SBs *(552 observations)*	
Variable	Mean	p50	Mean	p50
Payout ratio	0.610	0.618	0.351***	0.368***
Dividend yield	0.033	0.031	0.016***	0.009***
ROE	0.055	0.055	0.036***	0.028***
Size	16.567	16.803	13.743***	13.594***
Loans	0.760	0.782	0.760	0.843***
Deposits	0.633	0.636	0.682	0.702***
Equity	0.085	0.085	0.089	0.085

Panel C. Listed vs non-listed (private) SBs

	Listed SBs *(104 observations)*		Non-listed (private) SBs *(88 observations)*	
Variable	Mean	p50	Mean	p50
Payout ratio	0.606	0.578	0.615	0.630
Dividend yield	0.036	0.036	0.029***	0.028***
ROE	0.059	0.059	0.049***	0.046***
Size	16.815	16.993	16.277***	16.213***
Loans	0.749	0.765	0.773	0.800***
Deposits	0.626	0.628	0.642	0.644
Equity	0.081	0.080	0.089	0.088***

Table 2. Evolution of the dividend policy of Swiss banks

The percentages are computed for a balanced sample of 93 private and public Swiss banks for the period 2014-2021, including 24 state-owned banks (SBs). The definitions of the two variables (Payout ratio and Dividend yield) are provided in Appendix A.

	All banks (N= 93)		Non-SBs (N=69)		SBs (N=24)		Listed SBs SBs (N=13)		Private SBs SBs (N=11)	
Fiscal year	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Panel A. Payout ratio (%)										
2014	41.9	45.4	35.0	39.2	61.8	62.1	60.5	57.1	63.5	66.4
2015	40.0	42.4	32.9	37.1	60.1	61.5	60.8	60.2	59.3	62.1
2016	39.2	41.9	32.8	35.7	57.7	61.6	54.5	57.7	61.5	66.7
2017	41.9	42.4	35.4	37.1	60.6	62.4	61.8	60.0	59.2	63.7
2018	45.0	44.1	39.2	39.4	61.7	62.4	61.7	56.2	61.8	66.6
2019	42.1	43.6	35.8	36.4	62.4	61.4	62.8	58.5	61.9	63.4
2020	42.1	44.1	34.8	34.9	62.9	59.3	62.3	57.4	63.6	62.6
2021	41.4	44.7	34.6	37.5	60.9	59.1	60.4	56.2	61.5	62.6
Panel B. Dividend yield (%)										
2014	2.1	1.5	1.7	1.1	3.3	3.0	3.6	3.5	3.0	3.0
2015	2.1	1.4	1.6	1.0	3.4	3.2	3.7	3.8	3.1	2.8
2016	1.9	1.3	1.5	1.0	3.1	3.1	3.2	3.6	3.0	2.8
2017	2.0	1.4	1.6	1.0	3.3	3.1	3.7	3.8	2.8	2.6
2018	2.1	1.4	1.6	1.0	3.3	3.0	3.8	3.8	2.9	2.6
2019	2.0	1.3	1.7	0.9	3.3	3.1	3.7	3.7	2.8	2.6
2020	1.9	1.2	1.4	0.7	3.2	3.1	3.6	3.6	2.8	2.6
2021	1.8	1.2	1.3	0.8	3.2	3.1	3.6	3.4	2.8	2.5

Table 3. Analysis of the payout ratio

The analyses are based on balanced sample of 93 private and public Swiss banks for the period 2014-2021 in columns 1 and 2, including 24 stats-owned banks (SBs), and on a balanced sub-sample of 73 Swiss banks for the period 2014-2021 in coumns 3 and 4 (i.e., cooperative banks are excluded). The analysis is based on all years in columns 1 and 3, and on the years before the crisis in columns 2 and 4. Robust standard errors in parentheses. All variable definitions are provided in Appendix A. *** p<0.01, ** p<0.05, * p<0.1.

