Should Financial Services be Taxed Under a Consumption Tax? Probably.

Abstract - Previous authors have concluded that a broad–based consumption tax would be more efficient if financial services to consumers, such as services for investment, loans and insurance, were exempted from the tax, even if taxing the financial services posed no special administrative burden. I argue, however, that this conclusion rests on some key assumptions and that alternative, equally plausible assumptions support the conclusion that, absent any special administrative burden, the tax rate on financial services to consumers should be at least as high as the tax rate on consumer goods.

INTRODUCTION

In a recent paper, Grubert and Mackie (2000) concluded that financial services to consumers should be exempted from a broad–based consumption tax, even if the services are paid for separately and their cost is not included in the price of the taxed consumer goods. Earlier, Whalley (1991) and Chia and Whalley (1998), using simulations from a general equilibrium model, reached the somewhat weaker conclusion that a broad–based consumption tax would be more efficient if financial services to consumers were exempted from the tax than if they were taxed at the same rate as consumer goods.1

The conclusions from these studies are attractive to those who favor a consumption tax, because the technical difficulties of applying the tax to financial services have proven to be severe.2

In this paper, I examine the optimal tax treatment of financial services to consumers given that a uniform tax is to be imposed on consumption (defined to exclude these services). I show that this treatment depends importantly on the answers to the following two questions:

1 In another recent paper, Jack (2000) considers the special cases of fees that are imposed on a per–transaction basis but that are not related to the nominal amount of the financed consumption, such as some bank check–cashing fees, or that are one–time fixed fees. He concludes that both types of fees should be taxed under a broad–based consumption tax, but he agrees that the fees that are based on the nominal amount of the financed consumption should be exempt from the tax.

2 Bradford (1996), and Mintz and Seade (1991) discuss some of these technical difficulties.
(a) When consumers use financial services to move private consumption over time, they typically also move revenue from the consumption tax over time. But is the effort to move the tax revenue over time wasted?

(b) Would a tax on financial services cause consumers to increase the amount of these services per unit of the tied private consumption? For example, if a consumer borrows money to buy a car, would a tax on the financial services cause him to increase the size of the car loan?

The answers are not clear cut. For example, in the central case considered by Grubert and Mackie the answer to both questions is “no,” whereas Chia and Whalley implicitly assume the answer to both questions is “yes.” I argue that the better answer to (a) is “yes” and that the better answer to (b) is “no,” and I show that in this case financial services to consumers should be taxed at least as highly as consumption.

For the most part, I will be concerned with financial services that consumers use to move consumption over time when the fee for the services is related to the nominal amount of the tied consumption, as in the models used by Grubert and Mackie, Whalley, and Chia and Whalley. These services include insurance, brokerage services for household investment, and services provided by banks or other financial intermediaries for household saving accounts, home mortgages, and consumer loans. However, I also consider banking services that consumers use to effect current exchanges when (as assumed by Jack, 2000) the fee for the services is either fixed absolutely or is levied on a per–transac-

3 As pointed out by Grubert and Mackie, insurance can be viewed as services that allow individuals (or, in the case of life insurance, households) to move consumption from fortunate times to less fortunate times.

4 I abstract (as did Grubert and Mackie) from any utility consumers may incidently derive from these services, such as the enjoyment they may get from discussing investment strategies with their brokers.

5 In characterizing the marketing costs, Foley (1970, p.282) said “The important feature of these costs is that they expend real resources without altering the characteristics of the delivered product.”

WHAT IS DIFFERENT ABOUT FINAL FINANCIAL SERVICES?

A question that naturally occurs when examining the appropriate way to treat final financial services under a consumption tax is why they should be treated any differently from other services that are tied to consumption and that may be paid for separately, such as transportation or storage services. All of these services can be viewed as being incorporated in the delivered value of final consumption, if the delivered value is defined to include the cost of moving the consumption over time. These services also share a number of other characteristics. For example, none enters the consumer’s utility function directly: the utility derived from a good should be the same whether the consumer borrowed to buy the good, whether the good was moved from a distant or nearby producer, or whether the good was stored (assuming it retains all of its original characteristics). All of the services also appear to fit fairly well under the broad definition of marketing services considered by Foley (1970) in his study of general equilibrium in the presence of costly marketing. From the similarities, one is tempted to conclude that all of the services should be treated the same under a broad–based consumption tax.

