Foreign Direct Investment in Competing Host Countries

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Thomas Andersson

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To my Parents

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I have had many sources of inspiration for this work. During my research, I found that the subject attracted considerable interest in scattered corners of the world. In spite of a voluminous literature in the field, observers in diverse locations and positions shared a view, perhaps for different reasons, that some crucial links and relationships had so far been bypassed. My ambition was to build on the knowledge and insights accumulated in economics while trying to explore some new avenues of approach.

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Needless to say, any remaining mistakes or omissions are entirely mine.

Stockholm, March 1989

Thomas Andersson

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1 INTRODUCTION

A considerable proportion of the flows of goods and factors between countries takes place within multinational enterprises (MNEs).[1] As an operative definition we associate this with firms which own and control income generating assets in more than one country'.[2] A subsidiary owned an controlled abroad is established through direct investment. According to conventional theory, discussed in Chapter 3, direct investment in foreign countries is motivated by specific advantages associated with ownership, combined with advantages in internalization and inter-country differences in factor costs and technology (Dunning, 1977).

A more profound understanding of the determinants of [foreign] direct investment is certainly needed, but can in any case explain only half the impact on resource allocation and social welfare. This depends on the behaviour of the capital exporters, but also on that of the importers. With sovereign nation states, there are no universal or reliable rules for the division of profits between the two. Conflicts are not likely between nations that gain from direct investment both as home and as host countries. The developing countries, however, are host to some 25 per cent of the world's direct investment but home to only about three per cent. Due to this asymmetry, they benefit primarily as hosts, and must be expected to do the best they can in this capacity.

Establishing a secure international trade and investment regime has for more than a century been a major policy objective for the leading industrialized nations. This has led to many clashes with less developed capital importing countries. For historical surveys, see Platt (1966) and Lipson (1985). Gilpin (1975) maintained that direct investment requires backing by home countries, and predicted difficult times for investors with declining U.S. hegemony in the world economy. However, the main focus has from the

1 Another common term is transnational corporations (TNCs), which implies that firms no longer can be associated with a certain home country but are truly global in nature. This study uses the term MNE, since it is the belief of the author that the firms in question generally do view their country of origin as 'home'. Other countries in which MNEs set up subsidiaries are throughout viewed as 'host' countries.

2 Cf. Buckley and Casson (1985).

mid 1970s been on the MNE - host country relationship. The basis of most studies has been the view of a bilateral monopoly, with the two sides struggling over the structuring of projects and the division of gains. In an early study, Penrose (1959) argued that a foreign firm should receive as much profit as induces it to invest. Kindleberger (1965) viewed this as a lower limit only, and added an upper limit set by the scarcity value to the host country of the services provided by an investment project. Most subsequent work in the field builds on Vernon (1971) and Moran (1974) who added the time dimension and the role of risk. Their findings are referred to as the theory of 'obsolescing bargain', or the 'changing balance of power'. The idea is that, over time, there is a shift in the bargaining position to the advantage of poor countries as they attain a higher level of development and investment projects become sunk.

Beginning in the 1970s, there has been a general change of course in economics. It has become clear that, in an imperfectly competitive world, the actions of one agent affect others, and that this interaction is taken into account by everybody when acting. This has led to the traditional 'structural' approaches becoming supplemented by 'strategic' ones, which allow agents to adapt to changes in each others' behaviour. The analytical tools have gradually been refined. New insights into the role of expectations, the nature of equilibria, sequential bargaining and time consistency have considerably revised our view of e.g. monetary and fiscal policy, public finance and inter-country policy coordination.[3]

There has similarly been a certain revision of international capital flows. Eaton and Gersovitz (1981) used disequilibrium models to examine how the risk of debt repudiation may constrain a country's external borrowing. This work has been followed by a number of studies of imperfections to the standard model of international borrowing.[4] Much of this literature is concerned with the interaction between sovereign debtor nations and perfectly competitive creditors. There have also been applications to direct investment, where the interaction between countries and large firms opens up many opportunities for strategic behaviour. Home country behaviour in the form of tax treatment of foreign source income has been investigated by e.g. Hartman (1985) and Newlon (1987).

3 See e.g. Lucas (1976), Kydland and Prescott (1977), Selten (1975), Rubinstein (1982), Binmore and Herrero (1984), Shaked and Sutton (1984), and Barro and Gordon (1986).

4 See for example Sachs and Cohen (1982), Sachs (1984), McFadden et al. (1985) and Hajivassiliou (1987).

Gersovitz (1987) and Hines (1987) have taken into consideration that host country governments may respond to U.S. tax increases. In fact, the most palpable influence on direct investment is exerted by host countries, whose gains to some extent directly offset the profits of MNEs. In this work, the emphasis is on the potential gains of direct investment in the developing world, and how these are approached by MNEs and host countries. Clarifying the consequences of strategic interaction between these agents should be an important research agenda for the 'new course' in economics.

To gain as much as possible from direct investment, host countries may use a variety of policies, ranging from those that aim at a general and sweeping transformation of the domestic economy, to measures that target MNEs directly. There is no general formula for which ones are the most effective. For the transfer of technology to developing host countries, Blomström and Wang (1989) indicate that support of domestic firms may be preferable to imposition of performance requirements on the behaviour of MNEs. However, throughout the developing world there has for decades been an abundance of policies which interfere with MNEs directly. This study is concerned with such policies.

Although there are many diverse host country policies vis-à-vis MNEs, one can think in terms of two broad categories. On the one hand, there are policies which stimulate certain kinds of behaviour on the part of MNEs. Among them are, for example, regulations, tax incentives and subsidies. On the other hand, there are policies which interfere with the ownership and control of MNEs, such as joint ventures, licensing agreements and, in the extreme, complete takeover by the host country. The former are in this study referred to as *taxation*, the latter as *nationalization*. We are concerned with the major developments in these two kinds of policies in the developing countries from the late 1960s onwards. As will be seen, economic motives have been of great importance for shaping host country behaviour in this period.

Among the empirical studies of host country behaviour vis-à-vis direct investment, those preceding 1980 mostly lacked comprehensive data. In the last decade, nationalization has been studied by e.g. Jodice (1980), Kobrin (1980 and 1984) and Minor (1987 and 1988). Other policies have been examined by e.g. the Harvard Multinational Enterprise Project, directed by Vernon[5], and Guisinger (1985). Most of this work has provided useful information on e.g. cross-country variation in policies at a certain time, but their

5 The results are largely found in Vernon (1977).

developments over time have not been satisfactorily dealt with. Of the formal models allowing for strategic interaction between MNEs and host countries, Eaton and Gersovitz (1983 and 1984) determined time-consistent equilibria with regards to taxation and nationalization respectively, Shenfeld (1984) investigated host country policies pursued by an individual country, and Doyle and van Wijnbergen (1984) analysed taxation when there is competition between host countries. However, these studies have not resolved some pertinent issues left unanswered by the empirical studies. The theoretical work on nationalization has generally not explained its occurrence, and studies of taxation have tended to assume perfect competition and zero profits, thereby neglecting the distribution of gains from direct investment.

As of today, there is a general uncertainty to what extent the nature of the MNE-host country conflict impedes or distorts the potential welfare effects of direct investment. The threat of adverse host country behaviour has, for example, been put forward as a partial cause of the decline in direct investment that has occurred in developing countries in the 1980s. Liberalization of the foreign investment regime, with a reduction of burdens and restrictions, is a standard part of the policy package advised by the International Monetary Fund to countries afflicted by balance of payments difficulties. Moreover, a multilateral insurance agency was instituted in association with the World Bank in the mid 1980s to encourage equity investment by alleviating investors' concerns about non-commercial risks. At first, it caused a certain amount of controversy, and had to await ratification from the required number of countries. The host country attitudes have gradually become more favourable, however, and MIGA was established in April 1988.[6]

This study investigates the impact of host country behaviour on the undertaking of direct investment and the distribution of gains. Most of the questions addressed have already been dealt with in a voluminous literature. However, we add to most previous work by considering that direct investment is traded in a market where it is supplied by firms and demanded by countries. In this market we consider competition between host countries, real profits and alternative host country policies. On the basis of theoretical models which

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6 MIGA = The Multilateral Investment Guarantee Agency. The convention has been signed by fifteen capital-exporting and fiftysix capital-importing countries. In principle, MIGA offers coverage of three types of non-commercial risks; transfer and convertibility restrictions, expropriations, and wars/revolutions/civil disturbances (MIGA, 1988).

allow for strategic interaction, we come up with some results which contradict mainstream views and formulate hypotheses which are tested against empirical data.

The major issues addressed are; When and how do host countries pursue taxation or nationalization? How are the gains from direct investment divided between MNEs and host countries? Under what circumstances is direct investment prevented or distorted by host country behaviour? Is there a raison d'être for interference in the market for direct investment? The theoretical findings are applied to direct investment in pollution intensive activities and empirical investigations of the nationalization policy. The latter include analyses of the pattern of nationalization between 1968 to 1979, and why nationalization ceased in the late 1970s.

Of course, the developments in the real world have been influenced by changes in political and social attitudes. This study is concerned with economic aspects of the MNE - host country relationship. Moreover, there are limitations to the economic analysis. As already indicated, this study is confined to direct investment, which means that alternative forms of MNE activity are excluded, and host country policies are considered only in 'pure' forms. In addition, no attempt is made to provide a general equilibrium theory or jointly determine different host country policies. The latter may be defended by the fact that different policies are likely to be the most effective with respect to different kinds of direct investment. Finally, the empirical tests allow only for a tentative verification of the analytical framework developed.

The study is organized as follows:

Chapter 2 presents the historical background of host country policies vis-à-vis direct investment. The development of foreign property rights is reviewed, from emergence to breakdown. It is argued that the MNE-host country relationship has been characterized by a lack of strict rules from the late 1960s. Up to the mid 1970s, there was increasing pressure from host countries on MNE affiliates in the form of both taxation and nationalization. In the late 1970s, however, the general trend shifted from conflict towards harmonization and liberalization. Finally, the major trends in the flow of direct investment to developing countries in the last decades are briefly discussed.

Chapter 3 presents the theoretical background of the MNE-host country relationship. The nature of Multinational Enterprises and their potential impact on host economies are surveyed. This is followed by a discussion of the basic motivation of MNEs and host countries. The behavioral options open to the respective parties are presented along with their possible consequences. It is argued that important developments in host country behaviour in the last decades cannot be explained by the theory of 'obsolescing bargain'. Finally, the foundation of the present work is laid out.

Chapter 4 uses a game-theoretic approach to analyse taxation of MNE affiliates when there is competition between host countries. The set-up is the most applicable to export-oriented investment and nationalization is ruled out. Time inconsistency in host country behaviour, which is known to prevent direct investment in the one firm-one country case, is shown normally not to prevail when there is effective competition between host countries. The distribution of gains turns out to depend on the dissimilarity between countries and the 'mobility' of investment projects. The investment incentive determined by Doyle and van Wijnbergen (1984) is found to emerge as a special case.

By investigating host country competition for direct investment which causes negative external effects on the environment, *Chapter 5* shows to what extent the findings of Chapter 4 carry through when there are external economies. Effective host country competition is seen neither to cause a socially too low level of environmental protection, nor to distort the pattern of investment. While the findings are consistent with some observations of the real world, there are deviations due to e.g. imperfections in the international capital market and in information, and 'government failure'.

Chapter 6 deals with nationalization of MNE-affiliates. It is shown that selective nationalizations, here interpreted as targeting investment projects by random, are compatible with complete information and continued undertaking of direct investment. In the case of two countries which compete for gains from direct investment, there are shown to be two alternative equilibria. In one, both countries nationalize, while in the other neither of them does. Hypotheses are derived for the factors that may cause shifts from one state to the other. Implications for welfare effects and the possible raison d'être for interference with host country behaviour are briefly discussed.

Chapter 7 reviews some empirical work which has sought to explain cross-country variation in the nationalization of foreign-owned equity. Based on the preceding chapter, hypotheses are formulated in order to explain variation in the occurrence and frequency of the policy 1968-1979. Because these years constitute the period in which nationalization peaked around the developing world, it is argued that countries' need and ability to earn foreign exchange, rather than the risk of discouraging direct investment, determined which countries nationalized. The hypotheses set up are largely supported by a Probit and a Binomial model test. The conclusions suggest a reinterpretation of previous work in the field.

Chapter 8 analyses the termination of nationalization among the developing countries in the late 1970s. A statistical test for the duration of nationalization supports the hypotheses that the termination was caused by access to inexpensive borrowing, a fall in commodity prices and the increasing indirect effect of the discouragement to direct investment for an individual country which continued when most others had terminated. Together with the results of Chapter 7, these findings tentatively support the notion of two equilibria in host country behaviour. Moreover, it is discussed whether the threat of nationalization still plays a role today, and whether this calls for intervention by the international community.

Chapter 9, finally, summarizes the study and discusses the policy implications of our findings.

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2 EMPIRICAL BACKGROUND

2.1 Introduction

The history of foreign direct investment dates back to the last century. From its emergence, making gains from direct investment has been a high priority for businessmen and politicians alike. In many developing countries, the attitudes towards foreign firms became hostile in the 1960s. Today, this type of rhetoric has mostly disappeared and the general atmosphere leans more towards harmony and cooperation.

For a long time, multinational enterprises were believed to require protection from their home governments in order to prevent host countries from expropriating gains earned under their jurisdictions. Much of the world's history in the last two centuries has, in fact, been shaped by the desire of the leading industrialized countries to safeguard the undertaking of profitable business operations in other countries. A study of foreign direct investment must therefore pay attention to political factors, the importance of which has been made clear notably by Vernon (1971), Moran (1974), and Lipson (1985).

This chapter surveys the history of host country policies vis-à-vis direct investment, and the flows of investment in the last decades. Section 2.2 is concerned with the historical development of direct investment and 'foreign property rights'. Such rights should be expected to be crucial since the purpose of direct investment is control through ownership, i.e property, in another country. Particular attention is paid to the extension of these rights to developing countries and their subsequent gradual breakdown. The section is much in debt to Lipson (1985), whose work has cast light on the historical record.

Section 2.3 is concerned with host country behaviour from the late 1960s, discussing both nationalization and taxation of MNE affiliates. It is argued that economic motives have been of great importance for shaping host country behaviour in this period. Section 2.4 surveys the flow of direct investment in the last decades, comparing the trend with

those of direct investment in other parts of the world, as well as other capital flows to developing countries. Finally, Section 2.5 summarizes the chapter. Due to the size of the territory covered, the presentation is sweeping and only major circumstances and events are brought up.

2.2 The History of Foreign Property Rights

The meaning of property cannot be taken for granted, since it is rooted in the social and institutional heritage of a society, which is subject to continuous change. It is even more difficult to justify any a priori or moral vision of property across the boundary of jurisdictions. Nevertheless, or perhaps due to this state of facts, there have been repeated violations of 'foreign property rights' for more than a hundred years.

Itinerant merchants in the Middle Ages were protected only by local municipal laws. Foreign property rights evolved as orderly national economies developed in Europe, and commercial treaties were set up between them bilaterally. By the mid-19th century, foreign property rights had been well defined in Europe and gradually became codified as international law. According to the basic principles, foreigners were subject to local law, although additional minimum standards deemed interference with foreign property permissible only in exceptional cases, then requiring 'prompt, adequate and effective' compensation.

