A new approach to financial VAT

Julio López-Laborda* and Guillermo Peña**

November 17, 2015

ABSTRACT

Many methods of taxing financial services have been developed in recent decades, but so far, none of them is definitive. The cash-flow method, considered one of the most theoretically accurate approaches, has turned out not to be viable. The purpose of this article is to propose a new approach to taxing financial services that would be theoretically accurate and could be applied practically across countries. We develop an approach called the "mobile-ratio" method that taxes financial transactions using a rate that obtains, roughly, full taxation of the value added by financial services. The simple, neutral method generated can easily be administered by entities. This paper will be useful for public economists and policy-makers in order to raise tax revenue and improve economic efficiency and neutrality.

Key words: Financial VAT exemption, mobile-ratio method

JEL classification: H21, H23, G2

*University of Zaragoza, Department of Public Economics, 50005, Tp. 976 76 18 08, Fax 976 76 18 40, julio.lopez@unizar.es

**University of Zaragoza, Department of Public Economics, 50005, Tp. 876 55 46 21, Fax 976 76 18 40, gpena@unizar.es

1. Introduction

Value Added Tax (VAT) has been implemented in several countries since the 1960s, but the difficulty of calculating financial value added and the lack of an accurate method of taxing financial services meant that in most countries financial services are exempted from VAT. Nevertheless, the financial sector has grown considerably in recent decades, and this exemption has led to lower tax revenue and has distorted the economy in these countries. In this paper we aim to develop a new, simple approach which is easy for entities to implement and administer. This method reduces distortions and achieves practically full taxation of global financial consumption, collecting the product of the standard VAT rate and the financial value added.

The paper is structured in the following sections. The second section deals with the problems found in the current exemption approach and the features of other existing methods in which financial services are fully or partially taxed. In the third section we present an approach that overcomes the difficulties of other methods. Section 3.1 presents the theory of the new method, the "mobile-ratio" approach. Section 3.2 provides some numerical examples to help explain the approach. Finally, in the fourth section we discuss the differences between our approach and the existing methods, followed by some final conclusions and remarks.

2. Problems of the current exemption and other methods for taxing financial services

2.1. Current exemption in most countries

Nowadays, most countries exempt financial services from VAT, mainly due to the problems of calculating the value added and the complexity of existing methods. As Huizinga (2002) states, the exact taxable financial margin is not known, as data for the cost

of the funds and the risk premium are difficult to calculate on a transaction-by-transaction basis; the value added by interest margins, foreign exchange transactions and insurance are not taxed. Nevertheless, exempting financial services from VAT brings several distortions to the economy. As Avi-Yonah (2009) explains, first, exemption under-taxes households, because they do not pay any explicit tax for their consumption of financial services; second, there is an over-taxation of businesses that produces a cascading effect, because financial entities cannot deduct all their input VAT for non-financial operations[1], and they add this amount to prices, and hence, to businesses; third, a vertical integration incentive is produced, in order to avoid the part of the input VAT[2] being unrecoverable; and finally, it gives financial entities a competitive advantage over other entities, because financial entities can sell financial services without VAT. Furthermore, distinguishing between exempt and non-exempt transactions represents a compliance cost and makes the tax more complicated.

Due to the over-taxation of businesses and the under-taxation of final consumers under exemption, taxing the financial value added would generate a positive effect on demand for financial services in businesses (e.g., they would pay less interest for borrowing and they could credit input VAT), and a negative demand effect in households (because of the tax, which increases the price to final consumers), as Huizinga (2002) suggests. On the supply side, the full taxation of financial services would improve bank profits, *ceteris paribus*, because the financial entities would be allowed to credit all their input VAT. Therefore, banks would not charge the input VAT to the price of the financial services.

In addition to distorting the economy, exemption has several negative implications for tax revenue. Financial services are not taxed, hence no tax is collected on the value added of

---

[1] In Spain, for instance, a share of the full input VAT of the financial services can be credited in the *Corporation Tax*.

