

## **Foreign Direct Investment and the Multinational Corporation**

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**Anthony Venables** of London School of Economics and CEPR presents the “Optimal Location of Capital” in a paper prepared for the Mirrlees Festschrift. In accordance with Mirrlees (1972), the optimal spatial organization on one-dimensional space is analyzed. However, the focus is on countries rather than the city center and its surroundings. Three questions are addressed: How is the spatial distribution of production and trade? Where does capital locate, if it is free to move? What is the welfare optimal distribution of capital?

The model is based on constant returns to scale production technology and perfect competition. Countries are represented on a continuous line with end-points. In the middle of the line is located a center country which has uniquely the capability to produce a specific center good that is used as intermediate input for production in all other countries. The countries (other than the center country) produce two goods – agriculture and manufactures. Agricultural production uses the production factors labour, intermediate goods and the specific production factor land. Manufacturing production uses the production factors labour, intermediate goods, and the specific factor capital. All goods are subject to iceberg trade cost in dependence of distance. The center imports manufacturing goods and agricultural goods, while it exports intermediate goods. Consequentially, consumption prices of manufactures and agriculture are the lower the further distant is the producing country from the center, and consumption prices of intermediate goods are the more expensive the further away from the center they are used. All countries have the same endowment of land, the endowments of the other production factors may differ, however.

The production structure depends both on endowments and on geography. In a first step, capital is still assumed immobile. A country is the more specialized in manufacturing the larger is the capital endowment. The further distant a country is from the center, the more it is specialized in the transport un-intensive sector, where the transport un-intensive sector is the one that involves the lowest direct and indirect transport cost in total production cost. Are manufacturing goods relatively transport intensive, then rental rates of capital are higher close to the center and capital moves there (case 1). If manufacturing is less transport intensive than agriculture, then there is a rise in demand of capital at remote countries, since they tend to specialize in manufacturing. If additionally manufacturing is sufficiently capital intensive, then the general fall in factor prices in remote

countries is overcompensated by the increase of demand for capital. Consequentially, remote countries may have higher rental rates of capital than countries close to the center (case 2). If capital is allowed to be mobile, capital moves to the remote countries in the latter case (low transport intensity of manufacturing goods).

Next, capital is assumed immobile, but new capital becomes available and is free to choose its location. In case 1 (large transport intensity of manufacturing), a certain number of countries close to the center obtain the new capital which suppresses their rental rates of capital and increases their wage rates, while the remote regions remain unaffected. In case 2 (small transport intensity of manufacturing), capital moves to the remote countries and wage inequality is reduced across countries. There is also a third case possible, where capital moves to countries with an intermediate distance from the center.

Finally, a utilitarian welfare maximization is undertaken to find the socially optimal allocation of capital that differs from the market outcome. It is assumed that capital is owned by the center. On one hand, a concave social welfare function implies that it is better to rise income in locations with low income. On the other hand, it is better to rise income, where the cost of living index is lowest. Also, if capital flows into a location, this rises wages and national income in this location. Taken together, it is best to re-allocate more capital towards remote regions and regions with little capital.

**Gianmarco I.P. Ottaviano** of University of Bologna, Bocconi University Milan and CEPR and **Giorgio Basevi** of University of Bologna discuss “The District Goes Global: Export vs. delocation”. This paper discusses, when a Marshallian Industrial District – a local agglomeration of small firms producing similar products with local learning spillover effects – begins to relocate production activity outside the district. It also asks the question what allocation choice is socially optimal.

The model consists of an endogenous growth model with R&D externalities as engine of growth. There are two types of goods: a freely traded homogeneous good which is traded in perfectly competitive markets using a constant returns to scale technology; and a differentiated manufacturing good which requires the development of a blueprint in R&D labs. R&D labs compete in perfect markets, while manufacturing goods operate in monopolistically competitive markets. There is a world capital market trading a riskless bond. R&D activity is monopolized by the district, since it has an inherited learning curve advantage, but firms have the possibility to relocate their production plants from the district to the rest of the world. The incentive to relocate

are transport cost savings, if foreign markets are accessed. The disincentives are delocation costs due to linguistic and cultural barriers, difficulties of transferring technological knowledge to foreign workers, barriers to profit repatriation, and administrative hurdles. There are learning externalities from local production and from the stock of past patents to R&D labs.