	Full sample		Without cooperative banks	
Dependent variable: Payout ratio	All years 2014-2021	Before the crisis 2014-2019	All years 2014-2021	Before the crisis 2014-2019
	(1)	(2)	(3)	(4)
SB	0.248***	0.240***	0.183***	0.176***
	(0.027)	(0.031)	(0.028)	(0.032)
Size	-0.005	-0.002	0.003	0.006
	(0.008)	(0.009)	(0.009)	(0.010)
Loans	-0.143*	-0.126	-0.109	-0.090
	(0.078)	(0.089)	(0.076)	(0.086)
Deposits	-0.370***	-0.420***	-0.220**	-0.270**
	(0.097)	(0.116)	(0.106)	(0.129)
Equity	0.095	0.334	-0.162	0.136
	(0.477)	(0.541)	(0.485)	(0.565)
Loss	-0.597***	-0.661***	-0.561***	-0.605***
	(0.077)	(0.086)	(0.069)	(0.084)
Constant	0.783***	0.746***	0.615***	0.567***
	(0.178)	(0.204)	(0.186)	(0.214)
Year FE	YES	YES	YES	YES
Observations	744	558	584	438
R-squared	0.263	0.258	0.233	0.223

Table 4. Changes of the payout ratio during the crisis

The analyses in columns 1 and 2 are based on balanced sample of 93 private and public Swiss banks for the period 2014-2021, including 24 state-owned banks (SBs). In the first column, the variable *CRISIS* includes the fiscal years 2020 and 2021 (i.e., the dividend decision made the first semester of 2021 and 2022). In the second column, the variable *CRISIS* includes the fiscal years 2019, 2020 and 2021. In the third column, we perform the same analysis as in column 1 on a balanced sub-sample of 73 Swiss banks for the period 2014-2021 (i.e., cooperative banks are excluded). All variable definitions are provided in Appendix A. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable: Payout ratio	Full sample	Different crisis period	Without cooperative banks
	(1)	(2)	(3)
CRISIS	-0.007	-0.009	-0.012
	(0.016)	(0.017)	(0.021)
SB # CRISIS	0.056***	0.063***	0.062***
	(0.019)	(0.019)	(0.023)
Size	0.015	0.012	0.046
	(0.052)	(0.059)	(0.059)
Loans	0.298**	0.303**	0.333*
	(0.151)	(0.149)	(0.174)
Deposits	0.329	0.388*	0.439*
	(0.209)	(0.214)	(0.243)
Equity	1.761***	1.785***	2.042***
	(0.638)	(0.675)	(0.724)
Loss	-0.211**	-0.213**	-0.203*
	(0.107)	(0.107)	(0.106)
Constant	-0.334	-0.335	-0.865
	(0.717)	(0.803)	(0.833)
Year FE	YES	YES	YES
Bank FE	YES	YES	YES
Observations	744	744	584
Adj. R-squared	0.827	0.828	0.767

Table 5. Analysis of the dividend yield

The analyses are based on balanced sample of 93 private and public Swiss banks for the period 2014-2021 in columns 1 and 2, including 24 stats-owned banks (SBs), and on a balanced sub-sample of 73 Swiss banks for the period 2014-2021 in coumns 3 and 4 (i.e., cooperative banks are excluded). The analysis is based on all years in columns 1 and 3, and on the years before the crisis in columns 2 and 4. Robust standard errors in parentheses. All variable definitions are provided in Appendix A. *** p<0.01, ** p<0.05, * p<0.1.

	Full sample		Without cooperative banks	
Dependent variable: Dividend yield	2014-2021	2014-2019	2014-2021	2014-2019
	(1)	(2)	(3)	(4)
SB	0.002	0.002	-0.001	-0.002
	(0.003)	(0.003)	(0.003)	(0.003)
Size	0.003***	0.003***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
Loans	-0.040***	-0.038***	-0.037***	-0.035***
	(0.009)	(0.010)	(0.009)	(0.010)
Deposits	-0.098***	-0.113***	-0.102***	-0.119***
	(0.019)	(0.023)	(0.021)	(0.024)
Equity	-0.063	-0.042	-0.069	-0.042
	(0.047)	(0.056)	(0.052)	(0.063)
Loss	-0.079***	-0.101***	-0.080***	-0.103***
	(0.017)	(0.020)	(0.018)	(0.021)
Constant	0.079***	0.081***	0.073***	0.075***
	(0.021)	(0.024)	(0.023)	(0.027)
Year FE	YES	YES	YES	YES
Observations	744	558	584	438
Adj. R-squared	0.479	0.511	0.466	0.506