[2] As a commentator has suggested, the incentives of vertical integration are not very relevant due to the high weight of the wages and salaries and the evidence of outsourcing in the financial sector.

this type of services. This means the loss of collection efficiency or C-efficiency, defined by Keen (2013) as the ratio between the real VAT revenue of an economy and the product of the standard rate of VAT and the overall consumption of the economy. According to Eurostat, the financial sector represented 5.45% of the value added of the European Union in 2013; due to the exemption of this sector, there is a considerable loss of tax revenue. The exempt financial value added[3] in Spain reached 206,539 million of Euros in 2013[4]. Applying the standard VAT rate of 0.21, a loss of tax revenue of 43,373 million of Euros is produced, i.e., 4.13% of Spanish GDP in 2013. Thus, the ratio between real VAT revenue and potential VAT revenue falls, with a C-efficiency of 0.55 in the OECD and 0.41 in Spain in 2013[5].

In terms of equity, the taxation of financial services has a positive effect on income redistribution, due to the fact that high income people are the most frequent consumers of financial services. Nevertheless, it is also true that low income people pay higher interest than the high income classes, and then the effect would be less positive.

2.2. Other current methods

Taxes on financial services aim to tax the financial value added, improving neutrality by eliminating the previously mentioned tax distortions of the economy. These are taxes on the consumption of financial services.

Several approaches have been developed to improve the current treatment of financial services. Many of them have been tested in some countries, but no method has been widely accepted by the scientific community. Some approaches are conceptually acceptable, such

---

[3] The exempt financial value added has been calculated as the difference between the non-creditable exempt sales and the sum of the non-creditable purchases and non-creditable investments.
[4] http://www.agenciatributaria.es/AEAT/Contenidos_Comunes/La_Agencia_Tributaria/Estadisticas/Publicaciones/sites/iva/2013/jrubikf2148d450ca7d95ef70ea83273df7d818f6738b8b.html
[5] OECD(2014)

as the cash-flow method with TCA (Tax Calculation Account), or the modified reverse-charging approach. Nevertheless, they are very complex methods and all of them are unviable in practice. Other methods, such as zero-rating or the taxation of explicit fees and commissions, are simpler, but they do not achieve significant tax revenue; or they produce a lack of liquidity, such as the full invoicing method. There are also some methods which are incompatible with the credit-invoice method used in general VAT: the subtraction method and the addition method. Our preferred existing method is separate tax rates with tax on commissions, because full taxation of financial value-added is approximately achieved, it is a simple and practical method, and it is fully compatible with the credit-invoice method.

Next we are going to discuss each of these methods briefly. The cash flow method developed by Hoffman et al. (1987) consists of considering all the cash inflows from financial transactions as taxable sales on which VAT must be remitted to the administration, and all the cash outflows as taxed purchases on which VAT is an input VAT credit; the TCA is a variant of the cash flow method designed to address practical difficulties, deferring the payment or the credit of the tax. This is achieved by temporarily transferring the cash amount that will be paid or credited to an account, the TCA. As Gendron (2008) suggests, this approach is conceptually correct but it is a complex method, hence it has not yet been adopted. According to Zee (2006), the cash-flow approach solves all the problems of VAT exemption at once. In spite of this, as outlined both by this author and by Huizinga (2002), the EU experience during 1996-1998 in ten banks using this method was discouraging because it was very difficult to implement.

The modified reverse-charging approach developed by Zee (2005) applies a reverse charge whereby a registered business collects VAT on inputs and outputs, taxing gross interest and establishing a "franking mechanism". Gendron (2008) indicates that this approach seems to

be complex. He considers that this method is a variation of the TCA approach and it is difficult to know its current applicability.

 The zero-rating approach consists of applying a zero rate to financial services and full input VAT credit to financial entities. Zee (2005) considers that zero-rating avoids the cascading problem, but increases its complexity compared to exemption. On the other hand, Gendron (2008) shows that this approach significantly reduces the distortions and complexity of other methods. There are two principal disadvantages: first, it produces a loss of revenue from taxing inputs under the exemption; second, the main distortion is produced by the different relative prices of taxable and zero-rated services.

Another method is the taxation of explicit fees and commissions. Under this approach financial margin is still exempt, hence not all the financial value added is taxed. Furthermore, collection levels are low. Bird and Gendron (2005) consider this method as a variant of the next one, the full invoicing method.

