

Siebert, Horst

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## The paradigm of locational competition

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# The Paradigm of Locational Competition

by Horst Siebert

## Contents

- Locational competition is geographic competition, competition between places, between cities, between regions, and between countries. These spatial units compete with each other for the mobile production factors in factor markets, i.e., for mobile capital, for mobile technical know-how, and for mobile highly qualified labor.
- Countries compete with their taxes, their infrastructure and their institutional setups. Mobile capital can leave a country when conditions there become unfavorable, for example, when taxes are raised. Taxation drives capital out of the country, whereas infrastructure attracts capital. Obviously, there is a trade-off between these two effects.
- In addition to tax competition and competition in providing public goods (infrastructure competition), there is also competition between institutional rules, i.e., between product standards, permitting procedures, or other legal regulations (institutional competition).
- The exit option of capital redefines the opportunity costs of taking economic policy measures and thus also redefines policymakers' cost-benefit calculus. Policymakers' decision-making scope is reduced because the tax base in a country shrinks when real capital emigrates. In addition, when real capital emigrates, labor productivity drops, which reduces income and job opportunities and diminishes the tax base.
- Locational competition impacts heavily on the position of unions because expansionary wage policies, i.e., increases in wage rates that go beyond employment-neutral productivity increases, cause capital to emigrate. This amplifies the effect of such policies on employment. As a result unions' power wanes, which can be seen in the drop in membership.
- The fear that there will be an unlimited race to the bottom is unfounded. There are numerous ways, even given international competition, of ensuring that infrastructure is provided without causing capital to emigrate.
- The discussion about the race to the bottom has obscured the fact that locational competition, like product competition, is a discovery process in the sense of Hayek, a means of reducing costs and finding new solutions. This is why the institutional competition in the EU, which was brought about by the Cassis de Dijon verdict of the European Court of Justice when establishing the country-of-origin ruling, has become a national regulations can opener. Locational competition puts interest groups under pressure, thus constraining rent-seeking. It also tames governments.
- Locational competition will have its impact on national economic policies. Governments will be forced to look at international benchmarks for their own policies. This holds for stabilization policy, for tax policy, for infrastructure policy, and it also begins to apply to social policy. Economic policies undertaken by the major European governments can be explained with the concept of locational competition.

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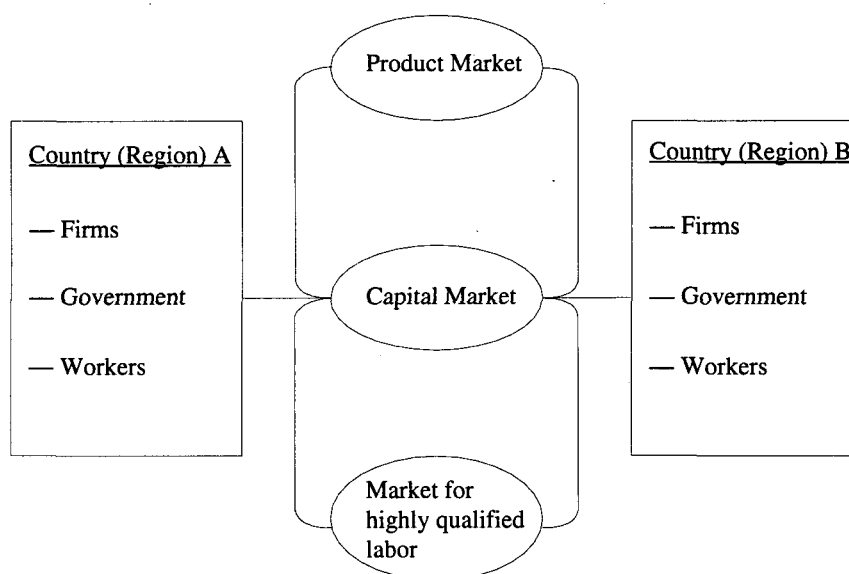
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# I. The Concept of Locational Competition

## 1. Definition

Locational competition is geographic competition, competition between places, between cities, between regions, and between countries. It takes place at three levels: (1) firms compete against each other in product markets; (2) territories and countries compete with each other for mobile production factors in factor markets, i.e., for mobile capital, for mobile technical know-how, and for mobile highly qualified labor; (3) immobile production factors, e.g., primarily less-qualified immobile labor, compete with each other via complex international linkages (Figure 1).

Figure 1: Three Levels of International Competition



Firms can increase their profits if they can sell their products well internationally. Governments can maximize the utility of their citizens, or their own utility, by attracting mobile production factors or by keeping them in their own countries, because, when mobile production factors come and stay, opportunities for the production factor “immobile labor” to increase its income are greater. This increases a government’s chances of being reelected. Workers also attempt to maximize their own utility, whereby the elements of their utility function are the level of their income and the extent to which their jobs are secure.

These three levels of locational competition—competition between firms, between countries, and between workers—are not independent of one another. Whether firms are competitive depends on the economic framework the governments provide for firms. Whether it is worth investing capital in a country depends on the economic framework within which firms operate. Whether income opportunities for workers exist depends on how much capital is invested in a country. The greater the amount of capital invested, the higher the marginal productivity of labor. Further, the marginal productivity of labor also depends on technical know-how. And the competitiveness of workers changes in relation to the competitiveness of the firms they work in because the demand for workers is a derived demand. In addition, one has to take into account that firms may be active internationally. A firm in country A can relocate to country B, it can be active in both countries, or it can merge with the firm in country B (by means of direct investment).

In this paper, I use the concept of locational competition broadly, since I consider these three levels of competition to be interdependent. Traditional foreign trade theory and the new foreign trade theory focus on only one of these levels, namely competition between firms and the implications à la Heckscher–Ohlin that this competition has on the income of production factors and thus also on the production factor “labor.” In contrast to this narrow concept, locational competition in the wider sense deals more with competition between countries. Consider a country (or a region). Some of the production factors in this country (or region) will be internationally (interregionally) immobile. Labor, if one disregards highly qualified labor, is thus tied to the country (or region) for a number of reasons. Competition between countries (or between regions) results from the fact that the immobile production factors in a given country have to try to attract mobile production factors to that country in order to increase their income opportunities to the greatest extent possible. Locational competition is thus competition between immobile production factors for mobile production factors.

The term “competitiveness,” which is traditionally applied to individual firms or sectors, is applied in this paper to countries, i.e., to their ability to attract and keep mobile production factors. Krugman’s (1994) statement that “The idea that a country’s economic fortunes are largely determined by its success on world markets ... is flatly wrong. That is, it is simply not the case that the world’s leading nations are to any important degree in economic competition with each other ...” is flatly wrong as concerns competition for mobile production factors, but this is not the only statement he has made that is flatly wrong.

## 2. Locational Competition Mechanisms

Locational competition can take place via numerous mechanisms, all of which have in common that they create interdependencies between countries, be it via the mobility of real capital and new technical know-how, be it via the exchange of goods, be it via the emigration (immigration) of labor, or be it via a pure demonstration effect.

### *Mobility of Real Capital*

Mobile real capital can choose where it goes; it has an exit option. However, it cannot adjust immediately to changes in economic conditions. When it has been installed somewhere, it is like fired clay in that its shape can no longer be changed; it has to be physically transported somewhere else. Technically, it is thus *ex post* largely immobile. However, *ex ante* it can be shaped like clay. The mobility of capital is an *ex ante* mobility; it becomes mobile when the decision is made to invest it somewhere. This is basically the case as concerns new investments, but it is also the case with replacement investments when installed equipment is written off and the capital thus freed up is no longer used in the same place, but rather elsewhere.

As predicted by the Feldstein–Horioka hypothesis (1980), domestic investments are usually financed by domestic savings. Thus, capital markets are segmented as far as real capital is concerned, and capital markets have only one function: to mitigate bottlenecks (Siebert 1999b). However, recent empirical studies have shown that this segmentation has become less, i.e., that world capital markets have become more important (S. Sinn 1992a; Siebert and Klodt 1999). Thus, direct investments have increased faster than world trade (Siebert 1999b: Figure 1.6). Further, foreign direct investments (FDI), which can, as was the case in Hungary in 1995, amount to up to 10 percent of GDP, are extremely important for individual countries; they provide the capital for a large number of investments (Table A1). In addition to FDI, portfolio investments are important, especially when they are long-term investments. Even when capital flows in any particular period do not appear to be important, in the long term they can bring about substantial changes in capital accumulations. Often, only marginal changes are needed to trigger substantial processes. Capital mobility can thus be an important force.

### *Mobility of Portfolio Capital*

In addition to real capital, portfolio capital constitutes an important means of interaction. Portfolio capital can be reinvested quickly. The volume of financial transactions amounts to about 2 billion dollars daily; commodity trade transactions amount to about 6 billion dollars annually. Thus, exchange rates are determined to a great extent in the short term by portfolio switching, even when double counting due to hedging is taken into account. When financial market actors lose faith in the stability policy pursued by a particular country, they switch to other currencies. The devaluation that this brings about signals voters what financial markets think about the economic policies of their governments. Nowadays, financial markets are, via currency competition, an instrument with which to determine the solidity of the stability policies of individual governments.

### *Exchange of Goods*

Locational competition is, however, not engendered exclusively by the mobility of production factors, it is also engendered by the exchange of goods. Factor migration and goods movements can be substitutive to some extent. Whatever causes production factors to cross borders can also be the consequence of goods movements. In principle, locational competition could even function if the production factors “capital” and “technical know-how” were completely immobile, as locational competition would then take place via goods movements. Assume that a country drastically raises its taxes, for example, its taxes on capital, or that it tightens its regulation of goods and factor markets. Then, the competitiveness of exporting firms will suffer, they will lose their comparative advantage, they will export less, and eventually other countries will become more competitive in these markets. Thus, the country with high taxes or dense regulation will suffer from the consequences of its policies. In the long term, it is thus less desirable to accumulate capital in the export sectors and in the area of import substitutes. In the end the country will have a small capital stock, not because of capital emigration, but because of weak capital formation in the area of tradable goods. We can assume that this control mechanism which results from goods movements takes considerably more time and thus is not as noticeable as is the case with capital mobility.<sup>1</sup> It takes time for it to become evident that a comparative advantage has been lost.<sup>2</sup>

### *Migration*

The migration of people is also an important mechanism. By migrating, people are “voting with their feet” (Tiebout 1956) and thus signaling their governments that they are losing citizens. Generally, governments want to prevent emigration. Thus, if they do not want to resort to forbidding emigration and walling in their citizens, they have to change their policies. The exit option that citizens have constitutes a means of regulating government policymaking.

