

4 CONCLUSIONS AND POLICY IMPLICATIONS

Intensified competition, unhindered access to European markets, technology import, transfer, and spill-over, as well as the participation in the European division of labour (associated with specialisation advantages) are amongst the market forces that can be assumed to be best suited to produce the most efficient market result of integration (allocative efficiency). If, however, the political aim of economic coherence (*i.e.* income convergence) is defined to be an overriding objective, then the result produced by market forces through real economy integration might prove to be an undesired one: in fact, past experience, as well as modern theory, suggest that integration results need not fulfil the political aim of income convergence in all cases. Rather, convergence clubs have typically emerged between groups of economies or regions according to common country-specific criteria (either as initial conditions or as having emerged during integration as a market effect). Integration is assumed to be a necessary condition for real economy catch-up, but could prove to be insufficient to produce the political objective of income convergence, and a case can be made for political intervention. In the case of Central East European economies, such policy-intervention could subscribe to the aim of preventing a 'club' of less developed economies in CEE.

Our analysis in the project was able to identify a large set of determinants of productivity gaps *vis-à-vis* West Europe. Focussing on such determinants would assure efficient policy targeted at the particular conditions prevailing in CEE. Due to the methodological design of the study, we, however, are unable to identify a ranking order of determinants empirically. For this, a macroeconomic modelling approach would be necessary. Such a method, however, would depend on the availability of sufficient data on relevant determinants. Such knowledge was so far unavailable. One of the main achievements of the project was the construction of such knowledge, in particular, such knowledge is comparable in nature (both between CEECs and in comparison with West Europe). A future research effort could attempt to perform such a macroeconomic, or rather macro-determinant, analysis in a modelling framework by use of the knowledge generated. Such a project, however, would command significant effort in terms of scale and in particular in terms of econometric expertise.

In the following, we turn to the main policy-conclusions generated from analysis in the individual workpackages.

4.1 *Specialisation patterns in domestic production*

- Results of analysis into emerging sectoral specialisation patterns suggest that for some new member states, market forces through integration and liberalisation might turn out to produce conditions which are not conducive to swift economic catching up.¹ Political support or intervention could hence be desirable, however, not in the form of enforcing a 'more desirable' sectoral structure. Policy-measures could rather be geared towards assisting sectoral flexibility and change, and could become important determinants in some of the countries' prospects for catching up.

¹ This has been the result of analysis of effects of specialisation patterns on catch-up prospects and is not an argument of infant industry at the micro or mezzo level.

A case for economic policy assistance in CEECs could be made...

...with the objective to prevent an East European 'club of the poor'...

...and efficient use of policy-resources would be grated if focussed on the determinants identifies in this project

Sectoral structures cause some of the productivity gaps...

- Political intervention supporting flexibility of employment and capital allocation with a view on sectoral change (as called for in the EU's second cohesion report) could prove to be a decisive factor in the cases of the Slovak Republic, Slovenia, and possibly Poland. Those countries' patterns of sectoral structures increasingly imply a limit to the prospects for real convergence (if some degree of path dependency of sectoral structures is assumed at least for the short to medium term). In the case of Hungary, sectoral structures explain a large share of the national productivity gap, yet at variance with the afore-mentioned countries, the country's sectoral content did not increase in recent past. Sectoral patterns appear to be indifferent with respect to catching up prospects in the cases of Estonia and the Czech Republic.
- In this respect, CAP, and in particular where this policy takes the form of direct income-support, is most detrimental to the countries' prospects of catching up: we could expect CAP to retard employment shifts from agriculture to other sectors, mainly (relatively smaller) enterprise-related services. In a scenario where the agricultural sectors remain relatively larger on a long-term basis due to comparative advantages, the method of direct income-support would also be ill-advised: in the new member states where the agricultural sector plays an important role in explaining the national productivity gap (as in the Slovak Republic and Estonia, and possibly Poland), this is paralleled by above-average productivity gaps in this sector. A support of technological advancement could be expected to produce more sustainable comparative advantages as compared to income subsidies.
- The industrial sector proved to be the one sector most responsible for national productivity gaps. Hence economic policy could be most efficient if focussed on the qualitative development of industries in new member states. Industrial support need not however target the relative sizes of industrial sectors in terms of employment, as new member states typically still have some degree of over-manning in industry. Qualitative development could either support structural change between industrial branches of different technological intensities, or target directly technological and organisational upgrading within industries.²
- Analysis into industrial specialisation patterns evolving in the course of intensifying integration generated a model projecting future potentials for productivity growth. According to the results, the industrial structures of the Slovak Republic, Slovenia and Hungary are predicted to contain the most favourable prospects for swift productivity growth, whereas Estonia and Poland are ranked at the bottom of the list. Prospected for the Czech Republic are rather ambiguous. In general, however, our analysis leads to expect sectoral adjustment within this sector to actually accelerate productivity catch up: if past trends in sectoral adjustment persist, then adjustment itself will have a positive statistical effect on productivity growth. This however, crucially depends on whether sectoral adjustment will actually benefit those sectors that are associated with above-average productivity growth potentials. If sectoral patterns were rather to evolve to resemble patterns in southern EU cohesion countries, then productivity growth and eventually catch up would be prolonged. This, however, does not

...but economic intervention can only take the form of supporting flexible reallocation...

...and in particular in the Slovak Republic, Slovenia, and possibly Poland

CAP effects counter-productive results, in particular when taking the form of income-support

Industrial sectors at the heart of national productivity gaps...

...hence economic policy should target technological upgrading in industry

Industrial structures are predicted to support fastest productivity growth in the Slovak Republic, Slovenia, and Hungary...

...whereas predictions for Estonia and Poland are less optimistic

Most efficient policy would again be targeted at technological upgrading

² Incidentally, such policies can also increase the flexibility of production factors between broad sectors to promote the kind of sectoral change in the countries, for which analysis pointed out the desirability of political intervention for productivity catch-up.

suggest that economic policy should step in and promote the growth of particular sectors:

- o first, structures develop according to market interaction and additional supply would not necessarily meet additional demand;
- o second, in terms of the theoretical background, the direction of causality runs from technology to sectoral structures: whilst patterns determine prospects, an autonomous change in patterns is unlikely to change technology, that is, only if the emerging structures are sustainable - and this depends on technology advance.

So, even faced with an 'unfavourable' development of sectoral structures, economic policy would only be efficient if targeted at the determinants of sectoral change. In the situation of already fully liberalised trade, such an objective could only be met by policies in support of technological development (e.g. R&D), technology transfer (e.g. FDI), education and training programmes.

4.2 *Specialisation patterns in foreign trade*

- Analysis of foreign trade identified the prevalence of a quality-product-cycle between the current EU and the new member states: the quality advantage of the EU in mutual trade is overwhelming and appears to still grow as of lately. The main advantage of new member states was found in costs. Pure reliance on (wage) costs might have been amongst the causal factors or a driving engine behind the emergence of the quality-product-cycle via vertical intra-industrial trade. Such patterns do support technological upgrading. However, catch-up will only occur if technological upgrading in new member states is in fact faster than in the EU which is not a typical feature of product-cycle patterns. In particular, analysis suggests that strengthening the role of technology policy in new member states might be more efficient as compared to attracting FDI to overcome this pattern in trade between the integrating partners.

