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8

Evolutionary Understanding of Corporate Foreign Investment Behavior: U.S. Foreign Direct Investment in Europe

JOHN HAGEDOORN AND RAJNEESH NARULA

I. INTRODUCTION

Recent theoretical developments in different fields such as economics, organization and strategic management stress the importance of organizational learning and theoretically sub-optimal conduct as key characteristics of a more evolutionary understanding of company behavior. Contrary to, for instance, economic textbook models of profit-maximizing strategies, an evolutionary understanding of firm behavior to a large extent follows the assumptions of the behavioral theory regarding the general implications of bounded rationality with firms demonstrating a 'satisficing' behavior under conditions of 'imperfect knowledge'. In particular, notions such as routinized behavior, learning and satisficing strategies oppose more orthodox economic theories that explain firm behavior in the light of maximizing strategies and rational choices that lead to an optimization of investment decision rules. In the 'older' strategic management literature, similar 'orthodox' approaches are found in somewhat outmoded models in which rational decision-making procedures combined with elaborate information gathering would lead to allocative decisions exploiting competitive advantages through calculated rationality (Levinthal and March 1993). Modern theories of strategic management often implicitly recognize the importance of bounded rationality and learning capabilities in both an analytical and a prescriptive context. Analogous concepts and

topics for an evolutionary research agenda are found in recent contributions to the understanding of the dynamics of organizational change from a modified population ecology perspective (Baum and Singh 1994). Many studies inspired by these groups of theories embrace an evolutionary understanding that, contrary to the classical Darwinian understanding of efficiency, concentrates on understanding the inefficiencies of history and the many ways in which evolutionary processes generate sub-optimal outcomes (March 1994).

So far a substantial part of modern evolutionary theory, as well as the empirical analyses inspired by these new contributions, pays attention to the implications of technological change where the 'tension' between routinized behavior and radical change is most obvious (Nelson and Winter 1982; Dosi *et al.* 1988; Cantwell 1989). Gradually other aspects of corporate behavior and organization, such as diversification strategies, are also being studied from a more evolutionary perspective (Ginsberg and Baum 1994; Teece *et al.* 1994). We understand foreign investment behavior of firms to be of a somewhat similar level of complexity regarding strategic changes as those that reflect innovation and diversification. In the present contribution we will relate the general evolutionary understanding of basic characteristics of company behavior to corporate foreign investment strategies. This approach complements some of the 'older' contributions to the theory of foreign investment (Aharoni 1966; Vernon 1971; Knickerbocker 1973) and ties in with some recent evolutionary contributions to the literature (e.g. Kogut 1988).

In the next section evolutionary understanding of basic properties of firms is explained in terms of routines, satisficing behavior and learning capabilities. This is followed by a further theoretical exploration of the literature on foreign direct investment and the implications for an evolutionary understanding of foreign investment strategies. The section on propositions and methodology provides the reader with both the leading questions for this contribution as well as a clarification of how these topics will be researched in the empirical part of the chapter. The section with major findings provides an empirical analysis of 40 years of U.S. foreign direct investment in Europe and the U.K., Germany and the 'older' European Union member states in particular. The final section discusses some of the major conclusions in terms of an evolutionary understanding of corporate foreign investment behavior.

II. ROUTINES, SATISFICING AND LEARNING

In their seminal contribution to modern evolutionary theory, Nelson and Winter (1982) introduce the concept of 'routine' to

describe the regular and more or less predictable pattern of corporate behavior. These routines refer to a wide variety of characteristics of firms, the so-called 'operating characteristics' that deal with organizational aspects of production and investment behavior. Companies are expected to follow such routines in their standard behavior as well as when they are adapting their internal strategies to their environment. Following this evolutionary line of thinking, we understand routinized behavior to imply that firms are usually better equipped to do more of the same, in particular in different or changing market environments, than to fundamentally change their strategies on one or more of their operating characteristics. Therefore, we can expect that there is some similarity between present and future behavior of companies. Routines that firms have employed in the recent past will have a rather strong tie to routines to be applied in the near future. Changes in the behavior of firms, for instance in their investment strategies, are guided by heuristics that reduce the number of alternatives through a quasi-stable commitment to a particular set of alternatives for investment project selection. These organizational routines and the large degree of interdependency between past, present, and the search for new investment opportunities places company behavior in the light of evolutionary path-dependency (Tece *et al.* 1994). This path-dependency that governs a wide range of corporate strategies and routines is not so much of a deterministic nature, but of a more complex quality as it is placed in a dialectic process of the overall business opportunities and competitive forces on one side and the search processes and satisficing behavior of the company on the other. In other words, this evolutionary path-dependency implies that the *ex ante* selection process of potential investment projects within companies, guided by existing routines and search procedures, already limits the number of 'potential' projects with competitive forces in the market, once again reducing the number of successful projects. Through experience, companies learn about the potential benefits of investment projects, limiting themselves to a number of alternatives.

To a large extent the assumption of satisficing behavior of firms in much of modern evolutionary and population ecology theory is borrowed from the behavioral theory as mainly inspired by Simon (1956, 1987). Contrary to, for instance, orthodox economic theory, the behavioral school has placed its concept of the firm as a coalition of groups within an organization aspiring, on the basis of limited information and uncertainty, a set of more or less vaguely specified and often contradictory goals (Devine *et al.*

1979). Under these assumptions rationality can no longer be perceived in the light of maximizing behavior, but as both Simon (1956, 1987) and Cyert and March (1963) have put forward, rationality is bounded and thereby just aimed at an aspiring level at a certain moment. Firms are assumed to strive to an acceptable level for a particular corporate objective, not a maximum level. If the attainment does not reach an acceptable minimum level, sequential search will be urged. Alternatives for existing routines, first as minor modifications and, in case these are unsuccessful, more 'radical' alternatives are employed until the aspired level is satisfied.

These satisficing strategies of companies are also to be understood in the context of a corporate learning process that has two major characteristics. One characteristic is its repetitive nature, the other characteristic is the local scope of experimentation (Teece *et al.* 1994). The local scope of learning implies that 'near neighborhood learning' is preferred (Levinthal and March 1993). We contend that this neighborhood learning has a temporal dimension, i.e. short-term learning is preferred to long-term learning, as well as a spatial dimension, i.e. local learning is preferred to long-distance search for learning opportunities.

The repetitive nature of firms' learning is directly related to their existing organizational routines that turn their learning experience into cumulative learning, building upon what was learned before. This usually also restricts the degree of experimentation in which companies are involved because most search for new opportunities and company experimentation is assumed to be local in scope. This particular understanding of corporate learning processes allows us to differentiate between routinized learning that involves gradual changes, which governs the majority of learning experiences of companies, and the much more unusual process of learning that implies radical changes in company routines. Routinized learning can be further characterized as 'exploitative learning' which adds to the existing knowledge and competencies of a firm without fundamentally changing the nature of its activities. Non-routinized learning, or 'exploratory learning', involves changes in company routines and experimentation with new alternatives (see for example March 1991; Dodgson 1993). As explained by Levinthal and March (1993) the satisficing strategy of firms implies that, in order to survive, firms have to find a balance between exploitative and explorative learning. Effective learning combines both forms, as exploitative learning ensures current viability, whereas explorative learning creates possibilities to ensure the future viability of firms.

