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Global Outsourcing and FDI:
Can the Least Developed Countries Participate in the Process?

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ABSTRACT

Today's corporations have a much wider set of options how and where to organize their production and sales, including options to outsource the supply of certain parts to external producers – either in their home country or offshore. These changes in the structure, scale and geographical distribution of the production and supply chain of the multinational corporations, were set off by the rapid technological progress, the sharp reduction in transport costs, the wide range of international agreements to facilitate trade and, in particular, by the spread of global and highly effective information and communication technologies. These changes contributed, in turn, to wider changes in the structure of international trade. The paper examines the forces that drove these changes and their impact on the less developed countries.

Global Outsourcing and FDI

Can the Least Developed Countries participate in the Process?

I. Introduction

Economic theory suggests that the abundance of capital in the developed countries and the low wages in the developing countries should have triggered large flows of capital from the developed to the developing countries where its marginal product should be much higher. In a widely quoted and influential paper, Lucas (1990) asked why in practice the flows of capital from the developed to the developing countries are so scanty even though the wage gap remains large.

Today, nearly fifteen years later, the paradox seems even more glaring: On the one hand, the wage gap between the developed and the developing countries actually *widened* during the 1990s and continues to grow even today (Figure 1). In 2003, labor costs in the major auto-producing manufacturers were $33.0 per hour in Germany, $22.5 in the US, but only $2.7 in Mexico and around 90 cents or less in China. On the other hand, despite the huge increase in the worldwide flows of capital during the 1990s, and although the wage differential *widened*, the gap in the rate of return to capital did not fall by much, and both financial and direct investments in the developing countries are still only a small fraction of the total flow of capital worldwide. Most capital flows to and between the developed countries, the flows of capital to the developing countries are still only a fraction of the total, and most of these investments concentrate in only a handful of developing countries (Figure 2). Given the restrictions on labor migration to the developed countries and the pressures of market competition, the flow of capital to the

developing countries should have been much larger. Rodrik (1997) emphasized also that the asymmetries between the high international mobility of capital and the constraints on labor mobility further skew the income distribution, placing the less mobile factors and the developing countries that have abundance of low-skilled labor, at a disadvantage.

INSERT FIGURES 1 AND 2 AROUND HERE

Lucas explained the paradox by the large differences in the skills and human capital content of labor between developed and developing countries. Firms in the developed countries would continue to employ more capital per labor even when the rate of return to capital would be equalized as an effect of these flows of capital, and wages in the developed countries would remain higher than in the developing countries. With this explanation, however, the paradox seems even more puzzling today, since the skill differential between workers in the developed and the developing countries narrowed during the past decade, particularly in manufacturing, with the spread of education in many developing countries, and the significant increase in the skills and expertise of local workers who work and are trained in enterprises owned by trans-national corporations (TNCs) or in the developed countries. As a result, the share of the developing countries in world exports in medium- and high-technology manufactured products more than doubled during the 1990s.

In recent years, a number of papers examined different directions of explaining the seeming paradox that Lucas pointed out. Most of the explanations that have been put forward are rooted in the commercial considerations of the firms as they weigh the options how and where to organize their production so that they can best meet the

demand for their products and maximize their profits.[1] These and other papers highlighted, in particular, the fact that much of the increase in world trade in recent years was in intermediate inputs. Feenstra and Hanson (1996) showed on the basis of U.S. input-output tables that the share of imported intermediate inputs increased from 5.3% of total purchases of intermediate inputs in 1972 to 11.6% in 1990. Yeats (2001) showed that international trade in intermediate inputs increased at a much faster rate than the trade in final goods.

Today's structure of global trading offers firms a much wider set of options:

- Produce the final product and all its components and intermediate inputs in the firm's own plant.
- Outsource the supply of certain components and intermediate inputs by sub-contracting producers either in the firm's home country or offshore and assemble the final product in the firm's own plant.
- Gain control over the production of certain parts through merger, acquisition or direct investments in the firms' home country or offshore, but assemble the final product in-house.
- Transfer the entire production offshore.

The objective of the paper is to develop a model that provides a direct extension of the Lucas' model, but, at the same time, can describe the commercial considerations of firms as they weigh these options and their criteria as they make their decisions. These criteria suggest an explanation why most firms still concentrate most of their investments and the

[1] See, for example, Grossman and Helpman, 2003; Helpman, Melitz and Yeaple 2003; Antràs and Helpman 2003; Razin, Rubinstein, and Sadka, 2003. Some of these papers will be discussed in more detail later on.

bulk of their outsourcing and other business activities in the developed countries (though not necessarily in their home country) and in only a small number of developing countries. On the basis of the operational criteria and guiding principles of private enterprises derived from this model, the paper then evaluates the driving forces of outsourcing in the coming years and the factors that will determine the countries' comparative advantage in global trading and their capacity to attract a larger share of the global FDI.

II. Incentives and constraints to FDI in the developing countries

To explain the paradox, Lucas employed a standard constant-returns-to-scale production function for the economy given by:

$$Y = A \cdot F(K, L) \qquad (1)$$

where Y is output, K is capital and L is labor. The parameter A is the productivity index that reflects the average level of human capital in a country that reflects not only labor productivity but also the stock of public capital on account of better infrastructure (roads, communications, port facilities, etc.) and more effective public institutions. Output per worker is thus given by:

$$y = Y/L = A \cdot F(K/L,1) = A \cdot f(k) \qquad (2)$$

The profit-maximizing rate of return to capital is given by:

$$r = A \cdot f'(k) \qquad (3)$$

and the market equilibrium wage rate is given by:

$$w = A \cdot [f(k) - kf'(k)] \qquad (4)$$

Lucas assumed the production function to be the same in the two (groups of) countries in order to focus on the differences in the human capital content. The only difference

between countries is thus the level of the productivity index. The relative abundance of capital in the developed country implies that, in the absence of capital flows to the developing countries, the rate of return to capital in the developed country is likely to be lower: $r^* < r$, where asterisks indicate variables in a developed country. Higher labor productivity in the developed country, indicated by: $A^* > A$, leads to a larger human-capital externality for producers in these countries, and higher gains from producing in their home country. As a consequence, even when capital can move freely between countries and the rate of return to capital is equalized, firms in the developed countries may still prefer to employ more capital per worker in their in-house production, and their wages still remain higher than the wages in the developing countries.[2] This wage differential attracts migrants from the developing countries to the developed countries and creates pressure to reduce wages, but political counter-pressures in the developed countries to prevent a fall in local wages and a host of other considerations force the local authorities to take measures to stop or slow down the inflow of workers even when it may, in fact, have some beneficial effects on their economies, primarily by mitigating the inflationary pressures.

In the early 1990s, when Lucas raised the question about the meager flow of capital from rich to poor countries despite the opportunities that corporations seem to have to reduce their labor costs, this may have not been such a paradox. At that time, prior to the creation of the WTO and the conception of a host of multinational and regional trade agreements, including agreements on Trade-related Intellectual Property Rights (*TRIPs*)

[2] The high labor-capital ratio may also be due to labor market inflexibility as an effect of organized labor restrictions on the rise in employment, particularly in large companies. In smaller companies the substitution between labor and capital is less rigid because they are less restricted by unions and by labor laws.

and Investment and trade-related Investment Measures (*TRIMs*), the flows of capital between countries and the investments of corporations outside their home country were on a relatively small scale. The main reason was the risks of investing in developing countries that deterred the TNCs despite the low wages.

Even today, the nominal or real wage differential by itself does not show the higher profits that firms in the developed countries can reap by transferring part or all of their production to a developing country. In practice, their actual profits are likely to be smaller due to the additional operational costs in their production offshore on account of transport costs, higher financial expenses, and other additional costs associated with the larger distance and additional time involved in each transaction and with transactions, operations and investments in many developing countries due to ineffective administration and corruption. Firms must also take account for the political costs associated with the higher risks in producing and investing in developing countries. Indeed, in many developing countries the attraction of low wages is far outweighed by the high investment risks. Once all these additional costs are taken into account, the cost differential is likely to be much smaller than the difference indicated by the wage differential in itself.

Razin, Rubinstein and Sadka (2003) suggested another explanation for the "Lucas" paradox. They considered cases in which the migration of firms from their home country to another country involves high set-up costs; these "lumpy" adjustment costs may prevent firms from making the transition unless the wage differential is high enough to provide adequate compensation. These adjustment costs will, in turn, limit the phenomenon that Bhagwati (1997) termed "kaleidoscope" or "knife-edge" comparative

advantage, whereby small changes in production costs can lead to shifting comparative advantage between countries and to gyrations in the attractiveness of different countries as a production base.

Razin et al. considered in their analysis a firm that weighs the decision whether to divide a vertically integrated production process and where to invest offshore given the fixed set-up costs involved. These fixed costs will not affect the firm's operating costs and will therefore leave unchanged the firm's *marginal* profit maximization conditions that determine its level of output and employment, but they will determine whether or not this firm can remain profitable after making the transition to another country. Hence, the guiding principle for the firm's decision is whether the present value of the stream of net *additional* profits as a result of the transfer, due to the lower wages in the host country, can cover the fixed set-up costs.

Earlier it was noted, however, that the firms has other options than transferring its entire operations offshore. The firm can also outsource the supply of only certain components/ parts that it had previously produced in-house by sub-contracting suppliers offshore, thus avoiding the adjustment costs altogether, or by merger, acquisition, or direct investments offshore for the production of only some parts in which the firm has a comparative disadvantage, instead of transferring the firm's entire operation, thus reducing the "lumpy" adjustment costs. The following figures are indicative: In the production of a typical American car, 30 percent of the car's value originates in Korea, 17.5 percent in Japan, another 15.5 percent in Germany, Taiwan, Singapore, the U.K., Ireland and

Barbados, and only 37 percent in the US (WTO 1998 report, p.36).[3] Outsourcing to developing countries the supply of components in which production is labor intensive has become an increasingly more attractive alternative for the TNCs given the large wage differential.

Outsourcing is by no means a new phenomenon, however, and it has been common for many years. Corporations, including the large US car manufacturers, have always found advantages in contracting outside suppliers that have a comparative advantage in producing certain parts or providing certain services due to economies of scale, specific expertise as a result of specialization in production, availability of specialized equipment, etc. In the past, outsourcing was common primarily in manufacturing, concentrated mostly on blue-collar jobs and certain services, and was restricted mainly to local suppliers due the high transport costs or to suppliers in other developed countries due to the poor communication and very high risks in offshoring to developing countries. The high share of trade in manufactured goods between the industrial countries and the high share of intra-industry trade, (trade in goods produced by the same industry, that in the 1970s and 1980s accounted for approximately 40 percent of world trade), was in large part due to outsourcing. [4]

The steep reduction in communication and transportation costs, the standardization of software packages and other technological innovations in ICT made it possible to outsource many more business functions, including certain customer services,

[3] The production of a pair of jeans, to take another example, can be broken down into more than a dozen stages and allocated among more than ten producers in different countries before the final product is shipped off to consumers.