The pattern of intra-industry trade with the EU does support technological upgrading, but not catching up, if not assisted by political intervention

4.3 *National innovation systems and capacities*

The analysis into national innovation systems (NSIs) in CEECs distinguished between 'broad' and 'narrow' NSIs. The results and their interpretation in terms of economic policy also differ between the two distinct systems. The analysis has resulted in several suggestions to change the orientation of economic policy.

- The radical reduction of public funding for entrepreneurial and institutional R&D might have been a necessity of transformational recession. However, the identified lack of a coherent long-term policy in restructuring S&T and in particular R&D systems led to insufficient restructuring of industrial R&D. Only the Europeanization process provided some guidance on the reforming of the individual countries' broad NSIs. In fact, the Europeanization process might have had a greater effect on the building of NSIs in CEECs than public policy itself. This opens the opportunity to couple the reinventing of NSIs with the formulation of EU policies for the new member states.
- Notwithstanding country-specific differences, the analysis of determinants of broad NSI-development suggests an order of priority for economic policy from demand-determinants, to R&D-incentives, and to technology-diffusion-determinants. In this respect, e.g. Slovenia has a smaller gap in R&D and absorptive capacities, whereas Estonia's main strengths lie in demand and

In terms of broad national innovation systems, CEECs still exhibit insufficient restructuring ...

...only the process of EU integration provided guidance

National economic policy should focus on all determinants...

...but R&D capacities today appear to be the bottleneck

diffusion-determinants and weaknesses in R&D. It is important to notice, however, that policy should not follow an exclusive focus on only a sub-sample of these determinants: analysis clearly suggests that innovation is a multidimensional and a multilevel activity. Still, in general, absorptive capacities are currently relatively better than R&D capacities in CEECs. Today, with the demand-determinants having improved markedly in CEECs, the latter can be considered a particular bottleneck to be targeted by economic policy.

- The analysis furthermore established that CEECs have lost some of their advantages in terms of size of R&D which they inherited from the socialist period. In addition, production capabilities (indicated in the analysis by ISO9000 certification) in combination with technological capabilities (size of R&D employment) proved to be the most influential determinants of GNP per capita on a macroeconomic level.
- Distinguishing between technology-using and technology-developing perspectives in the narrow NSIs, the analysis hence suggests that production capabilities (*i.e.* determinants of firm-specific productivities, hence non-R&D activities) play a dominant role in today's development of CEE-NSIs. At the firm level, improving absorptive capacities today can accelerate firms' technology adoptive ability. In other words, firms need to make the transition from 'mastery of production' to improved technological capabilities.
- In terms of policy, this would require a re-orientation of R&D systems from the current exclusive orientation on knowledge-generation to one that is more focussed on knowledge diffusion as well as absorptive capacities.
- Finally, the results suggest that economic recovery in terms of growth did not automatically trigger a likewise recovery of demand for domestic R&D and innovation. Rather, a further condition for improvements in the latter lies with a sound restructuring of both narrow and broad NSIs, functioning financial systems, efficient mediation between supply and demand for R&D and innovation, and with the emergence of public-private and local-global interfaces and interactions.
- In conclusion, our analysis points to a gap between production and technology determinants of productivity in CEECs on the one side and innovation policy to support the closure of this gap on the other. Policies that can assist in closing this gap cannot be confined only on narrow NSIs and oriented only towards the generation of new knowledge but also have to embrace knowledge absorption and diffusion functions of R&D systems and could better assist integration of narrow and broad NSIs through effective demand-oriented measures. Due to differing 'innovation constituencies' in each CEEC, NICs reforms, however, cannot follow a simple benchmarking methods in the design of policies. Rather, country-specific gaps and weaknesses need to guide economic policy. Those differences include the share of large enterprises (active in business R&D), MNCs being either active as innovators or more confined to low-cost operations. In terms of causality, the analysis would suggest that a positive role and attitude of the state may facilitate the establishment of innovation policies ahead of the current level of demand for innovation policy, *i.e.* despite a weak 'innovation constituency'. Equally, the level of innovation policy may be behind the actual or latent demand from enterprises and other organisations.

Firms need to make the transition from 'mastery of production' to improved technological capabilities...

...policy perspective should hence be on knowledge diffusion and absorptive capacities

Restructuring of NICs cannot follow benchmark-approach...

...rather has to focus on country-specific weaknesses

4.4 Technology transfer via foreign direct investment

The Slovak team came to the conclusion that the use of data mining techniques in this type of application is a complementary rather than an alternative method to the statistical approach. A combined approach (*i.e.* data mining plus statistical methods), however, bears several benefits. The potential advantages of the data mining approach result from differences between association rules and correlation coefficients:

- Correlation coefficients define dependency between variables, association rules define dependencies among concrete values of variables, that means association rules provide more detailed information.
- Correlation coefficients are symmetrical, association rules are in general asymmetrical. Association rules can thus provide more insight about how variables influence each other, especially if the relationship is highly asymmetrical, *i.e.* if the confidence for the rule $X \Rightarrow Y$ is significantly different from the confidence for the vice-versa rule $Y \Rightarrow X$.
- Association rules in general associate two or more variables (or strictly speaking between their values), correlation coefficients define relationship only between two variables.

But differences among these approaches can also be evaluated on a more general level: traditional approaches are deductive *i.e.* the researcher formulates a hypothesis (*e.g.* “FIEs where foreign owners have a majority in equity share exhibit higher increases in productivity”). It is then tested whether the collected data are in harmony with the formulated hypothesis or not. However, data mining techniques can support also an inductive approach – one would specify the required minimum confidence and the data mining tool would generate all the association rules with confidence higher than the specify minimum confidence.

In any case, the application of this approach on the CEE subsidiary database would warrant further research, including the testing of other data mining techniques (*i.e.* other than the Apriori algorithm), additional cross-country analysis of the results of data mining, and other statistical methods.

The Estonian team conclude that, from the perspective of technology and knowledge transfer through FDI and the innovation potential, neither excessive dependence and/or control by the headquarter nor excessive independence or autonomy from the headquarter is good, especially in CEE countries today. Excessive dependence impedes the potential for increasing the subsidiary's own absorptive capacity and excessive independence might leave the local unit in a circle of “internationally uncompetitive” knowledge. It is even supposed to be good to lose some autonomy and in return being granted access to the kind of knowledge and technology that was missing and parent company-specific. However, today, subsidiaries have to move from knowledge and technology adaptations towards knowledge and technology development. Having own capabilities, the subsidiary could get more mandates over individual business functions and engage into technology and product development co-operation with the parent companies (reverse technology transfer) and the local or host economy. Therefore, being constrained by a shortage of knowledge and technology, subsidiary-managers should strive be more active in their relationship with their headquarters. The relatively low technology autonomy of subsidiaries in CEECs is expected, at this

Data mining methods are a valuable addition to generate ‘pure’ knowledge...

