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Exemption in Commercial Banking

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Measuring the Fiscal Revenue Loss of VAT Exemption in Commercial Banking

by

Bernd Genser and Peter Winker*

1. Introduction

Fiscal consolidation is one primary target of all EU member countries in order to meet the fiscal discipline criteria of the Maastricht treaty. This not only implies cutting fiscal spending, but also levying taxes most efficiently and closing tax loopholes. The important loopholes under general discussion are the erosions of the income tax base, giving rise to consolidating tax policy measures following a “tax cut cum base broadening” strategy. There is much less discussion on loopholes in general commodity taxation through VAT exemption.

Two kinds of exemptions have to be distinguished within the European consumption type VAT system: full exemption (or zero rating) and restricted exemption (exemption without VAT crediting). Full VAT exemption is granted to exports of goods, which ensures the application of the destination principle and avoids double taxation and commodity price distortions in international commodity trade. Eliminating commodity exports from the national VAT base and charging VAT on commodity imports makes consumption the aggregate national VAT base. In addition, zero rating has been intensively used in the UK and in Ireland. Unlike most other EU members, which levy a reduced VAT rate on food, books, newspapers, medical care etc., the UK and Ireland have chosen a zero rate on these necessities.

In addition to zero rating, VAT codes in Germany and in most other EU countries allow for restricted exemption of well-defined sets of entrepreneurial activities. VAT relief through exemption is restricted since the advantage of not charging VAT on exempted activities is partly offset by not allowing credits for recovering the VAT load on intermediate inputs. Basically, VAT exemption without crediting only eliminates the taxation of value added

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of the exempted processing stage, whereas VAT levied on intermediate inputs remains a hidden cost element. But restricted exemption has a further consequence. If exempted commodities or services are used as an intermediate input, the hidden VAT burden cannot be recovered by a VAT credit and remains a cost element through all further processing stages¹. The break in the credit chain through restricted exemption gives rise to VAT cascading².

In Germany, VAT exemption is offered on a broad variety of activities, in particular on financial services. The political arguments for VAT exemption are manifold, e.g.³ (1) continuity in tax practices, since many of the exempted goods and services were already exempt under the old turnover tax, (2) reduction of compliance costs, (3) avoidance of conceptual problems created through "difficult-to-tax" transactions, and (4) price reductions in line with distributional targets.

Banks had been exempt from the former German turnover tax and there is a widely held view that it is impossible to define a correct VAT base, which would allow an application of the general credit/invoice method of VAT for the broad scope of bank services⁴.

The exemption of financial services from VAT gives rise to social costs for different reasons: foregone VAT revenue has to be raised through other distortive taxes, regressive redistribution causes welfare losses for final consumers, and non-recoverable VAT credits distort input prices. In this paper, we want to concentrate on the tax revenue effect. Our aim is to compare the present VAT exemption of financial services with a hypothetical benchmark case of taxing them at the "normal" VAT rate and to derive first numerical estimates for the fiscal revenue loss. In order to determine the hypothetical benchmark case, we focus on deposit and loan services as the most important source of value added in the banking sector, and split the interest spread into taxable service components rendered to lenders and borrowers. A further disaggregation had to be made with respect to entrepreneurial clients, which are entitled to VAT credits, and public and private households, which are not. Disregarding other minor sources of exempt margin services (e.g. foreign exchange services), we estimate a net VAT revenue loss of 10 bill.

¹ According to the 1991 Input-Output Table for West Germany, published by the German Statistical Office in 1995, non-recoverable VAT charged on intermediate products amounts to more than 18 percent of total VAT revenue. Another 19 percent of national VAT comes from non-recoverable VAT on investment. Hidden VAT in the banking sector amounts to more than one percent of total VAT revenue, i.e. more than 2 bill. DM.

² Cf. Gottfried and Wiegard (1991) for an estimate of resulting effective tax rates for Germany. Weichenrieder (1996) analyses VAT cascading in insurance business.

³ Cf. Tait (1988).

⁴ Hoffman, Poddar and Whalley (1987), van Brederode (1995), and Poddar and English (1997) sketch concepts for including financial services consistently into a credit/invoice type VAT.

DM (or 4% of VAT revenue) in 1994 through the exemption of bank services and we show that our figures are pretty robust with regard to changes in our crucial parameters.

The paper is organised as follows. In section 2, we sketch the current VAT regulation for financial services in Germany. Section 3 surveys the problems with the identification of macroeconomic aggregates which measure the banks' contribution to national value added. Section 4 is devoted to the economic theory of the banking firm, and shows a way of how to identify "prices" for crucial banking services. In section 5, the consolidated bank balance data published by the Bundesbank are used to break down the national value added into final and intermediate bank services. Numerical results for German banks between 1990 and 1996 are presented in section 6. We do not draw political conclusions in section 7, but rather call for further investigations based on more disaggregated bank data in order to improve the estimates for the fiscal effects and to study the issue of implementing a regular VAT on bank services in more detail.

2. The Status Quo of Value Added Taxation in the German Banking Sector

Most of the services provided by financial institutions are exempt from VAT in Germany. This exemption is in line with the treatment of bank services under the former gross turnover tax, the predecessor of the VAT, as well as with the harmonization requirement of the 6th EU VAT directive of 1977. Literally, the German VAT code does not exempt banks. Banks are economic entities which are subject to VAT in Germany under § 1 (1) UStG⁵, since they are entrepreneurs selling market services to their customers. Nevertheless, banks do not have to charge VAT on the majority of their financial services, since these are explicitly exempt under § 4 (8) UStG. This exemption comprises

- a) loan services (granting, negotiation and management of credits),
- b) currency services (transactions and negotiation concerning currency, bank notes and coins used as legal tender, apart from those of numismatic interest),
- c) outstanding debt services (transactions and negotiation of debts, except debt collection and factoring),
- d) deposit and current account services,
- e) security services (transactions and negotiation of securities, except for management and safekeeping),

⁵ UStG (Umsatzsteuergesetz) is the German VAT code.