[4] Another explanation was that international trade in manufactured goods occurred mainly between countries at the same stage of economic development that shared the same consumer preferences; see Mahoney, Trig, Griffin, Pustay, 1998.

telemarketing, and document management that affect a growing number of white collar professions, including many services that previously seemed country-specific, e.g. medical transcription, tax preparation, and financial services. Corporations find particular benefits in outsourcing these segments of production (and jobs) because set-up costs are relatively low and the wage differentials in these professions is very high.

Intense competition worldwide has forced corporations to outsource larger segments of their production offshore or push their local suppliers to do the outsourcing for them by subcontracting certain functions to suppliers abroad. Local producers and suppliers in the developed countries are forced to outsource a larger share of their own production or transfer their entire operation overseas under a growing pressure to match the prices that producers overseas are offering. US suppliers to the car industry, for example, are increasingly pressured by the parent companies to close a cost gap between the US and China, leading to an increase in the imports of automobile parts to the US from China from less than $200 million in 1997 to over a $1 billion in 2003.[5]

Nevertheless, in many finished products that are produced in the developed countries the share of components that are outsourced overseas is still quite small. Although this share is likely to grow in the coming years, many companies in the developed countries still find it profitable to keep a large portion of their production in-house for several reasons: First, economies to scale and externalities in a vertically integrated production that increase their comparative advantage in maintaining key segments of production in their

[5] The cost difference between the US and China in the production of many parts in the car industry, currently estimated to be in the order of over 20%, takes into account the higher efficiency of US workers on the one hand and the complicated logistics and transport costs involved in the production of these components overseas on the other hand.

own plant and the added costs of dividing production into individual parts and outsourcing their supply offshore; second, certain structural rigidities in their operations and management, including pressures of their labor union, trade agreements and political pressures, and third, the set-up costs and risks involved in offshore investments.

These factors still leave unexplained, however, why the share of most developing countries in the worldwide flows of capital and FDI remains small and essentially stagnant. In fact, the changes in the structure of world production and trade during the past decade, and the establishment of multinational institutions and agreements to facilitate the flow of commodities and capital between countries should have contributed to increase their share, and the decline in the labor-productivity differential between many developing countries and the developed countries with the spread of advanced technologies should have precipitated this process. The models of Lucas and of Razin et al. also leave unexplained the reasons why the TNCs still exercise great caution in making any direct investments in most developing countries or in outsourcing to producers in these countries any part of their production despite the large and growing wage differential and other advantages that these countries can offer. The objective of the next section is to develop a micro-economic model of the firm that clarifies the considerations of enterprises in the developed countries when they make their decisions how and where to organize their production, whether to outsource the production of certain parts or intermediate inputs to external suppliers in their home country or offshore, or choose any other option that today's structure of world trade and investments offers.

III: The Corporations' Criteria for outsourcing

In the Heckscher-Ohlin model, countries gain a comparative advantage and export the goods that make more intensive use of their more abundant and relatively less expensive factor of production. With trade, the production of labor-intensive goods is therefore shifting to countries that have abundance of labor and relatively low wages, while the production of capital-intensive goods is shifting to the capital-abundant countries.[6] The structure of trade may change, however, if it is technically feasible and economically profitable to divide a vertically integrated production process into several segments. This division will give the firm the option of either maintaining the production process fully integrated and produce all the parts of the final product in its own plant or outsource the supply of some parts to external producers. These parts are intermediate inputs in the production process and they are assembled into the final product and shipped to consumers in the final stage of that process. Today's intense competition, the rapid technological progress and a sharp reduction in transport and communication costs pressure firms to divide their production process into separate segments and outsource the supply of many parts to external suppliers whenever it is technically feasible and economically profitable. These adjustments brought about a steep rise in the share of *intermediate inputs* in international trade: Ng and Yeats (200l) found that in East Asia imports and exports of manufactured components grew annually between 1984 and 1996 two to three times faster than imports and exports of traditional production; Yeats (2001)

[6] The traditional Heckscher–Ohlin model has a number of quite restrictive assumptions:
• *Two factors* -- capital and labor; • *Two countries*; • *Two final(or finished) goods*; • *Immobile factors*: • *Perfect competition*; • *Constant returns to scale*. Some of these assumptions will be discussed later on.

estimated that about 30 percent of global manufactured goods trade takes the form of trade in parts and components. The firm's competitive advantage relative to other firms and the country's comparative advantage relative to other countries are therefore determined for the different parts and different stages of the production process.

The organization of production at the firm level would then require three key decisions: First, what are the pros and cons of dividing a vertically integrated production process into several segments and outsourcing to external suppliers the production of some parts of the final product.[7] Second, if the firm decides to divide the production process, which parts should it continue to produce in its own plant and which parts should it outsource to external suppliers? Third, how should the firm select the external suppliers and what criteria should it use in making the choice between the different suppliers – in the firm's home country or offshore. When the firm makes these decisions, it must take into account the following considerations:

- The direct costs of producing the parts in the firm's own plant relative to the costs of purchasing these parts from external suppliers and transporting them to the firm's plant;
- The indirect benefits (or costs) of producing the part in the firm's own plant due to returns to scale and possible externalities (positive or negative) in a vertically integrated production process;
- The firm's market shares and its capacity to exercise monopolistic and/or monopsonistic powers in the production, sales or purchases of certain parts and/or the final product;

[7] Throughout this discussion, the terms "intermediate inputs" "components" and "parts" will be used interchangeably since all these terms have been used in the different writings on the subject.

- The efficiency and relative production costs of the firm's assembly line.

The direct costs of producing the parts or the final product in the firm's own plant relative to the costs of purchasing them from external suppliers that were the focus of Lucas' analysis are therefore only part of the overall considerations that the firm must take into account when it makes its decisions.

To determine criteria for the firm's decisions, the firm's production process is segmented into the production of the intermediate inputs and of the assembly line. The output level of the final product as function of these intermediate inputs and of the assembly line is thus given by:

$$Y = F(Y_1,\ldots,Y_n;\ A(L_A, K_A)) \qquad (5)$$

where $Y_1,\ldots,Y_n$ are the *n* segments or intermediate inputs and $A(L_A,K_A)$ is the production function of the assembly line. The firm's structure of production thus requires a series of decisions for each of these segments. To simplify the analysis, the production functions of the individual segments and of the assembly line are assumed here to be functions of labor and capital, and labor is assumed to be a homogeneous factor of production; the possibility of distinguishing between skilled and unskilled labor will be discussed later on. The shares of labor and capital in production vary widely, however, between the different segments; in addition, the firm has different proficiencies and expertise in the production of the different intermediate inputs. The firm's efficiency in the production of these parts is indicated by productivity indices α_j: j=1,…,n, and the firm's production functions for the individual intermediate inputs thus have the following form:

$$Y_j = (1+\alpha_j)\cdot G^j(L_j,K_j):\quad j=1,\ldots,n \qquad (6)$$

The individual production functions G^j and F are concave but not necessarily homogeneously linear in their respective components in order to allow for increasing (or decreasing) returns to scale in the production of each component. In addition, the firm's production of the final product as well as the production of certain sub-groups of components may also benefit from increasing returns to scale.

To simplify the presentation of the criteria for the firm's decisions, the intermediate inputs $Y_1,\ldots,Y_n$ are divided into two sub-groups: Those that the firm can profitably produce in-house and those that the firm finds more profitable to outsource to external suppliers; either one of these sub-groups can be an empty group, however, as we shall see below. Let these two sub-groups be denoted as H – for the components produced in-house, and E – for externally produced components, respectively. The sub-group H includes also the assembly line and the firm's management. The firm's profits are thus given by:

$$\pi = PY - w\{\sum_{j\in H} L_j\} - r\{\sum_{j\in H} K_j\} - \{\sum_{j\in E} P_j Y_j\} \qquad (7)$$

where P is the price of the final product, P_j is the price of purchasing the *j*-th intermediate input from an external supplier, w is the wage rate and r is the rate of return to capital. The first order conditions for profit maximization are:

$$PF_j - P_j = 0 : \; j \in E \qquad (8)$$

$$PF_j \cdot (1+\alpha_j) \cdot G^j_L - w = 0 : \quad j \in H \qquad (9)$$

$$PF_j \cdot (1+\alpha_j) \cdot G^j_K - r = 0 : \quad j \in H \qquad (10)$$

where $F_j = \partial F/\partial Y_j$; $G^j_L = \partial G^j/\partial L_j$; $G^j_K = \partial G^j/\partial K_j$.

These conditions determine the firm's decisions with respect to the level of output of the final product, whether or not to dis-integrate the production process into individual

components, and how to choose between alternative sources of supply of the intermediate inputs. These conditions determine the level of the intermediate input that will be used in the production of the final product by equating the firm's marginal costs on either producing or purchasing that input to the marginal products of that input in the production of the final output. Condition (8) and (9) determines the firm's decision whether to outsource the supply of a given intermediate input to an external supplier by equating the firm's marginal costs of producing that input in the firm's own plant, given by $\{w/[(1+\alpha_j)\cdot G^j_L]\}$, to the price of purchasing the input from and external???, P_j, calculated at the firm's gate and including the price paid to the external producer plus all freight and inland transport costs, insurance, storage, financing and any other related costs. Condition (8) and a comparison of the purchase price from alternative suppliers are pivotal in determining the firm's choice of the external supplier.

The elasticity of substitution between the different components ($Y_1,\ldots,Y_n$) need not be zero, but in the short run this substitution is bound to be quite limited and production is likely to require nearly fixed proportions of the different components. In the longer run, some substitution is technically feasible and the firm will have incentives to increase the share of those parts that became relatively less costly either due to outsourcing or as an effect of technical progress, thus reducing the share of the other parts. It may also be possible to substitute labor for capital in the production of the different components, but the elasticities of substitution are different in the different production functions of the intermediate inputs. These substitution possibilities are important forces that drive and guide the firm's R&D and its continuous search for alternative sources of supply.

