

# **Determinants of Location Choices by Multinational Firms: A Review of the Current State of Knowledge**

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## **Abstract**

We provide in this paper a survey of recent empirical evidence concerning the determinants of location choices by multinational firms for their production affiliates. While the concerns about delocation/offshoring of manufacturing activities have been dominated by the belief that low production costs or taxes are the main drivers of attractiveness, the inspection of rigorous econometric work reveals that those “fear-factors” of location are largely dominated by the desire to be close to consumers and suppliers and to follow the choices of competitors.

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## **1. Introduction**

There has been growing concern in Europe regarding the attractiveness of European locations for mobile firms. This concern has grown in particular in large European countries enjoying high living standard, as a result of the fears of tax competition, social dumping, environmental competition, among other modalities of “unfair competition”.

Outsourcing, offshoring and deindustrialization concerns fill the columns of our newspapers, and challenge the economic policies pursued by social-liberal or liberal-social governments. These policies have traditionally relied on the welfare state, a specialization on high quality goods, of diversified economies engaged in inter-industry trade. The welfare state would now be endangered, new competitors scrapping the markets, inter-industry trade and the associated costs of reallocation of resources, in particular the displacement of workers, coming back since the

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early 2000s. Last but not least, Europe itself has profoundly changed, with new members offering attractive low-cost location opportunities.

To put these concerns in a nutshell: Will Germany and France still have factories in a decade or so? The decline in the share of industry in total employment seems to be currently accelerated by the very forces of globalization, translating into a series of factories being dismantled, and at best relocated in low wages new eldorados, namely new Member states. Consequently, the civil society, as well as numerous commentators and politicians, would answer negatively to the above question. According to a poll conducted in October 2004, 70 percent of the French population considers offshoring to be a serious issue, and one French out of three is fearing an offshoring of its own job, in its family or among his friends. Similarly, Germany and France are the two European countries where citizens do consider that globalization has gone too far, according to the Eurobarometer survey.

The perception of these evolutions by economists is however not as alarming as the one of the civil society. First, they generally consider that if costs, taxation or pollution havens are possible determinants of the location of the firms, other determinants need to be taken into account. Second, economists argue that specialization and trade are the source of positive gains according to economic theory. Third a difference must be carefully made between the local effects of these evolutions, that can be large and painful in certain regions or on certain parts of the population, and the macroeconomic effects that remain negligible.

Basically, the argument is that unemployment is mainly the outcome of domestic policies, as shown by the differences in employment performances of different European countries (e.g. the UK versus Germany) facing similar constraints in terms of globalization. The recent series of reforms engaged in Germany will not put an end to offshoring and outsourcing practices, but it creates the economic framework favoring the adjustment of the German economy to the competitive pressures, hence promoting employment in the long run. The transitory price to pay, in terms of demand, could however be sizeable.

More fundamentally, given the cost differential between China and locations such as France or Germany (1.30 euro per hour to be compared with 28 euros within two identical production units, Fontagne and Lorenzi, 2005), the declining transaction costs at the world level, the high international mobility of firms, qualified labor and technology, why there are still factories in Germany remains a mystery within a perfect competition world, where firms would only be motivated by cost-reduction strategies.

More generally why high labor costs locations are actually holding a share of 80 percent in total outward FDI stocks of German firms, as well as in sales of their foreign affiliates (Buch et al., 2005) cannot be explained on the grounds of firms seeking low production costs to enhance their competitiveness. Chinese locations account for only 1 percent of German FDI, 2 percent of affiliates

sales of German firms, and 3 percent of the employment abroad in German firms. As for the Eastern European locations, the corresponding figures are 4, 7 and 16 percent.

Regarding the relocation of activity, there is a first series of theoretical arguments, based on traditional approaches of the international economy, that is hardly convincing. Everybody has kept in mind the assessment of offshoring and outsourcing made by Gregory Mankiw "New types of trade deliver new benefits to consumers and firms in open economies. (...) The benefits from new forms of trade, such as in services, are not different from the benefits from traditional trade in goods. (...) When a good or service is produced at lower cost in another country, it makes sense to import it rather than to produce it domestically. (...) Although openness to trade provides substantial benefits to nations as a whole, foreign competition can require adjustment on the part of some individuals, businesses, and industries". (N. G. Mankiw, K. J. Forbes, H. S. Rosen, Testimony before the Joint Economic Committee, Washington D. C., February 10, 2004.). Would Germany take the opportunity of offshoring all productions for which a cheaper location is available abroad, then the bulk of German plants should be closed. Indeed, we do face here the traditional difference between absolute and comparative advantages: production costs are systematically higher in Germany than in China, but they are relatively cheaper in certain industries.

It is however hardly justifiable to analyze the location of activities on the simple basis of theories based on perfect competition. A more relevant framework must take into account imperfections in competition, highly mobile firms, transaction costs, and externalities between firms. This is why the statement opposed to Mankiw by the Senator Tom Daschle ("This is Alice in Wonderland economics!") seems justified, even if cruel.

What therefore needs to be clarified are the determinants of the location of mobile firms in an imperfectly competitive world, with transaction costs, externalities, public policies designed to interact with those decisions, differences in institutions, and last but not least the possibility of fragmenting the production process into independently located stages. The purpose of the current survey is to address these issues by considering a world in which location decisions matter if only because space matters. We accordingly view localized competition as a central component of location choices, which is a radical departure from the traditional competitive setting.

## 2. Theory Background

What are the determinants of the location choice made by a multinational firm for its production unit? How to reconcile the empirical evidence of a complementarity between net exports and foreign presence, with the statements of the business community emphasizing low-cost locations seeking strategies? In order



to guide and structure our survey of the recent evidence in the literature, one first needs to consider what economic theory has to say about those determinants. To summarize, the relevant determinants of this choice can be broadly grouped under four different categories: 1) the demand that can be expected if a given location is chosen, 2) the production costs that would be faced here, 3) the intensity of competition, 4) the public policies designed to influence the location patterns and in particular regional policies.

## 2.1 Market Access and Spatial Competition

Note first that the level of trade costs among locations will be crucial in the strength of most determinants affecting the location choice. Consider first demand: In a perfectly integrated economy, choosing a region rather than another has no effect on the level of demand faced by a firm, because distance, borders and space more generally do not matter for trade flows. Locations will therefore not offer different characteristics in terms of demand, and this variable will not influence the choice. At the other extreme, if trade costs are very high, the firm chooses between isolated and quasi-autarkic “islands” in terms of demand, which means that only local demand will matter in the choice. Of course, the reality of trade costs is somewhere in a middle range, and the construction of the demand variable needs to take into account those accessibility issues so as to discount demand in remote locations accordingly. This is the approach known as the *market potential*, initiated by geographers (Harris, 1954) and rediscovered recently and more formally in theoretical and empirical work by economic geographers (Krugman, 1992, Hanson 2005, Fujita et al. 1999 notably).