- f) equity services (transactions and negotiation of shares of companies and associations),
- g) guarantee services (negotiation and management of credit guarantees and other securities for money),
- h) management of special investment funds, and
- k) bullion services (transaction and negotiation in bullion, gold coins used as legal tender and crude gold)⁶.

These exemptions are related to taxable activities and not to taxable persons and, thus, they are not only applicable to banks but to any firm which provides services of this kind.

Financial institutions, therefore, do not charge VAT on the bulk of their services. An immediate consequence of VAT exemption is that banks are not entitled to VAT credits related to VAT exempt services according to § 15 (2) UStG. Non-creditable VAT paid on intermediate goods and services or on investment, therefore, is a source of production costs.

Restricted VAT exemption creates two effects on banks' output prices. There is a price reducing effect since no VAT is charged on exempt bank services, and there is a price increasing effect through non-deductible VAT on bank inputs. If the VAT rate on banks' inputs and outputs is the same, then the price decreasing effect will always outweigh the price increasing effect and gross output prices of exempt bank services will be lower than hypothetical market prices if banks were subject to VAT. Furthermore, two groups of bank clients are affected fundamentally differently by VAT exemption. For household clients and nonregistered businesses, VAT is a final burden and they will benefit from reduced prices for exempt bank services. Commercial clients who are entitled to VAT credits have no possibility to recover the hidden VAT in their payment for bank services, which, therefore, become more expensive.

Bank services which are not exempt according to § 4 (8) UStG are subject to the regular VAT rate. The main taxable activities of banks are agency services in financial and estate investment, security custody services, estate administration services, safe deposit services, factoring services and trade in numismatic coins⁷. Taxable bank services give rise to VAT credits. As a matter of fact, banks are obliged to apportion VAT paid on inputs according to their internal utilization for taxable and for exempt bank services and only VAT associated with taxable services can be credited⁸. A special feature of the German VAT code is the optional waiver of VAT exemption, which is

⁶ Items i) and j) have been omitted since they do not refer to bank services.

⁷ Cf. Hartmann, Weber and Schnittker (1995, pp. 19 ff.).

⁸ The VAT regulations for banks in Germany comply fully with the 6th VAT directive. The exemption of bank services in § 4 (8) UStG follows Art. 13, B (d) of the VAT directive, and the obligation of apportionment between deductible and non-deductible VAT credits in § 15 (4) follows Art. 17 (5).

open to banks according to § 9 (1) UStG⁹. This option offers German banks the opportunity to charge VAT on selective financial services rendered to registered firms and, consequently, to deduct VAT credits associated with these taxed services¹⁰. VAT crediting is feasible not only for purchases of intermediate inputs and investment in the year when the option is exercised, but can also be extended to VAT payments on investment goods purchased up to 10 years before¹¹. Although this option seems to provide a rather generous selective cost reduction to VAT registered bank clients, it has not been widely applied by German banks. One reason is certainly the administration cost burden, which is likely to exceed the benefits from VAT credit relief. Another explanation is the opportunity to circumvent the VAT credit restriction by strategic tying of VAT credits to taxable bank services or a special class of exempt services¹², which allow for a full deduction.

3. Measuring the National Value Added by Banks

A first approximate evaluation of the amount of VAT revenue foregone through the exemption of financial services may start out from value added figures in national accounting. Several attempts have been made in the past few years to improve the measurement of the financial sector due to its growing importance for output, capital formation and employment.

The current method of measuring financial service output followed by the statistical offices of industrial countries can be exemplified by the approach taken by the German Federal Statistical Office (Statistisches Bundesamt). It is perceived as impossible to assign the value added by banks on a transaction by transaction basis, as a large part of these services is not charged directly in the form of commissions or fees, but is included in the interest margin. Hence, the calculation of the value added for national accounting is based on an aggregate view of bank business. The aggregated difference between interests received and paid by banks is used as a proxy for the so-called "imputed bank services"¹³.

⁹ This option is in line with Art. 13, C of the 6th EU VAT Directive.

¹⁰ Besides Germany, only Belgium and France have included the VAT option for financial institutions in their national VAT legislation. Cf. van Brederode (1995, p. 20f.).

¹¹ Cf. Hofmann (1991).

¹² § 43 of the USt-DV (Umsatzsteuer-Durchführungsverordnung), which contains mandatory implementing regulations for the German VAT code, defines certain classes of exempt services, which do not require an apportionment of VAT credits but allow full credit deduction.

¹³ In fact, for Germany a somewhat larger definition is used, adding the net surplus of returns to wealth. This net surplus not only includes the gains from foreign exchange or security services, but also losses of banks' wealth through bad debts. Cf. Dorow (1972).

Table 1
Value Added and VAT in the German^{a)} Banking Sector (bill. DM)

Year	Value added			VAT				
	GNP ^{d)}	Imputed bank services ^{e)}		Total	Banks			
		Total	Share		Taxable activities	Non-deductable	Sum	Share
88	1946.4	85.2	4.38%	130.1	0.042	1.545	1.60	1.23%
89	2063.5	88.4	4.28%	137.5	n.a.	n.a.	n.a.	–
90	2246.1	96.3	4.29%	155.0	0.512	1.824 ^{b)}	2.34	1.51%
91	2639.7	117.1	4.44%	183.8	n.a.	2.168	n.a.	–
92	2845.5	129.3	4.54%	199.0	0.615	n.a.	n.a.	–
93	2912.5	135.1	4.64%	217.1	n.a.	n.a.	n.a.	–
94	3055.4	139.4	4.56%	234.9	0.63 ^{c)}	2.433 ^{c)}	2.98 ^{c)}	1.27%
95	3190.9	141.8	4.44%	235.4	n.a.	n.a.	n.a.	–

a) Since 1991 including East Germany.

b) West Germany.

c) Own estimates.

d) Corrected for imputed bank services.

e) Interests received + business income – interests paid.