Bakker and Chronican (1985) developed the full invoicing method, in which capital and income amounts and fees and commissions are taxed. Bird and Gendron (2005) and Gendron (2008) consider this approach to cause liquidity problems due to the excessive tax liability of taxing capital. Nevertheless, we think taxing capital would correct the negative externalities of generating a large financial sector. Another tax that corrects external effects is the Financial Activities Tax (FAT), developed by the IMF (2010). This tax consists of a financial services tax (by the addition method), and two financial transaction taxes (on the sum of bank profits and bankers' remuneration and on systemic risk) that tax negative externalities.

The addition method is an accounts-based method in which the value added is calculated as the sum of wages, cost of capital, and profits. The subtraction approach is another accounts-based method in which the value added is calculated as the difference between

revenues and allowable purchases. Gendron (2008) shows these methods are accounts-based, meaning they are incompatible with the credit-invoice method and hence registered businesses are not allowed to claim the VAT paid on purchases. Zee (2005) holds that one of the features of a good method is its compatibility with the credit-invoice method, and these approaches do not achieve it. In spite of this, the addition method is considered a simple solution, as Bird and Gendron (2005) show. They state that the subtraction method is simpler than other alternatives, but it has complex rules in order to distinguish between financial and non-financial businesses.

The separate tax rates method, developed by Bakker and Chronican (1985), taxes a part of the interest, taxing the proportion of service charge on each type of transaction over the total amount of the transaction. An improved method is the one that Bird and Gendron (2005) selected for developing countries: a hybrid system consisting of the separate tax rates method plus the taxation of explicit fees and commissions. There are several reasons justifying this choice. First, if all explicit fees and commissions and the financial margin are taxed approximately, almost all the financial consumption of entities is taxed. Second, it is a simple and practical method with few administration costs. Third, it discourages the substitution of margins for fees, the incentive to self-supply and import bias. Tax revenue is not reduced unless financial services move to the informal sector or abroad. Fourth, this approach is fully compatible with the credit-invoice method. Fifth, it provides full input VAT credits without complex input mechanisms. Finally, it eliminates the liquidity problems of taxing capital. In spite of all this, it has some disadvantages. First, this method requires some approximations. Second, this approach has more compliance and administrative costs than an aggregate method, like addition or subtraction. Third, as Gendron (2008) points out, obtaining the data and the proportion of value added of each type of transaction could be complex and costly.

Table 1 shows the different existing methods and the countries where they are applied. Some of these methods have been developed theoretically but have not been applied in any country.

Table 1. Methods of taxing financial services and countries that apply them

Method	Countries where applied	Method	Countries where applied
Zero-rating	*Quebec, New Zealand (since 2005, Merrill (2011)),*	Net operating income	*Mexico (since 1992, Schatan (2003))*
Taxing explicit fees and commissions	*Australia (since 2000, De la Feria and Walpole (2009)), Singapore (since 1994, Jenkins and Khadka (1998)), South Africa (since 1996, Merrill (2011))*	Full invoicing	
Exemption with input credits	*Australia, Singapore*	Accrual method	
Option to tax	*Austria, Belgium, Estonia, France, Germany and Lithuania (all since 2006, Merrill (2011))*	Modified reverse-charging	
Addition method	*Quebec, Michigan (since 1950, De la Feria and Krever (2012)), France (since 1979, Pons (2006)), Israel (since 1976, Gillis (1987)), Denmark (since 1988, Møller and Hjerrild (2013))*	Financial Activities Tax	
Subtraction method	*Italy (since 1998, Keen et al. (2010)), Japan (it was going to be settled in 1950, but it was abolished a few years before, De la Feria and Krever (2012)), proposed in Canada*	Separate tax rates	
Separate taxes	*Quebec, Israel (since 1981, Gillis (1987)), France, Denmark, Italy*	Cash-flow method	
Taxation of gross interest	*Argentina (since 1992, Zee (2004))*		

Source: By the authors

3. A new approach of financial VAT

3.1. Theoretical formulation of the mobile-ratio method

Being aware of the trade-off between neutrality and compliance costs on the one hand, and simpler methods on the other, as Bird and Gendron (2005) explain, we need to find a

balanced method that improves on existing ones. The desired method has to solve current problems (under-taxation of households, over-taxation of businesses, cascading effect, and vertical integration incentives), be fully compatible with the credit-invoice method, be simpler and more neutral than the hybrid method, and tax the product of the standard VAT rate and financial consumption. It should tax all financial services, not only bank services, because sometimes businesses also provide financial services to consumers or to other businesses (see Zee, 2006).

