



Reint Gropp

# Taxes, banks and financial stability

White Paper Series No. 6

**Center of Excellence SAFE Sustainable Architecture for Finance in Europe**

A cooperation of the Center for Financial Studies and Goethe University Frankfurt

House of Finance | Goethe University  
Grüneburgplatz 1 | D-60323 Frankfurt am Main

Tel. +49 (0)69 798 33684 | Fax +49 (0)69 798 33910  
policycenter@safe.uni-frankfurt.de | www.safe-frankfurt.de

This paper is forthcoming as a chapter in: Gaetan Nicodeme and Ruud de Mooij, eds., “Taxation and Regulation of the Financial Sector”, MIT Press, forthcoming.

SAFE Policy papers represent the authors’ personal opinions and do not necessarily reflect the views of the Center of Excellence SAFE or its staff.

# Taxes, banks and financial stability<sup>1</sup>

*Reint Gropp, Goethe University Frankfurt, SAFE and CFS*

## Abstract

In response to the financial crisis of 2008/2009, numerous new taxes on financial institutions have been discussed or implemented around the world. This paper discusses the connection between the incidence of the taxes, their incentive effects, and policy makers' objectives. Combining basic insights from banking theory with standard models of tax incidence shows that the incidence of such taxes will disproportionately fall on small and medium size enterprises. The arguments presented suggest it is unlikely that the taxes will have a beneficial impact on financial stability or raise significant amounts of revenue without increasing the cost of capital to bank dependent firms significantly.

Key words: taxes, financial institutions, tax incidence, financial stability, tax revenues, bank incentives

---

<sup>1</sup> These remarks were prepared for the CES-IFO Conference on the taxation of financial institutions. Financial support from CESifo Venice summer institute is gratefully acknowledged. Comments from Ruud De Mooij and Gaetan Nicodeme greatly improved this paper. All errors remain my own.

## 1. Introduction

In response to the financial crisis and its aftermath, in many countries numerous different “fees”, “taxes” and/or “levies” on financial institutions have been discussed or implemented. The main objective of the present analysis is to draw attention to the connection between the incidence of the taxes, i.e. who ultimately pays, the incentives for financial institutions based on the incidence of the tax, and what policy makers are trying to accomplish by imposing these taxes. I argue that combining basic insights from banking theory with standard models of tax incidence may provide us with new insights on the question of the ultimate desirability of such taxes. While it would go beyond the scope of these remarks to work out a full fledged model of tax incidence for the type of financial institutions taxes proposed, I will present some intuitive discussion that suggest that incidence will be disproportionately on small and medium size firms, quite contrary to the intention of policy makers.

In these remarks, I will focus on taxes directly levied upon financial institutions. In addition, the IMF and others have discussed more radical reforms to reduce the incentives for leverage of financial and non-financial firms by abolishing the deductibility of interest, or, alternatively, allowing the deductibility of a risk free return on equity (IMF, 2010, Keen and de Mooij, 2012, Gu et al., 2012). These changes would have significant consequences not only for financial institutions but also for all non-financial firms. Other taxes related to ensuring financial stability have been proposed, most notably Tobin taxes on short-term financial transactions and taxes on manager bonuses in banks. I feel these taxes are outside of the scope of this analysis for two reasons. One, they are levied either on financial markets or individuals’ bonuses, rather than financial institutions themselves. Second, their incidence would differ substantially from the taxes discussed here. This notwithstanding it is clear that to some extent these taxes are envisaged to serve a similar purpose as the taxes discussed in this paper.

Optimal tax theory tells us that a tax should be designed such that it raises a maximum amount of revenue with a minimum amount of distortion to the decisions of economic agents. However, taxes on financial institutions are not only motivated by raising revenue, but also by discouraging certain types of behavior by banks, especially those types of behaviors that create systemic risk. For the purposes of this analysis, I define systemic risk as the externality arising from the actions of one financial institution for other economic agents, such as other banks, but also firms and households.