There is an important difference, however, in how a consumption tax affects the cost of the different services per unit of tied private consumption. The tax typi-
Financial services, whether as protection against loss or theft, are ad valorem in nature, because the services typically are provided before the tax is applied. In contrast, a consumption tax can be expected to increase the cost of final financial services per unit of tied private consumption because, in effect, using the services to move taxed private consumption over time entails also moving tax revenue over time. For example, if a consumer intends to save enough money to buy a car, a sales tax on the car will increase the amount he must save. Presumably, moving the tax revenue over time adds to the cost of the financial services. This same difference separates the final financial services from financial services to business, since the services to business precede the tax.

A tax on the final financial services themselves may also increase the amount of these services required per unit of the tied private consumption. For example, if the consumer automatically includes the fee for financial services in the amount of a car loan, a tax on the fee may cause him to borrow more. It is difficult, however, to imagine likely circumstances under which a tax on transportation or storage services would increase the amount of these services per unit of tied consumption. Also, if businesses are able to immediately recoup the tax, it should not affect the amount (or cost) of the financial services they need.

The next section explains how a consumption tax can impose a social welfare cost by raising the cost of the final financial services. It also shows why the final financial services should probably be included in the base of a consumption tax.

THE ANALYSIS

To begin, consider the example described by Grubert and Mackie (2000), in which the consumer lives for two periods and gets his entire endowment in the first period. For simplicity, I assume that the interest rate is zero, so their equation for the consumer’s budget choices becomes

\[ E = P C_1 + (P + P_i) S, \]

where \( E \) is the amount of the consumer’s endowment, \( C_1 \) is the quantity consumed in the first period, \( S \) is the amount of the saving good needed to finance second-period consumption, \( P \) is the price of \( C_1 \), and \( P_i \) is an investment service fee required per unit of \( S \). Units of \( S \) are defined so that \( PS \) yields the amount that must be spent on the saving good in order to finance second period consumption, so the consumer’s second-period budget constraint is:

\[ P C_2 = PS, \]

where \( C_2 \) is the quantity consumed in the second period and \( P \) is the price of \( C_2 \).

Substituting from [2] into [1] yields the budget constraint expressed in terms of the consumer good:

\[ E = P C_1 + (P + P_i) C_2. \]

Equation [3] implies that the consumer will adjust his consumption of \( C_2 \) and \( C_1 \).
until the tradeoff in utility, or the marginal rate of substitution of \( C_2 \) for \( C_1 \), is equal to

\[ [4] \quad MRS_{2,1} = (P + P_t)/P. \]

Assuming the prices reflect production costs, \( P \) will be the marginal cost of producing \( C_1 \) whereas \( P + P_t \) will be the total marginal cost of producing \( C_1 \), including the cost of producing the required final financial services. Hence, in equilibrium the marginal rate of transformation of \( C_2 \) for \( C_1 \), or the \( MRT_{2,1} \), will be equal to the \( MRS_{2,1} \) given by [4].

Now introduce taxes and government spending. Since private consumption and total consumption are no longer the same, I divide \( C_1 \) and \( C_2 \) into components: \( C_{1p} \) and \( C_{2p} \) are the amounts of post–tax private consumption and \( C_{1c} \) and \( C_{2c} \) are the amounts of consumption supplied by transfers from the government. To keep the analysis as simple as possible, I assume that the cost of producing the consumer good is constant with respect to the level of output in each period.\(^{10}\) I first consider an example in which the government must pay the same fee as the consumer to move resources over time. Then, a lump–sum tax on the consumer’s endowment would leave the marginal social cost of \( C_1 \) and \( C_2 \) the same as in the no–tax case (since it does not affect the marginal cost of producing \( C_1 \) or \( C_2 \) for private consumption and since the government faces the same cost as private consumers for supplying \( C_1 \) or \( C_2 \)), and it would also leave the consumer prices the same as in the no–tax case.

