

## Chapter 3

### **Theoretical outline: determinants of FDI inflows**

#### **3.1.Overview**

This chapter reviews theoretical background prevailed behind the determinants of FDI that leads to a basis for formulation of a model related to the objectives of this study. “Conditions in foreign direct investment and MNCs have been changing so rapidly that reliable economic theory has not been able to keep pace, and an appropriate theory has not been fully developed”. (Kiyoshi Kojima, 1978). Although numerous empirical studies are available in the literature of FDI, theories that appropriately explained causes and effects of FDI etc. are not adequately available. Some theories basically introduced to explain international trade are applicable to FDI too as describe in the next sections of this chapter.

Many studies on FDI (UNCTAD, 1993; Balasubramanyam and Greenaway, 1994 etc.) have based on a few theoretical views such as industrial organization theory, and firms’ advantages and so on. The theories developed in the area of international trade have been extended to explain some aspects of foreign direct investment.

#### **3.2.Theory of comparative costs advantages**

Both trade and investment carry out according to the same principle of comparative costs. David Ricardo (1913) first introduced the theory of comparative

advantages in international trade. Ricardo analyzed labor costs of wine and cloth in England and Portugal. He assumed that Portugal can produce both goods with a smaller expenditure of labor than England.

He illustrated cost of labor for production of cloth and wine in England and Portugal as follows.

One unit of wine – produced by 80 labor units in Portugal

One unit of cloth – produced by 120 labor units in England

One unit of cloth – produced by 90 labor units in Portugal

One unit of wine – produced by 100 labor units in England

According to this illustration, Portuguese superiority in production over England is greater in wine than in cloth. Portugal has a comparative advantage in the production of wine, for her cost difference is relatively greater than in the case of cloth since  $80/120$  is less than  $90/120$ . The ratio of the costs of production of the goods in Portugal ( $80/90$ ) can be compared with the ratio of the costs of two goods in England ( $120/100$ ). The former is less than the latter. Therefore Portugal has a comparative advantage over England in wine relative to cloth. Conversely, the disadvantage of England is greater in wine than in cloth.

If we suppose that the terms of trade is established at 1 unit of wine in exchange for 1 unit of cloth. It is clearly advantages to Portugal to export wine to England and to import cloth with the terms of trade 1:1, for in domestic exchange a unit of wine commanded only 0.9 units of cloth. Similarly, for every 100 labor units, which England sends to Portugal, embodied in the export of cloth, she services 1 unit of labor, would have cost her 120 labor units to produce for herself.

According to this comparative costs theory, an international division of labor along the line of comparative costs assumes coexistence and co-prosperity of both parties, whatever difference in size, stage of development and tastes may exist between the two national economies.

**Ricardo's (1913) comparative costs advantage theory** is directly relevant to direct investment decisions. MNC's decision to invest in a country is influenced by the comparative cost advantages. If a country has comparative cost advantage for a particular industry, investors who are in a country, which has comparative disadvantage for that industry, can gain advantage by investing in the former country if the capital movements are free. Relative costs between two countries are represented by the exchange rate between the two countries.

### **3.3.Heckscher-Ohlin Theorem**

The determinants of comparative costs lie in difference in factor endowments of the two national economies and in the ways in which the two commodities are produced, either by labor intensive or by capital-intensive methods. **Heckscher-Ohlin theory (1919 and 1933)** assumes that relative demands for the products in each nation to be given; for the comparative costs mean the costs with which each production meets the effective demands assumed. The factor of production, labor and capital are not spread evenly among countries. One country may have a comparative abundance of capital and a comparative scarcity of labor. The reverse may hold in another country. Products may be characterized by the relative amounts of the several factors of production, which they utilize. For example, X goods production requires a higher ratio of labor to capital than

the production of Y goods simply because of the technological requirements of these products. X goods are considered to be labor intensive and Y goods are considered to be capital-intensive. It is further assumed that there is only one production, which combines inputs of several factors and the production function for each product is the same for both countries. Initially, the input ratio is assumed to be fixed. X goods production is always labor-intensive for every wage/rental ratio in each country.