First of all, we clarify some basic concepts. As Eurostat (2013) states, financial services consist of the following services: financial intermediation, which is financial risk management and liquidity transformation (including insurance and pension services); services of financial auxiliaries, which are activities that facilitate risk management and liquidity transformation; and other financial services, such as monitoring and security services.

The financial value added of the entity j in the period t, $FVA_{j,t}$, is obtained by the subtraction method by adding the financial margin ($FM_{j,t}$) plus the net explicit fees and commissions ($EFC_{j,t}$), minus the input costs ($IC_{j,t}$) and minus the investment ($I_{j,t}$). This equates the sum of profits ($P_{j,t}$) and wages and salaries ($WS_{j,t}$), plus the costs of capital of the previous period, ($i_{j,t}K_{j,t-1}$), plus the amortization, ($A_{j,t}$), minus the investment; obtained by the addition method:

$$FVA_{j,t} = FM_{j,t} + EFC_{j,t} - IC_{j,t} - I_{j,t} = P_{j,t} + WS_{j,t} + i_{j,t}K_{j,t-1} + A_{j,t} - I_{j,t} \qquad [1]$$

The financial margin is equal to the interest or banking margin, $BM_{j,t}$, the foreign exchange margin, $FEM_{j,t}$, and the insurance margin, $IM_{j,t}$, and other operating incomes (e.g. results of investment funds and property investments), $OOI_{j,t}$.

$$FM_{j,t} = BM_{j,t} + FEM_{j,t} + IM_{j,t} + OOI_{j,t} \qquad\qquad [2]$$

As Zee (2006) states, the financial margin (or "imputed" banking output) is also equal to the difference of the received interests (loan interests, insurance, foreign exchange and other operating revenues), ($RI_{j,t}$), minus the paid interests (deposit interests, insurance, foreign exchange and other operating expenses), ($PI_{j,t}$).

$$FM_{j,t} = RI_{j,t} - PI_{j,t} \qquad\qquad [3]$$

We define the total value of the interests of the entity j ($TVI_{j,t}$) as the sum of all the interest transactions, that is, the paid interests ($PI_{j,t}$) plus the received interests ($RI_{j,t}$):

$$TVI_{j,t} = PI_{j,t} + RI_{j,t} \qquad\qquad [4]$$

The mobile-ratio method taxes the financial margin with a mobile-ratio approach and also taxes net explicit fees and commissions. Thus, the whole financial value added provided by banks and businesses is taxed, achieving a midpoint in the trade-off between neutrality and simplicity (administrative costs).

In this method, the tax base uses an identical proportion applied to each interest transaction. The ratio is the fraction between the financial margin generated by financial services provided by the business or bank j at the quarter t-p (denoted as $FM_{j,t-p}$, being t-p the quarter in which the information is available, and t the current quarter), and the Total Value of the Interests of the entity j at the quarter t-p (denoted as $TVI_{j,t-p}$):

$$r_{j,t} = \frac{FM_{j,t-p}}{TVI_{j,t-p}} \qquad\qquad [5]$$

Where $VI_{ij,t}$ is the value of the interests of the transaction i of the entity j at t and τ the general VAT rate, the VAT collected of the financial margin by the entity j is:

$$FVAT_{j,t}(FM) = \sum_{i=1}^{n} \tau r_{j,t} VI_{ij,t} = \tau r_{j,t} \sum_{i=1}^{n} VI_{ij,t} = \tau r_{j,t} TVI_{j,t} =$$

$$= \tau FM_{j,t-p} \frac{TVI_{j,t}}{TVI_{j,t-p}} \qquad [6]$$

The fraction $\dfrac{TVI_{j,t}}{TVI_{j,t-p}}$ is roughly equal to 1, therefore we consider the VAT revenue would

be[6]:

$$FVAT_{j,t}(FM) \approx \tau FM_{j,t-p} \qquad [7]$$

The VAT collected for net explicit fees and commissions by the entity j is:

$$FVAT_{j,t}(EFC) = \tau EFC_{j,t} \qquad [8]$$

The financial VAT collection of an entity j is obtained by adding the VAT collected on the financial margin with the mobile-ratio plus the VAT collected with the tax of explicit fees and commissions, minus the investment and input cost credits[7].