With a tax on the consumer good, the saving good will need to finance the tax as well as the purchase price of second–period private consumption, so \( PS = (1 + t)PC_{2p} \) and \( P_tS = (1 + t)PC_{2p} \). Thus, the consumer’s post–tax budget constraint for private consumption becomes:

\[ [5] \quad E = (1 + t)PC_{1p} + (1 + t)(P + P_t)C_{2p}. \]

Given [5], the consumer will allocate private consumption between the two periods such that his post–tax tradeoff in utility, the \( MRS_{2p,1p} \), is the same as under the lump–sum tax.

The consumer cost per unit of \( C_{2p} \) is \((1 + t)(P + P_t)\), of which \( tP \) is tax revenue. Thus, the consumer cost per unit of \( C_{2p} \), net of the tax revenue, is \( P + tP \). The social cost of providing a unit of \( C_{2p} \) may differ from the net–of–tax consumer cost in this example, however, because under the consumption tax the private purchase of a unit of \( C_{2p} \) moves \( tP \) of tax revenue to the second period. For instance, suppose that the desired amount of \( C_{2c} \) is exactly equal to the amount that can be financed using the tax revenue that is automatically moved to the second period under the consumption tax (i.e., \( PC_{2c} = tPC_{2p} \)). Then, since the government would need to pay \( tP_C_{2p} \) to move this amount of consumption to the second period if it raised all of its revenue with a lump–sum tax on the consumer’s endowment, none of the cost of final financial services borne by the consumer in moving the tax revenue to the second period under the consumption tax is wasted. In other words, there is a positive externality equal to \( tP \) for each unit of \( C_{2p} \) that the consumer buys under the consumption tax. Thus, the social cost per unit of \( C_{2p} \) (the marginal social cost of \( C_{2p} \)) is the consumer cost less \( tP \) and less \( tP_t \) or \( P + P_t \) which is the same as under the lump–sum tax. The marginal social cost of \( C_{1p} \) and the marginal social rate of transformation of \( C_{2p} \) for \( C_{1p} \) (the \( MSRT_{2p,1p} \)) are also the same as under the lump–sum

\(^{10}\) I have followed the simplifying convention adopted by Grubert and Mackie of using \( P \) to denote the price of \( C_1 \) and \( C_2 \). In their analysis, a tax on the consumer good does not alter the equilibrium quantity produced and consumed of the good in each period, so the cost of production in each period does not change, but in my analysis, the equilibrium quantities may change.
Thus, in this special case the tax on the consumer good imposes no distortion relative to the lump–sum tax. A symmetric result occurs if the consumer receives his entire endowment in the second period and borrows to move some of his consumption to the first period. These are the results obtained by Grubert and Mackie.\textsuperscript{12}

Consider, however, a second example in which the government can transfer tax revenue over time without cost.\textsuperscript{13} The lump–sum tax would leave the marginal social cost of $C_{1p}$, $C_{1r}$, and $C_{2p}$ as well as the consumer prices, the same as in the first example, but it would reduce the marginal social cost of $C_{2r}$ to $P$. Under the consumption tax, there is no positive externality when the consumer pays for final financial services to move tax revenue to the second period, since the government can move the revenue costlessly. Thus, the marginal social cost of $C_{2p}$ is just the net–of–tax consumer cost per unit, or $(1 + t)(P + P) - P = P + (1 + t)P$. This is higher than the marginal social cost under the lump–sum tax by the amount $tP$, which is the cost of the wasted effort when the consumer uses final financial services to haul the tax on a unit of $C_{2r}$ to the second period. The marginal social cost of $C_{1p}$ is $P$, so the post–tax marginal social rate of transformation becomes:

\begin{equation}
[6]\quad MSRT_{2p,1p} = [P + (1 + t)P] / P.
\end{equation}

The $MRS_{2p,1p}$ is the same as in the first example, so it is less than the $MSRT_{2p,1p}$.