Foreign property rights emerged initially due to reciprocal interests. They facilitated capital flows and international economic specialization between nations. Within Europe, they were supported less by the threat of coercion than by the withdrawal of normal reciprocities. The extension of rules beyond Europe was different, as can be exemplified by the 1838 Anglo-Turkish Convention. This essentially meant that a 300 year-old tradition of mutual commercial privileges was replaced by a treaty which forced the Ottoman Empire to open its markets for European goods. The same course was followed in the Anglo-Chinese wars, 1839-1842 and 1856-1860, the Anglo-Japanese treaties of 1854 and 1858, consular arrangements in Africa and similar arrangements by the other major European powers with countries outside Europe. Throughout, this resulted in both a modern structure of property rights and commercial penetration.

Outside Europe, foreign property rights served to establish and maintain order in a system of diverse and unequal countries. Their extension reflected the increasing military strength of the capital exporting countries; '... international property rights were effectively guaranteed by the extraterritorial application of European and American laws.'[1] Concerning the policies of Great Britain, Platt (1968, p. 353) states that the call was not for special privilege, but 'equal favour and open competition for British finance and trade overseas'. This is shown by the reliance on most-favoured-nation treaties. In Africa and Asia, the process did involve outright colonialism. Not so in Latin America. After the defeats in the Rio de la Plata region in 1806-1807, Great Britain rejected territorial ambitions and concentrated on access to Latin America's markets.[2]

Until the 1890s, bonds were the major kind of investment in Latin America, with Great Britain owning three quarters of the region's foreign debt. Latin America welcomed foreign investment, but disputed investors' right to call on outside powers for assistance at times of dispute. There were, indeed, many defaults as well as disputes. The British government was unwilling to defend individual subjects, but determined to steer off general assaults on property rights. Most often it did not have to, because British denial of further credit was a powerful tool, particular after the Franco-Prussian War crippled the major competitors and London attained a near credit monopoly. This ensured the settlement of most defaults.

The British stock of direct investment grew rapidly from the early 1860s and surpassed the outstanding value of bonds by the 1890s. This was not surprising since the rate of return was considerably higher. Most of this investment was concentrated in railways and public utilities. Britain turned out to be willing to intervene by force more readily to defend direct investment than in the case of default. Platt has reported at least 40 examples of British military intervention in Latin America between 1820 and 1914, of which a great many (but uncertain number) were concerned with direct investment.[3]

1 Lipson (1985), p. 14.

2 Where local legal structures were sufficiently stable, commercial expansion did not require military intervention. Britain balanced its need of legal structures and the costs resulting from the erosion of local authority. The spurt in colonialism in the late 19th century was partly due to competition between the colonial powers, threatening the supremacy of Great Britain (cf. Hobsbawm, 1968, and Platt, 1968). Formal imperialism is, therefore, often viewed as a defensive response. It can also be noted that the industrial decline of Britain in itself was a major force behind investment abroad, since the economy retreated from industry to trade and finance.

3 Compare with Svedberg (1981).

Soon after its independence, the United States emerged as a champion of property rights. This ambition took on dimensions as the country's economic and political expansion began in the late 19th century. At the time of the First World War, the U.S. became the greatest investor in Latin America, mainly due to direct investment in agriculture, mining and oil. Like Britain, the U.S. firstly signalled an unwillingness to intervene in private activities. However, the Roosevelt Corollary of 1903 declared a duty and responsibility to intervene in the American continents on behalf of all foreign investors. European entanglement was prevented, but the U.S. became compelled to retaliate wherever foreign property rights were threatened. The result was a stream of coastal landings, armed interventions, involvement in civil wars, etc.

In spite of growing military intervention in the early 20th century, there were yet no real disputes over the nature of foreign property rights. Expropriation was, for example, universally viewed as robbery, and conflicts tended to concern countries' right to enforce rules bilaterally. The Hague Conferences at the-turn-of-the-century produced fragile compromises on this issue. Thus, the nature of foreign property rights remained intact until the Soviet nationalizations in 1918, which represented the first real challenge. Nationalization was viewed as an exceptional means, but the Soviet Union aimed at complete socialization of its economy. The U.S. failed to raise support for military retaliation as well as to organize a unified set of economic sanctions. The Soviet Union exploited the individual interests of the Western powers and concluded agreements bilaterally, step by step reopening its market for foreign investment. Unofficially, however, and contrary to the British strategy, the U.S. blocked settlements that would have acknowledged the right to nationalize.

The Soviet nationalizations demonstrated the weakness of international law. In the following decades, the poor countries became more active in the League of Nations, where all countries had the same voting power, and the poor soon outnumbered the industrialized. Thus, the diplomatic process began to dilute the traditional norms. Sovereignty was increasingly stressed, and partial rather than full compensation from nationalization advocated. However, the U.S., and some other capital exporters, continued to defend the traditional property rights with great determination. Unlike the Soviet Union, the poor countries had little to set up against either military or economic retaliation. Turkey, Mexico and Bolivia nevertheless undertook nationalizations that

departed from traditional rules, and got away with them. With a world war on the horizon, the U.S. had to make choices between the protection of investment and the need of stable allies. Military intervention could result in chaos, causing higher costs than revenues, which meant that the very weakness of expropriating countries could be to their advantage.

After the Second World War, the U.S. sought to reconstruct an open world economy. One step was a charter for world trade, along with which the U.S. brought up investment security, arguing for the traditional principles of prompt, adequate and effective compensation. As discussed by Lipson (1985), the measure was self-defeating. In 1952, a resolution by the General Assembly of the United Nations endorsed nationalization of natural resources. In 1962, compensation standards were diluted as 'appropriate' compensation was called for in Resolution 1803 on Permanent Sovereignty over Natural Resources. In 1972, the conditions justifying nationalization were stated irrelevant. Finally, in 1974, the Charter of Economic Rights and Duties of States placed the rights with host countries, the duties with firms and capital exporting countries.[4]

Despite the disputes, most direct investment remained secure until the late 1960s. Passing resolutions is not the same as passing international law, and the defence of the traditional rights continued. One important victory for investment security was achieved at Bretton Woods with the creation of the World Bank and the International Monetary Fund. In contrast to the United Nations, voting power was here based on capital contributions, placing power in the hands of the capital exporting nations. The World Bank was mandated to encourage direct investment, and protected foreign investment by denying credit to expropriating countries. According to a 1971 memorandum, the Bank does not lend or appraise projects in countries that expropriate foreign equity.

Particularly the U.S., Britain and France not only continued to respond bilaterally, but the diplomatic process had resulted in a lost legitimation to interfere for the protection of foreign property rights. Perhaps to compensate for this fact, and following investment disputes in Cuba, Brazil, Honduras, Ceylon, Argentina, etc., the leading home countries

4 The Charter was adopted by a vote of 120 in favour, 6 opposed and 10 abstentions. The negative votes were directed at the charter's section on nationalization, and in particular the omission of any reference to an obligation of compensation (Sigmund, 1980).

moved towards a stern and legally mandatory system of economic retaliation. In the U.S., the Hickenlooper Amendment (1962) and the Gonzales Amendment (1972) made suspension of aid legally mandatory vis-à-vis countries that 'fail to provide adequate compensation' when nationalizing, or in other ways violate foreign property rights. In addition to economic retaliation, military action was taken overtly or covertly. Chile in 1973 constitutes a conspicuous example of the latter.

In spite of the continued defence, there was a marked increase in nationalization of direct investment in the late 1960s and early 1970s. Moreover, the policy now became pursued by a majority of developing countries, acting independently of their political ideology. This development was set off by a range of factors, the continued struggle for sovereignty, the political gains of regimes in newly independent, former colonies to acquire domestic control over their natural resources, *and* a diminishing capacity for the industrialized countries to strike back as an increasing number of developing countries nationalized more or less simultaneously.

Although the U.S. in particular still retaliated against countries that violated the traditional norms on 'too massive' a scale, or too conspicuously, it turned out that, in effect, there was no mandatory and indiscriminate defence of foreign property rights. For instance, the U.S. accepted actions in Venezuela and Saudi Arabia which in Iran 1951 had led to a complete boycott by Britain and the U.S., the overthrowing of Mossadegh and the installation of the Shah. The traditional norms had broken down not only in the sense that legitimation was gone, but there was no longer any effective enforcement.

Why did no consistent defence of foreign direct investment develop, in spite of both bilateral and multilateral attempts? Although the complete answer may be complex, it would appear that such a policy was no longer in the interest of the capital exporting countries, or even the MNEs themselves. About the subsequent period, Lipson (1985) wrote: '... the automatic application of sanctions would only sever their future profits. ... self-reliance and accommodation is more prudent - and more profitable.'[5] Continued inflexible resistance from home countries would have been too risky, had less chance than previously of being effective and could fuel renewed violation. Open conflict dramatized the role of direct investment, and provoked host countries to strike with

5 Lipson (1985), p. 226. Similarly, Moran (1985), p. 15, concluded that MNEs do not do well in much politicized head-to-head public confrontations with host authorities.

nationalistic fervor towards the 'representatives of colonialism'. Continued tension between home and host countries would have held up the political gains of regimes in the Third World from treating MNEs as scapegoats in times of domestic crisis.

Summing up, we conclude that foreign property rights grew out of reciprocal interests, but that they were one-sidedly extended to the developing countries. The capital exporters laid down 'the rules of the game', the capital importers sought to undermine them. The latter struggle first took the form of establishing the right not to be subject to military intervention at the time of investment disputes, later to a right to nationalize foreign-controlled firms, for whatever gains. By diplomatic cooperation, the developing countries gradually undercut the traditional foreign property rights. Some home countries still continued to defend these rights, in spite of the increasing lack of legitimacy. In the late 1960s, however, a majority of the developing countries nationalized direct investment without any mandatory and consistent response from the capital exporting countries.

2.3 MNE - Host Country Relations from the Late 1960s

The violation of the traditional rights discussed so far, nationalization or expropriation, was by Truitt (1974) characterized as the point on a continuum where government action has the effect of depriving foreign investors of wealth. Over time, the concept has gradually become more diluted and diffuse. Here, it is used in the meaning 'forced divestment of ownership', as defined by Kobrin (1980), see further Chapters 3 and 6. Because the definition of foreign direct investment entails managerial control exercised through equity ownership across national borders, nationalization is thought of as leading to the involuntary withdrawal of the targeted MNE, with or without compensation from the host country.

Further in line with Kobrin (1984), we distinguish between 'mass' and 'selective' nationalizations. The former kind generally targets firms indiscriminately throughout industries and encompasses most or all foreign property - and sometimes all private property.[6] It has typically occurred in systems exploding after periods of tension,

6 Kobrin (1984) identified mass nationalization according to three criteria; at least 15 acts over the 20 year period 1960-79, distribution of expropriations over a number of sectors and some evidence that ideological motives played a major role.

following a systematic national change such as decolonization or Marxist revolutions. Although there have been exceptions, most mass nationalizations have been part of a general transformation from a market to a socialist economy. In contrast, selective nationalizations range from anything from single firms to entire industries.

There is no doubt that mass nationalizations generally have a strong political or ideological content. Selective nationalizations, on the other hand, seem to be driven primarily by economic motives. While their characteristics will be returned to later, it can be noted here that selective nationalizations are systematically related to firm- and industry-specific characteristics which reflect economic costs and benefits. Although the distinction between mass and selective nationalization, and even more between political and economic motives, is difficult or impossible to make in all cases, it is still believed to be valid in a broad sense.

As discussed in the preceding section, the period up to the late 1960s was marked by a regime of fierce responses from the leading capital exporters when foreign property rights were violated. Substantial costs had to be expected by countries which challenged the traditional norms. Most nationalizations, or about 60 per cent of all acts, belonged so far to the mass category. From this time, the MNE - host country relationship entered a new phase. The number of nationalizations rose, as did the number of countries that nationalized, acting independently of their political and ideological orientation. While mass nationalizations continued to result in fierce responses from the major home countries, the increase in the total number of acts from 1968 was accounted for by selective nationalizations, which now made up some 80 per cent of the total. For the whole period 1960 - 1979, Kobrin (1984) concluded that only ten out of a total of 79 nationalizing countries belonged to the mass category.

The real change from the previous period was consequently the emergence of selective nationalizations, which could be pursued without dramatic and expensive conflicts with home countries. There were no longer any clear rules, or enforcement of rules. The subsequent stage has been described in words such as '... we are entering an era of great uncertainty. The world economy will undoubtedly be characterized by a confused and complex mixture.'[7]

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7 Gilpin (1975), p. 261.

Thus, the spurt in nationalization was not due to an enhanced ideological conflict. Nor was it caused by the developing countries acting as puppets or dummies. In contrast to the mass nationalizations of the past, the selective nationalizations were primarily driven by economic motives. Third World governments had in the late 1960s become more stable and sophisticated. They were now more capable than previously of using nationalization as a measure to make economic gains. The policy was generally inconspicuous and often accompanied by incentives to obtain new investment. An ambiguity in host country behaviour had become evident - on the one hand the desire to expropriate, on the other the need to attract new investment.

The host country policies pursued from this time have sometimes been referred to as 'creeping nationalization'. In this study, policy instruments which aim at manipulating the behaviour of MNEs are termed *taxation*, and distinguished from *nationalization* which aims at depriving MNEs of ownership. The dividing line is far from clearcut in practice. Limitations to ownership and control such as requirements of joint ventures may, for example, be combined with various incentives and restrictions to achieve the outcome desired by the host country. Nevertheless, the two categories are fundamentally different in nature. The former hinges on a host country's capacity to share the gains of a foreign run activity, the latter on its capacity to run that activity on its own, see further Chapter 3.

Bergsten et al. (1978) and Leonard (1980) argued, among others, that the developing countries during the 1970s attained administrative, managerial and technical capabilities that enhanced their capacity to extract gains from direct investment through taxation. The data available are scanty, particularly on effectiveness, but there was certainly a spurt in controls and performance requirements targeting balance of payments operations, transfers of technology, etc. Thus, parallel to the increasing intensity of nationalization, there was also an increase in taxation.

The general trends did not encompass all developing countries. Regional and country-differences in nationalization are investigated in Chapter 7 and 8. Concerning taxation, there were relatively few regulations and restrictions in most of Africa and Asia, but numerous incentives for the purpose of attracting direct investment. In Africa, many states enacted 'investment codes' which promoted both domestic and foreign investment. Most Asian countries adopted measures which facilitated direct investment specifically.