The reasoning is very similar for the intensity of competition faced in each alternative location by the affiliate. With zero trade costs, space is meaningless, and each firm faces the same level of competition in all locations, which renders the number and location of competitors inconsequential for the location choice. With positive trade costs, distance isolates from competition, which means that firms will, everything else equal, try to avoid regions with a large number of establishments in their industry. This tendency to avoid proximity to competitors has been recognized for a long time in location theory (see Fujita and Thisse 2002, for an overview) and is often called the market crowding effect. There has been recent overwhelming evidence that space and distance in particular still matter a lot in trade flows even inside countries as integrated as the United States or France (see Wolf 2000 and Combes et al. 2005). It is therefore crucial to consider demand and competition forces in a correct way using the market potential and market crowding concepts.

## 2.2 Agglomeration

One of the most robust finding of the literature on location choice is the fact that firms “follow other firms”. They flock in certain locations beyond what can be explained on the basis of traditional determinants of locations such as market size or costs. The first paper to establish rigorously this fact on individual data is Head et al. (1995), which shows that *location of Japanese affiliates in the United States is very largely driven by location of previous affiliates in the same industry*. This methodology has been replicated by a flow of papers since then (see Buch et al. 2005 for a recent survey of those papers), with a unanimous finding of large positive effect of those agglomeration variables. The reasons behind this behavior might be very diverse. It is very often argued that technological spillovers are the driving determinants of clusters of this type. However, any enduring variable that affects attractiveness without being controlled in the regression might be captured by an agglomeration variable, which after all only telling us what locations previous affiliates found attractive. Head et al. (1995) control for those omitted variables that are time invariant through location specific fixed effects.

However, agglomeration variables might also be correlated with time varying determinants of location. For instance, a shock in market potential in a country if not properly controlled, will attract competitors, and therefore the agglomeration variable will capture its effect. Head and Mayer (2004) investigated those issues by testing whether the agglomeration variables’ effect was hampered by the inclusion of a proper market potential variable (as opposed to cruder measures of demand). The answer is that those agglomeration variables remain strikingly robust, which suggest that their impact does not come from an omitted variable bias linked to market potential.

An interesting potential alternative explanation comes from input-output linkages. Head et al. (1995), Head and Mayer (2004) among others have shown that *Japanese firms belonging to the same Kereitsu have a strong tendency to agglomerate*. This is probably due to needed proximity for enhanced trade in intermediate goods that occur within those networks of firms. The importance of input-output linkages in location decisions of multinational firms has also recently been emphasized in Smarzynska (2004) and Amiti and Cameron (2004), and is probably an important component in the agglomeration patterns of multinational firms.

## 2.3 Production Costs

Another set of determinants of location choices involves variables influencing *production costs* in the different locations. Labor costs are of course crucial in this respect and will be controlled for but there are other determinants of costs that have been proposed in the literature.



A recently popular hypothesis is that affiliates of multinational firms benefit from technological spillovers when locating near other affiliates in the same industry. If such spillovers exist, they can be expected to raise the attractiveness of places where the number of firms in the same industry is important for instance because proximity to competitors would increase productivity or reduce R&D costs due to the positive knowledge transmission from neighboring firms.

Note again that such forces can be at work only if space matters. Proximity to knowledge producers is valuable only if knowledge is hard to acquire over space. Distance-related frictions to knowledge transfers have been documented empirically in the literature using notably the location of patents' citation: Jaffe et al. (1993) and Peri (2005) showed that such frictions are large. Technological spillovers will therefore push firms to cluster in the same locations. This incentive will counterbalance the market crowding effect mentioned above, through which proximity intensifies competition and therefore reduces profits.

An additional feature of the market crowding effect and technological spillovers is that their intensity might depend upon the nationality of the surrounding competitors. For instance, competition intensity might be harder between firms from the same origin country, due to higher substitutability of the varieties produced.

## 2.4 Public Policy Measures

Another set of variables that are in fact related to costs of production concerns public policy in general and regional policy in particular. Indeed regional policies can take the form of direct production subsidies for targeted regions as is the case in France with the Prime d'Amenagement du Territoire. EU regional policy usually does not take the form of direct subsidies to the investor, but can have a similar indirect effect. Indeed, a large share of structural funds is used to finance public transport and communication infrastructure in peripheral areas, which might lead to a reduction in production costs and therefore be beneficial to foreign investors. Note also that some policy measures can affect market access in a substantial way, and therefore potentially raise (or decrease) attractiveness of a country/region. The above transport infrastructure case is an example, but trade agreements granting better access to large markets is another important one.

## 2.5 Synthetic Framework

To summarize, the expected profit from locating in country  $i$  for a foreign investor will be a function of the market potential of that region ( $MP_i$ ), of the number of local and foreign firms in that region and surrounding ones ( $N_i$ ), and the cost components, ( $C_i$ ), itself consisting of various components, in particular labor costs and subsidies granted through regional policies. Market potential is expected to influ-

ence profits and therefore location probability positively, while high cost will have a negative influence on the probability for a region to be chosen. The influence of the number of firms is more complicated and is the result of the mentioned trade-off between agglomeration and dispersion forces. Naturally, the set of determinants just outlined is not exhaustive and it seems difficult to capture accurately all cost-related variables for instance in this type of work that should enter ( $C_i$ ) in an empirical exercise. Fortunately, an easy way to deal (at least partly) with this empirical implementation problem, first proposed by Head et al. (1995) is to use fixed effects ( $\alpha_i$ ) for each alternative region  $i$  in the location choice set. This will ensure that all time-invariant characteristics of a department that make it attractive but are unobserved are nevertheless controlled for (for instance, the difference in skill composition of the labor force, the price of other inputs such as land, etc.). The expected profit yielded by location  $i$  for affiliate  $a$ , can therefore be described as:

$$(1) \quad \ln \Pi_i(a) = \alpha_i + \beta_1 \ln MP_i(a) + \beta_2 \ln N_i(a) + \beta_3 \ln C_i(a)$$

The core of the empirical research on location determinants is an implementation of this equation, under various forms. Researchers estimate the influence of proxies for each of those variables using the individual firm location choice decision to estimate the relevant coefficient, using primarily the logit econometric model.

