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367 Report by Franziska Bremus and Lena Tonzer

Bank levies can make bank balance sheets more resilient, but high corporate tax rates dampen the effect

- Study analyses effect of bank levies on bank leverage in the context of corporate tax rates
- Banks in countries with a levy have less leverage, but high corporate tax rates dampen the effect
- Interactions with other taxes should be taken into account when designing regulatory levies

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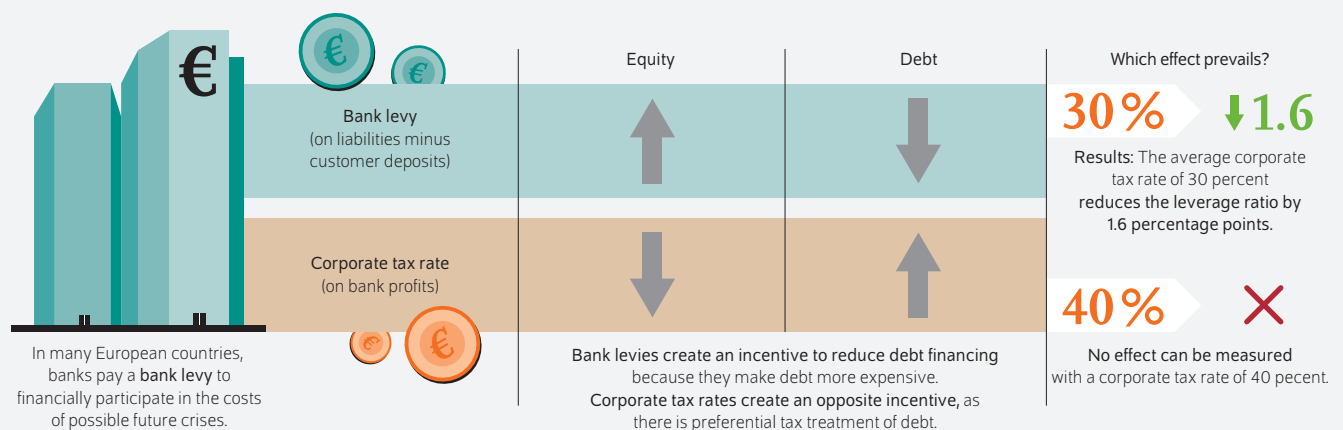
AT A GLANCE

Bank levies can make bank balance sheets more resilient, but high corporate tax rates dampen the effect

By Franziska Bremus and Lena Tonzer

- Study analyses the effects of bank levies on the stability of European banks
- Using bank balance sheet data from around 3,000 banks from 27 EU countries, leverage of banks subject to a levy and those not subject to a levy are compared in the context of corporate tax rates
- Banks in countries with levies on liabilities minus customer deposits have lower leverage ratios than in countries without levies
- Effect is partly or completely erased in countries with high corporate tax rates due to debt bias of taxation
- To ensure regulatory levies are effective, interactions with other taxes should be taken into account when designing them

Bank levies can reduce bank leverage, but high corporate income tax rates mitigate the effect



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FROM THE AUTHORS

"Bank levies only reduce the leverage of banks when they are levied on bank liabilities and when the corporate tax rate—and thus the debt bias—is not too high. Such interactions must be taken into account when designing regulatory levies."

— Franziska Bremus —

MEDIA



Audio Interview with F. Bremus (in German)
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Bank levies can make bank balance sheets more resilient, but high corporate tax rates dampen the effect

By Franziska Bremus and Lena Tonzer

ABSTRACT

Following the global financial crisis of 2008/2009, many European countries introduced bank levies to enable financial institutions to share in the costs of future banking crises via resolution and restructuring funds. Simultaneously, bank levies can set an incentive for banks to reduce their leverage, thereby achieving a more stable capital structure. Using information from banks' balance sheets, this report investigates to what extent bank levies have reduced leverage ratios and what role the corporate income tax rate plays in this. Preferential tax treatment of debt capital means that higher corporate tax rates favor a higher leverage ratio. The empirical findings show that banks in countries with a bank levy on bank debt have lower leverage and thus higher capital buffers than banks in countries without a levy. The higher the corporate tax rate, however, the less bank levies reduce leverage. To ensure regulatory levies are effective, how they interact with other taxes must be taken into account.