Few sectors were closed to direct investment and it was often accepted that disputes were settled through international settlements. The Arab countries had relatively less liberal systems with more regulations and restrictions. The generally most restrictive approach was pursued by the Latin American countries. Two regulatory models can be distinguished (Correa et al., 1984). Mexico and most of the Andean countries used relatively more compulsory regulation. The other Latin American countries, including Central America, developed a more incentive-oriented approach.[8]

At the international level, attempts were made to develop a system that would restrict the behaviour of MNEs in line with national priorities. Since the MNE is a global organization which can escape the policies of individual nations, it was argued that its behaviour should be controlled internationally. The idea first brought forward by Goldberg and Kindleberger in 1969, of an institution corresponding to the General Agreement on Tariffs and Trade (GATT) for the international corporation, was not realized in spite of the work of several conferences. The development of a Code of Conduct attained more palpable results. The aim was to develop a set of guidelines with which MNEs would have to comply. A draft was set up in 1982 by an inter-governmental working group although no consensus has yet been achieved. International work on the behaviour of MNEs has also been carried out within OECD, The United Nations Commission on International Trade Law (UNCITRAL), the International Labour Organization (ILO), etc.[9]

Returning to the national level, the general trend towards increasingly adverse host country behaviour began to shift in the second half of the 1970s. Nationalization reached its peak in 1975 with a total of 83 acts in one year. The number of acts thereafter declined markedly, to reach practically zero in the 1980s. The development of taxation is more difficult to verify. Some controls and requirements increased throughout the 1970s, and continued to do so in the 1980s. In the wake of the 'debt crisis' of many developing countries, UNCTC (1988) speaks of a growing use of performance requirements relating to exports and pressures for local content. There has, without doubt, been mounting requirements of shared ownership in joint ventures. As will be seen in Chapter 8, however, there was a marginal or non-existent increase in host country tax earnings, a

8 See further Hood and Young (1979) and UNCTC (1988).

9 Most of this is not directly relevant for this study, and is therefore not further discussed here. See UNCTC (1988) pp. 340-362 for an overview.

general decline in performance requirements and an increase in investment incentives for U.S. MNEs between 1977 and 1982. In addition, labour relations have been controlled, infrastructure provided, restrictions concerning profit repatriation diminished, special export processing zones offering particularly generous conditions developed, etc. Broadly speaking, the developing countries have turned from conflict towards liberalization and harmonization with MNEs in terms of nationalization as well as taxation.

To sum up, there was a general increase in nationalization and taxation from the late 1960s up to the late 1970s. The development seemed to be a continuation of an old trend, but the conflict was now between MNEs and host countries and less than previously between countries. The increase in nationalization was accounted for mainly by selective acts, which aimed at economic rather than political gains for the host country. The policy was mostly inconspicuous and accompanied by endeavours to attract new investment. In the late 1970s, the general trend was reversed. Nationalization diminished after a peak in 1975, and most kinds of taxation also became more favourable to investors. The state of confrontation seemed to be over.

2.4 The Flow of Direct Investment

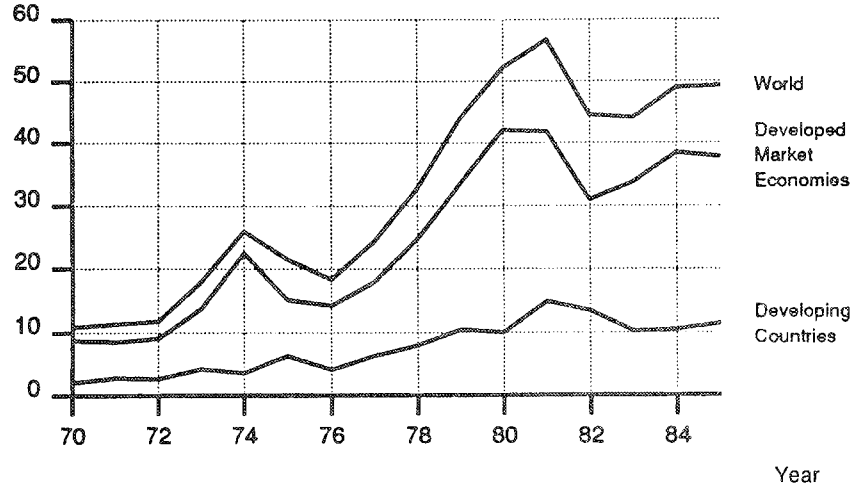
In the 1960s, the total flow of direct investment grew faster than GNP in the world's market economies, and as fast as world trade. In the 1970s, there was a 15 per cent increase per annum in current dollar terms, which meant a rate of growth equal to that of GNP but lower than that of trade. In nominal terms, the flow of direct investment more than doubled between 1975-85, but the record high was reached in 1981. From this level, it fell by more than 13 per cent to 1985. Figure 2.1 illustrates direct investment worldwide, in the developed market economies and in the developing economies from 1970 to 1984.

It can be noted that the United States provided about half of all direct investment in the early 1970s. In 1985, the U.S. share had declined to a quarter, and Western Europe had become the major source with about 50 per cent. Japan's share had also jumped from about 5 per cent in the early 1970s to 11 per cent in 1985. Meanwhile, the U.S. started to

capture a significant share of the inflows from 1978, attracting MNEs particularly from Western Europe and Japan.

As can be seen from Figure 2.1, the developing countries have obtained a relatively small share of the total flow of direct investment. In the downturn of the early 1980s, they fared relatively worse than the developed countries. In the late 1970s, they hosted 28 per cent of the total stock of direct investment. In the mid 1980s, they had only about 23 per cent. Meanwhile, direct investment declined relative to other capital flows in the developing countries. While the real value of direct investment hardly increased at all from 1967 to 1982, there was a yearly 9.5 per cent increase in real long term private lending. Furthermore, reinvested earnings constituted a growing share of direct investment. In the 1980s, it accounted for about 50 per cent.[10]

FIGURE 2.1: Foreign Direct Investment Inflows, by Major Regions, 1970-1985[11]
(billions of dollars)



SOURCE: UNCTC, 1988.

10 Figures for the 1960s and 1970s are from UNCTC (1983), p. 17, and for the 1980s from the World Bank (1985 and 1987) and UNCTC (1988, pp 74).

11 The socialist economies are excluded.

All in all, the flow of direct investment has diminished in relative importance in the developing countries. There was a certain revival in 1986, however, with the total rising from an estimated average of $ 10 billion a year 1983-85 to $ 12.5 billion. As for the future, the World Bank (1987) and UNCTC (1988) forecasted a continued increase. The former prophesied that direct investment in the developing countries will average some $ 17 billion a year up to 1995.

Concerning the regional distribution of direct investment in the developing world in the 1970s, see Table 2.1. Latin America attracted the bulk of the flow, although South and East Asia became an increasingly important destination. The flow to Africa stagnated until the late 1970s, when there was a certain revival. The flow to West Asia fluctuated considerably, with great negative figures, while developing countries in Europe attracted a negligible amount. Meanwhile, the flow of direct investment has been fairly concentrated to a small number of developing countries. The fall in the overall flow in the 1980s led to an even higher concentration. In 1980-85, 18 countries and territories attracted 86 per cent of the flow of direct investment to developing countries. Those that continued to attract direct investment were mainly rich in natural resources, had large markets or highly skilled and inexpensive labour forces. Africa and Latin America obtained relatively less direct investment than they did in earlier periods. Asia, particularly the Southeastern part, obtained relatively more.

In terms of sectors, direct investment in information intensive services such as banking, finance, insurance etc., has become more important world wide in the last decade, but this investment has mostly been concentrated in industrialized countries.[12] Concerning other sectors, it has been argued that the decline in investment in natural resources in developing countries was due to the fall in commodity prices from the mid 1970s, and the risk of adverse host country policies, particularly nationalization. In manufacturing and some other sectors, the fall in investment followed upon a decline in profitability in the early 1980s. This is generally believed to be associated with heavy external indebtedness and low growth rates, particularly in Latin America and Africa. There is considerable uncertainty regarding the role of host country policies.

12 Whether direct investment is accepted in services is important for the future potential flow to developing countries. The share of services in U.S. outward investment rose from 24 per cent 1975 to 34 per cent 1985. The corresponding figures for Japanese outward direct investment were 36 and 52 per cent respectively. Many developing countries still view direct investment in services with scepticism. See further Blomström and Lipsey (1988) and UNCTC (1988).

TABLE 2.1: Inflows of Foreign Direct Investment by Regions of Developing Countries, 1970-1980

Millions of dollars

Regions of developing countries	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Latin America	815.0	1 555.6	1 019.5	2 389.0	1 894.2	3 428.8	1 749.1	3 082.3	4 059.0	5 396.7	5 249.1
Africa	369.0	852.5	570.0	603.2	689.1	302.3	431.8	678.3	565.9	2 028.4	2 197.9
West Asia	142.0	-133.4	192.2	-468.5	-3 557.4	2 288.7	-1 086.4	1 056.6	855.1	-980.6	-3 097.6
South and East Asia	486.0	561.7	780.6	1 425.8	1 445.6	1 709.6	1 690.2	1 437.2	1 868.0	2 286.8	3 230.4
Europe	22.0	27.1	22.8	28.6	39.7	35.2	46.2	59.5	78.9	87.9	84.6
Total	1 834.0	2 863.5	2 585.1	3 978.1	508.7	7 764.5	2 830.9	6 313.9	7 446.9	8 819.2	7 654.3

SOURCE: UNCTC (1983)

2.5 Summary and Concluding Remarks

This chapter has surveyed the history of foreign property rights and host country behaviour, and the flow of direct investment in the developing world in the last decades. The capital exporters extended the traditional foreign property rights to developing countries, while the latter sought to undermine these rights through international diplomatic cooperation. While the industrialized countries fought for investment security, developing countries fought for their sovereignty, which initially meant the right not to be subject to intervention. Subsequently, sovereignty was rather interpreted as the right to nationalize for whatever gains.

There was no smooth erosion of foreign property rights. Different actors came in to defend them at different times; home country governments, syndicates of creditors, multilateral organizations, etc. There was a visible relationship between the use of retaliatory action and the costs associated with social disorder or the loss of allies. When the legitimacy of these rights no longer prevailed, the home countries still continued to defend them. In the late 1960s, however, a majority of the developing countries nationalized direct investment without consistent retaliation by the capital exporting countries.

Through the stern defence of their investments up to the late 1960s, the major home countries suppressed the potential conflict between MNEs and host countries. Up to this point, most acts of nationalization were of a 'mass' character, where all foreign investors were treated more or less on the same basis. During this period, political motives largely predominated. The increase in the number of nationalizations at that time was accounted for by 'selective' acts, driven primarily by economic motives and undertaken independently of the ideological orientation of the host countries.

Parallel to the increasing intensity of nationalization, there was also an increase in taxation of MNE affiliates as the developing countries became more capable of extracting gains from direct investment under foreign ownership. Due to these developments, the MNE - host country relationship became highly infected in the first half of the 1970s. In the late 1970s, however, nationalizations became less frequent, and were practically at a stand

still in the 1980s. Taxation policy was also generally on the retreat. The broad trend in the MNE - host country relationship switched from conflict towards harmonization and liberalization.

The flow of direct investment to developing countries declined in importance in the 1970s and 1980s, relative to both direct investment world wide and to other capital flows to developing countries. The flow also became more concentrated to a fairly small number of developing countries favourably endowed with investment opportunities. For the next decade, an investment revival has been forecasted in the developing countries.

This exposition leaves some pertinent questions unanswered. After the breakdown of mandatory and reliable rules in the international area, there have been different policy regimes in different countries, but fairly universal trends in the taxation and the nationalization policies across countries. Again, there was a tendency to first lean towards greater conflict with MNEs, in that host countries tried to withhold profits by means of either policy. This was subsequently followed by policies that involved less conflict and more investment incentives. The fundamental mechanisms behind the policy changes are still unclear.

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3 THEORETICAL BACKGROUND

3.1 Introduction

Over the years there have been systematic and swift policy shifts among host countries in the developing world towards foreign direct investment. As seen in the previous chapter there was, for example, a rapid increase in nationalization in the late 1960s and early 1970s, and an even more abrupt termination of this policy in the late 1970s. The universal nature of these shifts suggests that the behaviour of the developing countries is interdependent in some sense.

To understand the shifts that have occurred in host country policies from the end of the 1960s, we cannot limit ourselves to considering the legitimation and enforcement of foreign property rights. On the contrary, countries should be viewed as sovereign agents that act as best they can to gain from direct investment. Hence, they must then take account of how the investing MNEs respond to their policies. This chapter surveys theoretical aspects of MNE - host country interaction, and introduces a partly new framework for the purpose of analyzing the fundamental determinants of host country policies in the absence of reliable foreign property rights.

The chapter is organized as follows. Section 3.2 presents the nature of direct investment. Section 3.3 discusses how it can affect the welfare of a developing host country. Section 3.4 is concerned with the basic motivation of MNEs and host countries, and provides a simple illustration of what is open for bargaining. The options of the respective actors are introduced in Section 3.5. Section 3.6 discusses possible effects of host country policies. Section 3.7 argues that the policy shifts that have occurred in the last decade cannot be understood in terms of a 'changing balance of power'. A partly new framework of analysis is outlined in Section 3.8. Section 3.9 summarizes the chapter.

3.2 The Nature of Direct Investment

Traditional international economics did not provide a satisfactory explanation for the existence of MNEs. Inter-country differences in the rate of return to capital can explain portfolio investment, but not direct investment. The traditional theory of the firm was similarly insufficient for the extremely imperfect markets in which direct investment occurs. Over the years, a number of theories have addressed the phenomenon. One classification is in 'macro-oriented' approaches, based on international trade, versus 'micro-oriented', based on industrial organization. The former would be the currency-premium theory (Aliber, 1970), the dynamic comparative advantage theory (Kojima, 1973, Kojima and Ozawa, 1984) and the-level-of development theory (Dunning, 1981), the latter the product-cycle theory (Vernon, 1966), the risk-diversification theory (Grubel, 1968), internalization theory or the transactional approach (Kindleberger, 1969, Caves, 1971, and Buckley and Casson, 1976) and the eclectic approach (Dunning, 1977).

The division between macro and micro-oriented theories is somewhat illusory. Part of the difference depends on what aspect of direct investment is examined. The 'macro-oriented' theories do not explicitly consider how firms behave. Since an analysis of host country behaviour requires an understanding of how MNEs behave, it is for our purpose the 'micro-economic' theories which are of interest. These generally build on Hymer (1960), who noted that firms suffer a handicap in a foreign market relative to domestic ones. Direct investment requires costs that are sunk, and an MNE must possess firm-specific advantages to be competitive abroad. This ruled out perfect competition as incompatible with direct investment. Kindleberger (1969) and Caves (1971) narrowed the gap to neoclassical economics by pinning down factors which may give rise to MNEs; imperfections in goods markets and factor markets, economies of scale and government imposed disruptions. Building on Coase (1937) and Williamson (1975), Buckley and Casson (1976) explained the control of foreign firms by imperfections in information regarding e.g. technology, product quality or skills.

The earlier work was synthesized by Dunning (1977) in the 'eclectic' theory or OLI-framework, according to which the undertaking of direct investment requires three

cornerstones; ownership advantages, locational advantages and internalization of activities within a firm.[1] Meanwhile, three broad kinds of direct investment can be identified. Firstly, *horizontal multiplant* enterprises with production abroad of essentially the same line of goods. Secondly, *vertically integrated* subsidiaries which serve the purpose of enabling transfers of intermediate products. Thirdly, *diversified* affiliates which are neither horizontally nor vertically related to the rest of the organization. As discussed by Caves (1982), the determinants of the three kinds are somewhat different, but they fit into the OLI-framework.