A last remark is in order here concerning the type of FDI for which equation (1) is relevant. A now traditional distinction is drawn between horizontal and vertical types of FDI (see Markusen, 2002 and Navaretti and Venables, 2004 for detailed exposition of this distinction).

The first type of FDI relates to firms “duplicating” their units of production in order to reduce trade costs to serve markets where access is most difficult.

The second one relates to firms dividing up their production process between countries according to different stages of production, for which countries have different comparative advantages.

Equation (1) has traditionally been used to study FDI of the horizontal-type. Because of its generality, it is however also relevant for vertical FDI. Suppose that firms are keeping design in the home country and locating actual production in another foreign country (the classical Helpman, 1984 case). Location of the production affiliate will also be a function of market potential and costs. *Even in the case of intermediate goods or semi-processed goods, market potential of the country for the affiliate seems relevant*, although it now principally consist of the locations and size of other affiliates in the same firm that use its output in later stages of production.

It is not only the production costs that matter: Geography of demand of supply is also important in this case, although most of the action might take place within the firm.



The remaining of this survey focuses on the balance between demand and supply motives, and how they are impacted by policy measures. We proceed as follows. Market access and productions costs motives are further examined in sections 2 and 3, while policy measures impacting the location of firms are examined in section 4. Section 5 concludes.

### 3. Market Access and Spatial Competition: The Evidence

Measuring market potential is not at all a trivial issue. As stated above, the market potential is a measure of discounted demand to be expected from locating in  $i$ . But how should demand in each place be measured and what should the discounting factor precisely be?

#### 3.1 The Two Faces of Market Access

The first implementation, proposed by Harris (1954), was simply discounting the sum of local incomes by the inverse of distance. While this intuitive definition has some appeal in terms of ease of implementation, it seems rather insufficient. What about other barriers to trade, like tariffs and NTBs, differences in language, lack of knowledge of the foreign market that have proven to be important hindrances to trade? Also what about the differences between market potential of country  $i$  for a producer of shoes against a producer of computers? Those two problems can be solved quite easily by using apparent consumption at the industry level for the measure of local demand, and using gravity estimates of trade barriers for the measure of accessibility.

Another problem with the simple Harris' version of market access is harder to resolve. While Germany is one of the biggest markets in the world for most products, there might be very good reasons why firms don't all rush to locate there. Consider a new product, widely popular among consumers but not yet produced in Germany. If this product is not "too easy" to ship from foreign countries, Germany will attract a lot of entries in this new industry, because of the size of its market and the lack of initial competition. Entries will come both from new domestic producers and foreign investment. Has firms enter in the German market and start producing there, they exert two effects. First, this entry will tend to raise prices of factors used in this industry, as long as the factor supply curves are upward sloping. This will tend to reduce attractiveness. Second, new entrants in Germany, but also in surrounding market with good access to the German market, increase competition, and therefore make location in Germany less attractive for the next prospective entrants: *The market potential is a decreasing function of the number of competitors in each given market.* The functional form of  $MP_i$  needs to take into



account this competition effect, and is in fact therefore quite complex (see Head and Mayer, 2004) for an implementation.

### 3.2 Japanese FDI in Europe

Figures 1 and 2 are examples of such calculation of market potential taken from Head and Mayer (2005) for a specific industry in Europe for the different EU (12) regions for which data is available. Geographical centrality as well as local size are two important determinants of market potential.

Head and Mayer (2004) relate this measure of market potential to location choices of Japanese multinational firms in the EU. They find that market potential -either in its most structural form, or in more reduced form- is indeed a key driving determinant of those location choices, much more important than differences in labor costs or corporate taxes. Figure 3 synthetizes the impact of market potential as a driver of foreign investment.

It could be argued that those finding are only relevant in North-North FDI flows. That is demand is important for investment in rich countries whereas cost differences would be key for FDI directed towards emerging economies like China.

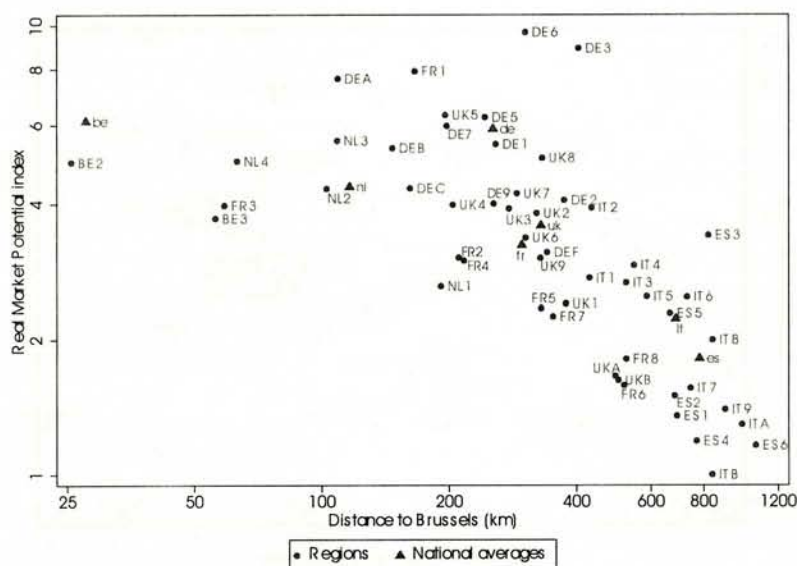


Figure 1: RMP vs Distance to Brussels, Electric Machinery, 1995,  
Brussels non plotted

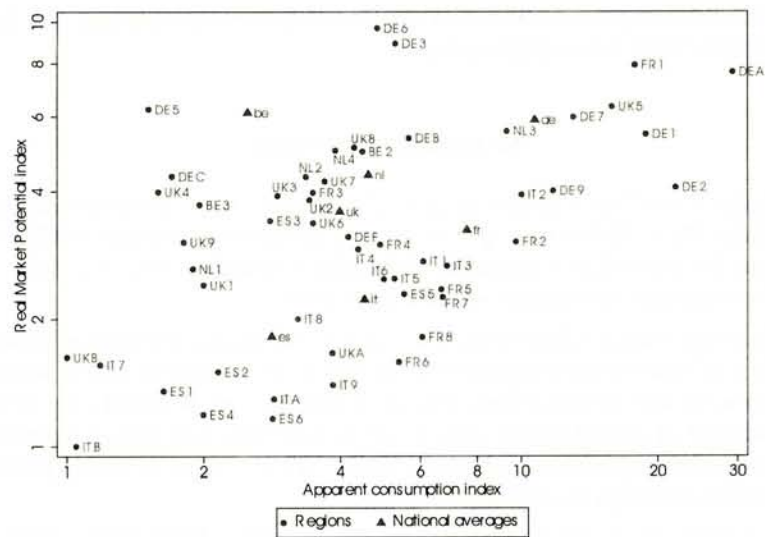


Figure 2: RMP vs Expenditure, Electric Machinery, 1995, Brussels (non plotted 13)