The COVID-19 pandemic and its economic consequences have renewed the discussion about the stability of the banking sector and the potential risk of another banking crisis. Although banks have higher capital buffers and are thus in a better position in 2020 than at the beginning of the global financial crisis in 2008/09, the increasing credit risks in the real economy nevertheless harbor the danger that banks will get into difficulties and require restructuring measures.¹

Progress has been made in terms of possible stabilization mechanisms for banks since the global financial crisis of 2008/2009. European banking regulation was fundamentally reformed with the main goals of reducing banks' excessive risk taking, strengthening their resilience, and breaking the vicious cycle of banks and sovereigns. Bank levies were a part of this reform. Many European countries introduced national bank resolution funds to allow banks to share in the costs of possible future financial crises through annual levies ("bank levies") and to avoid recourse to tax revenue. In 2010, a bank levy was introduced in Germany in the *Restrukturierungsgesetz*.² Since 2015, instead of different national levies, banks in the euro area have been subject to a common European bank levy that the national authorities transfer to the Single Resolution Fund.³ In addition to enabling banks' participation in financing the resolution and restructuring funds for financial institutions, bank levies can also set an incentive. For example, if a levy is charged on the banks' liabilities minus customer deposits, as recommended by the International Monetary Fund,⁴ banks can reduce the burden of the levy by financing themselves more

¹ Reint E. Gropp, Michael Koetter, and William McShane, "The Corona Recession and Bank Stress in Germany," *IWH Online 4* (available online; accessed on August 12, 2020. This applies to all other online sources in this report unless stated otherwise; Carla Neuhaus, "Droht Deutschland eine Bankenkrise?" *Tagesspiegel*, July 27, 2020 (in German; available online); and Marius Clemens, Stefan Gebauer, and Tobias König, "Europäische Bankeinlagensicherung könnte Folgen von coronabedingter Insolvenzwellen bei Unternehmen abfedern," *DIW Wochenbericht*, no. 32+33 (2020): 543–552 (in German; available online).

² Gesetz zur Restrukturierung und geordneten Abwicklung von Kreditinstituten, zur Errichtung eines Restrukturierungsfonds für Kreditinstitute und zur Verlängerung der Verjährungsfrist der aktienrechtlichen Organhaftung from December 9, 2010 (in German; available online).

³ Cf. The website of the Federal Ministry of Finance (in German; available online).

⁴ Stijn Claessens, Michael Keen, and Ceyla Pazarbasioglu, "Financial Sector Taxation: The IMF's Report to the G-20 and Background Material," *International Monetary Fund*.

with equity and customer deposits and less with debt. This creates an incentive for lower leverage.

In contrast, corporate taxation in most countries favors debt financing, since interest expenses for loans and bonds reduce the taxable profit of a company while return on equity capital is not tax deductible. Consequently, corporate taxation distorts the funding structure of both non-financial companies and banks towards a higher leverage ratio.⁵ The debt bias thus counteracts the stabilizing incentive of the bank levy.