Likewise, the substitution between labor and capital in the production of individual components is likely to be rather limited in the short-run; however, if the firm decides to outsource offshore the production of more labor-intensive components, it reduces its own labor inputs in the production of the final product, thus raising the relative share of capital in the firm's own production. These changes in the relative shares of labor and capital are, however, *not* the result of changes in the structure of production along the production possibilities frontier (i.e., changes in the decision *how* to produce), but the result of the firm's decision to outsource offshore the production of the more labor-intensive intermediate inputs (i.e., changes in the decision *where* to produce). For the same reason there is also likely to be a rise in the relative share of skilled labor in the production costs of firms in the developed countries as they shed some of their unskilled labor by offshoring the supply of parts that require mostly unskilled labor. In the longer-run, however, the substitution of capital for labor and of skilled for unskilled labor is first and foremost due to the changes in the production methods as an effect of labor-saving technological innovations. These innovations are not constrained to the production process and they range from containerization that replaces longshoremen to the dial phones that replace switchboard operators to the factory-floor robots that replace assembly-line workers to the automatic teller machines that replace bank tellers. [8]

Consider first the firm's decision whether or not to divide a vertically integrated production process into individual segments. This decision can be made with respect to the entire production process of the final product or with respect to a certain segment of

[8] The following figures are indicative: From 1980 to 2002 manufacturing output per hour in the US rose by 103 percent whereas output per hour in the overall non-farm business sector rose by only 50 percent. As a result, the number of workers in manufacturing declined from an average of 18 million in the late-1980s to an average of 16 million in the early 2000s.

the production process that can still be divided into smaller segments. By dividing the production process into the production of individual parts and outsourcing the supply of some parts to producers offshore the firm can take advantage of the lower wages and other variable costs offshore; the disadvantages of that division are due to the transport costs from the host to the home country, the loss of the increasing returns to scale and the positive externalities in an integrated production process and the set-up costs that may be required to establish a production line for the individual parts offshore.

Economies to scale and positive externalities in an integrated production process reduce the production costs of the individual segments in a vertically integrated production process.[9] The firm's marginal costs on each segment therefore differ depending on whether the production process is segmented into individual components or remains vertically integrated. In some products or some segments of production the efficiency of an integrated process may be high to the extent that even when it is technically possible to divide the process into smaller segments and outsource the supply of some parts to external producers at much lower marginal costs, this division is inefficient and unprofitable.[10] In making the decision whether or not to divide the production process, the firm must therefore take into account these economies to scale and externalities, as we see below. These externalities change the profit maximizing conditions for producing the *j*-th intermediate input, and they are then given by:

$$P(F_j + F_{2j} + \ldots + F_{nj} + F_{Aj}) \geq P_j \ : \ j \in E \qquad (11)$$

[9] In the words of Alfred Marshall, these effects are due to knowledge spillovers, advantages of the agglomeration of specialized skills, and the backward and forward linkages associated with an integrated production process. In terms of the analytical framework, positive externalities in an integrated production of the *i*-th and *j*-th inputs are indicated by: $F_{ij} > 0$ and/or $F_{ji} > 0$.

[10] In certain segments, particularly certain services, their production by the firm may have negative externalities due to pollution or congestion.

$$P\{F_j \cdot (1+\alpha_j) \cdot G^j_L + F_{1j} \cdot (1+\alpha_1) \cdot G^1_L + \ldots + F_{nj} \cdot (1+\alpha_n) \cdot G^n_L + F_{Aj} \cdot (1+\alpha_A) \cdot G^A_L\} \geq w : j \in H \quad (12)$$

High efficiency of the local labor force, positive externalities and large economies to scale of an integrated production process may therefore motivate the firm to keep the production process vertically integrated in its own plant despite the high local wages. These results are in line with the analysis of Grossman and Helpman (1991) who demonstrated in their endogenous growth model that positive production externalities in import-competing sectors reduce the gains from trade and may lead to market failure that reduces the incentives to trade and can even justify some trade restrictions. Figure 3 describes the different options that the firm has when it makes the decision whether to divide the production process into individual segments or keep it vertically integrated:

INSERT FIGURE 3

The curve OD indicates the production costs of a vertically integrated process; the 'curvature' of the curve, i.e., the vertical distance between this curve and the straight line OA, shows the cumulative gains due to the increasing returns to scale and the cost savings in an integrated process. By dividing the production process into individual segments, the firm loses that advantage; in the Figure this is illustrated by assuming that the production of each of the separate components is then constant returns to scale (c.r.s.) function of the corresponding inputs; the marginal costs of a segmented production process therefore remain unchanged at all levels of output. The set-up costs of establishing one or several lines of production of the individual components offshore are given by OS, and the line OSB summarizes the total production costs of a dis-integrated production process. These are the costs at the parent company's plant and they include all transport and other indirect costs; the line OSC summarizes the company's costs of

purchasing the parts from the external suppliers and the horizontal difference between OSB and OSC measures the transport costs of the parts that were outsourced to external suppliers.[11] If the firm's output (of the final product or of a specific intermediate input) falls below Y_1, then the set-up costs make outsourcing unprofitable; if the firm's output exceeds Y_2, then the firm's additional costs as an effect of losing the economies to scale with the segmentation of the production process exceed the gains due to the lower marginal costs offshore and the division is therefore unprofitable. At all intermediate output levels: $Y_1 < Y < Y_2$, the firm's gains due to the lower marginal production costs make the division and the outsourcing profitable.[12]

Consider now the firm's decision whether to outsource the production of an individual part to an external supplier or to produce it in its own plant. This decision is made by comparing the firm's marginal costs of producing that part in-house to the price of purchasing that part from an external supplier (calculated at the firm's plant and includes the cost of purchasing the part at the country of origin + insurance + freight). The first order conditions (8) – (10) imply that the firm will outsource the supply of the part if:

$$w/[(1+\alpha_j)\cdot G^j_L] = MC^H(Y_j) \geq P_j \qquad (13)$$

In practice, when the firm selects the external producer of that part, it compares not only the price of the part, but also the quality of the product, the reliability of supply and a host of other considerations that must be taken into account in order to secure the quality of

[11] Jones and Kierzkowski (2001) call these the costs associated with the *service link* activities and they include communication and coordination services that are required to establish a functioning network among fragments of *production blocks* that are located in different geographical locations.
[12] See also Jones and Kierzkowski (2003) for another diagrammatical illustration of the firm's options.

the *final* product and prevent disruptions in the assembly line. Figure 4 illustrates the firm's different options:

INSERT FIGURE 4

The curve PF_j in the Figure shows the value of the marginal product of the *j*-th intermediate input in the production of the final product; the shape of the curve is determined by the concavity of the production function F. P^E_j is the cost of purchasing that part from the external supplier. The firm's marginal costs are determined by its labor costs and given by: $MC^H(Y_j) = w/[(1+\alpha_j)\cdot G^j_L]$, where $[(1+\alpha_j)\cdot G^j_L]$ is the marginal product of labor in the production of one unit of that part. Wage difference is therefore only one of the considerations and differences in labor productivity is another important factor.

1. If the firm's marginal costs are given by the solid curve $MC^H(Y_j)$, then the profit maximizing level of output in in-house production is Y^H_j. In this case, the firm's marginal costs are higher than the cost of purchasing the part from an external supplier P^E_j at *all* levels of output, and the firm will therefore outsource to that supplier the entire production of the part.

2. If the firm's marginal costs of producing the part are given by the curve $MC^{H\#}(Y_j)$, the profit maximizing level of output in in-house production is higher than the cost of sub-contracting an external supplier, P^E_j. At lower levels of output, however, the firm's marginal costs are lower than P^E_j. In that case, the firm will produce the quantity $Y^{H\#}_j$ in-house and outsource the supply of the quantity $(Y^E_j - Y^{H\#}_j)$ to the external producer.

3. If the firm's marginal costs are given by the curve $MC^{H*}(Y_j)$, then the profit maximizing level of output in in-house production is Y^{H*}_j. The contract price of the external supplier is, in this case, higher than the firm's marginal costs at *all* levels of output below Y^{H*}_j and the firm will elect to produce that part in-house.

These conditions extend the conditions put forward by Lucas in (3) and (4) in several directions, but they strengthen the main conclusion: Even when capital can move freely between countries and the rate of return to capital is equalized, firms in the developed countries may still prefer to take advantage of the higher efficiency of the local labor force; by maintaining higher capital/labor ratio in their home production, the wages in the developed countries will remain higher than the wages in the developing countries despite the flows of capital. The following more general observations can be drawn from these conditions:

- The pressure to lower production costs by offshoring supply to producers in developing countries and the shift of companies to a globally integrated production is, in most cases, restricted to segments of production, products and/or services in which the wage differences are large enough to outweigh the productivity differences and cover all transport costs and investment risks, thus making the transition profitable. These shifts are not restricted, however, to segments of production that use mostly unskilled labor, and may include segments, products and services in which wages of the specialized skilled labor in the firm's home country are considerably higher than the wages abroad; offshoring high-tech services to India was triggered by the large differences in the wages of high-tech professionals.

- Economies to scale and positive externalities in an integrated production process tend to restrict outsourcing; proximity to the firm's central units and its management, the risks of losing control over the firm's intellectual property, concerns about workers' safety and investment risks are also significant constraints on outsourcing.
- The process of outsourcing is two-directional: As firms in the developed countries outsource the supply of parts in which production is labor-intensive to producers in developing countries, many firms in the developing countries outsource the supply of parts in which production requires specialized machinery and/or skilled labor to the US or the EU. It is estimated that more than 6.4 million jobs have been *in-sourced* into the US in recent years, and the US has a trade *surplus* in the categories of IT services that were most directly affected by offshoring;[13] moreover, that surplus has risen from $2.1 billion in 1995 to $4.2 billion in 2002.
- Offshoring was a major contributor to the rise in international trade during the past decade by promoting trade in intermediate inputs. In addition, the pressures of competition combined with the supply of cheaper imported alternatives of final products to consumers and of intermediate inputs to producers contributed to curb inflation, particularly in the developed countries despite the rise in business expenses on security and the climbing oil prices.
- Offshoring also contributed to a rapid increase in productivity due to the growing specialization of companies in all countries in segments of production in which they are the most efficient and have the greatest competitive advantage, and to the

[13] Including "computer and data processing services" and "database and other information services."

acceleration in the transfer of advanced technologies from developed countries to developing countries.

- Lucas' assumption in his model that the free flow of capital between countries will *equalize* the rate of return to capital was clearly made in order to simplify his presentation. In practice, important factors contribute to maintain large differences between the rates of return on both direct and financial investments in developed and developing countries and between developing countries; perhaps the most important factor is the risk associated with investments in the developing countries. In the formal analysis the risk factor is introduced by assuming that the flow of capital will reduce the gap in the *certainty equivalent rate of return to capital*, rather than the nominal or the real rates. The risks in most developing countries are particularly high and they are due not only to production and supply risks but also to policy instability, security uncertainties, the absence of law and order, etc. As a result, the flow of capital to the majority of the developing countries, particularly in SSA, remains rather limited and in many of these countries foreign direct investments tend to concentrate in the production of primary products, particularly oil, rather than in manufacturing.