III. FOREIGN INVESTMENT STRATEGIES AS SATISFICING BEHAVIOR IN AN EVOLUTIONARY CONTEXT

The particular evolutionary understanding of corporate behavior, as discussed above, is quite compatible with the literature on the evolution of foreign direct investment. The basic understanding of the evolutionary changes in the spatial distribution of foreign investment made by a gradually growing population of firms goes back to classics such as Aharoni (1966), Vernon (1966, 1971), Hirsch (1967), and Stopford and Wells (1972). A common element in these contributions is the discussion of foreign investment decisions in terms of increased experience and involvement with foreign markets and production. Davidson (1980) found that companies first enter so-called primary foreign markets that are nearby in terms of spatial distance or similarity in product-markets, human resources, production technology and similar consumer tastes or similar culture in the more general sense. Scale economies, learning benefits and reduced uncertainty initially lead to increasing investment in those countries relative to other countries. Kogut (1983) also stresses this point of increasing investment when he refers to the sequential flows of foreign direct investment through incremental investment in already established subsidiaries. Davidson (1980) demonstrates that step-by-step other countries become more attractive for foreign direct investment as companies build up more foreign experience and the uncertainty premium of so-called secondary markets gradually disappears. The understanding of the strategic aspect of this behavior was introduced by Knickerbocker (1973) who analyzed foreign direct investment in the context of risk-reducing and defensive corporate strategies in an oligopolistic game that results in a temporal and spatial concentration of foreign investment. This line of theory, linking foreign direct investment to oligopolistic competition, has been further developed by Graham (1978). The behavioral-based approach by Johanson and Wiedersheim-Paul (1975) and Johanson and Vahlne (1977) introduced the notion of 'psychic distance' of foreign market conditions and stressed the incremental character of foreign investment strategies of firms through increased learning based on a step-by-step growth of experience abroad (see also Strandskov 1986; Turnbull 1987; Welch and Luostarinen 1988). This positive impact of cumulative learning on foreign direct investment through foreign operations, beyond a threshold of experience, is also reported in Yu (1990).

Recent contributions by Dunning (1993a), Dunning and Narula (1994), Ozawa (1992) and Tolentino (1993) emphasize the general evolutionary context in which stages of economic development of

countries interact with trends in foreign direct investment leading to an investment development cycle.¹ Central to these contributions is the examination of the evolution of foreign direct investment activities in terms of both geographic and sectoral distribution affecting the economic growth and structural adjustment of the home and host countries. These studies emphasize how the characteristics of home and host country dynamically influence the competitiveness of firms and affect the process of learning with regard to innovatory activities as well as the familiarity with particular locations. As firms are increasingly becoming internationalized, sequential investment may also become more strategic asset seeking (Dunning and Narula 1996). Instead of defensive, asset exploiting, foreign direct investment to improve the profit position by searching for comparative cost advantages, strategic asset seeking investment is undertaken to improve the long-term market positioning of firms. In that context it is worth noting that advanced stages of economic development, for instance influenced by strong indigenous technological competences, can attract sophisticated foreign companies. This is referred to as the 'agglomeration effect' with a particular country or region having highly concentrated technological competences (Casson 1991). Such strategic asset seeking foreign investment is generally associated with firms engaged in technologically intensive sectors, typically from advanced industrialized countries (Dunning and Narula 1994). The competitiveness of indigenous companies creates technology spillovers that attract foreign direct investment from technologically well developed competitors. In a process of internationalization of corporate strategies and the international diversification of assets, this agglomeration effect indicates that international competition has become a complex process where advantages are not only cost-based and related to exploitative learning but also related to explorative learning about the strategic advantages of countries in particular industries. Recent examples of this strategic effect can be found in Silicon Valley and the U.S. biotechnology industry that both attract research-related foreign direct investment.

Chesnais (1995), Dunning (1993a) and Kogut (1988) combine this understanding of general evolutionary aspects of country and location advantages with the 'inter-temporal dependence' of companies in a sequence of investment decisions and strategic moves. It is this attention paid to the behavior of individual firms that creates the link with elements of evolutionary theory introduced above. This evolutionary understanding of corporate behavior complements the existing literature on the development of foreign direct investment through the attention that is paid to

satisficing strategies in the context of a changing international environment. The attention is somewhat refocused from the importance of country-specific experience, through either one-time investment or continuous investment, to the possible effect of satisficing behavior and different learning economies on sub-optimal levels of foreign direct investment. The evolutionary perspective that we suggest in this chapter indicates that as companies have no complete information about production and market opportunities abroad they follow a piecemeal investment strategy. Based on their existing routines they satisfice their corporate objectives by investing in those countries that do not necessarily have the highest theoretically possible returns but which demonstrate a certain similarity that enables them to follow as much of their existing routines as possible. Gradually companies learn about foreign opportunities as they apply and improve on their local search. However, the characteristic of their satisficing strategy—the slack due to exploitative learning by most firms building on existing routines, with only a few following more exploratory strategies—implies that foreign direct investment behavior lags behind what could be expected under conditions of profit maximizing behavior. It is important to stress that from an evolutionary perspective, economic and cultural similarities can only explain part of the initial irregularities in foreign direct investment. They can demonstrate the preference of companies for primary markets and the sequence of investment based on installed foreign capital. However, these economic and cultural similarities cannot explain the still existing lag with which foreign direct investment is dispersed over a larger group of countries once the uncertainty premium of secondary markets has faded. Based on the assumptions of an evolutionary understanding of company behavior we can clarify why firms stick to investment routines and relatively slow local learning that obstructs sudden changes and thereby causes 'sub-optimal' levels of foreign investment. In other words, from an evolutionary perspective we expect firms to gradually adapt their investment strategies with a prolonged preference for countries in which initial investments were made as they stick to their existing routines creating sequential flows of foreign direct investment. In addition to this we have to stress that the selection environment of companies and the competitive pressures that constitute this selection environment are also changing, although step-by-step and not parallel. This implies lags in matching evolutionary adjustment to changing environments, so called 'lagged co-evolution'. Evolutionary processes do improve the match between the current state of companies and their environment, although convergence will not necessarily be achieved by any particular time

(March 1994). In more concrete terms and related to the empirical context of this paper: the complex, combined processes of macro-economic developments, economic policies, and strategies of large groups of companies lead to a gradually more integrated global economy. This implies that, despite the lag in the process of internationalization of individual companies, the environment for companies is becoming more international. As both domestic and foreign markets and industries become more international, the spatial distribution of foreign investment opportunities is also changing. With companies gradually increasing their foreign investment over a larger number of countries, the population of primary and secondary markets changes as well. Over time the locus of foreign investment changes when firms adjust their organizational routines and search for investment opportunities in their gradually changing environment.