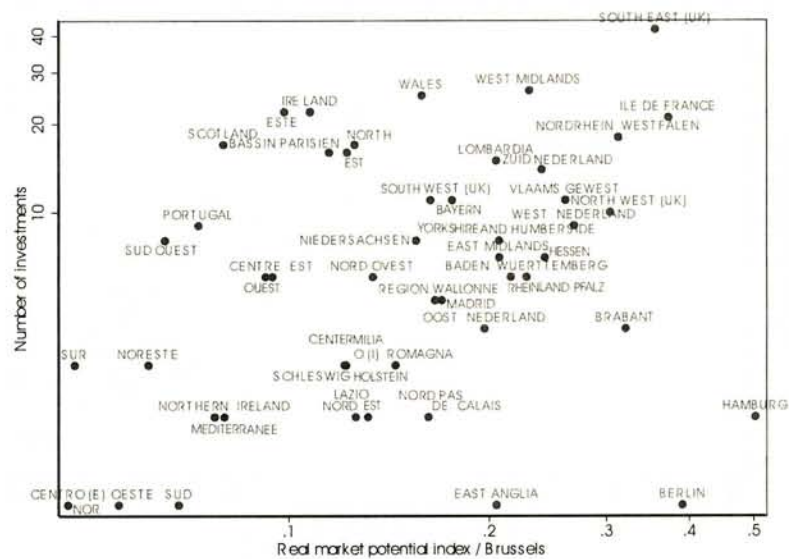


Figure 3: Japanese FDI Stock and Market Potential in EU Regions



### 3.3 Foreign Entries in Chinese Provinces

Understanding why firms invest in China is a key issue when one aims at assessing the respective role of market access and production costs. The share of foreign enterprises in China is very large : 31 percent on average and twice this average in Guangdong (Amiti and Javorcik, 2005). In a limited number of sectors (actually 1 percent of the sectors) at least three quarters of the industrial output is realized by foreign firms. Low wages are generally understood as a major determinant of FDI, foreign entries firstly aiming at benefiting from low cost and re-export within the more general framework of a process fragmentation. However, the presence of a huge and fast growing market should lead to an horizontal investment, namely a replication of production units in China.

To answer these questions, Amiti and Javorcik (2005) examine the relative importance of key determinants of foreign investment (of the change in the number of foreign firms present in a given province within an industry) in China: market size, factor costs, proximity of suppliers and lastly trade costs. Relying on data detailed at the industry (515 industries) and provincial (29 provinces) levels, they find that *market access and the proximity of suppliers are the main factors explaining inward FDI flows in Chinese provinces*. Doubling either of these factors leads to a 40 percent increase in the entry of foreign firms. These factors are particularly relevant for the local province where the entry takes place, due to the fragmentation of the Chinese market. We should carefully note however, that a Chinese location is not compared, here, to alternative locations outside China, and that production labor costs are not taken into account.

US data on the motivation of locating foreign affiliates in developing economies point out to a prominent market access motive: according to Mataloni (2004) 71 % of sales of US affiliates located in China are directed towards local customers in 2002. The corresponding figure is 87 % in India, and even a surprising 64 % in Mexico, a location that should host primarily vertical investment.

### 3.4 German Firms Locating Abroad

Most of the literature on the determinants of location choices of multinationals is traditionally based on US, Swedish, Japanese or even French data. Alternatively, one can rely on very large data sets which however provide aggregated data for a large sample of countries. Accordingly, the profession was missing precise empirical evidence regarding the motivations of the firms leaving the largest European economy to locate abroad. Fortunately, a recent firm-level data set from the Deutsche Bundesbank has authorized to replicate such studies on the German firms. Two papers by Becker et al. (2005) and Buch et al. (2005) investigate the determinants of the activities of German multinationals using this newly available source of information. Both papers provide clear-cut answers to our questions.

Becker et al. will be considered below and we focus here on Buch et al., a paper stressing that the market access motive for internationalization is dominating. *German firms leave Germany and invest abroad mainly to better access to large foreign markets.*

Buch et al. (2005) use the firm level data either directly at the individual level, or aggregated into industries, or total flows to each destination market. These three levels of aggregation permit to refine the traditional conclusions regarding the determinants of location: individual entrepreneurs stress the cost advantage associated with foreign locations, while macroeconomic data points out to German firms mainly locating in high costs countries. The authors use two alternative measures of market access determinants: The GDP used in the majority of the literature, and market potentials more recently introduced on the basis of the new economic geography (Head and Mayer, 2004 for instance).

Using macro data, it appears that German firms mainly go abroad for the stake of acceding to large and developing foreign markets. This result is obtained using the traditional GDP variable, and confirmed using the newly introduced market potential. The outcome is clear cut: A one percent increase in the size of a given foreign market is associated with a one percent increase in the activity of the German firms in this location.

Using industry-level data, the previous dominance of the market access motive is confirmed, but the associated elasticity is highly dependent on the sector. It ranges from 0.5 in the Clothing industry to 1.6 for the Transport and equipment material. This does not come out as a surprise: In labor intensive industries producing items easy to ship abroad, the vertical nature of FDI is certainly dominant; in contrast, in the car industry, access to the local market is a key motivation. What usual assessments based on macro data tell us is simply that market access and cost determinants both matter, but that the most prominent one remains market access: Mercedes-Benz cars sold in Europe will not tomorrow be produced in Beijing.

Lastly, relying on individual firm data and introducing in the regressions firm-specific fixed effects in order to control for non observable characteristics of the German multinationals points out to the strong heterogeneity among firms. Still, market access remains a key determinant. The elasticity does shrink and turns out to be at most one quarter of the elasticity obtained with macro data. To put in simple words, this difference means that up to three quarters of the increase of German presence in a foreign country is attributable to entries of new competitors, rather than to expansion of existing plants or affiliates.