- The inclusion of all the indirect and set-up costs associated with production offshore considerably narrows down the cost differential. Thus, for example, whereas the wage gap in car manufacturing between China and Germany exceeds 95 percent, the cost difference, after taking into account all the transport and indirect costs, is in the order of magnitude of only 20 to 40 percent – still large enough to outsource the production of parts that are particularly labor-intensive, but not large enough to motivate the transfer of production of many other parts. In a large number of

products and countries, the indirect costs are particularly high and the TNCs refrain altogether from outsourcing to or investing in these countries despite their low wages. In SSA, high indirect costs plus high investment risks are the main deterrents of most potential investors (see below).

Other considerations may also be part of the firm's considerations whether or not to segment its production process and where to outsource the supply of certain parts:

- Suppliers specializing in the production of specific parts or services can often be more cost-efficient due to economies of scale -- since they typically service several companies, high proficiency in the production of these parts or services and special skills and equipment.[14]
- External suppliers even in the firm's home country often pay lower wages -- partly because they are less constrained by agreements with labor unions and partly because they are located in areas where wages are lower (including designated industrial zones in border areas). The firm's decision to reduce the number of employees on its payroll by replacing a labor contract by a commercial contract may also reduce the influence and negotiating power of the firm's own labor union over wage increases. Outsourcing offshore can also save the firm costs of maintaining various environmental and employment standards that companies in the developed countries must observe. These considerations are all taken into account by today's CEOs, whether or not they stand on the moral high ground. On the other hand, when

[14] This higher productivity can be incorporated into the above profit maximization conditions by comparing the labor efficiency of external suppliers, indicated by the values of α^{E}_{j} and $\alpha^{H(o)}_{j}$ with the firm's own labor efficiency α^{H}_{j} in that segment of production.

companies shed part of their labor force as they outsource production, they must bear the costs of settling all their outstanding labor agreements as part of their set-up costs.

- By outsourcing the production of some components, the firm may be able to reduce its stocks of these components and plan its production so that these components are supplied "just-in-time," thus pushing some or all of the storage costs to their suppliers. Outsourcing may also enable the firm to better adjust its own supply of the final product in order to meet fluctuations in demand without building up large stocks and/or a large production capacity that may otherwise be necessary to meet peak demand.
- The experience of some firms shows that outsourcing enabled them to trim down, simplify and rationalize their management, in part because beyond a certain level, in-house production may raise certain costs due to logistic difficulties, congestion and other negative externalities.
- By reducing the number and variety of parts that the firm produces in its own plant and outsourcing their supply the firm can have more freedom to select the location of its plant and thus reduce transport costs to its wholesalers or retailers, by making the proper selection of their suppliers.

Antràs (2003) and Antràs and Helpman (2003) analyzed the choice of producers in a developed country between vertical integration and outsourcing offshore.[15] Their analysis led them to the following conclusion:

> "In choosing between a domestic and a foreign supplier of parts, a final good producer trades off the benefits of lower variable costs in the South against the

[15] See also Helpman, Melitz, and Yeaple (2003) for a different analysis of this choice.

> benefits of lower fixed costs in the North. On the other hand, in choosing between vertical integration and outsourcing, the final good producer trades off the benefits of ownership advantage from vertical integration against the benefits of better incentives for the independent supplier of parts" (p. 30).

These conclusions summarize very succinctly the benefits and opportunity costs of these options, but they leave out a number of key considerations. To use their terminology, these considerations can be summarized as follows: First, the decisions of a final good producer are not only between vertical integration and outsourcing, but also between different alternative of restructuring the production process: What segments of the production process should the firm outsource to external suppliers and what segments should it produce in its own plant. Second, the benefits of ownership advantage from vertical integration include economies to scale and externalities in a vertically integrated production as well as lower investment risks. Third, perhaps the most important outcome of the technological feasibility and economic profitability of segmenting the production process and outsourcing the supply of certain intermediate inputs to external producers is the choice it gives to the producers of the final good to select suppliers of parts and services according to their competitive advantage, thus requiring firms to focus on their core competencies and outsource activities and segments of production in which they have less expertise and no comparative advantage. Finally, although the choice between a domestic and a foreign supplier of parts is also influenced by investment risks, it does not necessarily imply that *fixed* costs in the North are lower due to high local taxes, high construction costs, etc. At the same time, a critical consideration in this choice is the efficiency of the labor force in the North and in the South which determines the *variable*

costs per unit of output. The choice of either a domestic or a foreign supplier need not therefore involve *any* trade-offs since in many cases variable costs per unit of output in the South are higher due to low labor efficiency, and in many other cases fixed costs in the North are higher. In all these cases the choice therefore need not involve any trade-off and producers in all countries are better off.

The growing pressures of an increasingly integrated world trade are forcing firms in both developed and developing countries to restructure their operations, improve their production structure and supply chain by, among other measures, taking advantage of the possibilities to outsource some of their less profitable activities and thereby increase their competitiveness. All too often, however, the objectives of privately owned and increasingly globalized corporations are not commensurate with the goals of the national economy. Although the growing opportunities to trade in an integrated global economy can increase these economies' gains from trade in the long-run and open up opportunity to leverage intellectual capital and advanced technologies wherever significantly they are available, thus accelerating their growth, the process of restructuring and re-allocating productive resources that global trade requires is slow and agonizing for large segments of the labor force. Shifting jobs from one sector to another and from one country to another leaves many people unemployed and many communities lose their main source of livelihood. While the gains from trade are spread throughout the economy, the pains for the structural adjustments concentrate on specific sectors and population groups and are often translated into strong political pressures to restrict free trade and oppose outsourcing. Amidst rising public concerns, several governments in the North responded to these pressures by launching national efforts against outsourcing and often even

against free trade. In France, the government offers hefty subsidies to companies that pledge to keep jobs at home for at least three years; in the US, public opinion polls show that some three-quarters of Americans believe that outsourcing has a negative impact on the economy and around two-thirds support direct and drastic actions of the federal government to constrain free trade and penalize companies that offshore jobs.

Among the developing countries the gains from the integrated global economy tend to concentrate among a relatively small number of countries and relatively narrow segments of the population. In India, less than 20 percent of the population benefited from their booming economy during the past decade and most of the gains concentrated among the highly educated segments of the population. Most of the least developed countries, particularly in SSA, are lagging behind. As a result, income inequalities between and within developing countries are on the rise and the sharp fall in poverty that took place during the 1990s has slowed down and in most SSA countries leveled off. These developments and their driving forces are reviewed in the next section.

IV. The impact on the less developed countries

For both the developed and the developing countries, outsourcing can be a significant boon by enabling all countries to reap much larger gains from international trade with greater specialization in products and services in which they have their largest comparative advantage. In the past, firms were constrained in their production and trade decisions to the production of final products due to high transport costs, high import tariffs and many administrative and technical restrictions on trade. Their options were either to produce the final product in their home country or transfer its entire production offshore to the country that has the comparative advantage in its production. Countries

that have a comparative advantage in the production of the final product need not have, however, an advantage in the production of all its parts. If it is technically possible and economically desirable to divide the production process into several segments, then countries that have abundance of capital and skilled-labor firms can increase their gains from trade by outsourcing the production of parts that require relatively more unskilled labor to countries that have abundance of unskilled labor and low wages and in-source the production of parts that require relatively more capital or skilled labor. This, in principle, is what the Heckscher-Ohlin model predicts, but with outsourcing trade can be expanded to include not only the final products but also the intermediate inputs.

The technical feasibility to divide the production process into separate segments and outsource the production of certain parts and/or services to external suppliers enables firms to specialize in the production of those parts in which they have the highest comparative advantage and thereby reap larger gains from trade. With the development of better means of communication and transportation, the gradual dismantling of policy and administrative barriers to trade and the rapid technological progress, firms in *all* countries have much greater flexibility in restructuring their production and are therefore able to take a greater advantage of trade and obtain larger gains from the low wages in the developing countries and the skilled labor and advanced technologies in the developed countries. In the developing countries, firms can increase their integration into the global trading system by specializing in the production of parts and/or services in which they have comparative advantage due to their low wages even when they do not have an advantage in the production of the final products. In the developed countries, outsourcing the production of labor-intensive parts reduces the dependence of local firms

on unskilled labor in their own in-house production, mostly migrant workers from the developing countries, for the production of labor-intensive parts that they can now offshore. Outsourcing can therefore significantly increase the range of products and services in which all firms in all countries can compete in the world's markets and consequently also the volume of their production and trade.

In the developed countries, outsourcing some production activities, including certain services, to specialized companies is by no means a new phenomenon; until the early 1990s, however, it was mostly constrained to the firms' home countries whereas outsourcing to the developing countries was very limited and concentrated in blue-collar jobs. Since the mid-1990s, the share of the developing countries has continuously increased and in recent years it included also services, white collar and skilled-labor jobs. The process of trade and specialization is highly dynamic, however, and driven by continuous efforts to reduce production costs and increase profits by adopting more advanced and innovative technologies and marketing strategies. These are the main forces that drive both their R&D, their search for new markets for their final products and less expensive sources of supply of primary and intermediate inputs they need for production, and their continuous re-assessments how and where to organize their production. These re-assessments are essential due to continuous changes in market conditions that are partly due to decisions of their competitors how and where to organize their production and due to policy changes at home or abroad and trade agreements that open access to new markets and/or reduce tariffs, changes in exchange rates, etc. Policy changes are, in principle, external to the firm but they must be taken into account in planning the firm's future strategies. Moreover, with the proliferation and growing scale

of the global operations of the TNCs, they have an increasing effect on countries' policies, both in their home country, as demonstrated by the confrontation over the tariff on steel imports to US.

These changes led to a strong opposition to outsourcing in many developed countries, particularly the US, even though surveys conducted by the US Labor Bureau suggest the main reason for the loss of white-collar jobs was not the transfer of jobs to developing countries but the rapid technical changes and the increase in labor productivity.[16] Nevertheless, the political discussions in the US often include combative declarations against outsourcing and recently France announced generous subsidies to corporations that do not transfer jobs abroad. Fears that blue- and white-collar jobs will be 'sucked out' of the developed countries as the TNCs transfer larger segments of their operations offshore touched a raw nerve and demands to 'keep the jobs home,' even though, in practice, they were not supported by the facts.[17]

One reasons for the very emotional tones and the passion of the political debate in the developed countries and the opposition to outsourcing is that whereas the benefits from trade are spread over the entire economy in the form of lower prices and higher growth rates, the losses concentrate in relatively specific sectors and affect a relatively small number of communities that lose their income sources and the main local employer cease

[16] A recent study quoted in The Wall Street Journal of June 10, 2004, suggests that over the past four years 133,000 jobs, or 16% of the labor pool in the American parts industries, were eliminated, mostly because part suppliers improved productivity and partly because they shifted jobs to lower-cost countries such as China and Mexico. By 2010, the same study predicts that additional 127,000 jobs, or 18% of the remaining labor pool, will be eliminated or move overseas.