### *The Demonstration Effect*

The demonstration effect also constitutes a locational competition mechanism that is not to be underestimated. When people see that things are done differently elsewhere, this illustrates benchmarking in the sense of Mark Twain’s statement “There is nothing so annoying as a good example.” The demonstration effect played a crucial role in the conflict between the centrally planned communist systems in Eastern Europe and the Western World.

---

<sup>1</sup> The effects of the tax increase or the tighter regulations on capital formation are attenuated by a devaluation of the currency.

<sup>2</sup> The nontradable goods sector is also affected because taxation of the production factor “capital” affects capital formation in this sector in closed economies as well. Capital taxation can be interpreted as follows: the net marginal productivity of capital, *ceteris paribus*, diminishes, and thus (assuming there is no capital mobility) so do savings. The comparative advantage with respect to capital-intensively produced goods then shrinks relative to labor-intensive goods.

## II. Competition Using Taxes, Public Goods, and Institutional Rules

Locational competition involves acquired comparative advantages and acquired site attractiveness rather than the given comparative advantages defined by endowment with natural resources. It depends crucially on how much real capital has been accumulated, which technologies have been realized, how workers are trained or educated (how good their human capital is), and how well designed the infrastructures are. All these factors can be developed; not overnight, but over 10, 20, or 30 years, they can be actively influenced via the educational system and investments in, inter alia, transportation and communications systems.

What kind of instruments can governments use to attract or keep mobile production factors? They can attempt to make their countries an attractive location for firms. However, this generally engenders opportunity costs. The best example of this is the provision of public goods: their provision has a positive effect on economic activity, but financing them increases the tax burden. Thus, the provision of public goods has to be balanced against the burden of financing them. Providing excellent infrastructure does not ensure the attractiveness of a country if it causes the taxes on mobile factors to be too high. On the other hand, a country in which firms are not taxed or are only minimally taxed can still be unattractive for mobile factors if it has poor infrastructure. Thus, governments are faced with conflicting objectives, which necessitates cost-benefit analyses, or in other words, optimization strategies. The situation as regards the regulatory framework is analogous.

### 1. Competition Using Taxes and Infrastructure

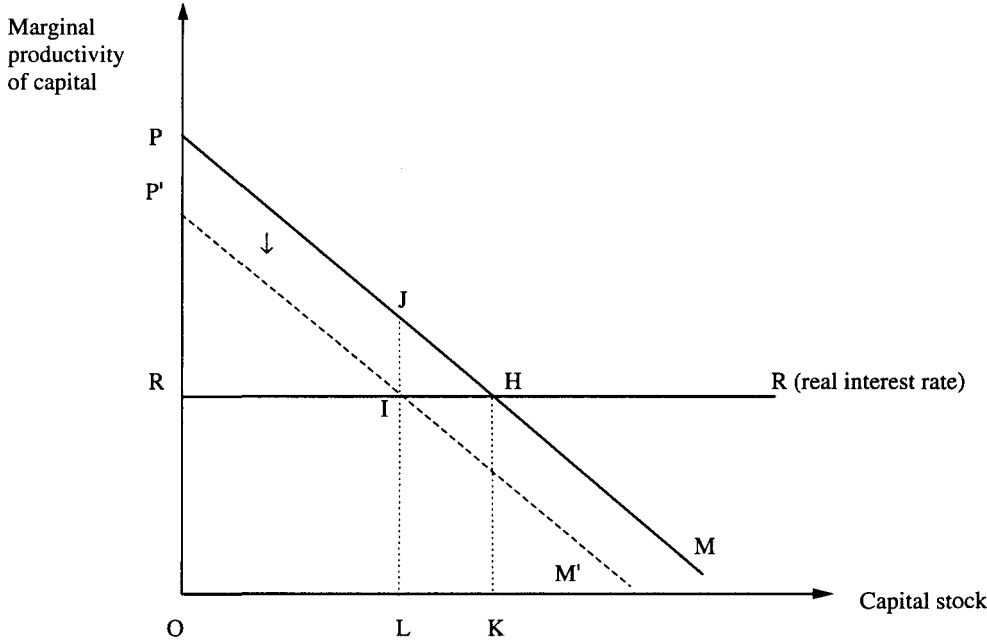
Mobile capital can leave a country when conditions there become unfavorable, for example, when taxes are raised. Let us look at a simplified problem structure of an investment decision made by a firm wishing to maximize its profits.<sup>3</sup> A tax with a tax rate of  $t$  per unit of capital is levied, for example, a capital tax. The capital investment is profit-optimal when the marginal productivity of capital,  $F_K$ , is equal to the real interest rate,  $r/p$ , and the tax per unit of capital in real terms,  $t/p$ , i.e., when  $F_K = r/p + t/p$ . In Figure 2,  $RR$  is the real interest rate, which is determined by the world market, i.e., we are assuming that the country involved is a small country.  $PM$  is the marginal productivity of capital. Before the tax is levied, capital amounting to  $OK$  is accumulated.  $ORHK$  is the capital income and  $OPHK$  is the gross national product.  $RPH$  is the income of the factor "labor." If a tax is levied per unit of capital, then the marginal productivity of capital is reduced and the net marginal productivity of capital shifts downwards,  $P'M'$ . In this new equilibrium,  $I$ , less capital is invested, and capital,  $LK$ , flows out of the country. The gross domestic product is less than it was before. The gross national product also includes the capital income  $LIHK$ , which has been earned abroad; it is lower by  $IJH$ . The country that levies the tax is thus the loser.<sup>4</sup>

<sup>3</sup> Profits are defined as price,  $p$ , times quantity,  $Q$ , minus costs, whereby the costs are, as usual, the costs of capital (the real interest rate as the price for capital times the amount of capital utilized) and labor (wages times hours worked). In maximizing its profit, the firm takes into account the tax,  $G = pQ - lA - rk - tk$ , and the constraint that its output is limited by the production function  $Q = F(A, K)$ . Using the Lagrange function  $L = pQ - lA - (r + t)K - \lambda [Q - F(A, K)]$  and solving for the derivative of  $Q$  yields the optimality condition,  $p - \lambda = 0$ . Then, solving for the derivative of  $K$  yields  $F_K(\cdot) = (r + t)/p$ .

<sup>4</sup>  $IJH$  in Figure 2 is the efficiency loss caused by a tax increase (the deadweight loss). One should note that the country that loses capital as result of productivity-induced capital migration (i.e., when there is no tax) benefits from the migration because it can earn greater capital income abroad (Siebert 1999b: Figure 3.5). The increase in capital income is greater than the wage income losses.

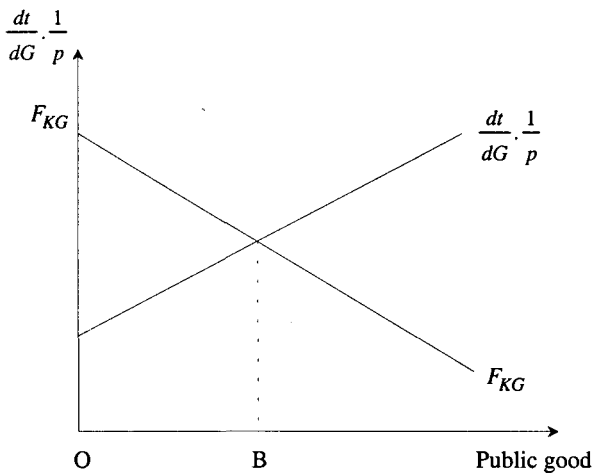
In Figure 2, the effect of the tax is depicted as an isolated effect. This, however, does not take account of the effects of providing infrastructure,  $G$ . When infrastructure provision increases the marginal productivity of capital, the marginal productivity of capital curve,  $PM$ , shifts upwards, whereupon there is an incentive to accumulate more private capital domestically.<sup>5</sup>

Figure 2: The Effect of a Capital Tax



<sup>5</sup> One may wonder whether, on the whole, infrastructure provision and taxes attract capital or drive it away. If one looks at the production function for individual firms,  $Q = F(A, K, G)$ , where  $G$  denotes a public good, then maximum profit (for individual firms) is achieved at the point where the effect of  $G$  on the marginal productivity of capital,  $F_{KG}$ , is equal to the tax increase,  $t$ , per additional unit of public good. This follows from

$$F_K = \frac{r}{p} + \frac{t}{p} \text{ and } \frac{dK}{dG} = -\frac{F_{KG} - \frac{dt}{dG} \cdot \frac{1}{p}}{F_{KK}} \begin{matrix} \leq 0 \\ > 0 \end{matrix} \text{ for } F_{KG} \begin{matrix} \leq \\ > \end{matrix} \frac{dt}{dG} \cdot \frac{1}{p}.$$



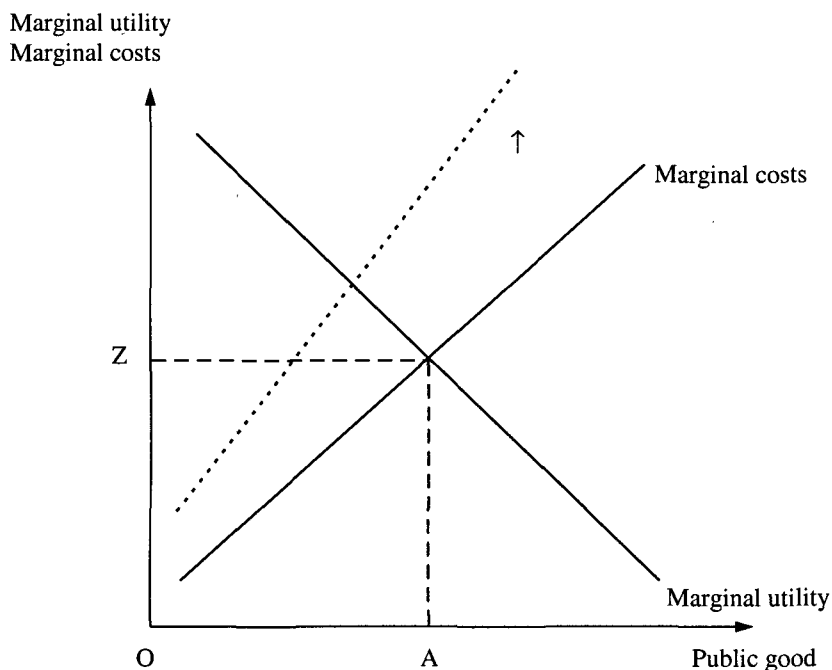
## 2. The Optimal Provision of Infrastructure

In locational competition there are thus two opposing effects. Taxation limits capital accumulation by driving capital out of the country, whereas infrastructure attracts capital. Obviously, there is a trade-off between these two effects. Figure 3 shows the marginal utility and marginal costs of a public good such as infrastructure,  $G$ , from a macroeconomic point of view. The positive effects of infrastructure, i.e., its marginal utility, is, for simplicity, taken to be the same as the marginal productivity of infrastructure for firms,<sup>6</sup> whereby the infrastructure is explicitly taken account of in the production function, and thus  $Q = F(A, K, G)$ . Thus defined, marginal utility decreases proportionately to the amount of infrastructure provided. On the other hand, the greater the amount of infrastructure that the country provides, the higher the marginal costs of providing infrastructure generally are. From a macroeconomic point of view, the provision of infrastructure is optimal at the point in time (place), when (where) the marginal productivity of the infrastructure,  $G$ , corresponds to the real marginal costs of the infrastructure,  $C'(G)/p$ :

$$F_G = C'(G)/p. \quad (1)$$

The social utility of infrastructure can no longer be increased by increasing the infrastructure by another unit, since the costs of an additional unit would exceed its utility.