Our theoretical framework should also acknowledge the role of national institutional specifics, just as the evolutionary theory of technological development acknowledges the role of 'national systems of innovation' (Nelson 1993). For instance, the U.K. and some small European countries, such as the Low Countries and the Nordic countries, have an institutional history marked by a high degree of international orientation, whereas other European countries have an institutional history that is more inward-looking. These institutional specifics can affect the process of lagged co-evolution. Together with institutional aspects of the agglomeration effect, the incremental change of national institutions, under different national conditions of economic 'openness' and different degrees of the international orientation of companies from various countries, has a mitigating effect on the convergence of the spatial distribution of foreign direct investment.

Finally, we have to mention the importance and theoretical relevance of structural breaks in the evolution of foreign direct investment such as those caused by World War II. The restoration of a pre-war share of foreign direct investment is clearly different from a gradual evolution of *de novo* foreign direct investment. The inclusion of structural breaks in our theoretical framework indicates that we cannot assume that the previous level of foreign direct investment is a starting point for a new phase of a further development of foreign direct investment. However, the choice for companies to invest in countries with which they had experience in the past is expected to be easier than investing in completely unknown regions. The gradual restoration of pre-war foreign direct investment levels in West Germany during the 1950s is an example and recent developments regarding investment by German firms in

former East European countries that were traditionally within the German sphere of influence suggest a somewhat similar pattern in terms of a partial restoration of investment levels (Economist 1995).

IV. PROPOSITIONS AND METHODOLOGY

Our theoretical framework based on theories of the evolution of company behavior and foreign investment strategies enables us to formulate a number of propositions that will guide our empirical analysis in the next part.

1. Due to satisficing behavior, quasi-stable commitment to a limited number of investment alternatives, and a preference for exploitative learning, foreign investments of companies from a particular country will initially be concentrated in those countries of an international region that most resemble the home market, i.e. during the early stage of foreign direct investment growth, this increase is concentrated in primary foreign markets.
2. With companies gradually increasing their experience in foreign operations and routinized learning being paralleled by non-routinized, explorative learning of foreign investment opportunities, there will be a gradual diffusion of foreign investment across a wider economic and geographic space. That is, the international distribution of foreign direct investment within a particular geographic region will diffuse, leading to investment in secondary markets. However, this growth of investments in secondary markets will initially be sub-optimal relative to the increase in primary markets of the same region.
3. As companies acquire experience with foreign production, the motives for foreign investment will become more complex, moving away from asset exploiting activities, that are aimed at exploiting comparative costs of production in order to supply markets, towards strategic asset seeking foreign investment with explorative learning to play a larger role.
4. As economic and de facto market integration takes place within a given economic region, foreign investment activity moves from sub-optimal levels, in terms of market growth potentials, towards less sub-optimal levels. This will result in a narrowing of the distinction between primary and secondary markets.

In illustrating these propositions we shall focus on manufacturing foreign direct investment of U.S. companies and limit our analysis to a comparison between their activities in the U.K. and in the six countries that originally formed the EEC, with a special emphasis on Germany.² These six countries are France, Germany, Italy, the

Netherlands, Belgium and Luxembourg. We put particular emphasis on Germany since Germany and the U.K. have similar economic features, both in terms of population and GDP, and provide a more direct comparison than between the U.K. and the EC6 as a group. The EC6 countries represent the 'secondary markets' while the U.K. represents the 'primary market'. We shall focus on U.S. foreign direct investment manufacturing activities in the post-World War II era due to the severely limited data prior to 1950. In order to avoid the effects of German reunification, we shall limit our analysis until 1990.

It should be noted that, given the role of World War II as an exogenous shock, the study of U.S. foreign investment in continental Europe, and especially Germany, represents a special case of 'secondary markets' where U.S. foreign investments do not represent *de novo* investments but sequential investments. Therefore, even though U.S. firms 'relearned' about old markets, the rate of growth of foreign investment may have been enhanced in this case.

For reasons of consistency and comparability, the foreign direct investment data used throughout this chapter is based on U.S. Department of Commerce estimates as published in the Survey of Current Business. Unless otherwise specified, foreign direct investment data refers to U.S. foreign direct investment manufacturing stocks on a historical cost basis (i.e. book values) which are nominal in nature. Sales data would have been preferred but these are unavailable at the level of industrial and sectoral desegregation for the entire period in question. Sales data, being flow figures, can be re-evaluated to provide real values. However, we follow the generally accepted practice in the foreign direct investment literature (see Dunning 1993a for a review) of using stock levels which are regarded as a monotonic function of sales data.

The use of stock data on a historical cost basis is inhibited by the fact that it leads to underestimation because of different age distributions of stock. Although recently several attempts have been made to estimate U.S. foreign direct investment stock levels in 'real' terms by re-estimating them on a market or replacement cost basis, data generated by these methods are not available on the required level of desegregation for our purposes, and tend to require restrictive assumptions that introduce biases of their own (see Cantwell and Bellak 1994, for a review).

In evaluating satisficing behavior in foreign investment, some measure of profitability would have been desirable. Several authors including Krause (1968), Dunning (1969, 1993b) and Dunning and Narula (1994) have proxied profit with rate of return, which is calculated by dividing the net income (after taxes) by the average of

the stock levels at the beginning and end of that year. This has several limitations. Firstly, by using historical stock figures a bias is introduced, since the assets are not depreciated, given that different countries have different ages of U.S. foreign direct investment stock. Secondly, due to transfer pricing practices by multinational companies to minimize tax burdens, net income is not always accurate, unless adjustments are made to allow for royalties and license fee payments. While it can be useful to evaluate the changes in profitability at a single location over time, it cannot be used without great caution to compare profitability between countries. Instead, we will assume that the domestic growth rate of the country in question proxies the profit potential for companies operating in that environment. If multinational firms seek to maximize, they should, *ceteris paribus*, seek locations where the profit potential is highest. In evaluating the growth of the domestic economies of the host countries it would be preferable to use real value-added activity or gross output in manufacturing. These are also unavailable in a sufficiently long time series. We shall therefore proxy these by GDP. GDP in 1980 prices is derived from estimates in Maddison (1991), while nominal GDP is based on OECD estimates. Population and exchange rate data are derived from various issues of the IMF—International Financial Statistics. Furthermore, GDP is used as an indicator of market size, which is a primary determinant of market-seeking investment. However, GDP also provides an indirect proxy of the extent of domestic production capacity.

To circumvent data restrictions we shall use the following relative measures of foreign direct investments:

- We evaluate the share of U.S. foreign direct investment stocks in a given country to the total U.S. foreign direct investment stocks in a given year.
- We take a ratio of the growth rate of U.S. foreign direct investment stock to the growth rate of real GDP in 1980 prices. It is important to realize that foreign direct investment is a nominal number, such a ratio is primarily meant to examine the trend over time, rather than to indicate the significance of the absolute value of this ratio.
- The ratio of U.S. foreign direct investment stocks to nominal GDP provides a proxy for the significance of the activities of U.S. internationally operating companies in the domestic economy.

