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Locational Competition – A Neglected Paradigm in the International Division of Labour

by

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Abstract:

Abstract: Krugman's verdict that competitiveness of countries is a largely meaningless concept is a serious misjudgement of the economics profession. Countries compete for the mobile factors of production, most importantly for capital and technology. The exit-option of these factors and of firms changes the calculus of national governments. This paper sets out the main elements of the concept of competition between locations – locational competition – and analyses its impact on welfare and employment of the capital-exporting country. It also looks at whether competition between countries necessarily results in a race to the bottom or whether it can function as a controlling mechanism for governments and as a discovery device. The paper discusses under which conditions common rules are needed to reduce transaction costs and to prevent strategic, opportunistic behaviour of countries and which common rules thus reduce transaction costs. Finally, it deals with the question whether one institutional equilibrium in the world economy can be expected or whether many national equilibriums can coexist.

Keywords: Competitiveness of countries – Mobile and immobile factors of production – Exit option of capital – Impact of capital exports on the capital- exporting country and its employment – Capital exports and exports of goods as complements or substitutes – Manoeuvring space of governments- Locational competition as a discovery device – Locational competition and global public goods and externalities – Single world equilibrium versus many national equilibriums.

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1. Introduction

Competitiveness is "… a largely meaningless concept…", Paul Krugman tells us in an often quoted 1994 article (Krugman, 1994:41), claiming that "... it is simply not the case that the world's leading nations are to any important degree in economic competition with each other" (1994:30) and stating that "… the obsession with competitiveness is not only wrong, but dangerous…" (Ibid.). Unfortunately, his conclusions are false and misleading. He is right in asserting that "countries do not compete with each other the way corporations do" (1994:34) and he is also right in stating that, under certain conditions, trade is a positive-sum game. However, he is absolutely wrong in his overall assessment because he ignores a phenomenon that has become increasingly important over the last decades, namely the increased international mobility of factors of production. Capital, technology and highly skilled labour have become more mobile internationally, and their availability influences the productivity of the immobile domestic factors of production, including traditional labour and land. Countries compete for these mobile factors of production. If they succeed in attracting them, they increase their factor endowment and raise the productivity of their immobile domestic factors. If, however, they lose them, the productivity of their domestic immobile factors is reduced. Moreover, the increased factor mobility reduces governments' room to manoeuvre. Thus, there is competition between countries, and the paradigm of competition between locations or of "*Standortwettbewerb*", as it is called in German with a long tradition, is indeed a

powerful concept in the theory of the international division of labour[1]. It refers to the competitiveness of a location in its capacity to attract within its borders mobile factors of production or to hold on to them.

This paper looks at the concept of locational competition and its implications. It describes the channels through will countries compete for the mobile factors of production (section 2) and portrays the structure of a model of locational competition (section 3). Then the benefits and costs, especially for the capital-exporting country, are studied (section 4) and the relevance for governments and trade unions is shown (section 5). The paper addresses the issues whether locational competition leads to a race to the bottom or whether it is a discovery device (section 6), whether international rules represent a cartel of governments or whether they are needed to reduce transaction costs (section 7) and whether a single world equilibrium or many national equilibriums will exist (section 8). The final section draws the conclusions.

2. Channels of Locational Competition

Competition between locations – between regions of an economy, between countries or even between regions of the world like the European Union and the United States – occurs through a number of channels of interaction, most importantly through the movement of capital, technology and people.[2] Locational competition is about explicitly competing for endowments with mobile factors. This approach is in contrast to traditional trade theory where the interaction between countries through the exchange of goods and services is at

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[1] See Siebert (2000). For American voices compare Findlay (1995) and on the role of increased mobility for monetary policy, fiscal policy and regulation see Cooper (1974). On the relationship between trade theory and local public economics see Wilson (1987). On capital mobility in trade models see Feenstra (2004), Chapter 11. See also work on interjurisdictional competition (Oates and Schwab 1988).

[2] Another field of locational competition is between metropolitan areas, for instance in per capita income, square feet of housing, office space and industrial buildings.

centre stage and where the main story is about exploiting international differences in given factor endowments, technology and preferences.

Capital is completely mobile *ex ante* if savings are not yet embodied in machinery and buildings. Foreign direct investment (FDI) can theoretically locate anywhere in the world. Strictly speaking, physical capital which is already in place is not mobile. But it can be turned into mobile funds *ex post,* when depreciation allowances are earned in the market. These funds do not have to be reinvested in the same location, but can be reallocated to other places. Foreign direct investment in the world economy increased by a factor of nine in the period from 1985 to 2003 in real terms[3] whereas world trade has only tripled (factor of 2.7). With foreign direct investment accounting for 10.4 percent of total world investment in 2002 (Table 1) and having peaked at 21.8 per cent in the boom year 2000, real capital flows have become an important factor in the international division of labour, even compared to the world's export to GDP ratio of 24.0 percent in 2002 when World Development Indicator Data are used (Figure 1). Three quarters of the world's foreign direct investment, measured as inflows, are attracted by the industrial economies (1991-2002, Table 1). Some countries have succeeded in financing an important part of their annual investment through foreign direct investment. As an example, Hungary managed to attract about a quarter of its annual gross investment from abroad in the 1990s and even 50.2 percent in 1995. In other economies, the export of capital plays a vital role. Thus, gross annual investment abroad of Germany's industry amounted to 34.8 percent of total investment in the period 1996-2001; the gross inflow made up only 8.8 percent of industry's annual gross investment.[4] The

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[3] Using IMF International Financial Statistics Data and adjusting FDI by the US industrial goods price index.

[4] Data provided by the German Statistical Office, German Council of Economic Advisers. In 2002, German industry's stock of gross foreign direct investment relative to its gross capital stock was 11.8 percent; the stock of foreign direct investment in Germany's industry relative to the German industry's capital stock was 6.1 percent.

larger European economies, Germany, France, Italy and the United Kingdom, had a net outflow of foreign direct investment in the period 1991-2003.[5] This also applies to the EU-15 and to the sum of EMU countries.[6] In the same period, the United States also had a net outflow except for 1996-2001.

