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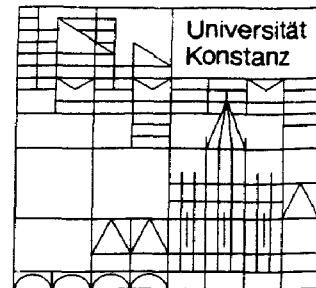
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Sonderforschungsbereich 178
„Internationalisierung der Wirtschaft“

Diskussionsbeiträge

Juristische
Fakultät

Fakultät für Wirtschafts-
wissenschaften und Statistik

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**Capital Exports
to Rising Eastern Europe—
Would Voters Go for It?**

**CAPITAL EXPORTS TO RISING EASTERN EUROPE -
WOULD VOTERS GO FOR IT?**

Günther G. Schulze*

Serie II - Nr. 177

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capital export? How would results be altered in that case? Would voters then vote for an export of (a part of) their jobs?

The paper addresses these questions, which have received surprisingly little attention in the ongoing discussion, in a two country version of the MacDougall-Kemp model of international capital movements (MacDougall 1960, Kemp 1964). This is due to the recognition that the countries of the dissolved Soviet bloc may offer a considerable potential for direct investment from abroad, provided economic reforms succeed. The new investment opportunities and the caused capital flow to the East would then drive up the rental rate on world capital markets. In other words: since savings are scarce on a world-wide basis and the Eastern economies' potential to absorb capital is sizable, the distribution of savings will influence the factor prices in the East *and* the West.

The criterion regarding the restriction of the capital flow is twofold. First, we start with the assumption that either individuals are identical with respect to their economic interests towards capital controls, or that sophisticated (and costless) compensation schemes are effectively implemented, so that losers make up for incurred losses through transfers from gainers. In both cases voters will vote for the restriction which maximizes the national product (and decide about the pareto improving distribution of the overall gain in a further stage). This concept yields the same results as the idea of a "benevolent dictator" who kindly maximizes the welfare of "the society as a whole".

Such a restriction on capital exports can be interpreted as a direct capital control or by means of effective marginal tax rates – a concept set forth in section 2.1. We distinguish between a situation in which factor markets are in equilibrium (section 2) and a situation characterized by a binding minimum wage constraint; in the latter case capital exports aggravate unemployment (section 3) – jobs are exported to the East!

As pointed out above, this "optimality" criterion rests upon very restrictive assumptions. If these presuppositions are not met, a conflict of interests arises between the differently endowed individuals. In our second approach we assume neither identical individuals nor do we follow the classical dichotomy of capital and labor. Instead, and more realistically for Western industrialized countries, we allow individuals to own different amounts of capital and labor. The recognition that

capital markets in the sense that the rental rate of capital would increase. Despite their huge need for foreign direct investment, however, the East European countries will not be able to absorb capital to a great extent at an unaltered rental rate on world markets. Structural rigidities and transitorial problems will add to the limited absorbing capacity. Thus, the two country setting seems appropriate for our problem.

The model runs as follows. Two large open economies produce one homogeneous good X called output, by means of two homogenous factors, capital (K) and labor (L). The superscript $*$ denotes the foreign country; the home country carries no superscript unless otherwise indicated. Both the production functions are assumed to be linear homogenous. The labor supply, denoted by \tilde{L} and \tilde{L}^* , respectively, is fixed. Output is produced under perfect competition so that factors will earn their marginal product. The price level is defined at unity.

The domestic economy is endowed with a constant stock of capital (\tilde{K}) which is allocated to production at home (K^h) and abroad (K^*); the foreign country produces with the imported and the fixed domestically owned capital stock (\tilde{K}^*):

$$\begin{aligned} X = F(K^h, L) \quad \text{and} \quad X^* = F^*(\tilde{K}^* + K^*, L^*) \\ \text{with} \quad \tilde{K} = K^h + K^*. \end{aligned} \quad (1)$$

Due to the properties of the production functions and perfect competition we have

$$r = F_K \quad , \quad \frac{\partial r}{\partial K} < 0 \quad \text{and} \quad r^* = F_K^* \quad \text{and} \quad \frac{\partial r^*}{\partial K^*} < 0 \quad (2)$$

with r (r^*) being the prevailing interest rate on the domestic (foreign) capital market.

Now consider a restriction on capital exports imposed by the exporting (i.e the home) country. Such a restriction could take a variety of forms; we confine the analysis to a discriminatory tax on dividends earned abroad that is applicable to residents at a rate t . But still this modelling captures many existing regulations concerning capital movements. For example capital export controls, which take the form of quantitative restrictions, are equivalent to a tax on earnings from capital invested abroad, provided that the licenses are auctioned. This equivalence holds since we

have assumed a competitive environment.⁴ Moreover, capital export neutrality does not hold if double taxation treaties do not provide a full tax credit for taxes paid abroad. In this case, exported capital is taxed more heavily than capital invested domestically – leading to a tax wedge driven between gross rental rates at home and abroad. An even stronger case can be made if no double taxation treaty exists or only tax deduction is granted.⁵ A more thorough institutional analysis would have to consider “*effective marginal tax rates*”, a concept which integrates corporate tax rates, different tax depreciation rules, investment grants on the corporate level, and personal taxes on income from capital (interest payments, dividends, capital gains) on the investors’ level in order to calculate the effective marginal tax burden on income from capital. This concept has been put forward by Bradford&Fullerton (1981), Auerbach (1983), King&Fullerton (1984), and others. Alworth (1988) and subsequently Crooks et al. (1989) have adopted this concept to the case of international capital movements, however, confining it to taxation on the corporate level. Schaden (1991) has healed this deficiency and extended the analysis considerably by including investors’ personal taxation and allowing for investors to reside in different countries.⁶ Such an analysis allows for effective tax rates to be changed much more frequently than mirrored by the variation of nominal corporate income tax rates. This is due to the fact that depreciation rules and investment subsidies (which affect the effective tax rate) are changed more often than the nominal tax rates.

In the interpretation of effective tax rates, t stands for the effective marginal tax rate *differential*, i.e. the difference between the effective marginal tax rate applying to investment abroad and at home. For the time being there are no comprehensive data available for the effective marginal tax rates regarding dividends and interest payments derived from investment in Eastern European countries.⁷

⁴For a discussion of the equivalence proposition (concerning tariffs and quotas) see Kindleberger (1958) and Bhagwati (1965, 1968).

⁵A full tax credit reduces the domestic tax liabilities by the full amount of tax paid in the source country (i.e. in our context the foreign country) resulting in an effective tax rate equal to the domestic tax rate. A tax deduction scheme reduces only the domestic tax base by the amount of taxes paid abroad thereby clearly causing double taxation.

⁶For further reference and data on the actual marginal effective tax rates see Schaden (1991) and the literature quoted there.

⁷However, information on double taxation treaties are provided by Diamond&Diamond (1975) and Diamond (1974).

