TEL-AVIV

WP 33-97

THE SACKLER INSTITUTE
for Economic Studies

TEL AVIV UNIVERSITY
The Eitan Berglas School of Economics

מכון סאקלר לכלכלה

הפקולטה למדעי החברה ע"ש גרשון גורדון אוניברסיטת תל-אביב

The Sackler Institute for Economic Studies

Founded by Raymond R. Sackler, M.D, and Mortimer D. Sackler, M.D.

The Sackler Institute promotes theoretical and applied research in economics, in a wide of areas such as game theory, industrial organization, public finance, international trade, monetary economics, and more. The Institute's research staff is made up of members of The Eitan Berglas School of Economics at The Tel Aviv University.

QUANTITATIVE IMPLICATIONS OF THE HOME BIAS: FOREIGN UNDERINVESTMENT, DOMESTIC OVERSAVING AND CORRECTIVE TAXATION*

by

Assaf Razin[1], Efraim Sadka[2] and Chi-Wa Yuen[3]

Working Paper No.33-97

November, 1997

[1] The Eitan Berglas School of Economics, Tel-Aviv University, Ramat Aviv, Israel, CEPR and NBER.
[2] The Eitan Berglas School of Economics, Tel-Aviv University, Ramat Aviv, Israel.
[3] School of Economics and Finance, University of Hong Kong. Telephone: (852) 2859-1051; Fax: (852) 2548-1152; e-mail: cwyuen@econ.hku.hk.

* Work on this paper began while Razin and Sadka were visiting the University of Hong Kong. It was completed during their visit to the Economic Policy Research Unit, Copenhagen Business School and during Razin and Yuen's visit to the University of Chicago. We thank Soren Bo Nielsen and participants in the EPRU workshop for useful discussions. We also thank Gal Hochman for competent research assistance.

Abstract

There is strong evidence about a home-court advantage in international portfolio investment. One explanation for the bias is an information asymmetry between domestic and foreign investors about the economic performance of domestic firms. This asymmetry causes two types of distortions: An aggregate production inefficiency and a production-consumption inefficiency, leading to foreign underinvestment and domestic oversaving respectively. Such market failures are found to be quite severe, slightly more so with equity flows than with debt flows. These inefficiencies can nonetheless be corrected by a mix of tax-subsidy instruments, consisting of taxes on corporate income and on the capital incomes of both residents and nonresidents. When only a partial set of instruments is available, however, the prescription for each tax instrument can change radically and may even be reversed although the welfare gains can be fairly substantial and sometimes close to the first best optimum. This partial set of instruments appears to be more effective in handling the market failure in the case of equity flows than in the case of debt flows.

JEL Classification: F21. F35. H25. H30.

Keywords: Foreign portfolio debt investment. Foreign portfolio equity investment. Foreign direct investment. Capital income taxation. Asymmetric information. Aggregate production efficiency. Production-consumption efficiency.

Yuen's visit to the University of Chicago. We thank Soren Bo Nielsen and participants in the EPRU workshop for useful discussions. We also thank Gal Hochman for competent research assistance.

I. Introduction

There is strong evidence about a home-court advantage in portfolio investment. This is quite evident in the international context and to some extent even in the national context. For instance, Tesar and Werner (1994) find that despite the recent increase in U.S. equity investment abroad (including investment in emerging stock markets), the U.S. portfolio remains strongly biased towards domestic equity. Likewise, Huberman (1997) reports that U.S. investors have a strong preference towards firms located in their states over out-of-state firms.

One explanation for the home bias is an information asymmetry between domestic and foreign investors about the economic performance of domestic firms (see Gordon and Bovenberg (1996), and Razin, Sadka and Yuen (1997)). Very likely, this will result in foreign under-investment, domestic over-saving, and under-accumulation of domestic capital. The mirror image of these distortions are a high marginal productivity of capital at home relative to the home country marginal cost of importing capital (a distortion which is known in the literature as an aggregate production inefficiency); but a low marginal productivity of capital relative to the consumer willingness to pay for present consumption (a production-consumption inefficiency).[1]

Foreign portfolio investment can be either in the form of debt–including debt securities and loans (foreign portfolio debt investment, FPDI)–or equity (foreign portfolio equity investment, FPEI). Both forms of international capital flows are associated with the two aforementioned types of inefficiency–i.e., aggregate production inefficiency and production-consumption inefficiency. We find

[1]For a useful discussion of these distortions in the context of source and residence taxation see Gordon and Varian (1989), Frenkel, Razin and Sadka (1991), and Huizinga and Nielsen (1997).

that these inefficiencies are quite costly and can reach an order of magnitude equivalent to a 1.6% permanent reduction in consumption for half of a generation. Furthermore, the impact of the inefficiencies is slightly stronger in the case of equity flows than in the case of debt flows.

Nevertheless these distortions can be fully corrected both in the FPDI and the FPEI cases by a package of tax instruments, including a corporate income tax, a tax on the capital income of the residents, and a tax on the capital income of the nonresidents (foreign investors). When only a partial set of tax-subsidy instruments is available in practice, however, full efficiency can no longer be achieved. In this case, one can do better (in the welfare sense) in the FPEI case than in the FPDI case. Furthermore, the nature of any corrective instrument (i.e., whether a tax or a subsidy) can be reversed (from a tax to a subsidy or vice versa) when it is employed as one component in an optimal package of instruments rather than as just a single corrective instrument. When the reversal takes place, the welfare gains from switching to these second best tax rates are found to be significantly smaller than the gains from switching to the first best rates.

The organization of the paper is as follows. Section II presents an FPDI model, analyzes the corrective policy, either partially or comprehensively, and quantifies its welfare gain. Likewise, Section III deals with the FPEI case and quantifies its welfare gain. The comparison between these two cases–one to the other, and to the benchmark case of symmetric information–is carried out in Section IV. Section V concludes.

II. Foreign Portfolio Debt Investment (FPDI)

We assume a small capital-importing country, referred to as the home country. In this section, it is assumed that capital imports are channelled solely through borrowing by domestic firms from foreign banks and other lenders. The economy is small enough that, in the absence of any government intervention, it faces a perfectly elastic supply of external funds at a given risk-free world rate of interest, r^*. In the absence of capital flows, this r^* is assumed to be lower than the domestic marginal productivity of capital, so that there could be welfare gains from capital imports.