In this second example, the efficiency of the consumption tax is improved by including the final financial services in the tax base.\textsuperscript{14} The tax on both the consumer good and final financial services, $[5]$, becomes:

\begin{equation}
[7]\quad E = (1 + t)PC_{1p} + (1 + t)[P + (1 + t)P]C_{2p}.
\end{equation}

where $t$ is the tax rate applied to financial services. The consumer cost per unit of $C_{2p}$ is $(1 + t)[P + (1 + t)P]$ and the tax revenue component of this cost is $tP + tP(PS/PC_{2p})$, or, substituting $PS = (1 + t)PC_{2p}$, it is $tP + (1 + t)P$. Thus, the marginal social cost of $C_{2p}$ is $P + (1 + t)P$. This is the same expression for this cost as when only the consumer good is included in the tax base, but the broader tax base allows the same revenue to be raised with a lower $t$, so the marginal social cost of $C_{2p}$ is lower. The marginal social cost of $C_{1p}$ is also unaltered, so the $MSRT_{2p,1p}$ is lower and is closer to its value under the lump–sum tax.

According to [7], if the final financial services are taxed, the consumer will face the following tradeoff in private consumption:

\begin{equation}
[8]\quad MRS_{2p,1p} = [P + (1 + t)P] / P.
\end{equation}

According to [6] and [8], the $MSRT_{2p,1p}$ and the $MRS_{2p,1p}$ will be equal if $t_{1} = t$, so including the final financial services in the tax base unambiguously improves wel-

\textsuperscript{11} In the above formulations, the fee is proportional to the amount of the saving good. As noted by Grubert and Mackie, however, the analysis also applies to more general cases in which the cost of the financial services is some function of the saving good, $f(S)$. Then, from [2] this cost can also be expressed as $f(C_{s})$, so the marginal cost of financial services per additional unit of $C_{2s}$ after the tax is $(1 + t)f'(C_{s})$, where $f'(C_{s})$ is the marginal cost before the tax.

\textsuperscript{12} This discussion points to another potential reason for treating final financial services differently under a consumption tax from other services tied to final consumption, even when the costs of the other services are ad valorem in nature and they are incurred after the tax is applied. For example, in the case of transportation services, one would need to ask whether there was any benefit from having the consumer incur the expense of using the transportation services to move tax revenue from the origin to the destination.

\textsuperscript{13} The reason for considering such a contrived example will be made apparent later. In this example it is necessary to assume that the ability to substitute $C_{2r}$ for $C_{2p}$ is limited, so that $C_{2r}$ cannot be dispensed with entirely.

\textsuperscript{14} The possibility of this result is mentioned in the studies by Grubert and Mackie (2000), by Whalley (1991), and by Chia and Whalley (1998).
fare compared with \( t_i = 0 \), since this reduces the marginal social cost of \( C_{2p} \) and also causes the tradeoff in private consumption to accurately reflect the social rate of transformation at the margin.

Setting \( t_i = t \) leaves a production–side distortion when compared with the lump–sum tax, however, and efficiency can be improved by setting \( t_i > t \). To see why, begin from \( t_i = t \) and consider the consequences of disturbing this equality while satisfying a constant revenue constraint. A reduction in \( t \) would reduce the marginal social cost of \( C_{2p} \) and cause the \( \text{MSRT}_{2p,1p} \) to fall toward its value under the lump–sum tax (see equation [6]), but it would not affect the \( \text{MRS}_{2p,1p} \) (see equation [8]). At the same time, the accompanying increase in \( t_i \) needed to replace the lost tax revenue would increase the \( \text{MSRT}_{2p,1p} \) without affecting any social costs of production. That is, the tax changes would reduce the production–side distortion caused by the tax on the consumer good, but it would cause the \( \text{MRS}_{2p,1p} \) and the \( \text{MSRT}_{2p,1p} \) to diverge. With \( t = t_i \) the production–side distortion already exists, whereas \( \text{MRS}_{2p,1p} = \text{MSRT}_{2p,1p} \) so according to the principle of second–best welfare should improve with a small reduction in \( t \) and increase in \( t_i \).