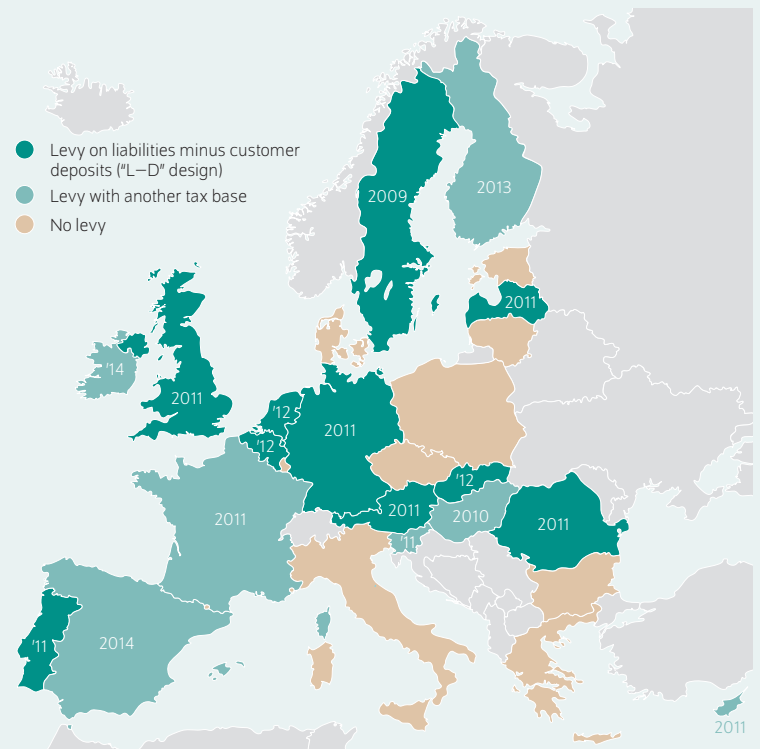
The following report analyses how the introduction of bank levies in Europe and their interaction with corporate taxation has affected leverage and thus bank stability.⁶ Information on bank balance sheets and macroeconomic data for 27 EU countries from 2006 to 2014 was evaluated for the analysis. As the Single Resolution Fund, introduced in 2015, is also financed by a bank levy, it is important to understand interactions between bank levies and country-specific, non-regulatory factors such as corporate taxation.

European bank levies: from various national regulations to the Single Resolution Fund

Following the global financial crisis, many European countries introduced bank levies to enable banks to share in the costs of possible future liquidation and restructuring measures and to mitigate the measures' impact on taxpayers. Prompted by the G20 members to discuss banks' fair contribution to the cost of financial crises, national bank levies came into force in nine European countries in 2011 (Figure 1). Before the crisis, only Sweden and Hungary had collected bank levies. By the end of 2014, a total of 17 EU Member States had implemented a bank levy. In addition to financing resolution funds through the levy, the majority of countries also created an incentive for higher capital requirements by setting the liabilities of a bank minus its customer deposits as the tax base (Figure 2).⁷ With such a regulatory levy, it becomes more expensive for banks to finance with debt than with equity and customer deposits. However, some countries chose alternative tax bases, such as customer deposits (Ireland, Spain, and Cyprus), bank balance sheets (Slovenia, Hungary) or the minimum capital requirements (France). In addition, some countries continually increased the levy's contribution rate while it remained constant in other countries. Small banks in Austria, Germany, the Netherlands, and the United Kingdom were not subject to the levy while small banks in other countries were. Overall, the bank levies in the European countries were markedly different in their design.

Figure 1

Bank levies in Europe and their year of introduction Up to 2014¹



¹ Since 2015, banks in the euro area have been subject to a common European bank levy instead of a national levy. The national authorities transfer this European bank levy to the Single Resolution Fund.

Source: Authors' own depiction.

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Most European countries introduced a levy on bank liabilities minus customer deposits ("L–D" design) in 2011 and 2012.

Since 2015, bank levies in the euro area have been calculated and collected according to the Banking Resolution and Restructuring Directive (BRRD).⁸ As with most of the previous national levies, the tax used to finance the Single Resolution Fund is levied on liabilities minus customer deposits. In addition, a risk factor is used to take the risk profile of the bank into account.⁹

The national bank levies were introduced at different times and using different tax bases, which is useful for an empirical evaluation of their effects on the leverage of European

⁵ For a summary of the literature, cf. Franziska Bremus and Jeremias Huber, "Corporate Taxation, Leverage, and Macroeconomic Stability," *DIW Roundup* 93 (2016) (available online).