Figure 3: Marginal Utility and Marginal Costs of Infrastructure



## 3. Effects on the Tax Base

Let us now do some mental gymnastics and switch from dealing with a closed economy to an open economy, i.e., from an economy without capital mobility to an economy with capital mobility. Now,

<sup>6</sup> This corresponds to  $F_{KG}$  in footnote 5.

the marginal costs of providing infrastructure can cause capital to leave the country, depending on whether the marginal tax burden resulting from the provision of infrastructure is greater than its effect on the marginal productivity of capital. That is, the marginal costs curve in an open economy shifts upwards from where it was in the closed economy because the additional macroeconomic costs of a loss of government objective, i.e., of the government's not being able to keep the capital in the country, must also be taken into account. This means that there is no capital income which can be used as a tax base, i.e., when capital leaves the country, its tax revenues decline. In addition, the outflow of capital has undesirable effects on labor productivity: the productivity of immobile labor drops and thus wages also drop, and this, in turn, diminishes the tax base again.

The effect of capital outflows on the tax base can be demonstrated, for example, by considering the case in which infrastructure is financed exclusively by levying a capital tax. When capital flows out of the country because of this tax,<sup>7</sup> the diminished tax base, as a loss of government objective, has to be factored into Equation 1 ( $t$  is the tax rate per unit of capital;  $dK/dt < 0$  is the capital outflow caused by using a tax to finance infrastructure).<sup>8</sup>

If  $h_{Kt} = \frac{dK}{dt} \cdot \frac{t}{K} < 0$  is the elasticity of capital with respect to the tax base, then the optimal provision of infrastructure is

$$F_G(G) = \frac{C'(G)}{p(1 + h_{Kt})}. \quad (2)$$

The marginal benefit,  $F_G$ , thus equals the adjusted marginal costs,  $[C'(G)/p(1 + h_{Kt})]$ . If the capital stock is diminished because of the higher tax rate, then the adjusted marginal costs in an open economy are, all conditions being equal, higher than they are in a closed economy. Thus capital mobility can induce the government of the country to change its cost-benefit calculus. If the government finances infrastructure exclusively with a capital tax, then it will provide less infrastructure when capital is driven out of the country.<sup>9</sup>

<sup>7</sup> Capital emigrates when net marginal productivity declines as a result of a tax increase, i.e., when  $d\{p \cdot F_K(K, L, G) - t\} / dt < 0$ . Because of government budget restrictions,  $C(G) = t \cdot K$ , a relationship obtains between the infrastructure provided,  $G$ , and tax revenues,  $tK$ , namely  $G = C^{-1}(t \cdot K)$ . The optimal tax rate when capital is mobile is when profits are maximized while taking account of tax revenue,  $tK$ , and the costs of capital ( $r$  denotes the world interest rate, which, for the sake of simplicity, is assumed to be constant):

$$p \cdot F\{K(t), L, C^{-1}[t \cdot K(t)]\} - t \cdot K(t) - r \cdot K(t).$$

This yields the first-order condition

$$[p \cdot F_K - t - r] \frac{dK}{dt} + \frac{p \cdot F_G [K + t \cdot dK/dt]}{C'(G)} - K = 0.$$

The first summand when the capital market is in equilibrium is 0. Thus,

$$F_G \frac{C'(G) \cdot K}{p \cdot [K + t \cdot dK/dt]}.$$

Canceling  $K$ 's on the right-hand side of the equation yields Equation 2.

<sup>8</sup> When governments take particular account of immobile factor income in pursuing a given objective, for example, when they attempt to ensure the highest income possible for immobile factors because they want to be reelected, they may suffer loss of objective if immobile factor income is lower.

<sup>9</sup> Capital can also emigrate when another country is naturally endowed with better infrastructure (e.g., waterways) and can thus offer its infrastructure at lower marginal costs. In this case, capital flows bring about greater allocation efficiency. The countries that provide capital also benefit, as their capital income increases.

#### 4. Other Policy Areas

A similar line of argumentation can be applied to other government activities. For example, if the government provides basic technological knowledge, the marginal productivity curve in Figure 2 shifts upwards. But technological knowledge does not fall like manna from heaven, it has to be generated by conducting basic research. The government has to finance this somehow, for example, by using taxes, and, as result, the curve shifts downwards again. Thus, the provision of basic technological knowledge increases marginal benefit, but also incurs marginal costs (as shown in Figure 3). It is provided efficiently when the marginal benefit and the marginal costs are equal.

Environmental policy is another example of how government measures influence the marginal productivity of capital. If, in the simplest of cases, an environmental tax is charged per unit of capital (which would not provide necessary pollution prevention incentives and would thus not be a useful measure), or if other business taxes are charged, the marginal productivity curve shifts downwards (see Figure 2). The improvement in environmental quality made possible by the proceeds from such a tax does not directly benefit mobile capital. There is no strict equivalence between marginal benefit and taxation in this case. Nonetheless, there are indirect benefits, for example, when a firm is interested in improving living conditions (i.e., environmental quality) for its employees.

#### 5. Institutional Competition

In addition to tax competition and competition in providing public goods (infrastructure competition), there is also competition between institutional rules, i.e., between product standards, permitting procedures, or other legal regulations. In this case, we talk of institutional competition. As Coase (1960: 17) points out: "The government is, in a sense, a super firm (but a very special kind) since it is able to influence the use of factors of production by administrative decision." Countries have, in the course of their history, developed their own institutional rules, for example, their own legal systems, and these rules can affect economic activity in various ways, for example, by inhibiting growth or reducing employment. Thus the way things are done (have to be done) in a particular country is the object of close international scrutiny. Some ways withstand the scrutiny; others have to be changed.

The best example of institutional competition is the Cassis de Dijon case. The product in question, which is very popular in France, was allowed to be imported to Germany but not to be sold there, because the German Alcohol Monopoly Law of 1922 stipulated that fruit liqueurs must have an alcohol content of 32 percent, and not 17 percent, as is the case with Cassis de Dijon. Why this is stipulated is irrelevant here. In 1979 the European Court decided that when a product is legally marketable in one EU country, it is then also legally marketable in all other EU countries. This was a landmark decision in that it established the country-of-origin principle. As a result, Belgian beer, even if does not comply with German purity standards of 1517, pasta that is not made of Italian semolina, and financial and insurance services can all be exported by every EU country to every other EU country. It suffices that the products and services comply with standards in the EU countries where they originate.

A result of the country-of-origin principle is that it creates institutional competition. In Europe and throughout the world, institutional competition takes place, in the sense of benchmarking, via the demonstration effect mentioned earlier when people wonder what other people are doing, when they wonder whether the aim of a particular institutional arrangement can be achieved better by using a different arrangement.

The alternative to the country-of-origin principle,<sup>10</sup> according to which the institutional arrangements in the exporting country are recognized in the importing country, is the country-of-destination principle, according to which the institutional arrangements in the destination country determine the standards that imported products must comply with. In international trade the latter principle can pose considerable problems: if every country that imports products could determine how a product should or should not be made, this could lead to a immense number of trade barriers. Comparative advantages can be engendered by production processes themselves. Further, the country-of-destination principle involves the danger that product standards can be misused for protectionist purposes. Thus, the world trade order is based, as far as possible, on the country-of-origin principle, as using this principle allows trade without trade barriers.<sup>11</sup>

## **6. Competition between Major Cities**

Major cities, such as the major cities in the EU, use various measures to compete for highly qualified labor, especially in the bank sector, the insurance sector, legal services sector, and the accounting sector. These measures also relate to such factors as a city's cultural offerings, its being a pleasant place to live, and its having low personal income tax rates. Low income tax rates attract young professionals. Major cities also have well-developed informal information networks which provide highly qualified workers with attractive career opportunities.

## **7. Complex Conflicting Aims in Welfare States**

In reality, conflicting aims in welfare states are more complex than in the case with corporate taxes. The trade-off as concerns these aims is as follows: profits and personal income are taxed in order to pursue income redistribution aims as well as to finance public goods. This, however, weakens the dynamic forces of the economy, lowering the growth rate and thus affecting employment. A further trade-off is that financing the extension of the welfare state and improvement of social services impacts on the demand for work and on worker motivation (Siebert 1998a; 1999c).

## **8. The Formal Model Approach**

Formally, locational competition can be modeled as a strategic game played by national governments or national groups (such as labor unions) (Lorz 1997). In this game, governments attempt to maximize their utility. In pursuing a strategy, however, they have to take into account the constraint that capital can flow out of their countries, i.e., emigrate, in response to their choice of economic policy instruments. This, in turn, impacts negatively on production, and employment drops. Unions, like governments, also attempt to maximize their utility or the utility of their members, which can also cause capital to emigrate. This model approach can, for the sake of simplicity, assume that capital flows out

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<sup>10</sup> Use of the country-of-origin principle worldwide would be more difficult. Even in the EU, Article 20 of the EC Treaty (Treaty of Amsterdam) provides for exceptions: if a product poses health risks, then the country-of-destination principle may be applied.