Table 6. Changes of the dividend yield during the crisis

The analyses in columns 1 and 2 are based on balanced sample of 93 private and public Swiss banks for the period 2014-2021, including 24 state-owned banks (SBs). In the first column, the variable *CRISIS* includes the fiscal years 2020 and 2021 (i.e., the dividend decision made the first semester of 2021 and 2022). In the second column, the variable *CRISIS* includes the fiscal years 2019, 2020 and 2021. In the third column, we perform the same analysis as in column 1 on a balanced sub-sample of 73 Swiss banks for the period 2014-2021 (i.e., cooperative banks are excluded). All variable definitions are provided in Appendix A. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable: Dividend yield	Full sample	Different crisis period	Without cooperative banks
	(1)	(2)	(3)
CRISIS	-0.003	-0.001	-0.004
	(0.002)	(0.002)	(0.002)
SB # CRISIS	0.003*	0.003*	0.004*
	(0.002)	(0.002)	(0.002)
Size	0.004	0.002	0.006
	(0.005)	(0.007)	(0.006)
Loans	0.023	0.026	0.025
	(0.017)	(0.016)	(0.019)
Deposits	0.015	0.015	0.021
	(0.019)	(0.020)	(0.024)
Equity	0.014	0.011	0.033
	(0.066)	(0.070)	(0.074)
Loss	-0.017**	-0.018**	-0.016**
	(0.008)	(0.008)	(0.008)
Constant	-0.060	-0.035	-0.099
	(0.078)	(0.091)	(0.093)
Year FE	YES	YES	YES
Bank FE	YES	YES	YES
Observations	744	744	584
Adj. R-squared	0.902	0.902	0.894

Table 7. Analysis of the dividend policy of public and private SBs

The analysis is based on balanced sample of 24 private and public Swiss SBs for the period 2014-2021. All variable definitions are provided in Appendix A. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable	Payout ratio	Dividend yield
	(1)	(2)
SB_LISTED	0.021	0.005***
	(0.022)	(0.001)
Size	-0.036***	0.006***
	(0.011)	(0.001)
Loans	-0.412**	0.015
	(0.173)	(0.015)
Deposits	0.285	0.036*
	(0.187)	(0.020)
Equity	2.131***	-0.085*
	(0.574)	(0.048)
Constant	1.153***	-0.089***
	(0.307)	(0.023)
Year FE	YES	YES
Observations	192	192
R-squared	0.113	0.209

Table 8. Changes of the dividend policy during the crisis of public and private SBs

The analysis is based on balanced sample of 24 private and public Swiss SBs for the period 2014-2021. In columns 1 and 3, the variable *CRISIS* includes the fiscal years 2020 and 2021 (i.e., the dividend decision made the first semester of 2021 and 2022). In columns 2 and 4, the variable *CRISIS* includes the fiscal years 2019, 2020 and 2021. All variable definitions are provided in Appendix A. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable	Payout ratio		Dividend yield	
	Main model	Different crisis period	Main model	Different crisis period
	(1)	(2)	(3)	(4)
CRISIS	0.026	0.028	0.000	0.000
	(0.018)	(0.019)	(0.001)	(0.001)
SB_LISTED # CRISIS	-0.002	0.007	0.002	0.002*
	(0.022)	(0.021)	(0.001)	(0.001)
Size	0.090	0.047	-0.001	-0.003
	(0.072)	(0.083)	(0.005)	(0.006)
Loans	0.575**	0.521*	0.032*	0.027
	(0.288)	(0.266)	(0.018)	(0.017)
Deposits	-0.270	-0.165	-0.019	-0.014
	(0.242)	(0.232)	(0.013)	(0.012)
Equity	0.729	0.308	-0.001	-0.017
	(1.586)	(1.648)	(0.074)	(0.075)
Constant	-1.321	-0.573	0.046	0.079
	(1.387)	(1.526)	(0.102)	(0.110)
Year FE	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES
Observations	192	192	192	192
Adj. R-squared	0.764	0.766	0.903	0.904

Table 9. Analysis of the ROE

The analyses are based on balanced sample of 93 private and public Swiss banks for the period 2014-2021 in columns 1 and 2, including 24 stats-owned banks (SBs), and on a balanced sub-sample of 73 Swiss banks for the period 2014-2021 in coumns 3 and 4 (i.e., cooperative banks are excluded). The analysis is based on all years in columns 1 and 3, and on the years before the crisis in columns 2 and 4. Robust standard errors in parentheses. All variable definitions are provided in Appendix A. *** p<0.01, ** p<0.05, * p<0.1.

