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AUSTERITY AND BANKING: THE IMPACT OF FISCAL CONSOLIDATION ON BANK EFFICIENCY AND STABILITY[1]

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February 2025

Abstract

This paper explores the impact of fiscal consolidations on banking behavior, focusing on efficiency and stability. Using a panel dataset covering 194 countries from 1989 to 2020 and employing local projection methods, we find that fiscal consolidations improve bank stability at the expense of efficiency. The decline in efficiency is attributed to reduced operational income, while stability gains stem from improved asset quality and bolstered capital adequacy. The effects are heterogeneous: consolidations have a more substantial negative impact on efficiency in advanced economies, while stability improvements are more pronounced in emerging markets. The size and composition of fiscal adjustments also matter: tax-based consolidations favor stability more than expenditure-based ones. Robustness checks with alternative definitions of fiscal consolidations and non-linear models confirm these findings. The findings emphasize the importance of tailoring fiscal consolidations to country-specific factors to balance stability and efficiency in the banking sector.

Keywords: fiscal consolidations, bank efficiency, financial stability, tax-based adjustments, panel data, local projections.
JEL codes: C23, G21, H3, E62, F34

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1. Introduction

The relationship between fiscal consolidations and banking behavior is critical for understanding the interplay between macroeconomic policy and financial sector performance. Fiscal consolidations—government actions aimed at reducing budget deficits—are often necessary for ensuring fiscal sustainability, particularly in high-debt contexts. However, their effects on the banking sector, particularly regarding efficiency and stability, remain unexplored. Banks are vital intermediaries in the economy, and disruptions to their operations can have widespread implications for credit availability, financial stability, and long-term growth. This paper investigates how fiscal consolidations influence bank behavior, focusing on efficiency and stability. It offers novel insights into the heterogeneity of these effects across countries, consolidation types, and business cycles.

Recent debates and empirical studies have highlighted the fiscal challenges facing banking systems. For example, fiscal consolidations are often associated with shifts in bank portfolio allocation. Cimadomo et al. (2012) show that consolidations increase Tier-1 capital ratios as banks shift from private to public debt securities, reducing risk-weighted assets. However, this analysis is limited to capital ratios and industrialized economies, leaving open questions about the broader impact on bank efficiency, stability, and profitability. Additionally, studies such as Alesina et al. (2019) demonstrate that fiscal consolidations can have disparate macroeconomic effects, depending on their size and composition, but do not explicitly link these effects to banking outcomes. To address these gaps, our paper uses a comprehensive dataset to analyze how fiscal consolidations affect bank efficiency and stability in 194 countries from 1989 to 2020.

Using local projection methods, we assess the effects of fiscal consolidations on key measures of bank efficiency (e.g., cost-to-income ratios and return on assets) and stability (e.g., non-performing loans and capital adequacy ratios). Our results reveal a consistent trade-off: fiscal consolidations improve bank stability but reduce efficiency. Stability gains are primarily driven by reduced sovereign risk and enhanced market confidence, which improves asset quality and capital buffers. However, efficiency declines reflect constrained credit growth, reduced profitability, and higher operational costs during fiscal adjustments. These dynamics are particularly pronounced in large fiscal consolidations. The size and composition of fiscal consolidations significantly condition their effects on banks. Larger consolidations, measured by changes in the cyclically adjusted primary balance (CAPB), are associated with greater

efficiency losses and, in some cases, risks to stability. Tax-based consolidations favor bank efficiency, as households reduce credit consumption and increase savings, improving banks' liquidity positions. In contrast, expenditure-based consolidations negatively affect bank stability, as reduced public spending forces banks to reallocate assets toward riskier investments. These findings are aligned with evidence from Guajardo et al. (2014), who emphasize the differential macroeconomic impacts of tax- and expenditure-based consolidations. Still, we extend this analysis to include their effects on the banking sector. Heterogeneity in the effects of fiscal consolidations is also evident across advanced and emerging economies. In advanced economies, fiscal consolidations have stronger negative effects on bank efficiency due to higher baseline operational costs and reliance on credit markets. Stability gains, while present, are modest given the robust starting conditions of banking systems in these economies. In contrast, emerging markets benefit more significantly from stability gains, reflecting reduced sovereign risk and greater macroeconomic resilience following consolidations. Still, these markets experience severe efficiency losses as fiscal tightening exacerbates pre-existing constraints on credit availability and operational efficiency. The timing of fiscal consolidations relative to the business cycle further influences their impact on banks. During economic expansions, consolidations reduce bank efficiency, possibly due to weaker credit demand and tighter financial conditions. However, their impact on stability is more muted, with initial declines recovering over time. In downturns, fiscal consolidations boost efficiency and stability as banks optimize operations under fiscal constraints and benefit from improved market discipline and reduced sovereign risk.

Our contributions are twofold. First, we expand the limited literature on fiscal policy and banking systems by providing the most comprehensive analysis to date. Existing studies, such as Cimadomo et al. (2012) and Alesina et al. (2019), provide valuable insights but are limited in scope and do not fully address issues of heterogeneity or endogeneity. Our dataset spans advanced and emerging economies and incorporates multiple bank efficiency and stability measures, allowing for a nuanced exploration of these dynamics. Second, we examine how the size and composition of fiscal consolidations condition their effects on banks. By differentiating between tax-based and expenditure-based consolidations, we offer novel insights into how fiscal policy influences the banking sector.

Our results have significant policy implications. Policymakers should recognize the trade-offs between efficiency and stability when designing fiscal consolidations. Tax-based consolidations are more effective during periods of excessive credit growth, as they enhance efficiency without compromising stability. Expenditure-based consolidations, while riskier,

may be more appropriate when banks have strong balance sheets and can absorb the effects of reduced public spending. Aligning fiscal consolidations with periods of economic expansion can help mitigate efficiency losses while amplifying stability gains. Additionally, emerging markets facing greater efficiency challenges may benefit from targeted interventions to support credit availability and operational resilience during fiscal adjustments. In sum, our paper underscores the complex and context-dependent effects of fiscal consolidations on banking behavior. By highlighting the trade-offs and heterogeneity of these effects, we contribute to a deeper understanding of fiscal policy's implications for financial stability and economic growth. These insights are particularly valuable for policymakers navigating the dual challenges of fiscal sustainability and financial sector resilience.

The remainder of this paper is organized as follows. Section 2 relates our work to the existing literature. Section 3 outlines the definition of fiscal consolidation and explains our empirical approach. Section 4 describes our novel dataset. Section 5 presents the baseline results, robustness checks and model extensions. Section 6 concludes.

2. Literature Review

A vast amount of literature investigates the relationship between sovereigns and banks. Notably, Reinhart and Rogoff (2010) conducted a seminal study on the historical link between public debt and financial crises. They find that countries relying on short-term borrowing to sustain growing debt are more likely to experience crises in confidence that can lead to sudden and unexpected financial crises. These empirical results are consistent with theoretical arguments by Acharya et al. (2014) on a feedback loop between sovereign risk and bank credit risk. Governments are more likely to bail out banks if credit risk is high, which increases sovereign risk. However, a higher sovereign risk weakens the banking system by eroding the value of government guarantees and bonds. This two-way feedback loop suggests fiscal consolidation could affect bank efficiency and stability.

The mechanisms, some dubious, some not, are well known. A vast literature suggests that fiscal consolidation may hurt bank efficiency for several reasons. First, they often involve austerity measures like reduced government spending and increased taxation. These measures have a contractionary effect on the economy, leading to lower economic growth. When the economy slows down, countries experience a rise in unemployment and in loan default rates (e.g., Goodhart et al., 2004). A rising number of non-performing loans (NPLs) will harm banks'

balance sheets because dealing with NPLs is costly and time-consuming, reducing the efficiency of banks (Alesina and Ardagna, 2013). Second, fiscal consolidations usually coincide with rising interest rates since governments compete with the private sector for funds in financial markets, and central banks often tighten monetary policy. Higher interest rates, while advantageous regarding net interest margins for banks, can reduce the demand for loans and negatively affect borrowers. This may deleteriously impact banks' efficiency (e.g., Ceccheti et al., 2011; Claessens et al., 2013). Furthermore, fiscal consolidations usually involve a reduction in government support and guarantees for banks, making them more risk-averse and reducing their willingness to extend credit, which affects profitability (e.g., Gambacorta and Rixtel, 2013). Lastly, significant regulatory changes often accompany fiscal consolidations, particularly stricter capital requirements and enhanced banking supervision. These regulatory changes improve the banking system's stability but increase compliance costs for banks (Franks et al., 1997). All this suggests that fiscal consolidations may reduce bank efficiency.

Notwithstanding, fiscal consolidations may improve bank stability. To begin with, fiscal consolidations seek to reduce government deficits and debt levels. Lower levels of government debt usually decrease the risk of sovereign default. This, in turn, lessens the likelihood of contagion to the banking sector (e.g., Reinhart and Rogoff, 2011). Banks are significant holders of government debt, and a sovereign debt crisis can certainly undermine their stability. Fiscal consolidations enhance fiscal sustainability, thereby reducing the risk of government bonds held by banks (Baldacci et al., 2010). Moreover, a credible fiscal consolidation can improve investor and public confidence in the economy. If investors have greater confidence in the fiscal discipline of a country, they are more likely to invest in government bonds and other financial assets. Therefore, improved sentiment may have a positive spillover effect on the banking sector, contributing to a more stable funding environment for banks (e.g., Aizenman et al., 2013). Relatedly, fiscal sustainability may also limit the moral hazard problem where banks take on excessive risks knowing that the government will bail them out in the event of a crisis. Indeed, reducing moral hazard will enhance the stability of banks by promoting prudent risk management (e.g., Demirguc-Kunt et al., 2013). On top of that, fiscal consolidations may lead to a reduction in government borrowing, which could bring down interest rates. If interest rates are lower, banks benefit from diminished funding costs and declining loan defaults, as borrowers find it easier to service their debt (e.g., Calvo and Reinhart, 2002). Finally, governments and regulators tend to scrutinize the banking sector more closely during fiscal consolidation. They implement new regulations,

stress tests, and other measures to prepare banks for economic hardship. These regulatory measures should lead to a more stable banking system (Leaven and Valencia, 2013). Taken together, the literature suggests that fiscal consolidations may improve bank stability at the cost of lower efficiency.

The impact of fiscal consolidation on bank behaviour may also be non-linear. After all, fiscal consolidations vary considerably in scale and scope. Specifically, expenditure- and tax-based consolidations may have disparate effects on bank behaviour. Nobody has yet provided evidence on this matter. Still, an influential paper by Alesina and Perotti (1997) suggests that cutting government spending improves investor confidence and reduces sovereign risk, which fosters bank stability. In contrast, they find that tax hikes depress economic activity and adversely affect the ability of borrowers to repay their debts, undermining bank stability. On top of that, some countries implement modest government spending and taxation adjustments, while others opt for far-reaching austerity measures or draconian structural reforms. Finally, the business cycle may also determine the effectiveness of fiscal consolidations and their impact on the banking system. Economic conditions, captured by the business cycle phase, may interact non-linearly with fiscal consolidation measures, influencing how these policies affect the banking system (e.g., McDermott and Wescott, 1996). These hypotheses are explored in detail in section 5.