Source: Statistisches Bundesamt, Fachserie 14, Reihe 8 (Umsatzsteuer); Fachserie 18, Reihe 1.3 (Konten und Standardtabellen), and Reihe 2 (Input-Output-Tabellen).

As we will expose further in this paper, this method allows for a good approximation of the value of the output of a single bank or the banking sector as a whole, which consists of explicit bank sales of taxable as well as VAT exempt services, commissions and fees and the imputed margin services. However, it is not possible to separate the share of final demand services rendered to private and public households from intermediate services rendered to other production sectors.

The current approach of national accounting books all financial services to a special account and assumes that they are all rendered to the production sector. This treatment results in an underestimation of gross national product¹⁴, as the resulting net contribution of margin services to gross value added is zero in this case. Furthermore, the intermediate services to the different sectors cannot be identified and subtracted, which ends in biased figures of sectoral value added.

A first view of German national accounting figures in table 1 reveals a share of the banking sector in total value added between 4% and 5%. On the

¹⁴ Cf. Kopsch (1987 a, b).

other hand, the national VAT statistic gives evidence for a VAT revenue share of the banking sector between 1% and 1.5% of total VAT revenue.

The 3% gap between the value added and the VAT payment of the banking sector is the result of exempting banks¹⁵. But unfortunately, neither the national account figures nor the VAT statistics provide data which would allow a more detailed and sophisticated determination of the fiscal exemption effect. This is most clearly demonstrated by an application of the national accounts approach, which attributes all bank services to producers. If this were true, then a general VAT on bank services would be fully neutralized through VAT credits of producers and the fiscal consequence of exempting banks would be a VAT revenue gain equal to the amount of non-creditable VAT. In order to estimate the VAT revenue effect correctly, a breakdown of bank services rendered to final consumers and to VAT registered firms is needed.

Disaggregated national account figures of this kind are not available, although a number of propositions have been brought forward on how to improve the treatment of banking services in national accounts¹⁶. Two different approaches may be distinguished. The first approach takes the imputed aggregate value added of the banking sector as given and tries to develop reasonable procedures for assigning it to the production sectors and to final demand components according to some balance sheet indicators. This approach resembles the method used in German national accounting prior to 1974, when the value added was divided equally between depositors and debtors. The assignment to specific sectors was calculated in proportion to the sum of interests paid and received¹⁷. The advantage of this approach is that it allows the calculation of an estimate of value added solely on the basis of aggregate volume data. However, the split of value added between depositors and debtors is ad hoc and not based on economic factors. The second approach aims at developing methods for measuring the value added through bank intermediation services on a transaction by transaction basis by treating banks like any other firm. Such a method, therefore, has to be based on an economic theory of a banking firm. In the following section, we provide a short overview of these theories and suggest one viable approach.

¹⁵ Non-exempted services only play a minor role in the banking sector and are not a subject of our further considerations, as the problem of breaks in the value added chain does not arise for these services.

¹⁶ Cf. Kopsch (1987a) for an overview.

¹⁷ Cf. Dorow (1972, p. 380).

4. Measuring the Output of a Banking Firm

The traditional argument for the exemption of financial services is the lack of a suitable VAT base since no explicit prices are charged for them. Contrary to other firms which sell definite quantities of commodities or services at well-defined market prices, the price charges for loan or deposit services are hidden in the interest rates taken for loans or paid for deposits. This difficulty is most evident for deposit services, whose implicit price is given by the wedge between a “true rate of interest” and the interest rate received by the depositor. This interest gap, however, does not solely reflect the deposit service component, but rather includes liquidity and risk premia as well, which have to be deducted to filter out the price of the deposit service. Similarly, the value of foreign exchange services is hidden in the margins of bid and ask prices of foreign currency. Although the value of a bank’s total output can be calculated by summing up the margins for all transactions, there is no simple way of identifying the service component rendered to a specific lender or borrower.

Taxing banks under a VAT would require a theory of the banking firm, which allows the calculation of implicit market prices for financial services. To our knowledge, such a comprehensive theory does not exist. Swank (1996) distinguishes four major groups of models which explain the rational behaviour of a banking firm: portfolio models, risk management models, imperfect market models and real resource models. The theories behind those models concentrate on specific aspects of banking activities and neglect others.

With respect to our primary target of identifying banks’ output and value added as the correct base of VAT, real resource models are the most promising, since the other models focus on financial resources and tend to regard banks as financial investors rather than producers of financial services¹⁸. The typical real resource model regards a bank as a firm which maximizes its profit for given output and input prices. Models differ, however, in their view on how to define a bank’s output. According to the “intermediation approach”, the provision of loans and other assets is regarded as the bank’s output which is produced by means of labour, physical capital and by financial inputs, viz deposits and other funds. According to the “production approach”, banks render output services not only to borrowers, but also to lenders, and, consequently, the value of specific loan and deposit services has to be determined by a suitable assignment of the interest margin to suppliers and demanders of bank funds. Besides these margin services banks also provide output services, for which they charge fees and commissions.

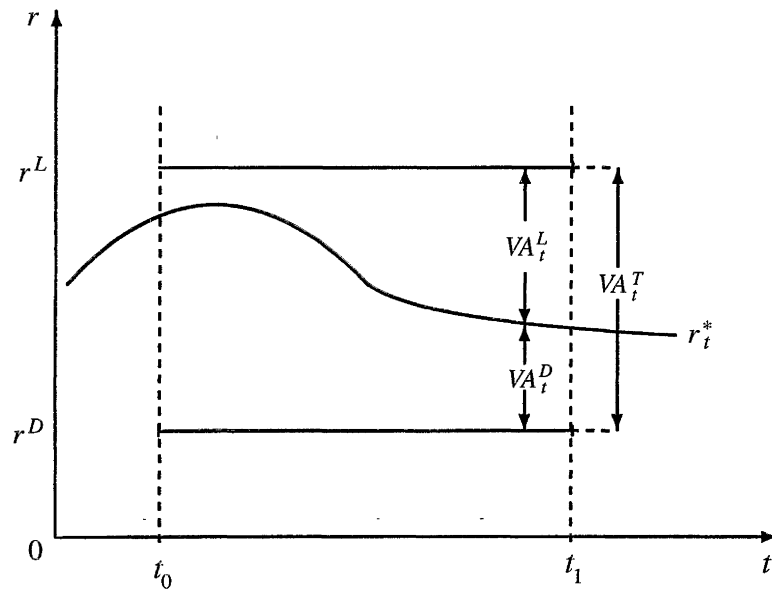
¹⁸ Cf. Markowitz (1952) and Tobin (1961).