<sup>11</sup> An example of this is the Mexican tuna case. The United States banned Mexican tuna because Mexican fishers used tuna fishing methods that killed dolphins (Siebert 1999b). The United States argued that it was banning Mexican tuna imports in order to protect animals. If the country of destination could apply its standards even to production or fishing methods in the country of origin, this would bring world trade to a screeching halt. Thus, in 1991 the GATT dispute panel ruled that the United States had to recognize country-of-origin standards, i.e., had to allow tuna that had been caught using Mexican fishing methods to be imported.

of a small country and that other countries do not, as one would expect, react. It can also assume, however, that other countries react by using policy instruments, so that possible capital outflow constraints as well as the possible reactions of other countries must be taken account of in the approach.

### III. The Effects of Locational Competition

What effects does locational competition have? How does it affect firms, workers, and governments?

#### 1. Greater Scope for Firms—Stronger Competition

As a result of greater mobility of capital and of globalization of product markets, firms have greater scope to do business internationally. Globalization provides them with additional action parameters in goods and factor markets, because, by shrinking economic distances, by integrating new economies into the international division of labor, and by liberalizing financial and telecommunications markets, it allows them to become more active internationally and to raise capital by being listed on international stock markets.

##### *Product Competition Strategies*

Firms have to react to such changes and to do so within the framework of locational competition. When the competition in goods markets increases, they have to attempt to maintain and improve their competitiveness. When markets expand as a result of locational competition and globalization, they have to attempt to increase sales of their products in these new markets.

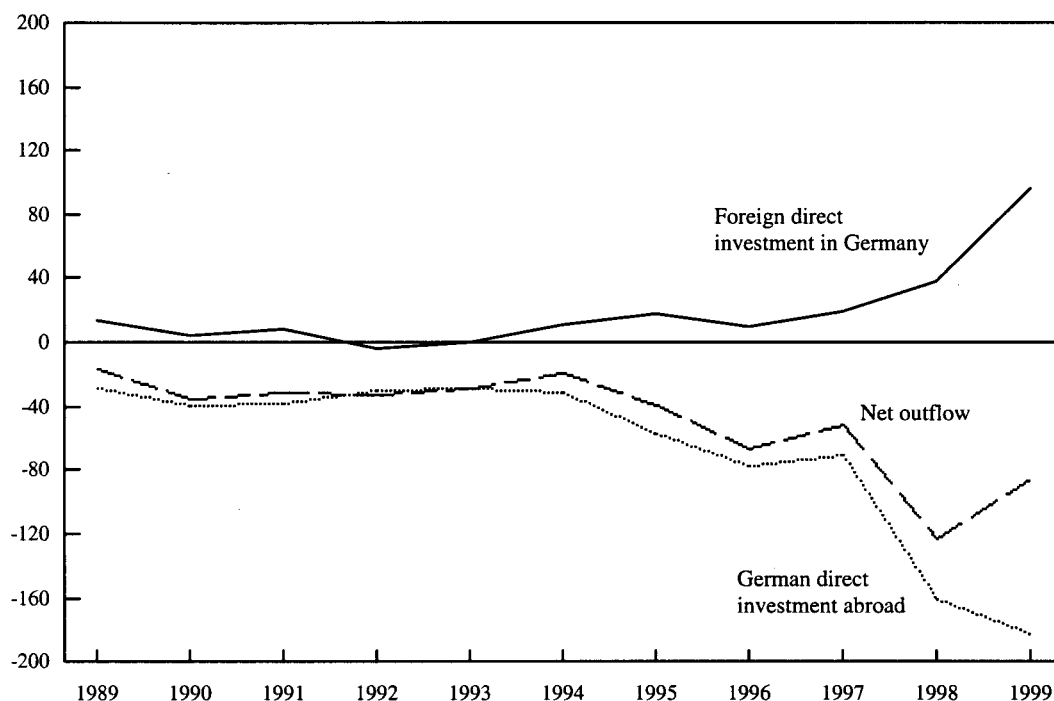
Firms in Germany in the 1990s initially reacted by pursuing a cost reduction strategy, which freed up labor. This is, however, not enough. In the long term, market shares can only be kept and gained by pursuing an innovation strategy, and especially by marketing new products. Just such a strategy is the strategy that firms have been pursuing since the mid-1990s. The R&D investments of German firms have increased since the recession of 1993. Measuring the R&D intensity as the ratio as gross domestic expenditures for R&D in percent of gross value added, the German economy experienced a reduction from 2.6 percent in 1989 to below 2 percent in 1994 (after an increase from 2.2 to 2.6 in 1981–1987); until 1998 the intensity increased slightly to 2 percent. In the UK, the intensity declined from 2.1 percent (1981) to 1.6 in 1997. France raised its intensity from 1.6 percent (1981) to 2.0 in 1993, and then experienced a decline to 1.8 in 1997. The R&D intensity of the US economy moved between 2.0 and 2.4 percent, Japan increased its intensity from 1.6 to 2.4 percent in the period 1981–1990, and then moved between 2.4 and 2.0 percent. The largest increase was observed for Sweden and Finland, namely from 2.3 and 0.9 percent in 1981 to 4.4 and 2.7 percent, respectively in 1997 (Bundesministerium für Bildung und Forschung 2000). In Germany, about 66 percent of R&D investments are spent on developing new products, 15 percent on new processes, and 10 percent on product/process improvement (Stifterverband 1998). R&D intensity is higher in large industrial firms than in small and medium-size firms.

##### *Spatial Optimization*

One important way in which firms can react is to optimize production, including doing so through the choice of production sites. Nowadays, firms have a larger number of choices, since, as a result of increased capital mobility, more production sites are competing for mobile capital.

German direct investments abroad, gross and net, increased in the 1990s (Figure 4). There were numerous reasons for this increase, for example, the desire to have a presence in foreign markets. But

Figure 4: German Foreign Direct Investment, 1989-1999 (in millions of marks)



Source: Deutsche Bundesbank (2000).

what these investments really amount to is the moving of German production sites to other countries. Firms are gathering experience about their production options elsewhere, which will make it easier for them to react to changes in German economic policy by quickly moving their production to other countries. Thus, the reaction of firms to economic policy changes can change: when foreign investments are insignificant, firms are path-dependent and thus tied to their current locations, but, as soon as foreign investments reach high levels, minimal changes in economic policy can suffice to motivate firms to move to a foreign location.

#### *A New Type of Firm*

Firms can also attempt to increase their efficiency by changing their organizational structure. Recent increases in the number of mergers are a reaction to changes in business conditions. Takeovers, be they friendly or hostile, and mergers are a manifestation of international capital mobility in a world with few trade barriers in the capital markets (Klodt and Kleinert 2000). Mobile capital seeks out profit opportunities everywhere in the world.

The new situation in the financial markets provides greater organizational scope for firms, but each and every firm, as a contractual plexus between production factors, has to determine whether a different structure might not be more profitable, because the capital market will surely do so. Thus, firms now have to compete for shareholders.

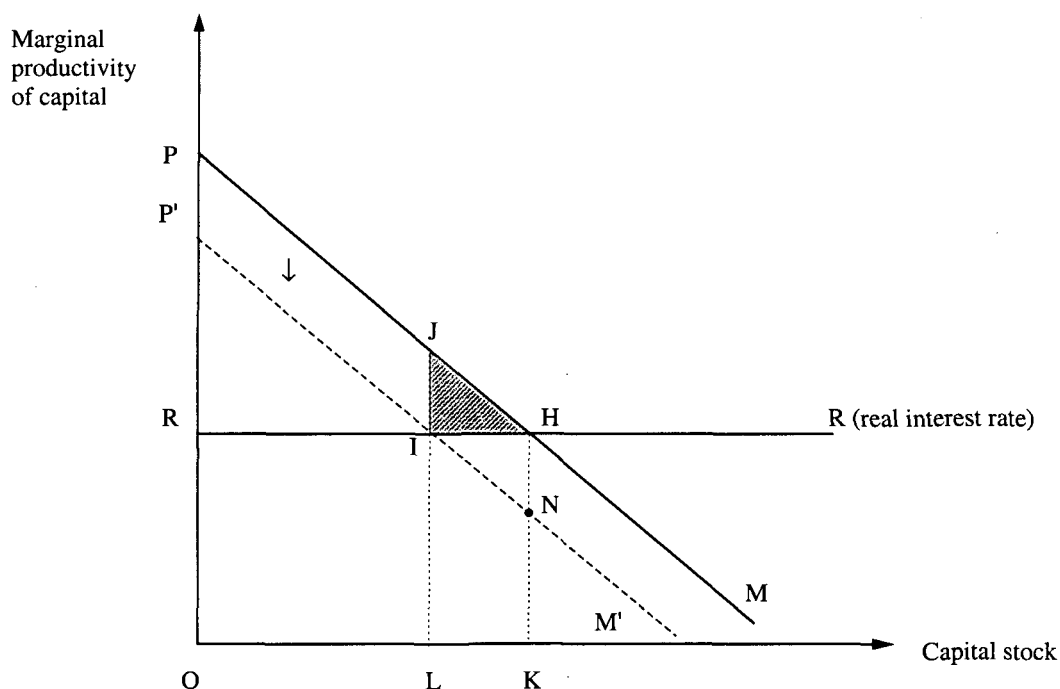
In 1998 there were 26,200 mergers worldwide, which made 1998 a record year for mergers, and since 1990 the number of mergers has more than doubled (Table A2). The volume of capital transfers resulting from mergers has quintupled since the beginning of the decade (from \$450 billion in 1990 to \$2,400 billion in 1998). (As part of this trend, firms have concentrated on core business activities and deinvested in peripheral activities.) Even the megafusions requiring the approval of the EU Commission increased considerably (from 60 in 1991 to 235 in 1998). A fourth of all mergers worldwide were cross-border mergers.

## 2. Effects on the Factor “Labor”

How does capital mobility affect labor income and the distribution of income? This can be answered by looking at Figure 5. Take point  $H$  as a starting point, or an initial situation. If a tax is levied which causes a capital outflow amounting to  $LK$ , then labor is less favorably endowed with capital. Domestic labor income decreases from  $RPH$  to  $RP'I$ , i.e., from the amount represented by the large triangle to the amount represented by the smaller triangle.<sup>12</sup> Labor is thus a loser when capital emigrates: its real income decreases.