A last point to be mentioned is that there is little evidence of the interplay between fiscal consolidation, monetary policy, and bank behaviour. Many, but not all, fiscal consolidations are preceded by a devaluation and a pegging of the exchange rate. This typically brings down interest rates and increases competitiveness and bank profitability (Perotti, 2012). That said, only a few papers find that expansionary monetary policies offset the contractionary impact of fiscal consolidation (Ahrend et al., 2006). Indeed, most papers find that monetary conditions do not determine the success of fiscal consolidations (e.g., Alesina and Perotti, 1997; Von Hagen and Strauch, 2001; Lambertini and Tavares, 2005; Guichard et al., 2007). Recently, much attention has been given to the idea that banking prudential regulation may also affect bank behaviour. Many papers find that prudential regulation reduces excessive leverage, the likelihood of bank failures, and the cost of bank runs and bailouts (e.g., Lim et al., 2011; Demirgüç-Kunt and Huizinga, 2010; Claessens et al., 2013). Further, prudential regulation requires financial institutions to implement sound risk management practices, which reduces non-performing loans and other forms of financial distress (e.g., Laeven and Levine, 2009; Dell'Ariccia et al., 2012). Recently, a growing body of research also finds that countries leaning heavily on prudential regulation have a more resilient banking system, lower sovereign

risk, and higher government debt (e.g., Afonso and Jalles, 2019; Hulsewig and Steinbach, 2022; Afonso and Teixeira, 2023). If prudential policies allow governments to accumulate debt over time, they could influence the effects of fiscal consolidation on bank behaviour. While it is outside the scope of this paper to provide a detailed analysis of these issues, we do include several controls in all our analyses.

In summary, the literature suggests that governments face a particularly ghastly trade-off when implementing fiscal consolidation. On the one hand, fiscal consolidations may contribute to the banking sector's stability by reducing sovereign risk, boosting investor confidence, and limiting moral hazard. On the other hand, fiscal consolidations are associated with lackluster growth that increases loan defaults. At the same time, rising interest rates, reduced government support, and stricter regulations may also hurt banks' balance sheets. Theoretically and empirically, how fiscal consolidation affects bank efficiency and stability remains relatively understudied.

3. Methodology

3.1 Identifying Fiscal Consolidations

The literature relies on two methodologies to identify a fiscal consolidation shock. The first is based on a "narrative" approach, while the second relies on an ad hoc criterion linked to the fluctuations in the CAPB. In the first approach, the identification of fiscal consolidation episodes is grounded in approved budget plans and historical records of past fiscal policies. Romer and Romer (2010) and Devries et al. (2011) pioneered this approach by compiling a comprehensive list of fiscal consolidation episodes in 17 AE from 1978 to 2009. Recently, Alesina et al. (2019) updated the Devries et al. (2011) database for a subset of European countries up to 2014. Advocates of this approach typically contend that fiscal measures are unaffected by economic cycles, given their "bottom-up" construction. Indeed, this approach minimizes identification challenges and mitigates risks associated with reverse causality (Guajardo et al., 2014)[4]. However, the narrative approach has limitations: it relies on subjective judgment calls, and it does not fully eliminate endogeneity concerns since fiscal policy may be a response to changes in output or vice versa.

[4] Note, though, that fiscal shocks may not be exogenous because they can be predicted by several macroeconomic factors (e.g., Jordà and Taylor, 2016).

The narrative approach is not suitable in our setting for at least three reasons. First, our paper examines a broad, diverse sample of advanced and emerging economies, including countries in Latin America and Africa. The databases available examine only a small set of countries, which limits cross-country analysis. Second, and related, the databases by Devries et al. (2011) and Alesina et al. (2019) cover only a few advanced economies up to 2014, making the data somewhat outdated for our paper. Lastly, replicating the narrative approach for our large sample of countries and timeframe would be challenging because we would be unable to ensure internal consistency among observations.

For these reasons, our analysis will be based on changes in the CAPB. It is hard to identify fiscal consolidation shocks based on a threshold for the CAPB. Giavazzi and Pagano (1996) implemented a rigorous threshold, setting the minimum annual increase in the CAPB-to-GDP ratio at 3 percentage points (pp) to reduce the likelihood of a fiscal shock being an isolated fiscal consolidation episode. As an alternative, they suggested cumulative changes of 5, 4, and 3 pp over 4, 3, and 2 years, respectively. Alesina and Ardagna (1998) introduced some temporal flexibility, requiring changes of at least 2 pp in one year or an average of 1.5 pp over two years, thus allowing for more single-year fiscal consolidation episodes. Afonso (2010) incorporated relative thresholds based on the sample characteristics, defining a fiscal consolidation episode when the annual change in the CAPB-to-GDP ratio is at least 1.5 times the sample standard deviation or equal to one standard deviation, on average, over two years. Given the lack of consensus in the literature, we opt for a middle-ground approach. In the same spirit as Alesina and Perotti (1997), we define a fiscal consolidation episode as a minimum annual improvement in the CAPB-to-GDP ratio of 0.5 pp over two consecutive years[5].

Another critical issue is how we measure the CAPB. We can obtain these data directly from the IMF World Economic Outlook (WEO) database or compute the CAPB using a filtering approach, which decomposes GDP and government revenue into their cyclical and trend components. There is no consensus regarding the "optimal" way to estimate potential output. Prior studies have applied univariate statistical approaches, filtering out the trend component from the cyclical one; or structural approaches, deriving the estimates directly from a theoretical model. Given that data from the WEO database does not maximize the number of

[5] The starting year of a fiscal consolidation episode is defined as the year with the smallest annual improvement in the CAPB-to-GDP ratio, amounting to at least 0.5 percentage points. If the subsequent year also experiences a minimum annual improvement of 0.5 percentage points in the CAPB-to-GDP ratio, then the conclusion year of the fiscal consolidation episode is identified as the final year within a series of years exhibiting this minimum annual improvement. Subsequently, the fiscal consolidation episode ends when the annual CAPB-to-GDP ratio either improves by less than 0.5 percentage points or worsens.

observations in our panel database[6], we choose to apply a filtering technique despite its potential limitations.

After estimating the output gap, we use it to compute a new measure of the CAPB. Given that the elasticity of government revenues (REV) to output growth is close to one and knowing that primary expenditure (PEXP) is largely inelastic to growth[7], we multiply government revenues by the factor [1/(1+OG/100)] to calculate the adjusted government revenues (REV_{adj}), with OG being the output gap obtained via the HP or Hamilton filters[8]. In mathematical parlance, we can write:

$$CAPB = REV_{adj} - PEXP, \quad (1)$$

We then define a fiscal consolidation episode as expenditure-based when $\frac{|\Delta PEXPC\_GDP|}{|\Delta CAPBC\_GDP|} \geq 2/3$ and $\Delta PEXPC\_GDP < 0$, with $CAPBC\_GDP$ and $PEXPC\_GDP$ denoting cumulative CAPB and primary expenditure (in percent of GDP) within a given episode, respectively. By contrast, a fiscal consolidation episode is defined as tax-based when $\Delta PEXPC\_GDP \geq 0$. Any episodes that do not satisfy the criteria above are classified as mixed fiscal consolidation episodes.

Our baseline specification defines fiscal consolidation based on a CAPB change of 0.5 pp over two consecutive years (Alesina and Perotti, 1997). The CAPB data is obtained using the HP filter. This specification maximizes our sample size with 806 episodes of fiscal consolidation identified between 2000-2020 (464 in AE and 342 in EE); ensures broad consistency and comparability with the already-established literature on fiscal consolidations, most of which relies on CAPB metrics; and prioritizes relatively durable fiscal consolidations as opposed to one-off shocks to CAPB. The next section explains the empirical approach.

3.2 Empirical Approach

The main hypothesis underlying our paper is that fiscal consolidation affects bank behaviour. To test this hypothesis, we rely on the local projections' (LP) method proposed by Jordà (2005) to estimate impulse-response functions. This approach, as demonstrated by

[6] The IMF estimates potential output using a production function, but there may be considerable variation in assumptions among different countries.
[7] See Girouard and André (2005).
[8] For a detailed discussion of these approaches, see Hamilton (2018).

Auerbach and Gorodnichenko (2013) and Romer and Romer (2019), offers a more flexible alternative to vector autoregressions (VAR).[9]

We rely on local projections over the VAR method for several reasons. First, our estimation is based on a large panel dataset with a variety of fixed effects, posing challenges to the use of standard VAR models.[10] The local projections circumvent the need to estimate equations for dependent variables other than the variable of interest, significantly reducing the number of estimated parameters. Therefore, local projections tend to perform better at estimating the shorter horizons of impulse responses, particularly in finite samples like ours. Second, local projections are better at capturing nonlinearities, such as the possible interactions between fiscal consolidation shocks and bank behaviour. Their application is also more straightforward compared to non-linear structural VAR models like the Markov-switching or threshold-VAR models. In fact, local projections tend to be easier to implement relative to VARs when a specified nonlinearity would make the inversion of the VAR form into the Vector Moving Average (VMA) form difficult (Plagborg-Møller and Wolf, 2021). Lastly, the error term in these panel estimations is likely to be correlated across countries, which is easier to handle using the local projections method by either clustering standard errors or using the Driscoll-Kraay (1998) standard errors that consider arbitrary correlations of the errors across countries and time.

With this necessary preamble out of the way, our baseline specification is the following:

$$\Delta \log y_{i,t+h} = \alpha_{i,h} + \delta_{t,h} + \beta_{j,h} d_{i,t-j} + \beta'_{c,h} X_{i,t-c} + u_{i,t+h} \qquad (2)$$

where y is the dependent variable proxying for bank efficiency or stability; β_k denotes the (cumulative) response of the variable of interest in each k year after the fiscal consolidation shocks; α_i, τ_i are country and time fixed effects, included to account for cross-country heterogeneity and common factors, such as the global business cycle or investment sentiment[11]; $shocks_{i,t}$ denotes the government consolidation shocks; $\boldsymbol{X_{i,t}}$ is a set a of control variables, including two lags of the fiscal shocks. To control for country-specific factors that may influence the propensity for governments to affect the need to consolidate, the baseline models

[9] See Plagborg-Møller and Wolf (2021) for a discussion on the trade-offs between VARs and local projections.
[10] It is possible to introduce country fixed effects in a panel VAR, for instance, by demeaning each model variable over time for each country before including them in VAR.
[11] The inclusion of the term τ_t controls for cross-sectional dependence that arises from common sources of variation in the panel. The estimated impulse responses should be interpreted as responses to country-specific shocks *relative* to the global.

use up to two lags in the dependent variable.[12] Lastly, we include country-specific time trends as additional control variables. In robustness checks, we also address potential omitted variable bias.[13] Equation (2) is estimated using OLS.[14] In all our LPs, we use Spatial Correlation Consistent (SCC) standard errors as proposed by Driscoll and Kraay (1998) clustered at the country level. We test whether spatial dependence is present in the disturbances between the cross-sectional units when using standard errors clustered at the country level as often applied in the LP literature. For this purpose, we use the Pesaran (2015) test, which is standard normally distributed. A vest statistic value outside the [-1.96, 1.96] interval rejects the null hypothesis of weak cross-sectional dependence in favor of cross-sectional dependence. The test is often significant.15 Impulse response functions (IRFs) are then obtained by plotting the estimated β_k for k= 0,1,...,5 with 90-percent and 95-percent confidence bands computed using the standard deviations associated with the estimated coefficients β_k.