The market outcome is that there will be more delocation of production outside of the district the larger is the world market relative to the market of the district (home market effect), and the larger are transportation costs relative to delocation costs.

The welfare analysis shows that there are three sources of welfare distortions: first, delocating firms do not take into account that there will be less positive learning spillovers on R&D labs of the district, if they de-locate which reduces the global growth rate (growth effect); second, more delocation augments wealth by increasing the value of the initial stock of blueprints (wealth effect); third, relocation increases the living cost of district consumers, since more goods have to be shipped abroad (competition effect). The first and the third effect pull towards too much delocation, while the second effect causes too little delocation from a world welfare perspective.

The comparison of the world welfare optimal delocation with the market outcome suggests that there is too much delocation, if the global market is large and if productivity of labour in innovation is high. From the point of view of welfare of the district it is found: If trade barriers are high and delocation costs are low, then there is too much delocation. If trade barriers are low and delocation costs are high, then there is too little delocation.

Frank Berry of University College Dublin asked for Jacobs externalities, i.e. intersectoral rather than intra sectoral spillovers. Reinhilde Veugelers of Katholieke Universiteit Leuven and CEPR asks what the impact on the results were, if multiplant operation were allowed for.

**Kristof Dascher** of Europa-Universität Viadrina and University College Dublin presents the paper “Trade, FDI, and Congestion – The small and very open economy”. A number of stylised facts of the boom of the Irish economy as an example of a very open economy with both free trade and free factor mobility are explained by a model that merges features of neoclassical trade theory and regional and urban economics.

The model consists of an Island that is too small to have an impact on the rest of the world. It's product prices and the factor prices of mobile factors are given exogenously. There are three types of agents: locals, immigrants, and the government; there are three sectors: food, electronics, and public infrastructure. Food and electronics are consumption industries, while public infrastructure can be considered as an intermediate input to the electronics industry. Public infrastructure is exogenously provided by the government which is financed by a tax on all inhabitants of the Island. There are 4 factors of production: labour, land, and capital specific to food and electronics industries. Locals own all the land, capital is owned by foreigners outside the model. Every household – local or immigrant – is endowed with one unit of labour. While food and electronics industries use their specific factor and labour as original inputs, one unit of public infrastructure is produced by one unit of land. Land is also used as consumption good by all inhabitants. However, locals are net suppliers of land, while immigrants are net users. The public infrastructure good is non-tradable, while food and electronics are freely tradable. Specific capital of the electronics industry is completely mobile, while specific capital of the food industry is not mobile. Immigrants move, whenever their utility from residing in Island is larger or equal to a reservation utility which they obtain from staying outside. All markets are assumed perfectly competitive and production technologies are constant returns to scale.

Suppose a government decides to increase the supply of public infrastructure. This increases the productivity of the electronics industries. Electronics industries offer higher wages and rental rates and attract workers from food industries and capital from abroad. However, the public infrastructure has to be financed by higher taxes and requires the use of land which drives up land rents. Hence, immigrants have less income to spend on consumer goods. The net effect of higher wages and higher land rents and taxes on immigrant utility is ambiguous. If the net effect is positive and a sluggish adjustment of migration is assumed, then there will first be an expansion of the electronics industry at the expense of the food industry as capital flows in, but not labour. As labour begins immigrating, also the food industry starts to expand. GNP rises due to higher wages and land rents. While immigrant utility is fixed, utility of locals is increasing by the supply of public infrastructure. In contrast, if the net effect of higher wages and higher land rents and taxes on immigrant utility is negative, then there is only a short run inflow of capital, while there is a long run emmigration. The emmigration renders capital abundant and drives down capital rents. Thus there will be a long run capital outflow.