Building on Lall and Streeten (1977), we can identify some sources of; a) *oligopolistic advantages,* b) *advantages of direct investment over trade,* and c) *advantages of direct investment over licensing*. These are merely enumerated in the following.

a) Sources of oligopolistic advantages;

- Cheaper *capital* due to the financial strength of the parent company. However, this is unlikely to induce direct as opposed to portfolio investment.
- Capitalization on the *exchange risk* and the relative hardness of the home country's currency. This was pointed out by Aliber (1970) as the predominant motive for direct investment. Valued against empirical evidence, it is today regarded as an insufficient explanation for direct investment.
- Superior *management* compared to local firms.
- Superior *technology* and/or ability to make efficient use of it.
- Superiority in *marketing* - same as above.
- Superior *access to raw materials* due to control over final markets, transportation, processing or the production of a material itself.
- An advantage in facilities which enjoy *economies of scale* due to the availability of finance and expertise to set up and operate them.
- A superior ability to extract concessions and investment incentives from the host country government, i.e. an advantage in terms of *bargaining and political power*.

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1 Much work has continued to concentrate on how direct investment relates to, and affects, the pattern of trade. Some general equilibrium models have been constructed, e.g.; Markusen (1984), Helpman (1984), Ethier (1986) and Horn and Ethier (1988). This literature is still in a premature stage, however, crippled by the fact that the eclectic theory does not generate well-specified hypotheses. Rather than a theory it is a taxonomy, enumerating factors but not specifying how they relate to each other.

b) Sources of advantages of direct investment over trade;

- *Cost of production* in the host country relative to the home country or third countries.
- *Government policy*, such as a discrimination of imports through tariffs and other impediments to trade, may motivate direct investment as a substitute for imports.
- *Marketing* may be more effective from a base within the host economy and again motivate direct investment as a substitute for imports.
- *Oligopolistic reaction*, due to the competition between rival firms.
- *Product cycle*, explaining how the various factors given above may interact over time to determine the effectiveness of activities in different locations (see Vernon, 1966).

c) Sources of advantages over licensing;[2]

- *Secrecy and novelty of technology*, increases the gain of internalizing it through direct investment.
- *The size and stability of the market*, generally making direct investment a more attractive alternative since it increases the likelihood that the sunk costs can be covered.
- *Government policy*, making direct investment more competitive if predictable.

Concerning the last category, riskiness in operations reduces the attractiveness of direct investment relative to licensing. All in all, firm and country characteristics interact to determine whether direct investment pays. Crucial country characteristics may be, for example; factor costs, geographic location in relation to markets for input or output goods, the quality of infrastructure, the size and growth of the host country's market, taxes, regulations and other host country policies. Concerning firm or industry characteristics, high labour intensity makes wage costs crucial, transport costs have a considerable bearing on location, pollution intensity makes the level of environmental protection matter, and so forth. Robinson (1987) discusses how trading costs, factor costs and social/political costs have to be taken into consideration as a firm determines the comparative advantage of countries relative to each link in its value added chain.

This study is generally not concerned with the firm characteristics that determine the profitability of direct investment. We simply conclude that the undertaking of direct

2 In line with Lall and Streeten (1977), we think of 'licensing' as sales of technology, brand names, patents, services, etc.

investment requires that an MNE expects either to retain larger benefits or account for smaller costs compared to the best alternative. However, we do need some idea of how host countries are affected by direct investment. This is discussed in the following section.

3.3 The Socio-economic Impact on Host Countries

This study is confined to the socio-economic impact of foreign direct investment on developing host economies. The socio-economic impact encompasses, in principle, all effects that can be identified, quantified, and monetized. As pointed out by Lall and Streeten (1977), however, there are limitations to the socio-economic analysis. A general distinction cannot, for example, be made between preferences on grounds of their social and ethical desirability, and factors that shape preferences cannot be taken into account. Effects on the distribution of income within host countries are also not dealt with satisfactorily. These distributional effects are merely pointed out in the following.

Traditionally, the contribution of capital was stressed for all kinds of foreign investment. Direct investment is naturally a source of long-term financing. However, a host country may be able to e.g. borrow internationally and foster domestic firms instead. A comparison of direct investment with indirect or portfolio investment is therefore in place. When borrowing, a creditor country has immediate control over the usage of funds. If debt servicing becomes difficult, it finds itself constrained and subject to a repayment schedule which is unrelated to its economy. With direct investment, the funds provided are controlled by an MNE, which runs the risk of failure. The firm-specific advantages of that firm are the real contribution of direct investment. While profitability in financial terms is assured in theory, the impact on the host economy hinges on the extent to which rents spill over to domestic agents.

As noted, privileged financing should not be the crucial oligopolistic advantage that motivates direct investment. Moreover, MNEs often avoid the exposure of more capital than necessary to exchange risk in poor countries. Some countries restrict the opportunities of MNEs to bring in capital and encourage funding of direct investment

within the host economy. The consequences are discussed by Lall and Streeten (1977). Still, the possible contribution of *capital*, not least in the form of indirect effects, is important to the host economy. Other kinds of investment may be spurred, such as aid and portfolio investment. Domestic savings, on the other hand, are often argued to be discouraged by capital inflows (Areskoug, 1973, Papanek, 1972, Fry, 1984). Gupta and Ismal (1983) found that direct investment has had a favourable impact on savings in Asian countries. The causal linkages are doubtful, however. See also Lee et al. (1986).

Whether direct investment contributes capital to the host economy is a matter subordinate to the question of how the *balance of payments* is affected. The net effect hinges on the inflows and outflows of capital, as well as the effects on the current account. Since an MNE carries the risk of failure, it usually requires a risk premium which would make a country's expected cost of obtaining foreign exchange through direct investment higher than through borrowing. Concerning the current account, direct investment tends to stimulate exports and/or substitute imports. In addition, MNEs may curtail the growth of barriers to trade in home countries, to the benefit of domestic firms.[3] Taken together, such influences may outweigh the cost of repatriation of profits, improve the balance of payments and give rise to an overall economic expansion. On the other hand, MNEs are often more dependent on imported inputs than domestic firms, so that a positive effect on the current account cannot be taken for granted.

Today, it is widely recognized that the most powerful effects of direct investment are associated with the transfer of *organizational practices*, *management* and *technology* to the host country (cf. Caves, 1982). Benefits are likely to accrue due to spin-off effects on domestic factors of production. This may take place e.g. through turnover of trained personnel, forward and backward linkages, demonstration effects and even government officials who come into contact with MNEs. Concerning the transfer of technology, benefits are likely to arise because MNEs are the prime innovators and the most efficient in realizing the potential of new technology. On the other hand, costs may arise because MNEs use monopolistic power, and the administrative weaknesses of host countries, to import 'too poor' technology at 'too high' a price. This may occur because MNEs' maximize their global profits rather than those of individual subsidiaries.

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3 With trade within their organizations, MNEs benefit from low tariffs both as buyers and sellers. From this one could expect them to curtail the growth of protectionism. Still, there is no convincing empirical evidence in this direction (cf. UNCTC, 1985a, Bhagwati, 1988).

Direct investment may make a net addition to the productive resources of the host economy, or there may be a *crowding out* of domestic activities. With MNEs substituting for domestic firms, or influencing their technology, it is thus important how foreign technology compares with domestic. In general, it is more capital intensive in developing countries. A replacement of domestic firms by foreign may then make capital more scarce. In the presence of a common distortion in the domestic price of capital, Batra (1986) demonstrated immiserizing growth in a developing host country due to direct investment when little capital is brought in and more labour intensive domestic firms crowded out.

One important aspect of the impact on domestic industry concerns *market structure*. It is often argued that the entrance of foreign firms reduces the market concentration in the host economy. On the other hand, the sheer size of foreign-owned subsidiaries, their capacity to tackle bureaucracies, use a predatory pricing, etc., may instead lead to the establishment of monopolies, particularly in protected or segmented markets, see Lall (1979) and Blomström (1983). Moran (1985) discusses effects on market concentration in both directions. The substitution of foreign-owned monopolies for domestic is detrimental to the host economy since profits are repatriated rather than invested locally. Another related danger is *suppression of domestic entrepreneurship*. A weak national entrepreneurial class may be taken over by MNEs and relegated to a subordinate role as provider of ancillary inputs (Lall and Streeten, 1977).

Finally, there may be various *external effects* on the social, cultural, political and physical environment in the host country. In his later work, Hymer maintained that MNEs, partly through their superior ability to store, retrieve and process information, exert a considerable impact on the social, cultural and political conditions in poor countries. Hymer's view of MNEs' role in this context was strongly critical, but both positive and negative influences are conceivable. Such effects can in any case not be recorded in terms of social values, since they concern the very transformation of such values, and are therefore excluded in this study.

Physical effects on the environment, on the other hand, can be valued, at least in principle. Environmental effects may be of great importance, not only because of their impact on the welfare of the host country, but because they matter for the establishment

of direct investment in the first place. Walter (1972) and Pearson (1976) predicted a substantial relocation of pollution intensive activities from countries with higher control costs to those with lower ones. Since we can expect a more strict regulation of environmental effects in the industrialized countries in the future, this factor may become increasingly important. The matter is returned to in Chapter 5.

To sum up, both positive and negative effects of direct investment can be expected on host economies. Transfers of capital, organization, management, technology and so forth are likely to give rise to rents that MNEs cannot capture, raising the productivity of domestic factors. Meanwhile, there are costs due to e.g. repatriation of profits, the monopolistic power of MNEs, the crowding out of domestic firms and negative external effects. This exposition merely illustrates the complexity of the impact, and that different agents, such as firms, workers and consumers, most likely are to be differently affected.

In addition, as is central to this work, we have the host country government. Corporate income tax and other tax payments represent one of the most tangible gains of a host country from foreign direct investment. The government matters in another sense as well. Due to its sovereign power over its jurisdiction, it is in the unique position to influence how direct investment affects the host economy. For example, the government may forbid direct investment in the first place, subsidize certain costs, impose performance requirements or, in the extreme, nationalize a foreign-owned firm. It may be asked whether this capacity on the part of the host country government is a curse or a blessing.

3.4 The Basic Motivation of MNEs and Host Countries

MNEs are normally large firms, vertically and/or horizontally integrated across nation states, which act according to global strategies. Their internal needs may differ considerably from the market forces to which atomistic companies relate. Knickerbocker (1973) and Vernon (1983) described how MNEs may enter markets 'clump-wise', i.e. either none or all competitors invest in a country. Sölvell (1987) speaks of strategic behaviour on two levels, the national and the international. De la Torre and Neckar (1988) distinguish between factors which relate to MNE's 'global strategy', including

synergetic or competitive contributions to other units, and those that relate to the investment climate of specific countries. We do not make this distinction explicit, but view MNEs as maximizing their overall profits. This may or may not be equivalent to maximizing the profits of individual subsidiaries. Understanding individual MNEs should, of course, require a more precise formulation of strategies.

Host countries, on the other hand, may be governed by e.g. cultural, political and institutional factors. Politicians may well take their personal gains into consideration, favoring e.g. tax revenues, bribes and the welfare of influential groups. Nevertheless, they can be expected to weigh personal motives against other interests. Without any ambition to explain everything, this work is confined to socio-economic motives for host country behaviour vis-à-vis direct investment. Thus, we abstain from a public choice approach and assume that governmental preferences are representative of the inhabitants they represent. Other possibilities are commented on when this appears to be most appropriate.

MNEs and host countries are thought of as negotiating a division of the economic gains from direct investment. To illustrate what is open for bargaining from a subsidiary run under foreign ownership, consider the following representation of gains (which essentially is used throughout the study). The utility of the host country, C_u, can be written as a function

(3.1) $C_u = C_u (\phi\pi + \emptyset, G, B)$

where ϕ is the corporate income tax rate, π profit before tax, $\emptyset$ a lumpsum tax, G positive external effects and B negative external effects. G stands for 'goods', B for 'bads'. Furthermore, assume that the utility function of the host country is constantly increasing in goods and constantly decreasing in bads over the intervals dealt with. Given that monetary values can be determined for the external effects, we can express the discounted gain of the host country as a money value, rewriting (3.1) as

(3.2) $u_C = \phi\pi + \emptyset + X_G - X_B$

where X_G is a function of G and X_B a function of B. Assume also that the home country's tax system is such that the host country's tax rate matters to the MNE, which is generally realistic. As discussed in the subsequent section, this is the case with a *tax exemption* system in the home country. We write the discounted gain of the MNE as

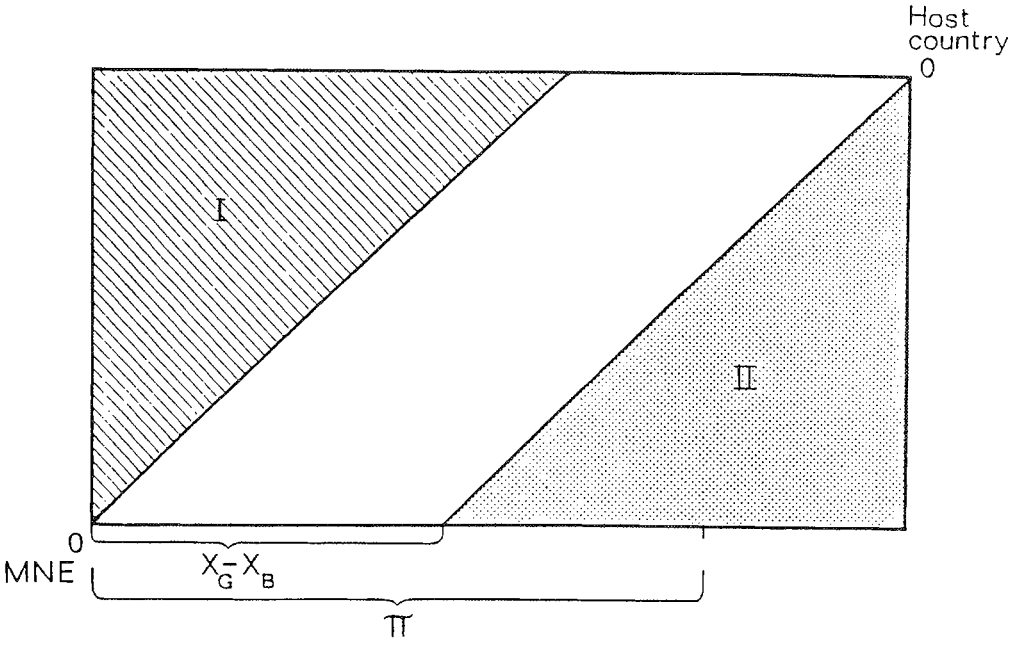
(3.3) $\quad u_F = (1 - \phi)\,\pi - \emptyset$

which says that the MNE earns the profit not paid in income tax, minus lumpsum taxes. As can be seen, there is a trade-off in the gain of the MNE and the host country. Given that the value of production can be taken for granted, i.e. that policies affect only the *distribution* of costs and benefits (given that production occurs), the outcome can be illustrated by a 'goods-bads box'. See Figure 3.1. Value added and positive external effects are depicted on the horizontal axis, negative external effects on the vertical. The net value of the project is given by the width of the box minus the height.

Any division of gains is represented by a certain point within the box, with the gain of the MNE given by the horizontal minus the vertical distance from the left-low corner. The gain of the host country is measured reversely from the right-high corner, with the utility of goods given by the horizontal distance to the left and the disutility of bads by the vertical downwards. The MNE does not accept an outcome in I, which is the area above the 45° diagonal from the MNE corner, since it then pays higher compensation for bads than it earns in profit net of tax. Similarly, the host country does not accept an outcome in II. This leaves us with the mid-corridor open for negotiation - in which both the MNE and the host country make a real gain.

