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The Taxation Implicit in Two-Tiered Exchange Rate Systems

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Abstract

A two-tiered exchange rate system can be interpreted as a set of separate taxes on money and other financial assets. If the official two-tiered exchange rate system coexists with a black market for foreign exchange, then there is implicit taxation of the international goods trade as well. This paper presents some evidence on the tax rates and tax revenues implicit in the exchange rate systems of The Bahamas (from 1978 to 1995), the Dominican Republic (from 1970 to 1984), and South Africa (from 1973 to 1995).

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F31; H21

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Summary

Multiple exchange rate practices are recognized as quasi-fiscal activities. Different exchange rates on capital and current transactions can be interpreted as separate taxes on international capital flows and goods trade. A two-tiered system of this kind enables the authorities to tax domestic money and other financial assets at different implicit rates.

The paper first shows that such a system cannot survive if domestic and foreign investors can freely hold domestic and foreign assets. Capital controls are needed to make the two-tiered system feasible as a tax system. Evidence is then presented on the tax rates and revenues implicit in the two-tiered systems of the Bahamas (1978-95), the Dominican Republic (1970-84), and South Africa (1973-95).

The Bahamas and the Dominican Republic seem to have subsidized international goods trade. The Dominican Republic and South Africa appear to have importantly subsidized capital inflows--by around 1 percent of GDP a year. In South Africa, savings on debt-service appear to outweigh the costs of the subsidized international lending.

In conclusion, the paper evaluates the desirability of two-tiered exchange rates as a way to tax residents' capital income. Besides being nontransparent and subject to abuse, taxes of this sort are equivalent to a tax on domestic saving combined with a subsidy on domestic physical investment, and are therefore generally dominated by a residence-based capital income tax that does not affect the cost of domestic investment.

I. Introduction

Many developing countries maintain multiple exchange rate systems with separate exchange rates for various current account and capital account transactions. As of 1995, 29 countries are reported to have separate import and export exchange rates, while 36 countries have a separate exchange rate for some or all capital transactions or for some or all invisibles. 1/ All the same, there has been a pronounced trend in recent years toward exchange system liberalization and unification. 2/ Multiple exchange rate practices, or generally any official selling or buying of foreign exchange at a rate different from the 'equilibrium' rate, have long been recognized to be quasi-fiscal activities as they immediately impact on the public finances. 3/ Starting with Bernstein (1950), various contributions, among them Adams and Greenwood (1985), Aizenman (1986), Frenkel and Razin (1989), Greenwood and Kimbrough (1987), and Stockman and Hernández (1988), have pointed out the equivalences between exchange controls (affecting trade) and capital controls (affecting investment) and direct trade and investment taxes or subsidies, and they investigate the positive impact of exchange rate policy, seen as fiscal policy, on the open economy.

A two-tiered exchange rate system with a commercial exchange rate (for current account transactions) and a financial exchange rate (for capital account transactions), for instance, is equivalent to a tax on foreign-source investment income accruing to domestic residents, if the commercial exchange rate is more appreciated than the financial exchange rate. Next, a multiple exchange rate system with a single export exchange rate that is more appreciated than a single import exchange rate is equivalent to a straightforward tax on either imports or exports.

The emergence of a black market for foreign exchange in this latter case is examined in Huizinga (1991). Several authors have examined the linkages between the revenue implications of multiple exchange rates and the need for inflationary finance. Pinto (1990, 1991), for instance, in theory and evidence, points out that in many instances the government derives net revenues from the exchange rate system, if it takes in more foreign exchange (from exports) than it sells (for imports) at a single overvalued official exchange rate. To offset the drop in revenues following a devaluation, the authorities may opt for higher inflation. An overvalued import exchange rate may be politically motivated, especially if a country imports basic foodstuffs. Such an arrangement clearly benefits agents who spend a relatively large budget share on importables at the expense of others.

1/ See International Monetary Fund (1995 issue).

2/ See Agénor and Ucer (1995) for the recent experiences of Guyana, India, Jamaica, Kenya, Sierra Leone, and Sri Lanka in this regard.

3/ See Tanzi (1995) for a survey of quasi-fiscal regulations, quasi-fiscal activities through the foreign exchange system, and quasi-fiscal activities through the financial system.

Equally important, official foreign exchange for favored imports may be rationed so that otherwise similar people may be affected differently by the exchange rate system. If the implicit public revenue losses are financed by inflation, then over time the real import exchange rate becomes even more overvalued, requiring still higher inflation. The political economy of exchange rate policy and stabilization in this setting is considered in Huizinga (1996a).

Absent political considerations, distorting exchange rate practices can in principle have a useful role as part of a country's optimal tax scheme. Aizenman (1986), for instance, examines the optimal mix of taxes on domestic money (by way of the inflation tax), international investment income (by way of a two-tiered exchange rate system or capital controls), and international trade (by way of tariffs). The dual role of money as a means of payment and a store of value is important in explaining the taxation or subsidization of cross-border capital income flows (see Huizinga (1996b)). The optimal tax scheme may imply a net-of-tax domestic interest rate lower than the international interest rate. As a borrower, the government itself is a direct beneficiary of this. Absent government borrowing, domestic credit may still be de facto subsidized, however, as the lower interest rate induces agents to hold larger money balances subject to the inflation tax. The relevance of seigniorage and financial repression through a lower domestic cost of borrowing has recently been documented by Giovannini and de Melo (1993) for a large set of developing countries. Overall, the availability or absence of alternative tax instruments is crucial in evaluating the useful role of financial taxes in raising government revenues.

This paper first reviews how a two-tiered exchange rate system can be used to tax (or subsidize) international capital income flows. The exchange rate system gives rise to two separate arbitrage relationships linking the returns to domestic and foreign assets for domestic and foreign investors. The two arbitrage relationships are generally inconsistent, thereby providing opportunities for large gains for one class of investors unless quantity restrictions or capital controls are imposed.

Sherwood (1956), and Kiguel and O'Connell (1995) have provided estimates of the magnitudes of the fiscal effects of multiple exchange rate practices on the trade side for several countries. Both studies confirm that these fiscal implications can be sizeable and of either sign. This paper contributes some further evidence for three countries, The Bahamas, the Dominican Republic, and South Africa, at different intervals. Implicit revenue estimates from capital income as well as trade transactions are presented. All three countries considered have operated explicit or de facto two-tiered exchange rate systems. The Bahamas and South Africa have also experienced black markets for foreign exchange. One can calculate the taxes implicit in the official two-tiered exchange rate system and in the dual exchange rate system involving the black market. The Dominican Republic and South Africa appear to have importantly subsidized international lending, with negative revenue implications of around

1 percent of GDP a year. The Bahamas and the Dominican Republic, instead, are estimated to have subsidized the international goods trade, at a cost of several percent of GDP. For the case of South Africa, we can estimate the debt-service savings the government achieved through the two-tiered system. These savings are estimated to outweigh the costs of the subsidized international lending.