In contrast, savers' or shareholders' income does not change when the capital tax is levied, causing capital to emigrate: they earn  $ORIL$  in their own country and  $LIHK$  abroad. Under simplified conditions, the income of the factor “capital” does not change; it can avoid the capital tax completely.<sup>13</sup>

Figure 5: The Effects of a Capital Tax



This result underlines a taxation principle: mobile factors can avoid taxes on internationally mobile production factors; in the long term, such taxes affect only the immobile factors. This means that a tax on the factor “capital” is, in the end, paid by the factor “labor.” The case is the same if qualified labor is taxed: unqualified labor pays.

Since the domestic factor “labor” is the loser when capital emigrates, could domestic labor improve its situation by paying the capital tax to prevent the capital from emigrating?<sup>14</sup> Labor could pay the

<sup>12</sup> If the government redistributes all tax revenues  $P'PJ$  to households, labor only loses  $IJH$ .

<sup>13</sup> With respect to labor, locational competition resulting from greater capital mobility overlaps with other global economic trends. Thus, factor abundance is affected. As a result of the integration of heavily populated countries such as China, labor has become more abundant. One could thus conclude that the situation for labor will become less favorable, but new markets have also been created, particularly for the capital goods produced by the industrialized countries. The terms of trade should therefore become better for the industrialized countries, thus bettering labor's situation. Relative demand does, however, change such that less-skilled labor is disadvantaged (Sachverständigenrat 1999: no. 341; Schimmelpenninck 2000).

capital tax,  $PHNP'$ , and thus keep the capital in its own country, whereby its country would gain  $IJH$ . Labor would then pay the tax gross and obtain the improvement in gross income represented by  $PHIP'$ . It would thus carry the net burden represented by  $IHN$ . It could, however, be a net winner if more than  $IJH$  of the total tax revenues were redistributed to labor. It could also be a winner if part of the tax revenues were used to finance new infrastructure, which, in turn, would have a positive impact on the marginal productivity of capital (the marginal productivity curve would shift upwards).

### 3. Less Scope for Policymakers

The exit option provided capital by locational competition redefines the opportunity costs of taking economic policy measures and thus also redefines policymakers' cost-benefit calculus. Policymakers' decision-making scope is reduced. The government is faced with less scope to set its own policy agenda because its tax base shrinks when real capital emigrates. In addition, when real capital emigrates, labor productivity drops, which reduces the number of income and job opportunities and diminishes the tax base. Governments have to take these potential effects of capital emigration into account when making their policies.<sup>15</sup> In addition, EU member-country governments have to take the country-of-origin principle and the institutional competition it engenders into account.<sup>16</sup>

Policymakers' scope is also limited by currency competition, which is a type of locational competition. Countries' stabilization policies, as well as their monetary, fiscal, and even their labor market policies, are subject to the scrutiny of financial markets when portfolio capital is highly mobile. For example, when a particular country's central bank pursues a price-level-neutral monetary policy and another country's central bank does not, the less stability-oriented country will suffer the devaluation of its currency. When this country's citizens perceive the devaluation of its currency to be an indication that their country's stabilization policy is not successful, they lose confidence in this policy, thus putting pressure on policymakers to change the policy (which is actually a destabilization policy). This is why France had to completely revise its economic policies in 1993, policies that President Mitterand had put into place in his first two years in office to stimulate domestic demand. Chronically high inflation, a worsening balance-of-payments deficit and an increasing foreign debt led, in the end, to the French franc being devalued.<sup>17</sup>

### 4. The Position of Unions

International locational competition impacts heavily on the positions of unions (whereby other factors such as deindustrialization and the reorganization of labor processes also play a role [Lindbeck and Snower 1996; Snower 1998]) because expansionary wage policies, i.e., wage policies that go beyond employment-neutral productivity increases, cause capital to emigrate (Siebert 1998a). This amplifies

<sup>14</sup> Alternatively, one could assume a different initial situation which includes a capital tax that generates tax revenues  $PJIP'$  and then let labor bear this tax income neutrally. Then labor would receive income  $IJH$ , which could be increased by redistributing  $PJIP'$ .

<sup>15</sup> An extreme example of how locational competition can cause governments to lose power is the emigration of people out of the centrally planned economies of Central and Eastern Europe. Emigration reduced the decision-making scope of governments there to the point that they either collapsed or made sweeping changes to adjust to the new situation.

<sup>16</sup> It is interesting to note that particular institutional changes also bring about a change in the constellation of powers. A good example of this is the change from fixed to flexible exchange rates, which shifted the balance of power between fiscal policy and monetary policy. Flexible rates provide monetary policy with greater scope, fiscal policy with less scope (Siebert 2000a: Ch. 18).

<sup>17</sup> This involved a very intricate regulatory mechanism, namely the interaction between purchasing power parity and interest rate parity (Siebert 1999b).

the effect of such policies on employment. As a result unions' power wanes, which can be seen in the drop in membership in German unions: the DGB lost about 3.5 million members from 1991 to 1999, the IG Metall 1.2 million from 1991 to 1998 (Table 1).<sup>18</sup>

Table 1: Decline in Union Membership (in millions)

	DGB	IG Metall
1991 <sup>a</sup>	11.80	3.97 <sup>b</sup>
1999 <sup>a</sup>	8.04	2.70
Change	-3.76	-1.27

<sup>a</sup>End of year. — <sup>b</sup>1991, including Gewerkschaft Textil und Bekleidung.

Source: Homepage of the Trade Unions: <http://www.dgb.de/wir/statistik/1999.index.htm>

## 5. The Path Dependency of Locational Competition

In a neoclassical model context, the effects of locational competition obtain quickly, as firms who are active in competitive markets must react to changes in market conditions quickly. An example of this is the Siemens semiconductor factory that was inaugurated in the United Kingdom in May 1997. Although according to press reports the factory had cost 3 billion marks and the inauguration ceremony was attended by the Queen, it was closed down a little over a year later. The intensity of competition and ever-shorter product cycles force firms to react quickly. Old locations have an advantage in that firms have already sunk costs in them, and this is an advantage that new locations must offset in order to compete. Locational trends are thus path-dependent, especially since agglomeration areas can attract additional activities. New locations must thus cross certain thresholds if they want to be players in the locational competition game. Firms can only base locational decisions on their sunk costs in old locations for a certain length of time. In the long run, there are no sunk costs, because, in the long run, even old locations have to recover the investments that have been made in them.

## IV. Locational Competition: A Degenerative Process?

### 1. A Race to the Bottom in the Provision of Infrastructure?

An issue that is intensely discussed in the literature is whether locational competition causes the provision of public goods (e.g., infrastructure) to degenerate because the marginal costs of providing them rise when capital is mobile (Zodrow and Mieszkowski 1986).<sup>19</sup> There are fears that countries will try to outbid one another in an attempt to create a favorable climate for private capital by cutting taxes, the consequence being that the provision of public goods will fall to inefficiently low levels.

This fear that there will be an unlimited race to the bottom is, however, unfounded. When the opportunity costs of providing infrastructure rise because inefficient taxation, *ceteris paribus*, causes capital to emigrate, the marginal benefit curve sets a bottom limit that ensures that infrastructure con-

<sup>18</sup> This development is somewhat overstated since membership was unusually high due to German unification.

<sup>19</sup> As regards this issue, see also the discussion between Blankart (1996) and H.-W. Sinn (1995).

tinues to be provided, because infrastructure users will be willing, even when capital is mobile, to pay taxes for infrastructure improvements, as they will (still) benefit from these improvements.<sup>20</sup>

There are numerous ways, even given international competition, of ensuring that infrastructure is provided without causing capital to emigrate. If these ways are used, no race to the bottom will take place. One way is to use benefit taxation, in which case the people who benefit from the provision of public goods also have to bear, as required by the equivalence principle, the taxes levied to finance these goods.<sup>21</sup> Business-related infrastructure (e.g., roads, airport, ports) can often be financed using user fees or charges, thus obviating the need to tax capital, and the opportunity costs are not changed as a result of capital emigration. However, if there is to be an equivalence between the infrastructure provided and the user fees or charges, the government cannot take in more revenue with these fees or charges than the provision of the infrastructure costs.<sup>22</sup> Another way is to use the concept of fiscal equivalence (Olson 1969) and to interpret infrastructure as a club good. In doing so, it is realistic to assume that different public goods have different spatial distributions. Therefore, for every public good that has its own spatial distribution, one needs, disregarding organizational costs, a separate organizational framework in which to provide the good and in which to charge fees or charges. Federalism can be interpreted as being a variant of the concept of fiscal equivalence: certain public goods should be provided subsidiarily at the state or municipal level; others, which have a greater spatial distribution, have to be provided at the national level. The concept of fiscal equivalence thus spreads locational competition, to some extent, across various levels, including the EU level.

Even when the relationship, in the fiscal equivalence sense, between taxation and the provision of public goods is only weak, firms will still recognize the positive effects of having to pay a tax if the benefit they derive from provision of these goods offsets the burden caused by the tax. This is the case, for example, when a country has a good educational system. A degenerative race to bottom in providing public goods thus does not necessarily occur, even when there is free riding. Firms will still be willing to pay even when they are not paying for public goods from which they benefit directly, but rather for such public goods as societal coherence or cultural offerings, from which they benefit only indirectly.

A third way is to privatize parts of the infrastructure provided by the government so that scarcity prices are created for infrastructure.

Infrastructure cannot be provided efficiently if capital taxes are levied according to the source principle as well as to the domicile (or residence) principle (Bucovetsky and Wilson 1991). Thus, proposals have been advanced to the effect that governments should cooperate with one another in taxing their citizens when they are domiciled abroad. This may make sense from a revenue point of view, but it would also constrain institutional competition, as well as extend governments' powers in the extreme if one considers the discussion of the basic constitutional issue of whether a government has the power to constrain the freedom of its citizens by levying taxes (Buchanan 1975; Brennan and Buchanan 1980). Above all, these proposals cannot be allowed to take people's exit option away, as having this option is a basic freedom. People generally do not want to leave their countries, but their exit options serve to regulate governments, and an international taxation cooperation agreement that deprived people of their exit options could be misused by totalitarian governments; it would be an

<sup>20</sup> In theoretical models the question can arise as to whether countries behave strategically with respect to infrastructure provision and taxation and whether game-theoretic interdependencies between countries can lead to overprovision. However, if countries did behave strategically, each of them would have to consider the opportunity costs that such behavior would incur. The way I see it, countries will attempt to take opportunity costs into account and to balance the costs and benefits of providing infrastructure.