⁶ For advanced information on the analysis, data, and results, cf. Franziska Bremus, Kirsten Schmidt, and Lena Tonzer, "Interactions between bank levies and corporate taxes: How is bank leverage affected?" *Journal of Banking and Finance* 118 (2020) (available online).

⁷ Here, liabilities are defined as the balance sheet total not including equity capital.

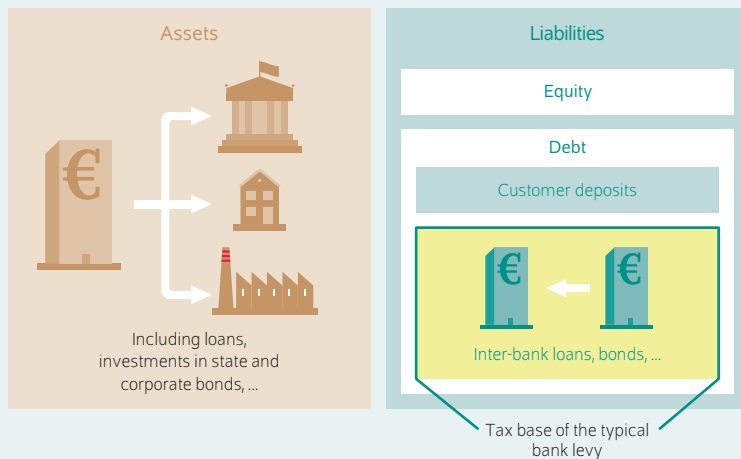
⁸ The Directive 2014/59 EU (BRRD), the associated Commission Delegated Regulation (EU) 2015/63, and the Council Implementing Regulation (EU) 2015/81 comprise the legal basis for the calculation of the bank levy.

⁹ Cf. The website of the Single Resolution Fund (available online). Small banks with a maximum balance sheet total of one billion euros pay a flat-rate contribution based on their size. For larger banks, a risk factor is calculated, which takes a number of risk measures into account (such as leverage, capital ratio, liquidity coverage ratio, the bank's systemic significance, the bank's membership in other protective mechanisms). This risk factor is then applied to the tax base.

Figure 2

Bank balance sheet and the bank levy tax base

Schematic diagram



Source: Authors' own depiction.

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Levies on a bank's liabilities make debt financing more expensive compared to equity.

banks. This way, the capital structure of banks subject to a levy can be compared to the capital structure of those not subject to a levy. Furthermore, the significance of different tax bases for the banks' financial decisions can be analyzed. Finally, the findings on national bank levies also allow conclusions to be drawn about the effects of the common European bank levy.

Evaluation: How do national bank levies affect banks' leverage ratio?

The present analysis is based on balance sheet data from around 3,000 banks and 27 EU countries as well as information at the country level. This study looks at how effectively bank levies have contributed to reducing the leverage of European banks or to strengthening capitalization depending on the level of corporate tax rates. Was the incentive created by the levies strong enough to counteract the tax discrimination between equity and debt financing? How does the design of a bank levy influence its effectiveness when taking the tax base into account?

To answer these questions, this empirical study compares European banks that are subject to a levy with those that must not (yet) pay a levy. Simultaneously, the effects of EU-wide changes to regulations that affect all EU countries the same, as well as bank-specific and macroeconomic differences, are controlled for in the regression model. The observation period ends in 2014, as the members of the European Banking Union have been paying contributions to the Single Resolution Fund since 2015. In addition, capital adequacy rules have been gradually tightened, especially following 2014. This is another regulatory change that could distort findings on the impact of the bank levy.