Consider a two-period model with a very large number (N) of *ex ante* identical domestic firms. Each firm employs capital input (K) in the first period in order to produce a single composite good in the second period. For the sake of simplicity, we assume that capital depreciates fully at the end of the production process in the second period. Output in the second period is equal to $F(K)(1+\varepsilon)$, where F(.) is a production function exhibiting diminishing marginal productivity of capital and ε is a random productivity factor. The latter has zero mean and is independent across all firms. (ε is bounded from below by -1, so that output is always nonnegative.) Given the very large size of N and the independence of ε across firms (which allow for complete diversification of such idiosyncratic risks through risk pooling), we assume that consumer-investors behave in a risk-neutral way.

Firms make their investment decisions before the state of the world (i.e., ε) is known. Since all firms face the same probability distribution of ε, they all choose the same level of investment (K). They then issue debt, either at home or abroad, to finance the investment. At this stage, domestic lenders are better informed than foreign lenders. Specifically, we assume that domestic lending institutions, being "close to the action", observe ε before they make their loan decisions; but foreign lending institutions, being "far away from the action", do not.

Throughout this paper, we consider three tax instruments: a corporate income tax (at the rate θ), a tax on the capital income of the residents (at the rate τ), and a tax on the capital income of the nonresidents (at the rate τ^*). However, with debt financing, a corporate tax is essentially a tax on pure profits (rents), and therefore does not affect corporate behavior. We therefore set θ equal to zero in this section. Government spending is assumed to be zero in both periods; and lump-sum taxes are used to finance these distortionary subsidies/taxes. For simplicity, we further assume that the foreign (capital-exporting) country is tax-free.

Competition among the borrowing firms and among the lending institutions, both domestic and foreign, ensures that there will be a unique interest rate charged to all the domestic borrowing firms. Denote this domestic interest rate by r. Given its investment decision (K), a firm will default on its debt if the realization of its random productivity factor is low so that its output $F(K)(1+\varepsilon)$ is smaller than its accumulated debt $K(1+r)$.[2] Thus, there is a cutoff value ε_o, such that all firms which realize a value of ε below ε_o default and all other firms (i.e., firms with $\varepsilon > \varepsilon_o$) fully repay their debts. This cutoff level of ε is defined by

$$F(K)(1 + \varepsilon_o) = K(1 + r). \tag{1}$$

Denote the cumulative probability distribution of ε by $\Phi(.)$. Then, $N\Phi(\varepsilon_o)$ firms default on their debt while the other $N[1-\Phi(\varepsilon_o)]$ firms remain solvent.

Recall that domestic lenders observe the value of ε before making their loan decisions. Therefore, they will not lend money to a firm that has realized a value of ε lower than ε_o. But foreign lenders do not observe ε, so that they will advance loans to all firms, which all look identical to them. Thus, foreign lenders will give loans to all the $N\Phi(\varepsilon_o)$ would-be bankrupt firms and to some fraction (say, β) of the $N[1-\Phi(\varepsilon_o)]$ would-be solvent firms. (The other fraction, $1-\beta$, of the would-be solvent

[2] See Stiglitz and Weiss (1989) and Eaton and Gersovitz (1989) for insightful studies on the implications of credit default under asymmetric information.

firms is financed by domestic lenders). Foreign lenders therefore receive a total of $\beta N[1-\Phi(\varepsilon_o)]K(1+r)$ from the solvent firms. Each bankrupt firm can pay back only its output, i.e., $F(K)(1+\varepsilon)$. Thus, foreign lenders receive a total of $N\Phi(\varepsilon_o)F(K)(1+e^-)$ from the bankrupt firms, where e^- is the mean value of ε realized by the bankrupt firms:

$$e^- \equiv E\,(\varepsilon/\varepsilon \le \varepsilon_o), \tag{2}$$

i.e., e^- is the conditional expectation of ε, given that $\varepsilon \le \varepsilon_o$. For later use, we also define by e^+ the conditional expectation of ε, given that $\varepsilon \ge \varepsilon_o$:

$$e^+ \equiv E\,(\varepsilon/\varepsilon \ge \varepsilon_o). \tag{3}$$

Note that the weighted average of e^- and e^+ must yield the average value of ε that is:

$$\Phi(\varepsilon_o)e^- + [1-\Phi(\varepsilon_o)]e^+ = E(\varepsilon) = 0. \tag{4}$$

The latter equation also implies that $e^- < 0$ while $e^+ > 0$, i.e., the expected value of ε for the "bad" ("good") firm is negative (positive).

Note that foreign lenders must earn a before-tax rate of return of $r^*/(1-\tau^*)$ on their FPDI so that their after-tax rate of return remains r^*, the rate of return they can earn in their own countries. As a result, the tax that our small economy imposes on their capital income is fully shifted to the domestic borrowers, i.e., $FPDI[1 + r^*/(1-\tau^*)] = A$, where $FPDI = \beta N[1-\Phi(\varepsilon_o)]K + N\Phi(\varepsilon_o)K$ is the amount of loans and $A \equiv \beta N[1-\Phi(\varepsilon_o)]K(1+r) + N\Phi(\varepsilon_o)F(K)(1+e^-)$ is the sum they receive before domestic taxes are levied on the loans. This condition can be expressed as:

$$\{\beta N[1-\Phi(\varepsilon_o)]K + N\Phi(\varepsilon_o)K\}[1 + r^*/(1-\tau^*)]$$
$$= \beta N[1-\Phi(\varepsilon_o)]K(1 + r) + N\Phi(\varepsilon_o)F(K)(1 + e^-). \tag{5}$$

Consider the debt-financed investment decision of a representative firm. This firm invests K in the first period and expects to receive an output of $E[F(K)(1+\varepsilon)] = F(K)$ in the second period. It also knows that if ε turns out to be smaller than ε_o, it will default on its debt. This firm expects then to pay back its accumulated debt, i.e., $K(1 + r)$, with probability $1-\Phi(\varepsilon_o)$. It expects to default, paying only $F(K)(1+e^-)$, with probability $\Phi(\varepsilon_o)$. Thus, the expected value of its cash receipts in the second period is

$$F(K) - [1-\Phi(\varepsilon_o)]K(1+r) - \Phi(\varepsilon_o)F(K)(1+e^-).$$

Maximizing the latter expression with respect to K yields the following first order condition:

$$F'(K) = [1-\Phi(\varepsilon_0)]\,(1+r) \,/\, [1-\Phi(\varepsilon_0)(1+e^-)]. \tag{6}$$

Since $e^- < 0$, it follows that

$$F'(K) < 1 + r. \tag{7}$$

Knowing that in "bad" realizations of ε (when $\varepsilon \leq \varepsilon_o$) it will not fully repay its loan, the firm invests beyond the level where the unconditionally expected net marginal productivity of capital (i.e., $F'(K)-1$) is just equal to the interest rate (i.e., r). The inequality implies that the domestic stock of capital is larger than what domestic consumer-savers are willing to pay for in terms of foregone present consumption. There is a production-consumption inefficiency: The intertemporal marginal rate of transformation in production (i.e., the marginal product of capital) is below the intertemporal marginal rate of substitution in consumption. As a result, a small decrease in domestic saving (a small increase in present consumption) without any change in FPDI (which amounts to a one-to-one decrease in the domestic stock of capital) will raise welfare.