Hence, one can view the type of taxes considered here as Pigovian taxes, i.e. taxes that are intended to make the private parties involved feel the social burden of their actions. Financial contagion has an obvious parallel to the pollution produced by firms. Both may cause harm to other agents. Therefore, it is worth emphasizing the similarity in spirit of the taxes proposed to pollution taxes that exist in many countries. The “pollution”, whose costs are supposed to be internalized to the bank, is the cost of excessive risk on parties outside the bank. Therefore the taxes discussed in this paper generally suffer from the same shortcomings and problems that have been identified in the literature regarding pollution taxes, probably even more so. Two problems directly apply: One, how to precisely measure the externality, i.e. the degree to which the actions of a financial institution cause systemic risk. And second, the so-called reciprocal cost problem identified by Coase (1960). While I will discuss the first problem in more detail in section 3, I will only very briefly discuss the latter here.

Coase illustrated the reciprocal cost problem with the following example: The social harm gets worse, Coase argues, if only one offender pays for the social harm. If the smoke-emitting factory must pay dearly for all its smoke, it will reduce its quantity of production or buy the necessary technology to reduce its smoke rate. With the advent of clean air, neighbors may move into the area. This immediately increases the marginal social cost of smoke, which would require a tax increase on the factory. Essentially, each time the tax increases, the population increases and the marginal cost of the status quo increases again, so the factory is punished for making conditions good enough that people want to move there. This story applies quite directly to the case of banks “emitting systemic risk” and the taxation of this emission. If banks are indeed discouraged from entering into activities (at a cost to them) that may cause systemic risk, other economic agents, in particular other banks, may increase their exposure to them and other market participants may reduce their monitoring of the potential risks. In the banking literature this would imply a reduction in market discipline, which unambiguously may have a systemic risk increasing effect. The difficulty of identifying systemic risks ex ante adds to this problem. In the Coase example: people move closer to the factory. But this in turn may increase the marginal social cost of contagion, as the financial system may have become more interconnected and, hence, more prone to systemic risk. Ultimately, even though the bank may have reduced activities that may result in systemic risk, the degree to which systemic risk emanates from the institution may not have reduced, suggesting a further tax increase, as in the Coase example.

Coase (1960) concludes that the tax should not be changed once it is implemented, in order to avoid burdening firms unduly with taxation. This is speculation, but it would appear that the problem is even trickier in the case of reducing the systemic risk emanating from financial institutions. Given space constraints I will leave this issue at this point.

In addition to issues arising from Pigovian taxes in general, the literature has developed some criteria for such taxes from a regulatory perspective. As it is intended not only to raise funds for future bailouts, but also to reduce the likelihood of financial instability occurring, it is argued that any such tax should at least satisfy the following three criteria (Weder, 2010):

- Private incentive compatibility: The tax should reduce the financial institutions’ incentive to create systemic risk.
- Public incentive compatibility: The tax should reduce public sector forbearance, meaning it should make it easier for the public sector to stick to ex ante commitments to not insure financial institutions.
- It should also be transparent, easy to enforce and difficult to manipulate by financial institutions. In general, the opacity of financial institutions (Morgan, 2002) has made it relatively easy for them to avoid regulations. Similarly, there is the concern that financial institutions would be able to relatively easily avoid the tax by engaging in activities akin to regulatory (or tax) arbitrage.

In the remainder of the paper I will explain in some detail two specific tax proposals that have been discussed, one in the U.S. and one in the EU. In section 3, I will, in more detail, analyze the measurement problem that arises in the context of taxing financial institutions to reduce systemic risk. In section 4, I will sketch some theoretical thoughts regarding the question of the likely incidence of taxes on financial institutions, section 5 compares capital requirements and taxes, and section 6 concludes the analysis.