The opposite tax changes unambiguously worsen welfare. Beginning from \( t_i = t \), an increase in \( t \) would increase the marginal social cost of \( C_{2p} \) and cause the \( \text{MSRT}_{2p,1p} \) to rise without affecting the \( \text{MRS}_{2p,1p} \), whereas the accompanying reduction in \( t_i \) would cause the \( \text{MRS}_{2p,1p} \) to fall without affecting the \( \text{MSRT}_{2p,1p} \), so the tax changes increase the production–side distortion while simultaneously causing the \( \text{MRS}_{2p,1p} \) and the \( \text{MSRT}_{2p,1p} \) to diverge.

It is easy to extend the analysis to incorporate a fixed fee for financial services or a fee for financial services used to effect exchanges within each period that is levied per transaction (that is, per unit of the consumer good), as in the analysis by Jack (2000). Analytically, the latter fee can be treated the same as a material input to production, so it can be incorporated into the above equations merely by changing the definition of \( P \) to include the fee. This leaves unchanged the conclusions from either example, as long as \( t \) is defined as the tax rate on the price inclusive of the fee. The fixed fee can be incorporated by adding a constant term to the consumer’s budget constraint. A tax on this fee would be equivalent to a lump–sum tax on the consumer’s endowment (so long as it did not eliminate the financial services entirely), as it would alter neither the relative prices to consumers nor the marginal social cost of production of \( C_{1p} \) or \( C_{2p} \). In the first example (where the consumption tax imposes no excess burden), it is immaterial how much of the total revenue is collected by a tax on the fixed fee and how much by a tax on the consumer good, since both taxes are equally efficient. In the second example, however, as much of the total revenue as possible should be raised with the tax on the fixed fee, since the tax on consumer goods imposes an excess burden.

The above examples demonstrate that the optimal taxation of final financial services in the presence of a consumption tax depends on whether these services are wasted when private individuals use them to haul tax revenue over time. The second example is contrived to ensure that the waste occurs, but the analysis is useful for examining a more general case. Thus, consider a third example in which the economy contains both a borrower and a saver. The saver receives his endowment in the first period and invests part of it to move consumption to the second period, whereas the borrower receives his endowment in the second period and borrows part of it to move consumption to the first period.

In addition, suppose that the amounts borrowed and invested are equal to each other. In this case, introducing a tax on the
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consumer good would not alter the relative prices for either consumer, so it should not lead to inequality between the consumer borrowing and investing. Adding a tax on the final financial services would increase the relative price to both consumers of consumption moved over time, but this creates offsetting tendencies in consumer borrowing and lending (both tend to fall), so there is little reason to believe that it would lead to inequality in these amounts. If the amounts borrowed and invested are equal, the private payments for final financial services to move tax revenue over time under the consumption tax are completely wasted in offsetting transactions. This is true, whether or not the final financial services are included in the tax base. The waste occurs, regardless of the cost the government faces in moving tax revenue over time, or of the desired time-pattern of government–financed consumption. All that is required is the rather standard assumption that, given the same revenue stream, the value of the government–supplied consumption does not depend on the tax design.\(^\text{15}\)

The consumer costs and the marginal social costs for providing the consumption required by the saver are given by the expressions developed for the previous example, and symmetric expressions (with perhaps a different value for \(P\)) give the corresponding costs for the borrower. Hence, the \(MRS\) and the \(MSRT\) are equal under the consumption tax for both consumers if \(t_i = t\). Also, reducing \(t\) reduces the marginal social cost of consumption that is moved over time for both consumers, whereas increasing \(t_i\) increases the relative price of this consumption for both consumers without affecting any of the social costs of production. Thus, as in the previous example, the optimal tax design will entail \(t_i > t\).