Because of the default possibility, foreign lenders will charge an *ex ante* interest rate (r) which is higher than what they will be satisfied with ($r^*/(1-\tau^*)$), given that their alternative return at home is r^*—the difference being a reflection of the risk premium. Together with (7), this implies that it is likely to have

$$F'(K) > 1+r^*, \tag{8}$$

so that the economy can gain an amount of $F'(K)-(1+r^*)$ from a marginal increase in FPDI. This means that aggregate production is inefficient in the sense that an FPDI-financed increase in the stock of domestic capital (keeping domestic saving and present consumption intact) is welfare-improving. Note also that in many second best situations, it is desirable to observe the principle of production efficiency even though the principle of production-consumption efficiency is violated (see Diamond and Mirrlees (1971)).

We abstract from income-distributional equity considerations, implicitly assuming that the government can optimally redistribute income via lump-sum transfers *à la* Samuelson (1956). This means that, with no loss of generality, we may assume that there is one representative individual-consumer in the economy. She has an initial endowment of I_1 in the first period and I_2 in the second period. She consumes c_1 in the first period and c_2 in the second period. Her saving earns an after-tax rate of return of $(1-\tau)r$.[3]

In the first period, the economy faces a resource constraint, stating that FPDI must suffice to cover the difference between domestic investment (NK) and national savings (I_1-c_1):

$$FPDI = NK - (I_1-c_1). \tag{9}$$

No matter what taxes are levied by the home country on FPDI, foreigners will be able to extract from the home country an amount of $1+r^*$ units of output in the second period for each unit that they invest in the first period. Therefore, the home country faces the following present value resource constraint:

---

[3]Her saving is either deposited with domestic intermediaries (banks, etc.) that channel it to the firms or in government bonds that also yield a before-tax rate of return of r. Assuming, as we are, that the government can levy lump-sum taxes in each period to balance its budget makes these bonds superfluous.

$$I_1 + I_2/(1+r^*) + NF(K)/(1+r^*) = c_1 + c_2/(1+r^*) + NK. \tag{10}$$

Table 1 compares the benchmark laissez faire FPDI regime with the (financial) autarky regime and three optimal tax regimes. Among the latter, the first corresponds to the first best corrective tax regime while the second and third correspond to different second best tax regimes. Between the two second best regimes, one assumes a single distortionary tax instrument whose proceeds are rebated in a lump sum fashion (assuming the other two tax instruments are not available); the other assumes the use of only distortionary tax instruments in the absence of lump sum taxes/transfers.[4] (Recall that since the corporate tax is neutral in the FPDI case, we have set θ to zero in all these experiments.)

[insert Table 1 about here]

The comparison between the unfettered FPDI with autarky reveals the magnitude of the inefficiency. When we move from autarky to the FPDI regime, the aggregate production inefficiency measure is reduced from 64.8% to 44.3% and, as a by-product, the production-consumption inefficiency measure (which was non-existent under the former regime) becomes −20.1%. As a result of this tradeoff, the welfare loss–defined as a permanent decrease in consumption in the second period, interpretable as the reduction in consumption for the second half of the current generation[5]–from shutting down these FPDI flows is a mere 0.06%. This suggests that the information asymmetry between domestic and foreign investors (a by-product of the liberalization of capital flows) creates so large a distortion that the net gains from opening up the international capital

[4]Obviously, when the tax proceeds from one tax instrument has to balance those from another to satisfy the government budget constraint (as in the second of our second best tax regimes), one of the taxes must be negative while the other is positive.

[5]One reason why we focus on welfare changes in the *second* period is that, in our setup, all taxes are levied only in that period. Another reason is that, in our simulations, we treat one period as half of a generation (30 years) so that heavy discounting is applied to consumption changes in the second period if we define welfare in terms of compensating changes in *present* (i.e., first period) consumption.

market are almost negligible.

One can show that Pareto efficiency can be restored by employing a positive tax on the capital income of the residents (i.e., $\tau > 0$), coupled with a lower tax (possibly at a negative rate, i.e., a subsidy) on the capital income of the nonresidents (i.e., $\tau^* < \tau$). [See Razin, Sadka, and Yuen (1997a).] Such combination of taxes restores both production efficiency (i.e., $F'(K) = 1+r^*$) and production-consumption efficiency (i.e., $F'(K) = 1+(1-\tau)r$, which is equal to the intertemporal marginal rate of substitution in consumption). The rationale behind the optimal tax policy (namely, $\tau > 0$, and $\tau^* < \tau$) is quite straightforward. First, given the possibility of default, in which case firms do not fully repay their loans, they tend to over-invest relative to the domestic interest rate that they face: the expected net marginal product of capital ($F'(K)-1$) is driven below the domestic rate of interest (r) (see condition (7)). In order to ensure that firms do not drive their expected net marginal product of capital below the world rate of interest (r^*), the government must positively tax domestic interest so as to maintain the domestic rate of interest above the world rate. Second, by the small country assumption, any tax levied on foreign lenders must be shifted fully to domestic borrowers. Therefore, foreign lenders must earn an expected return of $r^*/(1-\tau^*)$ on their loans. Since the interest cannot be fully recouped in the case of default, they must initially charge domestic borrowers a higher rate of interest than $r^*/(1-\tau^*)$. As a result, the domestic rate of interest (r) which is charged by all lenders, both foreign and domestic, must be higher than $r^*/(1-\tau^*)$. In other words, $r > r^*/(1-\tau^*)$, or $r(1-\tau^*) > r^*$. This means that if the nonresident tax rate (τ^*) were to be applied to residents, their net of tax interest rate ($(1-\tau^*)r$) would have been higher than the world rate of interest (r^*). But Pareto efficiency requires that the net-of-tax domestic rate of interest ($(1-\tau)r$) be equal to the world rate of interest. Therefore, residents must be levied a higher tax rate on their capital income than nonresidents.