Investment abroad is assumed perfectly substitutable to domestic investment, it does not bear any risk. Therefore, the allocation of capital depends solely on the rentals received in the home country and in the foreign country. Foreign capital earnings are repatriated. Investors will ensure via arbitrage that

$$r = (1 - t) r^*. \quad (3)$$

National income of the home country Y is then defined by:

$$Y = F(K^h, L) + r^* K^* = wL + r\tilde{K} + t r^* K^* \quad (4)$$

with $w = \partial F / \partial L$ being the wage rate and $t r^* K^* = T$ the tax revenue.

In the next section we study the effects of tightening the restrictions of capital exports on the national income.

2.2 Capital Export Restrictions and the National Income

Suppose t is increased exogeneously. The resulting decrease of capital exports affects both the amount of national income and its distribution. This is shown in figure 1.

The home country's origin is denoted by O and the downward sloping curve MPC depicts the marginal productivity of capital invested at home. Analogously, O^* denotes the foreign country's origin, MPC^* stands for the gross marginal product, and $MPC^*(1 - t_0)$ and $MPC^*(1 - t_1)$ for the net marginal product from investment in the foreign country before and after the tax increase ($t_0 < t_1$). The national capital inputs are measured from O to the right and from O^* to the left, respectively. The distance $\overline{O\tilde{K}}$ depicts the home country's fixed capital endowment that can be allocated to investment at home and abroad whereas $\overline{O^*\tilde{K}}$ depicts the capital stock owned by foreigners, i.e. \tilde{K}^* . If the tax t is raised from t_0 to t_1 the domestically owned foreign capital stock is reduced from FD to ED and the domestic rental rate of capital is depressed from OG to OA .

Home capital loses (represented by the rectangle $ACDG$) while domestic labor gains ($ABFG$); society's "net" change in tax revenue amounts to $-\alpha + \beta$. "(Home) society's loss" consists of $BCDF + \alpha - \beta$ which can be negative, i.e. "society as a whole" may well be better off after a tax increase.

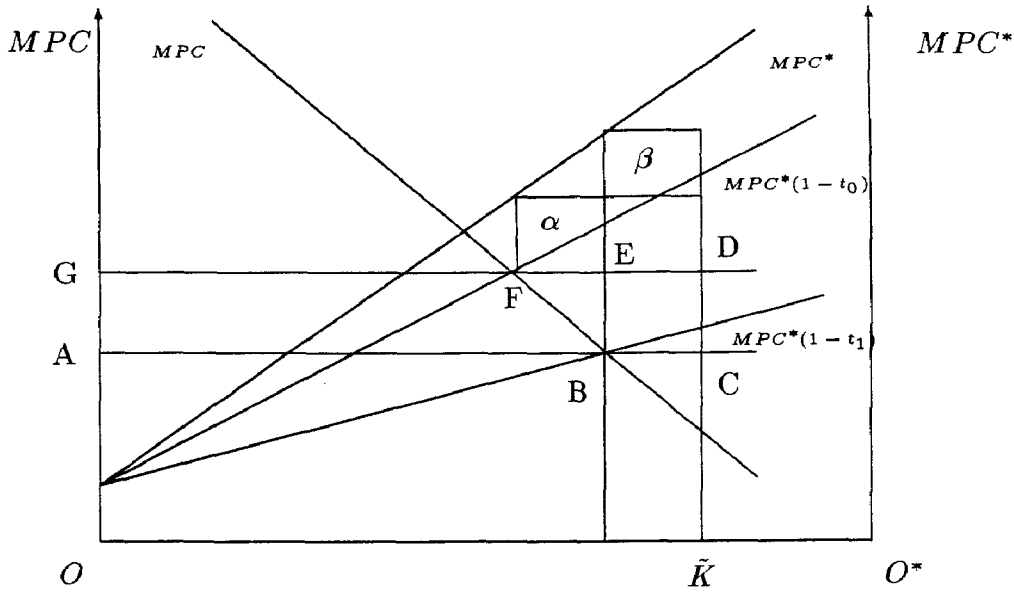


Fig.1: Capital export restrictions in a two country setting

We calculate the variation in national income due to a change in the tax rate by differentiating (4) with respect to t :

$$\begin{aligned} \frac{\partial Y}{\partial t} &= [-r^* t - \frac{\partial r^*}{\partial K^*} K^*] \frac{\partial K^h}{\partial t} \\ &= [-r^* \mu^* \xi^{*-1} - r^* t] \frac{\partial K^h}{\partial t}. \end{aligned} \quad (5)$$

with

$$\mu^* = \frac{K^*}{K^* + \bar{K}^*}; \quad \xi^{*-1} = \frac{\partial r^*}{\partial K^*} \frac{r^*}{\bar{K}^* + K^*} \quad (6)$$

The variable ξ^{*-1} stands for the elasticity of the foreign marginal product curve of capital, and μ^* denotes the proportion of capital stock that the foreign country has borrowed from the home country. A small open economy cannot affect the foreign rental rate of capital through its capital exports and thus $\xi^{*-1} = 0$; thereby making capital export restrictions unambiguously unprofitable (see eq. (7) below).

In contrast to a small open economy, we do not obtain clear-cut results: national income can move in either direction depending on the relative effects of misallocation and international redistribution.⁸

⁸The case of a small open economy is analyzed in Schulze (1992).

As seen from (5) and shown by Kemp (1964) there exists from an efficiency point of view an optimal tax t_{opt}^S on capital exports⁹ for the home country as a whole which amounts to

$$t_{opt}^S = -\xi^{*-1}\mu^* \quad . \quad (7)$$

The bigger the home country, i.e. the stronger the influence of domestically owned capital on the foreign country, the more restrictive is the home country's optimal policy. From the arbitrage condition (3) it is seen that

$$\frac{\partial K^h}{\partial t} = \frac{1}{1-t} \left[\frac{\xi^{*-1}}{\bar{K}^* + K^*} + \frac{\xi^{-1}}{K^h} \right]^{-1} = -\frac{\partial K^*}{\partial t} \quad . \quad (8)$$

which is evidently positive, since the term in brackets can also be expressed as $(\hat{r}^* - \hat{r})$ with “ $\hat{}$ ” indicating the relative change of the variables.

Thus, the variation of national income due to an alteration of the restriction of capital exports can be calculated as follows:

$$\frac{\partial Y}{\partial t} = \frac{1}{1-t} \frac{r^*(-\mu^*\xi^{*-1} - t)}{\frac{\xi^{*-1}}{\bar{K}^* + K^*} + \frac{\xi^{-1}}{K^h}} \quad (9)$$

As implied by eq. (7) the sign of the variation of the national income depends on the existing tax rate, the foreign production function and the relative amount of imported capital in the foreign country. The extent of the variation is additionally determined by the sum of the (foreign and the domestic) elasticities of the marginal product curves of capital divided by their respective capital stock.