If we assume wage/rental ratio is lower in country 1 than in country 11 and the production of X goods is more labor-intensive than that of Y goods in both countries, a country, which has abundant labor and consequently a lower wage can produce labor-intensive goods at cheaper cost compared to other country, while the reverse holds true for the second country.

In more general terms, a country has a comparative advantage in the production of a commodity, which requires relatively larger inputs of the factor that is relatively abundant and cheaper than in the other country. This is the central theme of the theory of factor proportions.

A country, which has relatively larger labor or other inputs, and has scarcity of capital may attract foreign investments from a country, which has the reverse situation. Therefore, foreign direct investment acts as a complementary factor to the trade. Abundance of inputs such as raw materials and labor in an economy may be represented by GNP. If a country, which has higher GNP may have relatively higher amount of natural resources and human resources and larger economy or larger market.

### **3.4. MacDougall-Kemp-model**

A macroeconomic analysis of the effects of international capital movement or foreign investment was initiated by **MacDougall (1960)** and subsequently elaborated by **Kemp (1964)**. According to this view, when capital moves freely between the countries of the world, marginal productivities of capital are equalized internationally. Efficiency in the use of world resources improves. The output of the world increases, augmenting welfare of industrial countries.

Assume a world composed of an investing country and a host country. Before international capital movement takes place, the marginal productivity of capital in the investing country is low than that of the host country since capital is relatively abundant in the former. The law of diminishing marginal productivity is assumed for capital. Also it is assumed that within each country, perfect competition prevails and the price of capital is determined equal to the marginal productivity of capital.

According to this model, investing country has diminishing marginal productivity of capital and the high price of capital compared with the host country. The capital flows from the former country to the latter for these reasons.

### **3.5. Dunning's eclectic analytical framework**

According to **Dunning's (1988) 'eclectic analytical framework'**, FDI decisions are influenced by ownership advantages, location advantages, and internalization advantages. Ownership advantages explain the fact that the firms acquire or create assets to give them an advantage over local firms in the host country. Locational advantages imply that a firm may choose different locations to overcome trade restrictions,

differences in fact a cost or host government policies. An Internalization advantage explains that the firm's desire to keep their foreign ownership advantages under their owner control by internalization process. In this process, the firm's decision to invest directly in a foreign country is influenced by many factors. Some of those are internal to the firm and some are external to the firm. External factors may include interaction of host country characteristics such as factor price, size of market, and availability of resources. Internal factor include the advantage attributable to the home country of the firms and individual firm-specific characteristics that differentiate them from other firms in their own countries and industries.

Following **Dunning's (1988)** view related to firms' advantages. **Balasubramanyam and Greenaway (1994)** listed out some possible advantages under the categories of ownership advantages, location advantages, internalization advantages. This listed out ownership advantages related to the size of the economy, intangible assets, and the government policies. As locational advantages, they listed some advantages related to inputs, economies of scale, government policies and environment. The internalization advantages that listed by them are related to market failure in market for final goods and inputs, monopoly power of the firms, product differentiation, and government policies.

### **3.6. Model of determinants of FDI**

The theories behind foreign direct investment decisions reviewed in the above sections of this chapter provide some guidelines to formulate a model to use for analysis of determinants of FDI in a country or a region empirically.

The theories related to comparative cost advantages were basically attempts to explain the course of the international trade. However those are also relating to the decisions of FDI. Product cycle theory suggests that FDI moves to the countries, which have low wages etc. When the concept of comparative advantages is included into a econometric model, one of the problems has to be solved is that the difficulty of measuring the comparative costs. A reliable index generally used for this purpose is the foreign exchange rate. Exchange rate can be considered as an index of the relative costs between two countries. When we consider the case of FDI inflows to Southeast Asian region from the whole world, it is suitable to choose the exchange rates of the relevant countries relative to the U.S. dollar. These exchange rates can be aggregated for the region.

The theories of macroeconomic approach emphasize that the difference of the marginal productivities of the capital between countries causes to move foreign direct investment. In the countries, which have low-cost labor and resources, large markets and dynamic economies yield higher marginal productivity of capital. Cost level may be represented by the exchange rate. GNP represents size of the market. Change of growth of GNP may indicate dynamics of the economy of a country or a region.