[17] In the US, for example, the number of jobs that have been in-sourced into the country in recent years has been larger than the number of jobs that have been outsourced. The US Bureau of Labor Statistics, also estimated that high paying management, business, financial, and professional positions in the US has actually increased from 23.4 percent of total employment in 1983 to 31.5 percent in 2002 (see Lindsay, 2004).

its operations there and in other communities that changed their character as an effect of a flood of migrant workers that settled there. Everybody gains from cheaper textile products made in China, India or Bangladesh, but communities that stand to lose their entire livelihood strong opposition of when local companies go either bankrupt or abroad as an effect of cheap imports strongly oppose free trade. In both the EU and the US, the highly concentrated political pressure of farmers has thus far prevented an international trade agreement in textile and farm products within the framework of the WTO;[18] Ducking the issue of farm subsidies by political parties and politicians in the US and the EU cost the American tax-payers over $15 billion a year and forces more than 95 percent of the European consumers to pay much higher prices for their fruits, vegetables and milk products in order to allow the 5 percent of the population who work in farming to keep their businesses, while placing crippling burden on farmers in the developing countries. The great danger of the escalation of the political debate within the developed countries over outsourcing is that their governments will be under increasing pressured to resort to protectionism and slow down the process of trade liberalization despite its potential gains to both the developed and the developing countries. The coalition of certain industries, farm and labor groups that call to put some restrictions on trade do not necessarily support a policy of economic isolationism. Some of their complaints are against what they perceive as unfair trade practices of China, particularly accusations that China

[18] Recently, the WTO ruled, however, in favor of Brazilian complaints against the US cotton and the EU sugar programs and WTO members agreed, in principle, to start rolling back direct export subsidies – although no time frame has been set.

manipulates its currency to gain trade advantages against U.S. firms and pursue unfair labor practices.[19]

The developed countries also resort to protectionist measures that are seemingly within the rules of the WTO to protect certain industries and particularly sensitive segments of the labor market.[20] These measures include:

⇒ *Export and domestic subsidies*. In theory, subsidies are designed to address market failures; in practice they are often used under the pressure of interest groups in order to protect certain sectors and certain regions.

⇒ *Anti-dumping*. Anti-dumping duties have become the most popular tool of protectionism in the developed countries and a number of developing countries have also started to use anti-dumping duties.

⇒ *Labor standards*. Despite the economic and moral arguments for adopting minimum labor standards, the imposition of these standards tend to benefit the developed countries and harm the poorest ones both because many of their industries may be left out of world trade as an effect of these regulations, and because many of the poor people in these countries would prefer to be employed even if these standards are not imposed than being unemployed.

⇒ *Environmental standards*. These standards are usually beyond the reach of the least developed countries and the sanctions imposed by these standards effectively restrict the capacity of these countries to compete in the export markets.

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[19] Their claims are that China, by pegging the yuan to the U.S. dollar, was keeping the value of its currency at least 40 percent below where it would be if the yuan's value were set by market forces, giving the country a tremendous competitive advantage.

[20] These measures are not targeted specifically against outsourcing and many of them were designed specifically for farm products. With an increase in the political pressures to curtail outsourcing there is danger that these measures will be applied to increase protection on local production and local jobs.

The developing countries as a group can be the main beneficiaries from outsourcing due to the possibilities it opens for them to increase their production for exports and their share in global trade and to attract large flows of foreign direct investments that can further accelerate their industrialization, their technical progress, and their overall economic growth. Not all countries and all economic sectors and population groups were certain, however, to benefit from these changes in the structure of global trade. Table 1 highlights these differences by showing the trends in the share of the developing countries in global trade. The first two rows in the Table highlight the very small changes in the share of the developing countries in the world's economy during the 1990s; in part the reason is that most of the economic growth of these countries concentrated in East Asia whereas in most other developing countries growth was at a much lower pace and the economies of many SSA remained stagnant. The table also reflects the impact of the financial and economic crisis in 1998 and 1999 that affected several East Asian and Latin American countries. The decline in the market share of exports of primary products from the developing countries is primarily due to the fall in their prices; this decline affected mostly the SSA countries where 17 of the 20 most important non-fuel export items are primary commodities and resource-based semi-manufactured goods while their share in the production and exports of more advanced manufactured products has continuously declined. In contrast, the sharp rise in the market share of the developing countries in the world exports of low, medium and high-technology manufacturing products reflect the rapid growth of the East Asian countries and the sharp changes in the structure of their economies.

In *all* countries, however, the structural adjustments imposed a heavy toll on sectors, regions and population groups that had to bear the main burden during the transition period. Even in the East Asian countries, the population that migrated from rural to urban areas in search of higher incomes, had to go through difficult times until they managed to settle and their family members that remained in their villages often had to carry a much heavier burden to keep their farms.

Table 1: SHARE OF DEVELOPING COUNTRIES IN THE WORLD ECONOMY

	1990	**1999**
Gross domestic product (current dollars)	22.3	23.8
Gross domestic product (purchasing power parity)	43.6	46.9
Export market shares	**1985**	**2000**
Primary products	62.0	59.6
Resource-based manufactures	31.3	31.8
Low-technology manufactures	33.6	50.3
Medium-technology manufactures	10.8	21.4
High-technology manufactures	16.8	36.6

Source: Calculations based on World Bank Indicators in various years.

When the TNCs consider possible destinations to outsource the production of certain final products or intermediate inputs, they compare prices – after including all transport and other related costs – as well as quality, reliability and timeliness of supply, and investment risks. Transaction costs include also the costs of financing such as banking fees, insurance costs to secure against violation of contracts or default (usually in the form of letter of credit or export guarantees), local taxes, etc. If outsourcing involves investments in certain lines of production in the host country, they must also take into account the investment risks that vary widely between countries. Their investment costs include also the time and physical resources needed to transfer know-how and advanced technology, training local workers and assimilating knowledge of local markets,

institutions and administrative rules and regulations. In addition to costs, foreign investors must also take into account the efficiency of the local labor force, the availability of skilled labor that may still be needed even for the production of goods that require mostly unskilled labor and the economies to scale in an integrated production process. Low wages of the local workers offshore are therefore only part, and often not even the most important part, of the overall considerations that the TNCs must take into account when they decide whether to dis-agglomerate their production, how to structure their supply chain and where to outsource the production of certain segments of production.

The high concentration of foreign direct investments in a relatively small number of developing countries is therefore due not only to the low wages of local workers but also to the large differences between countries in the effectiveness of their financial system, the quality of their inland and port infrastructure, the risks involved in long-term investments that are strongly influenced by their economic policies and the stability of their political regime, the efficiency and proficiency of their labor force, the availability of high-skilled professionals, particularly in ICT, the incentives offered by the local authorities to foreign investors, etc. In most of these areas, the countries of SSA are at a comparative disadvantage relative to the East Asian countries and they therefore did not fare well in the competitive global market, and, as a result, did not succeed to attract a significant volume of foreign private investments (Table 2).

Table 2: FDI Flows to major regions and countries: 2001-2002

(In billion US$)

Host Region	2001	2002
World	**824**	**651**
Developed Countries	589	460
Developing Countries	209	162
Africa	19	11
LAC	84	56
Asia & Pacific	107	95
China	47	53
Central and Eastern Europe	25	29

Source: UNCTAD FDI database

The changes in the structure of trade between the developed and the developing countries with the rapid increase in outsourcing and in the share of intermediate inputs in global trade is changing also the entire structure of the supply chain from the producers in the developing countries to traders, to wholesalers and to retailers in the developed countries. Corporations from developed countries that transfer some or even most of their production to developing countries usually retain management, marketing, accounting, and several other units in their home country. As a result, producers and sub-contractors in the developing countries often have a rather limited impact on the corporations' decisions. In fact, local producers and, in many cases, also their governments tend to deliberately restrict their interference with the TNCs decisions in light of an implicit but omnipresent threat of these corporations to transfer their operations to another country. Agricultural producers are particularly vulnerable to this structure of the supply chain because they have difficulties to meet the demands of strict food safety and other standards, both those that are required by the SPS and TBT agreements and those that are required by wholesalers in the developed country. As a result, even when the entire production is transferred to a developing country, the TNC and the wholesaler in the developed country often have exclusive rights on the purchases of the final product and full responsibility and ownership over marketing and management. This structure of

trade restricts competition and determines clear boundaries on the capacity of local producers in the developing country to take advantage of its comparative advantage and compete in the world's markets.

The discussion in this section highlights the fact that a complete answer to Lucas' question also has significant institutional and political dimensions. Although the basic production and marketing strategies of companies in the developed countries are based on economic criteria that, in the final analysis, determine the bottom line in their current and expected profit and loss accounts, in practice their decisions are all too often constrained by various rules and regulations that restrict their choices and limit their capacity or incentives to invest in many developing countries even when economic considerations alone seem to offer high rates of return on investments in these countries. The next section discusses these considerations in the countries of SSA, where political constraints often play a dominant role.

V. Can the SSA countries expand their role in global outsourcing?

For the countries of SSA, outsourcing can offer significant opportunities to develop some of their economic sectors. So far, however, the countries of SSA have benefited very little from outsourcing, despite their very low wages and despite several other advantages that they can offer to potential investors. Many African countries offer significant advantages in the production of a considerable number of high-value, non-traditional agricultural products due to their favorable agro-climatic conditions and cheap labor. The introduction of these crops to rural areas in these countries, particularly to small farms, requires, however, concerted efforts and investments of these countries' extension services and agricultural R&D institutes, their semi-public marketing agencies, their

relevant government ministries, local NGOs and the private sector. Some countries have already made considerable inroads in production and exports of tropical fruits and vegetables. In some cases, large wholesalers from developed countries contracted local producers to produce these crops; in other cases, large trading companies made direct investments to produce these products. That potential and the possibilities to increase the local value added through further processing is far from being exhausted, however. A number of African countries also offer significant advantages in the manufacturing of products that require natural resources that are available in these SSA countries.