A government has an incentive to pursue the public infrastructure policy, because this benefits the local inhabitants via higher land rents. However, it increases personal income inequality, since utility of immigrants stays constant and utility of locals rises. If the Island economy is forced to impose a higher tax on FDI – say - because of tax harmonization, then capital flows out and emigration will even re-enforce the capital outflow.

The model is matched with the Irish experience: an inflow of FDI into Ireland, immigration, a large bulk of productive capital is foreign owned; FDI concentrates on a few industries; government policy targets selectively those industries; wages and housing rental rates have risen in Ireland; The indigenous industry has first contracted and begins to expand slowly since the mid 90ies;

**Jean-François Ruhashyankiko** of London School of Economics presents the paper “Ownership, information technology, and multinational activities”. The paper starts out with noting 4 stylised facts: there are industry differences with respect to mergers&acquisitions rather than greenfield investments; there is large growth of FDI; the bulk of FDI is among similar countries; there has been a tremendous improvement of information technology. There are two different types of FDI-theories which cannot account for the stylised facts: those which build on ownership, location, and internalization considerations and those that build on the new trade theory. The first type of theories fails to explain the growth of FDI. The second type of theory fails to account for the bulk of FDI being among similar countries rather than different countries, relies on transport cost reductions as sole cause of FDI growth, and ignores two modes of production (licensing and contract manufacturing).

The model consists of three agents: an entrepreneur, a domestic manager, and a foreign manager. All three own a specific asset. The managers have knowledge of an alchemy technology that can provide a quality upgrade to some input of a final good production. The entrepreneur has an information technology that allows to team up with the manager even over distances to produce a final good more efficiently than without cooperation. However, there is a hold up problem and an incomplete contracting problem. The hold up problem consists of some relation-specific investment that managers have to undertake to deliver the quality upgraded intermediate input to the entrepreneur. At the same time, the entrepreneur can switch from the domestic input to the foreign and vice versa (perfect substitutability in terms of quality units). The incomplete contracting problem consists of the inability to verify the relation-specific investment at court. Hence, no contracts can be written on the relation-specific investments. Additionally, there are information

technology shocks to the production function of the entrepreneur which may be caused by communication problems to the managers. After the managers have made their quality upgrading decision and the entrepreneur has made the sourcing decision, the information technology shock arrives. The entrepreneur learns about his communication problems with the managers (which are independent of the contract form). Then, there is a renegotiation of the contractual relationship. There are four possibilities: All three agents remain independent (contract manufacturing), but there may be a compensation scheme between the managers and the entrepreneur proportional to domestic or foreign input revenues; the entrepreneur buys the alchemy technology of the home manager (national firm); Entrepreneur buys the alchemy technology of the foreign manager (multinational firm) at an acquisition cost; Foreign manager buys the information technology of the entrepreneur (technology licensing) at a licensing fee.

The results are as follows: the entrepreneur sources more from abroad the smaller are the differences in quality-upgrading of the domestic and the foreign manager. A reduction of the variance of the information technology shock yields a larger share of foreign sourcing, if foreign inputs have higher quality than domestic and an ambiguous impact if home has a higher quality than foreign. The first best ownership structure is contract manufacturing with an optimally chosen compensation scheme; second best is acquisition; and third best is technology licensing. Reduction in the variance of the information technology shock favours both the multinational corporation and contract manufacturing, but more so contract manufacturing.

Alessandro Turrini of University of Bergamo, Bocconi University Milan and CEPR wondered, whether the variance of the productivity shock was the right way to capture the information technology revolution. Lucia Tajoli of Politecnico di Milano remarked that the North-South nature of sub-contracting was not captured in the model.

**Enrico Pennings** of Universitat Pompeu Fabra Barcelona and **Leo Sleuwaegen** of Erasmus Universiteit Rotterdam present the paper “Exit, downscaling or international relocation of production”. The paper uses a dataset on Belgian firms that reported a lay-off of workers by exiting, by downscaling or by relocation. Exiting firms are firms that stop production; downscaling firms are firms that cut the workforce by layoffs (not by early retirement schemes and voluntary buyout); relocating firms also cut their Belgian workforce by layoffs, but increase production and employment abroad.