$$FVAT_{j,t} = FVAT_{j,t}(FM) + FVAT_{j,t}(EFC) - FVAT_{j,t}(IC) - FVAT_{j,t}(I) \qquad [9]$$

The total financial VAT revenue of the economy in the period t is:

$$FVAT_t = \sum_{j=1}^{m} FVAT_{j,t} \approx \sum_{j=1}^{m} \tau(FM_{j,t-p} + EFC_{j,t} - IC_{j,t} - I_{j,t}) \approx$$

$$\approx \sum_{j=1}^{m} \tau FVA_{j,t} = \tau \sum_{j=1}^{m} FVA_{j,t} = \tau FVA_t \qquad [10]$$

We can see that with this method our objectives are fully achieved. The consumption with this method is simpler to calculate than with separate tax rates and is more specific for each

---

[6] We analyzed annual data from the World Bank Database, using a sample of the sum of lending interest rate plus deposit interest rate in Spain during the period 1979-2002, with p=1, and we obtained that the fraction is equal to 0.95995 in the average of the period. We also used a sample of the total value of interest of the entity "CaixaBank" in quarterly data from the first quarter of 2011 to the second quarter of 2014. We found that the fraction is equal to 1.0159 in the average of the period. By the authors, based on http://www.caixabank.com/informacionparaaccionistaseinversores/informacioneconomicofinanciera/infor mefinancieroanualysemestral/2013_es.html

[7] If the entity is a firm, VAT collected would also include the VAT collected on sales, added to the total.

transaction: the first method includes the consumption of each entity, while the latter includes the value added of each type of transaction or group of transactions in the economy, which is also less specific and more difficult to calculate. Despite our method taxing different products in the same way, it takes into account the differences among markets, profits and financial margins in the different firms.

In our method we followed Zee (2004, 2005, 2006) and we considered that the financial entity provides a financial service to creditors, but also to depositors, obtaining an implicit (financial margin) and explicit (explicit commissions and fees) fee from both customers. We suppose that banks provide a service when people save deposits (due to the services of intermediation, maintaining money in cash and liquidity, etc.). Because of this, we tax the interests of depositors and creditors. Doing so, we assign the financial margin to each financial transaction of depositors and creditors, weighting the total financial margin in proportion to the net interest on implicit fees over the total value of interest. Nevertheless, taxing depositors could be controversial, as it would penalize saving; another option is taxing only creditors. We compared data on bank interest in Spain in recent years[8] and we found that deposit interests represent around 35% of the total banking interest value whilst credit interests are 65% of the total. Hence, creditors would pay roughly twice as much tax as depositors. Taxing only creditors, the difference with our method would be that instead of including the total value of interest in the mobile-ratio (expression 5), we would consider received interest only.

$$r_{j,t} = \frac{FM_{j,t-p}}{RI_{j,t-p}}$$ [5']

Then, this variant of the mobile-ratio would be applied to the received interest only, instead of the total value of interests.

---

[8] http://data.worldbank.org/indicator

$$FVAT_{j,t}(FM) = \sum_{i=1}^{n} \tau r_{j,t} RI_{ij,t} = \tau r_{j,t} \sum_{i=1}^{n} RI_{ij,t} = \tau r_{j,t} RI_{j,t} =$$

$$= \tau FM_{j,t-p} \frac{RI_{j,t}}{RI_{j,t-p}}$$

[6']

Taxing only creditors in banking transactions, we can see that the same aggregated VAT revenue is achieved, but in this case depositors would not pay anything.