4. Data

The data on each country's banking system characteristics comes from the World Bank's (WB) Global Financial Development database. This database contains annual data on the efficiency and stability of the banking system in 214 countries between 1960 and 2022. Based on prior theoretical and empirical literature, the database includes various proxies for bank efficiency and stability (e.g., Cihák et al., 2012).

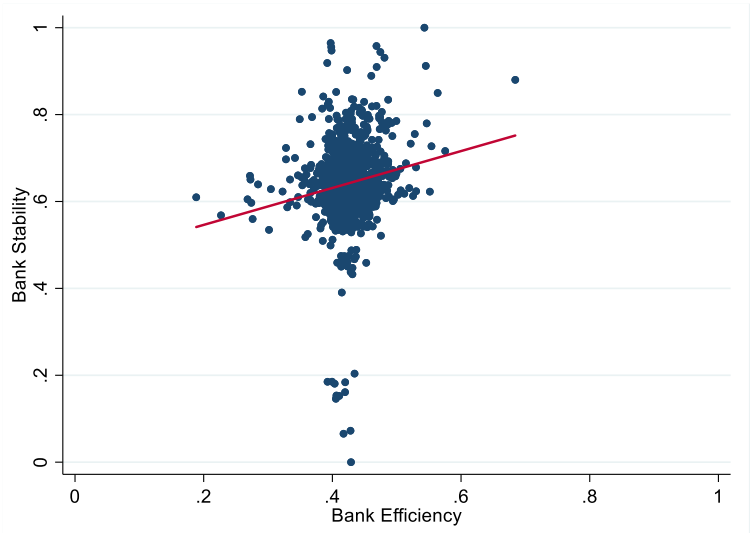
Bank efficiency and stability are hard to define and even harder to measure. This is why we collect data on several measures of bank efficiency and stability in each country. Specifically, we examine bank efficiency by looking at net interest margins, lending-deposit spreads, noninterest income to total income, cost-to-assets ratio, return on assets, and return on equity. To study bank stability, we analyze the evolution of non-performing loans to gross

[12] Similar results are obtained when using alternative lag parametrizations.
[13] The dynamics of bank efficiency and stability may differ across countries. These coefficients are being estimated as if they were homogeneous across countries. This could lead to the classic problem of latent heterogeneity in lagged dependent variables with the downside that the OLS consistency conditions may be violated (Pesaran and Smith, 1995). We assume that the dynamics for the shock variables are exogenous. If so, the coefficients will converge to the average value among countries, and the OLS consistency conditions are met.
[14] In comparison with vector autoregressions and autoregressive distributed lag models, the computation of confidence bands does not require Monte Carlo simulations or asymptotic approximations. However, confidence bands at longer horizons tend to be wider than those estimated in vector autoregression specifications.
[15] Results are available on request. The SSC standard errors are also cluster robust in addition to being robust to spatial correlation, see Driscoll and Kraay (1998).

loans, the ratio of regulatory capital to risk-weighted assets, credit to deposits, stock prices, and banks' z-score.

We use principal component analysis (PCA) to construct two aggregate measures of bank efficiency and stability based on the measures above. These aggregate measures provide an overall picture of the robustness of banking systems across countries between 2000-2020. Perhaps more interestingly, they allow us to examine how bank efficiency relates to stability. Figure 1 shows a strong positive correlation between bank efficiency and stability. This suggests that banks operating efficiently possess organizational structures and risk management practices contributing to greater stability. At the same time, a stable environment may also enable banks to operate more efficiently.

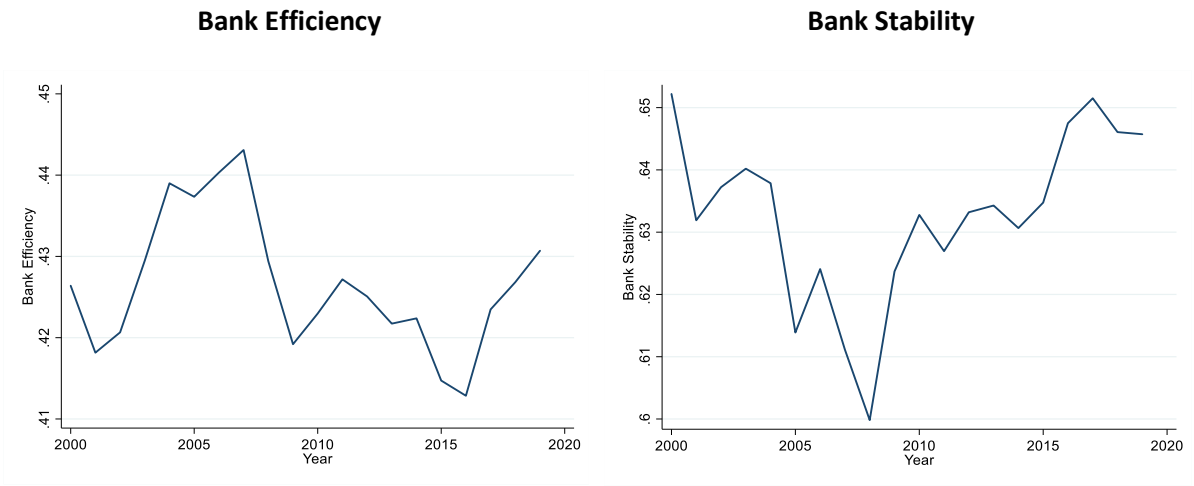
Figure 1: Relationship Between Bank Efficiency and Stability, 2000-2020



Note: This figure displays the relationship between bank efficiency and stability. We measure efficiency and stability using aggregate indexes based on the first principal components of the most used bank performance indicators described in Appendix A.

Figure 2 shows the evolution of bank efficiency and stability over time, respectively. Two observations immediately stand out. One is that bank stability declined steadily before the Great Recession, while efficiency rose until the crisis. Two is that bank efficiency and stability declined sharply during the Great Recession, suggesting that banks became less profitable and stable. The visual evidence in these figures shows that our aggregate measures are strong proxies for bank efficiency and stability. In additional analyses, we examine each measure separately to gauge the specific channels through which fiscal consolidation affects bank behaviour.

Figure 2: Average Evolution of Bank Efficiency and Bank Stability, 2000-2020



Note: These figures show the evolution of bank stability and efficiency in our sample. Bank efficiency and stability are built by combining the most commonly used efficiency and stability indicators using PCA. These indexes were then normalized to be between 0 and 1.

We collect fiscal data from the IMF's April 2022 WEO database to identify the episodes of fiscal consolidation. In particular, we obtain the CAPB-to-GDP ratio and primary government expenditures in percent of GDP. These variables are used to define a fiscal consolidation episode as a minimum annual improvement in the CAPB-to-GDP ratio of 0.5 p.p. over two consecutive years with the CAPB data estimated using the HP filter. In supplemental analyses, we estimate the CAPB based on the Hamilton filter, or we take it directly from the IMF World Economic Outlook (WEO) database. To address endogeneity, we also look at unexpected fiscal consolidation shocks. To do so, we rely on the work of Alesina et al. (2015) and David and Leigh (2018) who identify unexpected fiscal adjustments in several advanced and emerging economies using a narrative approach. Relying on their data, we identify 189 unexpected fiscal consolidations in 31 countries between 1989-2009.

The set of control variables comes from the WB World Development Indicators (WDI) database. These include CPI inflation rate (in percent), GDP growth, GDP per capita growth, and private credit to GDP. These variables capture significant changes in economic growth, credit conditions, and living standards in each country, all of which could influence the impact of fiscal consolidations on bank behaviour (e.g., Levine and Zervos, 1998; Schularick and Taylor, 2012). Detailed descriptions of every variable are available in Appendix A.

Table 1 presents summary statistics. Between 2000 and 2020, our baseline sample of 194 countries experienced 806 episodes of fiscal consolidation, which corresponds to approximately 23.3% of the total country-year observations. During this period, banks were more stable than efficient. However, bank stability was considerably more volatile than bank efficiency. In the next section, we investigate how fiscal consolidation affects bank behaviour.

5. Empirical Results

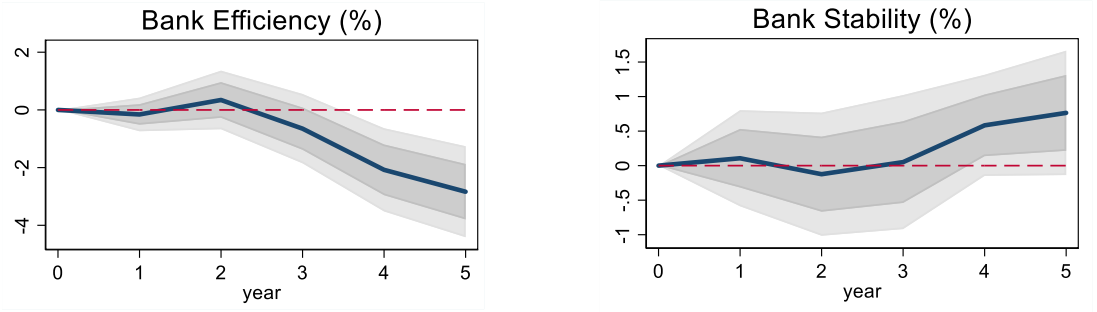
5.1 Baseline

Our baseline model examines the impact of a fiscal consolidation shock on bank efficiency and stability while controlling for changes in economic growth, credit conditions, and living standards in each country. The results presented in Figure 3 show that fiscal consolidations are associated with a significant decline in bank efficiency of about 7.7 percentage points over the medium term. The effect of a fiscal consolidation shock is particularly strong after three years, suggesting a delayed but persistent impact of fiscal adjustments on banks' profitability.

The impact on bank stability is weaker. Our estimations suggest that fiscal consolidations may foster stability over longer horizons, but these results are not statistically significant. A possible explanation for this result is the composition of our sample, which consists of countries with different economic characteristics. This heterogeneity in our sample may obscure the statistical significance of the impact of fiscal consolidation on bank stability.