The remainder of the paper is organized as follows. The equivalences between financial taxation by way of taxes on cross-border capital flows and a two-tiered exchange rate system are reviewed in Chapter II. Chapter III presents the calculations of tax rates and revenues (or losses) on the investment and trade side implicit in the exchange rate systems of The Bahamas, the Dominican Republic, and South Africa. Chapter IV, in conclusion, evaluates the desirability of two-tiered exchange rate systems as a device to tax international investment income flows.

II. Tax Rates Implicit in Two-Tiered Exchange Rate Systems

This chapter considers the taxation of international investment income implicit in a two-tiered exchange rate system with separate exchange rates for current and capital account transactions. Specifically, let e_j (f_j) be the commercial (financial) exchange rate in period j ($j = 1,2$) with full convertibility, while i (i^*) is the domestic nominal (foreign nominal and real) interest rate. A domestic investor is indifferent between owning domestic and foreign assets if the following arbitrage relationship holds,

$$1 + i = (f_2 + e_2 i^*)/f_1 \tag{1}$$

Equation (1) requires that 1 unit of domestic currency can be converted into $1/f_1$ units of foreign currency in period 1, while in period 2 the interest and principal returns are repatriated at the commercial and financial exchange rates, e_2 and f_2, respectively. The analogous arbitrage relationship facing a foreign investor is as follows,

$$1 + i^* = \frac{f_1}{f_2} + \frac{f_1}{e_2} i \tag{2}$$

Equation (2) requires that a foreign investor can convert one unit of foreign currency into f_1 units of domestic currency in period 1, while again the interest and principal payments are again repatriated in the second period at the commercial and financial exchange rates, e_2 and f_2.

Generally, equations (1) and (2) may not be consistent. To check this, let us assume that (2) in fact holds so that foreign investors are indifferent between holding domestic and foreign assets. A domestic investors can then achieve a higher return on foreign assets, i.e., $1 + i < (f_2 + e_2 i^*)/f_1$, and vice versa if,

$$(f_2 - f_1)(f_2 - e_2) > 0 \qquad (3)$$

Equation (3) holds if (1) the financial rate depreciates, i.e., $f_2 > f_1$, and (2) the financial rate commands a premium, i.e., $f_2 > e_2$, or if both conditions are reversed. 1/ Any inconsistency of the arbitrage relationships (1) and (2) is a reflection of the fact that the implicit interest tax or subsidy (with differing commercial and financial exchange rates) affects domestic and foreign agents disparately, if the domestic and foreign interest rates differ in the absence of the implicit taxation or subsidy (this is the case if the financial rate appreciates or depreciates). With (1) and (2) not holding simultaneously, a restriction on borrowing or generally limited convertibility has to be introduced to prevent some investors from reaping infinite gains. Domestic residents, for instance, can be prevented from holding foreign assets and from borrowing abroad, in which case arbitrage relationship (1) becomes irrelevant. The authorities are then free to choose an exchange rate policy consistent with the desired domestic interest rate, i, according to (2). For a given common rate of depreciation of the dual exchange rates, they can, for instance, select the gross financial rate premium, f/e, to bring about the desired value of i.

Next, consider the tax treatment of interest (or other financial returns such as dividends) implicit in the two-tiered exchange rate system. Domestic agents holding foreign assets receive e_2 rather than f_2 units of domestic currency for each unit of repatriated foreign interest. This suggests that repatriated interest is taxed at a rate $t = (\rho - 1)/\rho$ where $\rho = f/e$ is the gross financial rate premium over the commercial rate. Next, foreign residents holding domestic assets receive $1/e_2$ rather than $1/f_2$ units of foreign currency for each unit of interest repatriated abroad. This suggests that foreign residents receive an additive subsidy s for each unit of interest equal to $\rho - 1$, where of course $s = t/(1 - t)$.

For reference, the continuous time equivalents of (1) and (2) can be written as $i = \varphi + i^*/\rho$ and $\rho i = \varphi + i^*$, where φ is the rate of depreciation of the financial rate. Note that these two arbitrage relationships are equivalent if $\rho = 1$ or $\varphi = 0$ (or both), while the continuous time analogue to (3) is $\varphi(\rho - 1) > 0$. With purchasing power parity holding, the real returns to domestic assets accruing to domestic residents, r, in the two cases are given by $r = \varphi + i^*/\rho - \epsilon$ and $r = (\varphi + i^*)/\rho - \epsilon$, where ϵ is the rate of depreciation of the commercial exchange rate equaling the rate of inflation. These expressions indicate that the domestic real interest rate, and thus the implicit taxation of domestic asset holdings, generally depends on the rates of depreciation of the two exchange rates, φ and ϵ, as well as on the gross financial rate

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1/ With (3) holding, clearly i and i^* can be chosen so that the domestic arbitrage condition (1) holds, but then foreigners can achieve a higher return on domestic than on foreign assets, as the right hand side of (2) exceeds the left hand side.

premium, ρ. 1/ In the long run, however, the rates of depreciation of the two exchange rates in practice have to be equal, which suggests that the gross financial exchange rate premium is in fact the main determinant of the wedge between domestic and international real returns. The rate of inflation immediately determines the inflation tax that is levied on domestic money holdings. A two-tiered exchange rate system thus allows the authorities to implement separate implicit taxes on money and other financial assets.

In the three case studies below, we will calculate the impact on the public finances from the fact that investment returns are valued at the commercial exchange rate rather than the financial exchange rate. 2/ For comparison, we also calculate the overall budgetary impact resulting from the fact that international trade is valued at the official trade exchange rate, e, rather than at the equilibrium exchange rate, as proxied by the black market exchange rate, b. For this purpose, let X and M be the dollar value of recorded exports and imports, for which foreign exchange can reasonably be thought to have been valued at the official exchange rate. The public revenue effect of international trade in dollars is given by $(b - e)/b \cdot (X - M)$, where $(b - e)/b$ is the implicit trade tax and $X - M$ is the trade surplus. 3/ The trade regime thus yields positive revenues if $b > e$ and $X > M$, or if both inequalities are reversed. A similar valuation approach also underlies the estimates of the budgetary effects of the foreign exchange regime for several countries in Kiguel and O'Connell (1995). These authors further point out that the valuation effect may not be an accurate estimate of the budgetary implications of an exchange rate unification at the equilibrium exchange rate. The reason is that an exchange system liberalization and unification will importantly affect the overall domestic economy, with obvious implications for nonexchange rate-related public revenues and expenses.