The Federal Planning Bureau requires all firms with more than 20 employees to report a layoff of more than 10 per cent of the workforce (collective layoff). A questionnaire was sent to all those firms that reported one or more collective layoffs in between 1990 and 1996 to ask for the motive of layoff. The response rate was 70 per cent. Explanatory variables are obtained from balance sheet data of the year prior to collective layoff. A control group of firms that did not restructure was formed from a random sample of Belgian firms with more than 20 employees.

A multinomial logit analysis is undertaken to relate the three modes to a set of explanatory variables. The explanatory variables are founded on various theories of firms. It is expected that lack of profitability as measured by the return on equity will be a predominant cause of restructuring. Firms that have a higher financial leverage are more likely to face pressure of restructuring in particular in the case of financial distress. Relocation will be easier, if sunk costs are lower which in turn is more likely if a firm belongs to a multinational group and is less capital intensive. Exiting may be driven by the life cycle of a firm, since young firms tend to exit after they have learned their productivity compared to competitors. Hence, young firms and small firms may exit more likely than old and large firms. Finally, manufacturing firms are more likely to relocate than service firms, since service firms are primarily market oriented.

It is found that those firms which relocate are typically firms that are more profitable, have invested more in the recent past and belong to a multinational group. Downscaling and relocation are more likely in the manufacturing than in the service industry. Downscaling firms are more capital intensive than relocating firms. Exiting firms are less profitable, smaller, younger, more financed by debt, and more labour intensive than downscaling or relocating firms. Thus relocation may be driven by international production cost comparison, while downscaling and exiting are motivated by loss of profitability.

The multinomial logit estimation is compared to a logit specification that does not distinguish the modes of restructuring. It is also compared to a sequential logit model, when firms make their choice on restructuring first and the choice of how to restructure thereafter. The multinomial logit model was found to be the preferred method.

**Beata K. Smarzynska** of The World Bank presents the paper “Technological leadership and the choice of entry mode by foreign investors”. Previous studies found a negative relation between the degree of R&D intensity and marketing intensity of an industry and the probability to enter a

foreign market in form of a joint venture rather than in form of a wholly owned subsidiary. The theoretical argument is based on the dissipation of secret knowledge on a MNE-production technology and the free rider problem of eroding product quality and damaging brand names.

In contrast, this paper argues that not only matters marketing and R&D intensity *between* industries, but also *within* industries. Again, firms with above industry-average R&D intensity and marketing expenses are expected to have a lower probability of entering a foreign market in form of a joint venture. Selling intangible assets may be involved with more uncertainty, because the true value of the technology will not be revealed to prevent dissipation of technology to the local partner. However, market leaders may have such an advanced technology that technology dissipation is not possible. Additionally, they are also expected to have larger bargaining power than the industry average. Thus market leaders may be able to capture a better deal in a joint venture with a local firm than an average firm of an industry. Eventually, the dissipation of technology may not be an issue at all for industries with relatively low intensities of R&D.

The dataset is based on the EBRD survey of foreign investors supplemented with information from the Worldscope database. Information was obtained from 1405 firms investing in 22 Eastern European countries and countries of the former Soviet Union for the years 1989 until 1994. Also firms which did not enter those 22 countries were contained as control group. In total, 720 FDI projects were counted. Only manufacturing industries are considered, because there may be ownership restrictions imposed by governments on other sectors. Industries are classified according to a 3-digit SIC-code.

A bivariate probit model is estimated to control for the possible sample selection bias by estimating the probability first with which a firm undertakes FDI and second with which a firm that invests undertakes FDI in form of joint ventures. The explanatory variables are absolute and relative R&D intensity and marketing expense intensity. Control variables include degree of diversification of a foreign firm, firm size, the share of foreign sales of a foreign firm, a dummy for indicating whether a firm had previous to the FDI a trading relationship to this country, and a transition progress indicator for the host country and the size of the host country home-market. It is also considered a structural break for industries with high and low level R&D intensities.