3.2. Numerical example

We present two examples in order to explain our method and its characteristics numerically. The first example is a simulation using real data from "CaixaBank" as an example corporation (a financial corporation, in this case). We use quarterly data, and the current period in this example is the second quarter of 2014. The second one is a fictional simple numerical example that aims to explain the mechanisms of the method.

Table 2. Calculation of the value added of CaixaBank by the addition method (millions of euros)

Addition method			
Expression	Account	t-1	t
"Operating Margin" [i] $OM_{j,t} = P_{j,t} + i_{j,t}K_{j,t}$	Net result[ii]	152	153
	Capital Instruments Gains	150	74
	Deposit Guarantee Fund	83	83
	Taxes	-26	24
	Provisions	703	713
$WS_{j,t}$	Wages and Salaries	638	653
$A_{j,t}$	Amortization	93	91
$I_{j,t}$	Investment	69	98
$VA_{j,t}$	**Value Added (Addition)**	1424	1545
τ	Standard VAT rate	0.21	0.21
$VAT_{j,t}$	Ideal financial and real VAT revenue of CaixaBank	299.04	324.45

[i] The "Operating Margin" (*OM*) has been obtained as the sum of the operating income that appears in the profit and loss account of CaixaBank plus the Deposit Guarantee Fund account; minus the capital instruments gains. Following equation 1, *OM* is equal to profits, *P*, plus the cost of capital, *iK*.

[ii] The cost of capital and part of the profits are included in the net result.

The value added of CaixaBank in the first (*t-1*) and second (*t*) quarter of 2014 is calculated by the addition method, as can be seen in Table 2; and with the subtraction method, as can be seen in Table 3; both following equation 1.

Table 3. Calculation of the value added of CaixaBank by the subtraction method (millions of euros)

Expression	Account	t-1	t
Subtraction method			
$BM_{j,t}$	Interest margin	993	1022
$FEM_{j,t}$	Foreign exchange margin and result of financial operations	221	292
$IM_{j,t}$	Insurance	32	34
$OOI_{j,t}$	Other operating income	2	19
$FM_{j,t}$	**Financial Margin**	1248	1167
$EFC_{j,t}$	Net Explicit Fees and commissions	454	476
$I_{j,t}$	Investment	69	98
$IC_{j,t}$	Input costs	209	200
$VA_{j,t}$	**Value Added (Subtraction)**	1424	1545

We solve the problem of the risk premium obtaining the financial margin and applying the addition method, an accounts-based (not transaction-by-transaction) method that takes provisions into account. The financial margin can also be calculated as the sum of the interest margin, the insurance margin, the foreign exchange margin and the other operating income, by the subtraction method, and the risk premium is also solved.

How to calculate the total VAT revenue with the mobile-ratio method is shown in Table 4.

Where $TA_{j,t}$ are the total assets of CaixaBank in *t*. The financial VAT revenue is obtained by adding the VAT collected in the explicit fees and commissions to the VAT of the financial margin, minus the VAT credits of investment and input costs. The VAT collected for the financial margin is calculated with the product of the standard VAT rate, the total value of interest of the entity CaixaBank in the second quarter of 2014, and the mobile-

ratio. The mobile-ratio is obtained by dividing the financial margin by the total value of interest, both of CaixaBank in the first quarter of 2014.

Table 4: Calculation of aggregated VAT revenue using the mobile-ratio approach (millions of euros)

$TVI_{j,t} = RI_{j,t} + PI_{j,t}$ [i]	3376
$FM_{j,t-1} = RI_{j,t-1} - PI_{j,t-1}$	1248
$TVI_{j,t-1} = RI_{j,t-1} + PI_{j,t-1}$	3309
$r_{j,t} = \dfrac{FM_{j,t-1}}{TVI_{j,t-1}}$	0.37715322
τ	0.21
$FVAT_{j,t}(FM) = \tau \times r_{j,t} \times TVI_{j,t}$	267.39
$EFC_{j,t}$	476
$FVAT_{j,t}(EFC) = \tau \times EFC_{j,t}$	99.96
$I_{j,t} = \Delta TA_{j,t} - A_{j,t} = TA_{j,t} - TA_{j,t-1} - A_{j,t}$	98
$FVAT_{j,t}(I)$	20.58
$IC_{j,t}$	200
$FVAT_{j,t}(IC)$	42
$FVAT_{j,t} = FVAT_{j,t}(FM) + FVAT_{j,t}(EFC) - FVAT_{j,t}(IC) - FVAT_{j,t}(I)$	304.77

[i] Due to a lack of information, we have considered the total value of interest as the sum of the bank's paid and received interests.