1/ Frenkel and Razin (1989) assume that the authorities use differential rates of depreciation of the commercial and financial exchange rates to affect the return on domestically held assets.

2/ A practical reason for focusing on the premium as the main determinant of the implicit taxes and subsidies is that then one can calculate these taxes in the absence of data on asset returns.

3/ This expression assumes that the official import exchange rate equals the official export exchange rate. This indeed is correct for the three case studies presented below. Note that the expression overstates government implicit trade tax revenues to the extent that exporters, contrary to the rule, are allowed to sell their proceeds from (officially recorded) exports in the unofficial exchange market at a more depreciated exchange rate.

III. Measurement of Implicit Tax Rates and Revenues

This chapter provides some evidence on the tax rates and revenues implicit in the exchange rate systems for The Bahamas (from 1978 to 1995), the Dominican Republic (from 1970 to 1984), and South Africa (from 1973 to 1995). Of these, The Bahamas and South Africa operated de jure two-tiered exchange rate systems, while a separate black market for foreign exchange also existed. The Dominican Republic, instead, operated a de facto two-tiered exchange rate system, where a single official exchange rate coexisted with a tolerated, free or black market exchange rate. The evidence on the revenue implications of the exchange system is limited to the implicit central bank profits or losses that result from the fact that the central bank engages in foreign exchange transactions at rates different from the deemed equilibrium rate. The evidence relates to international investment income flows and international goods trade. 1/ For the cases of The Bahamas and South Africa, the implicit investment tax or subsidy is calculated using the official financial exchange rate. In all other cases, the free or black market rate is taken to be the reference equilibrium rate.

1. The Bahamas: 1978-1995

The Bahamas maintains at least de jure stringent exchange controls. Normally, any exchange receipts from exports or international investments have to be surrendered against the official primary rate. 2/ The approval of the Central Bank is required for making payments for imports. Residents can acquire securities and other assets from foreigners, only if they purchase foreign exchange against a separate, relatively depreciated investment exchange rate. Figure 1A shows that the financial exchange rate has commanded an invariant premium of 22.5 percent over the commercial exchange rate since 1987. As seen in Figure 1B, the arrangement implies an annual investment tax on, say, foreign interest receipts of 18.4 percent. 3/ Nonresidents who wish to purchase Bahamian assets can do so with Bahamian currency in so-called External Accounts. These accounts can be credited with any Bahamian investment income, and the balances are freely convertible into international currencies against the official exchange rate. Foreign residents who receive Bahamian investment income thus are not subject to a tax or subsidy implicit in the exchange rate

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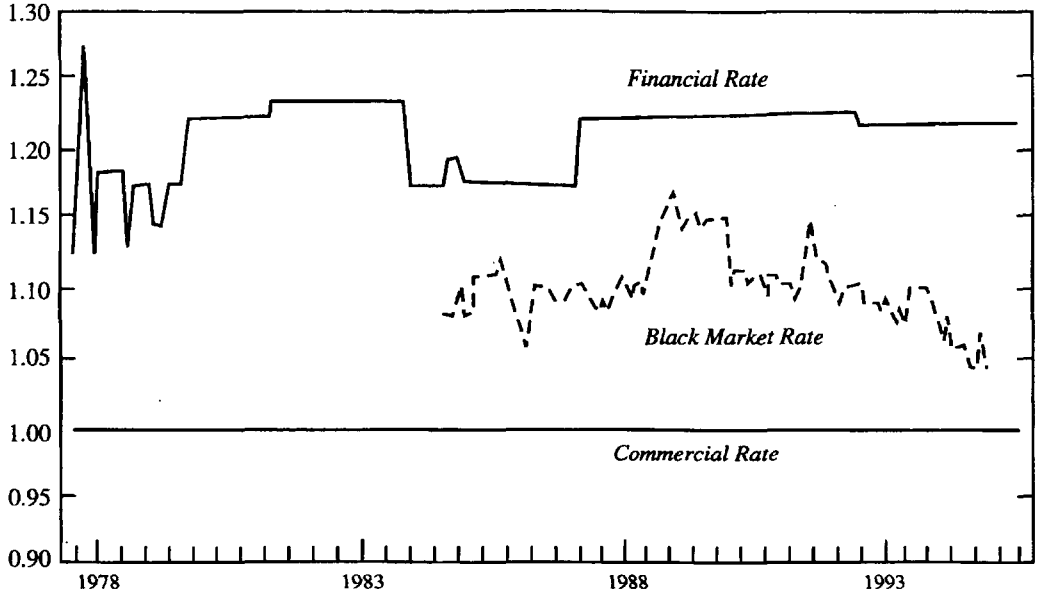
1/ The evidence thus does not relate to trade in services, wage remittances, unilateral transfers and direct capital account transactions. As an example of direct capital account transactions with fiscal implications, the central bank can make foreign exchange available for international debt repayment at a special rate. See Dornbusch (1986).

2/ See International Monetary Fund (various issues).

3/ The investment tax is calculated on an annual basis to downplay month-by-month changes in exchange rates. It is computed as $1 - (e/f)^a$, where $(e/f)^a$ is the average over the 12 months of the ratio of the commercial and financial exchange rates. For the Dominican Republic below, the financial exchange rate is taken to be the free or black market exchange rate.