It is found that the factors (excluding intra industry effects) determining the choice of entry mode are broadly consistent with results of studies on other country groups. Extending the study for intra



industry effects, it is found that technological leaders or marketing leaders in a sector are more likely to engage in wholly owned subsidiaries rather than joint ventures as compared to the industry average. This effect is more pronounced in sectors that have a high R&D intensity.

Giorgio Barba Navaretti of University of Ancona and Centro Studi Luca d'Agliano suggests that there may have been a shortage of local partners, since their technology capability may have been restricted with respect to Western technology. Helen Louri of Athens University of Economics and Business and IMOP suggests to use firm profitability as control variable.

**Raymond Louffir** of Athens Institute of Economic Policy Studies (IMOP), **Helen Louri** of Athens University of Economics and Business, and **Marina Papanastassiou** of Athens University of Economics and Business present the paper “Inward Direct Investment in Greece: Home Country Determinants”. Neoclassical determinants (comparative advantage) of FDI flows and new economic geography (home-market) determinants of FDI flows are tested against each other.

The dataset consists of a Bank of Greece survey in 1997 on FDI-stocks of 343 foreign affiliates of 9 OECD home countries located in Greece and OECD-data on country characteristics. Among the neoclassical determinants are the bilateral real exchange rate, wages in manufacturing, and bilateral exports and imports. Among the “new economic geography” determinants of FDI are used GDP, GDP per capita, and R&D expenditure.

First, a cross-section model is estimated using only neoclassical determinants. Second, a model is estimated using only new economic geography determinants. In both cases, determinants are significant. Third, the neoclassical and new economic geography determinants are nested in one estimation model. The geography determinants become insignificant. However, the complementarity relation between FDI and trade indicates some “new economic geography” influence. Finally, industry specific estimations are run for the sub-sample of food and chemical industries to avoid mixing up constant returns to scale and increasing returns to scale industries, and geography determinants become significant again. Overall, Inward FDI into Greece appears to be driven by the attraction of labour intensive industries to exploit cost advantages and by the use as an export platform to some Eastern European markets.

**Stephen Pavelin** of University College Dublin presents the paper “Firm Interdependence in Foreign Production: Leading UK Firms in 1986 and 1993”. This paper investigates the research questions:

Which relation exists between the operation of UK firms in a sector abroad relative to the size of market share of this firm in the UK, relative to the operation of foreign rivals in the UK, and the relative share of production of UK rivals abroad.

Hypothesis 1 suggests that those UK firms that have the largest market share in the UK in an industry also invest more abroad. The reason is that firms with sufficiently large market shares pass the scale of operation that is sufficient to cover the fixed cost of operating an additional affiliate. Hypothesis 2 tests whether UK firms invest less abroad, if there are other UK rivals that also invest in the same industry and region abroad. Again, a smaller market share in the presence of rivals reduces the probability of an affiliate. In particular, industries with large expenses in marketing and R&D are likely to be subject to this effect. Hypothesis 3 suggests that foreign rivals in the UK impede FDI of UK firms in the same industry. Again, the market share of the UK firm in the home-market may be too small to support foreign affiliates. Also, industries with large marketing expenditure and large R&D face a stronger impact. Hypothesis 4 and 5 are the opposite of hypotheses 2 and 3, respectively. It may be motivated by reciprocal FDI, geographically specific R&D spillovers, signals of local productive environments, and follow-my-leader FDI. The hypothesis are tested separately for European affiliates of UK firms and non-European affiliates of UK firms.

The analysis is based on the 'UK market share matrices' of the University of East Anglia. Included are the 5 firms with the largest market share in a 3-digit industry for two years 1986 and 1993. Supplementary information are obtained from commercial databases. There are 130 UK firms and 832 affiliates outside the UK in 1986 and 100 UK firms and 729 affiliates outside the UK in 1993. A cross section Tobit analysis is done with the dependent variable foreign production of UK firms by (world) region, and independent variables rival market share of UK competitors abroad, the parent company UK market share, foreign affiliates of the same industry in the UK, industry fixed effects, and region-fixed effects. Endogeneity problems are taken account for. Estimations are run separately for European and non-European affiliates and for the two years 1986 and 1996.