Another important indicator used in this paper is the so-called foreign direct investment 'imbalance coefficient'. If we take the quotient of the ratio of real GDP of any two regions to the ratio of foreign direct investment stocks in the same two locations, we are

able to calculate an estimate of the imbalance coefficient in the relative levels of foreign direct investment. A ratio of one would indicate that, for instance, U.S. investment activities in the two locations were proportional to the market potential, and a figure less than one indicates that the level of foreign direct investment is sub-optimal relative to their market sizes.

In the following we will analyze data that refer to foreign investment behavior of U.S. firms as a collective. Although the changes in foreign direct behavior are the result of investment decisions by individual firms, we can only 'measure' the results of these decisions in terms of trends in foreign direct investment for the population as a whole. Individual firm data would have been preferred but the lack of these data forces us to analyze the more generalized data that are available. However, these more general data still enable us to reconstruct historical patterns in U.S. corporate foreign direct investment behavior and illustrate our propositions. We use the term 'illustration' deliberately to indicate the exploratory nature of our contribution. The semi-quantitative nature of our study in combination with the level of aggregation of our data does not allow for a more formal testing of hypotheses. However, in a somewhat positivist line of thinking, we contend that even aggregated data can 'do the job' in this exploratory context as they demonstrate the outcome of a complex process with relatively straightforward indicators.

V. U.S. FOREIGN DIRECT INVESTMENT IN EUROPE SINCE WORLD WAR II

At the end of World War II, the U.S.A. enjoyed a technological and economic hegemony *vis-à-vis* Western Europe, and especially the EC6 and the U.K. With the partial exception of the U.K., a substantial part of the infrastructure as well as the production capacity in these countries was damaged or disorganized. This is apparent from a comparison of productivity in 1950 (as measured by GDP per man-hour at 1985 prices), which was US\$11.39 for the U.S., compared to US\$6.49 for the U.K. and US\$3.5 for Germany, while the average of the EC6 was US\$4.3 (Maddison 1991, pp. 274-275). The competitive advantages of U.S. companies were at their peak at this juncture, and given the liquidity problems of the European economies after the war and the consequent strength of the U.S. dollar, U.S. firms were, on the whole, increasingly eager to exploit their competitive advantages through foreign direct investment.

Although U.S. firms had been engaged in international production prior to the war, the significance of their European operations

declined considerably relative to other regions. U.S. production in Europe was at least as badly damaged by the war as European domestic production. The share of U.S. foreign direct investment manufacturing stocks in Western Europe as a percentage of total U.S. manufacturing foreign direct investment worldwide fell from 35.7% in 1936 to 24.3% in 1950 (U.S. Department of Commerce 1953).³ This suggests that, if we base our estimates on the historical demand for the output of U.S. affiliates, there was considerable opportunity for the expansion of U.S. foreign direct investment.

The U.K. has historically been the preferred destination for U.S. foreign direct investment in Western Europe, and the single most important destination outside North America. Even as early as 1929, the U.K. was host to 6.44% of U.S. foreign direct investment stocks worldwide, and 35.9% of foreign direct investment stocks in Europe, compared with Germany, which was host to less than half that amount. By 1950, there had been a recovery of U.S. foreign direct investment stock levels: total U.S. foreign direct investment in the U.K. as a percentage of the worldwide foreign direct investment stock of U.S. companies was 7.1%, and as a percentage of U.S. foreign direct investment in Europe the U.K. took 49.2% of the total. On the other hand, U.S. foreign direct investment in Germany had fallen in relative terms, from about half that invested in the U.K. in 1929, to a quarter in 1950. The situation was similar for all the other countries of what later became the EC6. Although these figures include foreign direct investment in all sectors,⁴ they are nonetheless indicative that in 1950 the significance of U.S. manufacturing foreign direct investment in the U.K., was at least as great as it had been prior to the war, if not greater. They also indicate that U.S. foreign direct investment in the EC6 countries had not recovered to the same extent, and had even declined relative to their pre-war levels.

However, it is important to realize that the opportunities for growth of U.S. foreign direct investment were considerably greater in the EC6 than in the U.K., where the significance of U.S. companies in the domestic economy was much greater. One of the measures of the significance of U.S. investment to the domestic economy is the ratio of foreign direct investment stocks to GDP in current prices. The ratio of the U.S. foreign direct investment stocks in manufacturing to GDP of the host country (see Figure 8.1) were 1.5%, 0.5% and 0.4% for the U.K., Germany and the EC6, respectively, in 1950.⁵ Although the GDP of the U.K. as well as its GDP per capita was greater than those of the individual EC6 countries, this difference is not sufficient to explain the difference in the significance of U.S.

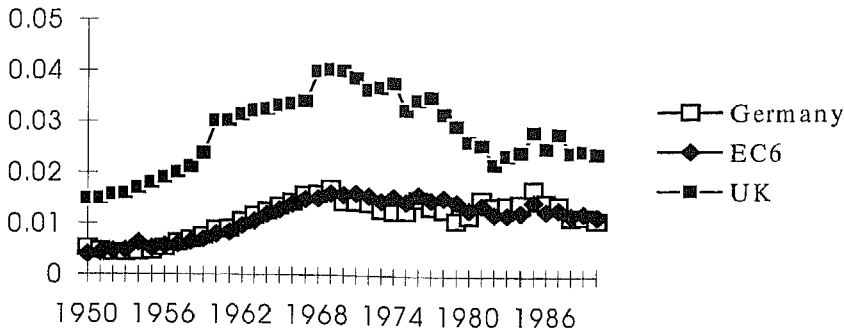


FIGURE 8.1 *Ratio of FDI Stock to Nominal GDP, 1950-90*

foreign direct investment activities to the host economies, especially so in the case of Germany. Apart from the fact that U.S. foreign direct investment in the other countries was starting from a lower base, there are several other reasons why, under conditions of maximizing investment behavior, U.S. foreign direct investment should have been at a higher level than it actually was in 1950:

- The opportunities for growth were higher in the EC6 relative to the U.K. Firstly, the extent of reconstruction was much lower in the U.K. Secondly, U.S. multinational companies had maintained their operations in the U.K. during the war, while those in other countries had been sequestered or destroyed. This holds especially for Germany and France, where U.S. companies had a significant presence prior to the war (U.S. Department of Commerce 1953, p. 7). The 'window of opportunity' appears to have been most promising for Germany, which had the highest potential for post-war growth given its technological competence before the war,⁶ and which also offered many opportunities created by the Marshall Plan. Although the argument has been made (e.g., Dunning 1988b, 1993b; Bostock and Jones 1994b) that higher level of investment in the U.K. may have partly been to supply continental Europe from a U.K. base, this does not take into account the demand for 'non-tradable' and perishable goods such as metals and food products, which could not efficiently have been supplied from the U.K.
- The level of competition faced by U.S. companies in almost all European economies after the war was lower than prior to the war due to the destruction of the plant capacity of their domestic competitors and the shortage of capital. Thus, U.S. companies faced a more competitive environment in the U.K. than in the EC6 countries.