From the viewpoint of a benevolent dictator¹⁰, if he were to exist, or the “society as a whole” (if this concept was regarded as realistic or at least meaningful) it would be optimal to restrict capital exports to the extent of t_{opt}^S given by eq. (7). This restriction would also be optimal for the members of the domestic society if individuals were egoistic rational utility maximizers as economic theory generally assumes and compensation between gainers and losers was feasible and was also adopted. However, if this assumption does not hold it is not clear what the outcome would be. This depends on individuals' different economic interest and the procedure

⁹Though Kemp (1964) does not analyze uniqueness of t_{opt}^S (note that $-\xi^{*-1}\mu^*$ is an implicit function of t) it is straightforward to show that at least for Cobb–Douglas functions t_{opt}^S is unique.

¹⁰It should be noted that the dictator is “benevolent” only with respect to his subjects – from a global perspective he is a chauvinistic creature.

to aggregate individuals' wills, i.e. the political system. We will take up this point later on when we analyze the process of majority voting; next we turn to the problem of unemployment triggered off by capital export.

3 Capital Export and Unemployment

When capital exits the domestic economy, labor becomes relatively more abundant, diminishing labor's marginal product. If prices are flexible, labor is paid a lower wage rate; however, if there exists an institutional "floor" value below which the wage rate is not allowed to fall, then capital export generates unemployment.¹¹

Assume an exogeneously given minimum wage rate \bar{w} . Perfect competition requires that unit cost $b(w, r)$ equals the commodity price.¹² This implies that every wage rate is associated with a unique rental rate of capital.

Consider a situation of domestic capital export such that the minimum wage rate \bar{w} (and the associated rental rate of capital \bar{r}) prevails exactly at the full employment level. Now t is reduced at the margin, leading to a further capital outflow. This is depicted in figure two.

The left hand panel shows the international capital allocation as known from figure one, whereas in the right hand panel the unit cost curve for the home country is depicted. A reduction of the tax rate from t_0 to t_1 turns the after-tax marginal product curve from $MPC^*(1 - t_0)$ upwards to $MPC^*(1 - t_1)$. With full flexibility of factor prices, capital would exit the country to the extent of $\bar{r}\bar{A} - r_1\bar{B}$ according to (8), the domestic rental rate of capital would increase by $r_1 - \bar{r}$ (see (3)),¹³ and the wage rate would be lowered accordingly from \bar{w} to w_1 . The equilibrium would be shifted from A to B.

With rigid prices in the domestic factor markets, all domestic adjustment is borne by factor movements alone (instead of variations in the quantity of domestically used

¹¹I am grateful to Arye Hillman who has drawn my attention to this point in his comment to a related paper of mine. See Hillman (1992).

¹²We have set the commodity price at unity.

¹³At the same time the foreign rental rate of capital would diminish due to the influx of capital. This could be shown graphically by depicting the gross rental rate of capital for the foreign country which lies unshifted above $MPC^*(1 - t_1)$.

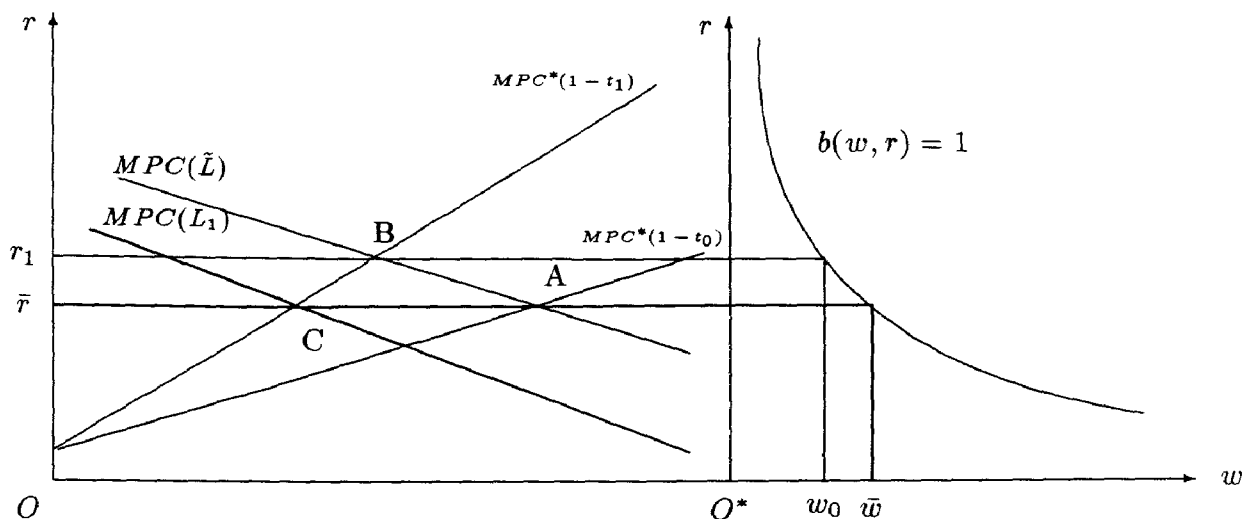


Fig. 2: Capital export and minimum wage constraint

capital *and* in factor prices). Capital will exit the country until the foreign net-of-tax rate of return has been depressed to \bar{r} , the domestic “maximum rental rate”. Graphically this is described by the intersection between $MPC^*(1 - t_1)$ and the horizontal line going through $r = \bar{r}$, i.e. point C in figure 2. In the course of the capital export unemployment is generated as the shadow price of labor falls short of the minimum wage ($w_1 < \bar{w}$). Labor is displaced to an extent such that its marginal product equals the minimum wage. With a linear homogenous production function this implies that at the boundary factor prices (\bar{w}, \bar{r}) the factor input ratio must be same for all employment levels. In figure two this is represented by a downward shift of the MPC curve so that the new marginal product curve of capital runs through point C.

We turn to the formal presentation of the argument made above. Starting from a situation of full employment at \bar{w}, \bar{r} we calculate the capital outflow resulting from marginal decrease of the tax rate t . From the total differential of (3) and the fact that $dr = 0$ follows

$$\frac{\partial K^*}{\partial t} = \frac{1}{1-t} (\tilde{K}^* + K^*) \xi^* . \quad (10)$$

Reformulating (10)

$$\frac{\partial K^h}{\partial t} = -\frac{1}{1-t} \left[\frac{\xi^{*-1}}{\tilde{K}^* + K^*} \right]^{-1} = -\frac{\partial K^*}{\partial t} \quad (11)$$

shows that the capital flow owing to a tax variation is higher in the case of a binding minimum wage restriction than if factor prices are flexible (cf. eq. (8)).

It is well known that for linear homogenous production functions factors' marginal products depend on the factor input ratio. Hence, for $w = \bar{w}$ the outflow of capital must be accompanied by a proportional reduction of employment to ensure a constant factor input ratio.

$$\begin{aligned} \frac{\partial L}{\partial t} &= \frac{L}{K^h} \frac{\partial K^h}{\partial t} \\ &= -\frac{L}{K^h} \frac{\partial K^*}{\partial t} \end{aligned} \quad (12)$$

In other words: capital export triggers off unemployment or aggravates this problem. Note that L stands for the actual employment; it equals \tilde{L} only if the shadow price of labor coincides with the minimum wage rate.