National bank levies reduced the banks' leverage ratio

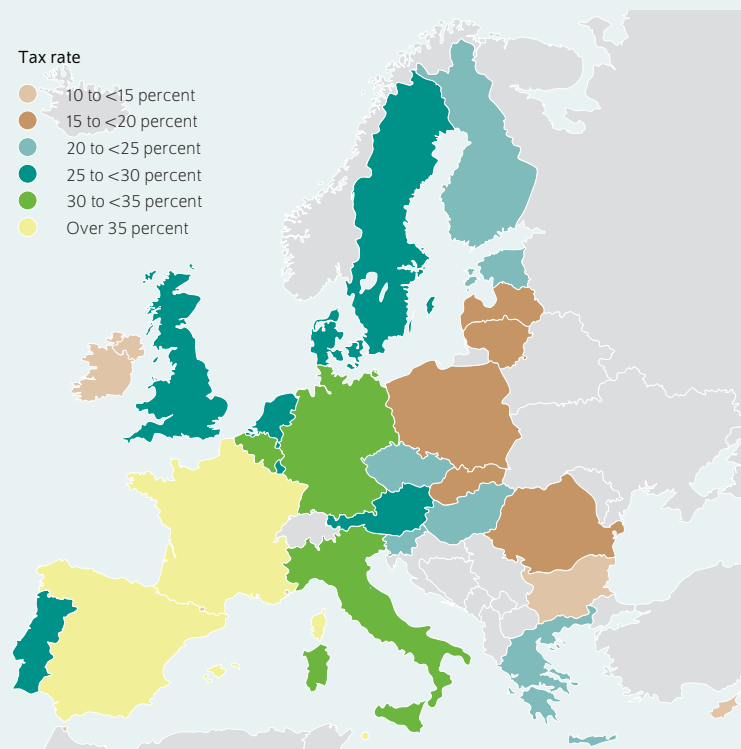
The estimates show that banks in countries with a bank levy have a lower leverage ratio and thus stronger capital buffer than banks not subject to a bank levy. This result confirms the findings of other studies.¹⁰ The bank levy increases the banks' debt financing costs in relation to the cost of equity capital, making financing through equity more attractive if the bank levy is charged on liabilities minus customer deposits ("L–D" design). A levy on bank liabilities can thereby contribute to a higher loss bearing capacity of banks.¹¹ When other tax bases are used for the levy, leverage is not significantly reduced.

In contrast to the stabilizing effect of bank levies on capital structure, the data indicate that higher corporate tax rates go

Figure 3

Corporate tax rates in Europe

Average from 2006 to 2014, in percent



Source: Authors' own depiction.

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From 2006 to 2014, Spain and France levied the highest corporate tax rates in Europe.

¹⁰ Cf. Michael Devereux, Niels Johannesen, and John Vella, "Can Taxes Tame the Banks? Evidence from European Bank Levies," *Economic Journal* 129, no. 624 (2019): 3058–3091.

¹¹ Moreover, another study shows that a tax on bank liabilities does not lead to a restriction on lending despite a rising cost of financing. Cf. Claire Célérier, Thomas Kick, and Steven Ongena, "Taxing Bank Leverage: The Effects on Bank Portfolio Allocation," Working Paper (2019) (available online).

together with higher leverage. The higher the tax rate, the greater the tax relief for interest on debt capital. This debt bias increases the optimal leverage of non-financial firms as well as banks.¹² For example, banks in Spain, where the corporate tax rate is high (Figure 3), have a greater incentive to refinance using debt capital such as bonds or inter-bank loans than banks in Ireland, where the corporate tax rate is over 20 percentage points higher on average during the observation period. While a levy on bank debt promotes lower leverage, a higher corporate tax rate encourages more debt financing. The following section examines the interactions between these opposing effects.