The Pre-EEC Years 1950-1957

The higher potential for growth suggested in the previous section was borne out by the higher growth rate of the EC6 economies during the period 1950-57, when real GDP (1980 prices) grew at an annual average rate of 6.6% in the EC6, 9.3% in Germany and 3.2% in the U.K. The growth rate of U.S. foreign direct investment in these same three locations was 14.8%, 16.3% and 12.5%, respectively. While the growth rates of U.S. foreign direct investment were much higher than those of real GDP, it should be noted that foreign direct investment is measured in current terms. Furthermore, the differences in growth rates between locations provide some evidence of the sub-optimal level of U.S. foreign direct investment. The differential between the GDP growth of Germany and the U.K. was almost 6%, while the differential in foreign direct investment growth was less than 4%. As Table 8.1 demonstrates, foreign direct investment grew at 1.7 and 2.2 times the rate of real GDP in Germany and the EC6, respectively, while in the U.K., foreign direct investment grew at an average of 4.2 times that of real GDP between 1950 and 1957. The ratio of foreign direct investment to GDP in Germany and the EC6 increased marginally (see Figure 8.1) from

TABLE 8.1 *FDI and Real GDP Growth Rates for Selected Periods, 1950-1990*

	Annual average US mfg FDI growth rates			Annual average real GDP growth rates				Ratio of FDI to GDP		
	EC6	FRG	UK	EC6	FRG	UK	USA	EC6	FRG	UK
<i>1950-57</i>	14.8	16.2	13.5	6.6	9.3	3.2	4.3	2.2	1.7	4.2
<i>1957-72</i>	17.6	17.8	11.1	5.0	4.9	2.9	3.5	3.5	3.6	3.8
<i>1957-62</i>	19.7	23.6	15.0	5.5	5.8	2.7	2.8	3.6	4.1	5.6
<i>1962-67</i>	19.4	17.4	8.4	4.8	3.7	2.8	4.8	4.0	4.7	3.0
<i>1967-72</i>	14.1	13.1	8.4	4.7	4.2	2.7	2.9	3.0	3.1	3.1
<i>1972-90</i>	10.4	9.6	8.5	2.6	2.3	2.3	3.2	4.0	4.2	3.7
<i>1972-77</i>	13.8	14.8	8.6	3.2	2.7	2.2	2.9	4.3	5.5	3.9
<i>1977-82</i>	5.2	5.7	6.6	2.3	1.8	1.2	1.9	2.3	3.2	5.5
<i>1982-90</i>	8.3	5.9	7.2	2.2	2.2	3.1	3.8	3.8	2.7	2.3

Notes: FDI growth for 1950-57 are 1951-57.

Sources: FDI data derived from Survey of Current Business, various issues, GDP data based on Maddison (1991), and updated for 1990 from IMF data.

0.4% and 0.53% in 1950, to 0.63% and 0.61% in 1957, respectively, while in the U.K. it increased from 1.5% to 2.01% in the same years.

More significantly, however, the share of U.S. manufacturing foreign direct investment in the U.K. as a percentage of total worldwide foreign direct investment increased from 14.1% in 1950 to 15.5% in 1957. In the case of Germany the corresponding figures were 3.21% and 4.3%, while those for the EC6 as a group were 8.3% and 11.2%. The fact that the share of the EC6 excluding Germany increased by as large a share as that of the U.K. and Germany together indicates that Germany, despite its high growth rate and market size was not the preferred destination of U.S. foreign direct investment among the EC6. The fastest growth of manufacturing foreign direct investment in the EC6 countries was in Italy and Belgium (Dunning 1969).

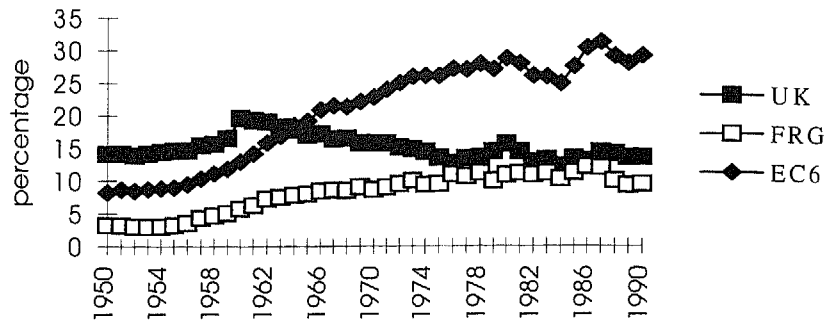
The data in Table 8.2 provide further confirmation of this. The imbalance coefficient in the case of EC6 relative to the U.K. decreased from 0.38 in 1950 to 0.27, suggesting that foreign direct investment in the EC6 not only was not at equilibrium level, but had actually declined relative to its market size. A similar trend is observed for Germany relative to the U.K. However, the imbalance coefficient between the 'EC5' countries (i.e., EC6 excluding Germany) and Germany increased from 0.67 to 0.74. The high (and increasing) level of this coefficient relative to the other two not only indicates that the 'EC5' and Germany were closer to an equilibrium level, but confirms the observation that within the EC6, U.S. firms had a preference for the other countries apart from Germany.

This suggests that the investment strategy of the U.S. companies were sub-optimal in terms of the potential market opportunities. Why then did U.S. companies not engage in more foreign direct investment in the EC6, and especially Germany, instead of the U.K.

TABLE 8.2 *Imbalance Coefficient, Selected Years*

	(1)	(2)	(2)÷(1)	(3)	(4)	(4)÷(3)	(5)	(6)	(6)÷(5)
	Real GDP EC6 ÷ Real GDP UK	US FDI EC6 ÷ US FDI UK	imbalance coefficient	Real GDP FRG ÷ Real GDP UK	US FDI FRG ÷ US FDI UK	imbalance coefficient	Real GDP EC5 ÷ Real GDP FRG	US FDI EC5 ÷ US FDI FRG	imbalance coefficient
1950	1.95	0.58	0.30	0.58	0.23	0.40	2.36	1.57	0.67
1957	2.47	0.67	0.27	0.85	0.28	0.33	1.88	1.39	0.74
1965	2.89	1.13	0.39	1.02	0.47	0.46	1.85	1.39	0.75
1972	3.32	1.65	0.50	1.12	0.62	0.55	1.96	1.63	0.83
1982	3.73	2.03	0.54	1.18	0.85	0.72	2.16	1.39	0.64
1990	3.51	2.12	0.60	1.11	0.7	0.63	2.15	2.05	0.95

Source: as for Table 8.1.