## 2. Two proposals

### 2.1. Financial crisis responsibility fee

The so called “Financial crisis responsibility fee” was announced by President Obama on 14 January 2010. The motivation for introducing the tax was the idea that “the financial sector should pay back for the bailouts it received in 2008/2009 financial crisis”. Hence, it would be a temporary tax. The fee would remain in place only as long as needed to cover the losses incurred in TARP. At the time of the announcement in January 2010, these losses were estimated to be \$117 billion. In President Obama’s proposal, the tax rate is envisaged to be 0.15% of covered liabilities of financial firms with more than \$50 billion in consolidated assets. In 2010, this applied to about 50 institutions in the U.S., including banks, thrifts, insurance and other companies with insured deposits and broker dealers, including their domestic and foreign subsidiaries. The tax base is defined as follows:

$$\text{Covered liabilities} = \text{Total assets} - \text{Tier 1 capital} - \text{FDIC assessed (insured) deposits}$$

The tax was estimated to be in place for 12 years in order to cover the losses estimated in January 2010.

More recently, the costs of recapitalizing banks have been reduced to \$68 billion and may fall further. This would cut the implementation time of the tax in half. Faced with questions about whether the tax was still needed, given the much lower than estimated costs of the bail outs, President Obama adjusted the objectives of the tax and argued that the fee would reduce the incentives towards “excessive risk taking” by reducing the incentives to use (non-insured-deposit) leverage.

Overall, the tax would go some way to reduce the bias towards debt finance for financial institutions, although the current proposal makes no attempt to calibrate the appropriate tax rate based on some estimate of the bias. In addition, its temporary nature also may create unwelcome incentives for banks’ financing choices. The reason that the tax is still not implemented may be due to the fact that financial institutions lobbied extensively against it based on the argument that bank shareholders were viewed as being unfairly treated, relative to shareholders of other firms. Nevertheless, the tax is part of President Obama’s 2013 budget proposal, although it largely disappeared from discussion before and after the November 2012 election.

### 2.2. Systemic risk charge (EU)

In the European Union, a similar tax has been under consideration. The tax base is broadly consistent with the financial crisis responsibility fee in the U.S. The tax would be levied on all “systemically relevant institutions”, yet to be determined. The tax rates would be calibrated such that they offset the “too big to fail” funding advantage that systemically relevant institutions are presumed to enjoy at the moment. Depending on the specific proposal this would amount to 0.3% to 0.7% of liabilities.

There are three main differences to the U.S. approach. One, the tax is envisaged to be risk sensitive, and varies as a function of systemic risk that emanates from the bank. The tax does not accrue to the general budget, but rather to a “systemic risk fund”, that could be used to bail out banks in the future. In this sense the tax is not concerned with forcing banks to pay

for bailouts that occurred in the past, but rather with funding for bailouts in the future. Unlike the U.S. tax, it is envisaged to be a permanent tax.

### 3. How to measure an institutions' contribution to systemic risk?

In order to design an efficient tax on financial institutions that raises revenues for future bailouts in proportion to the potential future cost and that discourages activities entailing externalities to the entire economy, it is necessary to measure the externality. At the current juncture, there is no agreement in the academic literature on the correct approach for measuring a financial institutions contribution to system risk. I briefly sketch one popular approach in order to highlight the difficulties that may be encountered.<sup>2</sup>

Before doing so, it may be worthwhile to highlight two fundamental conceptual problems one encounters when attempting to obtain such measures. One, the measure will be estimated based on historical data. Hence, the estimate to which an institution is deemed to be systemic in the future is based on the degree to which the institution was systemic in the past. While this may not be an important problem in the context of a pollution tax, it could be central in the context of ascertaining the contribution to systemic risk of a financial institution. The reason is that while most financial crises may follow a common pattern, the nature of the systemic risk emanating from institutions is difficult to predict. For example, in 2006 few would have thought that subprime loans were an asset class that could result in the financial turmoil that we ultimately observed. Similarly, few saw the risks due to the funding structure of a bank. Hence, while any proposed measure may do an excellent job at documenting which institution, for which reason, was systemically important during the last crisis, this may not give a good indication for future crises.