Figure 1
The Exchange System Experience in the Bahamas

A. Exchange Rates per U.S. Dollar



B. Implicit Tax Rates in Percent

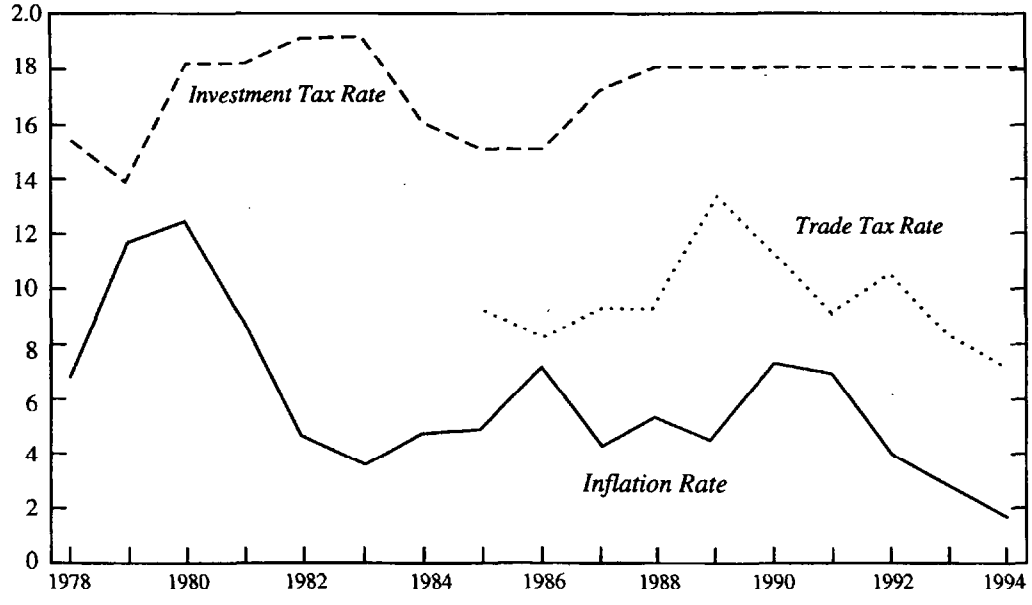
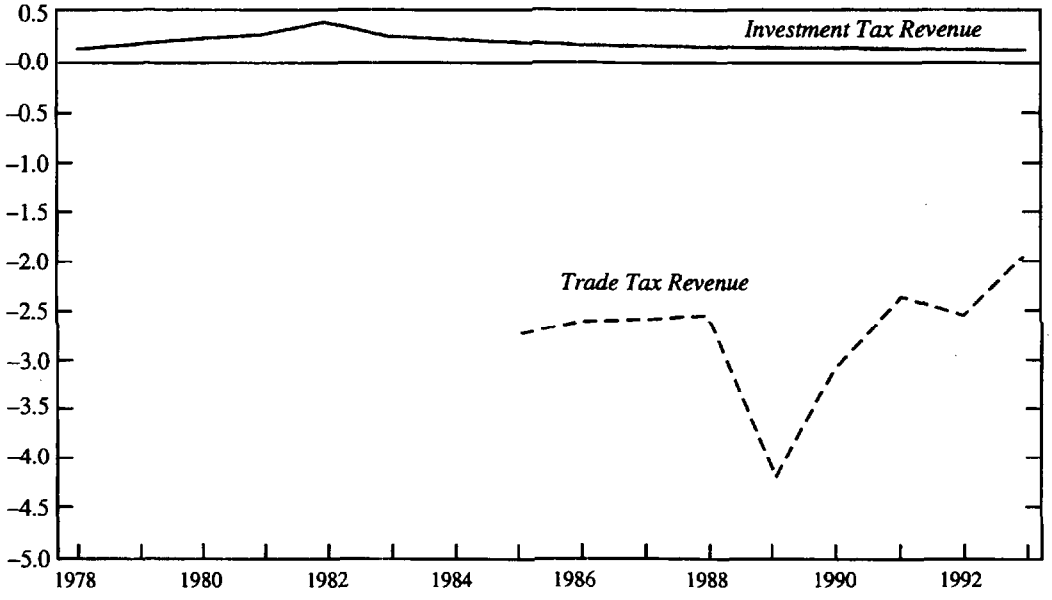


Figure 1 (concluded)
The Exchange System Experience in the Bahamas

C. Implicit Tax Revenue or Loss in Percent of GDP



system. This asymmetry in the treatment of domestic and foreign investment income implies that the relevant returns arbitrage conditions for the two groups of investors, i.e., equations (1) and (2), cannot hold simultaneously. Excluding borrowing or short positions, the asymmetric exchange treatment can lead to one of two outcomes: first, foreign investors are the marginal investors in both domestic and foreign assets, while Bahamians preferably only hold domestic assets; second, Bahamian investors are the marginal investors at home and abroad, and only they hold domestic assets. The first scenario is consistent with non-negligible aggregate investment income debits for The Bahamas, and (almost) no investment income credits, while the second outcome is consistent with non-negligible investment income credits for The Bahamas and (almost) no investment income debits. For the 1978-1994 period, investment income credits ranged from B$6.9 million to B$23.8 million while debits ranged from B$119.1 million to B$190.2 million. This suggests that the second outcome with the (untaxed) foreign investors being at the margin is the relevant one. The aggregate income data, of course, are also consistent with the view that Bahamian residents in fact have substantial foreign investment income, but fail to report this income so as to evade the tax implicit in the exchange rate system. Either way, the conclusion is that the two-tiered exchange rate system acts as a tax on investments by domestic residents abroad, but that the tax collects very little revenue. In fact, the revenues never exceed the B$4.5 million figure for 1982, which is 0.3 percent of GDP (see Figure 1C). 1/

A separate black market exchange rate, as seen in Figure 1A, hovers between the official commercial and financial exchange rates. The implicit export tax (and import subsidy) is in the 8-15 percent range (see Figure 1B). 2/ As a result, importers (exporters) have an incentive to channel transactions through the official (black) exchange market. Consistent with this view, The Bahamas has recorded a trade deficit throughout the 1985-1994 period. The implicit revenue loss is in the range of 1.9-4.2 percent of GDP (see Figure 1C). 3/ The estimated revenue loss on the trade side clearly exceeds the rather small implicit tax revenues on

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1/ The investment tax revenues are computed by multiplying the calculated annual investment tax by the recorded annual dollar investment income credit for The Bahamas, and, for the Dominican Republic and South Africa, by the annual dollar investment income. To translate the resulting dollar tax revenues into domestic currency, the period-average commercial exchange rate is used. Of course, the use of a period-average black market rate would lead to somewhat larger tax revenues as a share of GDP in most instances.

2/ The trade tax, as represented in the figure, is computed as $1 - (e/b)^a$ where, for comparability with the investment tax, $(e/b)^a$ is the average over 12 months of the ratio of the official and the black market exchange rates.

3/ The trade tax revenues are computed as follows. Starting with an annual trade balance in local currency, this is multiplied with a trade tax $(b/e)^a - 1$, where $(b/e)^a$ is the average over 12 months of the ratio of the black and the official exchange rates.

the investment side. This suggests that an exchange system unification at the equilibrium exchange rate would be salutary for the public finances. Finally, note from Figure 1A that The Bahamas has maintained a fixed official commercial exchange rate of B$1 = US$1 throughout the period. As a result, the imported Bahamian inflation rate has been relatively low (see Figure 1B).