FIGURE 8.2 *Share of U.S. Manufacturing Worldwide, 1950-90*

given the opportunities it represented? The literature on foreign direct investment (see Dunning 1993a for a review) suggests that the U.K. had market conditions with which U.S. firms were familiar—these include language and business practices—as well as the fact that the GDP per capita of the U.K. was more similar to that of the U.S. than that of Germany. Given the finite capital available for foreign expansion and the correspondingly high costs of establishing plant capacity in the EC6 relative to the U.K., U.S. companies preferred to exploit markets with which the net start-up costs were lower, rather than where the opportunity for growth was highest. In other words, the opportunities for higher growth in the EC6 were not exploited, with U.S. companies preferring to invest in their primary market (the U.K.) with which they had prior experience rather than exploit their secondary markets where growth and profit could be maximized.

The 1957-1972 Period

By the second half of the 1950s, U.S. foreign direct investment in secondary markets, such as Germany and the other EC6 countries, began to increase significantly, both in terms of the share of U.S. worldwide manufacturing foreign direct investment, as well as in terms of the share in GDP of the host economies (Figures 8.1 and 8.2). Several factors played a role in this changing importance of secondary markets.

Firstly, the economies of the EC6 and the U.S., as measured by real GDP per capita of the host countries relative to that of the U.S., as well as in absolute terms, began to converge (see Figure 8.3). In other words, economic conditions were becoming more similar between the EC6 (especially Germany) and the U.K. Furthermore, the level of productivity of these countries, and the quality of the

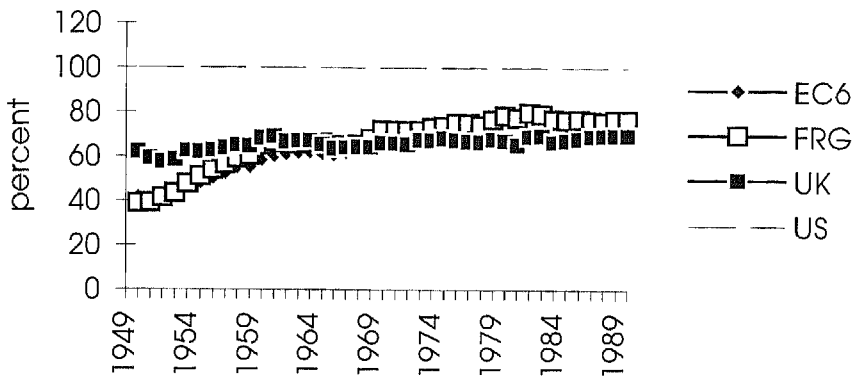


FIGURE 8.3 Trends in Relative GDP per capita, 1980 Prices, 1950-90 (U.S.A. = 100)

infrastructure were also becoming increasingly similar. In fact, the situation was much better in Germany relative to the U.K. in terms of capital stock: the average age of capital stock in 1960 was 19.4 years in Germany compared with 24.8 in the U.K. By 1970, these figures were 14.4 and 19.3 (Wolff 1994). More important, however, U.S. companies were becoming increasingly familiar with the business conditions in these countries, and were beginning to exploit the EC6 markets, and their continuing high growth rates, which continued to outperform that of the U.K.

Secondly, the setting up of the Common Market by the EC6 acted as an additional incentive to U.S. companies to establish or expand their operations there. This had serious, albeit delayed, consequences for U.S. investment in the U.K., where the share of investment started to decline in the early 1960s, and continued to do so during the rest of this period. The fact that U.S. companies relocated some of their foreign direct investment activities to the EC6 only several years after the establishment of the Common Market may in part be because they had expected the U.K. to join the EEC (Bostock and Jones 1994a). Furthermore, the U.K. growth rate of real GDP stayed relatively steady at just under 3%, while that of the EC6 and Germany averaged almost 5% between 1957 and 1972. This may also explain why U.S. manufacturing foreign direct investment growth rate after 1962 in the U.K. declined to almost half of its level between 1957 and 1962. It is interesting to observe that the growth rate of foreign direct investment in the EC6 remained at a higher level than in Germany from 1962 to 1972, indicating that U.S. companies were to some extent treating the other EC6 markets

as substitutes for investment in Germany (Table 8.1). However, their slower GDP growth relative to that of Germany resulted in similar foreign direct investment to GDP ratio (Figure 8.1).

Towards the end of this period, U.S. foreign direct investment growth rates in the EC6 and Germany declined. This is probably a result of two factors:

- The imminent entry of the U.K. into the Common Market may have slowed down the establishment of new capital flows towards the EC6, since membership of the Common Market would have extended the privileged access to the markets of the EC6 for U.S. companies from their U.K. plants.
- The high growth rates of the economies of the EC6 were symptomatic of the recovery of the domestic competitors of U.S. companies in these countries. The average annual rate of total factor productivity between 1960 and 1970 in Germany, France and Italy was 2.58, 3.4 and 3.93, while that of the U.S. and U.K. was 1.49 and 1.65 (Wolff 1994). As such, the window of opportunity for U.S. companies was closing, as European competitors began to catch up technologically (OECD 1992).

By 1972, the high growth rates of the EC6 economies, which were partly a result of the Common Market, meant that the ratio of the real GDP of the EC6 against the U.K. was 3.32, up from 2.47 in 1957 (Table 8.2). The ratio of U.S. foreign direct investment comparing these two locations had increased from 0.67 in 1957 to 1.65 in 1972. The imbalance coefficient increased from 0.27 to 0.5 (Table 8.2), indicating that U.S. foreign direct investment in the EC6 was now closer to equilibrium level relative to its market size. As such, it would seem that the reluctance of U.S. companies to invest in the EC6 had been gradually overcome, as they acquired more experience in operating in the EC6, and they began to learn more about the market potential of these countries. This increased participation was also due in part to the growth of the EC economies relative to the U.S., and the increasingly homogeneous market conditions amongst the EC6 countries as well as compared to the U.S. As Figure 8.3 shows, by 1972 the GDP per capita of Germany and the EC6 was closer to that of the U.S. than that of the U.K. relative to the U.S.

The slowing of U.S. foreign direct investment growth towards the end of this period and the increased level of participation of U.S. companies are by no means contradictory. On the one hand, the increasing competitiveness of EC6 firms may have driven out the less competitive U.S. firms, or discouraged existing U.S. affiliates from increasing their investments. On the other hand, highly competitive U.S. firms may have strengthened their presence to

exploit the economies of agglomeration that derive from the presence of clusters of highly competitive domestic firms. This is in accordance with the gradual and evolutionary process of internationalization of firms as they move from engaging in asset-exploiting, market seeking investments to efficiency seeking internationally integrated foreign direct investment whereby firms engage in both asset-seeking (defensive) and asset-exploiting activities. The above suggests that during this period, it is probably the first effect that was predominant.

The 1972–1982 Period

The U.K. entered the Common Market in 1973, but despite this there was no subsequent increase in the growth rate of U.S. foreign direct investment in the U.K. Throughout this period, U.S. manufacturing foreign direct investment increased at an annual average rate of 8.5%, and this was significantly less than investment growth rate into the EC6 of 9.5% (Table 8.1). Nor indeed, was there any discernible effect on the growth rate of its domestic economy *vis-à-vis* the EC6⁷ as the U.K. was growing at a slower rate than the EC6 or Germany until the early 1980s.