The no–tax equilibrium in this example is not Pareto efficient. For example, a transfer of wealth from the saver to the borrower in the first period, with a matching transfer from the borrower to the saver in the second period, would leave both individuals better off by allowing them to realize the same consumption while saving on the cost of final financial services. Thus, if the consumers can save on final financial services by substituting public for private consumption, both of them may be better off with the lump–sum tax or the consumption tax than in the no–tax equilibrium.\(^\text{16}\) This does not alter the above analysis of the best tax design to finance a given revenue need, however, as long as the private consumption cannot be dispensed with entirely.

How appropriate is the two–consumer example? In particular, how much of the final financial services that would be used to move tax revenue over time under a consumption tax would be wasted in offsetting transactions? The amount of such cross hauling cannot be determined exactly, as it would vary among the final financial services and over time, but the available data suggest that it would account for the bulk of the cost of moving the tax revenue. For example, in the United States in 1998, the ratio (borrowing by the household sector)/(personal saving, including investment in consumer durables) was 1.2.\(^\text{17}\) For the insurance industry, on an annual cash–flow basis for each of the years from 1996 through 1998

\(^\text{15}\) With declining marginal utilities, if the consumption tax reduces real income by imposing an excess burden, then the utility provided by the same nominal amount of government–supplied consumption will be slightly greater than under the lump–sum alternative. This is a minor consideration, however.

\(^\text{16}\) This possibility was noted by Whalley (1991), Chia and Whalley (1998), and Grubert and Mackie (2000). More generally, Foley (1970) and Hahn (1971) noted that equilibrium in a model with costly marketing may not be efficient.

\(^\text{17}\) The Federal Reserve Board (2000) reports that household total borrowing in 1998 was $472 billion while personal saving, including consumer durables, was $390 billion.
the ratio (the addition to the stock of investments)/(gross receipts from insurance premiums) was never more than 11 percent for the U.S. property and casualty insurance industry and never more than 17 percent for the U.S. health and life insurance industry.\textsuperscript{18} While these figures are merely suggestive, they indicate that it is probably better to model final financial services as not moving consumption over time on net than to model them as being used exclusively to move net consumption over time. This is precisely the approach used by Whalley (1991), and Chia and Whalley (1998).

THE ASSUMPTIONS USED BY WHALLEY AND BY CHIA AND WHALLEY

In apparent contradiction to the above analysis, Whalley, and Chia and Whalley used a model in which final financial services do not effect any net movement of consumption over time, yet they found that economic welfare is higher if these services are exempted from a broad-based consumption tax. Unlike in the above analysis, however, they use a model in which a tax on the final financial services automatically increases the amount of these services required per unit of tied private consumption.\textsuperscript{19} This assumption can be incorporated into the framework used by Grubert and Mackie by replacing equation [2] with the following budget constraint for the second period:

\begin{equation}
PC_2 = (P - P_1)S.
\end{equation}

According to [9] the amount of the saving good required per unit of \( C_2 \) depends on the fee for financial services and, presumably, would increase with a tax on these services.

This seemingly minor change to the model is important. The details are relegated to the appendix, but the results produced by the new model can be summarized as follows, using the example of the single-consumer economy. Given the second-period budget constraint described by [9], and assuming final financial services used to haul tax revenue over time are wasted\textsuperscript{20} a tax on these services increases the amount of them required per unit of \( C_{2p} \). Including the services in the tax base would allow the tax authorities to collect a given amount of revenue with a lower tax on the consumer good, however, which tends to reduce the amount of the services required per unit of \( C_{2p} \). The net effect can be to increase or reduce the marginal social cost of \( C_{2p} \) compared to the case where only the consumer good is taxed. Also, setting \( t_i = t \) brings the post-tax tradeoffs in production and in private consumption closer together compared to the case where \( t_i = 0 \), but it does not make them equal. Thus, whether or not the services should be taxed at a higher or lower rate than the consumer goods becomes an empirical question. In their general equilibrium simulations, Chia and Whalley find that welfare is lower when \( t_i = t \) than when \( t_i = 0 \).