The flow of technology, often coupled to foreign direct investment or simply taking place within international firms, is a second channel of competition between locations. This also includes organizational knowledge. In contrast to capital, knowledge can be used in a non-rival way and therefore is not necessarily lost once it is passed on to another location, but it may become less valuable for the first location or it may no longer be used at its origin.

The movement of highly skilled labour is a third channel of locational competition. Furthermore, some channels exist that do not directly relate to the production process of an economy. Thus, as a fourth channel residents may emigrate and thus vote with their feet if their option of voice is too limited or if conditions are unfavourable otherwise. Moreover, the international demonstration effect through communication systems – the CNN effect – is relevant as a fifth channel. By observing the performance of other countries, people are able to gain experience on how things can be done better and what they can strive for. Last but not least, in the monetary-financial sphere of the economy, portfolio capital can move instantaneously, enhancing the flow of real capital, but also affecting the value of currencies and of financial assets.

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[5] Germany hat a net inflow in the years 2000, 2002 and 2003, France except for 1993 and 1995. The UK had a net inflow in 2004. Italy had a net inflow in 1999, 2000 and 2003, its net outflow is small. l

[6] Except for the years 2000, 2002.and 2003.

FIGURE 1

World FDI to World Gross Capital Formation and World Exports to World

GDP, in Percent[7]
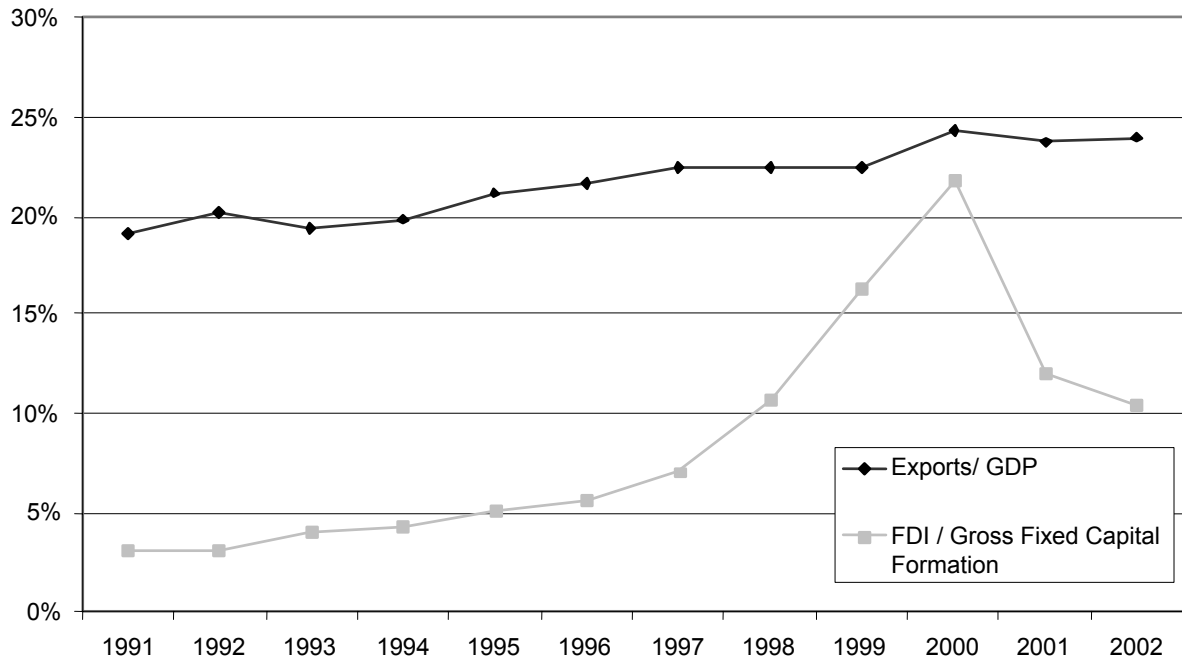
Source for data: World Bank World Development Indicators CD-Rom 2005

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[7] FDI as capital inflow. For a similar diagram see World Trade Report 2004 Chart IA:1, p. 4.

TABLE 1
Foreign Direct Investment, World Economy [8]

	2000		2002		Annual average 1991-2002	
	FDI in USD Bill.	Percent of gross capital formation	FDI in USD Bill.	Percent of gross capital formation	FDI in USD Bill.	Per cent of gross capital formation
All Countries	1,511.2	21.8	699.0	10.4	561.2	8.6
By Type of Country						
OECD Members	1,292.6	23.1	556.3	10.7	433.4	8.3
OECD and high-income non-OECD[9]	1,377.8	24.1	576.6	10.9	457.0	8.6
Developing[10]	133.3	10.8	122.4	916	104.2	8.6
By Region						
Latin America	77.4	20.11	44.2	14.5	46.3	13.7
East Asia[11]	136.0	15.75	78.5	8.0	72.7	9.4
Eastern Europe	28.2	14.48	32.8	15.2	17.6	8.5
Sub-Saharan Africa	4.3	7.6	5.3	8.5	3.6	6.6

Source for data: World Bank World Development Indicators CD-Rom 2005.

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[8] FDI as capital inflow.
[9] According to the definition of the World Bank.

[10] Low income, lower middle income and upper middle income according to the definition of the World Bank excluding Mexico, Poland, the Slovak Republic and the Czech Republic.

[11] Excluding Japan.

3. Basic Elements of a Model

Governments can use a set of policy instruments $\{G, t, In\}$ to attract mobile factors or induce them not to leave the country. They can influence the attractiveness of a location by improving or extending the supply of public goods (G), by choosing tax rates (t) and by putting in place institutional arrangements (In). Related instruments are providing infrastructure in transportation and in education, specifying other aspects of taxation such as defining the tax base and improving soft location factors. A large part of competition among locations takes place in the form of institutional competition in the regulatory framework that determines the way things have to be done in a society (Siebert and Koop, 1993). These institutional rules can be formal norms, such as constitutional requirements, modes of collective bargaining or the procedures of licensing firms, production processes and products, as well as informal aspects, such as non-codified, habitual behaviour. All these parameters influence the location decisions of firms and residents.