We assume that the individual has no a priori information about the distribution of the (reduced) labor and thus expects the average wage rate as the relevant magnitude. The expected wage rate $w^e = \bar{w} \frac{L}{\tilde{L}}$ and the wage bill ($\bar{w}L$) then change accordingly:

$$\frac{\partial w^e}{\partial t} = -\bar{w} \frac{1}{1-t} \frac{1}{K^h} \frac{L}{\tilde{L}} \xi^* (\tilde{K}^* + K^*) \quad (13)$$

$$= \frac{1}{\tilde{L}} \frac{\partial(\bar{w}L)}{\partial t} > 0 \quad \forall \xi^* \neq 0. \quad (14)$$

Clearly, labor will be worse off if the restriction on capital exports is lessened whereas capital remains unaffected since \bar{r} constitutes a ceiling on the rental rate of capital¹⁴; a reduction of the tax rate will eventually only affect the geographical distribution of domestic capital but not its net return.

But still we cannot exclude that national income is increased due to a positive factor terms of trade effect that more than offsets labor's loss. For this purpose we

¹⁴Capital may earn higher gross profits abroad, but capital will exit the home country until the arbitrage condition holds thereby equating the after-tax rates of return.

calculate the variation of national income due to a marginal change in the tax rate for $w = \bar{w}$ (and any level of employment $0 \leq L \leq \bar{L}$). National income is given by

$$Y = \bar{w}L + \bar{r}K^h + r^*K^* \quad (15)$$

and so is the first derivation of Y with respect to t :¹⁵

$$\begin{aligned} \frac{\partial Y}{\partial t} = & \underbrace{-\bar{w}\frac{L}{K^h}\xi^*\frac{1}{1-t}(K^* + K^*)}_{\text{employment effect} \geq 0} + \underbrace{tr^*\xi^*\frac{1}{1-t}(K^* + K^*)}_{\text{capital reallocation} \leq 0} + \\ & + \underbrace{\frac{1}{1-t}r^*K^*}_{\substack{\text{change in earnings} \\ \text{from existing FDI} \geq 0}} . \end{aligned}$$

Rearranged, this yields

$$\frac{\partial Y}{\partial t} = \left[\bar{w}\frac{L}{K^h} - tr^* - \mu^*\xi^{*-1}r^* \right] \frac{\partial K^h}{\partial t} . \quad (16)$$

Setting (16) equal to zero and solving for t yields the optimal tax on earnings from exported capital for the case of a binding minimum wage constraint as follows:

$$t_{optue}^S = \bar{w}\frac{L}{K^h}\frac{1}{r^*} - \mu^*\xi^{*-1} \quad (17)$$

Comparing (17) with (7) shows that the “socially optimal” degree of restricting capital exports is higher in the presence of unemployment than if labor is fully employed. This makes good intuitive sense, because in the former case a curbing of capital exports not only improves the terms of factor trade at the expense of capital misallocation, but also prevents a loss of employment and, thus, of output.

A priori it is not possible to determine whether t_{opt}^S from (7) or t_{optue}^S from (17) applies. That depends on the production functions and the minimum wage rate the latter of which in turn determines \bar{r} via the condition $b(w, r) = b(\bar{w}, \bar{r}) = 1$ (“unit costs equal price”). Eq. (17) applies if

$$\bar{r} < r^* + r^*\mu^*\xi^{*-1} . \quad (18)$$

So far we have shown that for a large open economy there exists an optimal restriction of capital exports. If factor prices are flexible, capital export benefits

¹⁵FDI stands for foreign direct investment, K^* .

capital whereas labor is worse off. If factor markets are rigid, capital exports lead to a proportional reduction of employment and the optimal restriction is tighter than in the case of full employment. Labor suffers from capital export while capital ultimately does not profit since the improvement in the factor terms of trade is siphoned off via the tax.

These results implicitly hinge on the assumption of a *benevolent dictator* who optimizes nation's welfare and takes care of the compensation of losers. However, it is a widely accepted tenet of the economic theory of politics that in reality there is no such thing as a "benevolent dictator" and that compensation of losers does not effectively take place. This implies that t_{opt}^S as a result of the maximization of national income (including the tax revenue), which ignores redistributive effects, can at best serve as a reference point; differences in individuals' preferences as well as the mechanism by which these preferences are aggregated become important. It is this we turn to in the next section.

4 Individual's Optimal Tax Rate

4.1 Individual's Factor Endowment and Political–Economic Interest

As we conclude from above, individual's economic interest towards restricting capital exports is determined by his or her factor ownership. Empirical evidence from Western countries demonstrates that the classical dichotomy of capitalists and workers does not portray reality adequately.¹⁶ We therefore remove this assumption by allowing individuals to own different amounts of capital and labor. The recognition that individuals own more than one factor of production but that they are endowed with capital and labor at individually differing ratios was first introduced by Mayer (1984) in a related context. Following his approach we assume that every individual of the home country owns a positive amount of labor L^i and a nonnegative amount of capital K^i . Furthermore we assume that tax proceeds are redistributed such that an individual i 's share of tax revenue T^i equals his or her income share from factor ownership Ψ^i , i.e.

$$T^i = \Psi^i T \tag{19}$$

¹⁶Cf. Magee (1980).

which can be rewritten by help of (7) as

$$t_{opt}^i = t_{opt}^S + Y \frac{L}{[w\tilde{L} + r\tilde{K}](w + rk^i)} \frac{(w'r - r'w)}{r^* \partial K^h / \partial t} (k - k^i). \quad (26)$$

This equation demonstrates that individuals will almost always find it profitable to deviate from the “socially optimal” policy pursued by the phantom of an absolute ruler acting in the well-being of the nation (and mercyfully redistributing from the gainers to the losers of his glorious deeds). They will agree to such a policy if and only if their factor ownership ratio coincides by chance with the economy’s capital–labor ratio. If an individual is *relatively* well endowed with capital¹⁹ she or he will favor a less restrictive policy or even a policy supporting capital exports, i.e. a negative tax rate t_{opt}^i .²⁰ Individuals with less capital relative to their labor endowment than the economy’s figure will be in favor of capital export restrictions that still exceed t_{opt}^S . Presumably this group will constitute a majority in at least most of the Western countries. We will elaborate this point further after having analyzed individuals’ optimal tax rate when the minimum wage constraint is binding.

4.3 Optimal Tax and Unemployment

Again, individual’s optimal tax rate is calculated from (21), which is differentiated with respect to t :

$$t_{optue}^i = \left[Y \frac{\partial \Psi^i}{\partial t} \frac{1}{\Psi^i} \frac{1}{r^*} \frac{1}{\partial K^h / \partial t} \right] - \mu^* \xi^{*-1} + \bar{w} \frac{L}{K^h} \frac{1}{r^*} \quad (27)$$

As in the case of full employment, the individually optimal tax rate is linked to the “socially optimal” tax rate in the following way:

$$t_{optue}^i = t_{optue}^S + Y \frac{1}{\Psi^i} \frac{1}{r^*} \frac{1}{\partial K^h / \partial t} \frac{\partial \Psi^i}{\partial t} \quad (28)$$

The direction of the deviation from this reference point t_{optue}^S is given by the sign of $\partial \Psi / \partial t$. This is calculated next.