2. The Dominican Republic: 1970-1984

The Dominican Republic maintained a single official exchange rate throughout the period 1970-1984--constitutionally fixed at US$1 = 1 peso. Exchange receipts from exports and investments normally had to be surrendered at the official exchange rate. There were three categories of imports that differed in the extent to which importers had access to foreign exchange at the official rate. Nonofficial exchange transactions, including financial transactions, were carried out in a tolerated free or black market. 1/ Any export receipts from unrecorded exports presumably also entered the tolerated free market. As seen in Figure 2A, the free market premium over the official exchange rate gradually increased from about 20 percent in 1970, even if this did not lead to an increasing rate of inflation (Figure 2B). In 1983-1984, however, the free market premium became so large as to be unsustainable. As a result, the two-tiered exchange rate system was dismantled in a number of steps starting in 1985 and resulting in an essentially free float several years later. 2/ The gradually increasing free market premium over the period, as expected, negatively influenced the recorded investment income and goods trade balances. The deteriorating recorded trade balance and the ever increasing implicit trade tax contributed to larger implicit trade tax losses. 3/ In Figure 2C, the implicit trade tax losses were largest in 1984, at 6.3 percent of GDP. On the investment side, the drop in recorded investment income was especially striking. In the 1982-1984 period, for instance, aggregate recorded investment income from abroad stood at an average of a puny RD$5.7 million pesos per annum. During the 1970-1984 period, the

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1/ For a short period in 1983-1984, the tolerated free market was in fact fully legalized and coexisted alongside a third 'black' market with essentially similar exchange rates. Exchange rates in this legalized free market for the period 1983-1984 are not considered here.

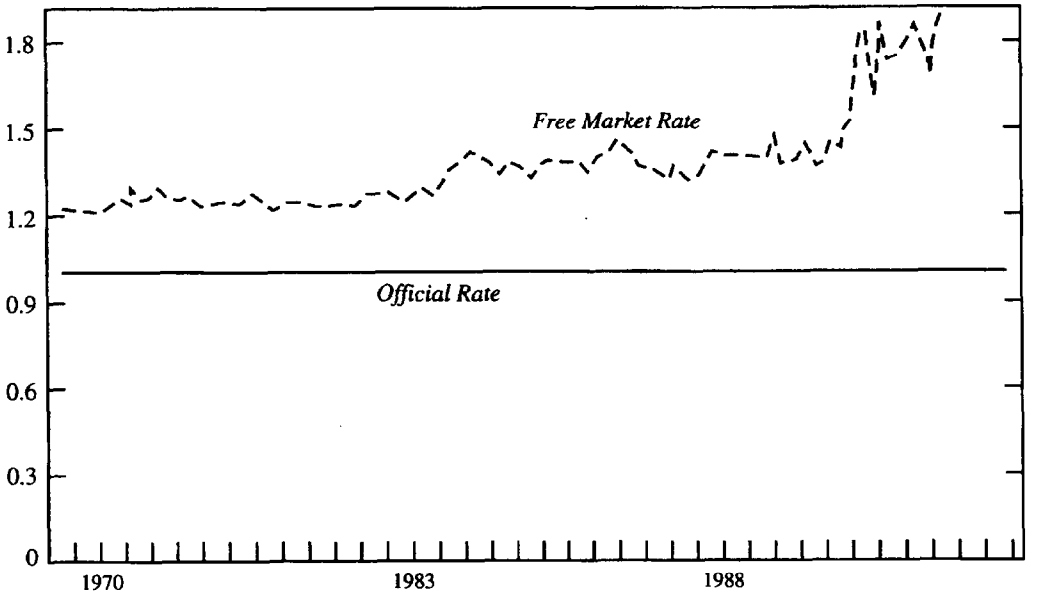
2/ In January 1985, a unified market-determined exchange rate was introduced. This was a key element of an economic program supported by a one-year Fund stand-by arrangement which also included the introduction of temporary surcharges of 36 percent and 5 percent, respectively, on earnings from exports of traditional and nontraditional goods. In January 1986, the surcharge on nontraditional exports was eliminated and that on traditional exports was reduced by one-half. In June 1986, the surcharge on traditional exports was eliminated.

3/ Note that starting in the late seventies, import payments were gradually transferred to the free market. By 1984, oil and some government imports continued to be paid at the official rate.