The task of the government is to find an optimal instrument mix in its calculus of locational competition where the definition of optimality varies with the government's target function. It may maximize, inter alia, welfare of society, national income, income per head or the votes for the party in power. Thus, it is necessary to weigh the advantages of the supply of public goods against the burden of financing them. A generous supply of infrastructure does not increase the attractiveness of a location unless taxes on mobile factors are kept at a reasonable level. Conversely, a country that levies a very low or no tax at all on business activities may nevertheless not be able to attract mobile factors if the infrastructure is not sufficiently developed. In comparing benefits and costs, governments have to take into account the fact that capital and other factors as well as residents have an exit option if conditions at home become less

favourable. This restraint, i.e. the international interdependence between national factor markets or even the international market of residents, changes the calculus of governments.

Let us look at the elements of a model in which only the mobility of capital is considered as a channel of interaction and where the other channels of locational competition are neglected. Agents in such a model are governments, firms and households, representing consumers and workers. In a richer version, households could also be considered as residents; other political agents such as trade unions can also be introduced.

Governments use their set of policy instruments {*G, t, In*} to maximize their objective function, for instance national income (*Y*), subject to their restraints, for instance balancing the budget. Households maximize their utility from consumption over time. Firms maximize profits with a production function in which output (*Q*) depends on labour input (*L*) and capital (*K*), where the supply of capital (*K*) is influenced by the public good (*G*), the tax rate (*t*) and the institutional arrangement (*In*). Therefore the production function has the form *Q=F(L,K[G,t,In]). Q* can be interpreted as an output vector so that the production function and factor availability define an output space; or in the two-commodity case they define a transformation function. In addition, the economy can enjoy gains from trade *Y=T(Q,α)* where *α* is the degree of openness with respect to trade and where *T* describes how output is transformed into national income via gains from trade.[12] Gains from trade arise from an improvement in the terms of trade and a positive volume effect, i.e. an increase in imports (and exports) at given relative prices. For simplicity, we can here argue that the

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[12]The production function here is interpreted as a technological relationship between output and inputs so that efficiency and trade gains can be separated. In an empirically estimated macroeconomic production function, however, a separation between a technological relationship and gains from trade is not possible; gains from trade are then part of the relationship between macroeconomic output and macroeconomic inputs.

marginal value product of factors of production expresses gains from trade. Thus, in a capital-abundant country specializing on capital-intensive products after trade has been taken up, the marginal value product of capital ($p_K F_K$) will increase because the price of the capital-intensive good (p_K) rises; F_K is the marginal productivity of capital.

The model is a two-stage game. Governments choose their policy instruments and play against each other. Firms and households react to the policy instruments chosen by governments. A reduced version of the model would be a small country case where only the decisions of one government are considered and where the other governments keep their policy instruments constant.[13] Already in such a small country case, the impact of an exit option of firms becomes apparent. If we take into account not only the mobility of capital but also some of the other channels of interaction, we obtain a much richer and more complex web of interdependencies.

4. The Impact of Competition between Countries: Losses versus Gains

Let us now look at the losses and the gains from locational competition. The criterion used here to determine whether the inflow or the outflow of mobile factors is beneficial is the welfare level. Welfare refers to the aggregated utility of people or, as a proxy, to national income or income per head. In the policy debate, the GDP growth rate and employment are also often used as a criterion. The criteria can be applied to the world, an individual country or groups in a country, for instance workers and capital owners.

a. Gains for the world and the capital-importing country

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[13] For an N-country game model without gains from trade see Lorz (1997).

Similarly as trade is a positive-sum game for the world, the mobility of factors of production is a positive-sum game for the world as well. The world will benefit from using capital where its productivity is highest, i.e. from allocating the mobile factor of production more efficiently.

For the capital-importing country, capital imports are beneficial provided that its domestic marginal productivity of capital is higher than the interest rate it has to pay.[14] Otherwise, the country loses and will easily find itself in a foreign-debt trap; then it should not import capital. The import of capital will also have a positive effect on the marginal productivity of labour since workers will be equipped with more capital. This improves the conditions for employment; the real wage can increase.

b. Impact on the capital-exporting country

With respect to the capital-exporting country, however, the answer is more complex. The traditional view is that capital exports are beneficial provided that the interest rate capital receives abroad is higher than its domestic marginal productivity. This means that savers can earn a higher income abroad and that Gross National Income of the capital-exporting country can increase. In this approach, capital exports are interpreted as excess savings that can be used abroad more productively. Thus, in the traditional economic model of capital mobility, the analogy to the trade model applies. Both the capital-importing and the capital-exporting country benefit.

This conclusion no longer holds, if the assumption of the traditional economic model, that capital owners will remain at their original location, is given up. If they leave and take their capital with them, not only is the country's capital

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[14] For a more cautious statement see Mayer-Foulkes and Nunnenkamp (2005) who find that US FDI tends to increase divergence of lower-income developing countries with respect to the United States.

endowment affected negatively, but also its earning capacity. This argument also applies if entrepreneurs walk off. If residents go away, the emigration country will lose in that its population shrinks.[15] Admittedly, in this interpretation policy targets are associated with a location, for instance GDP or the GDP growth rate; the location has an identity.

There are less drastic scenarios than those where the capital owner emigrates. Capital can move quite well across borders without residential or entrepreneurial mobility. Let us look at cases in which capital leaves as it has for Germany, France and the United Kingdom since 1991. Consider, for instance, a situation in which a national government, let us call it the home country, introduces regulations or a tax that reduces the rate of return on capital. Or think of a policy failure in which a government increases uncertainty through its policy means so that the expected rate of return is lowered. An example is that firms in the three continental European countries expect the implicit debt of the social security systems to become explicit eventually, fearing an increase in taxes. Another relevant policy situation is when countries abroad attempt to make themselves more attractive by choosing appropriate policy instruments. This then reduces the relative marginal rate of return of the home country, or for simplicity the relative net marginal productivity of capital from the point of view of firms. In these three cases, the capital stock of the home country will decrease in a comparative-static context. *Ceteris paribus*, this means a lower GDP. And under the conditions of a growing economy, growth will be lower in the home country. Thus, in a model of locational competition, the withdrawal of mobile capital can be a phenomenon that represents a loss for a country.