¹⁹It is not the absolute endowments but the factor endowment *ratio* that matters.

²⁰In reality such subsidization of capital exports can take a variety of forms (in part not covered by this model): tax exemptions of the parent company for the profits of its foreign subsidiary, loss carryforwards, tax holidays applying to foreign activities, and the like. Moreover, governments can provide guaranties for risks connected to the foreign direct investment.

In case of unemployment we have to heed that in (20) w has to be interpreted as $w^e = \bar{w}L/\bar{L}^{21}$ and that factor prices are fixed. Equation (20) can thus be written as

$$\Psi^i = \frac{w^e L^i + \bar{r}K^i}{\bar{w}L + \bar{r}\bar{K}} \quad (29)$$

Again, Ψ^i is a net-of-tax concept and has now to be interpreted as *expected* factor income share. Totally differentiating (29) with respect to t and considering (13) yields

$$\frac{\partial \Psi^i}{\partial t} = \frac{L^i L}{[\bar{w}L + \bar{r}\bar{K}]^2 K^h} \bar{r}\bar{w} \frac{\partial K^h}{\partial t} \{k - k^i\}, \quad (30)$$

and hence

$$\text{sign} \left(\frac{\partial \Psi^i}{\partial t} \right) = \text{sign}(k - k^i).$$

This result is evident: capital cannot increase its after-tax earnings by lessening the restrictions on capital exports, and labor will be worse off thanks to increased unemployment. Since tax proceeds are redistributed to individuals according to their income share from factor ownership; a person relatively scarcely endowed with capital, $k^i < k$, will encounter a decline in his share due to a reduction of the tax rate. A person relatively well endowed with capital will experience an increase of his part of the tax proceed, which may still increase his income even if the absolute amount of tax proceed is falling; hence, $t_{optue}^i < t_{optue}^S$ cannot be excluded a priori.

$$t_{optue}^i = t_{optue}^S + \frac{YLL^i\bar{r}\bar{w}}{[\bar{r}\bar{K} + \bar{w}L](w^e L^i + \bar{r}K^i)K^h r^*} (k - k^i) \quad (31)$$

To sum up, in the case of a binding minimum wage constraint, the optimal degree of curbing capital outflow from an efficiency point of view is tighter than if full employment prevails and so is the individually optimal restriction. This latter restriction differs from the former reference point of a nation's product maximizing restraint depending on the relative factor endowment ratio. Those well endowed with capital per unit labor (relative to the capital-labor endowment ratio of the whole economy) favor a less restrictive policy, whereas the opposite applies to persons relatively poorly endowed with capital.

²¹One could argue that an individual knows whether he or she is employed and thus earns $\bar{w}L^i$ or he or she earns nothing. At this stage of the analysis, however, we are concerned with a fictitious situation optimal for an individual i who does not know who will be laid off. The veil of uncertainty and the assumption of risk-neutrality justify the above formulation.

What policy towards capital export would be pursued if voters with different economic, and hence political, interest would be allowed to vote on it? We investigate this next.

5 Voting on Capital Export Restrictions

We start with the presumption that no redistribution effectively takes place (for example because it is too costly) and ask: "What would be the outcome if individuals' wills were aggregated such that everybody was considered in the same manner?" If individuals of a society or a country are regarded as separate individual utility maximizers and *not* merged together in the desire to support what is regarded as the "wealth of the nation"; in other words if the behavioral assumption of microeconomic theory is consequently extended to the analysis of national policy and individual political behavior, the concept of a benevolent dictator becomes obsolete. The political system which aggregates individuals' preferences into a "social preference order" becomes decisive. We investigate a situation in which the policy eventually adopted is totally demand-determined by a majority voting process. As Condorcet (1785) has shown and Arrow (1951, rev.ed. 1963) has further elaborated, majority voting in general may lead to inconsistencies in the form of cyclical results. However, it will be shown that in our context individuals' preferences are single peaked; also the issue which is voted on is unidimensional and thus majority voting produces a consistent social preference order (cf. Black (1948) for a proof).

We do not think of majority voting actually taking place. The reservations concerning the explanatory and predictive power of the median voter theorem for the political process are well known and need not be mentioned here.²² For this fictitious voting, we assume that individuals are aware of their (economic) self-interest and act according to it. This assumption corresponds to the rationality postulate of behavior set forth by traditional economic theory.

We show how individual's economic interest is related to the interests of others. This analysis follows the line of arguments set out by Mayer (1984). Consider an

²²For a discussion of the median voter theorem see inter alia Rowley (1984), Holcombe (1989), Mueller(1989), and Struthers&Young (1989).

individual i who votes on the variation of an *existing* tax that is optimal for a factor endowment ratio k^j . In other words the existing tax rate $t = t_{opt}^j$ according to (23) if the minimum wage falls short of the actual wage rate, else $t = t_{optue}^j$ (cf. eq. (27)).

In the case of full employment we substitute (5) and (24) into (22). Subsequently, t_{opt}^j of eq. (23) is substituted for t and after some standard transformation we obtain

$$\frac{\partial y^i}{\partial t} = Y L^i L^j \frac{(rw' - wr')}{[r\tilde{K} + w\tilde{L}](wL^j + rK^j)} (k^j - k^i). \quad (32)$$

Save for $(k^j - k^i)$ all terms are necessarily positive so that

$$\text{sign} \left(\frac{\partial y^i}{\partial t} \Big|_{t=t_{opt}^j} \right) = \text{sign}(k^j - k^i)$$

This implies that every individual i will favor a tax increase as long as the existing tax falls short of his or her optimal tax (i.e. $k^j < k^i$) and will support a reduction of the tax in force if $t > t_{optue}^i$ or, stated differently, his or her relative capital endowment exceeds the one for which the prevailing tax is optimal ($k^i > k^j$). Individual's preferences are single-peaked with respect to the tax on earnings from exported capital.

This basic result continues to be valid if unemployment prevails. From (16), (22), and (30) and the substitution of t_{optue}^j from eq. (31) for t , it is calculated:

$$\frac{\partial y^i}{\partial t} = Y \frac{L}{K^h} L^i L^j \frac{\bar{r}\bar{w}(\bar{r}k + w^e)}{[\bar{w}L + \bar{r}\tilde{K}]^2(w^eL^j + \bar{r}K^j)} \frac{\partial K^h}{\partial t} (k^j - k^i). \quad (33)$$

This means in turn that individuals can be arranged along an axis depicting the (individually optimal) tax rate according to their capital-labor endowment ratio. They will favor all tax changes that shift the existing tax rate towards their optimal tax. This is shown for one individual i in figure three.