Hancock (1991) recently has developed a model of the banking firm, where output services are determined endogenously under a joint-production technology by the user costs of holding financial assets and deposits. The user costs are defined as the net effective costs of holding one unit of a loan or deposit for one period of time and they are calculated with respect to a benchmark interest rate, which reflects the bank's opportunity costs of service provision. Since this benchmark rate is used for present value calculations of cashflows, we refer to it as discount rate in the following (cf. Hancock, 1991, pp. 28 ff.). The net user costs of a unit loan is the sum of the factor costs for intermediation, the costs for reserve requirements, deposit insurance, the risk premium and the discount rate, minus the interest earned on the loan. The net user costs for a unit deposit service consist of the interest rate paid, factor costs of intermediation, the costs for deposit insurance, liquidity holding and reserve requirements, minus the discount rate. If the user costs on a financial service are negative, then the corresponding asset or liability is an output. Otherwise it is an input.

It is evident that the classification depends crucially on the choice of the discount rate. Economically a bank's discount rate reflects a benchmark rate of opportunity costs associated with borrowing or lending one marginal unit of funds. There is a degree of freedom in selecting this benchmark rate since it will always cancel out when the net user costs for a corresponding pair of loan and deposit services are consolidated. Hancock used this room for selecting her discount rate. Following the general guideline of economic rationality which implies that, in the long run, banks will only supply services whose returns cover their costs, Hancock defined her benchmark rate as the highest rate which ensures positive quasi-rents (i.e. negative user costs) on all asset services. Empirical estimates for U.S. bank data exhibited negative user costs for loans, as well as for other assets which, therefore, were classified as outputs, whereas on the liability side, demand deposits had to be classified as outputs and time deposits as inputs.

Hancock's discount rate approach can be related to the observation that contemporary financial markets are characterized by substantial borrowing and lending among banks in the interbank market. This market offers a real opportunity for banks to invest excess deposits and to cover a shortage of funds and it comes very close to the requirements of a perfect capital market without information problems, default risk and unexpected liquidity requirements. The interbank market produces largely riskless and serviceless "pure" interest rates, which qualify for the benchmark rate in Hancock's production approach to the banking firm. Choosing an appropriate interbank rate, therefore, allows the calculation of the value of the output of a particular bank service as the absolute value of its user costs and allows the

Figure 1
Value Added for Unit Loan and Deposit Services



re-identification of the service component of any bank service, viz the VAT base¹⁹.

Once a proper discount rate is chosen, Hancock's model can be exemplified by a characteristic bank activity. We consider a pure intermediation service in a riskless capital market, where deposits and loans of one capital unit are made at the beginning of the period (t_0) and repaid at the end of the period (t_1), as pointed out in figure 1 in the time interval $[t_0, t_1]$. It is assumed that lending and borrowing are fixed for the whole period. The bank's total value added in each period Δt is given by the difference of interest received and interest paid $VA_t^T = r_L - r_D$, and for the whole maturity period $VA_{01}^T = (r_L - r_D) \cdot (t_1 - t_0) / \Delta t$.

The discount rate r_t^* will fluctuate and so will the value added components rendered to borrowers $VA_t^L = (r_L - r_t^*)$ and to depositors $VA_t^D = (r_t^* - r_D)$, although the total value added remains constant. The value of the bank's output services up to maturity is given by the shares VA_{01}^L and VA_{01}^D , determined by r_t^* .

¹⁹ The open question to be solved is, of course, whether one single benchmark rate can be identified, given the term structure of the interbank market. A second problem is the treatment of those banks, which do not have access to the interbank market. Finally, the perfectness of the interbank market might be questioned.

The graphical presentation can be easily extended to floating rates for loans and deposits. Risk of loan default can be encompassed by having loan rates include a risk premium. This premium will increase the value added to borrowers who pay back their loan upon maturity, but reduce the value added to borrowers who fail to do so. For the bank as a whole, fair risk premia will cover the loan defaults and total value added by the bank is calculated consistently if risk premia are included in interests received and loan defaults are deducted. Currency risks which give rise to capital gains and losses can be dealt with in an analogous way²⁰.

5. Estimating the Implicit Prices for Deposit and Loan Services

Using statistical bank data on interest rates and outstanding loans and deposits allows for calculating the total value added. To split the total value added into two components, we choose the 3-month interbank rate (FIBOR)²¹ as a proxy for the “true interest rate”. The introduction of this benchmark rate r_t^* allows an unanimous split of total value added by these margin services into a service component to the borrower (VA_t^L) and to the depositor (VA_t^D) in any period t , which are simply given by the difference between the contractual rate and the current marginal costs of refinancing, times the volume of loans or deposits outstanding.

From data on the volume, the conditions and sector of outstanding debt and deposits, it would be possible to calculate the contribution of banks’ value added to different sectors. Unfortunately, the information available on the aggregate level for Germany does not cover all three aspects. While the bank statistics published by the Deutsche Bundesbank²² provide a quite detailed breakdown on the volumes of outstanding debt and deposits, the information on the sectoral distribution and in particular on the interest rates is far less comprehensive.

A desirable data source for filling this information gap would, of course, be the commercial record of any characteristic bank, but obviously informa-

²⁰ This corresponds to the treatment of capital gains or losses in the manufacturing sector due to a change in the value of inventories.