<sup>21</sup> Benefit taxation prevents capital from emigrating, but is generally not an efficient type of taxation according to optimal tax theory.

<sup>22</sup> One has to take into account that the government has to balance its budget. It takes in tax revenues, but it also spends on infrastructure. Thus, if the average costs of infrastructure fall (high fixed costs), this can cause a problem in that, given marginal cost price formation, the budget will not be balanced (H.W. Sinn 1995).

agreement against freedom. An open society of the kind described by Popper (1957) would no longer be possible.

## **2. Fiscal Externalities**

A similar thesis to the thesis of infrastructure underprovision is the thesis of fiscal external effects: the tax rate in one country affects income in other countries. If the country cuts its taxes, it attracts capital that emigrates from some other country. This diminishes the tax base in the other country and its revenues drop.

This cannot lead to a race to the bottom either, however, because the country that cuts its taxes cannot do so if it needs revenues to finance the infrastructure firms would like to have. If less infrastructure is provided at the same time as the tax rate is reduced, then capital tends to emigrate. If, however, infrastructure is financed by charging user fees, then fiscal externality is a pecuniary external effect which takes place via market processes. Such effects are thus price interdependencies; they are an expression of competition and are no reason to take corrective measures. Only if there were no relationship between taxation and infrastructure provision, then competition for capital would lead to a race to the bottom. Admittedly, one could argue that minimum tax rates (e.g., on interest) would only be appropriate in a common market in which a common economic framework strengthens fiscal externality, because countries with low tax rates could free ride on the certainty provided by the framework.

## **3. Minimal Environmental Protection?**

In the literature, there is also discussion of whether locational competition has negative effects on environmental protection.<sup>23</sup> Some fear that locational competition could prevent countries from protecting their own (national) environment because environmental protection incurs costs for firms. Indeed, environmental policies can cause firms that make intensive use of environment to emigrate if they cannot comply with the policies technologically. But the migration of capital (firms) constitutes part of the opportunity costs of environmental protection. One can assume that firms and the economy are willing to pay for the public good "environmental quality." Thus, there is also a lower limit that prevents a race to the bottom as regards environmental quality.

## **4. A Race to the Bottom in the Provision of Social Security?**

Some also fear that locational competition also limits the ability of governments to provide social security. If one considers governments to be providers of low-income insurance (as does H.-W. Sinn [1997]), and if one considers that future income levels are shrouded in Rawls's (1971) veil of ignorance, then capital mobility diminishes the ability of governments to provide such insurance by taxing capital and firms. Thus the social security contributions that firms must pay increase the price of labor, which, in turn, diminishes the net productivity of capital, and investors are thus motivated to invest elsewhere. This, in turn, dampens the demand for labor and thus diminishes social security revenue, thus changing governments' opportunity costs.

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<sup>23</sup> More specifically, this discussion is about national environmental goods. A coordinated approach is called for with regard to global environmental goods if only because isolated national efforts are environmentally useless.

One may (like H.-W. Sinn) think this is regrettable, but given the magnitude of revenues generated by the capital tax, it is not very important as a means of financing social security systems.<sup>24</sup> Moreover, one should realize that it is not conceptionally useful with regard to economic policy to think of the government as a paternalistic provider of low-income insurance, and then, based on this realization, to derive concepts and economic policy action recommendations that go beyond the expansion of the welfare state currently taking place in the EU (Siebert 1998b).

## **5. Sociopolitical External Effects**

Sociopolitical external effects are an analog of fiscal external effects: if a government changes its social security system (lowering the contributions) in order, for example, to improve the employment situation in its country, this will, when it causes labor costs to fall, have repercussions on labor in other countries. This, however, does not give reason to believe that social security systems should be harmonized, as doing so would mean that it would not be permissible for individual governments to change their social security systems in order to improve the employment situation in their countries.

## **6. Immigration and Social Security**

Others maintain that social security systems distort incentives. According to this view, generous social security systems engender immigration which, because of the costs immigration poses for the systems, destabilizes them in the long run. This, indeed, is a problem; it can, however, be resolved by designing social security systems appropriately.

## **7. Asymmetrical Information**

Some who fear that competition between countries is constrained by product standards think that a possible reason for this is that consumers suffer from a lack of information. According to those who think this, asymmetrical information between firms and between firms and consumers can lead to strategic behavior that, they fear, can damage consumers. The crucial question here is: To what extent can one rely on consumer sovereignty and the ability of consumers to learn from mistakes, and to what extent might it be better to protect consumers by using sovereign standards? The answer presumably depends, *inter alia*, on how great the damage would be if there were no product standards. One can conceive of having minimum standards in certain areas (such as in the area of health protection) in an economic union.

## **8. International Coordination: A Useful Response?**

One possible way of responding to the increase in competition between locations could be to rely on better international coordination between countries in order to be able to constrain this competition. This would be justifiable from a game-theoretic point of view, as cooperative behavior can engender

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<sup>24</sup> In Germany, income tax on capital income in 1996 accounted for 8.3 percent of overall tax revenues. Further, business taxes (including business capital taxes) accounted for 5.7 percent, and taxes on business assets for 0.6 percent. This amounts to 14.7 percent, or 117 billion marks generated by taxes on firms and capital, which does not cover even one-third of the public funds appropriated to the social security system (these amount to approximately 400 billion marks annually) (Sachverständigenrat 1996: table 3 on p. 266). Further, one should not imply that taxes on firms and capital are used exclusively to finance the social security system.

Pareto improvements. Moreover, an international framework for competitive processes could possibly prevent market participants from being abused. But in concrete matters, where there are calls for action ranging from comprehensive harmonization of social and environmental standards to standardization of enterprise taxes in Europe,<sup>25</sup> this could bring about a cartel of governments which could eliminate all competition.<sup>26</sup> The precondition for requiring a common regulatory framework is that there are strong external effects (or public goods). An example of this is the framework that the WTO provides for the world trade order.

H.-W. Sinn's (1997) selection principle, which he uses to conclude that countries cannot be subject to competition, is not convincing. The mere fact that countries define themselves as such by internalizing national externalities or by providing national public goods does not mean that they should not be subject to competition in providing such goods. As long as the external effects are national external effects and the public goods are national public goods, there is no reason why countries should have to cooperate internationally. Internalization at the global level is only called for when the external effects or external goods are global and only when the costs of establishing common competition rules are less than the benefits they provide (Klodt 1999).

It seems to me that H.-W. Sinn does not take sufficient account of the fact that international capital mobility strips national public goods of the characteristic that defines them as public goods. In the extreme case in which public goods are purely national, capital mobility means that firms can react to taxes levied to finance public goods by either emigrating or staying, whereby they demonstrate their willingness to pay the taxes. Strictly speaking, (international) capital mobility changes the characteristic that defines (national) public goods as such (Samuelson [1954] defines public goods as goods that "must be consumed in equal amounts by all"), since some firms can avoid availing themselves of the public goods.

## 9. Competition as a Discovery Process

The discussion about the race to the bottom has obscured the fact that locational competition, like product competition, is a discovery process in the sense of Hayek (1968), a means of reducing costs and finding new solutions. One can thus assume that competition between countries contributes to improving efficiency by creating incentives to find new (economic and technical) solutions and by forcing countries to adjust. This is why the institutional competition in the EU that was brought about by the country-of-origin ruling has become a national regulations can opener. Locational competition puts interest groups under pressure, thus constraining rent-seeking (Lorz 1998). As S. Sinn (1992b) points out in his study so aptly entitled "The Taming of the Leviathan," it tames governments (see also Brennan and Buchanan 1980). When people began fleeing the communist planned economies, the systems were weakened, and, in the end, emigration caused these systems to collapse. Competition is also a mechanism for discovering preferences. It serves, particularly in a single European market with heterogeneous national policy preferences, to discover the opportunity costs incurred by national preferences. This is the case, for example, with different environmental preferences. Those who have reservations about the effects of locational competition should consider its functions: constraining costs by being a discovery mechanism and constraining governments.

<sup>25</sup> There have also been calls for exchange rate reference zones (Williamson 1983) and for a new financial architecture. Also witness the approach taken by the former German finance minister Lafontaine in the red-green government.

<sup>26</sup> One could argue that there is a gray area, for example, in a common market such as in the EU, in which one could call for coordination in particular areas, for example, in the supervision of subsidies by the European Commission. The example of the United States shows, however, that locational competition with respect to the establishment of business sites is entirely possible and even common. In the EU, the gray area includes taxation on interest earned on financial capital and the extremely preferential legal treatment accorded holding companies, for example.

## **V. Economic Policy Consequences of the Paradigm of Locational Competition**

If locational competition is a new paradigm, then what effect does it have on economic policy? When discussing these economic policy impacts I have in mind the open economies of the European Union, especially the three major continental countries Germany, France and Italy. I use Germany as an example.

### **1. No Refuge in Protectionism**

Because these countries' economies are export-based economies, they will not be able to escape locational competition. Attempting to do so would put the affluence that we derive from the international division of labor at risk. The very fact that these economies have benefited from being integrated into the EU and the world economy is proof that they cannot sidestep international economic trends. Small countries with very open economies in particular also demonstrate that countries have no choice but to participate in international competition and are thus forced to design their institutional frameworks accordingly. This is why New Zealand, for example, had to completely revise its economic policies in the 1980s (this revision was, by the way, initiated by the Labor government). European examples of small countries that have successfully adjusted to locational competition are Holland and Ireland.

### **2. Coordination: International Competition Cannot Be Sidestepped**

It is an illusion and a strategy mistake to assume that a country like Germany could sidestep international competition by coordinating with other countries. Great Britain's reaction to Germany's proposals to harmonize taxes in the EU showed this very clearly. Other countries are not willing to let their locational advantages be harmonized away. Coordinating national policies for the purpose of establishing exchange rate target zones is not feasible either (Siebert 2000b).

### **3. Tax Reform**

In the 1990s, the three large continental European economies, Germany, France and Italy, suffered from too little investment (relative to the United States and to their historical experience). This was especially striking in spite of the investment boom that was triggered by German reunification<sup>27</sup> (Siebert 1999a). In addition, the foreign direct investment balance for Germany was negative. In this kind of situation, it would not be wise to respond to locational competition for mobile capital by implementing a distribution-oriented tax reform. What is required in this situation is a tax reform that makes the country more attractive for capital.