...and serves the workpackage as preparatory effort

What is associated with a higher intensity of technology transfer: autonomy or integration in parent-networks?

Whilst today, technology adaptation is driven by close control by parents...

...future technological development will depend on more autonomy

stage of development, to contribute to the intensity of the transfer of knowledge and technology.

From their analysis, the team concludes for economic policy:

- The government should provide systematic analysis of the development of foreign subsidiaries, inclusive knowledge and technology level, and should target subsidiary-managers to embrace more active international co-operation in specific business fields.
- The government should systematically increase the absorptive and technological capacity of domestic firms and foreign subsidiaries, e.g. through human resource, and management capabilities development. This could prove to be decisive especially in specific industrial sectors. Economic policy could additionally target firms' managers to intensify their co-operation (e.g. in product and process development) with related industries (this suggestion is related to existing industries);
- The government could induce the creation of knowledge and production clusters (indirect effects from more value-giving industries/firms are expected).

Economic policy should hence focus on upgrading management capabilities in foreign subsidiaries

The Slovenian team is focussed on the determinants of productivity growth at the subsidiary level. Their empirical analysis shows that industrial integration through FDI led to considerable increases in productivity, technology and quality, as well as in sales and exports. The regression models suggest the following conclusions about the productivity growth and control in foreign subsidiaries:

FDI supported qualitative development in CEECs

- The level of foreign parent companies' overall control and the level of their control of marketing and strategic functions seem to be the most important determinants of productivity growth in foreign subsidiaries in the Slovenian manufacturing. The higher the foreign parent's control overall, as well as of marketing and especially of strategic functions, the higher the productivity growth in subsidiaries. Foreign parent companies seem to seek control of strategic and marketing business functions and leave operational control to subsidiaries themselves.
- The pattern of control and productivity growth holds regardless of the inclusion of foreign equity share dummy in the model or not. The level of foreign equity share as such is not a determinant of productivity growth, and foreign equity share does not seem to be an alternative for foreign parent companies' control of marketing and strategic business functions. The control of marketing and strategic business functions is obviously important *per se* and is probably based on factors like technology, marketing and supply channels *etc.* Foreign parent companies are eager to exercise control over marketing and strategic functions, regardless of whether they hold majority or minority equity share. In other words, the level and mechanisms of control of individual business functions seem not to be related to the level of foreign equity share.

Subsidiary development most importantly depends on parent control over marketing and strategic business functions

The model points to some other determinants of subsidiaries' productivity growth. The first is subsidiary size: large subsidiaries have significantly higher average change in productivity compared to small and medium sized subsidiaries. The second is the proportion of sales to foreign parent company; subsidiaries with higher proportion of sales to foreign parent companies or to other foreign buyers experience higher changes in productivity level. The third is that, in two variants of the model, subsidiaries in high technology intensity sectors exhibit significantly lower change in productivity than subsidiaries in other sectors.

Subsidiary development depends on size, export shares...

...and not on their belonging to technology-intensive sectors

All in all, the more subsidiaries are integrated into foreign parent companies' - marketing and strategic management, and export flows wise - the higher productivity growth they experience. To keep marketing and strategic control in the hands of foreign parent companies seems to be the main determinant of subsidiaries productivity growth. Foreign parent companies are eager to keep marketing and strategic control regardless of the equity share they have.

The results of research by the Slovenian team point to the some policy conclusions:

- Industrial integration through FDI led to considerable increases in productivity, technology and quality, as well as in sales and exports. The new EU member states should apply an active policy of FDI inflows promotion, because this will speed up their catching-up process. This policy comprises all the standard FDI promotion tools, as used by the most successful FDI host countries, e.g. Ireland, Portugal, Netherlands, Belgium, Czech Republic, Hungary *etc.*

In terms of economic policy:

- active policy of attracting FDI

The higher the foreign parent's control overall, as well as of marketing and especially of strategic functions, the higher the productivity growth in subsidiaries. Foreign parent companies seek control of strategic and marketing business functions and leave operational control to subsidiaries. Any attempt of a host country to legally influence the level of foreign parent's strategic and marketing control and/or of foreign equity in foreign subsidiaries may have an adverse effect on the productivity growth of these subsidiaries. None of the analysed countries, however, have or intend to have any restrictions in this regard.

- no interfering with the extent of control by parents

- Large subsidiaries have significantly higher average growth in productivity levels compared to small and medium sized subsidiaries. There seems to be a rationale for giving some specific incentives to FDI projects above certain size.

- some incentive to large FDI projects

- Subsidiaries with a higher proportion of sales to foreign parent companies or to other foreign buyers experience higher productivity growth. Obviously, higher export orientation of subsidiaries and their more intensive integration into foreign parent companies' network bring additional productivity gains. This speaks in favour of stimulating efficiency-seeking (vertical) FDI, *i.e.* FDI projects which are part of foreign parent company's integrated international production strategy.

- and to efficiency-seeking projects

- Subsidiaries in high technology intensity sectors exhibit significantly lower productivity growth than subsidiaries in other sectors. The fact that it is FDI in high-tech industries, which experience the lowest productivity growth, shows that the new member states still lack the necessary elements and appropriate environment for a competitive involvement in high tech industries. Even when it comes to FDI in high tech industries, foreign investors are mostly engaged in the lower-end segments and transfer less than up-to-date technologies, which reduces the impact on productivity growth. It seems that the new EU member states could not rely to a major extent on FDI when attempting to catch-up in technologically advanced industries. Here, endogenous efforts are indispensable. The policy of specific stimulation of FDI in high tech sectors could only be partially successful. The real policy advice would be reform and development in the fields of education/human resource creation, R&D, innovation *etc.* This would efficiently create a preferable environment for more high-tech FDI in these countries.

- reliance on FDI for technological upgrading in high-tech is misguided...

...rather endogenous efforts are necessary, like human resources, R&D, innovation

All the above policy suggestions should be combined with a policy of strengthening the so-called spillover effects of FDI, *i.e.* of linkages between foreign subsidiaries and domestic enterprises.

- finally strengthening links between subsidiaries and the host economy

The Hungarian team developed an innovative taxonomy of subsidiaries in respect to the level of autonomy from parents and the extent of abilities to adapt the foreign technology received from parents to function efficiently in the environment of the host economy. The analysis distinguishes between internal (between parent and subsidiary) and external (between subsidiary and the host economy) technology and knowledge transfer. The analysis of potentials for internal and external technology and knowledge transfer focussed on country-specific differences.