#### 4. Production Costs and Location: The Evidence

The first production costs at stake when a decision of (re)location is to be taken, are labor costs. Comparing China and Germany, or Bangladesh and France, is however hardly convincing as the real impact of costs differentials on the decision of location. Since any German firm easily invest in China, combine there Chinese wages with German productivity, and ship the output to high-living standard markets, one is forced to admit that, yes, production costs matter. However, producing in China and producing in OECD countries are two different stories and as already stressed, one might produce in China firstly to serve the local market. This is why an assessment of the impact of labor costs differentials on the location of firms has to be done on the basis of a comparison of truly substitutable locations.

##### 4.1 Employment Substitution between Parent and Foreign Affiliates

Becker et al. (2005) use two panels of German and Swedish multinational firms to investigate this issue. They conclude that employment in foreign affiliates effectively substitutes for employment in the parent company. Such approach is valuable since Germany as well as Sweden firstly invest in the developed or transition economies, not in developing ones, and have recently recorded a surge in their outward FDI flows toward Central and Eastern European Countries (CEECs).

Hence, if it does not make sense competing with the Chinese on labor costs, how the competition of the new Member states impacts the labor market in old Member states through the relocation of activity is a key issue. As for the German firms, Becker et al. (2005) consider three regional grouping of destination country: industrialized economies, CEECs, and developing countries. The corresponding indicators are interacted with parent-specific variables, in order to identify to what extent the same determinants lead to different strategies of the parent company, depending on the location of the affiliate.

Broadly speaking, the first result is that *traditional gravity variables are powerful regressors in the estimated conditional logic model explaining the probability of the presence of an affiliate in a given destination country*. The size of the destination country, namely the GDP level, has a positive impact, while the distance between parent and affiliate act in the opposite way. The former impact is in the line with our previous remarks regarding the prominent impact of market size. The second effect is not trivial: in the perspective of an horizontal foreign direct investment (replication of units) motivated by a substitution of foreign presence to exports, the sign should be *positive*.

The second result refers to the role of the availability of skills in the destination country. On the whole, German firms do seek skill-abundant locations. More pre-

cisely, when a location choice has to be made among (low cost) skill-scarce countries, parents prefer locations where this scarcity is less stringent. There is also (weaker) evidence of skill seeking among skillabundant (high cost) locations, suggesting that German parents might well (re)locate skill intensive activities in high cost destination countries. But all in all, high costs (controlling for the availability of skills) is deterring entry of German firms.

Lastly, as for the social competition, Becker et al. (2005) find that a 1% additional wage gap between German locations and CEECs' ones, translates into 900 fewer jobs in Germany and 5,000 more jobs in affiliates abroad. Accordingly, if the strategy of competitive deflation currently pursued in Germany is hopeless regarding the cost gap with emerging economies such as China, it does make sense facing the new Eastern competitors with such policy; at least when the sign of the effect is concerned. Indeed, the magnitude of the impact remains limited in comparison with the 1954 thousands employees in Germany occupied by German multinationals: *a 20% additional wage gap between Germany and the CEECS would cut employment in Germany by only 1% in Germany* according to this estimation. Those recent estimates refine earlier findings that labor costs are not the main determinant of location choice although they might be found to have a statistically significant impact.

#### 4.2 Is Regulation Deterring Inward FDI?

Among production costs, labor costs do not resume to differences in wages or differences in unit costs. Regulations on the labor market do matter, just because they make it more or less easy to rely on extra-hours worked, because they correspond to different degrees of flexibility according to hiring procedures, as well as to individual or collective dismissals. Such approach may help to solve the puzzle that foreign firms often invest in locations offering high wages, due to the positive relationship between the quality of labor and its compensation. Firms are relocating in certain industries in order to seek skills (Blomstrom, Fors and Lipsey, 1997; Marin, 2004)

Smarzynska and Spatareanu (2005) estimate a fixed effect (controlling for unobservable characteristics of the firms) logit model, which explains the decision of the largest 10,000 firms in Europe to be present or not in a given location, depending inter alia on its labor market regulations. The latter variable is considered in absolute terms, and also relatively to the home country of the investor. Alternative locations are 14 of EU15 countries, three new members (the Czech republic, Hungary, Poland), Bulgaria and Ukraine. Measures regarding the flexibility of the labor market rely on the Global Competitiveness report of the World Economic forum, as well as additional indicators compiled by the World Bank. Control variables regarding the host country are rather crude, too, and depart from the ones suggested by the new economic geography: Market size is proxied by the popula-



tion of the host country, notwithstanding its living standard (we are quite far here from the refinements of the market potentials). Labor costs are proxied by the average wage. Property rights and business taxation are also proxied in a rather crude way. One may of course challenge Smarzynska and Spatareanu (2005) results on the basis of the relative crudeness of such indicators, and additional research would be very useful in this field. However, the results are innovative and must be quoted.

In addition to a positive impact of the size of the population, as well as a positive impact of the average wage (a counterintuitive result already discussed), the key result is the fact that a more flexible labor market is increasing the probability of the presence in the host economy. Alternatively, the authors use a second specification addressing the size of the foreign locations, which confirms the previous findings and permits to quantify the impact of the regulations on the volume of investment: *comparing the regulated French economy with the deregulated UK, the authors find a 12 to 26 percent difference in the volume of investment, depending on the measure of the regulations.*

### 4.3 Social Dumping

The popular view of globalization is also associating foreign presence of multinationals with the fears of an exploitation of child labor. Factories of soccer balls have exemplified what very much sounds like a come-back of the labor conditions of the late 17<sup>th</sup> centuries, a time when a French influential Minister of Finance stressed that “Child idleness is the source of laziness for the rest of their life”.

Child “employment” in household activities by their parents is however a more accurate description of child labor in developing countries, than employment in foreign affiliates or sub-contractors of multinationals (Edmonds and Pavcnik, 2005). About 3 percent of children aged 5–14 are working for pay in developing countries, mostly in agriculture, where their parents are working too. In contrast to the previous limited record of participation in the market sphere, about two thirds of the same children participate to the domestic work in the household. Substitution effects are recorded among parents (entering in the market sphere) and children (replacing them in the domestic sphere).

Importantly, the percentage of active child is negatively correlated with the GDP per capita in the economy. Hence, one may argue that hosting foreign investment (what should translate in productivity gains in the host economy) would therefore alleviate, rather than strengthen, the participation of child labor. The same is true for the relationship between trade openness and child labor, that are proved to go in opposite directions. In addition, working conditions are often more satisfactory in the exporting sector than in the domestic sector in developing economies, even if working conditions are worse in the exporting sector than in alternative locations in the North.