All too often, these advantages and the low wages of local workers in SSA fail, however, to provide sufficiently strong incentive to attract foreign investors. Although the costs of producing products that require these raw materials and exporting them to the EU are certain to be much lower in the SSA countries than in the EU countries themselves, for the TNCs this is not the relevant consideration: For them, the selection of producers and suppliers along the supply chain is made by comparing the costs of producing or outsourcing the supply of each part at each stage of the production process between alternative producers and suppliers in different countries. In SSA, the high costs of in-land transport due to poor infrastructure in the hinterland and in their air and seaports, the high financial costs, the high local tariffs and taxes on trade,[21] the high investment risks and the web of red tape that wrap all administrative decisions reduce the incentives of the TNCs to invest in these countries, particularly in more advanced stages of production that require further processing and more capital-intensive technologies, and make it worthwhile for them to transfer these stages of the production process to other countries

[21] In the African countries, trade taxes are still very high: In 1995 these taxes exceeded 5 per cent of their GDP compared to an average of 3 per cent of GDP in other developing-countries and less than 0.5 percent in the developed countries.

or to their own home country even when they use raw materials from SSA and despite the low wages there. Moreover, wages of unskilled labor in most East Asian countries, particularly in China, are still very low, often as low as the wages in SSA, but the quality of infrastructure and other business services in these countries is far better. In other countries that became a Mecca for foreign investments, such as Brazil and Singapore, wages are higher than in SSA, but these countries offer far better services, better infrastructure, larger supply of skilled labor and a wide range of other incentives to investors that give them considerable advantage. As a result, the main exports of most SSA countries are still raw materials, (oil and unprocessed agricultural goods), while further processing that raises the products' value-added is done elsewhere.

The profit maximization conditions in Section III focused on the labor costs and labor productivity. Using the criteria that were determined by these conditions, it can be concluded that when potential investors make the decision where to invest, they compare first the labor costs *per unit of output*, thus taking into account the differences in labor productivity. The comparison of the production costs in two countries $\varepsilon; \tau \in E$, that can be potential suppliers of that product, is thus based on the comparison of the difference:

$$\{ w^{\varepsilon}/[(1+\alpha^{\varepsilon}_j)\cdot G^{\varepsilon}_{jL}] - w^{\tau}/[(1+\alpha^{\tau}_j)\cdot G^{\tau}_{jL}]\} : \varepsilon; \tau \in E$$

If this difference is not very large, then the other costs that are part of the production process, as well as the various administrative incentives or constraints, may well outweigh the significance of the direct costs criteria associated with low wages and labor productivity. The large difference between labor costs in SSA and in the EU is therefore not very relevant for these decisions because producers in the EU determine their

decision by comparing the labor costs in SSA with labor costs in other developing countries to which they can outsource the production these products. In these comparisons, the balance has not been favorable so far for the SSA countries. Despite their relative proximity to Europe and the availability of many raw materials and agricultural products, a host of other factors – economic, political and institutional – deter the TNCs from subcontracting local producers or make direct investments in these countries.

Even in agricultural products, Africa's trade performance was influenced adversely by the difficulties of local producers and exporters to integrate into the global distribution and marketing chains, tap into cheaper finance, organize efficient logistics, and meet the standards demanded by consumers in the developed countries and market exigencies such as the sanitary and phytosanitary (SPS) measures required by the WTO for food exports. African traders often have difficulties to compete in world markets also because they lack accurate market information and fail to meet timely delivery. The continent's underdeveloped and unreliable road and railway networks, the cumbersome customs formalities, and the lack of centrally organized services to assist producers and exporters further increase transaction costs for businesses.

Small agricultural producers and traders in many developing countries also suffer from the far-reaching changes in the structure of the world's markets for these products that has become increasingly oligopolistic. Producers and traders in these countries must export most of their products through a supply chain system that is largely dominated by the TNCs. Although the share of SSA in world agricultural trade has not declined during the past decade, the share of small farmers has declined very sharply and as a result, more

of them resort to production for self consumption or to their local markets.[22] The control of the TNCs over the supply chain and over the flow of goods from production to delivery enables the intermediaries to appropriate a growing share of the profits. In commodities such as coffee and tea business in the markets of the developed countries has been booming in recent years and the prices in the retail stores have risen sharply, but this has not been reflected in the prices received by producers in developing countries. In the early 1990s, earnings by coffee-producing countries (export prices f.o.b.) were some $10–12 billion, while the value of retail sales was about $30 billion; ten years later the value of retail sales jumped to $70 billion, but producers received only $5.5 billion. World market prices for coffee have actually fallen from about 120 US cents per pound in the 1980s to around 55 US cents, reaching their lowest levels in real terms in 2002. The growing share of wholesalers and retailers in the importing countries in the incomes accrued in the coffee supply chain also met little objection because farming and local trading in the producing countries are highly fragmented and the destruction of their local marketing boards further reduced the capacity of farmers to maintain their share. In addition, the declining terms of trade for the SSA commodity-dependent countries was exacerbated by high price volatility of their major exports such as coffee, cocoa, tea and cotton.[23]

The most important factors that inhibit investments in many SSA countries are the unstable macroeconomic environment, ineffective and often corrupt public institutions,

[22] They often find it difficult, however, to compete even in their local markets with the highly subsidized agricultural products imported from the EU or the US.

[23] The World Bank estimates that the cumulative loss resulting from adverse terms of trade over the period 1970–1997 for the African non-oil-exporting countries (excluding South Africa) amounted to 119 per cent of their combined GDP in 1997 (World Bank, 2000: 21–22).

highly unstable business environment and, in many countries, the absence of a basic rule of law. Collier and Gunning (1999) made the following pessimistic observations on the impact of these factors on would-be investors:

> "Today, the chief problem is those policies which are ostensibly domestically-oriented, notably poor delivery of public services. These problems are much more difficult to correct than exchange rate and trade policies, and so the policy reform effort needs to be intensified. However, even widespread policy reforms in this area might not be sufficient to induce a recovery in private investment, since recent economic reforms are never fully credible. Investment rating services list Africa as the riskiest region in the world. Indeed, there is some evidence that Africa suffers from being perceived by investors as a "bad neighborhood." Analysis of the global risk ratings shows that while they are largely explicable in terms of economic fundamentals, Africa as a whole is rated as significantly more risky than is warranted by these fundamentals (Haque et al., 1999). Similarly, private investment appears to be significantly lower in Africa than is explicable in terms of economic fundamentals (Jaspersen et al., 1999). "Africa" thus seems to be treated as a meaningful category by investors. The perception of high risk for investing in Africa may partly be corrected by the passage of time, but reforming African governments can also take certain steps to commit themselves to defend economic reforms. Internationally, governments may increasingly make use of rules within the World Trade Organization, and shift their economic relations with the European Union from unreciprocated trade preferences to a wider range of reciprocated commitments. Domestically, there is a trend to freedom of the press, and the creation of independent centers of authority in central banks and revenue authorities, all of which should generally help to reinforce a climate of openness and democracy, which is likely to be supportive of economic reform" (Collier and Gunning 1999, 20).

In recent years there has been an encouraging increase in the number of SSA countries that manage to create a more stable economic and business environment, including South Africa, Uganda, Senegal, and Ghana, to some extent also Nigeria can offer new opportunities to investors. An important outcome of these developments was the rise in merchandise exports from the Sub-Saharan African countries by 3.6 percent in 2002. [24] Although this rise is smaller than the rise by 7.8 percent from the entire group of

[24] Some of the increase is in trade between the African countries that is mainly attributed to the transfer of unrecorded trade into the recorded or formal sector.

developing countries, the recent trend represents a significant change after years of decline. Table 3 shows however, the wide differences in these trends in the different SSA countries:

Table 3: Growth Rates of GDP and Export in selected SSA countries (average 1990-96)

Uganda	6.9	11.8
Sudan	5.3	0.0
Ghana	4.3	7.2
Guinea	3.8	1.8
Ethiopia	3.4	1.2
Tanzania	3.4	0.0
Nigeria	3.1	2.1
Burkina Faso	2.7	-0.9
Gabon	2.5	5.7
Kenya	1.9	4.4
Senegal	1.8	1.5
Côte d'Ivoire	1.7	2.8
South Africa	0.8	3.6

Source: World Bank, 1997b, *Africa Regional Brief*, Washington DC: The World Bank.

Another obstacle in many African countries is their higher tariffs and fewer market access commitments, especially in the services sector, relative to most other developing countries. In most African countries, the import tariff and export tax remain the main trade and tax policy instruments. A direct product of this policy is that many industrial and consumer goods exported from these countries face relatively high tariffs, especially in the other developing countries that further impede their ability to attract investment and increase trade and competitiveness. A number of SSA countries took more active measures to integrate their economies with the world economy; the following examples are noteworthy: Uganda has implemented significant economic reforms during the past decade that included the elimination of all quantitative restrictions, simplification of its tariff structure and the application in 2001 of a simple average tariff rate of 9%.[25] In

[25] However the import license commission and the withholding tax increase the average rate to 15%.

Ghana the simple average tariff was reduced from 17% in 1992 to 13% on January 2000, but was raised again to nearly 15% in February 2000 when a "special import tax" of 20% was re-introduced. Another obstacle that deter would-be investors is that due to the small share of the SSA countries in world trade they do not have much to offer to their trading partners by way of market access concessions, thus limiting their capacity to engage in reciprocal bargaining that is central to the operation of the WTO and regional trade organizations, and to offer advantages to would-be investors and exporters from foreign countries (Mattoo and Subramanian, 2004).

These examples highlight the limited significance of the wage gap between the countries of SSA and the developed countries in attracting would be investors or contractors from the developed countries. In fact, during the past decade the wage gap between the SSA countries and all developed countries and most developing countries has actually *widened* but their share in world trade has declined (Table 4). Moreover, the SSA countries benefited very little from the sharp increase in the flow of FDI from the developed to the developing countries and only a trickle of this flow, less that 2% of the total in 2001 and 2002, reached their shores.[26]

TABLE 4: SHARES OF DEVELOPING REGIONS
IN WORLD MERCHANDISE TRADE, 1980–2000
(Percent)

	1980	1985	1990	1995	2000
Exports World	100.0	100.0	100.0	100.0	100.0
Sub-Saharan Africa	3.7	2.5	1.9	1.5	1.5
Developing Asia	17.9	15.6	16.9	21.6	24.3
Imports World	100.0	100.0	100.0	100.0	100.0
Sub-Saharan Africa	3.1	2.1	1.6	1.6	1.3
Developing Asia	13.1	15.2	15.9	21.9	21.1

Source: UNCTAD, Handbook of Statistics.

[26] Moreover, with the exception of SSA, most of these investments were oil exploration and production.

VI: Can SSA increase its share in FDI?