Indeed, Table 1 reveals that the first best taxes are $\tau = 5.1\%$ and $\tau^* = 4.7\%$ (given $\theta = 0$ due to the neutrality of the corporate income tax) respectively. The importance of the corrective tax package is highlighted by the significant increase in the share of FPDI in total investment from 0.10 to 3.99. Concomitantly, the fraction of good firms financed by FPDI (β) rises from 0.04 to 4.17. Since the debt flows finance not only firm investment but also private consumption, both measures of foreign capital (FPDI/K and β) exceed unity. Domestic investment rises by 16%. Evidently, the two kinds of inefficiencies vanish, resulting in a welfare gain of 1.57%.

When a single tax instrument is employed, welfare can still be improved; but naturally full Pareto efficiency cannot be restored. Interestingly enough, the welfare-improving change in a single tax instrument can be in a direction opposite to the corresponding change in this instrument as a component of the optimal package of all tax instruments. Rows 4 and 5 of Table 1 describe the effects of a single tax change, assuming all other tax rates are set to zero and the proceeds are distributed in a lump sum fashion.

Consider first a change in the tax on the capital income of nonresidents (τ^*). Recall that, as a component in the first best tax package, τ^* has to be smaller than τ. Here, even though τ is set equal to zero, the welfare-maximizing τ^* (= 12%) is positive and warrants only a negligible welfare gain of 0.21%. As mentioned earlier, in the no-tax case, there are two distortions: aggregate production inefficiency and production-consumption inefficiency. A positive tax on the capital income of nonresidents τ^* serves to mitigate the negative impact of both inefficiencies. First, as τ^* must be fully shifted to domestic borrowers, this is achieved by a higher share of FPDI in total investment and a higher fraction (β) of "good" firms financed by FPDI (see equation (5)). In our simulations, β rises from .04 in the no-tax case to 0.38 at the welfare-maximizing level of τ^*, and the fraction of the stock of capital financed by FPDI rises from .10 to .42. The increase in FPDI enhances welfare by a moderate 0.21% (because $F' > 1+r^*$).

Consider next the effect of a change in the tax on the capital income of the residents (τ). In this case, we find that the welfare-maximizing rate is negative. A small subsidy of 2% for domestic saving generates a sizable welfare gain amounting to an increase of 1.54% in second period consumption, and gets the economy fairly close to the first best optimum. The rationale behind this outcome is as follows. The government cannot directly affect FPDI through τ alone. It therefore subsidizes domestic saving, thereby raising the post-subsidy return to saving (i.e., $(1-\tau)r$) and lowering the pre-subsidy return (i.e., r). Observing that, with constant returns to scale production technology, ε_0 and hence $\Phi(\varepsilon_0)$ are not affected by policy variables (see equations (1) and (6)), this fall in r will raise the demand for capital by the firms, which will in turn bring in more FPDI. In fact, the welfare-maximizing subsidy τ raises the stock of capital by 23% and the flow of FPDI from 0.10 to 3.36, resulting in foreign over- (rather than under-) investment. Note from Table 1 that the τ instrument raises welfare by more than the τ^* instrument, as it brings in more FPDI, thereby mitigating more effectively the aggregate production inefficiency.

In the alternative second best tax regime with purely distortionary taxes, $\tau = -2.8\%$ and $\tau^* = 8\%$. Here again, the optimal tax package differs radically from its first best counterpart. This tax mix does not induce substantial rise in FPDI flows and, as a result, the welfare gain is a meager 0.11%. Notice that in this case, the mitigation of the effect of the aggregate production inefficiency is achieved at the cost of exacebrating the production-consumption distortion.[6] However, the aggregate production efficiency principle generally dominates the production-consumption inefficiency.

III. Foreign Portfolio Equity Investment (FPEI)

In this section, we assume that capital flows are channelled solely through portfolio equity investment, FPEI. Officially, foreign portfolio equity investment is defined as buying less than a certain small fraction (say, 10-20%) of shares of a firm. However, from an economic point of view, the critical feature of FPEI is the lack of control of the foreign investor over the management of the domestic firm, because of the absence of foreign managerial inputs. For our purposes, we shall simply assume that foreign investors buy shares in existing firms without exercising any form of control or applying its own managerial inputs.

We assume, in complete analogy to the information asymmetry assumed in the model of FPDI, that foreign investors do not observe the actual value of ε when they purchase shares in existing firms. Domestic investors, on the other hand, do observe the value of ε at that stage. We continue to assume that ε is not known to the firm or to anyone else when capital investment is made.

As before, all firms choose the same level of K in the first period, since ε is unknown to them at this stage. All firms are originally owned by domestic investors who equity-finance their capital investment K. After this capital investment is made, the value of ε is revealed to domestic investors, but not to foreign investors. The latter buy shares in the existing firms at a total amount of FPEI.

---

[6]In principle, second best tax reforms can reduce distortions at some margin while increasing distortions at other margins. That is why, in Table 1 (as well as Table 2 below), the absolute values of the two inefficiency measures are not necessarily smaller under the second best regimes, relative to the laissez faire regime.

They expect their investment to appreciate in the second period to an amount of FPEI$[1 + r^*/(1-\tau^*)]$, as the capital gains are taxed at the rate τ^* and foreign investors must earn a net-of-tax rate of return of r^*, which is the alternative rate of return they can earn when they invest in their home countries. Being unable to observe ε, foreign investors will offer the same price for all firms reflecting the average productivity for the group of low productivity firms they purchase. On the other hand, domestic investors who do observe ε will not be willing to sell at this price the firms which has experienced high values of ε. (Equivalently, domestic investors will outbid foreign investors for these firms). As before, there will be a cutoff level of ε, say ε_o (possibly different from the one under FPDI), such that all firms which experience a lower value of ε than the cutoff level will be purchased by foreigners. All other firms will be retained by domestic investors. The cutoff level of ε is then defined by

$$[(1-\theta)F(K)(1+e^-)] / [1 + r^*/(1-\tau^*)]$$
$$= [(1-\theta)F(K)(1+\varepsilon_o)] / [1 + (1-\tau)r]. \quad (11)$$