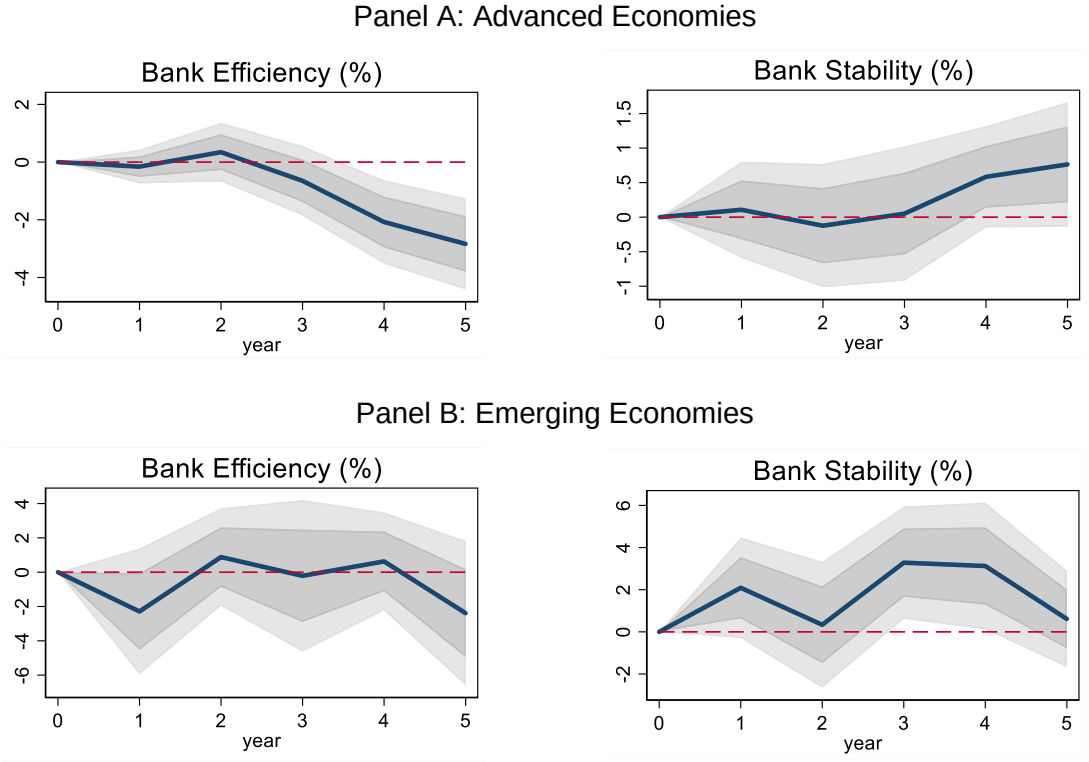
To explore this issue more formally, we disaggregate the effects of fiscal consolidation by country income level. Figure 4 repeats the estimations after dividing the sample into advanced and emerging economies. In advanced economies, fiscal consolidations have a pronounced negative effect on bank efficiency. However, fiscal consolidations only have a limited effect on bank stability. The obvious explanation for this finding is that, in advanced economies, where financial systems are inextricably intertwined and institutions are highly interdependent, fiscal consolidations may lead to a significant contraction in credit availability and a subsequent decline in bank efficiency.

Figure 3: Impact of Fiscal Consolidation on Bank Efficiency and Stability, Baseline, 2000-2020



Note: This figure shows the estimated effects of fiscal consolidation on bank efficiency and stability. We measure efficiency and stability using aggregate indexes based on the first principal components of the most used bank performance metrics. Fiscal consolidations are defined as a CAPB change of 0.5 pp over two consecutive years with the CAPB data obtained based on the HP filter (baseline). Standard errors are clustered by country. The shaded areas correspond to 90 and 95 percent confidence bands.

Figure 4: Impact of Fiscal Consolidation on Bank Efficiency and Stability, Advanced vs. Emerging Economies, 2000-2020



Note: This figure shows the estimated effects of fiscal consolidation on bank efficiency and stability in advanced versus emerging economies. Panel A examines the impact of fiscal consolidations in advanced economies. Panel B shows the impact on emerging economies. Standard errors are clustered by country. The shaded areas correspond to 90 and 95 percent confidence bands.

Conversely, in emerging economies, the impact of fiscal consolidations is distinctly different. Our estimations indicate that fiscal consolidations have a limited effect on bank efficiency. A possible explanation for this finding is that credit in emerging markets is characterized by a greater degree of informality and flexibility, which allows banks to maintain operational efficiency during periods of fiscal consolidation. Turning next to the impact on bank stability, our results suggest a strong positive effect, underscoring the crucial role of fiscal sustainability in ensuring the banking system's stability, at least in emerging economies. These results are consistent with the view that banks are more vulnerable to fiscal shocks in countries with a weaker institutional environment that discourages households and firms from seeking bank financing (e.g., Demirgüç-Kunt and Maksimovich, 1998; Beck et. al, 2005; Savafian and Wimpey, 2007).

Thus, our baseline results support the hypothesis that fiscal consolidations reduce bank efficiency while increasing bank stability. Our results also suggest that fiscal adjustments have a stronger impact on bank efficiency in advanced economies and bank stability in emerging economies. Having determined how fiscal consolidation influences bank efficiency and stability, we examine why this happens in the next section.

5.2 Channels

In this section, we explore the various channels through which fiscal consolidation may impact bank efficiency and stability. To do this, we examine the impact of fiscal consolidation on each individual variable that constitutes these indices. We also explore how the size and composition of fiscal consolidations are key in evaluating their impact on bank behaviour. These exercises allow us to look closely at the impact of fiscal consolidation on banks' balance sheets.

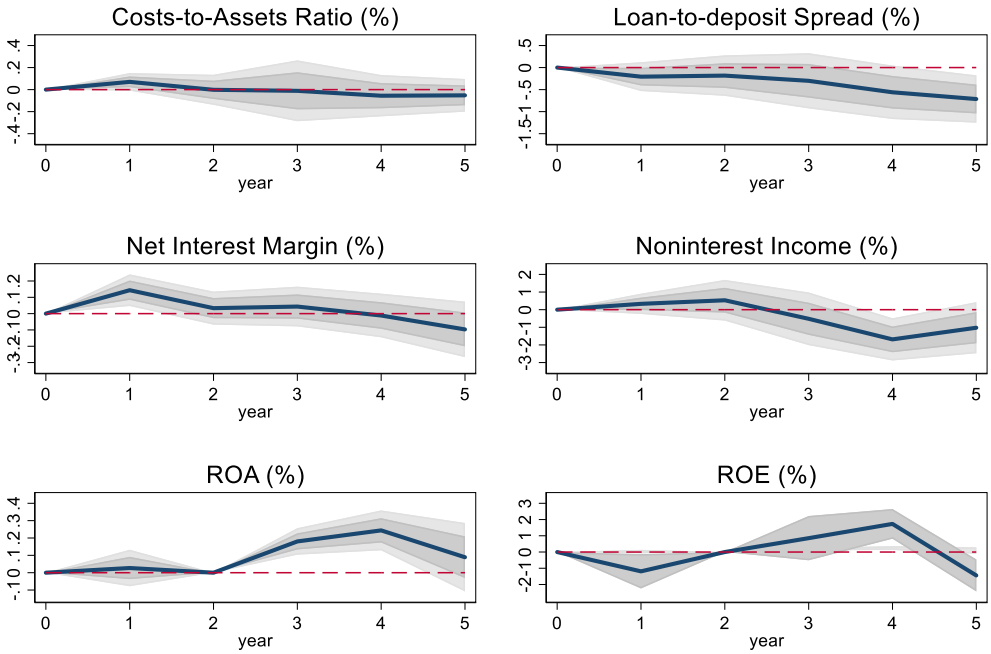
Figure 5a shows the estimated impact of fiscal consolidation on different measures of bank efficiency. Following fiscal consolidation, our estimations point to a decline in bank efficiency mostly attributable to operational issues. In particular, we find that there is a substantial reduction in the loan-to-deposit spread and noninterest income, reflecting adjustments in banks' operational strategies in response to the fiscal consolidation shock. Net interest margins slightly increase after fiscal consolidation, possibly influenced by rising interest rates. Yet, this increase is temporary, dissipating entirely after three years. Surprisingly, we also find that Return on Assets (ROA) and Return on Equity (ROE) display marked increases a few years

after the fiscal adjustment. This points to a positive shift in investor perception, suggesting that banks may be perceived as more efficient during periods of fiscal tightness.

Figure 5b shows that fiscal consolidation can also lead to a long-term reduction in non-performing loans, improving asset quality in banks' balance sheets. Additionally, over the medium term, credit experiences a relative decrease compared to deposits during fiscal adjustments. This is consistent with the view that either banks are more cautious in extending credit during fiscal tightening or households and firms borrow less and save more. Finally, our results show that banks respond to fiscal consolidation by significantly bolstering their capital adequacy ratios. This strategic response makes banks more resilient during periods of fiscal restraint, contributing to an overall improvement in the banking system's stability.

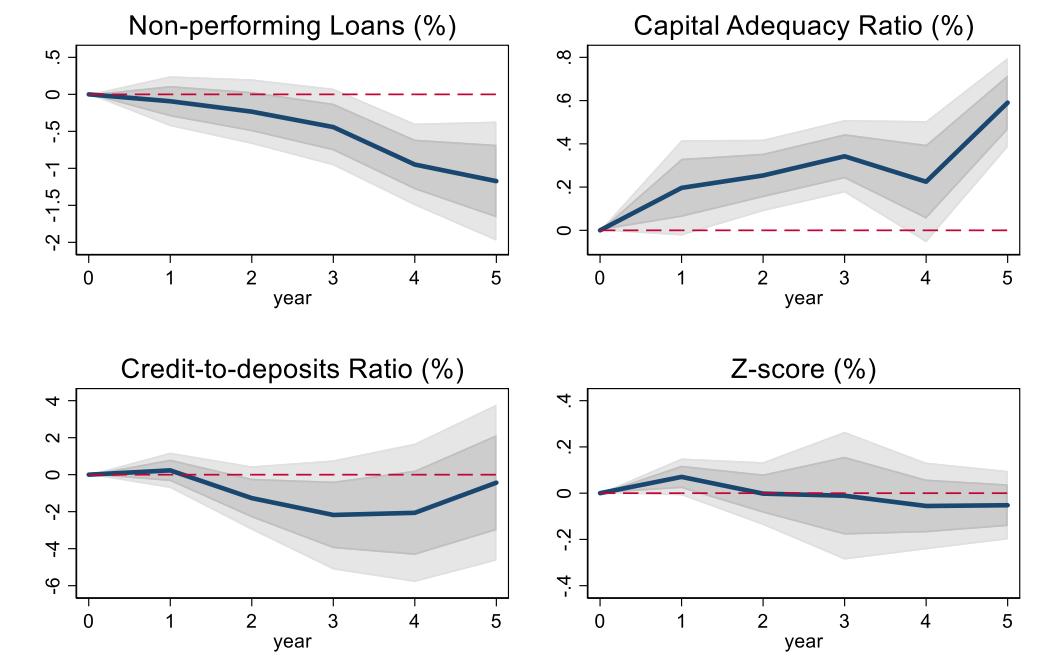
Our results indicate that fiscal consolidations negatively impact bank operations, affecting bank efficiency. However, they also positively impact banks' asset quality, improving bank stability. Next, we investigate how the impact of fiscal consolidation varies with its size and composition.

Figure 5a: Impact of Fiscal Consolidation on Bank Efficiency Indicators, Baseline, 2000-2020



Note: This figure shows the estimated effects of fiscal consolidation shocks on different measures of bank efficiency. The local projections are estimated using a within estimator with country-fixed effects. Standard errors are clustered at the country level. The shaded areas denote 90 and 95 percent confidence bands.