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[15] Similarly if workers move, the emigration country will lose part of its labour supply and its human capital and, consequently, part of its output. GDP per capita may increase if low-skilled labour leaves; it may fall if high-skilled labour emigrates. The migrants, the immigration country and the world as a whole will gain.

This production function approach, however, is not yet the whole story, because there may be gains from trade arising from capital exports which overcompensate the production function loss from capital outflows or which compensate them partly. A more complex analysis therefore has to look at the impact of capital exports on national income via trade or, for simplicity, on the impact of capital exports on the exports of goods and services. We then have to distinguish whether capital exports (K_x) are complements to the exports of goods and services (X), i.e. $dX/dK_x > 0$, or whether they are substitutes ($dX/dK_x < 0$).[16] If they are complements, exports of goods and services of a country are increased through its capital exports; if they are substitutes, exports of goods and services decline.

c. Capital exports and commodity exports – complements or substitutes?

If capital exports and the export of goods and services are complements to each other, the export of capital may serve to secure the export position of a country. Two cases can be distinguished. In the first case, the exported capital produces intermediate inputs abroad for a capital-exporting country's exports; these intermediate inputs are imported and then integrated into the export products of the capital-exporting country. In this case, a country uses other economies, in particular its neighbouring economies, as a supplier of inputs. The other countries are thus instrumental in reducing the country's production costs, so enhancing its price competitiveness. In the second case, the exported capital serves to produce final goods abroad for which high-value intermediate products of the capital-exporting country are required as imported inputs. In this case, capital exports help to secure old or conquer new markets for a country's intermediate exports, for instance for investment goods. In addition to these cases, economic growth in the capital-importing country is often stimulated by trade gains from integrating itself into the world economy as in the case of

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[16] Note that capital exports (K_x) is a flow variable in contrast to K, a stock variable.

Central and Eastern Europe and China. Growth of the capital-importing country then enhances exports of the capital-exporting industrialized countries and this has a positive effect on the empirically measured elasticity of complementarity.

If, however, capital exports and exports of goods and services are substitutes, the export of capital will be used to build new production facilities abroad which serve the world market. The production of goods migrates to another country, as for instance in a product cycle approach. This reduces the demand for a country's exports. Capital mobility then accelerates a process of structural change that is going on anyhow in older sectors.[17] Nevertheless, there are still benefits through dividend income from exported capital.

d. Will labour lose?

If a country gains in locational competition, this does not mean that all groups of a country will actually benefit. This result is analogous to trade theory. What happens to the economic position of the immobile factors, especially of labour, is at the heart of the locational competition approach. Labour will gain if capital is imported, but it may lose, if capital leaves. Whereas capital exporters earn a higher income abroad, assuming that the marginal productivity in the world lies above the country's marginal productivity, labour in the capital-exporting country is equipped with less capital in a comparative-static framework. Its productivity $(F_L[L,K\downarrow)$ is lower than prior to the capital outflow; F_L is marginal labour productivity, L is employment or labour input and K is the capital stock. This means lower wage income, i.e. $dw/dK_x < 0$ with w wage income and dK_x capital exports or – if wages are sticky as in continental Europe – higher unemployment, i.e. $dL/dK_x < 0$. In a growing economy, labour productivity increases at a lower rate than it otherwise would.

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[17] Industrial countries can compensate this tendency, if they succeed in generating a sufficiently strong technological progress in new sectors, thus raising their price competitiveness there and possibly overcompensating the loss of market potential for their exports in traditional sectors.

Looking at industrial countries, the negative productivity effect is an issue for low-skilled labour, but much less or not at all for high-skilled labour, i.e. human capital. It can be expected that for human capital the marginal value product rises if an industrialized country specializes on human-capital intensive exports. Moreover, the negative productivity effect is more typical for final goods production; if intermediate inputs are imported from abroad, jobs may become even more competitive by lower input costs. Finally, even low-skilled labour can enjoy gains from trade with improving terms of trade. These gains may partly compensate the productivity loss; it is open, however, whether these gains will be able to fully compensate the productivity loss. It seems unlikely. Note also that rigid wages imply unemployment and a shift of the production possibility frontier inward, thereby reducing GDP. Moreover, higher unemployment requires to finance higher outlays of the unemployment insurance and higher contribution rates which in turn have a negative impact on work effort and output. In an open economy, these effects go counter to the gains from trade.

The condition $dX/dK_x > O$ is not sufficient to have $dL/dK_x > O$. To have a positive employment effect depends on the employment intensity of exports (L/X). For employment to be stabilized, the positive effect of capital exports on the exports of goods and services should not be cancelled out by a decline in the employment intensity of exports. This requires that capital exports help to compensate the discussed negative shift in the marginal productivity curve of labour by securing export markets; then the marginal value product of labour increases. If, however, capital exports and the exports of goods and services are substitutes, there is a strong tendency for labour in the capital-exporting country to lose.

e. Capital Mobility with Inter-sector and Intra-sector Trade

The implications of locational competition on labour vary with the type of exchange in goods and services, in other words, they depend on the underlying trade model. In the context of traditional inter-sector trade (when goods and services of different sectors are exchanged between countries), low-skilled labour in one country is likely to be substituted by less expensive low-skilled labour elsewhere, and capital mobility in the form of off-shoring is one of the vehicles by which substitution occurs. Then, capital mobility will mean a loss for low-skilled labour in the case of a capital outflow. Relative wages decline or unemployment of low-skilled labour rises as in the larger continental countries Germany, France and Italy. Similar to the trade model, the country's gains are potentially sufficient to compensate the losers. Again as in the inter-sector trade model, high-skilled labour will not lose out, if the country specializes in favour of human-capital intensive products and accumulates more human capital in this sector. Moreover, the country's high-skilled labour will be needed to organize the production process in the labour abundant country where the capital has gone in order to use the low-wage labour.