Second, all measures are necessarily based on relatively few observations, as crises by definition are rare (or "tail") events. Furthermore, after a string of good news (as for example in the period 2001 to 2006 leading up the crisis), risk seems tamed, but, when a new tail event occurs, the estimated risk measure may sharply increase. This problem is most pronounced if the data samples are short. Hence, in the literature, time varying contributions to systemic risk have been proposed, see for example Adams et al., 2013. Time varying contributions to systemic risk, however, are most likely not a useful basis for assessing a systemic risk charge, as precisely when the institution is in trouble, it is asked to pay more tax, potentially tipping it over the edge. When considering the two measures described below, one should keep these two caveats in mind.

Adrian and Brunnermeier (2011) propose CoVAR (Co-value-at-risk, where the "co" may stand for conditional, co-movement or contagion). They start from the most common measure of risk used by financial institutions, the value at risk (VaR). The VaR focuses on the risk of an individual institution in isolation. The  $q\%$ -VaR is the maximum pecuniary loss within the  $q\%$ -confidence interval. However, a single institution's risk measure does not necessarily reflect systemic risk. Based on Brunnermeier et al. (2009), any systemic risk measure should identify the risk to the system imposed by individual institutions. The exact source of the risk to the system remains unspecified. It could be direct links among institutions in financial markets, for example, but not limited to, the interbank market or indirect links through banks' exposures to similar assets or asset classes. Brunnermeier et al. (2009) emphasize that systemic risk could also emanate from small institutions, if they are

---

<sup>2</sup> There are others. See, for example, Acharya et al. (2011) on „systemic shortfall.“

part of a herd, i.e. a group of banks with similar exposures. A group of several institutions that act alike may be as dangerous to the system as one large entity.

It would go beyond the scope of this paper to explain in detail how CoVaR is estimated. In a nutshell, Adrian and Brunnermeier (2011) use quantile regressions to estimate the contribution of one institution's VaR to another institution's VaR using weekly changes of the market value of total assets of publicly traded financial institutions in the U.S. This is the contribution of a financial institution to systemic risk or "CoVaR". This, in turn, is related to a number of balance sheet characteristics of the institution, in order to ascertain which features of the institution make it particularly prone to generate an externality.<sup>3</sup>

In principle, one could use the estimated CoVaR as a basis for a decision on which banks should be deemed systemically important and the degree of systemic importance. Moreover, Adrian and Brunnermeier (2011) also document that some deposits that would constitute the base for the proposed taxes in both the EU and the U.S. are indeed positively correlated with an institution's contribution to systemic risk (Adrian and Brunnermeier, 2011, Table 6). However, their analysis also suggest that insured deposits, which under the current U.S. proposal would not be taxed, contribute significantly more to an institution's CoVaR than most other liabilities that would be subject to tax. Furthermore, other factors, in particular the degree to which the institution is exposed to maturity mismatches, i.e. whether long-term assets are largely financed with short term liabilities, have a much larger impact on the institution's contribution to systemic risk than individual components of liabilities.

#### 4. Tax incidence

Theory (the classic reference is Harberger, 1962, for a modern treatment see Gravelle, 2010) would predict that the ability of banks to shift the tax burden to their customers, by widening margins, should depend on two main factors. One, the degree of competition: the more competitive the banking market, the lower the tax incidence on banks' customers, as banks would be unable to pass on the tax. Second, on the demand elasticity of customers: the higher the elasticity of demand, the lower the tax incidence on banks' customers.

There is ample evidence that there are substantial differences in the degree of competition in banking across countries even within the EU (see Bikker and Haaf, 2002, Corvoisier and Gropp, 2002 for the EU or Hannan and Berger, 1991 for the U.S.). This implies that even a harmonization of tax base and rate may lead to differences in the incidence of the tax and to competitive distortions across countries, even within the EU.

More fundamentally, to fully understand the effects such taxes would have, we may need a theory of tax incidence for financial institutions that takes the differences of banks relative to non-financial firms into account. The starting point may need to be basic banking theory. Banking theory would predict large differences in the degree of competition and the elasticity of demand, even within countries, across different banking products. Corresponding empirical evidence is provided in Corvoisier and Gropp (2002). Based on banking theory, the degree of incidence on banks versus their customers will depend upon the degree of asymmetric information between bank and customer, the role of natural monopolies, for example in

---

<sup>3</sup> Note that their approach focuses on the externality to other financial institutions only, rather than on the externality to the real economy that may be generated by the failure of an institution. To my knowledge, there is no measure in the literature that seriously tries to develop this broader concept of a financial institution's externality.



payment systems, and their regulation, and the outside options of the customer, such as financial markets or mutual funds.