#### 4.4 Environmental Dumping

The traditional fears that integration among countries having different collective preferences regarding environment might turn into polluting activities relocating in the South has been largely exploited by environmentalists. Indeed, a simple model of specialization and trade points to a division of labor where the rich country chooses to protect environment and abandon polluting activities to the developing world (Copeland and Taylor, 2003). Noticeably, an alternative approach based on the traditional proportion factor theory would lead to opposite conclusions: polluting and capital intensive industries should flock in the North, not in the South. Lastly, with endogenous environmental policies, and collective preferences favoring environment protection in rich (and capital abundant) countries, both effects should go in opposite directions: tighter regulations deter location of polluting industries in the North, while the relative scarcity of capital deters it in the South.

In total, the answer can only be of an empirical nature. Empirical evidence of such causation remains however limited: Busse (2004) investigates five highly polluting industries and 119 countries: he fails to identify any evidence that industries facing above-average abatement costs would relocate in pollution havens, and translate into net exports of the host countries. The only exception is the Iron and steel industry.

Considering such results, the fears of race to the bottom on environmental regulations may well be exaggerated. One plausible explanation is the limited percentage of abatement costs in the polluting industries, limiting the impact of differences in regulations among alternative locations. For instance, the availability of capital, in polluting industries that are often also very capital intensive ones, or the price of energy might be more prominent determinants of location. Another plausible explanation is that abatement costs are very different among industries; hence, industries have individual characteristics that may well explain trade and abatement costs, leading to fallacious correlations in the available estimations. Levinson and Taylor (2004) point out these econometric issues and assess the impact of environmental regulations on intra-regional trade within the Nafta, for 130 manufacturing. They find that for the most regulated industries, the change in regulations has been a powerful determinant of the change in net exports over the period 1977–86. This is where relying on FDI data rather than trade data might be relevant. Eskeland and Harrison (2003) test for the relationship between Pollution abatement cost and inward FDI for Mexico, Morocco, Cote d'Ivoire and Venezuela. Results point once again to the fact that market size is the main determinant of FDI. *Pollution abatement costs are insignificant in most cases.* Also FDI is largely found to be more energy efficient and use cleaner types of energy than local firms.

Another potential econometric problem is related to the correlation between environment protection and the quality of institutions. Certainly, countries facing



high corruption and collapsing administrations do not tend to invest massively in providing a regulation aimed at protecting their environment. Accordingly, one should control for institutions when assessing the pollution haven hypothesis (Smarzynska and Wei, 2001). We will investigate more in depth this issue of institutions below.

#### 4.5 Gains to Cultural Proximity

A last dimension of cost reduction strategies in location decision that has rarely been investigated in the literature is the choice of a region for which the investor has large knowledge about in terms of business practices, skills and culture of workers... For instance, a German investor locating a production plant in France might find the Eastern regions of the host country to be attractive because a large portion of workers speak German as a second language, and have a larger common set of common cultural traits and work attitudes with German citizens than workers from other parts of France. Such “familiarity” with local conditions of business practices would certainly be considered an advantage, at least in the first stages of investment in the country. Those advantages can counter-balance disadvantages of the Eastern regions, notably in terms of market access to national demand. Indeed this determinant seems to be of some importance in the investment decision. As can be seen in figure 4 (made with data from Crozet et al. 2004), regions close to Germany in France attracted a disproportionate share of German investors over the 1985–1995 period with respect to the GDP share of those regions. Similarity in cultural traits seems to be a far from negligible advantage in hosting regions, a result that can be related to the impact of distance on FDI flows in gravity like regressions like Wei (2000) or Stein and Daude (2001). Again, this cost advantage is compared with market access features of the region by the investor, and Crozet et al. (2004) show that if distance to the home country actually matters a great deal in the first years of investment, the effect seems to diminish drastically across time, while the impact of market access increases. This suggests that a learning process is at work with firms acquiring more knowledge on how to operate efficiently in the country over time, rendering proximity to the home country less necessary.

### 5. Public Policies and Location: The Evidence

What are the policy instruments that have been shown to “work” empirically in terms of attracting foreign investments? Among the commonly proposed list, taxes, subsidies and institutions usually rank very high. We briefly survey results about those determinants.



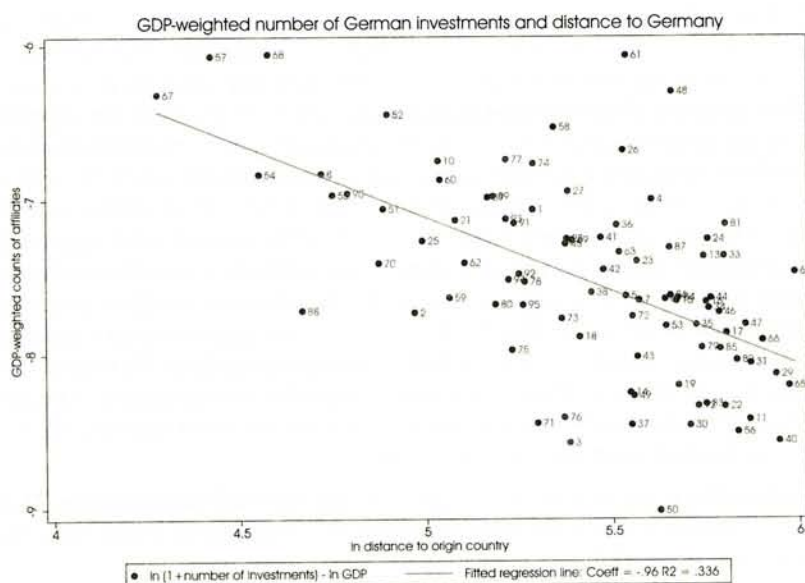
### 5.1 Corporate Taxes and Other Forms of Investment-promotion Policies

Among policy measures impacting the location of activity, corporate taxes are generally considered as a powerful driver of firms decisions. Partial evidence based on the large presence of multinationals in the Irish economy having offered appealing taxation schemes to foreign firms up to the reform adopting a 12.5 % rate, as well as the declining average tax rate of business in Europe have raised the fears of tax competition. Indeed, as apparent in Figure 5, the corporate tax rates in the Western world seem to present a very clear picture of convergence over the last 20 years. More recently, the enlargement of the EU to countries having on average low corporate tax rates, or even no corporate tax, have reinforced these fears.