In the case of intra-sector trade when similar goods are traded because people like product variety, potential negative implications are far less clear. Then cross-flows of foreign direct investment between countries are typical. Firms produce product varieties at different locations, establishing a portfolio of investments in different countries. Consequently, an outflow of capital by a domestic firm may be compensated by the inflow of capital by a foreign firm in the same sector, that tries to expand its market segment in the domestic country. Similarly, as in intra-sector trade, a sector does not have to shrink in one country if it expands in another. On the contrary, the same sector can expand in both countries, albeit with different types and qualities of the same or of a similar product, i.e. with a vertical structure in intra-sector trade. Again as in intra-

sector trade, this phenomenon is characteristic for industrialized, high-income countries. And as income per capita rises with economic development, the demand for variety increases and cross-border investment flows allow industrializing countries to benefit from this effect.

f. A Non-Neoclassical Framework

Looking at the impact of factor mobility between locations on economic growth and employment in a non-neoclassical dynamic framework, endowments of locations can be influenced in both size and structure if polarization effects in location space (as discussed in regional science), complementarities between factors of production, clusters, threshold effects and path dependency of economic processes are taken into consideration. In this view, countries or regions losing factors of production may experience a more entrenched relative or even absolute decline of their GDP or their welfare than in the neo-classical case. The erosion of economic positions, as analysed by Olson (1982), may come into play. The same holds for Schumpeter's idea of "creative destruction" (1942:82), in which existing structures have to make way in order to create new ones. In such a context of creative destruction, we can no longer guarantee that each generation of a country will benefit. A generation may have to bear the burden of adjustment without being compensated for it in order for a future generation to have a better life. The country may be successful in restructuring itself as the post-communist transformation countries have demonstrated in the 1990s, or it may lose, if the erosion is already too entrenched.

g. First Empirical Results

To empirically determine the relevance of capital exports for the exports of goods and services and for employment in capital-exporting countries runs into a number of difficulties. Using sectorial data, factors other than capital exports explaining exports of goods and employment in the tradeable sector have to be

taken into account. Thus, it is normal in the structural change of open economies for comparative advantage of a specific sector to shift from the industrialized to the industrializing countries. Furthermore, exports of the industrialized countries increase due to growth stimulated by a deeper integration of developing countries into the international division of labour. Exports also depend on the industrialized country's efforts to improve its comparative advantage in the "new" sectors when it is losing export potential in "old" sectors. In addition, the institutional incentives for employment prevailing in a specific country are relevant for the impact on employment. Moreover, the effects of off-shoring in the form of foreign direct investment have to be delineated from the impact of outsourcing in the form of trade. Last not least, temporary swings in exchange rates, both in the nominal and the real rate, also have an impact.

Taking Germany as an example, the number of jobs in manufacturing (*Verarbeitendes Gewerbe*) including the self-employed fell by 3.0 million to 7.6 million in the period 1991-2004, at a rate of 2.5 per cent per year and by 0.8 percent in the period 1995-2002.[18] In contrast to this trend, employment in car production increased annually by 3.14 per cent in the period 1995-2002; it seems that employment in the car industry, which has a large portion of its capital stock abroad[19] and in which intra-sector trade dominates, has benefited from off-shoring (Klodt 2004). In the food sector, employment also increased in the same period, rising by an annual rate of 0.91 percent; and in recycling it rose by 6.8 per cent, albeit in a sector that has only 19,000 employees. In plastics, employment more or less stagnated. In all other sectors, however, employment

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[18] The number also includes half-time and mini-jobs. What is telling, is the reduction in employees who (together with their employers) pay contributions to the social security system by 1.6 million to 26.6 million in the period 1995-2004. Unfortunately, there is no break-down by sector.

[19] 19.8 percent of its capital stock at replacement costs (2002). In the chemical industry, the respective percentage is 26.7.

fell, including machine building, the chemical and the electro-technical industry.[20]

Firm level panel data show mixed results. They suggest that a substitution effect exists in the manufacturing sector between employment in the parent multinational company in the European Union and their affiliates located in Central or Eastern Europe or within the EU-15. A decline in the affiliates wage costs by ten percent leads to a one to two percent decline of employment in the parent company (Konings and Murphy, 2001). However, for these somewhat older data the substitution is not observed with respect to affiliates in Central and Eastern Europe. It is also not found for the service sector. Employment relocation from west to east is not observed (Konings 2004). Marin (2004) finds that a ten percent decline in affiliate wages in EU accession countries of the first round leads to a 1.6 percent increase in labour demand of the parent company's in Germany and Austria. In spite of these sketchy data, however, a set of policy issues of the European economies such as the dwindling tax base for business taxes in some countries like Germany suggest that locational competition has an impact on economic processes.

5. Some Implications for Governments and Unions

Governments have to take into account the exit option of capital and of other mobile factors. Meanwhile, even the typical medium-sized firm of the industrial countries tends to have a portfolio of production sites in about a dozen countries. This means that firms have an option space in which they can optimise their activities. It also means that firms can respond to a government measure by rearranging their production and investment portfolio. This does not only have

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[20] For somewhat different quantitative results for these sectors for the period 1996-2002 see Klodt (1994); according to Klodt, sectors with a lower FDI stock abroad seem to have a more pronounced reduction of jobs.

implications for national GDP, the growth rate, the nature of the business cycle and employment. It also affects tax revenue. Besides the restraint through factor mobility, governments also have to recognize the demonstration effect. Voters will ask to what extent policy approaches used elsewhere can be applied in their own country. competition.[21]

There are also implications for trade unions in the industrial countries. These implications vary, depending on whether capital exports and the exports of goods and services are complements or substitutes, how high the employment