For example, relationship lending theory (Sharpe, 1990, Rajan, 1992) would predict that small, opaque firms obtain credit from banks based on the following deal: The bank invests heavily in collecting soft, non-verifiable information about the firm and provides credit at an initially relatively low interest rate. As the firm matures and becomes profitable, the bank will extract some of that surplus generated by the firm in order to compensate for the initial subsidy. The story suggests that the demand elasticity of small firms with respect to the interest rate is very low: They are locked in, as any departure from their bank entails the presumption that the firm is of poor quality by other banks (“lemon’s problem”). Other banks may not be willing to make the investment in generating soft information and hence may be unwilling to supply credit to the firm. Overall, relationship lending may result in an “ex post monopoly of information” of the incumbent bank. This results in low *effective* competition for borrowers with a high degree of asymmetric information, regardless of the number of competitors in a market.

In contrast to small firms, large firms can obtain funding from financial markets (“arms-length funding”). Imposing a tax on banks implies that the relative competitive position of banks relative to financial markets worsens, as financial markets are not subject to tax. Asymmetric information and relationships are less important for large firms and, hence, *effective* competition for loans to large firms is high, regardless of market structure, implying that the demand elasticity for loans by large firms is very high. There will be little incidence on large firm funding.

These considerations suggest that overall the incidence of a tax as discussed or implemented in the EU and the U.S. may largely fall on small and medium size enterprises. Recall just two of the main objectives, namely “to make banks pay for their bail outs (FCRF, US)” and “to reduce incentives to create systemic risk.” If the incidence of the taxes is largely on small and medium size enterprises, not banks, but rather small businesses may pay for the bailouts. This in turn may raise the cost of capital for small firms with extensive unintended collateral damage to growth and employment of small firms, which in all European countries make up a sizeable share of total employment. Furthermore, the incentive not to engage in activities creating systemic risk is reduced if at least part of the cost can be passed on to the customers of the bank.

## 5. Capital requirements versus taxes

In principle, one could design a quantity regulation (for example, a staggered capital requirement) that would be equivalent to the taxes discussed in the EU and U.S. It, however, substantially affects the choice between equity and debt, as it forces bank to reduce their leverage. This is different from a tax on liabilities of the bank, as it would only increase the cost of debt, but leave the choice of funding to the bank. As the cost of debt generally is considered to be lower due to the tax deductibility of interest under the corporate income tax, a tax may simply offset this tax disadvantage by complementing the taxation of banks with a tax advantage to equity. Hence, in the context of capital requirements the question is very important whether equity financing is more expensive than debt financing. Most observers would argue that this is the case, although recently there are also some prominent arguments against this idea (see Admati et al., 2011)

Nevertheless, similar incidence concerns may apply as in the case of taxes. Even so, there is one fundamental difference between the two, namely who controls the funds. In the case of the U.S. Financial crisis responsibility fee, the general budget would receive the proceeds from the tax, presumably to offset the losses from the bank bailout. In the case of systemic risk charges, the recipient of the tax revenue would be a systemic risk fund (presumably a bank supervisory agency), who would need to invest the funds in some way. The exact nature of this investment may determine the overall success of the measure; for example it has been proposed that the funds should flow back to the banks in the form of bonds that would convert to equity based on certain triggers relating to the health of the institution. In the case of capital requirements, no revenue is generated.

## 6. Conclusions

This paper focuses on bank-specific taxes, rather than more fundamental changes to the corporate income tax, such as eliminating the bias towards debt finance. The emphasis was on two stylized taxes, which are being widely discussed (or implemented) in the U.S. and Europe.