The value of a typical domestic firm in the second period is equal to its output minus corporate profit taxes, i.e., $(1-\theta)F(K)(1+\varepsilon)$.[7] Because foreign equity investors will buy only those firms with $\varepsilon \leq \varepsilon_o$, the expected second-period value of a firm they buy is $(1-\theta)F(K)(1+e^-)$, which they then discount by the factor $1 + r^*/(1-\tau^*)$ to determine the price they are willing to pay in the first period. At equilibrium, this price is equal to the price that a domestic investor is willing to pay for the firm which experiences a productivity value of ε_o. The cutoff price is equal to the output of the firm, minus

[7]Strictly speaking, the corporate tax rate (θ) applies to profits, F(K)-K, i.e., output minus depreciation, and not to output, F(K). However, there is a one-to-one relation between the tax base F(K)-K and the tax base F(K). We therefore follow Gordon and Bovenberg (1996) in levying a tax at a rate θ on output, F(K), which simplifies the notation a great deal. In fact, such a tax is equivalent to a corporate income tax cum investment tax.

corporate profit taxes, discounted at the rate domestic investors can earn on bonds issued by their own government, i.e., $(1-\tau)r$.[8] This explains the equilibrium condition (11). Rearranging terms, equation (11) reduces to:

$$(1 + e^-) / [1 + r^*/(1-\tau^*)] = (1 + \varepsilon_o) / [1 + (1-\tau)r], \tag{1'}$$

which is the analogue of equation (1) in the case of FPDI.

As $e^- < \varepsilon_o$, an equilibrium with both foreigners and residents having nonzero holdings in domestic firms requires that the foreigners' net-of-tax rate of return $(r^*/(1-\tau^*))$ be lower than the residents' net-of-tax rate of return $((1-\tau)r)$. In some sense, this means that foreign investors are overcharged for their purchases of domestic firms. They outbid domestic investors that are willing to pay *on average* only a price of $(1-\theta)F(K)(1+e^-)/[1+(1-\tau)r]$ for the low productivity firms. Since there are $\Phi(\varepsilon_o)N$ firms purchased by foreign investors, the amount of FPEI is given by

$$\text{FPEI} = [\Phi(\varepsilon_o)N(1-\theta)F(K)(1+e^-)] / [1+r^*/(1-\tau^*)].$$

Consider the capital investment decision of the firm that is made before ε becomes known. The firm seeks to maximize its market value, net of the original investment (K). With a probability $\Phi(\varepsilon_o)$, it will be sold to foreign investors, who pay $(1-\theta)F(K)(1+e^-)/ [1+r^*/(1-\tau^*)]$. With a probability $[1-\Phi(\varepsilon_o)]$, it will be sold to domestic investors, who pay on average $(1-\theta)F(K)(1+e^+)/ [1+(1-\tau)r]$. Hence, the firm's expected market value, net of the original capital investment, is

$$- K + \Phi(\varepsilon_o)(1-\theta)F(K)(1 + e^-) / [1 + r^*/(1-\tau^*)]$$
$$+ [1-\Phi(\varepsilon_o)](1-\theta) F(K)(1 + e^+) / [1 + (1-\tau)r].$$

Maximizing this expression with respect to K yields the following first-order condition:

---

[8]Here again, government bonds are superfluous, but we maintain them in order to establish a possibility for the consumer to lend money and assign some meaningful value to a net-of-tax domestic interest rate, namely $(1-\tau)r$.

$$\Phi(\varepsilon_o)(1-\theta)F'(K)(1+e^-) / [1+r^*/(1-\tau^*)]$$

$$+ [1-\Phi(\varepsilon_o)](1-\theta)F'(K)(1+e^+) / [1+(1-\tau)r] = 1 . \qquad (6)'$$

Unlike the debt-finance case of the preceding section, the corporate tax in this equity-finance case *does* affect the firm's behavior, as expected and as can be seen immediately from (6)'. Since the firm knows, when making its capital investment decision, that it will be sold to foreign investors at a "premium" under low-productivity events, it tends to over-invest relative to the net-of-tax rate of return to domestic investors and under-invest relative to the net-of-tax rate of return to foreign investors:

$$1 + r^*/(1-\tau^*) < (1-\theta)F'(K) < 1 + (1-\tau)r. \qquad (7)'$$

Finally, equation (9) of the preceding section continues to hold with FPEI replacing FPDI,

$$\text{FPEI} = \text{NK} - (I_1 - c_1), \qquad (9)'$$

and the present-value resource constraint (10) remains unchanged. Since the only lending/ borrowing activity here is carried out between the government and the (homogeneous) household sector, what matters is the net-of-tax rate of interest, i.e., $(1-\tau)r$, and not τ and r separately. We therefore set $\tau = 0$ here with no loss of generality.

Equation (7)' indicates that the laissez faire (i.e., no tax) situation involves two kinds of inefficiencies:

$$1 + r^* < F'(K) < 1 + r. \qquad (12)$$

The first inequality ($1+r^* < F'$) indicates an aggregate production inefficiency since the marginal product of capital exceeds the country's cost of importing capital (so that there is "too little" FPEI). The second inequality ($F' < 1+r$) indicates a production-consumption inefficiency, since the marginal product of capital is below the intertemporal marginal rate of consumption substitution (so that there is "too much" domestic capital and saving).

Similar to Table 1, Table 2 compares the benchmark laissez faire FPEI regime with the (financial) autarky regime and the first and second best tax regimes (remembering that τ is set to zero in this section). The comparison between the unfettered FPEI and autarky reveals the magnitude of the inefficiency. When we move from autarky to the FPEI regime, the aggregate production inefficiency measure is reduced from 64.8% to 64.3% and, as a by-product, the production-consumption inefficiency measure (which was non-existent under the former regime) becomes −0.23%. As a result of this tradeoff, the welfare loss from shutting down these FPEI flows is a mere 0.01% (smaller than in the case of the laissez faire FPDI flows). Even more so than the FPDI case, this suggests that the information asymmetry creates a distortion so large that the net gains from opening up the international capital market are negligible.

[insert Table 2 about here]

One can show that Pareto efficiency (i.e., $r^* = F' - 1 = r$) can be restored by a package of tax instruments in which $\theta > 0$ and $\tau^* < 0$. [See Gordon and Bovenberg (1996), and Razin, Sadka and Yuen (1997).] The negative tax on (viz., subsidy to) the capital income of the nonresidents serves to increase FPEI, while a positive corporate tax rate is needed to reduce the return to domestic saving and, consequently, to eliminate the over-saving of the residents. Indeed, Table 2 reveals that the first best taxes are $\theta = 37\%$ and $\tau^* = -96\%$ (given $\tau = 0$ due to the neutrality of the capital income tax on the after-tax return for residents in this case) respectively. The importance of the corrective tax package is highlighted by the significant increase in the share of FPEI in total investment from 0.019 to 3.99. These equity flows finance not only firm investment but also private consumption through short sales of domestic equity to the foreigners. Domestic investment rises by 25%. Evidently, the two kinds of inefficiencies vanish, resulting in a welfare gain of 1.62%.