The interval π along the lower boundary of the box marks what can be achieved by a corporate income tax alone, since external effects by definition accrue to the host country. The outcome can be somewhere else only through $\emptyset$, serving as a compensation to the host country for accepting a negative external effect or to the MNE for causing a positive external effect. In practice, external effects are seldom taxed effectively in developing countries. Since they are not internalized by an MNE (it is simply rewarded or paid for if compensation is realized in any direction), the box may seem redundant. Even if they are not paid for, however, the external effects should be taken into account. The candidate for equilibrium is then the X_G -X_B interval along the lower boundary of the box.

FIGURE 3.1: The Goods-Bads Box of an Investment Project



The goods-bads box is limited in at least four respects. Firstly, taxation is not the only possible host country measure to appropriate gains from direct investment. Secondly, information may be incomplete and asymmetrical. Thirdly, the effects of a project, i.e. the size and shape of the box, cannot be taken for granted but depend on the behaviour of countries as well as firms. Fourthly, costs and benefits vary over time, which makes it insufficient to consider the discounted value of goods and bads.

In this study, these limitations are relaxed in certain crucial aspects. As made clear, we take into account the host country's option to nationalize. Incompleteness in information is considered concerning the pay-off of individual projects or host countries. The discounted value of a project is taken as given for a subsidiary under foreign ownership. However, profitability may decline subsequent to nationalization. Finally, account is taken of the time dimension through the distinction made between the stages ex ante and ex post the set-up of a subsidiary. The subsequent section looks more closely at the behavioral options open to MNEs and host countries.

3.5 Behavioral Options of MNEs and Host Countries

Agents should be expected to do the best they can at each point in time, which follows from the requirement of perfectness. Throughout this study, we distinguish between the *ex ante* and *ex post* stages of setting up a subsidiary. This is the crucial distinction in time in the MNE-host country relationship. In the initial stage of an investment project, an MNE incurs costs in terms of investment, development, technology and know-how transfers. Except for expenditures on non-transportable and non-convertible plant and equipment, these concern the development of new contacts, habits, and ways of doing things which are necessary for a subsidiary to be operational in a certain foreign environment. Once operations have been established, costs fall and benefits accrue. If a project is undertaken, it must be expected that the ex post profit at least compensates for the sunk costs.

If an MNE establishes a subsidiary by incurring expenditure sunk in the project, it may thereby weaken its bargaining position vis-à-vis the host country. The host country can, of course, realize payments to an MNE ex ante - which we refer to as initial incentives. The point is that such payments cannot be withdrawn later. Subsequent to the set-up of a subsidiary, there are essentially three possible strategies for a host country;[4]

- Firstly, the host country may act as agreed ex ante.
- Secondly, it may not interfere with ownership but impose performance requirements, raise tax rates or provide economic incentives, etc. We refer to any such activities, which aim at determining or influencing the behaviour of an MNE, as '*taxation*'.
- Thirdly, it may undertake forced divestment, i.e. take over the ownership and control of a subsidiary, referred to as '*nationalization*'.[5]

A one-time division of the goods-bads box, as discussed in the preceding section, may be taken for granted under binding international law. However, this is not the case when nations are sovereign. Throughout this study, the existence of ex ante agreements is neglected, since they are not realized anyway unless they constitute the options that are

4 The categorization is neither complete nor the categories mutually exclusive. In practice, compensation may milder nationalization, requirements of joint ventures be linked to measures which affect the behaviour of MNEs, etc.

5 We do not consider takeovers which are contracted from the beginning. This has mostly been an option for a few developing countries richly endowed with natural resources.

optimal ex post. Thus, we are left with taxation and nationalization. Beginning with the latter, we can identify a scale of host country interference with ownership. In line with Hood and Young (1979), the possible arrangements can be ordered in terms of ascending interference;

- No ownership participation, subsidiaries are wholly foreign owned.
- Joint ventures, MNEs share ownership with local firms.
- Licensing agreements.
- Technical assistance agreements.
- Industrial cooperation.
- Rejection of direct investment in the first place, or nationalization when a project has been set up.

For simplicity, this study considers only the extreme alternatives of none or complete interference, the latter referred to as nationalization. Although the direct objective may vary, nationalization can in general be thought of as a measure to prevent repatriation of profits abroad, which implies that the aim is short term gains. An alternative objective is to break up foreign market power, in case the purpose may be long-term gains. This is not believed to be the general case, however. The observation that selective nationalization tends to be strongly associated with acute economic difficulties in host countries supports this view. See Chapter 6 to 8 for further discussions.

Turning to taxation, the policies belonging in this category may concern e.g;

- Corporate income taxes and profit repatriation.
- Purchase of inputs locally and abroad.
- Sales domestically and abroad.
- The prices used by an MNE, including royalty payments, management fees, etc.
- Employment, local participation in various activities and training of local personnel.
- The transfer of technology, including establishment of R & D activities.
- Credit policies.
- Degree and forms of competition.
- Environmental and social protection.

As with nationalization, we assume that the host country's objective is to retain profits that would otherwise be repatriated. The actual policy may take the form of an income tax, subsidy, regulation, performance requirement regarding e.g. employment, technology, trade, etc., an informal hint, and so forth. Of course, any interference with the behaviour of an MNE may, in practice, influence its effectiveness. Reduced burdens and restrictions may for this reason boost the productivity of a subsidiary to the advantage of both MNE and host country. On the other hand, host country policies which adjust for market imperfections may increase the social value of direct investment without causing an MNE too much damage. Performance requirements often aim to stimulate positive external effects, etc. However, this study is concerned with the broad developments in taxation and nationalization of MNE affiliates rather than the specific design of policies. We therefore view the profit under foreign ownership as given and independent of the level of taxation, provided that production occurs.

Neither nationalization nor taxation should be an issue unless there is a potential benefit to capture. However, if a host country does pursue either policy, it has to consider the possible response of the MNE targeted, as well as possible responses by other agents.

3.6 Direct and Indirect Effects

There are basically two kinds of effects which can be distinguished in response to taxation or nationalization by a host country, *direct* and *indirect* effects. Both generally take the form of costs. It can be noted that, throughout, we associate one MNE with one investment project. The two kinds of effects can be described as follows;

Direct effects relate to the MNE a host country takes action against. Faced with taxation, an MNE may i) continue to operate as it otherwise would, ii) withdraw completely without producing or iii) continue to operate but adapt to host country action through e.g. transfer pricing, reducing operations to a minimum, altering the quality of output, etc. An MNE's ability to choose the second or third responses cannot be generalized across firms. It will depend on the opportunities available to produce elsewhere, the flexibility and nature of technology, the relationship between affiliate and parent company, etc. In

any case, these responses can be expected to impose costs on an MNE, which must be weighted against the costs of complying with taxation.

Faced with nationalization by a host country, which cuts off an affiliate from the ownership and technology of the parent company, an MNE is considered to be unable to retaliate. It must organise a possible defence in advance, either by not investing ex ante or by making a subsidiary dependent on the parent company so that output falls subsequent to takeover.[6] Clearly, nationalization is not a viable alternative for all investment projects. The minimum requirement for a successful nationalization policy is that the profit under domestic ownership is larger than the share of the profit under foreign ownership which can be retained by the host country through taxation.

It is impossible to generalize about the host countries' ability to generate and withhold profits under domestic ownership. The metals or stones in a mine or the trees in a forest are easily captured, as are buildings, physical machinery and stocks. Some of the services and skills of the personnel within a subsidiary may also be possible to capture. However, assets within the parent company, or those that are realized only through the interaction between parent and affiliate, are inaccessible, and the question arises as to what extent the host country can substitute for them. For these reasons, nationalization tends to deprive an affiliate of a certain amount of management, technology, distribution networks abroad, brand names, etc. This is likely to depress a nationalized affiliate's profitability pre tax and the positive external effects on the host country.

Nevertheless, there are undoubtedly many potentially profitable projects which could also generate substantial profits under domestic ownership. It is their possible nationalization which is at stake here. The theoretical analysis will not be concerned with the fact that the likelihood of nationalization is greater in natural resource extraction, utilities or highly standardized manufacturing, rather than activities whose profitability hinges on advanced technology and the export channels of parent companies.

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6 An investment project unaffected by a takeover is independent of the parent company, which seems to contradict the internalization theory. However, a parent firm which was necessary when a subsidiary was set up need not be so for continued profitability.

Indirect effects relate to other agents than the MNE targeted. We distinguish between the following kinds;

- Military retaliation by home countries. As seen in Chapter 2, the 'gun-boat diplomacy', mainly expropriation of customs' houses and other military actions, constituted a real threat well into the 20th century. Overt military action seems to have ceased today, while covert action cannot be ruled out.
- Economic responses by home country governments, multilateral organizations or other official agents. Economic retaliation by industrialized countries or multilateral organizations such as the World Bank has attracted much attention. It is less often noted, that there may also be responses by other host countries.
- An impact on direct or portfolio investment, which is associated with the ex ante investment decision of other MNEs than that targeted, or the lending decisions of banks and other private creditor institutions.

Military retaliation can today be considered a small threat in response to selective nationalizations, since it is costly for home countries. Moreover, it is the response which most dramatizes the MNE-host country relationship. Economic responses are, by contrast, frequent. The importance of interstate relationships for direct investment has been much debated over the years. Gilpin (1975) maintained that direct investment requires political backing, and is therefore dependent on the supremacy of a hegemonic power. This was disputed by McCloskey (1971) and Keohane and Nye (1977), who pointed out that shifts in hegemonic power do not fully account for past policy shifts, and that portfolio investment has not been threatened at the same time as direct investment. Host country behaviour would not depend on the opportunities for retaliation by the home country, but governments would be able to manage conflicts without an hierarchical relationship. The arguments can be questioned, however. Can a state commit itself to abstain from action which is in its interest? And if it is in a country's interest to abstain from action, why would it have to commit itself? In practice, countries are intimately related through flows of goods and factors between them. In this study we take the actions of countries and organizations into consideration only to the extent that they materialize in effects on direct or portfolio investment.

Consider first the possibility of indirect effects on direct investment. Theoretical studies tend to make simplistic assumptions. For example, any deviation from an announced

strategy has been taken to destroy a country's reputation for ever, and reduce future investment flows to zero. Empirical studies, in contrast, have come up with inconclusive results. Green's (1972) study of the inter-country pattern of marketing investment and Thunell's (1977) of intra-country flows over time found that there were no significant negative effects from nationalization on direct investment. Kobrin's (1982) study of MNEs from within found that MNEs maintain that host country policies matter, but little factual evidence that they actually do. Work on the impact of environmental policies have similarly found only scattered evidence of effects on investment decisions. Among studies that do find an impact, Guisinger (1985) demonstrated effects of performance requirements and investment incentives.

The fairly weak empirical evidence for effects of host country policies on the flows of direct investment may not be surprising. As pointed out by Eaton and Gersovitz (1984), nationalization need not occur to exert an impact. Given a reasonable amount of foresight and rationality within MNEs, the prospects of the policy prevent direct investment from being undertaken in the first place. Moreover, the complexity of the asset portfolio of MNEs may make it difficult to verify changes in the flows of direct investment, which may be realized through inconspicuous adjustments. Finally, the sensitivity of direct investment to host country behaviour may vary considerably among firms and countries.

How large gains a host country can acquire from a project basically depends on its investment opportunities in relation to those of other countries. UNCTC (1988) points out that many countries may have difficulties to attract direct investment irrespectively of their policies. Those countries tend to have small size, negative or low growth and an adverse location. Other countries which are more favourably endowed may attract a great deal of direct investment even as they treat MNEs relatively adversely. There is nothing controversial about these observations. Our concern is the interdependence in the behaviour of different countries. Host country policies cannot be fully understood by studying countries in isolation.

The present work is confined to the interdependence of host countries in their interaction with MNEs. However, some comments on the home countries of these firms may be appropriate. One aspect of their behaviour vis-à-vis MNEs which has attracted a great

deal of attention in the last years is the tax treatment of residents' foreign source income. There are different kinds of tax systems, but most countries attempt to avoid double taxation. Under the territorial approach, the home country does not tax foreign source income at all. Some European countries, such as France and the Netherlands, use such a system. Under the more common residence approach, foreign source income is taxed in the home country but a credit or deduction may be given for taxes paid in the host country. Some countries exempt foreign income received by residents from their own tax, including retained earnings of foreign subsidiaries, which allows capital-exporting taxes to be deferred until income is repatriated to the investor in the form of dividends.

The crediting of corporate taxes in home countries is important to the design of corporate tax in host countries. The host country's corporate income tax aims at withholding equity accruing to foreigners. If the home country uses resident-based taxation without deduction for foreign taxes, a tax-cut in the host country is of no value to an MNE, but merely transfers income from the capital-importing to the capital-exporting country. With a territorial approach, on the other hand, the host country's corporate income tax affects the MNE directly. The situation is the same with an exempt tax system under which foreign earned income is tax exempt at home if foreign tax has been paid.

Most important home countries with residential tax systems have some element of tax exemption. The U.S. tax system, for example, has a deferral provision which allows firms to report foreign earned income when repatriating after foreign taxes have been paid rather than when it is earned. In case firms do not repatriate but reward domestic shareholders via capital gains instead of dividends (for foreign earned income), the tax system is in effect equivalent to an exempt tax system. Revisions in the 1980s have led to a less favourable treatment of foreign source income than used to be the case.[7] Meanwhile, U.S. direct investment abroad has declined markedly from 1981, while direct investment in the U.S. has increased substantially. In this study, however, we assume throughout an exempt tax system, so that the host country's tax does matter for an MNE.[8] This is valid as a generalization of the real world.

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7 This discussion partly builds on Hines (1987), who argued that the Tax Reform Act of 1986 reinforced a negative incentive for American firms to invest in low-tax countries.

8 The tax rate in a particular host country also matters because an MNE often has a considerable ability to transfer profits between different host countries.

Concerning indirect effects on portfolio investment, it can be noted that the bulk of formalization and modelling of political and economic risks has occurred in response to the rapid increase in international bank lending to developing countries in the last fifteen years.[9] Nationalization and other host country actions which affect foreign investors adversely undoubtedly run the risk of damaging a country´s ability to borrow in the international credit markets. Empirical evidence has shown that spreads in interest rates do not respond very significantly to the usual indicators of creditworthiness (Edwards, 1984, Hajivassiliou, 1986). However, the important role of credit rationing is clear. In practice, a greater difficulty to borrow implies that foreign exchange has to be obtained from other, less favourable sources. Adverse host country behaviour is likely to depress a country's opportunity to borrow commercially, and thereby make foreign exchange more expensive.

3.7 The Theory of Obsolescing Bargain

This section briefly discusses the theory of a 'changing balance of power', or the 'theory of obsolescing bargain'. This has represented the predominant view of the MNE - host country relationship for more than a decade. Some empirical developments which seem at odds with the theory are pointed out.

According to the idea of a changing balance of power, which goes back to Vernon (1971) and Moran (1974), the distribution of bargaining power between MNEs and host countries shifts to the advantage of the latter over time. There are reasons both at the project level and at the country level. We have already noted that direct investment requires sunk costs to begin with, while benefits accrue to an investing firm subsequent to the establishment of a subsidiary. This is in contrast to the host country, which first receives benefits but later incurs costs in the form of capital outflows. Thus, an MNE becomes more susceptible to host country pressure for gains over time. Meanwhile, the development process increases countries' access to foreign markets and technology. This improves their capacity to run firms under domestic ownership, and enables them to put pressure on foreign-controlled subsidiaries for a greater share of the gains.