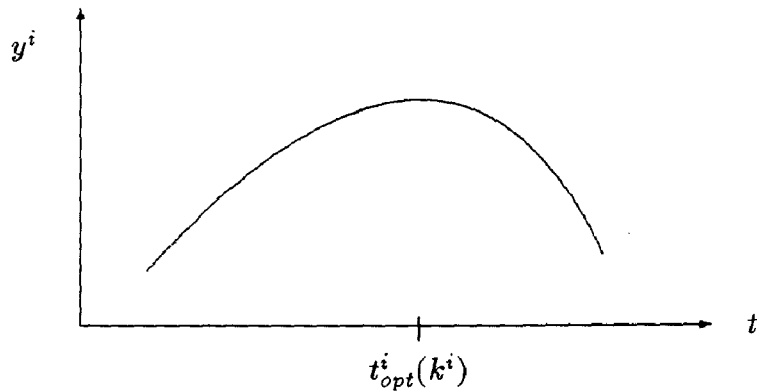


Fig.3: Economic interest and relative factor endowment

As follows from Black (1948), a repeated majority voting process on the tax rate will eventually come to a standstill at the tax rate which is optimal for the median voter. This has two implications: first, “society’s optimal tax policy” will only coincidentally be adopted, if the median voter’s capital–labor ratio equals the figure for the economy. Second, if this fictitious aggregation procedure was to serve as a criteria for optimality of a national policy then the optimal restriction was even tighter than Kemp (1964) has demonstrated – provided that factor ownership distribution was skewed to the right.²³ This is typically so for Western industrialized economies.

An unrestricted capital outflow would not be backed by the voters – neither in the traditional sense of a benevolent dictator, i.e. assuming nondistorting costless compensation schemes between gainers and losers, nor if compensation schemes are ill–designed or nonexistent and egoistical utility maximizing voters with different economic interests were to vote on a policy towards capital exports.

6 Concluding Remarks

In this paper we have addressed the question whether voters in the West would vote to restrict capital exports to the East, and if so to what extent. In a two country framework of the MacDougall–Kemp model of capital allocation, we have shown that voters would *not* vote for an unrestricted capital outflow out of their country,

²³That means that the median voter’s factor ownership ratio $k^m < k$.

even if they were assumed to further what could be called “the nation’s welfare” (this parallels the concept of a benevolent dictator maximizing national income).

Furthermore, we have demonstrated that capital export may lead to unemployment and a loss of output in the exporting country if a minimum wage constraint comes into effect. Nevertheless, it may still be optimal (in the traditional sense) to encounter a loss in employment and production to some extent – depending on the level of the minimum wage because of a positive factor terms of trade effect.

If we drop the assumption that losers can effectively be compensated by the gainers, and assume further that individuals are differently endowed with factors of production, a conflict of interest and, hence, a distributional problem arises. Individual preferences are found to depend on the factor endowment *ratio*: An individual whose capital–labor endowment ratio exceeds the figure for the economy will prefer less–than–optimal curbing of capital outflow, whereas the opposite applies to persons poorly endowed with capital.

In accordance with Mayer (1984) we show that the median voter’s optimal policy would be adopted if voters were allowed to vote on the capital export issue and that they would be perfectly informed and cast their vote in their self–interest. This implies that capital would not be allowed to exit the country unrestrictedly and that the restriction would presumably be tighter than in the traditional understanding of a benevolent dictator.

Some qualifying remarks, however, seem to be appropriate. First, voters may find it in their self–interest to prop up Eastern European countries by giving their leave to capital outflows in order to stabilize the economies in question and to contribute to the safeguarding of the transformation process. Such strategic considerations (“incur losses now to avoid higher costs in the future”) are not included in the paper. Second, voters could, and hopefully will, from an ethical standpoint reach a different conclusion which is more “open-minded” towards those living in the Eastern countries of Europe. Also, this philanthropic attitude is not captured by the paper.

This notwithstanding, the aim of the paper was to show how individuals’ incomes are affected by capital exiting their countries, and how policy would be designed, if self–interested voters were allowed to determine it thereby drawing attention to a point which up to now has been disregarded in the current discussion on Eastern Europe’s transition.

A Survey of Double Taxation Treaties with Eastern European Countries

by Michael Redford

The political changes occurring in Eastern Europe have led to amendments and alterations of existing double taxation treaties (DTT) with the goal of promoting investment. Because these revisions are in some cases ongoing, it is difficult to keep track of the newest developments. The following tables give an overview of the tax treaties existing to date, and were generated from information in "Foreign Tax and Trade Briefs: International Withholding Tax Treaty Guide. The treaties are usually country specific, that is they are agreements between two sovereign states, and valid only for the parties involved. There is, however, a general trend in the DTTs with Eastern European countries: they are based on the OECD Draft Convention for the Avoidance of Double Taxation, naturally with some special provisions.²⁴ The tables show five Eastern European countries – Bulgaria, the CSFR, Hungary, Poland, Romania²⁵ – and the taxes (if any) that are levied on dividends, royalties, rentals and interest. It is generally assumed that the recipient of the interest conducts business in the country through a permanent establishment. In the first column, dividends are those taxed in the state where they occur, when the company is the resident of said country. The reader is referred to the following sources for further, current information on DTTs: "Guides to European Taxation, (Volume 5) – Taxation in European Socialist Countries" (despite the "dated" name a valuable source of information) and "Tax News Service". The former is a good source for general information and listings of existing tax treaties; the latter is a bi-weekly publication on international taxation and provides the latest news on tax treaty developments.

As the tables show, a withholding tax on dividends is the most common withholding tax, although not a provision of all treaties, and the taxation of interest derived from bank interest is less prevalent. In both cases the tax percentage is restricted to levels laid down in the particular treaty. Hungary presents an interesting case: as the first of the Eastern Block countries to start reforms, it has had longer to begin integrating its economy in the world markets. This is in part reflected by the larger relative number of treaties existing between Hungary and other nations²⁶. The fact that Hungary's withholding taxes are either low

²⁴for a comparison of the OECD Model for income tax see "1963 and 1977 OECD Model Income Tax Treaties and Commentaries, Kuluwer Law and Taxation: Holland, 1987

²⁵We exclude the CIS states as well as the states within the territory of the former Yugoslavian Republic: since the situation is in a state of continuous change it is impossible to make any clear statements .

²⁶cf. Taxation in Eastern European Socialist Countries

or zero, makes it an attractive investment possibility, at least according to the information presented in the table.