Figure 5b: Impact of Fiscal Consolidation on Bank Stability Indicators, Baseline, 2000-2020

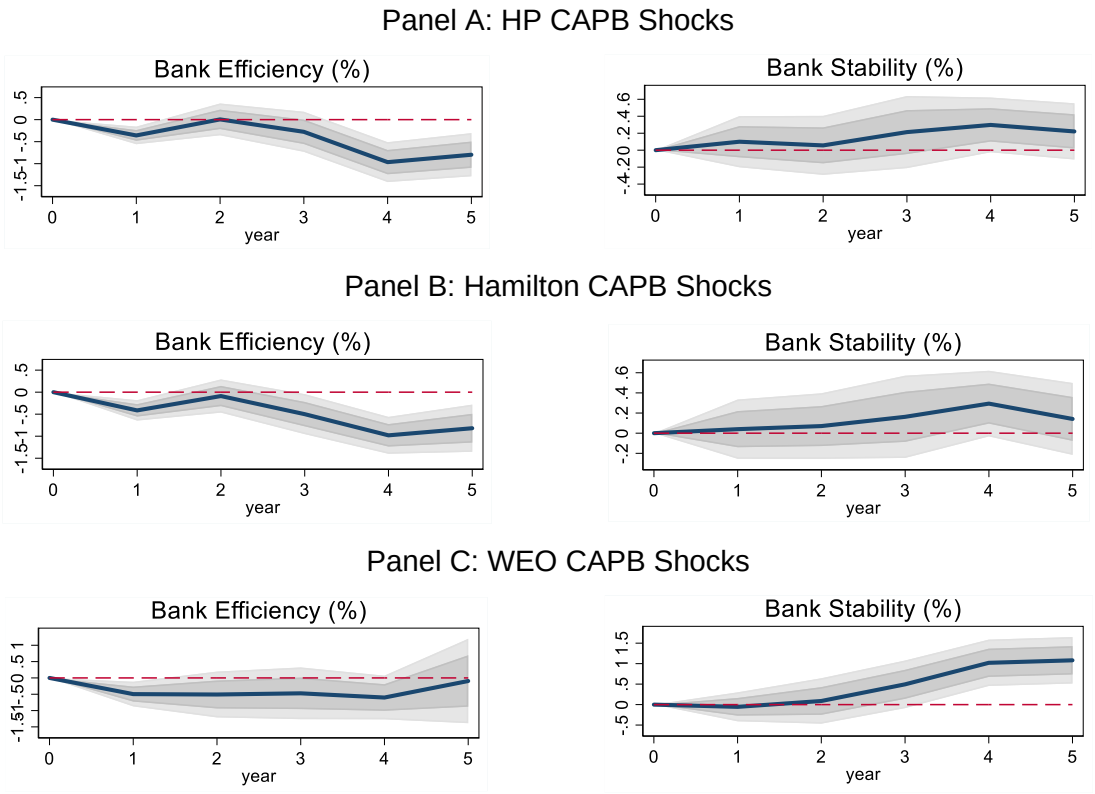


Note: This figure shows the estimated effects of fiscal consolidation shocks on different measures of bank stability. The local projections are estimated using a within estimator with country-fixed effects. Standard errors are clustered at the country level. The shaded areas denote 90 and 95 percent confidence bands.

The size and composition of fiscal consolidations are likely to affect their impact on bank behaviour. To explore this possibility, we look at the average annual change in the CAPB during the fiscal adjustment. This allows us to estimate the magnitude of fiscal consolidation's impact on bank efficiency and stability. For robustness, we repeat the estimations using the Hamilton CAPB and the WEO CAPB.

Figure 6a shows that the results are virtually unchanged. Once again, we find that fiscal consolidations reduce bank efficiency while increasing bank stability. Specifically, a one percent increase in the CAPB results in a decline of 1.0 percent in bank efficiency and an increase of 0.2 percent in bank stability, particularly after year four.

Figure 6a: The Impact of Fiscal Consolidation on Bank Efficiency and Stability, Size, 2000-2020



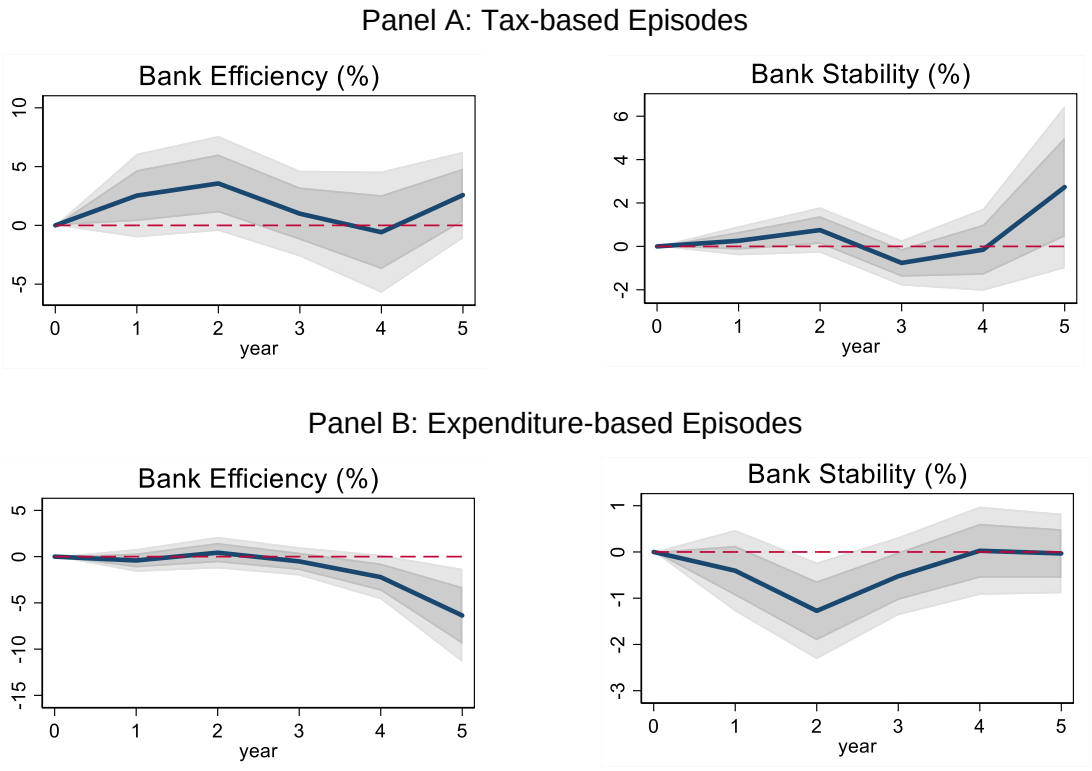
Note: This figure shows the estimated effects of fiscal consolidation on bank efficiency and stability using the average annual change in the CAPB during the fiscal consolidation episode. Panel A uses the estimates of CAPB based on the HP filter. Panel B uses the estimates of CAPB based on the Hamilton filter. Panel C uses the estimates of CAPB taken directly from the IMF World Economic Outlook (WEO) database. Standard errors are clustered by country. The shaded areas correspond to 90 and 95 percent confidence bands.

The results across the different measures of the CAPB are broadly similar. The bank responses are essentially the same when we use Hamilton CAPB shocks. These responses are, however, more sharply determined when we use WEO CAPB shocks. Our estimates suggest that a WEO CAPB shock has a larger impact on bank stability, which can be as high as 0.8 percent around year four. The behaviour of bank responses is also noticeably smoother, possibly because the sample is slightly biased towards advanced economies when we use WEO CAPB shocks. What is perhaps most interesting about these results is that the size of fiscal consolidation seems to have a much stronger impact on bank efficiency than stability. This is interesting because it means that, while fiscal adjustments may improve bank stability, they may also impose a disproportionally high cost on banks, which could compromise their stability in the long term.

Turning next to the impact of tax-based and expenditure-based episodes, Figure 6b shows that tax-based episodes lead to a substantial improvement in bank efficiency, especially

after year 4. This is likely to happen because tax-based episodes induce people to reduce credit consumption and increase savings. This shift in behavior, potentially driven by economic uncertainty as well, may have a negative effect on bank efficiency at least in the medium term. Conversely, our results indicate that expenditure-based episodes have a weaker and non-permanent positive effect on bank stability. These effects are nonetheless temporary. It may be the case that banks, anticipating the effects of reduced fiscal spending, take proactive measures to strengthen their capital ratios. This could be driven by expectations of potential economic challenges or uncertainties following the fiscal adjustment. These results seem to be consistent with the idea that banks adjust their behavior in anticipation of future fiscal changes, as predicted by Ricardian equivalence.

Figure 6b: Impact of Fiscal Consolidation on Bank Efficiency and Stability, Tax-based vs. Expenditure-based Episodes, 2000-2020



Note: This figure shows the estimated effects of fiscal consolidation on bank efficiency and stability in advanced versus emerging economies. Panel A examines the impact of tax-based fiscal consolidations. Panel B shows the impact of expenditure-based fiscal consolidations. Standard errors are clustered by country. The shaded areas correspond to 90 and 95 percent confidence bands.

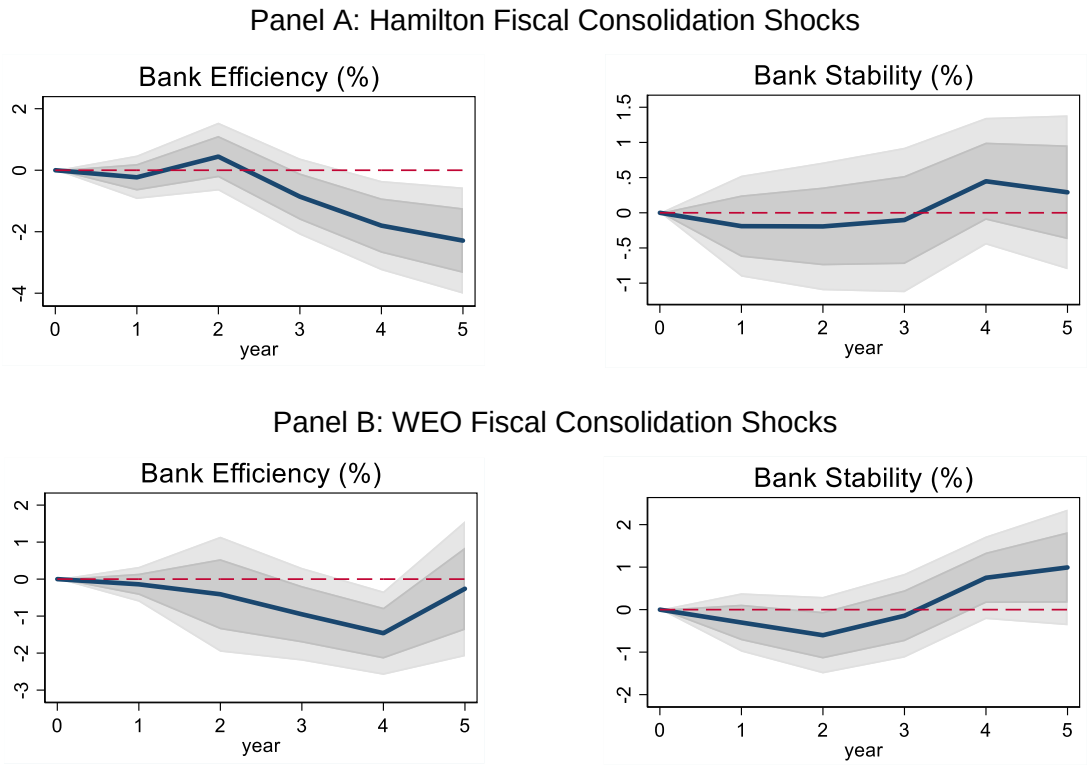
5.3 Robustness

Our attempts to establish robustness took two tacks. First, we rerun our models using alternative definitions of fiscal consolidation shocks. This analysis provides further evidence of the robustness of our findings. Second, to address endogeneity, we repeat our analysis using *unexpected* fiscal consolidation shocks. Our results hold across all robustness checks.