\textsuperscript{18} The figures are from A.M. Best (1999a,b).

\textsuperscript{19} Whalley (1991, p. 282) describes the fee for financial services as a reduction in the rate of return on investment for the saver and as an increase in the rate of interest that the borrower must pay on his loan. Chia and Whalley (1998) describe the fee using an ‘iceberg’ analogy, in which to exchange one good for another, a fraction of the offered good melts away as a transaction cost. Thus, for example, an increase in the fee for financial services automatically increases the amount that must be saved to finance a unit of future private consumption. In the formulation used by Grubert and Mackie, an increase in the fee for financial services requires the saver to forgo a greater amount of current private consumption to gain a unit of future private consumption, but it does not increase the amount of the saving good per unit of tied private consumption.

\textsuperscript{20} The conditions necessary for these services to be completely wasted are slightly different in this version of the model than in the previous version, since the final financial services now move revenue from any tax on these services, as well as from the tax on consumer goods, over time.
From the above, it is clear that it is important to know how consumers finance the fee for final financial services when deciding how to treat the services under a consumption tax. In most cases, it appears reasonable to suppose that consumers do not use the final financial services to finance the fee, so that equation [2] provides a better specification than equation [9]. For example, it seems unlikely that an increase in the financial services fee for accident insurance would cause households to increase the payoff amount of their accident policies. Also, it seems likely that borrowers or savers would pay for much of the cost of financial intermediation services using funds other than the loan proceeds or the investment returns. If the amount of the fee for final financial services that is taken from such sources bears the same relation to the fee as the loan or the investment does to the consumer’s entire budget, then only a minority share of the fee would be financed from these sources. For example, in the United States in 1998, the sum of consumer loan payments and personal interest and dividend income was only about 30 percent as great as personal disposable income.\(^\text{21}\)

CONCLUSION

How final financial services should be treated under a consumption tax depends importantly on the answers to two questions. The first question is whether the effort by private individuals in using final financial services to move revenue from the consumption tax over time is largely wasted in offsetting transactions. The second question is whether consumers use these services to move the fee for the services, as well as the tied consumption, over time. In previous studies, Whalley (1991), Chia and Whalley (1998), and Grubert and Mackie (2000) came to the common conclusion that it is better to exempt final financial services from the consumption tax, but they reach this conclusion using models that imply opposite answers to each of these questions.

In the present paper, it is argued that final financial services used to move revenue from the consumption tax over time are mostly wasted and that consumers do not use the services to move the associated fee over time. If these answers are correct, then a tax on consumer goods raises the social cost of moving consumption over time, but not the relative price of this consumption to consumers, whereas taxing the final financial services raises the relative price to consumers of this consumption, but it imposes no production–side distortion. In this case, the final financial services should be taxed at least as highly as the consumer goods.

The true answer to each of the above questions is probably some blend of the alternatives. Thus, quantitative work to better answer these questions is needed before further refinements can be made to determine the ideal treatment of final financial services under a consumption tax.

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APPENDIX

The Case Where a Tax on the Fee for Final Financial Services Increases the Amount of These Services Required Per Unit of Tied Consumption

This appendix continues with the second example, in which there is a single consumer who uses final financial services to move part of his consumption from the present to the future and in which the effort in using final financial services to move tax revenue to the second period is wasted. Now, though, the amount of final financial services required per unit of tied consumption depends on the amount of the fee for these services, as in equation [9] in the text. Thus, in the absence of taxes, the consumer’s budget constraints are:

[A1] \[ E = PC_1 + (P + P_i)S, \]
[A2] \[ PC_2 = (P – P_i)S, \]
[A3] \[ PC_1 + (P + P_i)PC_2/(P – P_i). \]