What the tables do not show is an overall picture of how investment taxation in Eastern European countries compares to taxation in Western Europe, the true intricacies of the treaties themselves, or the absolute tax advantage, if any, of investment in Eastern Europe. But it does show that these countries now offer a new market for investment, and tax treaties alone are not the sole decision maker: They do not exclusively determine the overall tax liabilities which a potential investor will have to face. For example, all grant a tax-holiday of varying length (2 to 5 years is the norm) with qualifications – generally for joint venture investments in “priority industries”.²⁷

To assess a foreign investor’s tax burden it is of course necessary to know how the Western countries regard the withholding taxes of the Eastern European countries, i.e. are tax credits, tax deductions, or tax exemptions given, or is there full taxation. Therefore, the treatment of foreign income by the Western countries that are listed in the tables will be sketched below. Then the withholding taxes levied by 5 East European source countries as laid down in the DTTs are given.²⁸

Austria

Resident corporations are taxed on their worldwide income; in order to prevent double taxation foreign tax credits are granted, although DTTs general exempt all foreign subsidiaries from paying taxes in Austria. Dividend income from foreign subsidiaries is taxed in the same way as Austrian companies, except that intercompany dividends are not tax exempt.

Belgium

Resident corporations are taxed on their worldwide income (although not consolidated with the income of subsidiaries), 90% of net foreign dividends received by a Belgian corporation (85% for holding companies) is treated as definitively taxed income not subject to corporate income tax. This applies only for permanent participation, and only when the dividends are not taxed under a tax regime that is considerably more advantageous. There are further stipulations concerning when, and under what conditions the tax credit is not granted. Income from foreign branches is taxable in Belgium, but at a reduced rate;

²⁷see “International Tax Summaries,” (Coopers and Lybrand Tax Network) New York, 1990

²⁸taken from “Corporate Taxes: A Worldwide Summary” Price Waterhouse World Firm Ltd, New York. 1991

however, for countries with which Belgium has a DTT, foreign branches are exempt from Belgian corporate income tax.

Canada

Corporations with their residency in Canada are subject to federal income taxes on worldwide income. Double taxation is avoided through the granting of tax credits for foreign taxes paid on non-Canadian source income.

France

Profits from activities outside of France are not subject to taxation, until they are actually due to French corporations. Resident corporations are only taxed on their French source income. Undistributed income from foreign branches is not taxed until it is distributed. When this occurs, double taxation is avoided either by participation exemption (for dividends) or (for other income) by the granting of a tax credit at least equal to the withholding tax paid in the foreign country. However, there is no tax credit for income stemming from a nontax treaty country; in that case a tax deduction is granted.

Germany

Unless a DTT specifies otherwise (provides for exemption), income received by a German corporation from foreign sources is included in taxable income for the purpose of determining the tax on corporation profits. Double taxation for corporation profits tax is avoided through a tax credit, or through the deduction of the foreign taxes as an expense; the decision is left to the taxpayer. Distributed profits are taxed at a 36 % imputation tax which can be credited completely against resident's personal tax liabilities or, on application, be partly refunded to a nonresident. This applies also to (actual or deemed) redistribution of tax exempt foreign source income. Undistributed income is usually not taxed, but certain anti-avoidance rules apply, e.g. for subsidiaries in low-tax countries in certain business arenas.

Italy

Regardless if the income arises from abroad or not, it is taxable. Unless a DTT stipulates otherwise, a tax credit is granted for tax paid in a foreign country. There are no regulations concerning the unremitted income of a subsidiary.

Japan

Worldwide income is subject to Japanese corporate income tax, however Japanese corporations are permitted to claim a tax credit. Foreign branch income is exempt from an

enterprise tax. Under certain conditions, undistributed profit from a subsidiary in a low-tax country is included in the Japanese parent company's taxable income, although a foreign tax credit is available.

Luxembourg

Whether derived from Luxembourg or not, a Luxembourg company is subject to income tax on its worldwide income. If income from a foreign branch is not exempted from Luxembourg corporation tax, a tax credit is granted to the extent that the tax paid is similar to the tax in Luxembourg. Taxes paid over and above those in Luxembourg can be deducted as expenses. Losses stemming from activities in nontreaty countries can be carried forward and set off against Luxembourg corporation taxes in the future; in case of a DTT the losses are general deductible from future profits abroad.

Netherlands

A Dutch resident company is subject to corporate tax on its worldwide income. Double taxation of certain foreign source income, including foreign branch income, is relieved by proportionally reducing Dutch tax by the ratio of foreign income to total income. Double taxation of dividends interest and royalties is relieved by tax credit, or if no treaty applies then by a deduction of foreign taxes paid in computing net income.

Switzerland

Basically, resident companies are taxed on their worldwide income: income from foreign branches are exempt, but are considered when the tax rate is determined. Dividends and interest from both Swiss or foreign sources are included in assessable income – dividends are de facto exempt from tax, or are taxed at greatly reduced rates. The irrecoverable portion of foreign taxes paid can be credited against payment of Swiss tax. Undistributed income of foreign subsidiaries is not taxed.

United Kingdom

UK companies are taxed on their worldwide income. Dividends are generally taxed when received. There are provisions whereby double taxation is avoided by means of foreign tax credits or by deducting the foreign tax against income. A portion of undistributed profits may be taxed under certain conditions.

USA

A U.S. corporation is generally taxed on worldwide income, including foreign branch income as earned and foreign dividends when received. Foreign tax credits are granted to offset double taxation, or a deduction may be claimed for actual foreign taxes paid. Certain types of undistributed income will be taxed, according to the rules set town in subpart F of the tax codes, which states what types of undistributed income are subject to taxation. For example: dividends, interest, royalties, rents and other forms of passive income, shipping income, and oil-related income.

In the following 5 tables, the withholding tax rates are shown at which each of the five selected East European countries taxes income derived in its country, according to the country in which the foreign firm resides. This is broken down into the five major sources of income: dividends, royalties, rentals, as well as bank and non-bank interest payments.

Table A.1: Bulgaria

Country	Dividends	Royalties	Rentals	Interest (non-bank)	Interest (bank)
Austria	none	none	none	none	10%
Belgium	10%	5%	5%	10%	none
Canada ^a	25%	25%	25%	25%	none
France	15%	5%	5%	25%	25%
Germany	15%	5%	5%	none	none
Italy	15%	10%	10%	10%	10%
Japan ^b	10%	15%	15%	10%	10%
Luxembourg	15%	25%	none	5%	none
Netherlands ^b	15%	none	none	none	none
Switzerland	35%	none	none	35%	35%
UK	10%	none	none	none	none
USA ^a	30%	30%	30%	30%	none

Source: International Withholding Tax Treaty Guide

^ano treay exists, values are for all countries without treaty

^bsigned but not in force

Table A.2: CSFR

Country	Dividends	Royalties	Rentals	Interest (non-bank)	Interest (bank)
Austria	10%	5%	5%	none	10%
Belgium	15%	5%	5%	10%	none
Canada ^a	15%	10%	10%	10%	none
France	10%	5%	5%	none	none
Germany	15%	5%	5%	none	none
Italy	15%	5%	5%	15%	25%
Japan	15%	10%	10%	10%	10%
Luxembourg ^b	15%	12%	none	5%	none
Netherlands	none	none	none	none	none
Switzerland	35%	none	none	35%	35%
UK	15%	none	none	none	none
USA ^b	30%	30%	30%	30%	none