[21] Besides locational competition in the real sphere of the economy, competition between currencies can be viewed as a special form of locational competition. Consider a country expanding its money supply way in excess of the growth of the economy's production potential. Then, the price level rises and purchasing power parity requires the national currency to devalue. Market participants anticipate the devaluation relative to a fixed or crawling peg, and as soon as expectations for depreciation are strong enough, portfolio capital will leave (including capital flow reversals). This then reinforces the process of devaluation. The exchange rate will overshoot. A similar effect of devaluation occurs if the public budget is in disarray and if uncertainty on the repayment of high public debt affects exchange rate expectations negatively. A prominent example is when the governor of Brazil's province of Minhas-Gerais declared that the province's debt would not be repaid. This then triggered the crisis of the Brazilian real in 1999. The interplay of purchasing power parity forming exchange rate expectations and interest rate parity determining portfolio flows can thus lead to an overshooting of the exchange rate, but it can also furnish a check on governments who must aim to prevent such a devaluation giving a negative signal to the voters on the government's performance. This could be observed in 1983, when France was forced to reverse the economic policy it employed during the first two years of the Mitterand presidency, which had aimed at stimulating internal demand. This resulted in high inflation, combined with an increasing current account deficit, rising foreign debt and a devaluation of the French franc. Thus, currency competition can be interpreted as a controlling mechanism for the soundness of monetary and fiscal policy. Multilateral approaches to prevent currency competition have to be viewed with scepticism. Coordination in the form of target zones for exchange rates is unlikely to be an appropriate approach. Target zones not only require a coordinated monetary policy between the central banks. They also necessitate a synchronised fiscal policy in order to prevent different degrees of fiscal frailty arising from diverging debt levels between countries. Moreover, they would have to call for harmonization of wage policy in those countries where the institutional set-up leaves it up to the social partners to set the wages. Last not least, they would require a consensus on the equilibrium real exchange rate around which the target zones would have to be defined. It is highly unlikely, that all these preconditions will ever be met.

intensity of export production is, and on whether the inter-sector or the intra-sector approach to the exchange of goods and services dominates. In the traditional approach with inter-sector trade, the bargaining position of trade unions aiming at a high income for their members and at secure employment is negatively affected by the exit of capital. Assume unions succeed in pushing for a wage increase above productivity growth. In an open economy with capital mobility, capital will then leave the country, and labour productivity will be reduced. Either wage income for the union members will have to fall, correcting the original increase, or there is an increased risk of unemployment for them. It is quite likely that the new phenomenon of competition among locations has affected the position of trade unions in the large continental European economies.[22] Since the opportunity costs of wage policy rise for trade unions, they must change their strategy except when the social policies of the government accommodate the unemployed. In the context of intra-sector trade, this implication is less pronounced.

Competition between locations may also have implications for the institutional set-up of wage bargaining because the bargaining equilibrium between trade unions and employers' associations is affected by the increased mobility of capital. The exit option that firms have induces the employers' associations not to resist wage increases too strongly. Under this condition, delegating the wage formation process to the social partners (as in Germany) may no longer yield positive results for the economy as a whole with respect to employment, unless the unions temper their wage claims. The above aspects then imply that competition between locations requires to redefine the institutional set-up of wage bargaining, for instance by changing some of the legal stipulations that are

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[22] Locational competition may be one of the factors that can explain the loss of membership of trade unions. For instance, the German Trade Union Federation (DGB) lost about 4.8 million members, more than one third, in the period between 1991 and 2004.

the origin of the unions' power and that prevent a decentralization of wage formation.

Opposing views exist on some of some other important implications of the paradigm of locational competition. A first issue is whether locational competition necessarily implies a race to the bottom between countries or whether it can be viewed as a controlling mechanism for governments and as a discovery device. A second question is whether coordination between governments to establish common rules has to be viewed as a governments' cartel or whether common international rules are necessary in an environment of locational competition. Finally, an essential question is whether many national institutional equilibriums can coexist. These are vital policy issues that we will discuss in the following sections.

6. A Race to the Bottom versus a Discovery Device

Some fear that competition between locations will necessarily lead to a negative downward spiral, or as race to the bottom as some call it (Brecher and Costello 1994), that may even eventually result in the demise of the nation state. As already discussed, it is indeed true that the exit option of the mobile factors of production introduces a new restraint on the nation state and reduces its room to manoeuvre. Mobile factors can escape national taxation. This means that the nation state will inevitably lose part of its power to tax (Wilson 1987; Devereux, Lockwood and Redoano 2003). In addition, with the exit of each unit of capital the aggregated willingness of firms to pay for the national public good, for instance infrastructure, is reduced. Consequently, the marginal benefit curve of the public good as the vertically aggregated willingness to pay shifts downward and less of the public good becomes optimal in a benefit-cost analysis. In order

to prevent the outflow of capital, governments are forced to reduce taxes on capital. They eventually have less and less financial means.

However, there are limits to this process and a lower bound to a race to the bottom is likely to exist. Firms are willing to pay taxes if sufficiently attractive public goods are supplied. Moreover, the state can adjust the financing of its location instruments, for instance by introducing user charges for infrastructure such as roads, ports and airports. Additionally, it is possible to privatise large parts of a previously publicly owned infrastructure in order to set scarcity prices. Or, the government can switch to benefit taxation, which means that taxes are equivalent to the benefits received by users and not to the ability to pay of firms. Finally, the nation state can change the structure of its tax system to lean more on indirect taxes, explicit consumption taxes and taxes on immobile factors. The Scandinavian concept of dual taxation, which places a lower tax rate on the internationally mobile factors of production, i.e. capital income, and a higher tax rate on the income of the immobile factors, i.e. labour income, is already an answer to this problem.[23] All these responses can counteract the spiralling-downward process.

In a similar way, countries do not have to weaken the regulations that protect individuals and the environment, if negative long-run impacts of non-regulation are taken into account by citizens and firms. Moreover, the sector of non-tradeables is much less susceptible to locational competition, and it has a dominant weight in many economies, except in the smaller countries with a high degree of openness. For these reasons, it is not true that the nation state fades away (Wade 1996).