**Innovative concept:
taxonomy of
subsidiary positions...**

**...autonomy and
adaptive ability**

**Hungary contains the
largest potentials for
dynamic technological
interaction between
parent and
subsidiary...**

**...yet in terms of
external technology
transfer rather little
links to host economy**

**Estonian and Polish
subsidiaries are
prematurely
autonomous...**

**...but are well
integrated with their
host economy**

**Slovenian subsidiaries
have a low adaptive
ability...**

**...and contain rather
little potentials**

**Slovak subsidiaries are
young...**

**...but when maturing,
they would contain
large potentials for
technology transfer**

- The taxonomy would suggest that the Hungarian FIEs contain quite large potentials for internal technology transfer and display relatively intense adaptation of foreign technology received from their parents. Hence, our Hungarian FIEs are well endowed with conditions for an intense internal dynamic technology transfer between parent and subsidiary (including reverse technology transfer). In our analysis of external technology transfer potentials, however, we established that both material and non-material vertical links to the host economy rather suggest limited potentials for external technology transfer. Only with respect to the sources for finance did our analysis suggest an intense role of the host economy in the operations of foreign investment subsidiaries in Hungary. This could be interpreted to signify what is typically termed a dual economy: well developed and mature subsidiaries, however with little contact to the host economy. Additionally, the share of OPT-kind FIEs appears to be significant in Hungary.
- The Estonian and Polish FIEs of the database play a comparatively important role in their host economy, both in forward linking business and the latter country-FIEs also in supplying areas of competitiveness and serving as sources of finance. In the taxonomy, however, both country's FIEs rather featured 'premature autonomy' and inability to adapt the foreign technology to their own needs. In the case of Poland, this is mainly due to the strong market-orientation of FIEs. Therefore, the potentials for external technology transfer would be significant in both countries, if only our FIEs would signal to us larger potentials for internal technology transfer - in their current situation, potentials for technology transfer via FDI subsidiaries are rather low for both countries.
- In the case of the Slovenian FIEs, the analysis both suggests rather low potentials for internal technology transfer mainly rooted in the lack in adaptive abilities. At the same time, vertical linkages with the host economy for sales and procurement are comparatively less intense. Only with respect to the non-material linkages supplying areas of competitiveness and FIE-finance could we establish above-average roles for the country's respective host economies. In total, however, our analysis suggests rather limited potentials for technology and knowledge to diffuse from parent to subsidiary and further on to the host economy.
- In the case of the Slovak FIEs, potentials for technology transfer today appear low according to our taxonomy, yet with FIEs maturing, a brighter future might lie ahead. In particular, the conditions for intense dynamic technology transfer between parent and subsidiary in the future are well in place and await their exploitation. In regard to the conditions for high potentials for external technology transfer were results rather mixed: in our analysis of backward and forward linking activities, we established intense networking activities, but also a high share of FIEs fulfilling our criteria for OPT-kind of subsidiaries. The intensity of non-material linkages are likewise rather average across our country-samples. In sum,

we have to conclude rather small potentials at this point of time whereas we expect the potentials to rather increase in the future.

This implies for economic policy: for technology transfer via FDI to be particularly intense, advanced foreign technology first has to be installed in the foreign investors' subsidiaries. Only then can technology flow into the rest of the host economy. Hence, in a first step, economic policy can strive to assist subsidiaries to learn how to adapt foreign technology (e.g. in programmes matching up networking partners). A high level of adaptive ability turned out to be the most decisive factor for the subsidiary developing along the FIE learning curve. Once up this curve, the subsidiary is then apt to engage into the dynamic form of technology transfer in a two-way interaction between the investor and its local subsidiary.

In the second step, economic policy can try to increase the intensity of technology flowing from foreign subsidiaries to the local economy. Motivating foreign subsidiaries to increase local content could serve this objective. Restricting foreign direct investment below a threshold level of local content, however, works against the market and is hence not efficient: foreign investors can only be successful if allowed to follow the kind of strategy they derive from their analysis of the market. Policies could be targeted at assisting local firms with the kind of networking, technological, and managerial upgrading necessary in business with foreign investors. Additionally, local content need not consist of procurement of semi-finished products, material, or personnel (in particular in the higher qualification bracket), but just as well of business services supplying those areas of subsidiary-competitiveness, our analysis identified as particularly important across the whole sample of subsidiaries interrogated. Finally, local banks supplying sources of finance could learn from foreign subsidiaries in terms of business plan management and risk assessment strategies. In some cases, this could consist of management education programmes, as potentials are often not sufficiently perceived.

The German team added another taxonomy-related analysis to allow country-independent analysis of potentials for technology transfer. They conclude:

- *MNC strategy matters*: Subsidiary strategy is a significant determinant of technology transfer independent from country effects. The results show that highly integrated and export oriented FIEs (type III and II) are more likely to achieve high productivity growth and production technology upgrades, yet to a lesser extent quality improvements. Medium integrated and domestic market oriented subsidiaries (type I) show a significant probability to benefit from increased levels of quality. Autonomous subsidiary (type IV) strategy has no positive significant impact on technology transfer. Within group estimations showed that coefficients of the other variables have different significance levels and/or signs depending on strategy.
- *Trade as Technology Transfer Channel*: Given the general trade patterns of subsidiary type II and III, it can be argued that intra-MNC trade has a decisively positive impact on technology transfer. Furthermore, a higher export share for 'receptive' subsidiaries increases productivity as well as quality. Yet, a higher share of imports increases the likelihood of productivity and technology improvements for type II subsidiaries. Given the fact that types II and III FIEs have also on average the highest foreign equity shares, it can be argued, that FDI and international trade are complementary rather than substitutes for technology transfer.

In a first step, economic policy can target subsidiary's adaptive abilities

In a second step, external technology transfer can be supported by:

- promoting networking, technological, and managerial upgrading

- developing local business services

- local banks as transporters of managerial know-how

The country-independent analysis shows that subsidiary development depends on its strategy...

...and in particular on the autonomy issue and the host economy links

Intra-MNC trade determines technology transfer

FDI and international trade are complementary

- *Explicit channels for technology transfer via inward FDI or FIE initiative:* The evidence shows that all areas of business functions and initiative can work as explicit channels of direct technology transfer. However, most frequently and significant is the direct technology transfer via marketing business functions and questions related to product scope. On the other hand FIE initiative with regard to the general organisation of business functions and technical product development increases FIE development in terms of technology. However, there are significant differences depending on respective subsidiary strategy adopted. For type I subsidiaries marketing business functions are explicit channels for positive technology transfer. The more closely integrated type II subsidiaries benefit in addition from foreign parents initiative in product and market scope. The difference might be explained by the export orientation of type II subsidiaries. Interestingly, for the most integrated subsidiaries (type III) dependency has a negative impact on productivity growth and technology upgrades. Low integrated type IV subsidiaries benefit from technology transfer via operational and strategic business functions as well as from parent initiative with regard to product scope.
- *Dynamics of FIE development:* From the perspective of FIE development and somehow simplified, stronger foreign parent initiative and co-ordination is required for the group of autonomous subsidiaries. There is still room for stronger foreign parent engagement in medium integrated/export oriented FIEs. On the other hand higher subsidiary initiative and autonomy pays off for receptive FIEs and medium integrated and domestic market oriented subsidiaries. Our evidence shows that a differentiated approach to further FIE development depends on the currently adopted subsidiary strategy (degree of integration reached), market orientation (export vs. domestic market), and the particular business function and/or area of initiative in question.