Germany has gone through great pains to finally pass a tax reform. To cut the corporate tax rate on retained and distributed profits to 25 percent in order to stimulate investment is a step in the right direction.<sup>28</sup> A split tax rate for firms and natural persons applies, but a very stark split was prevented. Nevertheless the underlying distinction between a low tax rate for corporate firms and natural persons

<sup>27</sup> In Germany the rate of increase in capital formation in the private sector (not including housing construction) amounted to 1.8 percent in 1990–1999; in the United States it amounted to 5.9 percent.

<sup>28</sup> Legislation that will go into effect in 2001 and that will abolish taxing the profits made on selling shares that tie one joint-stock company to another will provide for increased capital mobility, which, in turn, will accelerate the process of adjusting to global changes.

may give rise to discrimination and distorted incentives: (i) The reform applies only to joint-stock companies. However, more than 80 percent of German firms are not joint-stock companies.<sup>29</sup> It is questionable whether the ad hoc approaches to accommodate the person-owner firms such as offsetting the business tax against the income tax, will prove to sufficiently correct the distortions. (ii) The reform favors capital formation in (corporate) firms; this will lock in capital in existing firms. It discriminates against savings in the capital market. Capital will be locked into firms (capital lock-in effect). This will favor old structures causing misallocation of capital. Capital markets will atrophy. When households begin selling their savings held in the form of shares in firms, regulations will be needed. (iii) Discriminating between firms and entrepreneurs will not motivate people to be productive. (iv) Growth does not depend on accumulating real capital, but rather on accumulating human capital. If one wants to promote accumulation of the latter, one has to cut the high income tax rates even more. This is important because human capital is the central factor in the new sectors, for example, in the communications and biotechnology sectors. The proposed tax reform disadvantages these sectors while advantaging the older industries that have high real capital expenditures. Human capital should not be disadvantaged because competition between locations is also competition for human capital. An example of this is the competition between the two financial centers Frankfurt and London.

#### **4. Revamping Human Capital Formation**

Locational competition requires to set free the most important factors for a dynamic development, possibly the most important one being human capital formation. A country such as Germany has the advantage of having a reasonable dual educational system combining formal schooling and training on the job. This system has to be made more responsive to the relative change in labor demand, i.e. to change in professions. What is wanting, however, is the university system and the organization of their research activities and their universities. The elite of tomorrow is nowadays educated in the United States (and maybe partly in the UK). In some countries of the continent, the university systems are organized in a rather bureaucratic fashion, similar as in central planning. Politics does not dare to organize these systems along the concept of competition. Here is Europe's greatest challenge.

#### **5. Adjusting the Institutional Framework for Labor and Wage Formation**

Locational competition has three consequences for the wage formation system. First, the manner in which employment-oriented wage policy is made needs to be rethought. Firms and unions have the leading role in wage formation. Whoever is free to negotiate and set wages should also be held responsible for the complete labor market, i.e., for unemployment as well as employment. Second, wages need to be more strongly differentiated. Third, labor regulation that does not regulate properly needs to be brought into line with the new economic situation. We will not be able to resolve unemployment if we do not make wage formation more dependent on market processes. The government is always held responsible for unemployment, even though it is the firms and unions who set wages. If the government does not always want to be held responsible for unemployment, then it will have to

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<sup>29</sup> There are 2.8 million firms in Germany, most of which are small or medium-size. In 1992 (the most recent year for which data are available), only 1,300 joint-stock firms paid corporate income tax, whereas 240,000 limited liability firms (i.e., small and medium-size firms) did. In addition, 1.8 million natural persons paid income tax on business earnings. Looking at tax revenues—8.8 billion marks, 26.5 billion marks, and 64 billion marks, respectively—one can see that the government depends primarily on the motivation of small or medium-size firms and natural persons for its tax revenues. The small and medium-size firms also employ the most people; 75 percent of those employed are employed by firms with fewer than 500 employees (65 percent by firms with fewer than 200 employees).

find ways of helping the market to influence wage formation. There are three such ways in the institutional context of the German system:

- Legislate entrance wages for the unemployed wishing to enter employment which are below the wages negotiated by firms and unions.
- Enable firms to deviate from collectively negotiated wage levels when the employee council and a qualified majority of the employees in a firm agree to other wage levels. This requires to repeal Article 77, para. 3, of the Labor Management Relations Act (Betriebsverfassungsgesetz), which legally forbids decentralized arrangements unless agreed by trade unions and employers' associations.
- Change the interpretation of the advantage rule (Günstigkeitsprinzip) differently, so that it is not considered "advantageous" for workers to lose or endanger their jobs by working at a lesser wage level than the level collectively negotiated. Change other rules as well. Do not declare collectively negotiated wage levels to be generally binding.

## 6. Reforming the Social Security System

The social security system encumbers the factor "labor" and provides firms with an incentive to not hire new employees. Because the population in Germany is aging, the social security system is suffering from a lack of finance. In reforming the social security system, one will have to differentiate between risks that are too large for individual citizens to bear and that thus must be borne by society and risks that are small enough for individual citizens to bear on their own (Siebert 1998a). An example of this is the loss of income during the first three (or five) days of unemployment, which one could offset with one's savings. Arriving at a consensus about what constitutes large risks and what constitutes small risks is the best way to reduce social security expenditures and thus to stimulate labor demand. Another way that might be feasible would be to base the social security system on something other than the employer-employee relationship.

## 7. Restructuring the Federal System

In the context of the German federal system, locational competition implies that competition between *Länder* is permissible, which, in turn, implies that having different per capita income levels and different income tax levels in different *Länder* is acceptable. It is not possible to establish income levels such that incomes everywhere in Germany reach 100 percent of average levels. Income levels in Germany belie the notion that this is possible (even if we only consider Western Germany): income levels in Lower Saxony and Schleswig-Holstein reach 85 percent of the western German average (the Rhineland-Palatinate 80.5 percent, Saarland 85 percent), income levels in Bremen 125 percent, and income levels in Hamburg even 172.5 percent. The design of the fiscal equalization system should thus take into account the effects that federal redistribution can have on incentives. It is wrong that *Länder* whose additional tax revenues are higher than average transfer revenues have to give up tax revenues to such an extent that they lose interest in raising revenue (as is the case now). It is also wrong that *Länder* receiving transfers have no interest to increase their tax base because they then will no longer get the transfers (Siebert 2000c).

## 8. The German Consensus Model

In the latter half of the last century, Germany was characterized by a consensus model which was used to implement change through mutual agreement of societal groups; examples are the Alliance for Employment and codetermination in supervisory boards and employee councils. Whether this is the right institutional approach with which to modernize an economy in a globalized world and whether it is the right way for an export-dependent country to cope with a global economic revolution is questionable because, more often than not, it is those who are interested in protecting their vested rights who make the decisions pertaining to change. The Alliance for Employment is an excellent example of this.

The consensus model does not like difficult economic problems. It prefers to have things easy, to have an economy in which one can lean back and put one's feet up. It is soft economics. The result is short-term policymaking and populism in which everything, in order to make it suitable for the media, is highly simplified.

The term "social market economy" still has positive connotations in Germany, but the German populace has no appreciation of how market processes work in the long run. The economy is an extremely complex system, similar in complexity to ecological systems. If one intervenes in one area, it will have an effect elsewhere. Nowadays, the effects of interventions do not become evident until five or six years later. When we implement legal protection against job dismissal, it does indeed protect those who have a job. But firms react by hiring fewer people. If we increase government expenditure, then government interest expenditure will increase. None of this is sustainable. If we heat up demand enough to start a flash fire, the ashes of the follow-up costs remain. Policymakers once again have to start thinking relationally, i.e., to start thinking in terms of balance and interdependencies.

There is no question that we have a fair number of economic problems in Germany. The weak investment of the 1990s, the entrenchment of unemployment, and the much-needed restructuring of the social security system pose difficult problems for German policymakers. Germany wasted a lot of time in the 1990s by not adjusting its economy so as to keep step with global economic change. Wasting more time is not an option, unless of course we bank on time to help us along the difficult path we have chosen. As Corneille points out, time, that great master, takes care of things. Or, as the Swiss saying goes, "Time takes care of what you don't."

## Appendix

Table A1: FDI Inflows in Percent of GDP<sup>a</sup>

	1992	1993	1994	1995	1996	1997	1998
Poland	0.8	2.0	1.9	2.9	3.1	3.4	na
Czech Republic	na	2.1	2.2	5.1	2.5	2.4	4.5
Hungary	4.0	6.1	2.8	10.2	4.4	na	na
Argentina	1.9	1.2	1.4	2.1	2.4	2.8	2.1
Brazil	na	0.3	0.6	0.7	1.4	2.6	4.1
Chile	2.2	2.3	5.1	4.6	6.9	7.1	6.4
Mexico	1.2	1.1	2.6	3.3	2.8	3.2	2.5
Korea	0.2	0.2	0.2	0.4	0.4	0.6	1.7
Malaysia	8.9	7.8	6.0	4.8	5.1	5.2	na
Thailand	1.9	1.4	0.9	1.2	1.3	2.5	6.2

<sup>a</sup>FDI inflows = gross balance-of-payments figures. GDP at current prices, calculated using the average dollar exchange rate. na = not available.

Source: *International Financial Statistics* (IMF), CD-ROM.

Table A2: Merger and Acquisition Trends, Worldwide

Year	No.	Volume in billions of \$	Thereof cross-border
1990	11,300	450	180
1991	16,100	400	90
1992	15,700	400	100
1993	16,800	480	120
1994	19,300	570	140
1995	22,700	950	240
1996	23,900	1,100	290
1997	24,500	1,600	400
1998	26,200	2,400	650
1999		3,400	

Source: *Economist* according to Securities Data, *Handelsblatt*, 3 January 2000.