Source: International Withholding Tax Treaty Guide

^asigned but not in force

^bno treaty exists, values are for all non-treaty countries

Table A3: Hungary

Country	Dividends	Royalties	Rentals	Interest (non-bank)	Interest (bank)
Austria	10%	none	none	none	10%
Belgium	10%	none	none	15%	none
Canada ^a	25%	25%	25%	25%	none
France	15%	none	none	25%	none
Germany	15%	none	none	none	none
Italy	10%	none	none	none	none
Japan	10%	10%	10%	10%	10%
Luxembourg	15%	none	none	none	none
Netherlands	15%	none	none	none	none
Switzerland	10%	none	none	none	none
UK	15%	none	none	none	none
USA	15%	none	none	none	none

Source: International Withholding Tax Treaty Guide

^ano treaty exists, values are for all non-treaty countries

Table A4: Poland

Country	Dividends	Royalties	Rentals	Interest (non-bank)	Interest (bank)
Austria	10%	none	none	none	none
Belgium	10%	10%	10%	10%	none
Canada	15%	10%	10%	15%	none
France	10%	10%	10%	10%	none
Germany	15%	none	none	10%	none
Italy	10%	10%	10%	10%	10%
Japan	10%	10%	10%	10%	10%
Luxembourg ^a	15%	12%	none	5%	none
Netherlands	15%	none	none	none	none
Switzerland	35%	none	none	35%	35%
UK	15%	10%	10%	none	none
USA	15%	10%	10%	15%	none

Source: International Withholding Tax Treaty Guide

^ano treaty exists, values are for all non-treaty countries

Table A5: Romania

Country	Dividends	Royalties	Rentals	Interest (non-bank)	Interest (bank)
Austria	15%	20%	20%	none	10%
Belgium	10%	10%	10%	15%	none
Canada	15%	15%	15%	15%	none
France	10%	10%	10%	10%	none
Germany	25%	none	none	10%	none
Italy	10%	10%	10%	10%	10%
Japan	10%	15%	15%	10%	10%
Luxembourg ^a	15%	12%	none	5%	none
Netherlands	15%	none	none	none	none
Switzerland	35%	none	none	35%	35%
UK	15%	10%	10%	10%	10%
USA ^a	10%	15%	15%	10%	none

Source: International Withholding Tax Treaty Guide

^ano treaty exists, values are for all non-treaty countries

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factor endowments vary across individuals was first introduced into the literature on public choice by Mayer (1984), who analyzed the endogenous formation of tariffs in a Heckscher-Ohlin and a specific factors model via a majority voting process. We adjust his model to our problem and thus derive the individually optimal restriction for fully employed labor as well as for a partly unemployed labor force (section 4). It turns out that this individually optimal policy depends on the individual factor endowment *ratio* and thus the problem of aggregating individual preferences occurs if compensation schemes do not exist.

Subsequently in section 5, it is analyzed how perfectly informed and self-interested voters would vote on capital export restrictions and what the final outcome of (repeated) majority voting would be. This is done for the case of full employment as well as for the situation of a binding minimum wage constraint; results are compared with each other and with the “benevolent dictator” outcomes, which serve as a reference point. It is shown that due to the single-peakedness of individuals’ preferences (which prevent cycling, see below), it is the median voter’s optimal restriction which is finally adopted. Most presumably, the “optimal” policy derived by a majority voting process turns out to be even more restrictive than those maximizing national income. A summary of the results and some concluding remarks are offered in a short sixth section.

2 Capital Exports in a Two-Country Model

2.1 The Model

We consider capital exports to Eastern Europe in a two country framework because we regard the former member countries of the CMEA³ as potentially offering important investment opportunities in the future – provided economic reforms do not fail. The investment flow into the East, triggered off by consequent economic reforms to safeguard the property rights of foreign investors, could then affect world

³Full members of the Council of Mutual Economic Assistance comprised at the end of 1990: Bulgaria, CSFR, Cuba, Hungary, Mongolia, Poland, Rumania, USSR, Vietnam. It was dissolved on June 28, 1991. The Soviet Union has disintegrated on December 25, 1991 when the presidents of Russia, Belarus and the Ukraine agreed to dissolve the central power and to form a “Commonwealth of Independent States”; Soviet President Mikhail Gorbachev’s resignation took effect on December 31, 1991.

Abstract

The paper addresses the question whether voters would favor a restriction on capital exports to the East, and if so, to what extent. In a two country framework, it is shown that an unrestricted capital outflow is *not* optimal, in the traditional sense of a social welfare maximizing benevolent dictator. Furthermore, capital export may lead to unemployment and a loss of output in the exporting country if a minimum wage constraint comes into effect. Nevertheless, it may still be optimal to encounter a certain loss in employment and production because of a positive factor terms of trade effect.

The preferences of individuals who are differently endowed with capital and labor depend on their endowment ratio: E.g., an individual whose capital-labor endowment ratio exceeds the figure for the economy will prefer less-than-optimal curbing of capital outflow. If the policy concerning capital exports is decided upon via majority voting, it is the median voter's optimal policy that is finally adopted. This implies that the restriction on capital exports would presumably be tighter than in the traditional understanding of a benevolent dictator.

1 Introduction

The iron curtain has parted, setting the stage for political and economic change in Eastern Europe. Since the socialist governments have been toppled in all major former satellite states of the Soviet Union and the Soviet Union itself has ceased to exist as of December 25, 1991, the consensus has been growing that those centrally planned economies shall be transformed into market economies. Together with reforms of the price system, privatization and the gradual development of money and capital markets, rules governing foreign direct investment have been liberalized in all major East European economies. A transformation of the institutional framework, yet at a slow pace, convertibility of the currencies and other measures leading to improved property rights have already triggered off a flow of investment from the West into Eastern economies in transition. For example, Hungary has tripeld its accumulated investment from abroad within 1990 to US \$1.53bn. Though the absolute amount is not yet particularly impressive, the trend is sharply upwards; the government's medium term target is to raise foreign capital's share of the company sector from about 4% to 25 %.¹ If the reforms continue and the transformation becomes increasingly successfull, then chances are that huge investments will be channeled into the new market economies. The need for a foreign financed reconstruction of these desolate economies is obvious, and if the investor's requirements of an appropriate legal, institutional and infrastructural framework, together with ensured property rights, are increasingly met, there is good reason to believe that investors will find it profitable to invest in these new markets.²

This paper differs from many other current articles by taking the perspective of the *capital sending country* and inquires whether it is at all in society's interest to let capital exit the country unrestrictedly. What are the repercussions of the capital outflow for the capital exporting country? Would voters vote for sanctions on capital exports, and if so, how tight would the optimal restriction be? Moreover, could Western economies encounter a loss of employment and output thanks to the

¹Cf. Nicholas Denton, "Hungary takes the lead on foreign investment", Financial Times, May 14, 1991, p.2.

²For a detailed discussion of the reform process, *viz.* its sequencing, see Blanchard et al. (1991), Calvo & Frenkel (1991), Fischer & Gelb (1991): The authors agree that foreign investment on a large scale will take place only after the reforms have taken hold.