The main answer to Lucas' paradox is, however, in the numbers themselves. Since the early 1980s, world flows of FDI have grown faster than both world trade and world output. The flows to developing countries grew at an average annual rate of over 30% in the first half of the 1990s and 15% in the late 1990s -- from less than $35bn per year in 1990 to over $210 billion in 2001. More than half of these investments were in the East Asian countries, primarily in China, Hong Kong, Singapore and, until the Asian crisis of 1998, Indonesia; investments in LAC countries were at a lower pace and concentrated mainly in Chile, Brazil and, until the financial and economic crisis since 1999, also in Argentina. A considerable portion of these investments was associated with mergers and acquisitions (M&As) of the TNCs that increased their global role and the geographical spread of their operations. Figures 5 and 6 highlight the changes in the flows of direct and portfolio investments to the 25 emerging economies during the 1990s and the relatively small share of SSA.

INSERT FIGURES 5 & 6

The surge in FDI to the developing countries, had a number of key characteristics: [27] First, more than 70 percent of the total worldwide flow of FDI was to the developed countries themselves (Table 4); second, of the total flow of FDI into the developing countries, more than two-thirds went to only five countries: Brazil, Mexico, China, Hong-Kong and Singapore.[28] Third, the total amount of FDI worldwide in 2000 stood at an all-time historical high -- almost six times higher than the level recorded only five years

[27] The main sources of the data in this review and of the charts and tables are UNCTAD 2003 report and the OECD Global Forum on International Investment (2003) *Attracting International Investment for Development.*

[28] Until the financial crises in Indonesia and Argentina in the late 1990s, these countries were also the recipients of large flows of foreign capital.

earlier. In 2001 and 2002 there was a significant decline in the flow of international investments following the "bubble" of 1999 and 2000; nevertheless, their level was still twice their level in the mid-1990s. The hike in FDI inflows and outflows, particularly in 1999 and 2000, affected mostly the largest OECD economies, and it was mainly driven by the large and rapidly growing number of M&As in both the developed and the developing countries, and by the wave of global restructuring and repositioning among the TNCs.

In the developing countries, stepped-up privatization measures of the authorities in many countries, primarily the previously centrally planned economies, and direct investments of the TNCs in China, Hong Kong and Mexico played the most significant role in the large increase in FDI. Investment risks was one of the most important guiding principles that guided foreign businesses and investors in their investments decisions in the developing countries and their main criteria were dependable and open regulatory regimes, competitive and investor- friendly environment, and political and economic stability; other criteria included the indirect costs associated with the level of development of the local infrastructure, the efficiency of the local workforce and the availability of more proficient human capital. Intense competition drove the TNCs to increase their investments in new markets and seek access to low-cost resources and factors of production. At the same time, there was also intense competition between the developing countries to attract FDI, and the governments of these countries were pressured to adjust their policies making them more open and stable, offer more incentives to foreign investors and implement various other investment promotion strategies. Many of these governments also accelerated the liberalization of their trade

and FDI regimes and made many regulatory changes aimed at opening up their economies. The East Asian countries were clearly the most rapidly liberalizing host region, but many other developing countries, primarily in Latin America, implemented various promotion measures that include direct financial incentives and sometimes even open bidding wars for large FDI projects.[29] These measures included: • Bilateral investment and double taxation treaties; • Trade and investment agreements; •Large tax incentives; •Prohibiting the formation of national labor unions; •Free trade zones that provide special benefits to attract FDI.

In contrast to the high and growing shares of FDI in total external financing of the Asian and Latin American countries, their share in SSA remained low, and foreign aid remained the main source of external financing (Figures 2 and 6). Even the rise in 2001 was temporary and their share in the past six years was, on average, only 10 percent (Table 4).

Table 4: FDI Flows to major regions and countries: 2001-2002
(in billion US$)

Host Region	2001	2002
World	**824**	**651**
Developed Countries	589	460
Developing Countries	209	162
Africa	19	11
LAC	84	56
Asia & Pacific	107	95
China	47	53
Hong-Kong	24	14
Central and Eastern Europe	25	29

Source: UNCTAD FDI database

In most SSA countries, progress toward the creation of functioning free trade and investment areas has been slow, but several agreements, mostly sub-regional, were concluded in recent years. In 2002, FDI inflows to Africa declined $11b after a surge to

[29] In Latin America most external financing in the 1970s came in the form of syndicated bank loans, but in the 1990s FDI were the main source of external financing and they accounted for three-quarters of the net capital flow into the region.

$19b in 2001, mostly to South Africa as a consequence of cross border M&A. The region's share in global FDI inflows fell from 2.3% in 2001 to 1.7% in 2002 (Table 4 and Figure 5). U.S. companies had the largest share in total investments in the region, but these investments accounts for less than one percent of the US FDI position worldwide. US investments in South Africa were largely in manufacturing, while the rest was dominated by investment in the petroleum sector, primarily oil explorations in several oil rich countries.

Investment Policy Reviews for the African countries conducted by UNCTAD show some developments in the regulation and promotion of FDI. Standards of treatment and protection of foreign investors have become the norm even in countries without FDI laws. Privatization with the participation of foreign firms has become an important practical measure to attract foreign investors and increase their stakes in the local economy. But the UNCTAD reports also indicate that the majority of the African countries are still lagging behind most other developing countries. While FDI-specific standards are far better now and generally sound, the regulatory measures for businesses are still quite erratic and all too often discriminatory and arbitrary. Limited competitiveness in most export industries further reduces their attraction to foreign investors, and these countries also lack of adequate labor regulation and effective arrangements for industrial dispute resolutions. The 2004 report highlights the fact that the concerns that many government in SSA still have about liberalizing FDI and giving more freedom to TNCs have a great deal of similarity to the concerns that these governments have about the impact of trade liberalization (p. 104-105). On the one hand, these governments became increasingly aware of the potential impact of free trade and of

FDI on improving the allocation of their countries economic resources; on the other hand, there were concerns that the inefficiency of local markets and local institutions may hamper these effects of free trade and FDI. In particular, inefficient, rigid and often corrupt local institutions and legal system are likely to saddle the effective functioning of local markets and obstruct the efficiency of competitive free trade. The UNCTAD report recognizes that while the benefits from FDI rests on an effective exploitation of the advantages of free trade and perfect competition, there may be a case for restricting free trade and foreign investments if these conditions do not exist since attempts to exploit these advantages can then only harm rather than benefit the host economy. This, for example, can be the case if the TNCs are engaged in anticompetitive business practices, or when there is a divergence between the social and economic goals. Even where market failures make free trade and FDI harmful rather than beneficial, however, the report argues that the case for restricting FDI can be made only if the host government can design and implement effective interventions that can lead to better results for consumers.

Other arguments that are often raised in favor of some controls over the inflow of FDI include:

• *Infant domestic entrepreneurship*: Strong foreign presence may crowd out local entrepreneurship[30] -- similar to the effect of free trade on infant industries. South Korea and Taiwan are two examples of countries that in their early development restricted FDI in order to give an advantage to domestic entrepreneurship. As with free trade, however, protection is not always helping infant industries to grow and political pressures oppose

[30] This was the case in the automotive components industry in Brazil and Mexico

the removal of this protection even when the case for maintaining it no longer exists. Beyond that stage, further restrictions may impose high costs on the host economy.

• *Deepening of local technological*: The superior technologies that the TNCs bring with them often deters local investments in R&D and encourage local industries to buy ready-made technologies or skills from abroad even when these technologies are not entirely suitable to the local conditions. Moreover, the spillover (or positive externality) generated by FDI include not only technological diffusion but also human capital building. Foreign-owned enterprises provide their suppliers with technical assistance, information, training and other information to raise the quality of their products, and assistance in modernizing and upgrading their production facilities.

• *Risks of relocation*: Foreign investors may decide to relocate their plants and activities in another country or possibly back in their own home country if conditions change in either the host country or their home country.

V: Concluding Remarks

In the past decade, only a handful of developing countries gained significantly from outsourcing or managed to attract substantial foreign direct investments. The potential gains due to low wages that most other developing countries offer to foreign investors are outweighed by high transaction costs and investment risks. As a result, most developing countries were not able to compete with the advantages that China and few other emerging economies could offer to foreign investors. Indeed, throughout the 1990s and even before the financial crisis of the late 1990s, capital flows from the developed to the

developing countries fell considerably short of what theoretical models predicted on the basis of the difference in the production costs.[31]

The developing countries that were able to attract foreign investors and in-source a large volume of production accelerated their growth and significantly raised local incomes. The TNCs brought advanced technologies, improved marketing strategies of local producers, gave them access to international clients, and made large investments in local R&D and human capital through extensive training of their workers. By offering much higher wages to skilled workers, they also gave strong incentives to the local youth to acquire higher education and better skills.

In principle, outsourcing and FDI can make a significant contribution to expanding international trade and increase the gains that all countries, particularly the developing countries, receive by integrating into the global trading system. Even though these gains are positive-sum and all countries can profit, the potential for net gains for all is, however, not the principle that guides the TNCs in their trade investments. The larger gains that trade between a *sub-group* of countries can offer while excluding many other countries, and the higher profits that the TNCs can extract by targeting their investments, outsourcing their production, and restricting their supply chain to this sub-group of countries, leave the other countries largely outside that chain. As a result, although the total gains from trade still have a positive sum, the distribution of these gains may not bring about win-win outcomes that benefit all countries. The relatively more powerful actors along the supply chain, primarily the TNCs, have a strong impact on the

[31] Rodrik (2000) noted also that real interest rates were not driven so far to equality even among advanced countries with integrated financial markets, in contrast to the Lucas model; investment portfolios in the advanced industrial countries typically exhibit large amounts of "home bias" that seems to reflect risk aversion.

distribution of these gains between producers and consumers and between countries; as a result, the dismal share of producers, consumers and traders in many developing countries may reduce their incentives to engage in and support free trade. One result of these developments during the 1990s and early 2000s was a growing income gap between the least developed countries and the emerging and developed countries; another result was a growing income gap between different sub-groups of the population in the developed countries and some of the emerging economies, due to the unequal distribution of the gains from trade. These income gaps may tilt the political balance and strengthen the opposition to outsourcing and FDI, and can lead to a *lose-lose* outcome that the countries and population groups that were left out or may have lost will still find better off than the free trade outcome.