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[23] Capital income includes profits, dividends, interest income, rents and capital gains. Labour income includes wages, income for management functions, also of entrepreneurs, and pensions. If a higher tax burden is put on the immobile factors, labour may demand a higher pre-tax income; this would worsen the capital outflow and make it more difficult to find an acceptable equilibrium. Putting the tax on consumption prevents this effect.

In contrast to this view of a race to the bottom, competition between locations can be interpreted as a useful mechanism to control the efficiency of governments and as a discovery device for better policy approaches in the sense of Hayek (1968). Competing for mobile factors puts pressure on countries to find new solutions, for instance by implementing new institutional arrangements or by exploring new technological horizons. It stimulates the imagination and intensifies search effort to find new and better ways of doing things. Moreover, in this view, the technological or institutional solutions employed in the different locations can be explicitly compared. Seeing positive or negative examples from elsewhere may encourage a country to do better than it actually performs. One aspect is that countries can mimic approaches already used successfully abroad. This is why "benchmarking" has become a key concept in the reform programs of several continental states in Europe. Note, however, that the benchmarking strategy does not mean to be at the new institutional frontier.

In addition, locational competition provides a way for people to express their preferences by voting with their feet in the sense of Tiebout (1956) and Hirschman (1970). In this interpretation, the threat of losing an economic position through locational competition is seen as the price of freedom. Without this threat there would not be the necessary pressure for new solutions. Furthermore, competition between states, if adhered to, reduces the opportunity of interest groups to rent-seek and thus raises efficiency.

To some extent, and in extreme cases, competition between locations may even be seen as an instrument to tame the Hobbesian Leviathan. This happens when people vote with their feet, as when some 600 East Germans stormed the Hungarian border at Sopran on 19 August 1989, and Hungary did nothing to prevent them. In such cases, systems can collapse as communism did. In this respect, the exit option controls governments. Thus, competition among

locations can indeed be seen not only as an economic, but also as an important political mechanism.

7. Rules for Locational Competition: A Cartel of Governments versus Reducing Transaction Costs

Different views also exist on whether a common set of rules is necessary in an environment of locational competition. If the competitive process between countries is seen as a race to the bottom, institutional harmonization will be called for. As a counter position, to strive for intergovernmental cooperation and institutional harmonization can be viewed as a natural reaction of governments. They form a cartel of institutional rules, restraining the mobility of factors of production and of residents, in order to reduce the pressure which locational competition exercises on governments.

We will here argue that in locational competition a set of rules are necessary in order to keep transaction costs low, the most important reason being to prevent strategic and opportunistic behaviour of countries that distort the competitive process to the detriment of other countries. It is important to clearly delineate the cases in which these rules are needed. The following cases have to be distinguished:

i) Global public goods cannot be allocated by competitive processes. For instance, in global warming because of greenhouse gases and in damage to the ozone layer the concept of competition between countries cannot be used to determine the optimal quantity or quality of the environmental media at stake. Once the target value has been agreed upon and property right have been assigned, markets can come in to find the least-cost solutions for the abatement of pollutants. Terrorism is a threat to security, and security is a public good with global properties. By definition, global goods do not involve costs of reducing

competition, and there are gains from cooperation. In these cases, international cooperation and common rules are needed. Free-rider behaviour of countries is to be discouraged.

In a strict interpretation, public goods are "consumed in equal amounts by all" (Samuelson 1954). To justify common rules between countries, the public good must be global. If public goods only have a national dimension, they do not satisfy the property of a global public good and therefore fit the criteria for competition between countries. From a global perspective, such goods are like club goods with nations representing the club.

ii) Border-crossing externalities, both negative and positive, distort the market allocation and the competitive process. Cross-border environmental pollution is an example of a negative externality. There are gains to be made by cooperation in order to internalise these externalities.

However, not every interdependence between countries is a real externality. We must distinguish between market externalities and non-market externalities. A market externality means that an interdependence between countries exists through the market mechanism, in our context especially the factor markets. A non-market externality or a "technological" externality means that the interdependence goes through other, non-market systems, so to say through technological systems, for instance meteorological systems in the case of global warming or social (including religious) systems in the case of terrorism.[24]

Externalities running through technological systems require cooperation if the benefits from cooperation outweigh the costs of having the technological externality. By definition, this type of cooperation means reducing the

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[24] On the distinction of market and technological externalities for environmental systems see Siebert (2004).

externality, for instance by agreeing on the polluter-pays principle or the pollutee-pays principle. And by definition, in theory this type of coordination does not involve costs of reducing competition. [25]

Cooperation in the case of market externalities, however, always implies that competition is reduced because market results are not accepted. This represents long-run opportunity costs because innovative pressure is taken out of the system. Therefore if market interdependencies are not accepted, it is required to include the costs of reducing competition in a benefit-cost analysis. The gains from cooperation must more than compensate for the costs of reducing competition.[26], [27]

iii) Besides global goods and technological externalities, the strategic behaviour of governments can distort competition in favour of one country and to the disadvantage of another one. This is analogous to the monopoly argument in the product markets. An example is when global rules of the game are established that favour one country and disadvantage another. Or, political power may be misused to influence the result of competition for mobile factors. In yet another example, governments deliberately and strategically distort their comparative advantage by subsidies, for instance in older sectors as in agriculture or when the state plays an active role in engineering national champions.

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[25] Implementation is another case.

[26] With this condition, I give a first answer to the question what to do if market failures exist. Competition between governments involves the functioning of many markets, especially goods and labour markets. Ideally, these markets function well. If market failures exist, national and international policy failures have to be distinguished. National failures have to be solved at the national level. International market failures require coordination. The costs of international policy failures should not outweigh the costs of market failures.

[27] Coordination should never be seen as legitimate if it is undertaken for the single purpose of keeping governments, or the existing parties, in power. In no case should governments be allowed to cooperate in limiting the exit option of residents, for instance by detaining a country's inhabitants behind walls. This limits freedom and runs counter to an open society in the spirit of Popper (1945).