The results confirm hypotheses 1 and 2. Foreign affiliate production outside the UK is likelier, if the parent company has a large market share in the UK home-market. Production of a UK affiliate is suppressed, if there are affiliates of other UK firms in the same region and industry. The activity of foreign competitors in the UK has no significant impact on foreign affiliate production of UK firms in the same industry. By exclusion of all firms with zero market share in the UK, a subsample is

built that contains most likely horizontal FDI and it is found that results become more strongly significant. It is concluded that the mechanisms associated with horizontal FDI dominate the choices of UK-firms of producing abroad. There is over the two time periods a divergence of importance of the interaction terms for EU and non-EU affiliates. There is increasing interdependence between UK affiliates in the EU and their UK rivals in industries which are marketing or R&D intensive, while there is decreasing dependence outside the EU in comparison of the two years 1986 and 1993.

**Henrik Braconier** and **Karolina Ekholm** of The Research Institute of Industrial Economics (IUI) Stockholm present the paper “Multinationals and Wage-Competition Between Different Locations”. The short run consequences on employment of the activity of multinational firms is explored. In general, the expansion of activity and employment abroad can go along both with an expansion or a reduction of activity and employment of a multinational firm in the home country. This study extends previous work by integrating the effects of employment changes not only of established affiliates, but also of new entries and exits of affiliates. The location decision and the employment decision of a multinational firm are looked at simultaneously.

The empirical research is motivated explicitly by a theoretical model. A multinational firm produces a final good using labour and an intermediate good as production factors in an increasing returns to scale production function. The intermediate good is produced by labour with a constant returns to scale technology. There are three locations with exogenous demand functions. Transport cost have to be paid for shipping final and intermediate goods across locations. There are several outcomes possible: a multinational produces the final good and the intermediate good both in the home and host country (horizontal FDI) depending on market size relative to transport cost. Alternatively, the intermediate good may be either produced at the home or host country depending on wage differences; a multinational produces the final good at one location but exploits wage differences to produce the intermediate good in nother location (vertical FDI).

A plant will be set up by a firm in a location the more likely the lower are labour cost in this location, the larger is the local market, the larger is the wage cost and the smaller is the local market in the best alternative location, where there is not already a plant. The wage cost of other locations including Sweden is ambiguous depending on the nature of FDI – vertical or horizontal. An indicator of total factor productivity is used as control variable. The world is divided into 4 regions: High-income Europe, Low Income Europe, High Income Non Europe, and Low Income Non

Europe. The location decision is estimated as a Logit model and a Heckman-Probit model separately for each region. Likewise, the labour demand of an affiliate in a location depends on the same set of variables except for the variables of the best alternative location, where there is not already a plant. The latter is tested with a regression estimation and a Heckman regression.

The data are based on a firm-level survey of Swedish multinational firms that starts in 1970 and covers approximately every fourth year until 1994. The panel is unbalanced and covers about 700 observations on the level of the Swedish parent companies and about 3000 observations on their affiliates which produce in 44 countries in the world.

The results suggest for the group of affiliates in high income Europe countries that a plant is more likely set up in a location, if the local wage is low, and the local market is large, and the best alternative wage in a location without plants is high. However, there is no significant effect from wage cost of Swedish or other locations with plants on the decision to set up a plant in a location. Labour demand depends in a similar way on the independent variables. However, there is evidence that there is a complementarity relation among affiliates in high income Europe. Low Income Europe location decisions and labour demand depend significantly just on the local market size. High Income Non Europe countries location decisions and labour demand depend rather on total factor productivity than on the size of the home market and there is some evidence of a substitutionary relation with similar locations. Finally, individual slope coefficients for each single year of the panel data set are allowed for. Evidence is found that labour demand becomes more complementary over time.

Marina Papanastassiou of Athens University of Economics and Business and IMOP asks how the change of industrial structure was taken account of over the time period of the panel. Frank Berry of University College Dublin wondered, how affiliate employment was effected if Sweden was in a temporary recession or faced a revaluation.