This slowdown was, *inter alia*, due to exogenous changes in the world economy during this period, the two most significant were the devaluation of the dollar and introduction of the floating exchange rate regime, and the oil crisis. These had a more adverse effect on the domestic growth rate of the U.K. than it did on the EC6 countries. As Table 8.2 shows, GDP growth rates declined for Germany, the EC6 and the U.K. However, the U.K.'s growth rate averaged 1.7% during this period, a full percentage point less than the EC6. It is interesting to note that both the GDP growth rate and foreign direct investment growth rate of Germany were higher than the EC6 as a whole, indicating a preference of U.S. companies to invest in Germany rather than the other members of the EC6, with foreign direct investment growing at over 4.3 times the rate of real GDP growth during this period, compared with 3.3 times in the case of the EC6 as a whole, and that U.S. multinational firms were now treating Germany as a primary market.

The share of U.S. foreign direct investment in manufacturing in the U.K. declined from 14.9% in 1973 but subsequently reached an 'equilibrium' level, while that of Germany rose for a while, before leveling out (Figure 8.2). Furthermore, despite the low levels of GDP growth, the ratio of foreign direct investment to GDP in the U.K. declined throughout this period, falling from 3.7% in 1973 to 2.2 % in 1982, while that of Germany and the EC6 remained at

about the same level. This clearly suggests that from the point of view of U.S. companies, the U.K. had lost its preferential significance despite its entry into the EEC.

Nonetheless, the imbalance of investment between the U.K. and the EC6 did not substantially improve despite the high growth rates of foreign direct investment. From Table 8.2 we see that the imbalance coefficient increased marginally from 0.5 to 0.54 over this period. However, the imbalance coefficient between Germany and the U.K. did increase significantly from 0.55 to 0.72. This indicates that although U.S. companies had begun to invest more extensively in Germany, they also now preferred to invest in Germany rather than the other EC6 countries, implying that the attractions of European integration were not that great, despite the fact that the GDP growth rates of these countries were individually greater than that of the U.K. In fact, the imbalance coefficient between Germany and the other EC6 countries declined from 0.75 to 0.64 between 1972 and 1982. The implication of these facts is that Germany was increasingly regarded as a primary market, and that the U.S. companies now preferred the U.K. over the other EC6 countries now that the U.K. was a part of the EEC. Investment in the U.K. and Germany was to some extent a substitute for investing in the other EC6 countries.

Therefore, while U.S. foreign direct investment in the U.K. may not have grown immediately after its entrance into the EEC, it eventually led to some growth in the second half of this period. Between 1977 and 1982, for instance, U.S. foreign direct investment grew faster in the U.K. than in the EC6 or Germany (Table 8.1), despite the U.K. GDP growth rate being less than that of the EC6 and Germany during the same period. Furthermore, there are indications that the declining competitiveness of the U.K. relative to the EC6 countries, and the concurrent increasing competitiveness of these countries *vis-à-vis* the U.S. may have resulted in the increase in U.S. foreign direct investment activity in the U.K. during the second half of this period. Indeed, GDP per capita of the U.K. continued to diverge away from that of the U.S. as well as the EC6 and Germany (Figure 8.3). U.S. foreign direct investment in the EC6 may have grown much more slowly than expected because of two factors. First, the entry of the U.K. into the EEC made existing U.S. production facilities in the U.K. more viable than the establishment of new facilities in the other EC6 countries apart from Germany. Second, as U.S. multinational firms moved towards increasingly globalized (or regionalized) production, the role of the U.K. as an international business center from which to engage in internationally integrated investment activity continued to be important. Such activities include defensive and strategic

asset-seeking investments. Furthermore, from an industrial or technological perspective, there were also economies of agglomeration given the U.K.'s leading position in Europe as a center of excellence in sectors such as food products and pharmaceuticals. These economies of agglomeration due to centers of excellence also applies to Germany, but there was little sectoral overlap between these two countries.

The 1982–1990 Period

The most recent period of U.S. foreign direct investment in Europe analyzed in this paper demonstrates that the significance of U.S. foreign direct investment to the U.K. economy, as measured by the ratio of foreign direct investment stocks to GDP, halted its decline during this period, and stabilized at about 2.5%. Despite the high growth rates of U.S. foreign direct investment activity, as Figure 8.1 shows, the ratio of foreign direct investment to GDP in Germany as well as in the EC6 as a whole also stabilized. This suggests that the economies of the EC6 and the U.K. were growing at about the same rate as that of U.S. firms. Indeed, the foreign direct investment growth rate in the U.K. was 7.2% between 1982 and 1990, greater than in Germany (5.9%) but lower than in the EC6 as a whole (8.3%) (see Table 8.1). Some of this growth may have been due to the higher rate of U.K. GDP growth (3.1%) relative to the EC6 (2.2%).

Despite the high growth of U.S. foreign direct investment activities in the U.K., the fact that the ratio of foreign direct investment to GDP remained at the same level indicates that the U.K.'s competitive position may have experienced some recovery. Total factor productivity growth in the U.K. was 0.92% between 1973 and 1989, the same level as in France, but higher than in Germany (0.88%) or the U.S. (0.32%) (Wolff 1994).

The share of U.S. manufacturing foreign direct investment in both the U.K. and Germany stabilized and seemed to fluctuate around an equilibrium level of 13.4% and 8.7%, respectively.⁸ The share of the EC6 as a group began to rise significantly, from 26.1% in 1982 to 29.1% in 1990, while the share of Germany rose from 8.9% to 11.1% in the same years, indicating that much of the increase in U.S. production activities occurred in the other EC6 countries (Figure 8.2).

Also, the imbalance coefficient between the EC6 and U.K. rose from 0.54 to 0.60, while the coefficient between Germany and the U.K. fell during this period from 0.72 to 0.63. This helps support our earlier contention that U.S. firms were seeking alternative locations to Germany. In fact the imbalance coefficient between Germany and the

other EC6 countries reached 0.95 in 1990, indicating that the EC6 countries were increasingly regarded as substitutes for each other.

The above shows that the process of integration had really begun to have some effect on U.S. multinational firms in Europe. Apparently they were no longer demonstrating a preference for engaging in production in large markets such as Germany or the U.K., with which they had most experience, but they were expanding the locus of their operations to other countries. U.S. companies had begun to diversify their production activities to take advantage of the single market. The distinction between primary and secondary markets was beginning to blur. The fact that during much of this period, U.S. real GDP growth outpaced that of the EC6 and the U.K., which did not lead to a decline in U.S. foreign direct investment growth in these countries, indicates that, in that respect, U.S. companies were not seeking to maximize profits.