Table 2 also illustrates what can be done when only one tax instrument is employed. Consider first the nonresident tax τ^* as the single instrument (with $\theta = 0$). In this case, we will still wish to subsidize the capital income of the nonresidents (i.e., to set a negative τ^*) in order to attract more FPEI. This policy raises the total stock of capital but by a smaller amount than the increase in FPEI, so that domestic saving actually declines. Indeed the optimal subsidy to the capital income of the nonresidents is found to be rather high, 83% (i.e., $\tau^* = -0.83$), resulting in foreign over- (rather than under-) investment and a fairly substantial welfare gain equivalent to a 1.36% increase in half-generation consumption.

Consider next the corporate tax (θ) as a single tax instrument (with $\tau^* = 0$). In this case, the corporate tax reduces the return to investors, both foreign and domestic, and does not operate directly on the production efficiency. It turns out that the welfare-maximizing rate for this tax is zero and thus coincides with the original laissez faire FPEI equilibrium.

If, however, the tax package involves only two distortionary taxes (θ and τ^*) but no lump sum taxes/transfers, the second best tax mix is almost indistinguishable from the first best tax mix and the welfare gain is only a tiny bit below that of the first best. In other words, the absence of the lump sum tax/transfer instrument is no big deal here. Interestingly, such tax package results in domestic under-saving and foreign over-investment.

4. Foreign Direct Investment (FDI) and the Cost of Asymmetric Information

In this section, we consider international capital flows in the form of foreign direct investment (FDI). From an economic point of view, we look at FDI not just as a purchase of a sizable share in a company but, more importantly, as an actual exercise of control and management. A foreign direct investor purchases a domestic company from scratch at the "greenfield" stage, i.e., before any capital investment has been made. This aspect of FDI accords foreign investors with the same kind of "home-court" advantage (with respect to, say, business information) that domestic investors have, but foreign portfolio (debt and equity) investors lack. Specifically, foreign direct investors can learn about the state of the world (i.e., the realization of the productivity factor ε) at the same time as domestic investors. The asymmetric information feature of the two preceding sections is thus circumvented by FDI. As a result, the laissez faire FDI allocation is Pareto-efficient and is identical to the allocation achieved in the FPDI and FPEI cases with a full package of tax instruments ($\tau > 0$, $\tau^* < \tau$ in the FPDI case and $\theta > 0$, $\tau^* < 0$ in the FPEI case).[9]

[insert Table 3 about here]

Table 3 compares this FDI symmetric information allocation with the laissez faire asymmetric information FPDI and FPEI allocations. It illustrates the large magnitude of foreign under-investment (98-99%) and the relatively small magnitude of domestic over-saving (only 77 basis points of GNP) in both the FPDI and FPEI cases, relative to the Pareto-efficient FDI case. Correspondingly, the stock of domestic capital is too low (by about 13.9% in the FPDI case and 19.5% in the FPEI case, relative to the FDI case). The overall welfare cost associated with the asymmetric information is sizable, amounting to a permanent fall of 1.55% in half-generation consumption in the FPDI case, and 1.60% in the FPEI case, relative to the Pareto-efficient FDI case. Notice that the asymmetric

[9]In Razin, Sadka, and Yuen (1997b), we analyze a different asymmetric information structure in which the owner-managers of the firms are better informed about their productivity levels than the outside suppliers of funds (both domestic and foreign). In that case, the exercise of control and management by the FDI investors accords them with informational advantage over foreign and domestic savers, so that, unlike this case, the FDI equilibrium there will not be first best.

information problem is more severe in the case of FPEI than in the case of FPDI. Tables 1 and 2 indicate, however, that the different corrective tax packages are more likely to produce significant welfare gains in the case of FPEI than that of FPDI.

5. Conclusion

In this paper, we have emphasized informational problems which lead to home bias and insufficient amounts of capital inflows. Assuming that domestic savers are better informed than their foreign counterpart, we find a welfare ranking which puts foreign direct investment (FDI) at the top, foreign portfolio debt investment (FPDI) in the middle, and foreign portfolio equity investment (FPEI) at the bottom. (See the welfare columns in Tables 1 and 2 for the laissez faire FPDI and FPEI and the first best/FDI cases.) Such ranking is consistent with the pecking order of capital inflows alluded to by Razin, Sadka, and Yuen (1997a).

This information asymmetry causes a market failure which we find to be quite severe, slightly more so with equity flows than with debt flows. This inefficiency can nonetheless be corrected by a mix of tax-subsidy instruments. When only a partial set of instruments is available in practice, however, the prescription for each tax instrument can change radically and may even be reversed even though the welfare gains can be fairly substantial and sometimes close to the first best optimum. This partial set of instruments seems to be more effective in handling the market failure in the case of equity flows than in the case of debt flows.

Obviously, the first best tax regime generates larger welfare gains than the second best tax regimes. In comparing the two kinds of second best regimes–i.e., (i) single distortionary tax/subsidy instrument financed by lump-sum transfers/taxes and (ii) two distortionary tax instruments without lump-sum taxes/transfers, we cannot draw a definite conclusion as to which welfare-dominates which. While regime (i) is welfare-superior in the FPDI case, the opposite is true in the FPEI case.

As is conventionally modelled in the finance literature, another type of asymmetric information may exist between (domestic and foreign) savers and the owner-managers of the (domestic) firms. The optimal tax implications and welfare ranking of the various kinds of savings under such information structure are quite different from the ones obtained here (see Razin, Sadka, and Yuen (1997b)). In reality, two levels of asymmetric information may exist whereby the domestic firms are better informed than the domestic savers, who are in turn better informed than the foreign investors. The analysis of this more realistic information structure is left for future research.

References

Diamond, P.A. and J.A. Mirrlees, 1971. "Optimal taxation and public production I: Production efficiency," *American Economic Review* 65, 8-27.

Eaton, J., and M. Gersovitz, 1989, "Country risk and the organization of international capital transfer," in G.A. Calvo, et al. (eds.), *Debt, stabilization, and development: Essays in memory of Carlos Diaz-Alejandro* (Basil Blackwell, New York, NY).