## References

- Blankart, C.B. (1996). Braucht Europa mehr zentralstaatliche Koordination? Einige Bemerkungen zu Hans-Werner Sinn. *Wirtschaftsdienst* 76 (2): 87–94.
- Boss, A., K.-J. Gern, C.-P. Meier, J. Scheide, and M. Schlie (1999). For a Stable Monetary Policy and Tax Competition in Euroland. Kiel Discussion Paper 338. Institut für Weltwirtschaft, Kiel.
- Brennan, G., and J.M. Buchanan (1980). *The Power to Tax. Analytical Foundations of a Fiscal Constitution*. London.
- Buchanan, J.M. (1975). *The Limits of Liberty. Between Anarchy and Leviathan*. Chicago.
- Bucovetsky, S., and J.D. Wilson (1991). Tax Competition with Two Tax Instruments. *Regional Science and Urban Economics* 21: 233–250.
- Bundesministerium für Bildung und Forschung (BMBF) (Hrsg.) (2000). Zur technologischen Leistungsfähigkeit Deutschlands. Zusammenfassender Endbericht 1999. Bonn.
- Coase, R.H. (1960). The Problem of Social Cost. *Journal of Law and Economics* 3: 1–44.
- Deutsche Bundesbank (2000). Zahlungsbilanzstatistik (July). Frankfurt am Main.
- Edel, M., and E. Sclar (1974). Taxes, Spending and Property Values. Supply Adjustment in a Tiebout-Oates Model. *Journal of Political Economy* 82 (5): 941–954.
- Edwards, J., and M. Keen (1996). Tax Competition and Leviathan. *European Economic Review* 40 (1): 113–134.
- Feld, L.P., and G. Kirchgässner (1995). Fiskalischer Wettbewerb in der EU: Wird der Wohlfahrtsstaat zusammenbrechen? *Wirtschaftsdienst* 75 (10): 562–568.
- Feldstein, M. (1994). Tax Policy and International Capital Flows. *Weltwirtschaftliches Archiv* 130 (4): 675–697.
- Feldstein, M., and C. Horioka (1980). Domestic Saving and International Capital Flows. *Economic Journal* 90 (March): 314–329.
- Findlay, R. (1995). The Philosophy of Locational Competition. In H. Siebert (ed.), *Locational Competition in the World Economy*. Tübingen.
- Gerber, R.I., and D.P. Hewitt (1987). Decentralized Tax Competition for Business Capital and National Economic Efficiency. *Journal of Regional Science* 27: 451–460.
- Gerken, L. (ed.) (1995). *Competition among Institutions*. London.
- (1998). Der globale Wettbewerb als Anreiz- und Entdeckungsverfahren. *Ordo* 49: 269–280.
- Giovannini, A. (1989). Capital Taxation. *Economic Policy* 4 (2): 345–386.

- Giovannini, A. (1990). Reforming Capital Income Taxation in the Open Economy: Theoretical Issues. In H. Siebert (ed.), *Reforming Capital Income Taxation*. Tübingen.
- Henderson, J.V. (1985). The Tiebout Model: Bring Back the Entrepreneurs. *Journal of Political Economy* 93 (2): 248–264.
- Hayek, F.A. (1968). Der Wettbewerb als Entdeckungsverfahren. Kieler Vorträge 56. Institut für Weltwirtschaft, Kiel.
- Klodt, H. (1999). Leitlinien zur internationalen Politikkoordination. Kiel Discussion Paper 343. Institut für Weltwirtschaft, Kiel.
- Klodt, H., and J. Kleinert (2000). *Megafusionen: Trends, Ursachen und Implikationen*. Kieler Studien 302. Tübingen.
- Kommission zur Reform der Unternehmensbesteuerung (1999). Brühler Empfehlungen zur Reform der Unternehmensbesteuerung, 30. April 1999.
- Krugman, P. (1994). Competitiveness: A Dangerous Obsession. *Foreign Affairs* 73 (2): 28–44.
- Lindbeck, A., and D. Snower (1996). Reorganization of Firms and Labor-Market Inequality. *American Economic Review, Papers and Proceedings* 86 (2): 315–321.
- Long, N. Van, and H. Siebert (1991). Institutional Competition versus Ex-Ante Harmonization: The Case of Environmental Policy. *Journal of Institutional and Theoretical Economics* 147 (2): 296–311.
- Lorz, J.O. (1997). *Standortwettbewerb bei internationaler Kapitalmobilität — Eine modelltheoretische Untersuchung*. Kieler Studien 284. Tübingen.
- (1998). Capital Mobility, Tax Competition and Lobbying for Redistributive Capital Taxation. *European Journal of Political Economy* 14 (2): 265–279.
- (1999). How to Improve Locational Competitiveness. In H. Siebert (ed.), *Globalization and Labor*. Tübingen.
- Lorz, J.O., and F. Stähler (1997). Who Is Afraid of Capital Mobility? On Labor Taxation and the Level of Public Services in an Open Economy. Kiel Working Paper 824. Institut für Weltwirtschaft, Kiel.
- Monopolkommission (1998). *Systemwettbewerb*. Sondergutachten 27. Baden-Baden.
- Obstfeld, M. (1993). International Capital Mobility in the 1990's. NBER Working Paper 4534. Cambridge, Mass.
- Obstfeld, M., and K. Rogoff (1996). *Foundations of International Macroeconomics*. Cambridge, Mass.
- Olson, M. (1969). The Principle of 'Fiscal Equivalence': The Division of Responsibilities among Different Levels of Government. *American Economic Review, Papers and Proceedings* 59 (2): 479–487.
- Oates, W.E. (1969). The Effects of Property Taxes and Local Public Spending on Property Values: An Empirical Study of Tax Capitalization and the Tiebout Hypothesis. *Journal of Political Economy* 77 (6): 957–971.
- Oates, W.E., and R.M. Schwab (1988). Economic Competition among Jurisdictions: Efficiency Enhancing or Distortion Inducing? *Journal of Public Economics* 35: 333–354.
- (1991). The Allocative and Distributive Implications of Local Fiscal Competition. In: D.A. Kenyon and J. Kincaid (eds.), *Competition among State and Local Governments*. Washington, D.C.
- Popper, K.R. (1957). *The Open Society and Its Enemies*. London.
- Prebisch, R. (1959). Commercial Policy in the Underdeveloped Countries. *American Economic Review, Papers and Proceedings* 49 (2): 251–273.
- Razin, A., and E. Sadka (1991). International Tax Competition and Gains from Tax Harmonisation. *Economic Letters* 37: 69–76.
- Rawls, J. (1971). *A Theory of Justice*. Cambridge.
- Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung (1996). *Reformen voranbringen. Jahresgutachten 1996/97*. Stuttgart.

- Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung (1999). *Wirtschaftspolitik unter Reformdruck*. Jahresgutachten 1999/2000. Stuttgart.
- Samuelson, P.A. (1954). The Pure Theory of Public Expenditure. *Review of Economics and Statistics* 36 (4): 387–389.
- Schimmelpfennig, A. (2000). *Structural Change of the Production Process and Unemployment in Germany*. Kieler Studien 307. Tübingen. (Forthcoming).
- Siebert, H. (ed.) (1995a). *Locational Competition in the World Economy*. Tübingen..
- (1995b). Locational Competition in the World Economy. In H. d’Orville (ed.), *Perspectives of Global Responsibility*. In Honor of Helmut Schmidt on the Occasion of His 75th Birthday. New York.
- (1996). On the Concept of Locational Competition. Kiel Working Paper 731. Institut für Weltwirtschaft, Kiel.
- (1998a). *Arbeitslos ohne Ende? Strategien für mehr Beschäftigung*. Wiesbaden.
- (1998b). Disziplinierung der nationalen Wirtschaftspolitik durch die internationale Kapitalmobilität. In D. Duwendag (Hrsg.), *Finanzmärkte im Spannungsfeld von Globalisierung, Regulierung und Geldpolitik*. Schriften des Vereins für Socialpolitik 261. Berlin.
- (1999a). How Can Europe Solve Its Unemployment Problem? Kiel Discussion Paper 342. Institut für Weltwirtschaft, Kiel.
- (1999b). *The World Economy*. London.
- (1999c). Wenn Steuern Wohlstand mindern: Thesen zur Steuerreform. Kiel Discussion Paper 344. Institut für Weltwirtschaft, Kiel.
- (2000a). *Außenwirtschaft*. 7th revised edition. Stuttgart.
- (2000b). The Exchange Rate Regime among Major Currencies. Comment presented at the Conference on Key Issues in Reform of the International Monetary and Financial Systems. May 28–29, Washington, D.C.
- (2000c). Mehr Standortwettbewerb beim Finanzausgleich. *Frankfurter Allgemeine Zeitung*, 8th August.
- Siebert, H., and M. Koop (1993). Institutional Competition Versus Centralization: Quo Vadis Europe? *Oxford Review of Economic Policy* 9 (1): 15–30.
- Siebert, H., and H. Klodt (1999). Towards Global Competition: Catalysts and Constraints. In: OECD (ed.), *The Future of the Global Economy: Towards a Long Boom?* Paris.
- Sinn, H.-W. (1990). Tax Harmonization and Tax Competition in Europe. *European Economic Review* 34 (2/3): 489–504.
- (1994). Wie viel Brüssel braucht Europa? Subsidiarität, Zentralisierung und Fiskalwettbewerb im Lichte der ökonomischen Theorie. *Staatswissenschaft und Staatspraxis* 5: 155–186.
- (1995). Implikationen der vier Grundfreiheiten für eine nationale Fiskalpolitik. *Wirtschaftsdienst* 75 (5): 240–249.
- (1997). The Selection Principle and Market Failure in Systems Competition. *Journal of Public Economics* 66 (2): 247–274.
- Sinn, S. (1992b). The Taming of Leviathan: Competition among Governments. *Constitutional Political Economy* 3 (2): 177–196.
- (1992a). Saving-Investment Correlations and Capital Mobility: On the Evidence from Annual Data. *Economic Journal* 102 (September): 1162–1170.
- Stiftungsverband für die deutsche Wissenschaft (1998). *Forschung und Entwicklung in der Wirtschaft 1995/97*. Bericht über die FuE-Erhebung 1995/96. Essen.
- Snower, D.J. (1998). Causes of Changing Earnings Inequality. In: The Federal Reserve Bank of Kansas City (ed.), *Income Inequality: Issues and Policy Options*. Symposium. Kansas City.
- Taylor, A.M. (1996). International Capital Mobility in History: The Saving-Investment Relationship. NBER Working Paper 5743. Cambridge, Mass.

- Tiebout, C.M. (1956). A Pure Theory of Local Expenditures. *Journal of Political Economy* 64 (5): 416–424.
- Williamson, J. (1983). *The Exchange Rate System. Policy Analysis in International Economics*. Cambridge.
- Zodrow, G.R., and P. Mieszkowski (1986). Pigou, Tiebout, Property Taxation and the Underprovision of Local Public Goods. *Journal of Urban Economics* 19 (3): 356–370.