Figure 2

The Exchange System Experience in the Dominican Republic

A. Exchange Rates per U.S. Dollar



B. Implicit Tax Rates in Percent

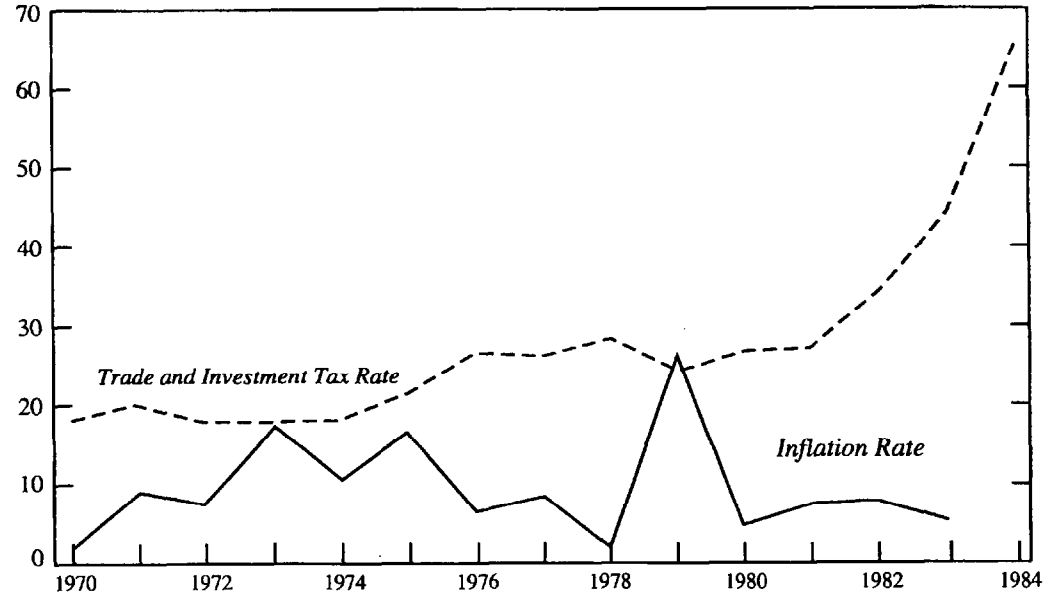
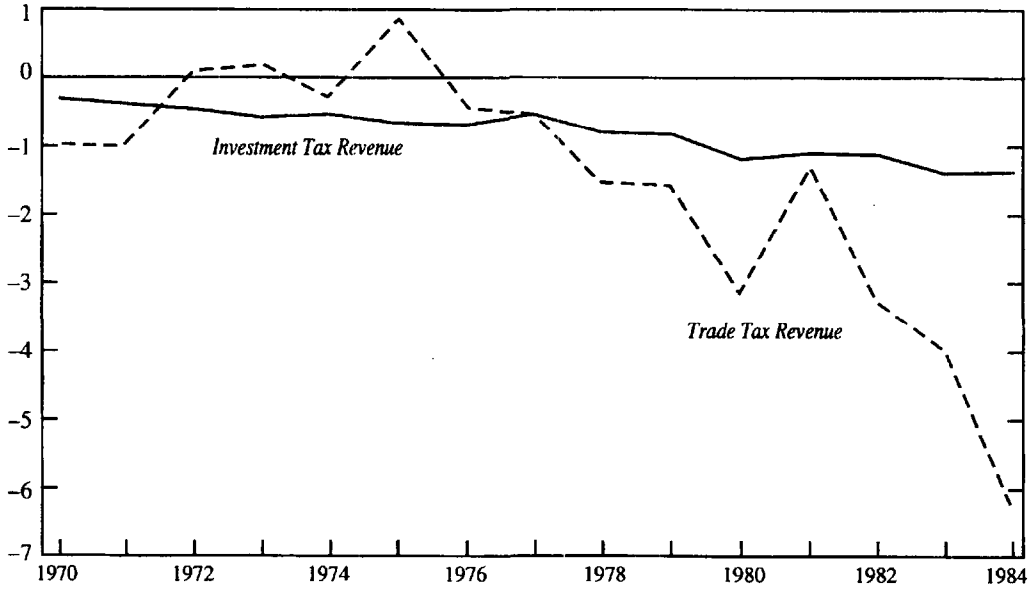


Figure 2 (concluded)

The Exchange System Experience in the Dominican Republic

C. Implicit Tax Revenue or Loss in Percent of GDP



Dominican Republic contracted substantial foreign debts and debt-service obligations. The foreign exchange necessary to service these debts was made available at the official exchange rate. As a result, in the 1982-1984 period, the average investment income debit was RD$270.1 million pesos. The implicit net subsidies to capital inflows are calculated at 1.4 percent of GDP in 1984 (see Figure 2C). For 1984, the combined investment and trade tax losses were 7.6 percent of GDP, or 75.7 percent of government revenues. A benefit for the government must have been a lower cost of domestic public borrowing. In the absence of domestic debt figures, however, the importance of this effect cannot be evaluated.

3. South Africa: 1973-1995

From the 1960s until March 1995, South Africa maintained a two-tiered exchange system consisting of commercial and financial rand exchange rates--with the exception of a short-lived period of exchange market unification from February 1983 to August 1985. All current account transactions were valued at the commercial exchange rate--with the authorities regulating imports with varying degrees of laxity, and requiring the surrender of most foreign exchange receipts. In the financial rand market, nonresidents could purchase or redeem South African securities--including financial rand bank deposits, government debt and quoted and nonquoted equities. Capital outflows by South African residents were severely restricted. Effectively, therefore, any arbitrage relating to the returns in the South African financial rand assets markets and international assets markets was left to nonresidents. This implies that the arbitrage relationship (2) should be the relevant one. Reflecting high inflation rates (see Figure 3A), both the commercial and financial exchange rates depreciated against the dollar and other major currencies in the 1980s. Equations (1) and (2) then imply that domestic residents could obtain a higher return on foreign assets than on domestic assets. This implies that South African residents--to the extent that they owned financial rand--had to be restricted from owning foreign assets by capital controls, as by and large they were.

The premium of the financial exchange rate over the commercial exchange rate fluctuated widely over the period--even if it did not diverge in the long run (see Figure 3A). This implies that the short-run dollar return on, say, South African government debts accruing to nonresidents were dominated by the short-run movements in the financial rand exchange rate. In the long run, the implicit subsidy offered to nonresidents for holding these debts, however, was determined by the financial rand premium. After the reintroduction of the financial rand system in September 1985, the financial rand premium reached a peak, following the South African declaration of a moratorium on the repayments of more than half of its international debts. Throughout the period, a black market exchange rate coexisted alongside the official dual exchange rates (see Figure 3A). The black market rate was always sandwiched between the commercial and financial exchange rates--with the exception of several months in 1975. By the 1990s, the black market exchange rate differed little from the official commercial exchange rate, with an average premium of around 5 percent.

The implicit investment and trade taxes are represented in Figure 3B. The investment tax reached a peak of 42 percent in 1986. The inflation rate (in Figure 3B) displays some co-movement with the investment tax rate, also peaking in the 1985-1986 period. The implicit trade tax varied, settling down to around 5 percent in the 1990s. South Africa consistently maintained an official trade surplus from 1977 to 1994. As a result, the calculated trade tax revenues are positive in Figure 3C, even if after 1980 they were less than one percent of GDP. South Africa, instead, had a recorded investment income deficit during the 1976-1994 period. The investment income debit--in absolute magnitude--was roughly 3 to 5 times the investment income credit. The apparent large net capital inflow--relative to the gross capital flows--suggests that capital outflow restrictions had an effect, at least on recorded investment income. The investment balance deficit and the implicit capital inflow subsidy imply that South Africa received negative investment tax revenues from the two-tiered exchange rate system. The implicit capital inflow subsidies, however, were a relatively small share of GDP, standing at 0.3 percent of GDP in 1994.