9 See Van Agtmael (1976), and Nagy (1979/1984) for approaches incorporating quantitative as well as qualitative assessments.

Although there are alternative views, stressing the potential of mutual profits for firms and countries, the theory of obsolescing bargain has attained considerable appreciation. The implication is that the expected profitability of direct investment would decline in developing countries, as would the flow of investment. Chapter 2 argued, however, that there is no simple relationship between host country policies and the flow of direct investment.

Minor (1987) pointed out that the flow of direct investment increased in the mid 1970s, when nationalization peaked, and thereafter declined, as did nationalization. But what is the causal relationship? If direct investment is reversely related to nationalization, why did it increase in 1975? If nationalization is positively related to the flow of direct investment, why did the developing countries not nationalize to a greater extent than they did in 1978-79? A comparison of the flow of direct investment and the number of nationalizations across regions further indicates that there is no clearcut relationship.[10] As discussed in the preceding section, this has already been concluded in empirical studies.

The developments in host country policies seem to fit the theory of obsolescing bargain up to the mid-1970s, but what about after that period? Could more benevolent host country policies have been a response to an expectation of reduced investment flows, in turn caused by expectations of adverse host country policies if the flows continued on a grand scale? Such reasoning seems difficult to support, since the matter of which expectations came first is obscure or, at any rate, impossible to verify. The factual evidence does not point towards a reduction in direct investment prior to the shift towards more benevolent host country policies. The picture must be regarded as incomplete, which signals that there are anomalies in the mainstream conception of the MNE - host country relationship.

A note here is appropriate regarding the argument that the change in host country behaviour from the mid-1970s, including the termination of nationalization, merely reflects a change in attitudes. The developing countries have been said to convert to 'an acceptance of the likelihood of mutually beneficial co-operation ... The possible contribution to economic development and the transfer of technology has been generally

10 Compare the flow of direct investment to the major regions of developing countries 1970-1980 in Table 2.1 with Figure 7.1, which depicts nationalizations across regions.

recognized in developing countries'.[11] Clearly, there has been a broader change in political perceptions at national levels in the direction of more liberal market ideologies. This is not to say, however, that the policy change would somehow not reflect economic rationality. Again, it is our point of departure that host country policies can be understood on the basis of economic costs and benefits.

3.8 The Market for Direct Investment

It is now time to sum up the arguments which form the basis for this work. Our point of departure is that direct investment is traded in a market where it is supplied by firms and demanded by countries. The concept of a market implies that a good or service is traded at some price. The 'goods' can be characterized as the effects generated by investment projects. The 'price' is, in principle, the share of the gains acquired by host countries. But what is the level of the price, and how is it determined?

The notion of a market has seldom been made explicit in past work on direct investment, and there has not been much clarification of its characteristics. In the market for direct investment, there is certainly no perfect competition, neither between countries nor between firms. However, generally speaking there are not monopolies either. The bulk of direct investment is undertaken by a fairly small number of MNEs, between 300 and 600.[12] Even though there are many small and medium-sized MNEs, less than five tend to dominate most industries. Meanwhile, the stock of foreign direct investment is highly concentrated, particularly in manufacturing, where about six countries host some three quarters of the total stock in developing countries.

The market for direct investment looks different for the two major kinds of direct investment. *Import-substituting* or 'tariff-jumping' direct investment is driven by impediments to exports from another country. *Export-oriented* direct investment takes advantage of low factor costs, which outweigh the transport costs of shipping to and from a host country. The difference between the two categories is fairly sharp in

11 UNCTC (1988, p. 262).

12 According to UNCTC (1988), about 600 MNEs account for 20-25 per cent of industrial value added in the market economies.

manufacturing, although some investment in the former may switch to the latter over time. It is less straightforward to classify investment in natural resource extraction along these lines. Such investment is often oriented towards exports, whether final processing occurs here or elsewhere. However, its objective is to make efficient use of resources which are inherent to the host economy.

In the case of import-substituting investment, MNEs can in principle invest in every country - but do not substitute investment in one country for that in another. The bargaining power of countries can be expected to be great, since they may play out firms against each other for shares of their markets. In the case of export-oriented investment, MNEs can choose between countries, which accounts for a weak bargaining position for the latter. This leads to the, perhaps, surprising conclusion that host countries have a greater ability to extract rents from tariff-jumping than from export-oriented investment. In fact, this in no way contradicts the view that the former is less favourable for social welfare.[13] Import-substituting investment tends to be driven by artificial barriers to trade, such as tariffs and non-tariff barriers. With trade displaced, there may well be less efficient resource allocation, and a smaller or even negative net gain to divide. Export-oriented investment, on the other hand, expands trade and implies a more efficient allocation of resources. The net gain to be distributed is likely to be larger from this kind of investment.

It can be debated what kind of investment has the largest potential for the future. With a possible escalation of the barriers to trade, the future of export-oriented investment may be in danger. On the other hand, the inter-country differences in factor costs will in that case widen, requiring increasing policy distortions to prevent a diffusion of production. Increased robotization may lessen the attractiveness of low labour costs, but is unlikely to erase it altogether. Import-substituting investment has suffered from the sluggish growth and accumulation of debt burdens in developing countries. However, the rate of growth is generally high in developing countries compared to industrialized, a state which can be expected to continue. Thus, there should be a considerable potential for future direct investment in both categories. As seen in the preceding chapter, official forecasts today lean towards an investment revival in the developing countries.

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13 Cf. Johnson (1967), Bhagwati (1978), and Kojima and Ozawa (1984).

With a potential gain from foreign direct investment, possible host countries should be expected to make an effort to obtain it. For export-oriented investment, this involves competition with other potential host countries. The same is true for investment which targets a group of markets (including that of the host country), and to some extent for import-substituting investment as well. With limited capacity, MNEs generally invest 'in one country at a time'. Moreover, the developing countries' persistent scarcity of factors that MNEs have in ample supply, such as capital, technology, management skills, etc., suggest a competitive edge for MNEs. Competition between host countries can be observed in e.g. preferential treatment of foreign firms and initial incentives. The existence of 'tax havens' is another conspicuous example of host country competition. The tax haven fraction of worldwide pre tax earnings of U.S. controlled affiliates rose from 11 to 20 per cent over the period 1968-1982 (Hines, 1987).

In spite of the importance of host country competition, it has been examined only in a few studies. Doyle and van Wijnbergen (1984), who analyzed taxation by competing host countries, is a rare exception. However, their results hinge on the assumption of zero profits due to perfect competition between firms. As pointed out by Caves (1982), direct investment often generates high returns on intramarginal units of investment because subsidiaries draw on parent firms' intangible assets, or excess capacity in tangible assets. In a market where both countries and firms compete, there is no justification for assuming zero profits after tax.

Assuming zero profits means neglecting the distribution of gains as well as the question whether direct investment is undertaken in the first place. To consider one firm - one country interaction means to neglect competition between firms as well as countries. Instead, this work starts out with the assumption that there exist potentially profitable investment projects. Different host countries compete to obtain those projects and acquire as much as possible of the gains. In order to do that they may have a range of alternative policy options, here represented by taxation and nationalization.

With a potential for mutual profits from an investment project, maximization of overall welfare requires that it is undertaken. However, an MNE invests only to the extent that its

expected return is higher than from its best alternative. Building on (3.3), the requirement for a firm to undertake direct investment, f, in country i, can be written

(3.4) f in i iff: $E[[(1-\phi_i)\pi_i - \emptyset_i](1- r_i) - S_i] \geq \max [E[[(1-\phi_j)\pi_j - \emptyset_j](1- r_j)] - S_j, 0]$
where $j \neq i$

where π is profit before tax, ϕ the corporate income tax, $\emptyset$ a lumpsum tax and S the sunk cost of setting up a subsidiary. (3.4) says that a firm weighs its expected profit net of tax with the probability of not being nationalized, denoted r. Investment is undertaken in country i if and only if the expected profit net of tax is positive *and* larger than in the best alternative host country, j. The best alternative *other than* direct investment in another host country, whether production at home, licensing, turnkey contracts, etc., is in this study set at zero.

The attractiveness of the best alternative depends on what behaviour is expected from other potential host countries. A host country's maximization problem can be written

$$(3.5) \quad \max_{\phi,\emptyset,\lambda} \sum_{t=1}^{\infty} \sum_{f=1}^{n_t} [(1- \lambda_f) (\phi_{ft} \pi_{ft} + \emptyset_{ft} + X_{Gft} - X_{Bft}) + \lambda_f (\pi_{ft}^N + X_{Gft}^N - X_{Bft}^N)]$$

s.t. f in *i* , $\phi = [0, 1]$ and $\lambda_f = \{0, 1\}$

which can be compared with (3.2). The host country maximizes its gains, over an infinite time horizon and a potential flow of n investment projects each period, through corporate income tax (ϕ), lumpsum taxes ($\emptyset$) and nationalization (λ). It is assumed that a host country can discriminate policies perfectly between firms. In case an affiliate is nationalized, the whole profit is retained by the host country but the level of profit as well as the external effects may be affected. The levels subsequent to nationalization are marked by superscript N. The corporate income tax is a continuous variable between 0 and 1 and nationalization is discrete, taking either the value 0 or 1 (nationalization). (3.4) and (3.5) represent the two sides of the market, on each of which a number of agents maximize their gains from direct investment over time.

Finally, we consider that potential host countries, like MNEs, tend to be heterogeneous. The 'goods' traded in the market are diversified, and the value dependent on which seller and buyer strikes a deal. This seems to imply that the determination of the 'price' is complex. Hajivassiliou (1987), in his study of poor countries' debt repayment problems, incorporated country heterogeneity through an error-components structure which deviated from the standard stochastic properties. Here, dissimilarities between countries will systematically influence the behavioral options of MNEs and host countries.

3.8 Summary

This chapter has presented a theoretical background to MNE - host country interaction. The view of MNEs adopted is that provided by the OLI-framework. We assume that both MNEs and host countries maximize their profits respective socio-economic gains from direct investment within a bargaining framework. Each side acts as best it can at each point in time. The crucial distinction in time is that between the *ex ante* and *ex post* stages of undertaking a project. The reason is that the establishment of a subsidiary incurs an MNE costs which are to be sunk, while benefits accrue later. Ex post the set-up of a project, a host country seeks to capture as much as possible of the gains through taxation or nationalization. The *direct effects* of these policies are defined as those relating to the MNE targeted. *The indirect effects* relate to other agents, notably private agents contemplating to undertake direct or portfolio investment. Home country behaviour is not explicitly considered, but an exempt tax system is assumed to prevail at home. Accordingly, the host countries' tax rates matter to MNEs.

It is argued that the mainstream theory of a 'changing balance of power', or 'the theory of obsolescing bargain', does not explain the major developments in host country behaviour in the last decade. This calls for a partly new framework of analysis. We view direct investment as traded in a market where it is supplied by firms and demanded by countries. The share of the gains acquired by host countries can be interpreted as the 'price'. The characteristics of the market differ between e.g. direct investment which substitutes for imports and that which is export oriented. Competition between host countries is relatively more important for the latter kind. Chapters 4 to 8 investigate the consequences of competition between host countries through taxation and nationalization.

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4 TAXATION OF MNE AFFILIATES BY COMPETING HOST COUNTRIES

4.1 Introduction

In this chapter we are concerned with taxation of MNEs when there are competing potential host countries. The analysis is most relevant for export-oriented manufacturing affiliates, rather than for import-substituting investment, for which competition between firms is relatively more important.[1] Nationalization is ruled out, meaning that internalization of activities within MNEs is taken for granted. This is partly motivated by the fact that nationalization is not an issue for all direct investment, whereas taxation is. In particular, nationalization is often the least threat to export-oriented investment where the parent's access to foreign markets tends to be pivotal. Furthermore, complete information is assumed to prevail throughout. Applications to the real world will require adjustments for firm- and industry-specific conditions, including imperfections in information.

The fundamental objective of taxation is normally to generate government revenue in the least distorting way. This motivates uniform tax rates on capital goods in closed economies. As expounded in the literature on optimal taxation (e.g. Diamond and Mirrlees, 1971), it is inefficient to have firms within and across industries facing different relative prices in their use of factors of production. Most tax reform proposals over the last decades have been consistent with the theoretical arguments. For example, the Carter Report (1966), the Meade Report (1978), the U.S. Treasury I Report (1984), and the Canadian MacDonald Commission Report (1985) have argued in favour of uniform taxes on assets.

The case for uniform tax rates looks different when international aspects are considered. In fact, corporate tax rates vary considerably across countries, from not much more than zero in 'tax paradises' to about 50 per cent in countries such as France, West Germany

1 However, there is some host country competition for such investment as well, cf. Chapter 3.

and Canada. Although there are cultural and constitutional explanations, the importance of economic factors is evident. Tax policy must pay attention to a country's competitive situation, or the tax sensitivity of capital flows. For growth and economic development in general, it is a prerequisite for a country to attract investment. At the same time, a government wants to extract gains from business, particularly from foreign direct investment, whose profits net of tax are sooner or later repatriated abroad.

As discussed in the preceding chapter, we assume an exempt tax system in the home country. The host country faces a tradeoff between raising taxes and attracting direct investment. The task of negotiating a mutually rewarding contract between an MNE and a host country is complicated by the time dimension. Because direct investment is associated with fixed and irreversible costs, its undertaking requires that the MNE can expect to repatriate a profit which is higher than the variable cost. With more than one jurisdiction involved, however, agents cannot commit future behaviour. On the contrary, 'perfectness' assures that an agent does not stick to a contract when he can do better. In other words, contracts are bound to be broken unless it is optimal to keep them. An MNE invests only if a satisfactory profit can be expected given optimal host country behaviour.

Given complete information, it is in the 'one firm - one country' case well-known that direct investment is prevented by the prospect of optimal host country taxation. Regardless of what is negotiated ex ante, the host country taxes the whole profit ex post (see for example Shenfeld, 1984). In accordance with Kydland and Prescott (1977), the optimal plan of the host country can be characterized as dynamically inconsistent with respect to the behaviour of the firm. The country would gain if it could pre-commit itself to abstain from the optimal ex post policy.

Formal analyses of the MNE-host country relationship have generally been confined to the one firm - one country case so far. As we know, however, the developing countries are short of 'factors' that foreign investors can provide and we should therefore expect them to compete for direct investment. Doyle and van Wijnbergen (1984) and Eaton and Gersovitz (1983) represent two of the few theoretical studies that have considered the implications of host country competition for taxation. Instead of investigating the distribution of gains, as is the task of this work, these studies assume perfect competition and zero profits net of tax.

Intuitively, it seems plausible that host country competition makes a difference for how the gains from direct investment are divided. If a country taxes all profit from an investment project, a firm has the option to set up a subsidiary in another country and produce there instead. Will this not force countries to keep taxes low? Similarly, if all other countries set a high level of tax, can this not be done by the last one as well? To provide some answers to such questions, this chapter determines the optimal level of taxation in a sequential bargaining framework. Due to their legislative power, countries are able to negotiate business conditions at any time and to discriminate their policies between firms perfectly.[2]

Host countries are modelled as gaining from direct investment solely through corporate income tax. Of course, it can be noted that tax holidays are often regarded worthwhile although corporate income tax constitutes the most tangible host country gain. This implies that the net outcome of other effects is generally non-negative. Similarly, the fact that only temporary rather than permanent tax concessions are made implies that other effects are negligible on balance. This could be argued to justify our construction, and it is relatively straightforward to supplement the model with other effects entering as mere constants. However, a comprehensive analysis of the welfare effects of direct investment requires a more detailed treatment of the functioning of subsidiaries, as well as host economies, than attempted here.