VI. CONCLUSION

Before drawing some conclusions, it is necessary to note two limitations to this study. First, our analysis uses aggregated data across industrial sectors which conceals a number of aspects of the evolution of U.S.-owned production activities. Apart from the obvious lack of information on individual firms, the aggregated data also obscures some of the changes in investment patterns and the extent to which investment may be due to the changing comparative advantages of EC countries *vis-à-vis* the U.S., as well as amongst each other. As the EC6 and U.K. have gradually moved from being labor-intensive towards being capital-intensive,⁹ the nature of U.S. production activities within these countries has probably also changed. In other words, we can expect that as these countries have undergone structural adjustment, there has been a concurrent structural adjustment of multinational activities. Production activities that were situated in these countries that required high content of labor have gradually been shifted to countries with the appropriate comparative advantage, either amongst these countries, or to other non-EC countries. The expansion of the EC to include lower-income (and more labor intensive) countries such as Spain and Portugal has undoubtedly hastened this redistribution.

Second, this chapter is not meant as an encompassing analysis of foreign direct investment considering all possible effects as for instance we abstract from changes in the U.S. economy and the role of government intervention. Changes in the U.S. economy and competitiveness relative to those of the host economies, such as exchange rates as well as other macroeconomic factors have no doubt

played some role in affecting the extent and pattern of foreign direct investment. Also, non tariff barriers and government restrictions on the participation of foreign firms may explain some of the investment activity in certain sectors and in particular countries.

Keeping in mind these limitations in our analysis, as it can only reveal some general trends and patterns, we are still able to demonstrate the overall evolutionary pattern of corporate foreign direct investment behavior. The previous sections do illustrate some particular traits of an evolutionary pattern of foreign direct investment behavior as explained by our theoretical framework. As 'predicted' by the first proposition, our analysis of foreign direct investment by U.S. companies both before and during the first decade after World War II shows that a remarkably large share of foreign investment in Europe was concentrated in the U.K. A clear pattern of evolutionary path-dependency is found in what appears to be a more or less routinized and stable commitment to investment projects in the U.K. This preference for the U.K. as a primary market due to investment strategies that can be characterized as satisficing behavior must have led companies to exploit existing and familiar opportunities. Despite the many opportunities in other European countries, U.S. foreign direct investment outside the U.K. remained at sub-optimal levels for some decades after the war.

These sub-optimal levels of foreign direct investment do not imply that U.S. firms did not gradually learn more about the investment opportunities in Europe outside the U.K. As mentioned in the second proposition, it was expected that gradually U.S. firms would explore possibilities in secondary markets through non-routinized investment behavior that paralleled some of their existing investment routines. These new investment projects should result in a gradual diffusion of foreign direct investment across Europe. However, the existing preference for the U.K. would still lead to sub-optimal levels of investment in the light of the growth potential of these secondary markets. The late 1950s and early 1960s show this expected pattern of increasing, albeit sub-optimal, U.S. foreign direct investment in the other European countries.

As for our third proposition, while our aggregated data only provide some indirect evidence, there seems to have been a shift in the internationalization strategy of U.S. companies. Their investment strategy has evolved from being motivated primarily by comparative costs of production, towards more complex motivations that increasingly reflect a strategic and/or defensive intent with increased explorative learning. These reflect both the increasing globalization due to de facto and de jure economic

integration, as well as the increasing international experience of these firms and the growing competitiveness of EC firms. In particular during the 1980s U.S. companies began to diversify their production activities to take advantage of the single market, as well as developing an internationally integrated foreign direct investment strategy towards global (or regional) rationalization by spatially distributing their activities to exploit both the economies of agglomeration and those of scale and scope, due to the various national systems of innovation.

Our fourth proposition expressed the idea of the expected learning economies through which U.S. foreign direct investment in Europe would gradually narrow the gap between their primary and secondary markets. This process has to be understood in the context of so-called lagged co-evolution in which gradual changes in the environment of companies are both affecting and being affected by the investment strategies of groups of individual firms. At the end of the 1960s, with the EEC being well established, U.S. foreign direct investment in the EEC had clearly become less sub-optimal if compared to the growth potential of these economies. During the 1970s this development not only led to a narrowing of the gap between primary and secondary markets, to some extent this evolution of U.S. foreign direct investment indicated that Germany had become the primary market for U.S. investors instead of the U.K. However, from the perspective of the direction of U.S. foreign direct investment the continuing process of economic integration in Europe further assimilated the markets of countries that established the EC. At the end of the 1980s U.S. foreign direct investment had no particular preference for either the U.K. or Germany and the distinction between primary and secondary markets for the U.K. and within the EC6 had largely disappeared. It should be noted that while the process of globalization of production and the increasing convergence of the economies of the developed economies has led to a similarity in country-specific characteristics, there continued to be considerable differences in the national systems of innovation. Furthermore, the national institutions and the level of competitiveness of countries change only incrementally over relatively long cycles (Cantwell 1989; Hagedoorn 1995; Narula 1996). It is for these reasons that we believe that complete convergence in foreign direct investment patterns is unlikely to ever happen. In a profit satisficing scenario where decisions are strategic as well as cost based, the complex and changing motivations of foreign direct investment will lead to a continuously shifting extent of foreign direct investment.¹⁰

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NOTES

1. The analysis of general economic conditions and the broad evolutionary changes in them reminds us of Schumpeter's (1942) classical evolutionary theory of the effect of long waves on economic development.
2. It is to be noted that all data for Germany explicitly focuses on the former West Germany.
3. Although U.S. manufacturing foreign direct investment stocks in Western Europe actually increased in value from US\$611.4 million to US\$878 million between 1936 and 1943 (U.S. Dept of Commerce, 1953, p. 49), this is accounted for in great part due to the movement of refugees, primarily from Germany, who subsequently became citizens of the U.S. However, by the end of the war, much of these refugee holdings had been liquidated or written off (U.S. Department of Commerce, 1959, p. 13).

4. Foreign direct investment manufacturing stock data on a comparable basis prior to 1950 is unavailable.
5. These figures are calculated on the basis of current prices. It is important to realize that foreign direct investment is a nominal number, and although it is possible to compare growth rates of foreign direct investment with those of real GDP, the use of such a ratio is primarily as a means to examine the trend over time. On the other hand, it is not possible to compare real GDP in 1980 prices with nominal foreign direct investment figure, and we must necessarily do so with nominal GDP.
6. For instance, of the 146 major innovations between 1915 and 1939, 13% originated in Germany, the same percentage as that of the U.K., and second only to the U.S. In terms of U.S. patents, Germany recorded almost twice as many U.S. patents as the U.K. in 1939, and four times that of France in 1939 (Dunning 1988b, pp 90-91).
7. Growth rates of both GDP and foreign direct investment both declined considerable in the early 1970s due to the effect of the introduction of the floating exchange rate system as well as the oil shock. However, this affected all countries within Europe to more or less the same extent, and since we are examining relative growth rates it does not influence our argument.
8. These are averages for 1982-1990, the standard deviation for the U.K. was 0.65% and for Germany it was 1%.
9. For instance, between 1950 and 1979 the comparative level of capital labor ratio in Germany and the U.K. increased from 46 for both to 105 and 64, respectively, with 100 being equivalent to the U.S. (Abramovitz and David 1994).
10. This is amply illustrated in the various country studies in Dunning and Narula (1996).