The theories attempted to analyze ownership, location, and internalization advantages consider various factors that may be advantages to the investing firms. Some are internal to the firm and some are external to the firm. The factors that internal to the firm are complicated and difficult to measure (UNCTAD, 1993). Some advantage factors can be included into the size of the market or economy of the host country (Balasubramanyam and Greenaway, 1994). Some advantages are included into the

cost advantages (UNCTAD, 1993). Some advantages such as government policies on investment and trade, investment incentives etc. are not easy to measure. However generally such factors are represented by the openness of the economy. The openness of the economy is indicated by the trade variable measured as the ratio of imports plus export to GNP (UNCTAD, 1993).

The fact the countries have locational advantages implies availability of a large and dynamic economy or market. Such an environment provides opportunities or incentives to both domestic and foreign investments. Therefore domestic investment can be considered as a complementary factor to FDI. The ratio of domestic investment to GNP would be a good indicator of determinants of FDI in this way.

As an additional role of the exchange rate, its volatility can be considered to represent the risk of capital investment. Although this factor is more relevant to portfolio investments than FDI, this is used in this model, as there is another reason to do so. That is, many empirical studies have revealed that the effects of exchange rate on FDI are weak although theoretically this factor is important to influence FDI. Adding the volatility of exchange rate, this problem may be solved up to some extent (UNCTAD, 1993).

Considering these facts the following regression model to analyze the determinants of FDI in Southeast Asian region can be formulated. In this model, the value of FDI inflows is used as the dependant variable, and certain factors that can be considered as the outcome of the above theoretical review are used as explanatory variables.



$$FDI_t = \alpha_1 + \alpha_2 GNP_{t-1} + \alpha_3 \Delta GNP_t + \alpha_4 I/GNP_{t-1} + \alpha_5 XR_t + \alpha_6 V(XR)_t + \alpha_7 (M+X)/GNP_{t-1} + U_t$$

---- (equation 1)

Where:  $FDI_t$  = Foreign direct investment inflows (current year)

$GNP_{t-1}$  = Gross national product (previous year)

$\Delta GNP_t$  = Difference of GNP between the previous year and the current year

$I/GNP_{t-1}$  = Domestic investment to GNP as a percentage (previous year)

$XR_t$  = Exchange rates (current year)

$V(XR)_t$  = Variation of exchange rates (current year)

$(M+X)/GNP_{t-1}$  = Rate of the sum of imports plus export to GNP (previous year).

In this model, GNP represents the size of the market or the economy. Change of GNP i.e. ( $\Delta GNP$ ) represents the growth or dynamics of the economy. Imports plus exports to GNP i.e. trade variable or openness ratio  $((M+X)/GNP)$  implies the degree of openness of the economy. Variation of the exchange rate ( $V(XR)$ ) exhibits the fluctuation of the exchange rate. 'I' denotes domestic investment i.e. capital formation.  $I/GNP$  represents the ratio of domestic investment to GNP as a percentage. XR represents the foreign exchange rate. This shows the number of units of local currencies per U.S. dollar.

As the theory suggests the expected signs of all the coefficients of independent variables except  $V(XR)$  are positive. The coefficient of  $V(XR)$  is expected to be negative.

### 3.7. Summary

Ricardo's theory of comparative advantages applies to both trade and investment. FDI moves to the country, which has comparative cost advantage from the country, which has comparative disadvantage according to this view. **Heckscher-Ohlin theorem**

(1919 and 1933) explains capital from a country that has abundant of capital to a country, which has abundant labor and resources and scarcity of capital.

Industrial organization theory explains the investing firms' advantages such as oligopolistic nature that effect FDI. Product cycle approach explains three stages of the product cycle of the firm, new phase stage, growth stage, and mature stage and how investments take place in these stages.

Macroeconomic approach of FDI attempts to describe the cause of movement of capital using marginal productivity of capital in the countries. The difference of MPC causes the movement of FDI according to this approach.

Considering these theoretical views, a precise econometric model can be formulated to find the key determinants of FDI inflows that consists FDI inflows as the dependant variable, and GNP, exchange rate, volatility of exchange rate, and openness variable as independent variables.