²¹ The Frankfurt InterBank Offered Rate is calculated and published by Telerate GmbH, Frankfurt. It is based on the daily reports of 19 major German banks on their interbank offer rates for one to twelve months.

The mean rates for every maturity are calculated by omitting the two highest and the two lowest rates. The robustness of the estimator makes it less likely that a single bank or a small number of banks can influence the FIBOR strategically. Finally, it should be mentioned that the current version of the FIBOR is calculated on a 365 day base in contrast to preceding versions.

²² Statistische Beihefte zum Monatsbericht der Deutschen Bundesbank.

tion on loan and deposit rates are kept secret and are not available. Therefore, we decided to rely on the published data and to extract as much information as possible from the aggregate time series and to combine them with plausible proxies for crucial unknown variables, in particular maturity terms and interest rates. Since the objective of the paper is the calculation of the aggregate revenue effect of exempting banks from VAT, we checked the robustness of the numerical estimates through sensitivity analyses, in particular with respect to variations of the reference rate.

For the aggregate revenue effect, a sectoral breakdown of services to VAT credit claimants and other customers is sufficient. Using the bank statistics we distinguished between bank services to firms, private households and public households. The firm sector (F) comprises all enterprises, self-employed and non-profit organizations. Private households (P) include all other private persons, and public households (G) cover government and social security. Unfortunately, this sectoral split is not optimal since the firm sector F does not coincide with entities entitled to VAT credits. In particular, insurance companies and a substantial part of the self-employed, e.g. self-employed physicians, are VAT exempt in Germany. Nevertheless, imputing VAT credits to the whole firm sector according to the split of table 2 seems to be the best compromise obtainable when using the Bundesbank data, since the estimated revenue loss from exemption will be a lower bound due to non-recoverable VAT credits by these exempted firms. A further disaggregation of sector F into different industrial sectors would have been possible, but we refrained from such a breakdown for the purposes of this study, since it would not have helped to identify VAT exempt firms within the different sectors.

For all three sectors the available data include outstanding values for different categories of debt and deposits. Tables 2 and 3 give an overview of the aggregates used for the further analysis. As there is no information about housing loans of the public sector, this entry remains empty.

The disaggregated data on loans and deposits described in the tables are not sufficiently comprehensive for the purpose of estimating VAT revenue effects. For example, the value of L_F^m represents the volume of outstanding loans to firms with an original term to maturity of one to four years. But the bank statistics do not provide further information on the distribution of maturities and the contracting periods in this aggregate, nor on other conditions, in particular about interest rates, or the share of floating and fixed term contracts.

In order to fill that gap, we have to use several approximations. First, we generate an artificial distribution of maturities within each category of loans or deposits using a perpetual inventory method. For a given loan volume V , let V_t^m describe the volume of outstanding loans in period t with maturity m ,

Table 2
Loan Categories

Sector	Contracted maturity					
	Short-term (<1 year)		Medium-term (1–4 years)		Long-term (≥4 years)	
	Housing	Other	Housing	Other	Housing	Other
Firms	L_F^{sh}	L_F^{so}	L_F^{mh}	L_F^{mo}	L_F^{lh}	L_F^{lo}
Private households	L_P^{sh}	L_P^{so}	L_P^{mh}	L_P^{mo}	L_P^{lh}	L_P^{lo}
Public households	–	L_G^s	–	L_G^m	–	L_G^l

Table 3
Deposit Categories

Sector	Current account incl. trust funds	Time deposits with contracted maturity of				Saving deposits with maturity			Saving certificates
		1 m–3 m	3 m–1 yr	1 yr–4 yr	≥4 yr	3 m	3 m–4 yr	≥4 yr	
Firms	D_F^c	D_F^{t1}	D_F^{t2}	D_F^{t3}	D_F^{t4}	D_F^{s1}	D_F^{s2}	D_F^{s3}	D_F^{sc}
Private households	D_P^c	D_P^{t1}	D_P^{t2}	D_P^{t3}	D_P^{t4}	D_P^{s1}	D_P^{s2}	D_P^{s3}	D_P^{sc}
Public households	D_G^c	D_G^{t1}	D_G^{t2}	D_G^{t3}	D_G^{t4}	D_G^s			D_G^{sc}

where $m \in [1, \dots, M]$ and $V_t = \Sigma V_t^m$ ²³. In some remote initial period, viz $t_0 = 1970.01$ (January 1970), we start out with a rectangular distribution of loan contracts, $V_{t_0}^1 = \dots = V_{t_0}^M = V_{t_0}/M$. For all subsequent periods t , the volume of new loans V_t^n can be calculated from the levels V_t and V_{t-1}^1 by

$$(1) \quad V_t^n = V_t - V_{t-1} + V_{t-1}^1$$

as by definition loans V_{t-1}^1 mature in the subsequent period t . Now we also have to make assumptions about the distribution of the new loans V_t^n on the

²³ The procedure for deposits is identical.

subcategories $m \in [1, \dots, M]$, i.e. on their contractual maturity, as no additional information is available. We start again with a uniform distribution $V_t^m = V_t^n/M$ and leave several alternative assumptions to our sensitivity analysis²⁴. Using this perpetual inventory scheme, a stable distribution is reached for the time period 1990–1996²⁵.

A second necessary assumption concerns the split between fixed and floating contracts. While for fixed term contracts the calculation of value added varies along the lines depicted by figure 1, floating term contracts basically imply a fixed value added margin over time. For some financial services, e.g. term deposits, it seems reasonable to assume fixed term contracts, whereas for others, e.g. current account deposits or loans, floating interest rates seem more appropriate. However, for other services, e.g. long-term loans, no clear-cut a priori decision can be made. Therefore, we introduce exogenous parameters λ_j indicating the percentage of floating contracts in category j . The parameter values of the λ_j 's can be changed in the sensitivity analysis in order to check their influence on the results.

Using the assumptions described above, we obtain estimates of the volumes of different categories of assets disaggregated by maturity, contracting time, fixed or floating terms, and sector.