Frenkel, J.A., A. Razin, and E. Sadka, 1991. *International Taxation in an integrated world economy* (MIT Press, Cambridge, MA).

Gordon, R.H., and A.L. Bovenberg, 1996, "Why is capital so immobile internationally: Possible explanations and implications for capital income taxation," *American Economic Review* 86, 1057-75.

Gordon, R.H., and H. Varian, 1989. "Taxation of asset income in the presence of a world security market," *Journal of International Economics* 26, 205-26.

Huberman, G., 1997. "Familiarity......," Columbia University Business School, mimeo.

Huizinga, H.P. and S.B. Nielsen, 1997. "Capital income and profit taxation with foreign ownership of firms," *Journal of International Economics* 42, 149-66.

Razin, A., E. Sadka, and C.-W. Yuen, 1997a. "A pecking order of capital inflows and international tax principles," *Journal of International Economics*, forthcoming.

Razin, A., E. Sadka, and C.-W. Yuen, 1997b. "Channelling domestic savings into productive investment: The essential role of foreign direct investment," working paper.

Samuelson, P.A., 1956, "Social indifference curves," *Quarterly Journal of Economics* 70, 1-22.

Stiglitz, J.E., and A. Weiss, 1981. "Credit rationing in markets with imperfect information," *American Economic Review* 71, 393-410.

Tesar, L.L., and I.M. Werner, 1994. "U.S. equity investment in emerging stock markets," *World Bank Economic Review* 9, 109-30.

Table 1. The Effects of Tax Changes on FPDI and Welfare

	θ	τ	τ^*	FPDI/K	K/K^0	β	production inefficiency (%)	production-consumption inefficiency (%)	welfare gains (%)
laissez faire	0	0	0	.10	1	.04	44.3	-20.1	0
autarky	0	0	0	0	.93	0	64.8	0	-.06
first best	0	.051	.047	3.99	1.16	4.17	0	0	1.57
second best (i.1)	0	0	.12	.42	1.01	.38	40.0	-20.1	.21
second best (i.2)	0	-.020	0	3.36	1.23	3.51	-18.2	-27.0	1.54
second best (ii)	0	-.028	.08	.27	1.04	.22	32.7	-29.9	.11

Notes:

(a) The utility function is $U(c_1,c_2) = \ln(c_1) + \delta\ln(c_2)$, where $\delta = (0.9)^{30}$ representing a discount rate of 11% with each of the two periods lasting 30 years.

(b) The production function is $F(K) = BK^{\alpha}$, where $B = 5$ and $\alpha = 0.2$.

(c) The distribution of ε, $\Phi(\varepsilon)$, is assumed to be uniform over the interval $[-0.9, 0.9]$.

(d) The values for the other exogenous parameters are: $N = 1$, $I_1 = 9.4$, $I_2 = 9.0$, $1+r^* = 1/\delta = (1.11)^{30}$.

(e) K^0 is the laissze faire (no-tax) level of the stock of domestic capital.

(f) The two distortion measures of aggregate production inefficiency and production-consumption inefficiency are given by $100[F'(K)-(1+r^*)]$ and $100[F'(K)-(1+(1-\tau)r)]$ respectively.

(g) The welfare gains are defined in terms of a compensating change in second period consumption, $100\Delta\%$, with Δ given implicitly by $U(c_1^0,c_2^0(1+\Delta)) = U(c_1,c_2)$, where (c_1^0,c_2^0) is the no-tax consumption bundle.

(h) Between the two second best tax regimes, (i) involves a single distortionary tax/subsidy instrument financed by lump-sum taxes/transfers while (ii) involves two distortionary tax instruments without any lump-sum taxes/transfers.

Table 2. The Effects of Tax Changes on FPEI and Welfare

	θ	τ	τ^*	FPEI/K	K/K^0	production inefficiency (%)	production-consumption inefficiency (%)	welfare gains (%)
laissez faire	0	0	0	.019	1	64.3	−.23	0
autarky	0	0	0	0	.999	64.8	0	−.0117
first best	.37	0	−.96	3.99	1.25	0	0	1.6237
second best (i.1)	0	0	−.83	2.60	1.66	−84.9	−100	1.3612
second best (i.2)	0	0	0	.019	1	64.3	−.23	0
second best (ii)	.377	0	−.96	4.02	1.24	−69.0	282.1	1.6236

Note: The preferences and technology as well as other parameter values are identical to those described in Table 1.

Table 3. <u>The Cost of Asymmetric Information</u>[a]

Type of capital flows	Deviation in capital stock (%)[b]	Deviation in capital imports (%)[c]	Deviation in savings rates (%)[d]	Welfare cost (%)[e]
FPDI	-13.9	-97.8	.770	1.55
FPEI	-19.5	-99.6	.774	1.60

Notes:

(a) Preferences, technology, and parameter values are as in Table 1.

(b) This is measured by $100(K^i - K^{FDI})/K^{FDI}$, where K^i is the domestic capital stock in case i = FPDI, FPEI, and FDI, with no taxes.

(c) This is defined in a similar way as in (b).

(d) This is measured by $100[(I_1 - c_1^i)/I_1 - (I_1 - c_1^{FDI})/I^1] = 100(c_1^{FDI} - c_1^i)/I_1$, where c_1^i is the first-period consumption and $100(I^1 - c_1^i)/I_1$ is the savings rate in case i = FPDI, FPEI, and FDI, with no taxes.

(e) This is measured by 100Δ with Δ defined implicitly by $U(c_1^i, c_2^i) = U(c_1^{FDI}, c_2^{FDI}(1 - \Delta))$, where i = FPDI, FPEI, FDI, with no taxes.