The importance of channels for direct technology transfer depend on the subsidiary-specific strategy

In sum, autonomous subsidiaries would benefit from closer parental control...

...whereas 'receptive' subsidiaries benefit most from autonomy

The Polish team conclude for the sample of Polish subsidiaries:

- A high degree of dependence on parent companies is observed in the case of investment finance, product price, process engineering, and product development. The overall conclusion is that prices affect the flow of cash between the parent and the subsidiary. Investment finance is an area included in a range of strategic areas of managing international concerns and is not transferred to subsidiaries.
- This confirms the proposition that the dependence on the foreign owner decreases after the period of development of subsidiaries utilised for learning. In conclusion, the process of maturation of subsidiaries is accompanied by the growth of their autonomy and results in the rise of headquarters confidence in the management boards of local subsidiaries. An argument for confirmation of the statement is the fact that subsidiaries of foreign investment enterprises in Poland rarely employ foreign citizens in managerial positions. One fifth of interrogated enterprises declare employment of foreigners as managers or technical specialists.
- The rise of areas of enterprise operation imposes the process of delegation of authority, which is indispensable for the effectiveness of the enterprise and is confirmed by the gathered empirical material. The enterprises with more than 10 business lines indicate a relatively higher level of autonomy in all business functions (with the exception of marketing research). In conclusion, the growth of

In the Polish sample, subsidiary managers are overly foreign, yet subsidiary autonomy increased with the age of the subsidiary which is a sign of maturing

Subsidiary autonomy increases with increasing lines of businesses

the number of business lines affects the growth of the autonomy level, which is quite normal.

- The participation of national partner produces the need for taking their objectives into consideration. The smaller influence is indicated by the enterprises with minority share of the foreign investor. In this case a form of holding management is encountered, which results in the rise of the range of decentralization. A relatively large participation of local partners encourages the spread of authority to the local environment as the result of spillover effects. In contrast, in the case of subsidiaries with 100 *per cent* foreign ownership, the prospects of know-how diffusion are distinctly limited. Along with the rise of the share of foreign investor ownership in subsidiaries, a possibility of unrestrained control increases. In the conditions of transformation in Poland's circumstances, the partner for foreign investors takes the form of the State Treasury in a majority of cases. The role of the treasury is however restricted to holding shares in FIEs (even if substantial) and to controlling the fulfilment of obligations agreed between the investor and the FIE. In the prospect of five to ten years to follow, depending on conditions of the contract, the Treasury shares are to be sold to the strategic investor. Nevertheless, the presence of national shareholders restricts the autonomy of foreign investors.
- Greenfield investment is characterized by larger convergence of structures and behaviours in relation to the parent enterprise, which could be associated with the stronger dependence of subsidiaries on foreign investors in terms of decision making. The Polish group includes a large number of enterprises with 100 *per cent* foreign ownership in capital. The development of greenfield investments is slow due to their character. The headquarters cautiously select local partners in terms of the adaptation to the culture of the corporation. This is later reflected in the submission of subsidiaries in relation to the foreign partner.
- Within the group of medium-high technology FIEs, the planning of the majority of business functions is fulfilled by foreign headquarters, in particular in production planning. This results from the protection of investor-specific know-how, the necessity to preserve the investor's technological regime (refer to Ozawa 1979 and Wells 1983), and the centralisation of research activities within the structures of multinational enterprise. The observed phenomenon is associated with a particular disadvantageous feature of capital inflows in the case of the Polish economy, namely the character of FDI for investment. In vestment under the control of foreign investors imposes ready-made solutions with regard to technology and shows strong reluctance to establish more independent research centres in Poland.

Subsidiaries with minority shares of foreign parents are more autonomous and have more intensive links to the local economy...

...whilst fully foreign owned subsidiaries have lower prospects for spillovers

Greenfield investment projects in Poland develop rather slowly

With increasing technological intensity, subsidiary-autonomy decreases due to investor-specific know-how

4.5 *Productivity and capability in the transition countries: a historical and comparative perspective*

The analysis of transcripts of interviews and their triangulation exercise concludes:

- The experience of FDI in Eastern Europe, as documented through our interviews, provides strong evidence that the East-West productivity gap on main production lines is relatively small, and can be closed quite quickly. That means that, as long as wages in the host countries remain well below West European levels there should be ample scope for further, profitable investments. The triangulation process has thrown up nothing to contradict this conclusion.

On main FDI production lines, the productivity gap can be closed swiftly...

- The implication is that social capability and technological congruence have not been critical problems on these main production lines.
- It should be stressed that these strong conclusions emerge from a set of interviews involving exclusively West-Central European investor-firms and largely East-Central European host countries. It would be dangerous to extend them to the whole transition region. Our global triangulation exercise reinforces this caveat.
- Investor companies have invested massive resources in training programmes, ranging from full-time secondments to on-the-job training, sometimes on site in the host country, sometimes back at headquarters. These programmes have covered blue-collar as well as white-collar workers. This suggests that one of the reasons why social capability has not been a critical problem is simply that it has been seriously addressed by the companies involved. This conclusion is generally confirmed by intra-project triangulation, though other WPs do raise doubts as to whether training is a factor which significantly differentiates one firm from another.
- The positive experience with main-production-line productivity is not matched by performance in relation to ancillary sectors. Investor-firms have generally struggled to build adequate supply networks in the host countries. Where they have persevered, they have done so in the face of a stubborn productivity deficit. Given that lead-company programmes for building social capability have been largely restricted to the in-house dimension this is, perhaps, hardly surprising. There is also a hint that technological congruence problems may be much more stubborn once we move beyond the sphere of Fordist and post-Fordist production lines. Whether that is primarily an effect of fear of technological incongruity on the part of investing firms, or of more objective technological factors, remains unclear. The global literature suggests that the latter factor may be the most important, with the impact of FDI on growth in developing countries strongly and inversely correlated with the size of the 'objective' technology gap between home and host country. Comparison with other work packages within the project confirms our overall conclusion here, but urges caution in relation to its generality. Individual country studies reveal wide differences in precise patterns of linkage, possibly related to differences in underlying resource endowments and related differences in corporate strategy.
- Investor companies have been eager to exploit local training and R&D facilities, but have done so on an essentially casual basis. Teaching of foreign languages and software development are the only two areas where local educational/research expertise is brought in systematically. The implication is that local human capital formation organisations are not playing the role they ought to be playing in the solution of social capability problems in CEE. This is confirmed by intra-project triangulation.
- While investor companies have shown great willingness to help local suppliers to raise their game, they have been short of ideas as to how to actually do it. In practice, help often reduces to simply helping the local supplier to be taken over by another foreign company. This pattern is strongly confirmed by the global literature.
- With strong FDI impacts on productivity trends in FIEs and weak impacts elsewhere, the overall effect of FDI on productivity convergence is likely to be

...hence social capability and technological congruence at this level are not a problem...

...possibly due to intense training of local staff

This positive assessment does not hold in the case of supply networks...