Alternative definitions of fiscal consolidation

To assess the robustness of our findings, we rerun our baseline models using alternative definitions of fiscal consolidation shocks. These alternative definitions include narrative-based measures, structural adjustments derived from changes in the cyclically adjusted primary balance, and exogenous fiscal consolidation episodes identified in prior research (Alesina et al., 2019; Guajardo et al., 2014). By leveraging different methods to identify fiscal consolidation shocks, we aim to enhance the credibility of our analysis and examine the consistency and generalizability of the results. As illustrated in Figure 7, a robust pattern emerges across all definitions of fiscal consolidation: bank efficiency consistently exhibits a significant decline between year three and four, suggesting that fiscal consolidations may impede banks' operational capacity, potentially due to reduced credit demand or a tighter regulatory environment following consolidation measures. At the same time, bank stability displays a modest but discernible improvement over the medium term, likely reflecting reduced sovereign risk and improved macroeconomic fundamentals associated with fiscal consolidation. These findings align with prior studies indicating that fiscal consolidations can enhance macroeconomic and financial stability while imposing short-term constraints on financial sector efficiency (BIS, 2016; IMF, 2013). These results confirm the robustness of our baseline analysis, highlighting the trade-offs between efficiency and stability in the banking sector during periods of fiscal consolidation. They underscore the importance of carefully designing consolidation measures to minimize disruptions to banking efficiency while maximizing long-term financial stability.

Figure 7: The Impact of Fiscal Consolidation on Bank Efficiency and Stability, Alternative Definitions, 2000-2020



Note: This figure shows the estimated effects of fiscal consolidation on bank efficiency and stability using alternative methods to estimate the CAPB. Panel A uses the CAPB based on the Hamilton filter. Panel B relies on the CAPB taken directly from the IMF World Economic Outlook (WEO) database, which computes potential output based on each country's production function. Standard errors are clustered by country. The shaded areas correspond to 90 and 95 percent confidence bands.

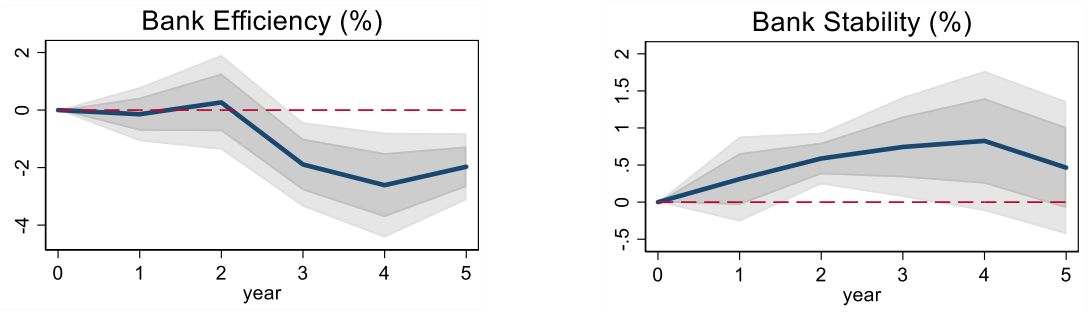
Addressing Endogeneity with Unexpected Fiscal Consolidations Shocks

In this subsection, we identify all the fiscal consolidation shocks in our dataset that were unexpected. To do this, we rely primarily on the work of Devries et al. (2011), who identify fiscal consolidation episodes motivated by a desire to reduce the budget deficit (rather than by a response to prospective economic conditions) in 17 OECD countries during 1978-2009. We complement these data with additional unexpected fiscal episodes in 14 Latin American and Caribbean economies from 1989 to 2016. These data are taken directly from David and Leigh (2018). These fiscal consolidations were identified based on a narrative approach to ensure their goal was improving long-term fiscal health. Our final dataset consists of 189 unexpected fiscal episodes in 31 countries between 1989-2016.

Figure 8 presents the estimations using unexpected fiscal consolidation shocks. The pattern in the local projections is very similar to that in Figure 4, if anything, showing a more clearly defined response of bank efficiency and stability. Our estimations point to a dramatic decrease in bank efficiency, reaching up to 2.3 percent in the third year following the fiscal

adjustment. This decline suggests that fiscal consolidations exert considerable strain on the operational efficiency of banks. In contrast, we find a substantial positive impact on bank stability, estimated at around 0.7 percent in the fourth year. This finding implies that while efficiency may be compromised, banks tend to strengthen their stability in response to unanticipated fiscal adjustments. Compared with our previous results, bank efficiency and stability responses are more strongly determined, and these effects are more persistent, suggesting that the consequences of fiscal adjustments continue to unfold beyond the initial shock. These results reinforce our previous findings.

Figure 8: The Impact of Unexpected Fiscal Consolidation on Bank Efficiency and Stability, 1989-2016



Note: This figure shows the estimated effects of fiscal consolidation on bank efficiency and stability. We measure efficiency and stability using aggregate indexes based on the first principal components of the most used bank performance metrics. Unexpected fiscal consolidation shocks are taken directly from Devries et al. (2011) and David and Leigh (2018). Standard errors are clustered by country. The shaded areas correspond to 90 and 95 percent confidence bands.

5.4 Extensions

This section completes what has been an exhaustive analysis of the impact of fiscal consolidation on banks. An interesting question that remains to be answered is whether our results change in countries with chronic deficits and surpluses. Sometimes contractionary fiscal policies positively affect GDP in countries with chronic deficits (e.g., Taylor, 2000). This would affect the impact on bank efficiency and stability. Furthermore, fiscal consolidations vary considerably in scale and scope, and their impact may depend on the phase of the business cycle. If that is the case, the impact on bank efficiency and stability could be non-linear. It is to these matters that we turn next.

5.4.1 Chronic Deficit vs Chronic Surplus Countries

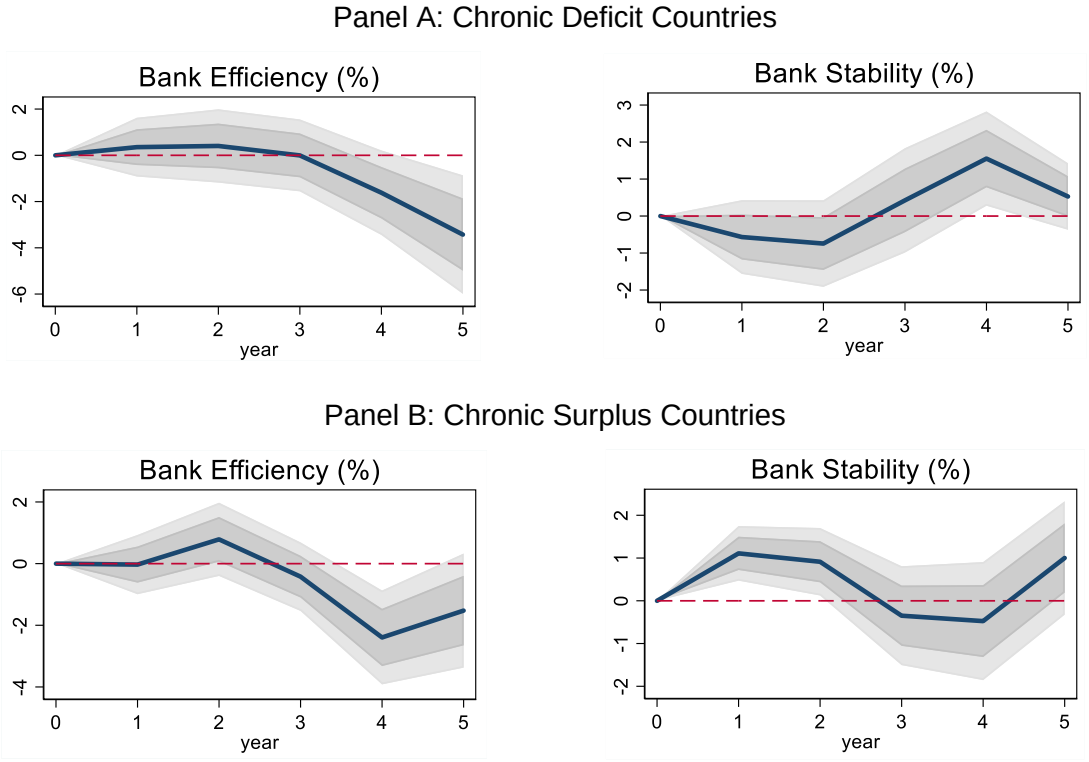
In this section, we split the sample into countries with chronic surpluses and countries with chronic deficits on their public accounts. The split was made at the cross-sectional level by taking the sample's median value of the fiscal balance and grouping countries above and below that value.

The results are shown in Figure 9, which shows a sharp asymmetry between the responses of the two groups of countries, particularly regarding bank stability. Our analysis reveals a consistent trend across all countries, indicating that fiscal consolidation leads to a reduction in bank efficiency, particularly around the fourth year of implementation. While fiscal prudence is traditionally associated with greater economic stability, our findings suggest a delicate balance needs to be struck. Excessive fiscal tightness in countries with chronic surpluses appears to have adverse consequences for the banking system, overshadowing the potential benefits of increased stability in countries with positive fiscal balances.

Interestingly, the results for bank stability are qualitatively different for countries with chronic deficits and surpluses. In countries with chronic deficits, we find that fiscal consolidations improve financial stability after year four. This effect takes some time to build up, but eventually, banks become more stable over time. In countries with chronic surpluses, though, fiscal consolidation only improves bank stability in the short term, and this effect dissipates in the long term. A possible explanation is that, in countries with chronic deficits, fiscal consolidations may signal responsible fiscal management, boosting investor confidence and stabilizing the banking sector over time. Conversely, in countries with chronic surpluses, the short-term impact of fiscal consolidation on bank stability may be explained by concerns about reduced government spending and a potential economic slowdown.

In brief, fiscal consolidations reduce bank efficiency and improve bank stability across countries. Nevertheless, the dynamics of this improved stability are notoriously different across groups of countries. In countries grappling with chronic deficits, the positive impact on bank stability unfolds gradually over time. On the contrary, in countries boasting chronic surpluses and with some fiscal space, the effect on bank stability is swift and immediate.