If a tax is imposed on the consumer good, the budget constraints become:

[A4] \[ E = (1 + t)PC_{1p} + (P + P_i)S, \]
[A5] \[ (1 + t)PC_{2p} = (P – P_i)S, \]
[A6] \[ E = (1 + t)PC_{1p} + (1 + t)(P + P_i)PC_{2p}/(P – P_i). \]

If the tax is applied equally to both the consumer good and final financial services, the budget constraints become:

[A7] \[ E = (1 + t)PC_{1p} + [P + (1 + t)P_i]S, \]
[A8] \[ (1 + t)PC_{2p} = [P – (1 + t)P_i]S, \]
[A9] \[ E = (1 + t)PC_{1p} + (1 + t)[P + (1 + t)P_i]PC_{2p}/(P – (1 + t)P_i)].

According to [A3] and [A6], if the tax is applied only to the consumer good, the consumer cost of \( C_{2p} \) rises by the amount \( t(P + P_i)PC_{2p}/(P – P_i) \), of which only \( tPC_{2p} \) represents tax rev-
enue. Thus, the tax raises the marginal social cost of $C_{2p}$ by $2tPP_i/(P - P)$ compared to the alternative lump–sum tax, to:

\[ [A10] \quad (P + P_i + 2tP_i)P/(P - P). \]

The marginal social cost of $C_{1p}$ is unchanged at $P$, so dividing [A10] by $P$ yields the post–tax marginal social rate of transformation of $C_{2p}$ for $C_{1p}$ or

\[ [A11] \quad MSRT_{2p,1p} = (P + P_i + 2tP_i)/(P - P). \]

From [A6], the post–tax marginal rate of substitution is:

\[ [A12] \quad MRS_{2p,1p} = (P + P)/(P - P). \]

If the final financial services and the consumer good are taxed at the same rate, the revenue from taxes on second–period consumption, including the tax on the final financial services, is $tP_iS + tPC_{2p}$. Substituting for $S$ using [A8], the revenue can be expressed as $t(1 + t)PP_iC_{2p}/[P - (1 + t)P] + tPC_{2p}$. Subtracting this revenue from the post–tax cost to the consumer (given in [A9]) and dividing by $C_{2p}$ yields the post–tax marginal social cost of $C_{2p}$ or

\[ [A13] \quad [P + P_i + 2tP_i + t^2P_iP]/[P - (1 + t)P]. \]

Dividing [A13] by $P$ (the post–tax marginal social cost of $C_{1p}$) yields:

\[ [A14] \quad MSRT_{2p,1p} = [P + P_i + 2tP_i + t^2P]/[P - (1 + t)P]. \]

From [A9], the post–tax tradeoff in private consumption choices is:

\[ [A15] \quad MRS_{2p,1p} = (P + P_i + tP_i)/(P - (1 + t)P). \]

From the above, we can conclude that adding final financial services to the tax base without lowering the tax rate increases the post–tax marginal social cost of $C_{2p}$, since the amount given by [A13] is greater than that given by [A10] by $t^2PP_i/(P - P)$. But the same revenue can be raised with a lower tax rate if the services are included in the tax base, so the net effect can be to increase or reduce this cost. The $MSRT_{2p,1p}$ and the $MRS_{2p,1p}$ are closer to each other when $t_i = t$ than when $t_i = 0$, since the ratio $MRS_{2p,1p}/MSRT_{2p,1p}$ is less than unity in both cases and $[A15]/[A14] > [A12]/[A11]$. To establish this last inequality, note that the difference $[A15]/[A14] - [A12]/[A11]$ can be written as $P_i(P + P)(2P - t - \tau)/(P - (1 + t)P)$, where $\tau$ is used in place of $t$ in [A14] and [A15] to account for the fact that including final financial services in the tax base allows a lower tax rate. The difference is always positive since $\tau < t < 1$.  