The comparison between the VAT collected in the proposed method and the ideal VAT is shown in Table 5.

Table 5. VAT collected in CaixaBank ideally and with the mobile-ratio method

CaixaBank	Mobile-ratio approach	$\tau FVA_{j,t}$
$VAT_{j,t}$	304.77	324.45

We can observe that the mobile-ratio method achieves a specific financial VAT revenue near the product of the value added of CaixaBank in t and the standard VAT rate, which is the ideal VAT revenue.

The following simple example illustrates the mechanism of the method. The main transactions of the example are summarized in Table 6. We consider a bank (Caixabank), a firm, and a household, during three periods. We assume the household deposits 10,000 euros in CaixaBank in the period t and the bank provides a loan of 10,000 euros to the firm simultaneously.

Table 6. Financial VAT paid on an example using the mobile-ratio method

	Household	Bank	Firm
t	Deposit: payment of 10,000 euros; deposit account of 10,000 euros		Loan of 10,000 euros; reception of 10,000 euros
t+1	Deposit interests of 0.01*10,000=100; VAT paid: 100*0.377153218495*0.21=7.92; Interests received: 100-7.92=92.08	VAT collected to the administration: 15.84+7.92=23.76; Bank: loan interests of 2% of the loan, deposit interests of 1% of the deposit	Loan interests of 0.02*10,000=200; VAT paid: 200*0.377153218495*0.21=15.84; Interests paid: 200+15.84=215.84
t+2	Deposit: return of 10,000 euros; deposit reception of 10,000		Loan return of 10,000 euros; payment of 10,000 euros

In the period t+1, the bank applies interest of 1% of the deposit without VAT to the household and interest of 2% of the loan without VAT to the firm, and CaixaBank applies a ratio of 0.377153218495. The household obtains 100 in interest, but pays VAT of 7.92 obtained by the product of the interest, the ratio and the standard rate. The net interest perceived is the difference between the deposit interest and the VAT paid, 92.08. The firm pays a net interest of 200, and also pays 15.84 in VAT, so the gross interest paid by the firm is 215.84, the sum of both amounts. The VAT collected by the bank for administration is 23.76, the sum of the VAT paid by the firm and by the household. In t+2 the loan and the deposit are returned.

In Table 7 we can compare the VAT collected in our method with the ideal VAT, obtained as the product of the VAT rate and the interest margin of these transactions, defined as the difference between the interests received and paid, as we saw in expression 3.

Table 7. Comparison of the VAT collected with each method and the ideal VAT

Method	$VAT_{j,t}$
Ideal	0.21*(200-100)=21
Mobile-ratio	15.84+7.92=23.76

4. Concluding remarks

The mobile-ratio method is the first financial VAT approach that taxes all financial services, including those provided by non-financial businesses. Furthermore, this objective is achieved with a simple approach that allows entities to collect the tax with low administrative and compliance costs. The mobile-ratio method provides both a more specific value added for each transaction and simpler administration than current approaches. As a simple approach, the mobile-ratio method taxes roughly all financial consumption with full compatibility with the credit-invoice method. Compared to separate tax rates or the hybrid method, our approach is more neutral, because the rate is based on the value added of each entity, rather than a rate based on the value added of each type of transaction. Financial consumption is also simpler to calculate with our method, thanks to the addition and subtraction methods and the calculation of paid interest among businesses, instead of the complexity of calculating the value added of each type of transaction over the total amount of that transaction. Our approach taxes financial services in relation to financial consumption. Households and entities will behave more neutrally than with exemption and other methods, without any incentive to reduce their financial transactions or size.

References

AVI-YONAH, R. S. (2009), "Designing a Federal VAT: Summary and Recommendations", University of Michigan Law School, *Olin Working Paper*, 09-013.