The next important step is to match all these categories with corresponding interest rates. Unfortunately, the set of interest rates published by the Deutsche Bundesbank is not very detailed and does not match all categories, not even at a rather coarse level. This problem is most pronounced for loan rates²⁶. Thus, we had to impute interest rates to our categories which are in line with available interest data, e.g. by using estimates of term structures to approximate missing interest data²⁷.

For interest rates on housing loans, we use published rates for three different maturities. The rates on other loans to firms are approximated by the rate on current account loans plus a term structure increment derived from the term structure on public bonds. The interest rate charged on non-housing loans to private households is approximated by the rate on installment loans. Finally, loans to the public sector bear the same rates as public bonds.

²⁴ In particular, we consider $V_t^M = V_t^n$ as a special case. This assumption implies, for example, that all medium term contracts have a term to maturity of 4 years.

²⁵ German unification in 1990 results in a large value of all the V_t^n . These increments were distributed according to the maturity structure of the outstanding loans and deposits. Hence, it was implicitly assumed that outstanding contracts in East Germany had the same term structure as in West Germany.

²⁶ Cf. Winker (1996, pp. 106 ff.).

²⁷ As the description of all the details of our construction of interest rate series would be quite lengthy, we restrict ourselves to a short dissertation of the approach. Detailed information is available from the authors.

The returns on current account deposits are assumed to be zero. For time deposits, the published data on deposits with maturity of up to three months are augmented by the term structure derived from public bonds. For saving deposits, interest rates for three different maturities are available and rates for other maturities are interpolated. For saving certificates, only one interest rate is supplied by the Deutsche Bundesbank. Consequently, the public bond term structure is used to derive a term structure for all maturities up to ten years.

A final problem was the assignment of bearer bonds which represent a large share of bank liabilities. Unfortunately, the data supplied by the Deutsche Bundesbank do not contain any direct information on this issue. Hence, we had to use additional information to split the outstanding volume of those bearer bonds. First, the volume held by banks (about 30%) is removed. Then, we use information on safe-custody accounts available for 1995 to split the remaining volume between firms, private and public households²⁸. Interest rates are available for different maturities, so we are able to construct an adequate term structure.

Using all this information, the total value added can be calculated for each category j of loans and deposits and each time period t . Let $V_{t,ct,j}^f$ denote the volume of category j contracted in period ct as fix term arrangement and still outstanding in period t , and $V_{t,ct,j}^{fl}$ its floating term counterpart. Then value added by loans of category j in period t has been calculated according to

$$(2) \quad VA_{t,j} = \sum_{ct=t-M_j+1}^t V_{t,ct,j}^f (r_{ct,j}^f - r_t^*) + \sum_{ct=t-M_j+1}^t V_{t,ct,j}^{fl} (r_{t,j}^{fl} - r_t^*),$$

where M_j denotes the maximum maturity in category j , $r_{ct,j}^f$ the fixed term interest rate contracted in period ct and $r_{t,j}^{fl}$ the floating term interest rate in period t for loan category j , respectively. r_t^* denotes the marginal cost of re-financing in period t , approximated in our application by the three month FIBOR. Value added from deposits is calculated accordingly²⁹.

The interest rates are not corrected for risk premia which, therefore, contribute to banks' value added. This treatment can be justified theoretically if ex post costs of risk taking (bad loans, currency losses) which result in cash flow losses reduce the VAT base in subsequent periods. In order to calculate correct VAT bases, we, therefore, have to subtract the capital losses caused by non-performing loans. Since data on these credit losses are not available, we use the fraction of balance sheet entries for accrued and deferred items as a proxy for the fraction of bad debts to private households and firms. The

²⁸ Cf. Deutsche Bundesbank (1997).

²⁹ Deposit services are associated with a positive value added. If the pure interest rate exceeds the deposit rate, then the interest differences in the brackets have to be reversed.

Table 4
Loans to Domestic Non-Banks 1996.09 (bill. DM)

	Debtor		
	Public	Business	Private
Short-term	29.6	507.6	86.2
Medium-term	89.2	135.2	79.9
Long-term	998.4	1401.2	1099.1
Total	1117.2	2044.0	1265.2

Source: Deutsche Bundesbank, Monthly Report 1/97.

resulting estimates of credit losses, which are subtracted from the gross value added, amount to 2.8 bill. DM for private households and to 10.6 bill. DM for firms in 1994.

6. Estimating the Revenue Loss from VAT Exemption of Loan and Deposit Services

We applied the procedure described in the previous section on banking data for the period 1970–1996 in order to estimate the value added by loan and deposit services of the banking sector. In contrast to the aggregate view of the national accounts approach, the value added can be explicitly assigned to three relevant sectors, i.e. VAT registered firms, and VAT exempt private and public households. As loan and deposit services offered to firms and public households should be treated as inputs to the production of these sectors, the differentiation allows estimates for the net value added of the banking sector to be obtained, a variable that is missing so far in national accounts. This is essential with respect to our objective, since only this net value added creates a revenue loss under the current exemption of banks from VAT.

The tables 4 and 5 provide an overview of the importance of the different balance sheet items which are related to VAT exempt bank services. All figures are for the Federal Republic of Germany after unification. The table is restricted to loans and deposits to and from non-banks. The volume of loans and deposits between banks is considerable, but consolidation within the banking sector is feasible since no net VAT revenue would be collected from services between banks.

Table 5
Deposits by Domestic Non-Banks 1996.09 (bill. DM)

	Depositor		
	Public	Business	Private
Current accounts	23.5	178.1	367.3
Fixed term deposits			
1–3 months	23.8	81.2	199.6
3 months–1 year	10.4	29.2	51.8
1–4 years	1.5	5.0	5.0
more than 4 years	121.4	529.5	45.8
Savings deposits	5.3	8.1	1084.0
Bank savings bonds	4.9	36.1	181.8
Bank debenture bonds	38.3	125.9	400.2
Total	229.1	993.1	2335.5

Source: Deutsche Bundesbank, Monthly Report 1/97. Own estimates for bank debenture bonds.