...this even pertains to the quality of local training facilities

mixed. In FDI target sectors, the tendency to convergence, East-West and inter-country, will be strong. Elsewhere, convergence to West European levels will be slow and difficult, and significant differences between individual East European countries will survive into the long term. This mirrors the global experience.

- The pattern of supply hierarchy in CEE whereby local companies are largely relegated to the status of second- and third-tier suppliers, with first-tier suppliers usually wholly or partly foreign-owned, is not universally reflected in global experience. Indeed, in China the problem is exactly the opposite – domestically owned first-tier suppliers (in this case to the auto industry) are strong, but second- and third-tier suppliers are weak. This in no way invalidates our conclusion on CEE, which is strongly supported by other research on CEE. But it does suggest that patterns of strength and weakness in supply hierarchies may be as much a function of specificities in development paths as of any universal developmental tendency. It is noteworthy that the pattern in Portugal has been more like the East European than the Chinese experience.
- The global experience strongly confirms the case-study results on the importance of two-way technology transfer, or rather on the reverse technology transfer element within that. It does, however, raise serious questions as to whether reverse technology transfer is a positive factor of host country development.

These conclusions are, in a sense, not surprising. It is not surprising that Czech and Hungarian production-line workers can quite easily be brought up to the standards of German workers, and it is not surprising that companies with shareholders to keep happy are not prepared to take on the job of retraining whole nations. There are, nevertheless, critical problems and gaps in the FDI-driven process of catch-up in Eastern Europe. These problems are as much a function of weaknesses in local infrastructure (especially R&D) as of any shortcomings in the management of major foreign investments. The fact remains that, in the outcome, the countries of Eastern Europe may experience uneven, dualistic development, rather than the smooth convergence to West European levels of development which catch-up theory (in principle) predicts. It is now common in Eastern Europe for levels of productivity and real wages in related sectors to vary by a factor of 2:1 and above, depending on whether the companies in question are foreign- or domestically-owned. This is clearly sub-optimal for the host countries themselves. To the extent that it generates social tensions and ultimately impacts on political stability, it could also significantly change the outlook for further foreign direct investment in this critically important area of the 'new' Europe in ways wholly beyond the control of the firms concerned.

Finally, let us return to the main 'unexpected' result of our interviews. The strategies of the companies we talked to are predominantly global strategies. This does not prove that global strategies are generally dominant among firms investing in CEE, but it does suggest that the global outlook is significantly represented among them. Intra-project triangulation strongly confirms that conclusion.

How is this likely to affect the impact of EU accession on the CEECs? To the extent that multinational investments in the region are cost-driven, and to the extent that enlargement tends to increase real wages in CEE, it will tend to mean a higher degree of onward mobility of investment, which means less FDI in the region. To the extent that the investments are network-building (if, in principle, on a global scale), the removal of frontier barriers and the (putative) improvement of infrastructure, particularly transport, in the new member-states may swing the balance of

Hence technology transfer is mainly confined to foreign subsidiaries

The case study casts doubt about the positive effects of dynamic technological interaction between parent and subsidiary

Results suggest that CEECs will experience rather uneven, dualistic development...

...which not least might produce social tensions and political instability

A further possible danger is that of 'flying geese'...

...so FDI effects on development prospects are rather ambiguous...

effectiveness towards pan-European strategies. To the extent that eastwards enlargement unleashes rapid growth in GDP and a boom in consumption in CEE, and to the extent that the new member-states retain significant peculiarities of taste, specifically CEE strategies may emerge – for the first time – in the case of some consumer-oriented companies. In a word, the net impact on levels of FDI could go either way. In that context, we should be that much more cautious about our assessments of the likely overall impact of FDI on productivity in the new member states.

...and policy should be rather cautious

4.6 Firm-specific determinants of productivity gap

➤ The analysis of the **Czech team**, consisting of Petr Fiala and Josef Jablonský, used a Data Envelopment analysis (DEA) in several multiple criteria decision making frameworks. The DEA models compare several outputs with several inputs that influence productivity levels. In the first wave of field work (involving machinery manufacturing and furniture industries), the analysis takes into account four inputs: total costs, the number of workers, labour costs and floor space available for production processes, and two outputs: turnover of the firm and market share of the most important product of the firm. In the second wave (consisting of firms from cosmetics and electrotechnical industries), one output variable (firm-turnover) was compared to several sets of inputs. In the first set, four inputs were considered: total costs, labour costs, the number of workers and the number of management. In the second set, we added to the first four inputs four more variables: market share, the value share of the most important product, intensity of networking with customers and suppliers and the intensity of use of modern communication technologies. The correlation coefficients between all variables used and the efficiency scores given by two different DEA models are presented in the table below. These coefficients show a very weak correlation between the input factors and the given efficiency scores. Firm-specific turnover is explained mostly by total and labour costs and by the number of people of different occupational categories. The results do not show definitely the impact of used factors on the DEA efficiency score.

DEA-analysis compares the quantities of inputs and outputs to identify the factor combinations of efficient firms

Table Correlation coefficients between inputs, output and efficiency scores

	DEA4	DEA8	Turn.	TC	LC	Mng.	Work	Share	1st p.	Net	www
DEA 4	xx	0.430	0.140	0.080	0.025	-0.083	-0.103	0.111	-0.031	0.043	0.003
DEA 8		xx	0.348	0.307	0.256	0.139	0.164	0.036	-0.071	0.270	0.194
Turnover			xx	0.900	0.769	0.674	0.647	0.007	-0.019	0.165	0.125
Total costs				xx	0.828	0.666	0.624	-0.013	-0.051	0.145	0.095
Labour costs					xx	0.591	0.656	-0.058	-0.023	0.220	0.187
Management - qualification						xx	0.565	-0.087	-0.092	0.114	0.128
Workers - qualification							xx	-0.135	-0.070	0.086	0.097
Market share								xx	0.049	-0.022	-0.073
Share of 1 st product									xx	0.049	0.103
Networking intensity										xx	0.565
Intensity of use of internet											xx

➤ Our analyses yielded a broad spectrum of results depending on the method applied, and turned out to be country, branch, and firm-size specific. Whilst each specific result can be associated with specific policy implications, it is not so easy to derive from all the different results sufficiently robust and general policy implications. In this report we will interpret only some evident general results. The results from different models unambiguously demonstrate the existence of a

The main policy conclusions include improving the qualification of workers...

productivity gap between firms from West Germany and firms from Central and Eastern European countries. In the new EU countries there is the problem of underinvestment. The new EU countries in comparison with the West Germany have very low relative fixed capital intensities. The models estimated also quite clearly identify a stable relationship between the number of workers, the levels of qualification of workers, and the size of unit labour costs. The main policy implications to be derived from this involve the strategic objective of replacing quantity by qualification with respect to mainly the workers' fraction in total firm employment, and the modernisation of fixed assets by way of investment. The applied models also confirm the positive impact of a high intensity of use of modern communication instruments (networking, Internet, e-business) for firm-specific productivity levels.