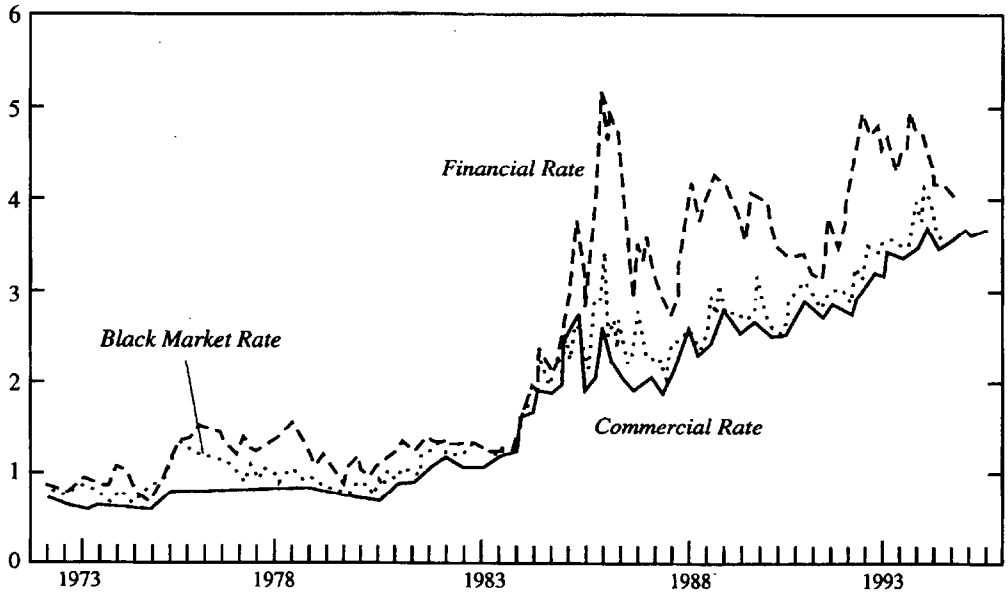
South Africa's capital inflow subsidy should have lowered the domestic cost of borrowing to the advantage of internal borrowers, including the South African government. 1/ The budgetary effect of a lower South African internal interest rate can be estimated as follows. First, let us assume that foreign investors are the marginal investors. We then calculate how much higher the (long-term) government debt yield would have to be if the implicit interest subsidy to nonresidents were taken away, on the assumption that the rates of depreciation of the dual exchange rates remain unchanged. 2/ The calculated government yield differential multiplied by the stock of government debt (net of any government debt held by the monetary authorities) yields an estimate of the debt-service savings on account of the two-tiered exchange rate system. These debt-service savings, as a percentage of GDP, are represented in Figure 4, along with the actual long-term government yield. The figure indicates that the computed debt-service savings are substantial, reaching a high of 3.9 percent in 1986 as then the actual government yield and the financial rate premium were both relatively high. All the same, South Africa's government debt/GDP ratio (net of reserve holdings), stood at a relatively modest 30.7 percent in 1986. The estimated debt-service savings exceeded the overall calculated spending on implicit capital inflow subsidies.

1/ Note that from an optimal tax perspective, the implicit tax on domestic assets, as evidenced by a low rate of return, should be related to the government's overall revenue need independently of the share of these revenues that is spent on debt service.

2/ The rates of depreciation of both exchange rates in the end reflect exchange fundamentals such as money growth.