According to table 4, more than 80% of loans to private households (including non-profit organizations) are long-term loans, mainly mortgage loans. The volume of business loans is some 60 percent larger than the volume of loans to private households. Furthermore, about one quarter of all business loans are short-term, i.e. current account loans.

Deposits by non-banks (table 5) are clearly dominated by private households. The composition of deposits differs markedly between the three groups. While business deposits are mainly long-term, about two thirds of private households deposits are savings deposits. A further disaggregation shows that nearly 75 percent of savings deposits are held with a legal period of notice (3 months). These deposits earn a low interest rate and consequently entail a high value added component for financial intermediation.

Given this loan and deposit structure of the German banking sector, the main beneficiaries of exempting bank services from VAT should be private household depositors, whereas business debtors should be the losers. Compared to the hypothetical benchmark case of charging the regular VAT rate on bank services, household depositors do not pay VAT on bank deposit services. Business debtors on the other hand cannot recover the bulk of hidden VAT resting on bank loan services. The tables also indicate that the level of the benchmark interest rate will affect the net VAT revenue effects of bank

Table 6
Value Added in the German Banking Sector (bill. DM)

Year	Firms		Private households		Public households		3-month FIBOR
	Loans	Deposits	Loans	Deposits	Loans	Deposits	
90	12.87	25.23	-0.83	64.97	-8.32	5.34	8.43%
91	11.11	31.08	-2.03	80.33	-11.37	6.78	9.18%
92	16.61	33.38	0.00	88.10	-12.47	7.23	9.46%
93	47.62	18.03	22.36	53.83	1.75	2.35	7.24%
94	77.07	6.03	42.29	25.71	16.19	-0.69	5.31%
95	90.65	-1.78	55.01	6.13	25.82	-2.56	4.48%
96	112.27	-12.81	70.41	-22.07	38.43	-4.77	3.27%

Source: Own calculations.

exemption. A rise in the benchmark interest rate shifts value added from the net debtor "business" to the net "depositor" private households, and will, therefore, cause a higher governmental revenue loss.

Making use of the time series data on bank balances by means of the perpetual inventory method sketched in the previous section, we were able to expand the number of loan categories to 885 and the number of deposit categories to 2,026.

If we use the 3-month FIBOR³⁰ as the benchmark interest rate for assigning the value added shares to borrowers and lenders, the aggregate figures for the early 90's are given in table 6.

For the year 1994, the value added in the banking sector amounts to 15.5 bill. DM for the public sector, 83.1 bill. DM for the business sector and 68.0 bill. DM for private households³¹. The bank services sold to the business sector are part of the value added chain, and they will neither give rise to a change in total value added nor to additional tax revenue if a VAT on financial services were introduced. In contrast, the value added flowing to the final demand of public and private households, which amounts to 83.5 bill. DM in 1994, is an independent source of national output and gives an estimate of the bias in total value added due to the current treatment of banks in national accounting.

The figures of table 6 allow a first numerical estimation of the gross VAT revenue loss through exempting bank services. If banks were subjected to

³⁰ The monthly mean of the 3-month FIBOR ranged between 4.92% and 5.86% in 1994. The annual average of the 3-month FIBOR is shown in table 6.

³¹ It should be noted that the figures for 1990 and 1991 may be biased by the effects of German unification.

the regular rate of 15% without exemption, the direct VAT relief to households in 1994 amounts to 12.5 bill. DM. In order to calculate the fictitious VAT burden, we have to take into account that bank outputs rendering a positive value added create VAT revenue, whereas bank services rendering a negative value added are bank inputs from VAT exempt individuals and do not give rise to VAT payment and VAT credits to banks. Our degree of disaggregation of the banks' balance sheets enables us to avoid to a large extent misleading netting out effects. The output of loan services to private households was equal to 42.29 bill. DM in 1994 and the output of deposit services (with positive value added components) amounted to 41.18 bill. DM. Using a VAT rate of 15% on this aggregated VAT base gives an estimate of 12.5 bill. DM³².

It should be noted that this fiscal revenue effect has been calculated on a *ceteris paribus* basis, i.e. ignoring changes of the input-output structure, which are likely to be induced by a change in the VAT rules. It is, however, beyond the scope of this paper to provide numerical estimates of the price elasticities of banking services or to embed the analysis in a general equilibrium framework³³.

In this estimate of the VAT revenue loss from exempting bank services, bad loan write offs are already taken into account by the estimates described in the previous section. However, in order to obtain the net VAT revenue effect, it has to be reduced by VAT credit claims of banks on their inputs. The latest available figures on non-deductible VAT from input-output tables for 1991 statistics are depicted in table 1 and exhibit an unrecoverable VAT burden of 2.169 bill. DM for the whole banking sector. Introducing a VAT on financial services would allow the deduction of VAT on intermediate inputs. Consequently, the expected fiscal revenue loss due to VAT exemption is reduced by this amount. Our first rough estimate of the net revenue loss using an extrapolated value of 2.433 for the non-deductible VAT in 1994 becomes $12.52 - 2.433 \cdot 1.15 = 9.72$ bill. DM³⁴.

In order to assess the robustness of our results with regard to changes of the underlying assumptions, we performed a series of sensitivity analyses.

³² In our calculation, we need not account for input services rendered by firms since the net revenue effect cancels out, irrespective of whether firms charge VAT on services rendered to banks who are entitled to VAT credits or if firms do not charge VAT on financial services and impose no VAT burden on banks.

³³ Nevertheless, at least the price elasticity of loan demand seems to be rather low, possibly due to rationing situations. Cf. Winker (1996, p. 212).

³⁴ In the calculation of the net revenue loss, a cascading effect of non-deductible VAT has to be taken into account. Firms not only bear the cost of unrecoverable VAT, but also have to pay VAT on higher output prices if this cost element is shifted forward. Hence, the factor 1.15 is used to cover the cascading effect of exemption. As a referee pointed out to us, this effect is likely to be smaller, as cascading will not occur if financial services are rendered to producers of investment or export goods.