Paired with high corporate tax rates, national bank levies do not strengthen capitalization

With an average corporate tax rate of 30 percent, introducing a bank levy reduces leverage by 1.6 percentage points. For the leverage ratio of an average bank (ten percent) in the sample, this means an increase of sixteen percent, from 10.0 to 11.6 percent. However, the higher the corporate tax rate in a country, the weaker the incentive for lower leverage becomes due to the bank levies (Figure 4). While the leverage of banks subject to a levy on their liabilities minus customer deposits is almost four percentage points lower at a corporate tax rate of ten percent than that of banks not subject to a levy, the difference in the leverage ratio is only 0.5 percentage points at a tax rate of 40 percent. In countries with very high tax rates, bank levies thus have barely had an effect on the capitalization of banks, as debt bias predominates. Here, the design of the levy is essential. The leverage ratio is only reduced when the debt (minus customer deposits) are taxed. When other tax bases are used, at very high tax rates, the levy can actually increase banks' leverage, even if this effect is not statistically significant.

Conclusion: Interactions between regulatory levies and fiscal taxes must be considered

Overall, the empirical findings underscore that bank levies not only serve to finance resolution and restructuring

¹² Cf. Lars P. Feld, Jost H. Heckemeyer, and Michael Overesch, "Capital Structure Choice and Company Taxation: A Meta-study," *Journal of Banking and Finance* 37, no. 8 (2013): 2850–2866; Leonardo Gambacorta et al., "The Effects of Tax on Bank Liability Structure," *BIS Working Paper* 611 (2017); Jost H. Heckemeyer and Ruud A. De Mooij, "Taxation and corporate debt: Are banks any different?" *National Tax Journal* 70, no. 1 (2017): 53–76; and Alexander Schandlbauer, "How do financial institutions react to a tax increase?" *Journal of Financial Intermediation* 30 (2017): 86–106.

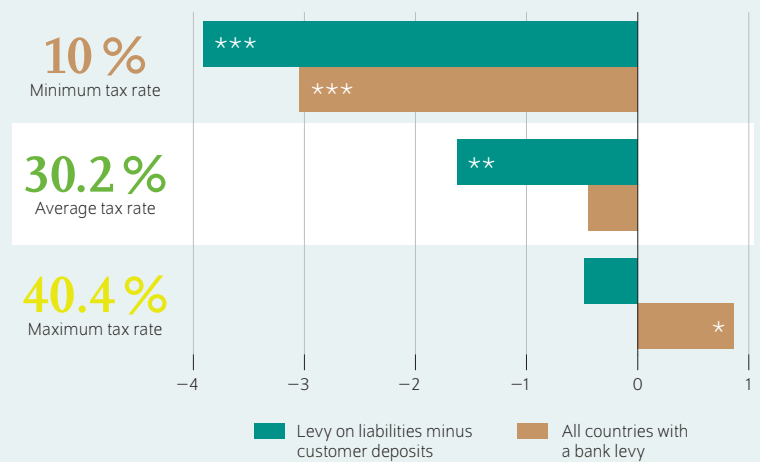
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Keywords: Bank leverage, bank levy, debt bias of taxation

Figure 4

Effects of bank levies on leverage depending on the corporate income tax rate



The higher the corporate tax rate, the less a bank levy reduces banks' leverage.

funds, but can simultaneously contribute to banks having a lower leverage ratio and thus greater resistance to negative shocks, such as an impending wave of corporate insolvencies. Higher loss absorbency can also reduce the probability of severe financial crises. For a levy to positively affect banks' capitalization, its design as a levy on debt is essential. However, such bank levies only have a positive effect on the capital structure of banks if a country's corporate tax rate, and thus the bias towards debt financing, is not too high. Strengthening banks' loss absorbency is therefore more effective in an environment with less tax discrimination against equity capital.

These findings indicate that despite its uniform implementation in the countries of the European Banking Union, the bank levy to finance the Single Resolution Fund is likely to have different effects on banks' financing decisions because incentives for higher leverage ratios in the form of corporate tax rates vary across countries.

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