	Full sample		Without cooperative banks	
Dependent Variable : ROE	2014-2021	2014-2019	2014-2021	2014-2019
	(1)	(2)	(3)	(4)
SB	-0.009***	-0.009***	-0.012***	-0.012***
	(0.003)	(0.003)	(0.003)	(0.003)
Size	0.007***	0.007***	0.007***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)
Loans	-0.067***	-0.065***	-0.064***	-0.062***
	(0.011)	(0.013)	(0.011)	(0.013)
Deposits	-0.101***	-0.111***	-0.107***	-0.118***
	(0.020)	(0.024)	(0.021)	(0.026)
Equity	-0.079	-0.127*	-0.072	-0.128
	(0.073)	(0.074)	(0.081)	(0.083)
Loss	-0.176***	-0.208***	-0.177***	-0.211***
	(0.031)	(0.043)	(0.032)	(0.044)
Constant	0.075***	0.080***	0.070**	0.077**
	(0.025)	(0.030)	(0.027)	(0.033)
Year FE	YES	YES	YES	YES
Observations	744	558	584	438
R-squared	0.544	0.558	0.544	0.560

Table 10. Changes of the ROE during the crisis

The analyses in columns 1 and 2 are based on balanced sample of 93 private and public Swiss banks for the period 2014-2021, including 24 state-owned banks (SBs). In the first column, the variable *CRISIS* includes the fiscal years 2020 and 2021 (i.e., the dividend decision made the first semester of 2021 and 2022). In the second column, the variable *CRISIS* includes the fiscal years 2019, 2020 and 2021. In the third column, we perform the same analysis as in column 1 on a balanced sub-sample of 73 Swiss banks for the period 2014-2021 (i.e., cooperative banks are excluded). All variable definitions are provided in Appendix A. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable: ROE	Full sample	Different crisis period	Reduced sample
	(1)	(2)	(3)
CRISIS	-0.018*	-0.017*	-0.020*
	(0.010)	(0.010)	(0.011)
SB # CRISIS	-0.001	-0.002	-0.002
	(0.003)	(0.004)	(0.004)
Size	0.047*	0.048*	0.054*
	(0.025)	(0.025)	(0.028)
Loans	0.020	0.019	0.015
	(0.044)	(0.044)	(0.051)
Deposits	-0.015	-0.017	-0.014
	(0.052)	(0.054)	(0.065)
Equity	0.053	0.050	0.110
	(0.304)	(0.306)	(0.331)
Loss	-0.110***	-0.110***	-0.108***
	(0.021)	(0.021)	(0.021)
Constant	-0.605*	-0.604*	-0.692*
	(0.350)	(0.351)	(0.392)
Year FE	YES	YES	YES
Bank FE	YES	YES	YES
Observations	744	744	584
R-squared	0.854	0.854	0.851

Appendix A. Variable definitions

Variable name	Definition
Payout ratio	Dividends / Net income
Dividend yield	Dividends / Equity
ROE	Net income / Equity
SB	Equal to 1 is the banks is a state-owned bank, and 0 otherwise
SB_LISTED	Equal to 1 if the SB is listed on the stock market and 0 otherwise
CRISIS	Equal to 1 for the economic crisis period and 0 otherwise
Size	Logarithm of the total assets
Loans	Loans / Total assets
Deposits	Deposits / Total assets
Equity	Equity / Total assets
Loss	Equal to 1 if the net income is negative and 0 otherwise