Figure 9: The Impact of Fiscal Consolidation on Bank Efficiency and Stability, Chronic Deficit vs Surplus Countries (2000-2020)



Note: This figure shows the estimated effects of fiscal consolidation on bank efficiency and stability in countries with chronic deficits versus chronic surpluses. Panel A shows the effects of fiscal consolidation on a sample of countries with a median CAPB above the sample median (chronic surplus). Panel B shows the effects of fiscal consolidation on a sample of countries with median CAPB below the sample median (chronic deficit). Standard errors are clustered by country. The shaded areas correspond to 90 and 95 percent confidence bands.

5.4.2 Non-linearities

To examine the role played by the business cycle, we also estimate the effects of fiscal consolidations on bank efficiency and stability under different conditional specifications. This is important because the business cycle can significantly influence how fiscal consolidations affect banks' performance and resilience. During economic expansions, fiscal consolidations may have a smaller impact on bank efficiency, as higher aggregate demand and robust credit growth can mitigate the negative effects of fiscal tightening. Banks may remain profitable and operationally efficient despite fiscal adjustments, as economic growth supports broader financial stability. Conversely, fiscal consolidations during economic downturns may exacerbate pressures on bank efficiency due to reduced credit demand, higher default rates, and weaker revenue streams, amplifying the adverse effects on operational performance. Similarly, bank stability's impact may vary across the business cycle. In periods of economic weakness, fiscal consolidations could increase systemic risks by placing additional strain on borrowers,

potentially leading to higher non-performing loans (NPLs) and eroding capital buffers. In contrast, during economic expansions, fiscal consolidations may improve bank stability by reducing sovereign risk, fostering financial market confidence, and encouraging more sustainable lending practices. Understanding these cyclical dynamics is critical for policymakers, as the timing of fiscal consolidations relative to the business cycle can significantly influence their effects on the financial sector, shaping both short-term outcomes and long-term economic stability.

We posit that the path of bank efficiency and stability in response to fiscal consolidation shocks depends on the economy's position in the business cycle when a given shock occurs. As discussed in Auerbach and Gorodnichenko (2012), the LP approach to estimating non-linear effects is equivalent to the smooth transition autoregressive (STAR) model developed by Granger and Teräsvirta (1993).[16] State-dependent LPs have been used extensively (e.g., Alpanda et al., 2021; de Haan and Wiese, 2022; Ortsman and Tripier, 2021; and Ramey and Zubairy, 2018). Plagborg-Møller and Wolf (2021) show that LPs and VAR models estimate the same IRFs in a linear framework. The LP methodology offers two key advantages over VARs in our state-dependent context. First, LPs provide a simple way to account for state dependence, especially in a panel framework. Second, unlike regime-switching VARs, they are not required to take a stand on a given state's duration or the mechanism triggering the transition between states. Specifically, we estimate:

$$\Delta \log y_{i,t+h} = \alpha_{i,h} + \delta_{t,h} + \beta^{L}{}_{j,h} F(z_{i,t}) d_{i,t-j} + \beta^{H}_{j,h} F(1-(z_{i,t})) d_{i,t-j} + \beta'_{c,h} X_{i,t-c} + u_{i,t+h} \quad (3)$$

where,

$$F(z_{it}) = \frac{\exp(-\gamma z_{it})}{1+\exp(-\gamma z_{it})}, \quad \gamma > 0$$

where z_{it} is an indicator of the state of the economy (the output gap calculated using the Hamilton (2018) filter on real GDP) and is normalized to have zero mean and unit variance. The weights assigned to each regime vary between 0 and 1 according to the weighting function

[16] The advantage of this approach is twofold. First, compared with a model in which each dependent variable would be interacted with a measure of the business cycle position, it permits a direct test of whether the effect of consolidation shocks varies across different regimes such as recessions and expansions. Second, compared with estimating structural vector autoregressions for each regime, it allows the effect of consolidation shocks to change smoothly between recessions and expansions by considering a continuum of states to compute the impulse response functions, thus making the response more stable and precise.

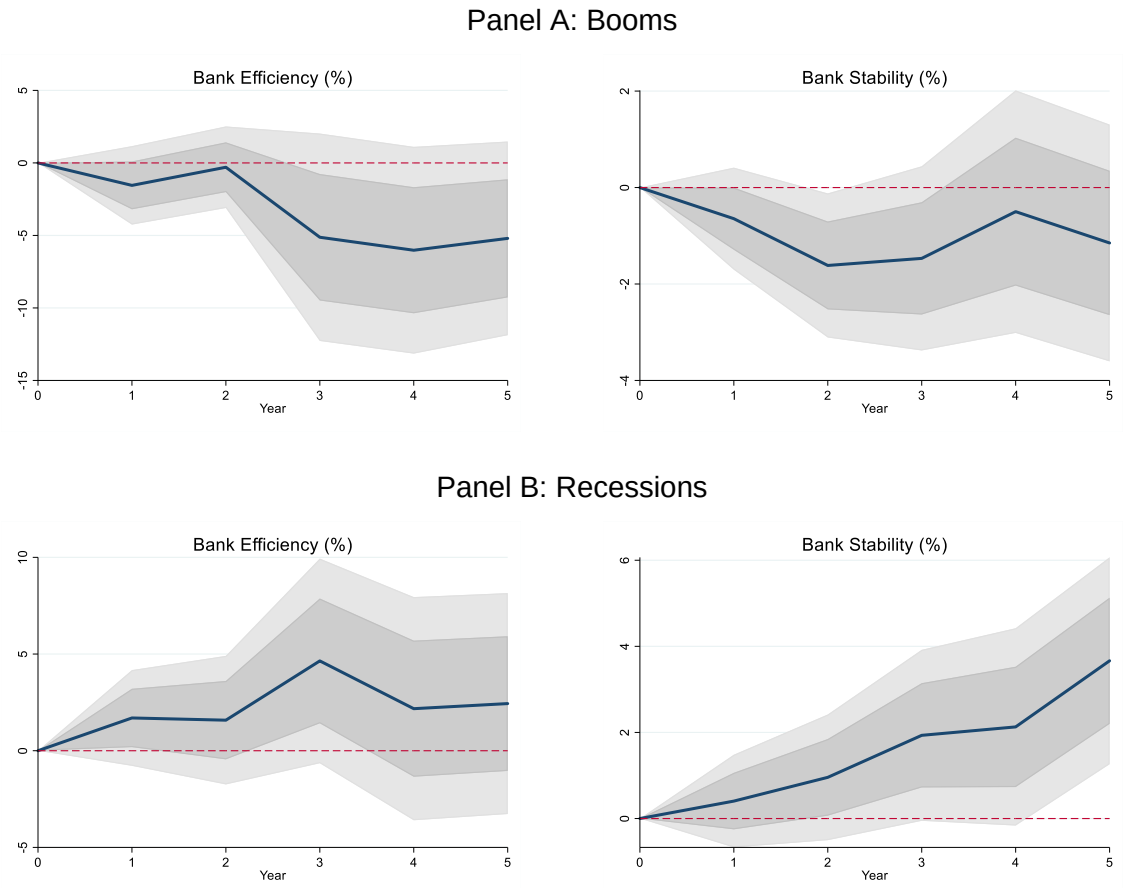
$F(.)$, so that $F(z_{it})$ can be interpreted as the probability of being in a given state of the economy. The coefficients $\beta_{0,h}^{L}$ and $\beta_{0,h}^{H}$ are used to construct the IRFs and the associated confidence interval for booms versus busts. They respectively capture the impact of consolidation shocks at each horizon *h* in cases of recessions ($F(z_{it})$≈1 when z goes to minus infinity) and booms (1-$F(z_{it})$)≈1 when z goes to plus infinity). Following Auerbach and Gorodnichenko (2012), we choose γ=1.5 so that the economy spends about 20 percent of the time in a recessionary regime – defined as $F(z_{it})$>0.8.

Figure 10 presents the estimated results from equation (3), indicating that the business cycle plays a crucial role in shaping the effects of fiscal consolidations on banks. Panel A of Figure 10 presents the IRFs for bank efficiency and stability during economic expansions. The results indicate that fiscal consolidation during booms leads to a decline in bank efficiency over time. The impulse response initially remains close to zero but exhibits a downward trend from the second year onward, with a more pronounced effect in years three to five. This decline suggests that during periods of economic growth, austerity measures may hinder banking sector efficiency, possibly due to reduced credit demand and tighter financial conditions[17]. That said, bank stability's response to fiscal consolidation in booms initially dips but recovers almost immediately, suggesting that fiscal consolidation has little impact on bank stability during phases of economic growth.

Panel B of Figure 10 illustrates the IRFs for periods of economic downturn. The results contrast starkly with those observed during booms. In response to fiscal consolidation, bank efficiency increases significantly during recessions. The IRF suggests a rapid improvement in efficiency within the first two years, stabilizing afterward. This perhaps surprising result suggests that banks optimize operations under tighter fiscal conditions, cutting inefficiencies or benefiting from restructuring effects. The response of bank stability to fiscal consolidation during recessions is also positive and persistent. Unlike in booms, where stability declines temporarily, the effect here is unambiguously positive, with a steady upward trajectory over the five-year horizon. This suggests that fiscal consolidation during downturns may also improve the resilience of banks, potentially through mechanisms like improved investor confidence, reduced sovereign risk, and market discipline effects.

[17] Similar to stricter prudential requirements, fiscal consolidations may reduce aggregate demand and worsen wealth inequality, thus affecting banking bank efficiency and stability (see, for example, Teixeira and Venter (2023) and Teixeira (2023)).

Figure 10: The Impact of Fiscal Consolidation on Bank Efficiency and Stability, Booms vs. Recessions (2000-2020)



Note: This figure shows the estimated effects of fiscal consolidation on bank efficiency and stability during booms and recessions. Panel A presents the impulse response functions (IRFs) for periods of economic expansion (booms), while Panel B shows the IRFs for periods of economic downturn (recessions). Following Auerbach and Gorodnichenko (2012), recessions are periods when the economy spends about 20 percent of the time in a recessionary regime. Standard errors are clustered by country, and the shaded areas correspond to 90 and 95 percent confidence bands.

In conclusion, our results underscore the business cycle's crucial role in determining fiscal consolidation's effects on bank efficiency and stability. During booms, fiscal austerity slightly weakens bank efficiency without affecting stability. Conversely, in recessions, fiscal consolidation is associated with significant improvements in both efficiency and stability. These empirical results lend support to theoretical expectations that fiscal consolidation affects financial intermediation differently depending on macroeconomic conditions.

6. Conclusions

This paper investigates the relationship between fiscal consolidations and bank behavior, focusing on their dual impact on bank efficiency and stability. Using a comprehensive dataset spanning 194 countries from 1989 to 2020 and employing local projection methods, we provide new evidence on how fiscal adjustments affect banks. Our findings reveal a consistent trade-off: fiscal consolidations reduce bank efficiency while bolstering bank stability. This trade-off reflects the dual effects of fiscal consolidation, constraining banks' operational capacity and profitability while improving asset quality and reducing sovereign risk.