Table 7
Value Added 1994 for Different Benchmark Rates (bill. DM)

FIBOR +x basis points	Firms		Private households		Public households		Gross VAT revenue effect
	Loans	Deposits	Loans	Deposits	Loans	Deposits	
-100	94.35	-3.49	52.34	1.91	24.95	-3.04	11.93
-50	85.71	1.27	47.31	13.81	20.57	-1.86	12.21
0	77.07	6.03	42.29	25.71	16.19	-0.69	12.52
50	68.43	10.79	37.26	37.60	11.82	0.49	12.85
100	59.79	15.55	32.24	49.50	7.44	1.66	13.20

Source: Own calculations.

One crucial assumption is certainly the choice of the benchmark interest rate. Although our choice of the 3-month interbank rate (FIBOR) has been based on theoretical arguments, we ran our calculations for reference rates which deviate from the 3-month FIBOR by up to 100 basis points, i.e. $\pm 20\%$. Table 7 summarises the results. As expected, value added attributed to loans depends negatively on the reference rate, whereas a positive relationship exists between value added embedded in deposit services and the reference rate. Consequently, due to the composition of banks' balance sheets, a higher reference rate assigns a larger part of value added to private households and the gross VAT revenue effect increases as shown in the last column of table 7. Still, starting with the actual value of the 3-month FIBOR, a variation by a few basis points has quite a small revenue effect. We may conclude that the estimated order of magnitude for the fiscal revenue loss due to VAT exemption is robust with regard to slight changes in the definition of the benchmark rate³⁵.

Changes of the assumptions concerning the maturity distribution of new contracts have an even smaller impact on the final outcome. Increasing the share of contracts with shorter maturity by about 50% within all categories results in a gross revenue increase in 1994 of about 1% (12.65 bill. DM instead of 12.52 bill. DM). Under the extreme assumption that all new contracts have the maximum term to maturity in the relevant category, the gross revenue loss shrinks to 12.14 bill. DM, whereas under the minimum term to maturity in each category the VAT loss becomes 13.39 bill. DM. Although this effect is small, it should be noted that the size and even the sign of this

³⁵ This result is in line with the empirical findings of Hancock (1991) and Fixler (1993, table 1).

effect depends on the time pattern of interest rates prior to the year under consideration. Further research will have to show how the annual gross revenue effects evolve over time and how robust they are with regard to approximation errors in the imputed interest rates for bank assets and liabilities.

7. Conclusion

In this paper we want to answer the question about the size of the fiscal revenue loss due to the current VAT exemption of commercial banking. The current approach in national accounting does not allow a separation of the value added by margin services between final demand and intermediate production. We use a balance sheet approach for the calculation of value added in margin services based on a real resource model of the banking firm. The crucial step is the introduction of a benchmark interest rate which economically reflects the marginal costs of financial funds and allows for assigning bank services to debtors and depositors. Using this approach, it becomes possible to approximate the fiscal revenue loss of VAT exemption based on aggregate bank balance sheet and interest rate data. The numerical results indicate a lower bound of the net revenue loss of exempting bank services close to 10 bill. DM in 1994.

Our exercise is clearly a first attempt at approximating the revenue effects of exempting bank services and it is subject to several shortcomings which should be overcome in future research. First, we consider only deposit and loan services and disregard other exempt activities, e.g. foreign exchange services, hedging services etc. Second, the treatment of risk premia and corresponding write-offs must be analysed more carefully. The official bank statistics are a rather coarse data base and not well suited for our purpose. We think that more sophisticated estimates are urgently needed, as the revenue effects seem to be sufficiently large to put the abolition of exempting financial services from VAT on the political agenda, all the more since the growth of the financial sector and the fiscal costs of exempting financial services will remain high.

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Abstract

The closing of tax loopholes is one important strategy for fiscal consolidation. We concentrate on the VAT exemption of banking services in Germany. Subjecting all bank services to VAT would give rise to two opposite revenue effects. Final consumers would have to pay VAT on currently untaxed bank services and, thereby, increase national VAT revenue. Business clients, on the other hand, will be able to recover the hidden VAT on bank services and this will reduce national VAT revenue. The net VAT revenue effect from exempting banks cannot be estimated from national accounting data, which do not allow the apportionment of the value added between final consumption and intermediate production. We develop a method based on disaggregated bank balance sheet data and obtain an estimate of 10 bill. DM or 4% of VAT revenue in 1994 as a lower bound for the fiscal loss of exempting German banks from VAT.

Kurzfassung

Das Schließen von Steuerschlupflöchern stellt eine wesentliche Strategie zur Konsolidierung der öffentlichen Haushalte dar. In diesem Beitrag untersuchen wir die MWSt-Befreiung von Bankdienstleistungen in Deutschland. Wären alle Bankdienstleistungen mehrwertsteuerpflichtig, ergäben sich zwei gegenläufige Ertragseffekte. Einerseits hätten Endnachfrager Mehrwertsteuer auf bisher steuerfreie Bankdienstleistungen zu zahlen. Andererseits könnten Firmen die verborgene Mehrwertsteuer auf Bankdienstleistungen als Vorsteuer abziehen, was den Steuerertrag schmälern würde. Der Nettoeffekt der gegenwärtigen Steuerbefreiung der Banken kann nicht auf Grundlage von verfügbaren VGR-Daten geschätzt werden, da zwischen Wertschöpfungsanteilen, die auf den Endverbrauch und auf Zwischenprodukte entfallen, nicht unterschieden werden kann. Wir stellen ein Verfahren vor, mit dessen Hilfe der Einnahmeneffekt auf Basis von disaggregierten Daten der Bankenstatistik berechnet werden kann, und erhalten für 1994 eine untere Schranke von 10 Mrd. DM bzw. 4% der Mehrwertsteuereinnahmen für den Einnahmenausfall durch die Mehrwertsteuerbefreiung von Bankdienstleistungen.

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