It should be noted that all indirect effects of taxation are excluded, i.e. effects that relate to other agents than the MNE affiliate directly targeted by policy action. This assumption may at first seem overly restrictive. Among other things, it rules out the possibility that violation of contracts is prevented by the prospects of future gains in a business relationship that involves a sequence of projects. However, indirect effects matter because they can discourage home country action even when this pays with respect to an individual project. We examine here the more fundamental question of whether host country action is worthwhile solely on the basis of the gain that can be made from an individual project. It deserves to be mentioned that there is no a priori argument why a country's actions should affect other investment projects than the one directly targeted.

2 This construction, which enables consideration of taxation of one firm at a time, is in line with the prevailing literature (e.g. Doyle and van Wijnbergen, 1984, Shenfeld, 1984). It is particularly relevant because taxation represents a range of measures which influence the behaviour of MNEs. In some of them, such as performance requirements and investment incentives, host country competition is more tangible than in corporate income taxes.

Given complete information there should, in fact, be no indirect effect. With incomplete information, on the other hand, indirect effects are plausible.[3] It is, in practice, important to add such considerations to the present analysis but, as discussed in the conclusions, they are unlikely to interfere with our results.

The chapter is organized as follows. Section 4.2 presents the set-up of the game between an MNE and competing host countries. The four subsequent sections analyse the outcome in four different model specifications, which are gradually extended from simplicity towards complexity. Section 4.3 (Model 1) considers two identical host countries when the irreversible cost required for direct investment can only sustain production in the same time period. The result obtained is shown not to hold when the sunk cost may sustain subsequent production as well. This is the case with the second model in Section 4.4, where technology allows investment to be 'resting' while a subsidiary is set up in the other country. In Section 4.5 (Model 3), it is shown that the nature of the sunk cost does not matter when countries are allowed to offer initial incentives to MNEs. The findings of the most general interest are those of the fourth model in Section 4.6, which incorporates the possibility of dissimilar countries. The findings of this section are robust with respect to any number of dissimilar countries. Section 4.7 summarizes the results of the four models. Section 4.8 concludes.

4.2 The game

In order to analyse how the gain from direct investment is divided when there are competing potential host countries, consider a noncooperative game without any indirect effects from violation of contracts. Firms and countries act as rational maximizers of their profits respective socio-economic gains from direct investment. Information is complete, so that the whole game structure and all possible pay-offs are known to all players. At any point in time, players maximize their gains given the best possible actions of other players in all time periods, which is consistent with the characterization of a Nash equilibrium.

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3 As already discussed, the empirical evidence on indirect effects of host country policies on investment behaviour is inconclusive. Indirect effects are probably more likely from nationalization than taxation, being a more conspicuous and controversial policy. However, empirical studies have in many cases failed to verify indirect effects. Cf. Section 3.6.

The Nash equilibrium embodies the principle that agents act in accordance with their incentives. As pointed out by Johansen (1982), the Nash equilibrium is sometimes mistakenly interpreted as taking agents to be shortsighted concerning the behaviour of others. On the contrary, it requires a great deal of sophistication. Agents take all optimal responses, in any possible consternations, into consideration. In sequential bargaining, however, it is a weak solution concept since incredible threats are admitted. Any individually rational outcome can result in a Nash equilibrium. For this reason, we make use of the stronger concept of subgame perfect equilibrium, defined by Selten (1975).

A combination of strategies constitutes a subgame perfect equilibrium if, in every subgame, the strategies relating to that subgame form a Nash equilibrium. In a subgame perfect equilibrium, an agent cannot be induced by another player's deviation from equilibrium to deviate himself. A plan remains optimal along an unanticipated path as well as along anticipated ones. The subgame perfect equilibrium is an improvement over Nash in that incredible threats become less useful.[4] From now on, this is in this chapter referred to as 'equilibrium'.

The object of study is a firm which, if it produces in a developing country, can generate a positive profit before tax. Many plausible constructions can motivate a positive profit. For simplicity, consider a firm which can produce and sell at home just one good at a price P, which is taken as given. Production can be located either at home or, through a subsidiary, in one of two possible host countries. The pre-tax profit, R, is

$$(4.1) \qquad R = P - z - w_i \qquad\qquad i = H, C_1, C_2$$

where z is the cost of drawing on the parent's specific ownership advantage and w_i the wage cost. H stands for the home country and C_1 and C_2 for the two potential host countries. The ownership advantage allows labour to be hired anywhere. Assume that

$$(4.2) \qquad P = z + w_H > z + w_{C1} = z + w_{C2}$$

4 Contrary to what is sometimes asserted, the subgame-perfect equilibrium does not rule out incredible threats altogether. See further Segerström (1988a), who discusses a number of requirements for this to be fulfilled. The qualifications are not necessary for our analysis, however, and are therefore ignored here.

i.e. C_1 and C_2 have the same wage level, which is strictly lower than w_H. If production takes place in H, we have R = 0, if in C_1 or C_2 it is assumed that R = 1. Thus, there is a potential real profit of one unit to be shared between the MNE and one of the host countries. This is then divided through the latter's tax rate, ø. The life span of an investment project is represented by one time period, so that a subsidiary depreciates completely after one period of production.[5] Although production lasts only one time period, the game is dynamic because we do not know what period that is.

The home country, H, represents a zero profit alternative and is therefore not included in the game. This makes the set of players, N, consist of

(4.3) $N = \{F, C_1, C_2\}$

where F is the investing MNE, and C_1 and C_2 the two potential host countries. Since there are two countries in which the profit can be realized, F can bargain with them for a tax as low as possible. Obviously, the Walrasian 'market clearing' tax is 0 (cf. Shaked and Sutton, 1984). With two important extensions, the outcome is more complicated. Firstly, setting up a subsidiary in a foreign country requires a fixed and irreversible cost. Secondly, economic agents are not indifferent with respect to when in time a gain is made.

Assume that the set-up of a subsidiary in C_1 or C_2 requires a fixed irreversible cost, S, added to the costs in (4.1) and (4.2). S is taken to be only a fraction of 1, so that there is still a potential profit to be made. Time is discrete, the time horizon infinite and the discount factor E = [0, 1]. A good is sold in the same period as it is produced, so that revenues are obtained immediately. Although discounting needs no justification, one special interpretation in this context is that the MNE has partial market power, through e.g. a patent. The market can be saturated by one period's output but, if advantage is not taken of the opportunity, competitors gradually develop substitutes and reduce the good's real price as well as the potential profit.

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5 The life span could be split up, but the presentation would become considerably more complicated without great changes in the distribution of gains since we already allow production to be deferred. Allowing investment projects to operate over many time periods, a common finding is that ø rises gradually, which is one aspect of the theory of 'obsolescing bargain', cf. Shenfeld (1984) and Doyle and van Wijnbergen (1984).

Further, let us assume that there are no budget constraints. Hence, direct investment can always be financed. However, only one subsidiary is allowed to be set up in each period. This means that our time unit corresponds to the time needed for an MNE to relocate its productive resources. The discount factor becomes an indicator of how quickly the MNE can reorganize itself among host countries. The smaller the discount factor, the 'longer' it takes to realize investment in the other country. When E = 1 the host country can set up a subsidiary in the other country immediately. When E = 0, this can not be done at all so that host country competition is ruled out altogether ex post investment in a country. Together, S and E can be said to characterize the 'mobility' of direct investment.

A host country is free to change ø at any time. Consequently it is set *after* a subsidiary is established. Setting ø prior to an investment is undertaken is meaningless, since it can always be changed. However, we must assume that ø is set before production takes place. When production has begun, the country cannot change ø and the firm is unable to escape it. Hence, the host country obtains ø and the firm 1 - ø. Allowing ø to be set after production would lack economic sense since the whole life span of an investment project is represented by one time period. A tax may certainly be revised subsequent to the spending of investment required to start up production. However, it cannot be collected after a project has depreciated.[6] Since only one good is produced, the game ends when the decision to produce is made.

In the following sections, the game is set up and analyzed in four different model specifications. Strategies and pay-off functions are presented case by case. It turns out that production always occurs in t=1, when the potential gain of direct investment is largest, except when it is discouraged in the first place. However, the determination of an equilibrium requires a calculation of payoffs in subsequent periods, which is in line with the established solution technique for a subgame perfect equilibrium. Section 4.7 compares the results in the four models and their implications.

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6 Our construction is in line with the general view of MNE-host country interaction. Since production of one unit represents the whole business activity and there are no future dealings between an MNE and a host country, allowing taxes to be set after production is implausible and results in trivial consequences.

4.3 Model 1: Non-deferrable Production

In this section, the irreversible cost (S) is assumed to sustain production only in the same period. If the firm wishes to enter a country again, it will have to spend S anew. The options open to the players are

$$(4.4) \qquad A_F^0 = \{in_{C1}, in_{C2}, e\},\ A_{FC1} = \{q_1, in_{C2}, e\},\ A_{FC2} = \{q_2, in_{C1}, e\}$$
$$A_{C1} = A_{C2} = [0, 1]$$

where A_F^0 refers to the single period action space of F in period zero, which is the state before any investment has been undertaken. A_{FC1} is the action space of F when it has set up a subsidiary in C_1, and A_{FC2} the corresponding space when it has done so in C_2. The connotation 'in_{C1}' means setting up a subsidiary in C_1, e means exiting the game, i.e. not investing in any country and q_1 means producing in C_1. A_{C1} is the strategy space of C_1 and A_{C2} that of C_2. Throughout, subscript marks agent and superscript time period.

As can be seen, F makes only the discrete choices whether and where to invest and produce. If F chooses not to produce subsequent to investment, it withdraws to invest in the alternative country. There is always a possibility to end the game, but after t=0 that cannot represent the actual outcome since if e dominates any time it must prevent investment in the first place.[7] The countries, on the other hand, set ø which is a continuous variable taking a value between 0 and 1. The game is symmetric with respect to the countries, which are identical ex ante. The choice of strategies is returned to below.

Figure 4.1 illustrates the game in extensive form. The payoffs are denoted u_F, u_{C1}, u_{C2} or u_i, with $i = C_1, C_2$ when the countries' return is the same. In the first period, t=0, F has not invested in any country. Period t=1, the first ex post stage, begins as F spends S (thought of as an instantaneous event) in either C_1 (in_{C1}) or C_2 (in_{C2}). This act, marked by a dark rectangle, is followed by the host country setting $ø^1$. F then chooses production, q^1, or withdrawal. Production means that R=1 is divided between the host country and the firm through $ø^1$. The country gains $ø^1$ and F gains $(1 - ø^1)$ - S. If F chooses not to produce, it instead invests in the other country. The game then continues in t=2 with the same process as in t=1 reiterated, the only difference being that costs and

7 There are no exogenous forces in the model, so what does not pay today cannot pay tomorrow either when nothing is done. A firm which chooses not to invest will therefore never invest.

benefits are now discounted. F first spends S and, subsequent to an offered ϕ^2, chooses between production and withdrawal. In this way, the game can in principle be repeated endlessly, although the gain to be shared diminishes due to discounting and the repeated spending of irreversible costs.[8]

Figure 4.2 illustrates the distribution of gains between F and C_1 or C_2 in coalitional form. The payoff of the firm, u_F, is measured along the vertical axis, while those of the countries are measured along the horizontal axis to the right and left of origo respectively. The diagonal t-lines represent candidates for equilibria in the case of production in different time periods. They illustrate possible results for F and the country in which production occurs, with extreme tax rates determining the end points. The larger ϕ is, the smaller the share of the MNE and the larger that of the host country. In diagrammatic terms, this would correspond to a low outcome as measured by the vertical axis and a point far out along the horizontal axis. Production at $\phi^1 = 0$, for example, renders a distribution on the vertical axis at 1-S. Production at $\phi_1{}^1 = 1$ achieves; $u_F = -S$ and $u_{C1} = 1$. F has spent S ex ante but C_1 taxes the whole gain ex post. The erosion of the potential profit over time is reflected in the downward shift of the t-lines, by $1 - E(1-S)$ between t=1 and t = 2, by $E - E^2(1-S)$ between t = 2 and t = 3, and so on. Direct investment is prevented in the first place if we end up beneath the horizontal axis, since the pay-off of the MNE then is negative.

To summarize, F maximizes the discounted value of profit after tax, the countries maximize the discounted value of tax revenue. The outcome depends on whether production occurs, in what time period that is and what the tax rate is.

Consider a situation in which F has invested in country 1. To maximize its tax revenue without at the same time discouraging the firm from producing, C_1 sets the highest $\phi_1{}^1$ which guarantees F a return as high as its best alternative. Note that in the 'one firm - one country' case, F has only the alternative to exit, e^1. In relation to this, C_1 can set $\phi_1{}^1 = 1$, i.e. tax the whole profit. With two countries, the possibility of investment in C_2 must be considered. $\phi_1{}^1$ is then restrained by; $(1-\phi_1{}^1) \geq E\,(1-\phi_2{}^2 - S)$.[9] In words, if a firm

8 This is not a repeated game in the true sense since events are not exactly repeated period by period. Nevertheless, we can speak in terms of 'repetition of the game' referring to repetitive investment in the two countries.

9 It is assumed that a firm earning the same from production in a subsidiary as from the best alternative, chooses production. Thus, we do not need strict inequality. The assumption (cont.)

undertakes direct investment in a country, that country must leave the firm with at least as much profit net of tax as it would obtain from instead setting up a subsidiary in the other country in the subsequent period.

First, consider the possibility of Nash equilibria. Think of an arbitrary number, a, such that $0 \leq a \leq 1$. Say that F uses a strategy such that, given investment in a country, production occurs only if $\phi \leq a$. If $\phi > a$, F consequently withdraws without producing so that the host country earns zero. It is immediately clear that any ϕ can form a Nash equilibrium. Whichever a is chosen by the firm, the host country maximizes its payoff by offering $\phi = a$ since a higher tax prevents the country from obtaining any gain, and a lower makes it earn less than what is attainable.

The failure to render a unique Nash equilibrium derives from the acceptance of incredible threats. This 'weakness' does not pertain to (subgame perfect) equilibria, which require that agents maximize payoffs in all possible subgames. In a finite game, equilibrium can be identified by tracing optimal choices from the end backwards, i.e. from right to left in the extensive form. Since our game is infinite, that method cannot be used. It is not difficult to construct one candidate for equilibrium, however. Consider the strategy combination $\hat{o}$

$$
\begin{aligned}
(4.5) \qquad & \hat{o}_{Ci} = \phi_{Ci}(y^t) = 1 \quad \forall\, y^t \in Y \\
& \hat{o}_F(y^0) = e^0 \\
& \hat{o}_F(y^t) = q_{Ci} \quad \forall\, \phi^t
\end{aligned}
$$

where y^t is the history of a particular situation, part of the set of all possible histories, Y. $\hat{o}_F(y^0)$ represents the behaviour of F in t=0 according to the $\hat{o}$ strategy combination. (4.5) says that both host countries always set $\phi = 1$ ex post, and that F therefore chooses not to invest in the first place. It is easily seen that the strategy combination $\hat{o}$ supports an equilibrium. Denote $\phi = 1 = \phi^*$. It is always optimal for a country which obtains investment to offer ϕ^* because, subsequent to investment, F cannot do better than to produce at this tax rate. Since setting up a subsidiary simply would mean that the sunk cost is lost without compensation, F chooses e^0 to begin with.