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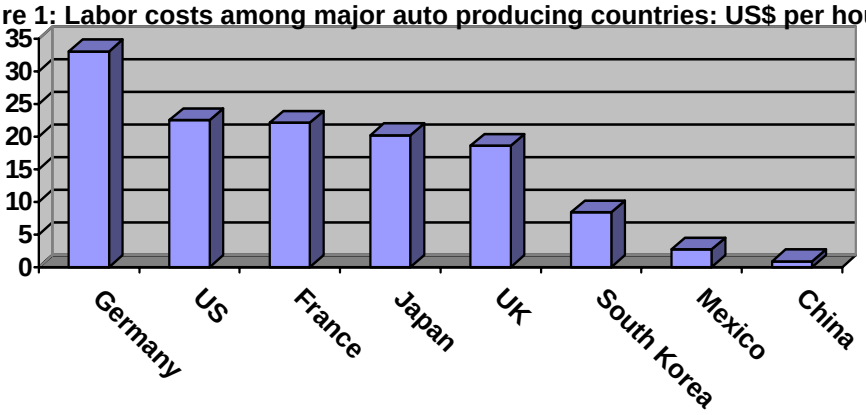
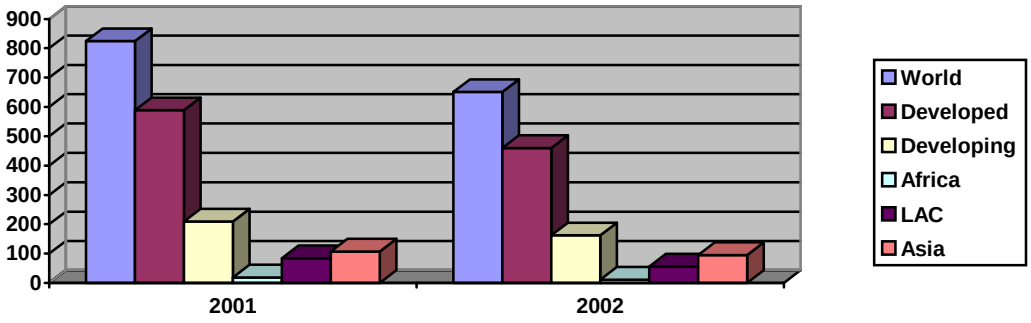
Figure 1: Labor costs among major auto producing countries: US$ per hour



Source: US Office of Trade and Economic Analysis

Figure 2: Flow of FDI to Main Regions



Source: UNCTAD FDI Database.

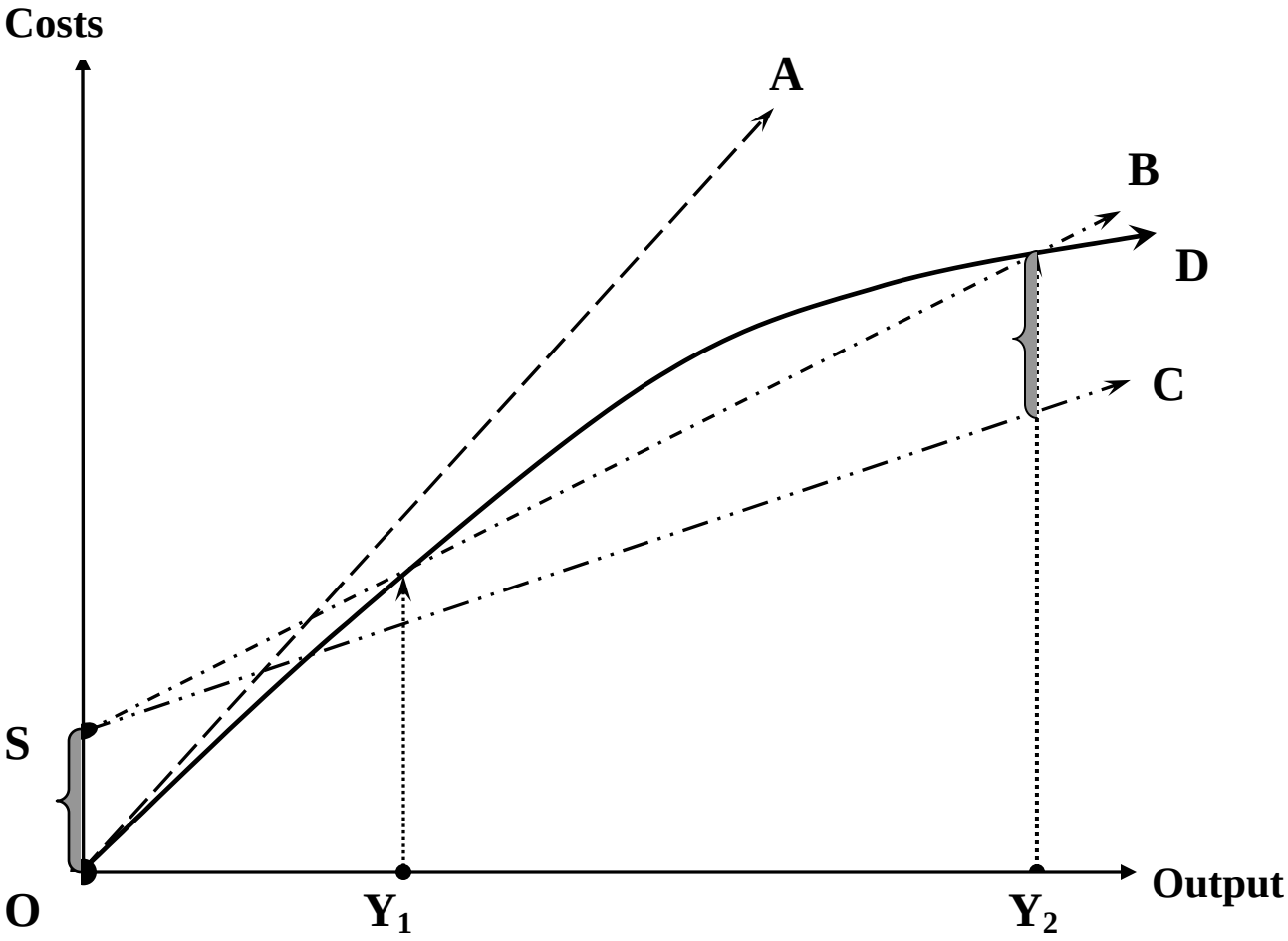


Figure 3: The firm's Decision whether and when to dis-agglomerate a Vertically Integrated Production

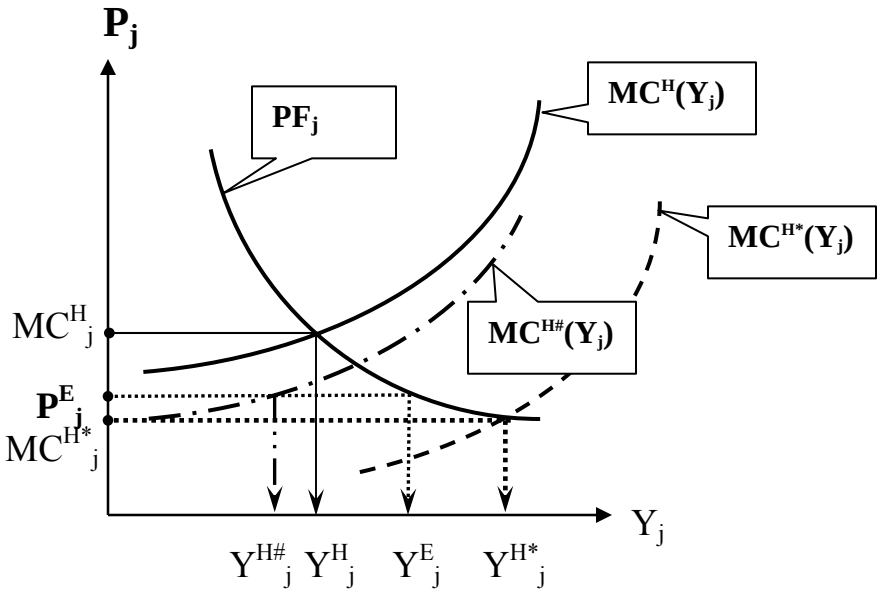
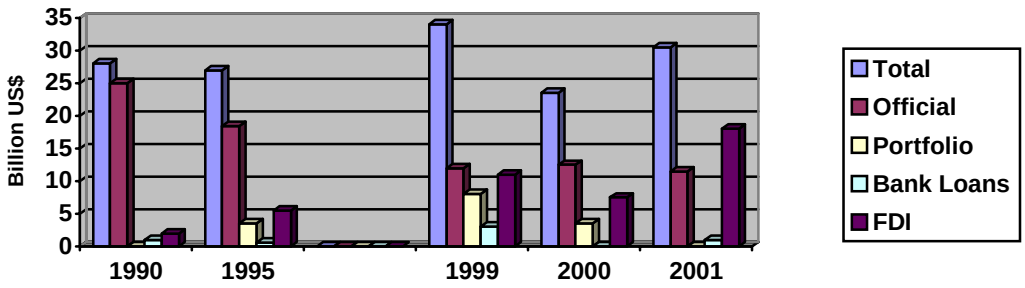


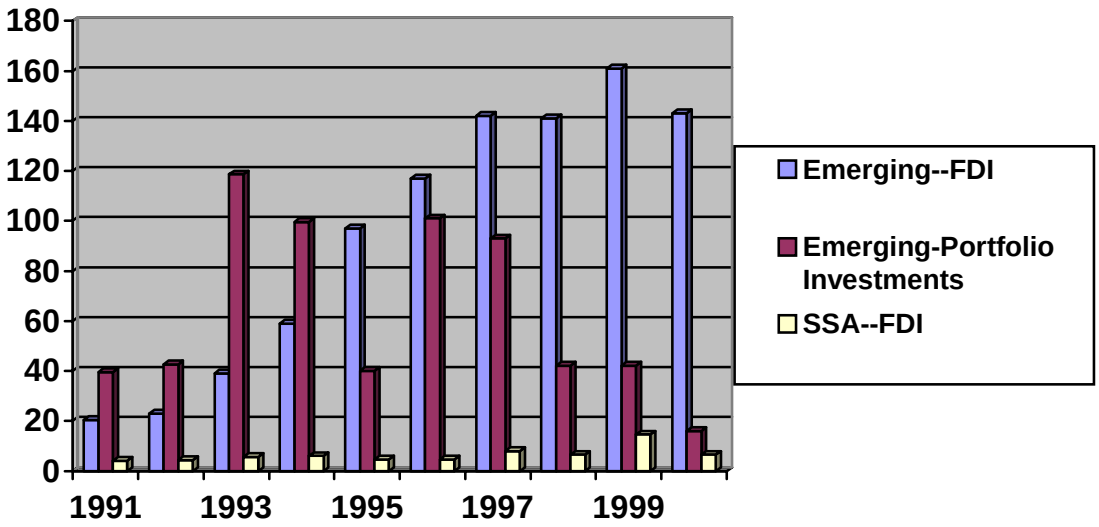
Figure 4: The firm's choice between in-house production and outsourcing

Figure 5:External Resource Flows to Africa 1990-2001



Source: UNCTAD, based on World Bank, 2003

Figure 6: Direct and Portfolio Investments in 25 Emerging Economies and in SSA: 1991-2000



Sources: J. P. Morgan and UNCTAD FDI Database