Four key insights emerge from our analysis. First, fiscal consolidations negatively impact bank efficiency, reflecting reduced credit demand and operational income, but enhance bank stability by improving capital buffers and reducing non-performing loans. Second, the effects of fiscal consolidations vary across countries: advanced economies experience more significant efficiency losses, due to their reliance on credit markets and higher baseline operational costs, while emerging economies benefit more significantly from stability gains, reflecting reduced sovereign risk. Third, the size and composition of fiscal consolidations matter. Tax-based consolidations slowly improve bank efficiency by encouraging savings and reducing credit consumption, whereas expenditure-based consolidations have a temporary negative impact on bank stability as banks shift to riskier assets to compensate for reduced public spending. Finally, our findings align with theoretical expectations that fiscal consolidation affects financial intermediation differently depending on macroeconomic conditions. Fiscal consolidation reduces aggregate demand in booms, leading to lower credit growth and efficiency losses. In recessions, fiscal discipline reduces concerns over sovereign risk and incentivizes prudent banking practices, improving stability at the expense of economic growth.

Our findings have important policy implications. Policymakers must carefully design fiscal consolidations to balance the trade-offs between bank efficiency and stability. Tax-based consolidations appear more suitable during periods of excessive credit growth, as they enhance efficiency without undermining stability. Expenditure-based consolidations, while riskier, may be better suited to economies with strong bank balance sheets. Additionally, the timing of consolidations is critical: aligning fiscal adjustments with economic expansions can mitigate efficiency losses and maximize stability gains. In emerging markets that are more vulnerable to efficiency losses, targeted interventions to support credit availability and operational resilience during fiscal adjustments are essential. Policymakers should also consider the

cyclical position of the economy when designing fiscal measures, as their impact on banks can vary considerably based on macroeconomic conditions.

Despite these findings, our study has limitations that suggest directions for future research. First, while our dataset provides extensive coverage, the complexity of fiscal consolidation episodes means that heterogeneity within countries and over time may still be underexplored. Second, the role of macroeconomic conditions, uncertainty, and Ricardian expectations in shaping bank responses to fiscal consolidations warrants further investigation. Why fiscal consolidations have stronger effects on bank efficiency in advanced economies and stability in emerging markets remains relatively unexplored. Future research could delve deeper into the mechanisms driving these differences, exploring how institutional quality, market structure, and policy environments interact with fiscal adjustments. Also noteworthy, our analysis provides empirical evidence that the impact of fiscal consolidation in the banking sector is highly state-dependent. Future research could extend this analysis by exploring heterogeneity across banking systems, alternative fiscal policy instruments, and potential long-run effects on financial development. Finally, austerity is often framed as a budgetary issue, but its effects on the banking sector are just as critical. Disentangling these effects presents a key empirical challenge, as the impact of fiscal consolidation on financial stability depends on timing, structure, and country characteristics. Our paper takes the first step in this direction by showing how fiscal consolidations reverberate through the banking system, sometimes reinforcing stability and sometimes undermining it. Future research must continue exploring the conditions under which austerity strengthens or weakens financial systems.

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Appendix A

Variable	Source	Description
Bank Efficiency	Own calculation	Index based on the first principal components of all bank efficiency variables used in our analysis.
Bank Stability	Own calculation	Index based on the first principal components of all bank stability variables used in our analysis.
Capital Adequacy Ratio	WB Global Financial Development	Ratio of bank capital and reserves to total assets.
Cost-to-assets Ratio	WB Global Financial Development	Operating expenses of a bank as a share of the value of all assets held.
CPI	WB World Development Indicators	Annual percentage change in the cost to the average consumer of acquiring a basket of goods and services
Credit-to-deposits Ratio	WB World Development Indicators	Resources provided to the private sector by domestic money banks as a share of total deposits.
HP Fiscal Consolidation	IMF WEO	CAPB change of 0.5 pp over two consecutive years using HP filter.
Hamilton Fiscal Consolidation	IMF WEO	CAPB change of 0.5 pp over two consecutive years using Hamilton filter.
WEO Fiscal Consolidation	IMF WEO	Episodes of fiscal consolidation taken directly from IMF WEO database.
GDP Per Capita Growth	WB World Development Indicators	Growth rate of gross domestic product divided by midyear population.
Lending-deposit Spread	WB Global Financial Development	Difference between lending rate and deposit rate. Lending rate is the rate charged by banks on loans to the private sector and deposit interest rate is the rate offered by commercial banks on three-month deposits.
Net Interest Margin	WB Global Financial Development	Accounting value of bank's net interest revenue as a share of its average interest-bearing (total earning) assets.
Noninterest Income	WB Global Financial Development	Bank’s income that has been generated by noninterest related activities as a percentage of total income (net-interest income plus noninterest income). Noninterest related income includes net gains on trading and derivatives, net gains on other securities, net fees and commissions and other operating income.
NPL to Gross Loans	WB Global Financial Development	Value of nonperforming loans divided by the total value of the loan portfolio (including nonperforming loans before the deduction of specific loan-loss provisions).
Private Credit to GDP	WB Global Financial Development	Financial resources provided to the private sector by other depository corporations (deposit taking corporations except central banks), such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment.
ROA	WB Global Financial Development	Commercial banks’ after-tax net income to yearly averaged total assets.
ROE	WB Global Financial Development	Commercial banks’ after-tax net income to yearly averaged equity.
Z-score	WB Global Financial Development	Probability of default of a country's commercial banking system. Z-score compares the buffer of a country's commercial banking system (capitalization and returns) with the volatility of those returns.

Appendix B

Table B1: Summary Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
Bank Efficiency	1,604	0.427	0.043	0	1
Bank Stability	1,853	0.633	0.083	0	1
Capital Adequacy Ratio	2,359	0.169	0.054	0.018	0.486
Cost-to-assets Ratio	2,820	0.037	0.031	0	0.843
CPI	7,398	0.207	2.082	-0.176	117.496
Credit-to-deposits Ratio	7,157	0.923	0.973	0.029	56.657
HP Fiscal Consolidation	4,846	0.233	0.423	0	1
GDP Per Capita Growth	7,815	0.022	0.062	-0.644	1.405
Lending-deposit Spread	3,353	0.080	0.075	0	0.885
Net Interest Margin	2,790	0.047	0.030	0	0.561
Noninterest Income	2,830	0.376	0.137	0.061	0.969
NPL to Gross Loans	2,341	0.071	0.076	0	0.741
Private Credit to GDP	5,926	0.410	0.394	0	3.046
ROA	2,834	0.013	0.025	-0.703	0.287
ROE	2,817	0.128	0.141	-1.326	2.590
Z-score	2,895	0.161	0.094	-0.018	0.710

Note: All variables are winsorized at the 5th and 95th percentile level. Bank efficiency and stability are aggregate indexes based on the first principal components of commonly used bank performance indicators. Appendix A provides additional detail on the variables.

Table B2: Summary Statistics by Country Income Level

Panel A: Advanced Economies					
Variable	Obs	Mean	Std.Dev.	Min	Max
Bank Efficiency	835	0.422	0.036	0	0.571
Bank Stability	1,181	0.617	0.066	0.398	0.958
Capital Adequacy Ratio	1,490	0.162	0.044	0.066	0.468
Cost-to-assets Ratio	1,563	0.027	0.031	0	0.843
CPI	3,233	0.101	0.830	-0.117	29.477
Credit-to-deposits Ratio	3,075	0.950	0.408	0.149	3.760
HP Fiscal Consolidation	2,389	0.263	0.441	0	1
GDP Per Capita Growth	3,268	0.022	0.049	-0.479	0.970
Lending-deposit Spread	1,462	0.057	0.054	0	0.584
Net Interest Margin	1,536	0.034	0.022	0	0.164
Noninterest Income	1,550	0.369	0.132	0.063	0.969
NPL to Gross Loans	1,476	0.053	0.060	0	0.488
Private Credit to GDP	2,522	0.661	0.453	0.002	3.046
ROA	1,568	0.010	0.021	-0.552	0.220
ROE	1,564	0.109	0.145	-1.326	2.590
Z-score	1,587	0.163	0.099	-0.018	0.669
Panel B: Emerging Economies					
Variable	Obs	Mean	Std.Dev.	Min	Max
Bank Efficiency	769	0.431	0.048	0.188	1.000
Bank Stability	672	0.660	0.101	0.000	1.000
Capital Adequacy Ratio	869	0.181	0.065	0.018	0.486
Cost-to-assets Ratio	1,257	0.049	0.027	0.000	0.275
CPI	4,165	0.288	2.674	-0.176	117.496
Credit-to-deposits Ratio	4,082	0.903	1.238	0.029	56.657
HP Fiscal Consolidation	2,457	0.204	0.403	0.000	1.000
GDP Per Capita Growth	4,547	0.022	0.070	-0.644	1.405
Lending-deposit Spread	1,891	0.097	0.084	0.002	0.885
Net Interest Margin	1,254	0.062	0.032	0.001	0.561
Noninterest Income	1,280	0.383	0.142	0.061	0.922
NPL to Gross Loans	865	0.103	0.090	0.000	0.741
Private Credit to GDP	3,404	0.225	0.192	0.000	1.388
ROA	1,266	0.016	0.029	-0.703	0.287
ROE	1,253	0.152	0.132	-1.162	1.783
Z-score	1,308	0.159	0.087	0.000	0.710

Note: Advanced economies comprise all countries classified as upper-middle and high-income economies according to The World's Bank country classification by income level; emerging economies are countries classified as lower-middle- and low-income economies.

Table B3: Impact of Fiscal Consolidation on Bank Efficiency and Stability, Regression Coefficients of Local Projections, Baseline, 2000-2020

	Bank Efficiency	Bank Stability
HP Fiscal Consolidation	-0.077***	0.007
	(0.024)	(-0.005)
L.HP Fiscal Consolidation	-0.003	-0.002
	(0.027)	(-0.005)
L2.HP Fiscal Consolidation	-0.037	0.001
	(0.027)	(-0.005)
L.Y	-0.556***	-0.374***
	(0.037)	(-0.081)
L2.Y	-0.275***	-0.278***
	(0.044)	(-0.059)
L.GDP Growth	0.0177**	0.011**
	(0.007)	(-0.003)
L2.GDP Growth	0.009	0.010*
	(0.007)	(-0.005)
L.CPI	0.000	0.000
	(0.002)	(-0.001)
L2.CPI	-0.002	0.000
	(0.002)	(-0.001)
L.Private Credit to GDP	0.003	0.002***
	(0.003)	(-0.000)
L2.Private Credit to GDP	-0.001	0.002***
	(0.002)	(-0.000)
L.GDP Per Capita Growth	-0.008	-0.010**
	(0.007)	(-0.004)
L2.GDP Per Capita Growth	0.001	-0.007
	(0.008)	(-0.004)
Obs.	554	602
No. of Groups	79	95

Note: This table shows the estimated regression coefficients of the impact of fiscal consolidation on bank efficiency and stability (Figure 2). We measure efficiency and stability using aggregate indexes based on the first principal components of the most used bank performance metrics. Fiscal consolidations are defined as a CAPB change of 0.5 pp over two consecutive years with the CAPB data obtained based on the HP filter. Standard errors are clustered by country. The shaded areas correspond to 90 and 95 percent confidence bands.