To simply demand a "level playing field" is not sufficient to prevent these distortions. Agreement is needed on a frame of reference from which to define and identify the distortions. A first approach is to accept that differences in the factor endowment of countries with immobile factors can be fully exploited. An example are differences in national environmental abundance. A second approach is to acknowledge that countries have different preferences for national public goods, again including the environment now from the demand side. If countries have different preferences for public goods, this inevitably means different taxation levels and taxation systems. Nations also have different preferences with respect to merit goods, for instance with respect to the level of social protection, implying different levels of contribution rates to the social security systems, and with respect to labour market regulations, leading to different degrees of flexibility and rigidity. With the existing differences in labour productivities, we cannot impose the rich countries' labour norms on the low-productivity countries, not even within the European Union. Moreover, we should not impose one country's preferences on another one. To accept these two approaches would represent an important step towards finding basic elements of an international rule system. A third approach is that the results of competition for the mobile factors of production in the international factor markets should be accepted. This third aspect of specifying a frame of reference from which distortions can be defined is the most difficult one to reach agreement on. [28]

International public law and international institutional arrangements such as the WTO represent approaches that help to prevent countries from developing

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[28] How difficult it is to agree on a distinction between what reflects differences in endowment and preferences and what is a distortion is shown by tax competition in the European Union where the willingness to cooperation is more pronounced than in multilateral arrangements. The new EU members from Central and Eastern Europe, who want to attract capital, rightly view harmonizing corporate taxes as a means to reduce locational competition in a government's cartel.

aggressive and strategic behaviour to the detriment of others. This also holds for regional integrations. Such rule systems are instrumental in reducing transaction costs and generating benefits. Apparently, an international rule system only evolves slowly over time in a Hayekian process. As new economic phenomena have emerged in the past, such as the increased trade in services and the relevance of property rights for technology, new rules have been introduced in the rule system for trade in response. It can be expected that locational competition will be another area where a new economic international order will develop that reduces transaction costs and allows competition between countries for the mobile factors of production.

8. A Single World Equilibrium versus Many National Equilibriums

A fascinating, but open question is whether competition between locations will eventually lead to a single equilibrium in the world economy or whether many different national or regional equilibriums are feasible. The argument in favour of many different equilibriums in face of the mobility of factors and residents is that conditions in the regions of the world are markedly different and that historical experience suggests that different institutional solutions can coexist as they do, for example, in the case of varying fiscal regimes at the state level in the US. Another important aspect is that people's preferences differ, and this means that people attempt to find different solutions. However, with factor mobility the economic position of a country can erode if it loses mobile factors due to internal false incentives and the inability to adjust to new external conditions. Apparently, a condition for many national equilibriums to exist is that they must be sustainable in the long-run. Locations must be able to hold on to factors of production and to inhabitants. If factors and people exit, this process must at least come to a halt at some level that is sustainable. Otherwise many national equilibriums will not be possible.

Even if adjustment processes in locational competition take a long time, the pressure of competition between locations is a powerful economic force when all the channels of interaction are taken into consideration. Thus, nearly all Latin American countries followed the strategy of import-substitution and populist policies for nearly four decades since 1950, until the lost decade of the 1980s forced the hemisphere to a different orientation. Communist central planning including the COMECON, judged by many for some decades to be successful, finally collapsed. Sweden, for a long time a prototype of a state that combined markets and the equity goal, had to change its welfare state approach after the 1992 crisis. Similarly, the Netherlands had to adjust to the changed conditions in the early 1980s with the Treaty of Wassenaar. The same applies to other small open European economies, for instance Ireland. For the larger continental countries of Europe, the policy issue is whether they can keep the existing social model in an environment of locational competition or whether this model already affects the economic foundation of these countries negatively, witness Germany's great pains to repair its stalling economic engine (Siebert 2005). All these examples and the issues discussed in this paper demonstrate that - contrary to Krugman's evaluation - competition between locations is a powerful economic paradigm.

9. Conclusions

Locational competition is an important concept to explain the international division of labour in an environment where factors have become more mobile internationally and where nations compete for the mobile factors of production - for capital, technology and high-skilled labour. Countries can improve their welfare if they succeed in holding on to their own mobile factors at home or in attracting new ones from abroad. This widely neglected or even ignored approach is in sharp contrast to trade theory where factor endowments are

treated as given and where differences in endowment are exploited. To summarize, our main points are:

• The world and the capital-importing country will gain from locational competition.

• For the capital-exporting country, the answer is more complex. It loses capital and its labour productivity will be reduced. This may be compensated by an increase in exports and gains from trade, depending on whether capital exports and the exports of goods and services are complements or substitutes.

• Employment effects in the capital- exporting countries are a function of the employment intensity of exports and on the relationship of capital exports and the exports of goods and services, i.e. their complementarity or substitutability. Potential negative implications on exports and employment are less pronounced in a world of intra-sector trade instead of inter-sector trade.

• The exit option of capital introduces a new constraint into the calculus of governments and trade unions.

• Locational competition will not necessarily result in a race to the bottom because governments have policy instruments at their disposal to adjust to the increased mobility of factors. If, however, countries do not respond appropriately, an erosion of their economic position can ensue.

• Locational competition can be a controlling mechanism to curb the inefficiency of governments and it can work as a discovery device to produce new and better institutional solutions.

• Coordination by means of a common rule system for competition between countries is necessary when the allocation of global public goods is at stake and when border-crossing externalities cause disruptions of the competitive process that are so large that their internalisation creates more benefits than it causes coordination costs. In other cases, international coordination may represent a

cartel of governments to reduce competitive pressure. This would then reduce welfare.

- A rule system is also justified in order to prevent strategic behaviour of individual countries and distortions that would cause high transaction costs. Agreement is needed on a frame of reference from which to define and identify the distortions. A promising approach to define such a frame of reference is to accept that differences in the factor endowment of countries with immobile factors exist and that countries have different preferences for public and merit goods. It would also be helpful to accept the results of competition for the mobile factors of production in the international factor markets.

- It can be expected that an international order for locational competition evolves slowly over time in a Hayekian process.

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