Appendix B. Analysis of the parallel trend assumption for the payout ratio

Analysis of a balanced sample of 93 private and public Swiss banks for the period 2014-2021, including 24 SBs, or a balanced sample without cooperative banks. All variable definitions are provided in Appendix A. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable: Payout ratio	Full sample	Without cooperative banks
	(1)	(2)
SB # YEAR_2015	0.017	0.025
	(0.030)	(0.032)
SB # YEAR_2016	0.005	0.015
	(0.041)	(0.041)
SB # YEAR_2017	0.015	0.020
	(0.030)	(0.042)
SB # YEAR_2018	-0.007	-0.023
	(0.033)	(0.040)
SB # YEAR_2019	0.057*	0.038
	(0.034)	(0.057)
SB # YEAR_2020	0.081**	0.088
	(0.035)	(0.055)
SB # YEAR_2021	0.062*	0.072
	(0.037)	(0.056)
Size	-0.082	-0.079
	(0.106)	(0.122)
Loans	0.281*	0.308
	(0.158)	(0.223)
Deposits	0.319	0.445
	(0.214)	(0.324)
Equity	1.368	1.517
	(0.856)	(1.249)
Loss	-0.231**	-0.229
	(0.109)	(0.198)
Constant	1.024	0.875
	(1.421)	(1.485)
Year FE	YES	YES
Bank FE	YES	YES
Observations	744	584
Adj. R-squared	0.828	0.802

Appendix C. Analysis of the parallel trend assumption for the dividend yield

Analysis of a balanced sample of 93 private and public Swiss banks for the period 2014-2021, including 24 SBs, or a balanced sample without cooperative banks. All variable definitions are provided in Appendix A. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable : Dividend yield	Full sample	Without Cooperative banks
	(1)	(2)
SB_LISTED # YEAR_2015	0.002	0.002
	(0.002)	(0.002)
SB_LISTED # YEAR_2016	0.002	0.002
	(0.002)	(0.003)
SB_LISTED # YEAR_2017	0.002	0.003
	(0.002)	(0.003)
SB_LISTED # YEAR_2018	0.003	0.003
	(0.002)	(0.003)
SB_LISTED # YEAR_2019	0.003	0.002
	(0.002)	(0.003)
SB_LISTED # YEAR_2020	0.005*	0.005
	(0.002)	(0.004)
SB_LISTED # YEAR_2021	0.006*	0.007
	(0.003)	(0.005)
Size	0.011	0.014
	(0.012)	(0.013)
Loans	0.024	0.025
	(0.017)	(0.027)
Deposits	0.023	0.033
	(0.021)	(0.034)
Equity	0.052	0.074
	(0.082)	(0.106)
Loss	-0.016*	-0.015
	(0.008)	(0.014)
Constant	-0.164	-0.209
	(0.160)	(0.166)
Year FE	YES	YES
Bank FE	YES	YES
Observations	744	584
R-squared	0.901	0.908

Appendix D. Analysis of the parallel trend assumption for public vs private SBs

Balanced sample of 24 private and public Swiss state-owned banks for the period 2014-2021. All variable definitions are provided in Appendix A. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable :	Payout ratio	Dividend yield
	(1)	(2)
SB_LISTED # YEAR_2015	0.045	0.000
	(0.041)	(0.002)
SB_LISTED # YEAR_2016	-0.043	-0.004
	(0.070)	(0.003)
SB_LISTED # YEAR_2017	0.054	0.003
	(0.051)	(0.002)
SB_LISTED # YEAR_2018	0.029	0.003
	(0.047)	(0.002)
SB_LISTED # YEAR_2019	-0.001	-0.000
	(0.056)	(0.004)
SB_LISTED # YEAR_2020	0.031	0.004
	(0.061)	(0.003)
SB_LISTED # YEAR_2021	0.030	0.004
	(0.061)	(0.003)
Size	-0.019	-0.017
	(0.252)	(0.016)
Loans	0.172	0.005
	(0.463)	(0.039)
Deposits	-0.064	-0.001
	(0.596)	(0.031)
Equity	1.654	0.013
	(2.757)	(0.148)
Constant	0.663	0.326
	(4.573)	(0.286)
Year FE	YES	YES
Bank FE	YES	YES
Observations	192	192
R-squared	0.781	0.894