Economic theory provides mixed arguments: Mobile firms should locate where tax rates are the lowest, leading to an equilibrium with a zero tax rate in a frictionless perfect equilibrium world (Wilson, 1999). This is why “Tax policies are obviously capable of affecting the volume and location of FDI” (Gordon and Hines, 2002). However, transaction costs, distance to markets, public goods available in the alternative locations may translate into equilibria where the center imposes larger tax rates than the periphery. Also, multinationals can optimize their taxation using transfer prices, hence be present in attractive and central places, while paying their taxes in remote fiscally attractive locations offering location rents (Haufler and Wooten, 1999, Baldwin and Krugman, 2004).

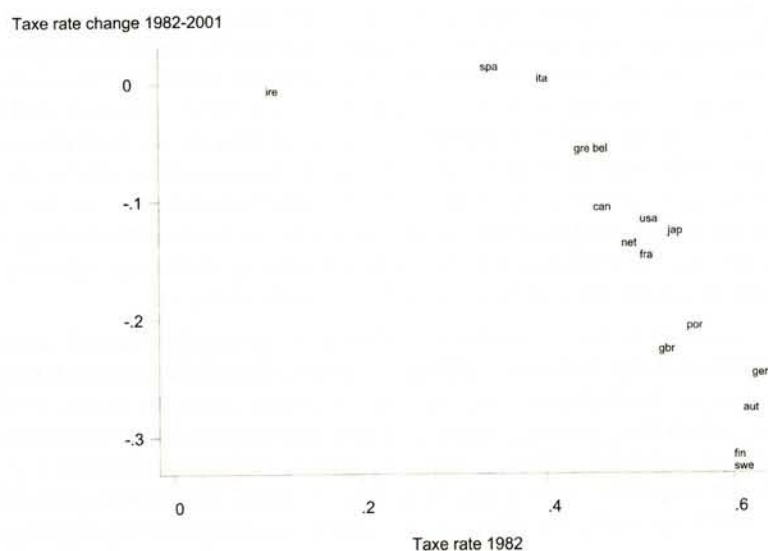
In contrast to the mixed evidence provided by the theory, and thus to the convincing arguments that in an imperfect competition framework firms would be insensitive to tax differentials among alternative locations, the empirical literature points to clear-cut results. Tax differentials matter. The next and more fundamental question is: How large is the effect? A meta-analysis of the empirical literature conducted by Mooij and Ederveen (2003) and treating more than 350 point estimates, finds an average semi-elasticity of FDI to tax rates around  $-3$ .

It has been suggested that, since firms arbitrate not only between foreign locations but also between foreign and domestic locations, tax *differentials* should be considered. This is done by Benassy-Quere et al. (2005a), who address this issue by focusing on the impact of tax schemes (exemption versus credit) on the decisions taken by multinationals. Using a panel of 11 OECD countries over 1984–2000 and bilateral FDI data, they show that positive tax differentials deter FDI inflows, even when gravity factors and other economic geographyrelated variables are controlled for. In addition this impact is non linear, large differences having a more than proportional discouraging effect when the investor originates in a credit-scheme country. Lastly, FDI reacts asymmetrically to tax differentials, high taxation rates discouraging FDI inflows more than low ones do encourage them. The bottom line seems to be that, since market potentials or the provision of public goods matter, the solution of the tax competition game is not a zero tax rate, while the incentive to harmonize tax rates falls essentially on countries having high rates.



Source: Crozet et al. (2004).

Figure 4: Location of German Production Affiliates in France, 1985 – 1995



Source: Constructed from Devereux et al. (2002).

Figure 5: Statutory Corporate Tax Rates in Major Developed Countries

The impact of subsidies emerging from the literature is much more mixed (and also much scarcer due to lower access to good quality information on such investment-promotion measures). Crozet et al. (2004) study individual location choices of 3902 affiliates of multinational firms over the 1985–1995 period. An important part of the work is focused on assessing the impact of French and European regional policies through the inclusion of investment incentives and structural funds in the location choice model. Results point to very disappointing impacts of both types of measure on the actual choices of investors. On the other hand, agglomeration economies seem to be very important, and it is observed in particular that the foreign investors have a very strong tendency to follow the location choices of French firms in the same industry. Even if important agglomeration economies might constitute a favorable ground for effective regional policies, the evidence for France is very negative: There is no significant, either in statistical or economic terms, rise in the attractiveness of French départements when investing there is associated with grants from public authorities.

It should be noted that the story is different with uncoordinated subsidies. Head et al. (1999) show some evidence of competition tournaments taking place between states in the USA.

## 5.2 FDI and Institutions

A recent stream of the literature has focused on how FDI reacts to the quality of institutions in the host country. While its methods are not unchallenged (see Rodrik, 2004), the literature estimating the impact that institutions have on economic development has been enormously influential. Initiated by Daron Acemoglu and co-authors (see IMF, 2003 and Acemoglu et al., 2004, for recent surveys), a stream of results has shown that improving such institutions as the protection of civil and property rights, the level of economic or political freedom and the level of corruption tend to be associated with higher prosperity. Endogeneity of institutions to economic development has been the main question of interest here, and the ingenious use of historical determinants of institutions as instruments showing that causality runs the right way has shown that improving institutions favorable to investment is a possible and desirable policy for poor countries.

Not surprisingly, thus, a number of authors have also studied the link between institutions and FDI. Such link could be seen as one channel through which institutions promote development in the modern era. Indeed, good institutions are supposed to exert their positive influence on development through the promotion of investment in general, which faces less uncertainty and higher expected rates of return. Because FDI is now a very large share of capital formation in poor countries (UNCTAD, 2004), the FDI-promoting effect of good institutions might be the most important channel of their overall effect on growth and development.

There are several reasons why the quality of institutions may matter for attracting FDI. One is rooted on the results of the growth literature: By raising productiv-



ity prospects, good governance infrastructures may attract foreign investors. A second reason is that poor institutions can bring additional costs to FDI. This can be the case of corruption for instance (Wei, 2000). A third reason is that FDI yields sunk costs; making it is especially vulnerable to any form of uncertainty, including uncertainty stemming from poor government efficiency, policy reversals, graft or weak enforcement of property rights and of the legal system in general. A number of authors have empirically studied the impact of institutions on FDI, generally within the framework of gravity models where FDI bilateral flows or stocks essentially depend on GDP or population in the source and/or the host country, and on the distance between both countries (see Eaton and Tamura, 1994, for an early application of the gravity model to FDI). Wheeler and Mody (1992) found the first principal component of 13 risk factors (including bureaucratic red tape, political instability, corruption and the quality of the legal system) to have no significant impact on the location of US foreign affiliates. However the index also included factors like the living environment of expatriates or inequality which are not directly related to the quality of institutions. Later studies by Wei (1997, 2000) pointed out corruption as a significant impediment to inward FDI, with both a strong statistical and economic impact. This result has been challenged by Daude and Stein (2001) who point out the high collinearity between their measure of corruption and GDP per capita, which can lead to spurious results when GDP per capita is not included in the equation. Using a wider range of institution variables, they nevertheless show inward FDI to be significantly influenced by the quality of institutions. More specifically, five out of six governance indicators provided by Kaufman et al. (1999) are shown to matter: Political instability and violence, government effectiveness, regulatory burden, rule of law and graft. Only the voice and accountability indicator appears to be a non significant determinant of FDI. Further regressions, using International Country Risk Guide and La Porta et al. (1998) indicators, show risk of repudiation of contracts by government, risk of expropriation and shareholder rights to matter.