- The analysis by **Johannes Stephan** identified that investment was amongst the most important firm-specific determinant of productivity gaps. Hence, economic policy which would focus on assisting firms by stimulating the propping up and modernisation of their fixed assets would certainly be effective. This becomes particularly important when considering that only in a few cases, we were able to establish a significant role of labour-capital substitution.
- Amongst the other firm-specific determinants, we established that weaknesses in the management of firms, so-called 'soft factors', *i.e.* differences in the organisation of production processes and differences in the management of firms (marketing, inadequate market position, networking, *etc.*) account for a large fraction of the productivity gap (see *e.g.* Bellmann / Brussig, 1998; Ragnitz *et al.*, 2000). Whilst economic policy cannot directly influence the management of firms, policy-support for management training can help managers to learn the kind of know-how that is decisive for competitiveness and success at the firm level and to appreciate the benefits associated with a market-oriented management.
- In particular, we established that managers in the East on average spend less time on strategic planning. Our experience with previous in-depths case studies in East Germany suggests that the management of manufacturing firms in East Germany is often devoted more to the technical solutions leading up to a project rather than the additionally decisive determination of the medium to long-term goals of the firm. Hence, strategic planning involving market analysis, process organisation, marketing in general, *etc.* perhaps receive not sufficient consideration.
- Other important fields within the 'soft factors' pertain to the intensity of networking and the use of modern technology for communication to assist networking with existing partners and to find and attach new partners to the firm. Whilst these functions can be expected to improve in quantity and quality over time along the typical learning curve of managers in less mature market economies, clearly focussed management training programmes could help to overcome those deficiencies. Networking between firms certainly was an important part of economic life under the planned system, however with a different focus. Today, networking involves more long-term contractual ties that allow managers and investors to overcome some of the uncertainty they are confronted with in an economic system governed by competition on markets with their price mechanisms serving as indicators for demand and supply. Amongst the different networking partners, it is in particular the regular contact with stake-holders other

...and the
modernisation of
capital stocks...

...and the support for
the intensifying of
networking and use of
modern
communication
technologies

Matched pair analysis
suggests that
investment is the most
important
determinant...

...and not a
substitution of capital
by labour

Followed by
differences in the
organisation of
production processes
and management of
firms (soft factors):

- intensity of strategic
planning

- intensity of net-
working

- use of modern
communication
technologies

than long-term customers or suppliers that contains large explanatory power. In terms of economic policy this is not only a field for management trainee programmes but rather also points to deficiencies in the supply of enterprise-related services. The low level of development and small size of this sector of the economies in the East could be targeted by economic policy. Next to networking with stake-holders, the intensity of regular and long-term contracting with customers and suppliers is a reflection of management quality and can only be targeted by economic policy in the form of management training programmes.

- The use of modern communication technologies might be rather new for managers, yet those technologies are in place and their benefits await to be exploited. Here again, training programmes can be focussed on the use of those technologies to work the market and to bind customers, suppliers and in particular stake-holders to the own firm. Large-scale accessibility of the internet, however, is additionally the responsibility of the national telecommunication firms which as public-goods utility suppliers often remain in some state-control even if only in terms of a state-regulator. Infrastructure-building is additionally an important field for EU structural fund policy which could make an important difference in terms of productivity catch-up at the firm level. Both Email and e-business are internet-based.
- When asked about the preferred strategies to weather intensifying competition, firms reacted quite differently across countries: firms in both parts of Germany clearly favoured the cost-reducing strategy related to labour costs. In CEECs, more weight was attached to introducing new products, and firms have in fact been quite successful in this.
- In terms of different strategies to increase productivity levels, firms unambiguously favoured internal, more long-term oriented means like R&D, process and product innovations and externally related means like marketing and networking activities. Surprisingly, finding a foreign investor turned out to be at the bottom of the list.

The analysis of the **Polish team**, consisting of Malgorzata Jakubiak and Anna Wziątek-Kubiak, centres around the matched-pair method. It divides the size, and industry panels into the 'better' performing and the 'worse' performing firms (with the criterion being firms' apparent productivity levels), irrespective of their country of origin. From their analysis, they conclude in terms of economic policy on four distinct fields.

- *Investment policy*: The role of investment in productivity improvement, especially of low productive firms, is crucial. The very low relative fixed capital intensity of the new member states, which is accompanied by low unit labour costs, high intensity of work and exhaustion of the potential to reduce employment are the main arguments supporting the urgent need to stimulate investment in the new member states. This is a prerequisite for moving up the quality ladder and maintaining comparative advantages of lower costs of labour in these countries. Given the hypothesis that the lower the productivity the higher the role of fixed capital intensity in productivity improvement, there is an urgent need to create the environment which will support the increase in the investment rates in these countries.
- *SME policy*: Very low productivity of SMEs of the new member states compared to Germany, as well as very low fixed capital intensity and investment rates, low

All this suggests that economic policy should focus on management training programmes...

...and the development of modern enterprise-related services

Firms in Germany fight intensifying competition by reducing labour costs...

...in CEECs more by innovating

Today, all sample firms favour R&D and innovation rather than finding a foreign investor

Amongst the group of 'weaker' firms, investment is particularly important

Productivity gaps root in a 'long tail' of weaker small and medium enterprises...

share of employees improving qualifications, as well as unstable business environments are the main arguments for improvements in SME policy in the new member states. Since most production in the analysed branches is of a labour-intensive character and low labour costs are still a key advantage of the new member states, the low mark-up on wages (especially social security contributions) is of special importance. Another argument for the improvement in SME policy is extremely high differentiation in productivity levels among the SMEs in the samples, suggesting a broad process of squeezing them out of the market in the nearest future.³

- *Education and training policy:* Differences between 'better' and 'worse' firms' subsamples in the share of employees improving qualifications, reinforce the selection process on the market and have important macroeconomic implications. The lower the level of productivity the smaller the share of personnel upgrading skills. Thus, training as a determinant of productivity levels influences and will continue to influence the process of selection of firms. If 'better' firms push out 'worse' firms from the market, the problem of unemployed, which does not act to raise qualifications, will grow. Without further training people will, furthermore, stay unemployed, adding to already large structural unemployment in some of the new member states (especially in Poland). The issue of government policy in education and training, especially of workers who are, as our research results reveals, much less involved in education and training than managers, is therefore being pushed high up the agenda. The problem is also related to the Lisbon Strategy.
- *Regional policy:* The differences in productivity levels of rural and urban firms create the need for a policy supporting investment in infrastructure and the development of rural areas.