Figure 3
The Exchange System Experience in South Africa

A. Exchange Rates per U.S. Dollar



B. Implicit Tax Rates in Percent

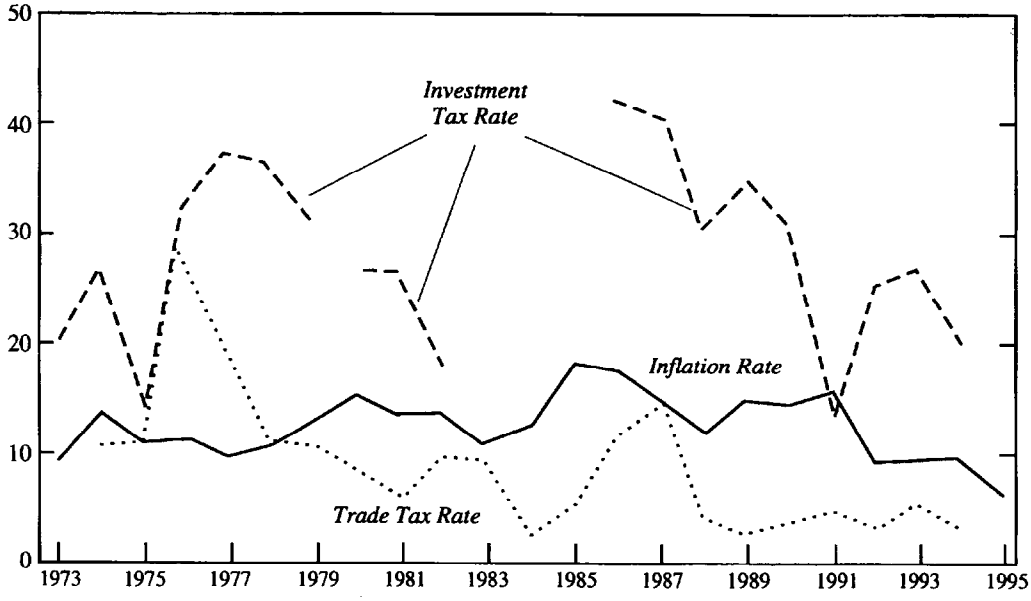


Figure 3 (concluded)
The Exchange System Experience in South Africa

C. Implicit Tax Revenue or Loss in Percent of GDP

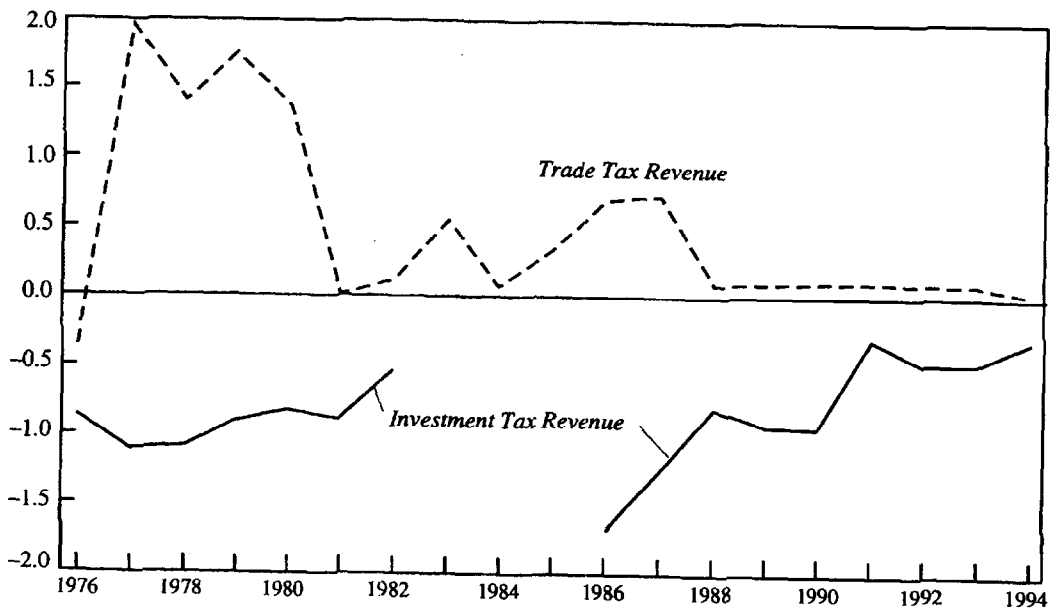
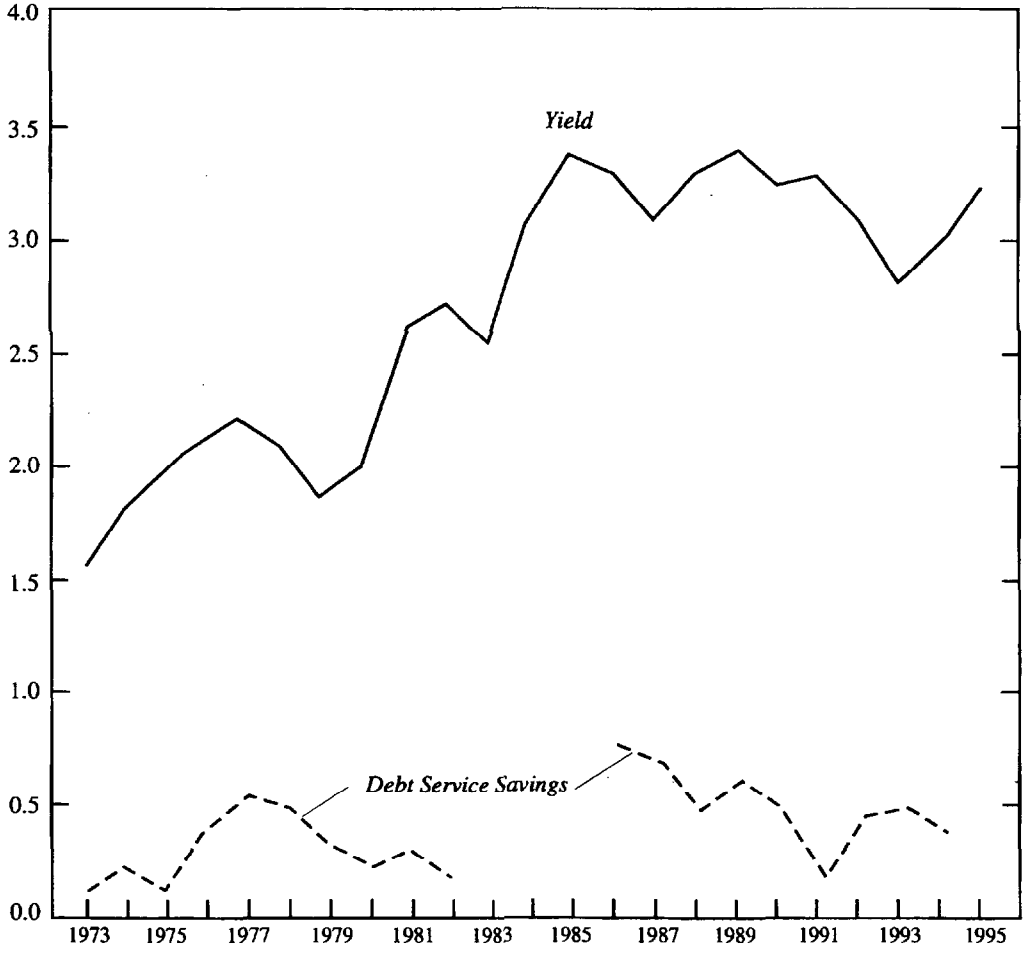


Figure 4

Government Debt Yield and Debt Service Savings in Percent of GDP in South Africa



IV. Conclusion

Exchange rate systems with separate commercial and financial exchange rates drive a wedge between the domestic and foreign returns on comparable assets. The arbitrage relationships linking the returns on domestic and foreign assets for domestic and foreign investors are generally inconsistent. This implies that capital controls usually have to be an integral part of two-tiered exchange rate systems. A two-tiered exchange rate system can be interpreted as a border tax or subsidy on international capital income flows.

The paper presents evidence on the tax rates and revenues implicit in the two-tiered exchange rate systems of three countries, The Bahamas, the Dominican Republic, and South Africa, at different intervals. The Dominican Republic and South Africa are calculated to have subsidized capital inflows. The implicit subsidy outlays are sizeable and comparable in magnitude to the implicit tax revenues or losses from the trade side, as calculated in this study and in previous ones.

The theoretical need to combine two-tiered exchange rates with capital controls and the empirical evidence that two-tiered exchange rates may drain public resources prima facie render these systems unattractive. Also, two-tiered exchange rate systems as taxation devices are relatively nontransparent, as the implicit tax rates have to be calculated from exchange rate data. Taxing capital income through the exchange rate system further introduces undesirable uncertainty to the extent that the exchange rates are variable. The links between administered exchange rates and capital controls and taxation also may give rise to opportunities for favoritism and abuse. These arguments imply that two-tiered exchange rate systems may be a rather inept way to impose a tax or subsidy on cross-border capital income flows.

An equally important and perhaps more fundamental question, of course, is whether a country should at all resort to taxing capital income by way of a border tax (or subsidy), if we maintain that the country is too small to affect international rates of return. To evaluate, consider a country that is a capital exporter and imposes an implicit tax on domestic residents' foreign-source investment income upon repatriation. The border tax on foreign-source capital income generally lowers the post-tax return on domestic saving as well as the cost of domestic physical investment. The border tax thus is equivalent to a tax on domestic saving and a subsidy to domestic investment. While the tax on domestic saving generally is part of the optimal tax scheme for a small open economy, the subsidy on domestic investment is not. Therefore, a domestic tax on saving or, equivalently, an income tax on worldwide capital income dominates a border tax on foreign-source capital income, as implicit in a two-tiered exchange rate system. If available, the worldwide capital income tax can be combined with a tax on other domestic income (for instance, labor income), but not with a subsidy on investment.

Data sources

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