Bénassy et al. (2005b) also use the gravity specification to study the effect of institutional distance between the host and the source country on FDI. For instance, it is possible that corruption in the host country is less an impediment to FDI inflows when corruption is also quite high in the source country and investors are used to deal with it in the home country.

More generally, if institutions are dependent on economic and social history (including the colonization era), then one could observe more FDI, other things equal, amongst countries displaying relatively similar institutions. Indeed, Gliberman and Shapiro (2002) find that US multinationals are more likely to invest in countries whose legal systems are rooted in English Common Law.

## 6. Conclusion

The growing concern over the attractiveness of European locations for mobile firms, as a result of a race to the bottom taking the form of tax competition, social dumping or environmental competition, is hardly justified on the grounds of the actual geographical structure of the foreign presence of German, French or Swedish firms. On the contrary, these firms are massively present in high income, high labor costs locations, suggesting a foreign presence mainly driven by the access to large and rich markets. This is not the whole story however: Outsourcing and offshoring are increasing, and vertical investment is taking benefit of worldwide cost differentials, as economic theory predicts it should. The balance between market access motives and low-cost seeking motives is very much (and very logically) depending on the industry considered: The clothing industry (low-cost seeking) and the car industry (market access) exemplify these differences.

Accordingly, if the family picture of highly integrated OECD countries is comforting, notwithstanding the difficult situation of a limited number of footloose industries, the movie is somewhat frightening when one lists the determinants potentially deterring investment and location in our European economies: Wage differentials, tax differentials, regulatory burdens, environmental-friendly attitudes of governments, and so forth. Hence the fears of a locational competition, especially with new Member states, putting at risk our social compromises and our specialization based on high costs of production.

The empirical evidence surveyed in this paper provides elements to structure the related arguments. Those are articulated around two major results.

- *First result:* Market access is a powerful attractor of firms. To put it in simple words, factories follow the clients, and do flock where the better access to regional demand is available. This has two immediate implications. On the one hand, Europe is still a huge market justifying to locate plants there. On the other hand, Europe and in particular the Eurozone will suffer from being a low-growth and limited-opportunities area, where locating will become less and less attractive, on the margin, as the gap with growth rates in the rest of the world becomes structural. One can hardly have a 1 to 2 percent growth rate and retain factories producing for markets doubling every 8 years, as China is today. And when foreign firms decide to enter the Chinese market, they do locate where they find the largest market potential within China.
- *Second result:* Costs differentials do however also matter. Wage differentials have been proved to impact somehow the location of German firms. With trade integration continuing and ensuring that peripheral low-cost countries are less and less undesirable locations in terms of market access, core countries with differentially high corporate tax rates will hardly be able to resist a convergence towards low rates offered by neighboring countries. Labor market regulations impact FDI, as well as environmental policies do impact the location of firms, when sectoral characteristics are properly taken into account in the estimations.



How to combine these two types of results into a full-fledged appraisal of the current locational competition is not an easy task. We do face for the first time in modern economic history a situation where the most promising markets are at the same time locations offering dramatically low-costs. Wages are stuck to the low average productivity of the host economies, while the mobility of the technology within the firm makes it possible to produce there with a decent productivity. Confronted to such a new framework, and considering the need to maintain their market shares in high-wage countries, firms have a strong incentive to fragment their production process, splitting the value added chain among the various locations of their subsidiaries. On this front, no hope should be placed in competing on wages or labor costs. Better take benefit from this situation and let domestic firms invest abroad in order to reinforce their efficiency.

There is a second front however. Arguably, the Single European market remains a valuable place to do business. Despite a sluggish macroeconomic environment, one of the largest pool of consumers is still located there, and locations near these consumers have to be selected, since space still hinders trade flows to a very large extent. The key issue for Germany, France or Italy is that new and appealing locations are available within this large market, combining low labor costs, the proximity of efficient suppliers, and low corporate taxation (with some exceptions). Last but not least, leaving the congested locations in Germany or France, to accede new locations offering agglomeration economies but still limited competitive pressure, is reinforcing the cost argument.

Should we care about this new competition? The answer is in the newspapers, on the page "industry", where a litany of relocation of activities is offered. What precedes suggest that the reasonable difference in costs with these locations (as compared with China) advocates for adjustment policies in order to avoid a further acceleration of the phenomenon. The recent social conflicts in the German car industry point out to the perceived accuracy of such policies at the micro-economic level. The German car industry would recover its competitiveness and avoid relocations abroad by reducing the wage bill. Indeed, the impact cannot be contested: it will work. The problem is the magnitude of the effect: We have seen that the impact on the decision of locating jobs in Germany rather than in the CEECs will be homeopathic, given the negotiation margins sociably acceptable. A more keynesian view would stress the negative impact on demand and hence on the size of the market of such policies.

The sensitivity of the public opinion to those issues is typically the result of a sluggish macroeconomic environment, where low growth, low employment and deflationary pressures make it more difficult to cope with necessary adjustments. If a competition for location exists, providing an appealing macroeconomic environment to firms is certainly the best policy. Of course drastically reducing corporate tax rates would help, of course cutting labor costs would limit the differential with the new Members, but none of these policies will durably increase the market potential in Europe, nor provide a decisive competitive advantage to our firms.



The kind of market positioning of exporting countries such as Germany, France or Sweden is on top quality products, integrating innovations either in terms of technology, design, longstanding experience: Overall, half of EU15 exports are currently top quality products, while only one third of the world market is in top quality products. Our efforts should be directed towards the reinforcement of such advantages. Combining a Euroland growth rate comparable with the US rate, together with a reinforcement of the European market positions in high-end products, is probably the best way to ensure that locational competition will no longer be an issue.

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