BAKKER, C. and CHRONICAN, P. (1985): *Financial Services and the GST: A Discussion Paper*, Wellington: Victoria University Press for the Institute for Policy Studies.

BIRD, R. M. and GENDRON, P. P. (2005): "VAT Revisited, A New Look at the Value Added Tax in Developing and Transitional Countries", *International Tax Program*, University of Toronto.

DE LA FERIA, R. and KREVER, R. (2012): "Ending VAT Exemptions: Towards A Post-Modern VAT", *Oxford University Centre for Business Taxation Working Papers*, WP12/28. (http://eureka.bodleian.ox.ac.uk/4387/1/WP1228.pdf).

DE LA FERIA, R. and WALPOLE, M. (2009): "Options for taxing financial supplies in Value Added Tax: EU VAT and Australian GST models compared", *International and Comparative Law Quarterly*, vol.58, October p.897–932. (http://www.sbs.ox.ac.uk/sites/default/files/Business_Taxation/Docs/Publications/Working_Papers/Series_08/WP0818.pdf).

EUROSTAT (2013): "European system of accounts, ESA 2010", European Union.

GENDRON, P-P. (2008): "VAT Treatment of Financial Services: Assessment and Policy Proposal for Developing Countries", *Bulletin for International Taxation*, November 2008: 494-507.

GILLIS, M. (1987): *The VAT and Financial Services*. World Bank.

HOFFMAN, L. A.; PODDAR, S. and WHALLEY, J. (1987): "Taxation of Financial Services under a Value-Added Tax: Applying the Cash Flow Approach," *National Tax Journal*, 40 (4): 547-54.

HUIZINGA, H. (2002): "A European VAT on financial services?" *Economic Policy*, 17(35), 497-534.

KEEN, M., KRELOVE, R. and NORREGARD, J. (2010): "The Financial Activities Tax", in S. Claessens, M. Keen and C. Pazarbasioglu, eds. (2010): *Financial Sector Taxation: The IMF´s Report to the G-20 and Background Material*, International Monetary Fund, chapter 7, pp. 118-143.

KEEN, M. (2013): "The Anatomy of the VAT", *IMF Working Paper*, WP/13/111, Fiscal Affairs Department.

JENKINS, G. and KHADKA, R. (1998): *Tax Reform in Singapore*. International Tax Program, (Vol. 644), Harvard Law School, Harvard Institute for International Development, John F. Kennedy School of Government, Harvard University.

MERRILL, P.R. (2011): "VAT Treatment of the Financial Sector", *Tax Analysts*, 163-185 (http://www.taxwire.org/www/freefiles.nsf/Files/MERRILL-13.pdf/$file/MERRILL-13.pdf).

MØLLER, H.; HJERRILD B. (2013): "Taxation of the Financial Sector in Denmark" *Nordisk Skattevidenskabeligt Forskningsråd*, Spring, p.93-132.

(http://www.djoef-forlag.dk/sites/ntj/files/2013/2013_10.pdf).

Organization for Economic Co-operation and Development (2014): *Consumption Tax Trends 2014*. OECD, Paris.

PONS, T. (2006): "Option for Taxation of Financial Services in France", *International VAT Monitor*, International Bureau of Fiscal Documentation, May/June 2006, 182-185 (http://www.empcom.gov.in/WriteReadData/UserFiles/file/2006-33.pdf).

SCHATAN, R. (2003): "VAT on Banking Services: Mexico's Experience", *VAT Monitor*, International Bureau of Fiscal Documentation, July/August 2003, 287-294 (http://www.empcom.gov.in/WriteReadData/UserFiles/file/2003-17.pdf).

ZEE, H. H. (2004): "Taxing the Financial Sector: Concepts, Issues, and Practice", International Monetary Fund.

ZEE, H. H. (2005): "A New Approach to Taxing Financial Intermediation Services Under a Value–Added Tax", *National Tax Journal*, 58(1): 77-92.

ZEE, H. H. (2006): "VAT Treatment of Financial Services: A Primer on Conceptual Issues and Country Practices", *Intertax*, 34: 458–74.