...and a lesser intensity of education and training of employees

Weaknesses in rural areas suggest a role for regional policy

The **Hungarian team**, consisting of Ilona Cserhádi and Tibor Takács, examined the collected data on the selected industries by a variety of different multivariate statistical methods. The objective of this analysis is to identify the areas in which firms in the new member countries still have some way to go in terms of catching up. Their results led them to conclude in terms of economic policy:

- Productivity levels highly depend on innovation, and qualification of personnel is an important factor from this point of view. A little bit astonishingly, it is even more important among the examined countries than the intensity of networking or the application of information and communication technologies (ICTs), although their importance has also been underlined by the results. It is a remarkable result that in all cases the qualification of workers has a higher importance than that of the management. This means that support for improvements in the qualification of workers is needed during the phase of catching up. In our opinion, both the state and the corporate sector has to provide support and resources for this.
- Our examinations support the fact that there is still a definite gap between companies of East and West Germany, and the productivity gaps between the West Germany and the Central and Eastern European countries are even more pronounced. There is however an exception, namely the cosmetics industry,

The more technical econometric analysis also establishes the role of

- innovation
- qualification
- networking
- ICT

³ This hypothesis is based on the assumption that the small firms in the samples produce the same products. However, it is very possible that small firms serve completely different market segments.

where large Polish companies reached (or even exceeded) productivity level of West German firms. It is also typical that there are large differences within the new EU countries. This can be explained mainly by ownership structures: large multinational companies have already reached high productivity levels, while national companies lag behind, and this may not change swiftly in the future. This has been supported by other research in the past years and suggests that governments in the new EU countries should encourage and stimulate better cooperation of multinational companies with national firms. This would lead to an overall rise of technological levels and of productivity, and will diminish the current dual character of the national economies.

- Across all firms-samples, the most important factors behind productivity levels and gaps are unit labour costs, the qualification of personnel, the intensity of use of information technologies, and amongst infrastructure types mainly the accessibility and quality of railway transportation. These results hence suggest that economic policy should place more emphasis on the railway system in the development of the infrastructure, this in particular as, for example in Hungary, governments so far typically rather considered the development of the highway system as a top priority.
- It is also important that ICTs should be accessible also to smaller companies, and they should be encouraged to use modern communication technologies in their business. Although there are several governmental programs targeted at this, ICT in general is not as widespread as in more developed economies. Amongst the causes for this are the relatively high costs and the lack of accessibility of good quality communication physical infrastructure.

4.7 *Economic policy in the EU and its compatibility with the particular conditions in CEECs*

The analysis of EU policies toward the new member states in the light of the results generated by other researchers in the project concludes:

- At the most general level, the assessment of EU policies and the results generated in the project suggests that swift productivity catch-up is most efficiently assisted:
 - o by a rather classical policy-mix of increasing competition (with a view on the 'long tail' of weak firms in CEECs);
 - o by increasing flexibility for intra and inter-sectoral migration;
 - o by some form of support for investment, in particular into infrastructure;
 - o by support, possibly organisation, of (management) training programmes with a focus on marketing and strategic management in a modern competitive market economy.
- The general picture emerging from the discussion of horizontal *versus* sector-specific state aid in CEECs seems to be that in general terms the CEECs have adapted well to the state aid system required by the EU and should not face any major challenges in light of EU accession. Some CEECs however, seem yet to be under-performing in some areas and will have to initiate the necessary changes.
- The somewhat technological bias of horizontal EU industrial policy means that lock-in of CEE economies into low-wage comparative advantage is not an issue. Rather on the contrary, technology-oriented bias might -in the worst case- not

...and in particular the role of technology transfer between foreign investment subsidiaries and domestic firms

In the order of ranking of importance

- unit labour costs

- qualification of personnel

- use of ICT

- railway infrastructure

Access to physical ICT infrastructure

Amongst the most important policies, the project results suggest a rather classical policy-mix

Most CEE-firms appear fit for EU horizontal industrial policy

The technological bias of this policy approach may prevent 'lock-in' or even be overly technological

correspond to existing or (short-term emerging) abilities/capabilities in CEE economies and hence remain less effective than elsewhere or than another kind of policy-bias more in tune with specific CEE-comparative advantages.

This positive evaluation of instruments of EU industrial policy for CEE economies could be complemented with an analysis into the efficiency of deployed resources: what we were able to assess here was whether the instruments as such meet the specific needs in CEE economies, not however, whether alternative uses of resources for those policies could potentially yield larger impacts. Such a policy-evaluation exercise, however, would be beyond the means of this research.

With respect to the individual fields of economic policy, we conclude:

- *Competition:* The new network opens possibilities for using full flexibility of existing EU policies within CEECs (e.g. priority for SMEs referred to in the treaty but not in articles 81/82 directly). What is less clear is whether the decentralisation of enforcement will actually allow this discretion to be used effectively in practice, and the implications are of national courts as well as national agencies being more involved.
- *Industrial Policy:* The CEECs are currently mostly subject to the EU rules, and it seems likely that it is the rule based system that has the most to contribute to convergence.

There is little evidence, from CEECs and existing EU, that policy tools that are current available and will be lost were major factors for example, in Irish catch up - nor that EU funds were a prime cause there: most analysis (including work done at Sussex) suggests that Irish catch up was due to national horizontal policies.

Certainly in the EU-15 a high level of state aids does not seem to be correlated with the ability to pick winners, but rather with the political strength or social problems in certain sectors. It leads us to feel that state aid control should still be an aim. But we must be wary of private actions in this area for the attempting to tilt the playing field towards those with a higher ability to pay lawyers.

One area where accession and a new policy framework could possibly have an impact relates to technical norms. Accession occurs at a time when the EU is trying to adopt a slightly more devolved approach to, for example, food safety standards. There is a real risk for CEEC firms and consumers having to pay extra to reduce risk levels below those deemed acceptable in those countries. Accession will mean that for the first time the new member states get a vote on the relevant regulations, and will be able to defend national measures before the ECJ. But in practice it seems likely that most tolerated derogations will be upwards.

- *Trade Policy:* The new member countries will now be inside the EU net. Steel safeguard measures could not longer be applied against them, for example. But it is not entirely certain that this is in the long run interest of productivity catch up. EU rules risk leading to (slightly) more protectionism, but on the other hand, because measures can only be introduced at EU level, pay off to investing in rent seeking is likely to be limited.

The result will be that firms cannot relax on productivity improvement merely by hoping for protection.

Does any of this suggest that enlargement should bring about major changes in EU policy towards industry, whether in terms of what can be done nationally or what

SMEs might benefit from new EU competition rules

Rule-based system for industrial policy is assessed positively...

...and state aid control should be the main objective

One possible area of conflict is the EU's high intensity of regulation in norms and standards

EU trade policy offers protection against safeguard measures in trade with EU...

...but not protection against competition within the single market

should be done at a community level? In terms of the constraints on national policies we would still argue that the virtue of the EU system is that it provides a rule-based framework for economic actors: predictability for investors may well be worth more than discretionary policy powers when political actors are weak, financially constrained, or inexperienced. Seabright and Holmes 2000 following Krugman 1987 argue that the tying of hands may be a powerful benefit of EU rules.

At the EU level the introduction of new policies towards industry was subject to unanimity by the Maastricht Treaty. The Community's record in micro economic intervention is not really such as to suggest that its programmes really are the best instruments for promoting catch up.

In total, we conclude that that the biggest contribution to catching up of CEECs is likely to be accession itself, in as much as it will support the consolidation of policy credibility due to the direct effect of EU law and the binding nature of EU law on its members.

**Possibly the biggest
contribution to
catching up is
accession itself**