**Jan I. Haaland** of Norwegian School of Economics and Business Administration and CEPR and **Ian Wooton** of University of Glasgow and CEPR present a paper on “Multinational Firms: Easy Come, Easy Go?”. The paper asks the question, how entry and exit barriers for multinationals to set up or shut down the operation in a country affect the decision to locate in a country and the decision at which scale to operate. It is in particular asked how government policy in form of subsidies, loans,

and redundancy payments affect the firm decisions and what policy mix is best from the point of view of the government.

A model is set up with an affiliate of a multinational firm that operates as a monopolist in an integrated market without transport cost. Within the integrated market, the firm can choose different countries which differ by their government policies. The cost function contains some fixed cost, entry cost, and exit cost. The firm faces an uncertainty in form of a survival rate. There are adverse events that can occur at some point within the theoretically infinite lifespan of the affiliate operation such that the operations will be closed down completely and all workers will have to be laid-off. A government can subsidize an investment initially and impose required redundancy payments in the case of lay-offs of each worker.

A country with an inflexible labour market distracts investment and reduces the scale of operation and employment, since firms anticipate the redundancy payments in the case of their failure. Redundancy payments protect workers in the future, but reduce the likelihood of attracting foreign affiliates and reduce in any case the labour demand today. This effect is the more severe the more risky an industry is. Countries with low labour market flexibility, i.e. high redundancy payments, will have to pay higher subsidies in order to still attract foreign affiliates. Also, the subsidy payments necessary to still attract the affiliate will have to be the higher the riskier is the industry. If the host country requires full, or partial repayment of the subsidy in case of failure, investment becomes less attractive. The optimal policy mix involves a negative redundancy payment, i.e. firms should be subsidized for lay-offs. This way, firms face lower cost in the case of failure and are willing to invest more likely and to generate more employment. In particular, this policy reduces the need for investment subsidies and rises the employment level of foreign affiliates in the host country.

**Alessandro Turrini** of University of Bergamo, Bocconi University Milan and CEPR and **Dieter Urban** of Centro Studi Luca d'Agliano present the paper "For Whom is MAI? A Theoretical Perspective on Multilateral Agreements on Investment". In 1998 the OECD made a proposal of a multilateral agreement to liberalize foreign direct investment among participants. This proposal faced resistance by many Least Developed Countries (LDCs). The question is addressed why LDCs may have opposed the proposal, although they were completely free to opt in or out.

There may have been an externality from the dispute settlement procedure under the provisions of MAI. The MAI dispute settlement procedure allows firms contrary to dispute settlement procedures of the WTO to sue governments. There may be a positive probability that courts take regulatory takings to cure externalities as measures to extract rents from multinationals. Governments face either the risk of fines or choose not to implement regulatory takings and bear the cost of the externality. In any case, countries lose bargaining power versus multinational firms.

A model is set up with a continuum of countries which are all alike and a continuum mass of multinational firms. The multinational firms have access to a superior technology compared to indigenous firms which they can obtain, if they undertake investments. Countries have an incentive to extract part of the monopoly rents of the multinational firm. The rent extraction rate is exogenously given and not known to the multinationals. Countries first choose whether to join MAI. If they do so, they lose part of their capacity to extract rents. Second, multinationals make their location decision. Third, countries reveal their rent extraction rate. Fourth firms make their investment, production, and pricing decisions.

There are multiple equilibria, if MAI is not too strict and not too soft: no country would like to enter MAI, all countries enter MAI, and some countries form MAI. World welfare is highest, if all countries join MAI, because this minimizes the political risk of rent extraction and stimulates investment. However, countries with few holdings of multinationals may lose relative to a world without MAI, because rents are shifted from governments to multinationals. Additionally, countries that opt out of MAI find that some FDI is redirected towards MAI members.

Tony Venables of London School of Economics and CEPR asked for the stability properties of the equilibria. He also remarked that the results are sensitive to the way, how MAI-membership is modelled and doubted that the asymmetry of countries' loss of bargaining power was in line with the fact that everybody is equal before the law.