The main take-away of this analysis is twofold. One, the practical implementation problems that one may encounter when designing a specific tax on financial institutions may be very large. This concerns both the problem of adequately measuring an institution's contribution to systemic risk as well as deciding on a suitable tax base. Unless properly designed, such a tax has little chance of accomplishing the stated objectives of the policy maker and will either create substantial distortions in banks' decisions without reducing systemic risk or be easily circumvented. Second, we may need a more sophisticated theory of tax incidence in the context of the specific characteristics of financial institutions. I have sketched what such a theory could look like based on basic relationship banking theory. The sketch suggests that it is likely that the incidence of the tax will not be on the financial institutions, but rather on small businesses, as the effective competition in the market for loans to small business may be low due to informational rents of the incumbent bank.

The lessons that emerge from this discussion may be summarized as follows: One, we should focus on ensuring that banks internalize the externalities they produce, rather than on raising revenue or even "punishing" them for past misbehavior. Other tools at the disposal of policy makers, aside from taxes, may be more suitable to this task. In particular, bail-in bonds that shift the burden to existing debt holders and future equity holders may be a much less distortionary approach to ensuring that those that take the risk also bear the cost if the risk materializes. And second, we are sailing in uncharted waters with these taxes and we may need to explore much more fully a number of issues regarding their likely effects on banks and banks' customers.

Let me conclude by saying that I was only able to sketch most issues in this paper, rather than fully explore them. The intent was more to outline some potentially interesting avenues for future research and to raise questions (that may ultimately turn out, given more research, not to be important), rather than provide conclusive answers.

## Literature

Acharya, V., L. Pedersen, T. Philippon, and M. Richardson (2010), Measuring Systemic Risk, Working Paper, NYU Stern School of Business, May 2010.

Adams, Z., R. Füss and R. Gropp (2013), Spill-over effects among financial institutions: A state dependent sensitivity value at risk approach, **Journal of Financial and Quantitative Analysis**, forthcoming.

Admati, A., P. DeMarzo, M. Hellwig and P. Pfleiderer (2011), Fallacies, irrelevant facts, and myths in the discussion of capital regulation: Why bank equity is not expensive, Working Paper, Stanford University.

Adrian, T. and M. Brunnermeier (2010), CoVaR, Working Paper, Princeton University.

Brunnermeier, M., A. Crocket, C. Goodhart, M. Hellwig, A. Persaud, and H. Shin (2009) The fundamental principles of financial regulation, Geneva Report on the World Economy 11.

Coase, R. (1960), The Problem of Social Cost, **Journal of Law and Economics** 3(1). pp 1-44.

Corvoisier, S. and R. Gropp (2002), Bank concentration and retail interest rates, **Journal of Banking and Finance** 26(11), pp. 2155-2189.

Gravelle, J. (2010), Corporate tax incidence: Review of general equilibrium estimates and analysis, Congressional Budget Office, Working Paper 2010-03.

Gu, G., R. de Mooij and T. Poghosyan (2012), Taxation and leverage in international banking, IMF Working Paper 12/281.

Hannan T. and A. Berger (1991), The rigidity of prices: Evidence from the banking industry, **American Economic Review** 81 (4), pp. 938-945.

Harberger, A. (1962), The incidence of the corporate income tax, **Journal of Political Economy** 70 (3), pp. 215-240.

IMF (2010), A Fair and Substantial Contribution by the Financial Sector: Final Report for the G-20, June 2010.

Keen, M., and R. de Mooij (2012), Debt, taxes and banks, IMF Working Paper 12/48.

Morgan, D. (2002), Rating banks: Risk and uncertainty in an opaque industry, **American Economic Review**, 92(4), pp. 874-888.

Rajan, R. (1992), Insiders and outsiders: The choice between informed and arms length debt, **Journal of Finance** 47, pp. 1367-1400.

Sharpe, S. (1990), Asymmetric information, bank lending and implicit contracts: A stylized model of customer relationships, **Journal of Finance** 45, pp. 1069-1087.

Weder di Mauro, B. (2010), Taxing systemic risk, Unpublished manuscript, University of Mainz.