THE FOERDER INSTITUTE FOR ECONOMIC RESEARCH and THE SACKLER INSTITUTE FOR ECONOMIC STUDIES

The Eitan Berglas School of Economics
Tel-Aviv University

List of Recent Working Papers

29-96 (Foerder)	Elazar Berkovitch Ronen Israel Yossef Spiegel	Managerial Compensation and Capital Structure
30-96 (Sackler)	Omri Ben-Shahar	Scientific Information and Products Liability: An Economic Analysis
31-96 (Foerder)	Lucian Arye Bebchuk Omri Ben-Shahar	Pre-Contractual Reliance
32-96 (Foerder)	Dan Ben-David Michael B.Loewy	Free Trade and Long-Run Growth
33-96 (Sackler)	Dan Ben-David Robin L.Lumsdaine David H.Papell	Unit Roots, Postwar Slowdowns and Long-Run Growth: Evidence from Two Structural Breaks
34-96 (Foerder)	Yosi Hadar David Pines	Are Large Cities Too Large? A Contribution to the Debate
35-96 (Foerder)	Assaf Razin Efraim Sadka	Tax Burden and Migration: A Political Economy Perspective
36-96 (Sackler)	Alex Cukierman	The Economics of Central Banking
37-96 (Foerder)	Alex Cukierman	Targeting Monetary Aggregates and Inflation in Europe
38-96 (Foerder)	Assaf Razin Prakash Loungani Chi-Wa Yuen	Capital Mobility and the Output-Inflation Tradeoff
39-96 (Sackler)	Michele Piccione Ariel Rubinstein	The Absent Minded Driver's Paradox: Synthesis and Responses
40-96 (Foerder)	Bent E.Sørensen Oved Yosha	International Risk Sharing and European Monetary Unification
41-96 (Foerder)	Dan Ben-David David H.Papell	Structural Change and International Trade

---

Copies of the working papers or a complete working paper list of the two Institutes can be obtained from: Mrs.Stella Padeh, The Foerder Institute for Economic Research, Tel-Aviv University, Tel-Aviv, 69978 Israel. Fax: 972-3-640-9908. e-mail: foerder@econ.tau.ac.il

42-96 (Sackler)	Momi Dahan Daniel Tsiddon	Demographic Transition, Income Distribution, and Economic Growth
43-96 (Foerder)	Chaim Fershtman Uri Gneezy	Strategic Delegation: An Experiment
44-96 (Foerder)	Todd R.Kaplan David Wettstein	Cost Sharing: Efficiency and Implementation
45-96 (Sackler)	Bhaskar Chakravorti Yossef Spiegel	A Posnerian Model of Entry into Regulated Markets
1-97 (Foerder)	Michael Kaganovic Itzhak Zilcha	Education, Social Security and Growth
2-97 (Foerder)	David Pines	Specialization and Trade: The Perspective of Club and Local Public Good Theories
3-97 (Sackler)	Dan Ben-David Michael B.Loewy	Knowledge Dissemination, Capital Accumulation, Trade, and Endogenous Growth
4-97 (Foerder)	Martin J.Osborne Ariel Rubinstein	Games with Procedurally Rational Players
5-97 (Foerder)	Rafael Eldor Itzhak Zilcha	Firms Under Tax Asymmetry: Price Uncertainty and Hedging
6-97 (Sackler)	Robert M.Sauer	Educational Debt, Loan-Forgiveness and Adverse Selection in the Market for Lawyers
7-97 (Foerder)	Krzysztof Burdzy David M.Frankel Ady Pauzner	Fast Equilibrium Selection by Rational Players Living in a Changing World
8-97 (Foerder)	Krzysztof Burdzy David M.Frankel Ady Pauzner	On the Time and Direction of Stochastic Bifurcation
9-97 (Sackler)	Zvi Hercowitz	The "Embodiment" Controversy
10-97 (Foerder)	Aviad Heifetz Enrico Minelli	Informational Smallness in Rational Expectations Equilibria
11-97 (Foerder)	G.M.Milesi-Ferretti Assaf Razin	Current Account Deficits and Capital Flows in East Asia and Latin America: Are the Nineties Different from the Early Eighties?
12-97 (Sackler)	Assaf Razin Efraim Sadka Chi-Wa Yuen	A Pecking Order of Capital Inflows and International Tax Principles
13-97 (Foerder)	Assaf Razin Chi-Wa Yuen	Income Convergence Within an Economic Union: The Role of Factor Mobility and Coordination
14-97 (Foerder)	Omri Ben-Shahar	Should Products Liability be Based on Hindsight?
15-97 (Sackler)	M June Flanders	Left- and Right-Endogenous Money: A Tale of Two Books

16-97 (Foerder)	Bent E.Sorensen Oved Yosha	Federal Insurance of U.S. States: An Empirical Investigation
17-97 (Foerder)	Jacob Glazer Ariel Rubinstein	Debates and Decisions: On a Rationale of Argumentation Rules
18-97 (Sackler)	Hedva Ber Yishay Yafeh Oved Yosha	Conflict of Interest in Universal Banking: Evidence from the Post-Issue Performance of IPO Firms
19-97 (Foerder)	Yoram Weiss Chaim Fershtman	Social Status and Economic Performance: A Survey
20-97 (Foerder)	Assaf Razin Efraim Sadka	Globalization: Public Economics Policy Perspectives
21-97 (Sackler)	Neil Gandal Michael Kende Rafael Rob	The Dynamics of Technological Adoption in Hardware/Software Systems: The Case of Compact Disk Players
22-97 (Foerder)	Zvi Eckstein Pedro Mira Kenneth I.Wolpin	A Quantitative Analysis of Swedish Fertility Dynamics: 1751-1990
23-97 (Foerder)	Francesca Cornell Oved Yosha	Stage Financing and the Role of Convertible Debt
24-97 (Sackler)	Zvi Eckstein Kenneth I.Wolpin	Youth Employment and Academic Performance in High School
25-97 (Foerder)	G.M.Milesi-Ferretti Assaf Razin	Origins of Sharp Reductions in Current Account Deficits: An Empirical Analysis
26-97 (Foerder)	Ariel Rubinstein	Definable Preferences: An Example
27-97 (Sackler)	Arthur Fishman Rafael Rob	An Equilibrium Model of Firm Growth and Industry Dynamics
28-97 (Foerder)	Ariel Rubinstein Lin Zhou	Choice Problems with a "Reference" Point
29-97 (Foerder)	Chaim Fershtman Neil Gandal Sarit Markovich	Estimating the Effect of Tax Reform in Differentiated Product Oligopolistic Markets
30-97 (Sackler)	Alex Cukierman Mariano Tommasi	When Does it Take a Nixon to Go to China?
31-97 (Foerder)	Jean-Marie Viaene Itzhak Zilcha	Capital Markets Integration, Growth and Income Distribution: A Dynamic Analysis
32-97 (Foerder)	Assaf Razin Efraim Sadka Chi-Wa Yuen	Implications of the Home Bias: A Pecking Order of Capital Inflows and Corrective Taxation
33-97 (Sackler)	Assaf Razin Efraim Sadka Chi-Wa Yuen	Quantitative Implications of the Home Bias: Foreign Under-investment, Domestic Oversaving and Corrective Taxation