... is not crucial but simplifies the presentation. It can be motivated by, for example, the correspondence of lexiographic preferences, with production at zero profit preferred to no production.

FIGURE 4.1: Irreversible Cost Useful Immediately Only, Extensive Form

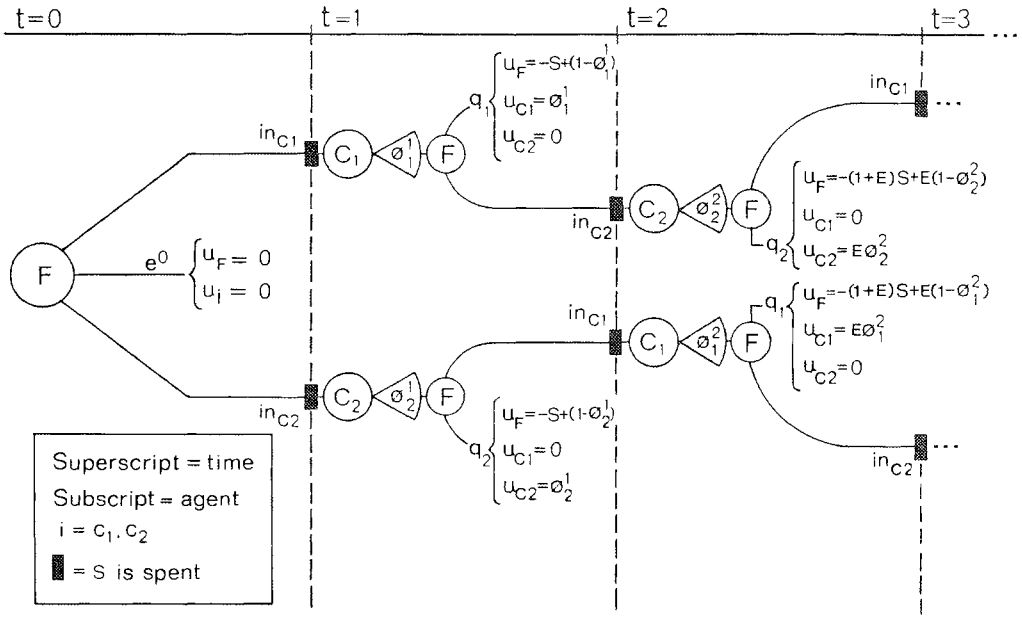
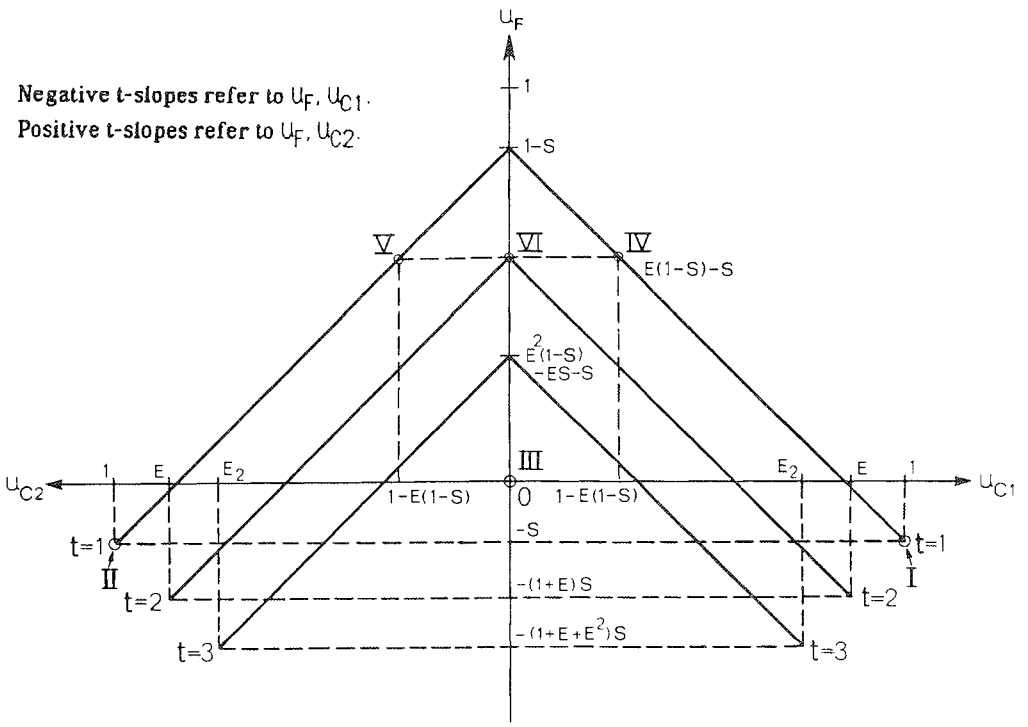


FIGURE 4.2: The Distribution of Gains, Coalitional Form



The setting of ø in the two countries appears to interact infinitely, since investment in the other country is always an alternative for F. For this reason, any tax rate seems to support an equilibrium. The remarkable result is, however, that ô represents a unique equilibrium. This is stated in Proposition 4.1, which is proved below.

Proposition 4.1: When the irreversible cost cannot be used for production later, foreign direct investment in one out of two identical countries always results in $ø^* = 1$. *Thus, investment does not pay in the first place, so that* e^0 *is a unique equilibrium.*

Proof; Assume that investment has occurred in C_1 in t=1. We know that ø can never exceed $ø^* = 1$. Thus, any $ø_1{}^{1**} \neq ø_1{}^{1*}$ must be such that; $ø_1{}^{1**} < ø_1{}^{1*}$. Assume that there exists a $ø_1{}^{1**}$ such that; $u_{C1}(ø_1{}^{1**}) > u_{C1}(ø_1{}^{1*})$. Since $\partial u_{C1}/\partial ø_1{}^1 > 0$, $u_{C1}(ø_1{}^{1**})$ must then stem from $q_1{}^1$ while $u_{C1}(ø_1{}^{1*})$ must stem from not $q_1{}^1$, because the inequality $u_{C1}(ø_1{}^{1**}) > u_{C1}(ø_1{}^{1*})$ cannot hold otherwise. C_2, presenting the only possible non-zero alternative for F, must set $ø_2{}^2$ so that; $(1-ø_1{}^{1*}) < E\,(1-ø_2{}^2 - S) \leq (1-ø_1{}^{1**})$. But $ø_2{}^2$ would be set by C_2 as high as possible while compensating F for its best alternative rate of return. Thus, we will have $E(1-ø_2{}^2) = E^2(1-ø_1{}^3 - S)$. By using this equality, we would have that; $(1-ø_1{}^{1*}) < E^2\,(1-ø_1{}^3 - S) - ES \leq (1-ø_1{}^{1**})$. But this is impossible, since the situation C_1 faces in t=3 is exactly identical to that in t=1. This must render $ø_1{}^1 = ø_1{}^3 = ø^*$, ensuring that $ø_2{}^2 = ø^*$ is optimal for C_2. There is no viable strategy which can realize a better outcome for F than to produce at this tax rate. Since $ø^1 = ø^*$, F is bound to make a loss by investing in any country, ensuring that e^0 is a unique ex ante equilibrium./

We have seen that, while any tax can form a Nash equilibrium due to a firm's ability to make incredible threats, there is a unique subgame perfect equilibrium. Once investment has been undertaken, it is *always optimal for the chosen country to tax the whole profit from production*. The outcome is in Figure 4.2 represented by the point I in case of investment in C_1, and by II in C_2. Since either results in a negative ex ante pay-off for the firm (-S), III is the unique ex ante equilibrium. As in the one firm-one country case, direct investment is prevented in the first place because host countries cannot commit future behaviour. The novelty is that the interaction between two competing host countries, in setting their optimal taxes, prevents them from competing effectively. No collusion is involved, but a host country is still known always to set ø = 1 ex post the undertaking of direct investment, making a firm's threat to withdraw incredible.

The one firm - one country result is thereby seen to hold under these circumstances. This may seem of little practical relevance since direct investment does occur in the real world. However, the implication may be that, for example, agents are irrational, information incomplete, violation of contracts results in indirect costs such as those of damaging a business relationship that involves a sequence of projects, host countries offer initial incentives to firms or that there are more than two host countries competing for gains. The latter two possibilities are examined below. Before that, the result's robustness with respect to the specification of technology is considered in the next section.

4.4 Model 2: Production at Any Time

The set-up here is identical to the preceding one, except for the nature of the fixed, irreversible cost of setting up a subsidiary. We now assume that a subsidiary can be used for production in any future time period. In Figure 4.3, the game is shown in extensive form, while we refer back to Figure 4.2 for an illustration of the outcome in the coalitional form.

In t=0 and t=1, the game is the same as in the preceding section. If the MNE does not produce in the first period, however, it can set up a subsidiary in the other country as well in t=2 and still produce in the first country. That is, F can postpone the decision whether to produce in a country, without losing S. F is, in other words, able to diversify its production apparatus internationally.

Again, countries can bargain with a firm for a changed tax rate at any time. Bargaining is frictionless so that any number of offers can be exchanged within a time period. If a subsidiary is set up in both countries, the two have to compete with each other to secure any gain. In this case, the Walrasian market clearing ϕ_i^2 is clearly zero.[10] Given that $E \geq (1 + E)S$, i.e. the value of production in t=2 surpasses the cost of spending S in t=1 and t=2, F can consequently realize this outcome in t=2 and gain the whole profit net of setting up two subsidiaries. This is marked point VI in Figure 4.2.

---

10 In analogy with the case of the firm, lexiographic preferences can be assumed to make a country prefer production at a zero tax to no production. It is, for example, plausible that a country prefers a large industrial sector to a small when there is no difference in terms of income.

Assume that C_1 obtains a project in the first period. In order to gain anything, C_1 must set $\phi_1{}^1$ subject to the constraint; $(1-\phi_1{}^1) \geq E(1- S)$. This means compensating F for its best alternative rate of return in t=2. As $\partial u_1/\partial \phi_1 > 0$, the solution is; $\phi_1{}^{1*} = 1 - E(1-S)$, being the highest tax for which the constraint holds. The resulting distribution is

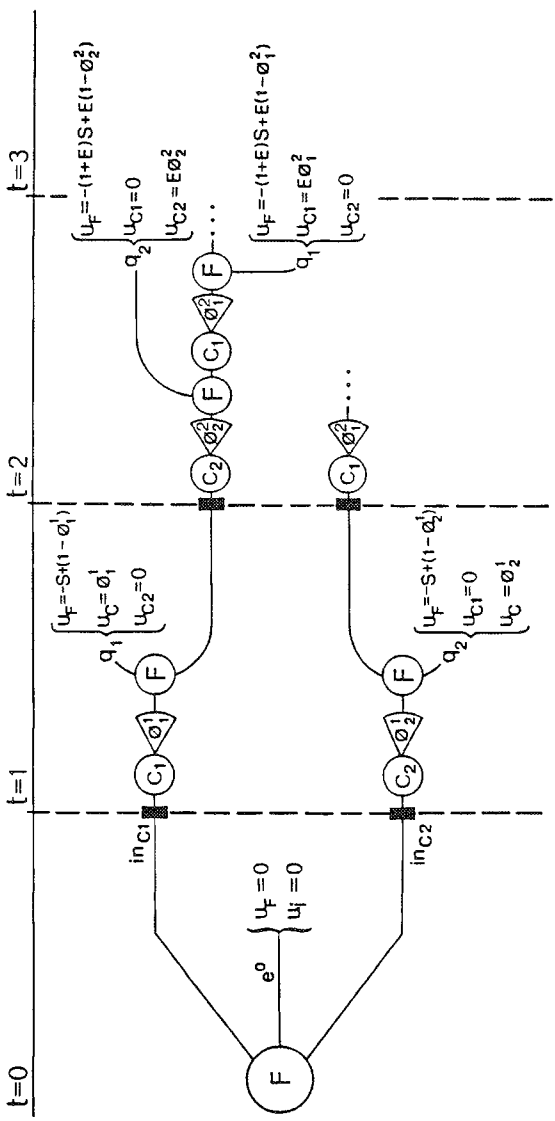
$$
\begin{aligned}
(4.6) \qquad u_F &= E(1-S) - S \\
u_{C1} &= 1 - E(1-S) \\
u_{C2} &= 0
\end{aligned}
$$

The host country can tax only as much as the value of production before tax would diminish by having it deferred to the next period in the other country. This means that the MNE obtains an amount corresponding to the entire profit in t=2, less the cost of setting up two subsidiaries. The firm is indifferent ex-ante between the two countries, since both would set ϕ^{1*} subsequent to investment. The outcome of direct investment in the two countries is represented by the points IV and V respectively in Figure 4.2. Either is a unique equilibrium *given* investment in a country. In analogy with Section 4.3, no threat of deviation is credible. Any $\phi^{1**} \neq \phi^{1*}$ must be inferior for a country since a lower tax means less tax revenue and a higher makes F invest in the other country as well.

In contrast to Model 1, we have in this case demonstrated that effective host country competition restricts the level of taxation. Provided that there is a net benefit from production in the second period, direct investment pays and is undertaken in the first period. The distribution of gains favors the MNE, the smaller the irreversible cost and the larger the discount factor. Discounting diminishes the firm's share because the alternative investment opportunity is weakened. With E = 1, we have $u_F = 1 - 2S$ as the best possible outcome for an MNE in this model set-up.

Thus, the outcome obtained in Section 4.3 - no direct investment in equilibrium - does not hold when subsidiaries can be set up in both countries before the decision where to produce needs to be taken. Indeed, it appears plausible that irreversible costs can support production later. However, the nature of the irreversible cost lacks importance when initial incentives are allowed, as will be seen in the following.

FIGURE 4.3: Irreversible Cost Useful In Production Any Time, Extensive Form



4.5 Model 3: Investment Incentives Offered by Two Identical Countries

In the first two models, the MNE has made the first move and the two countries have had a potential for real gains if selected as host. It should then be expected that the potential host countries make efforts ex ante to obtain investment. Such efforts are also frequently observed in the real world, where they take the form of subsidized infrastructure, tax holidays, various guarantees and promises aimed at making the host country, or certain interest groups within it such as labour unions, morally committed to a course of behaviour which is advantageous to the MNE. Thus, we here introduce the possibility for countries to offer an investment incentive, k, to the firm as it sets up a subsidiary.[11]

Doyle and van Wijnbergen (1984), who analysed sequential bargaining between many host countries and firms, concluded that host countries provide tax holidays. In their model, host countries offer tax rates period for period and firms make counter-offers. In equilibrium, an offer surmounts the previous period's tax rate with the value of a 'disgruntlement cost', which is suffered by a firm if it does not accept a tax increase but makes a counteroffer.[12] It is shown that there is a unique equilibrium with a tax-holiday whose discounted value amounts exactly to the irreversible cost. However, the distribution of gains is not really considered. Underlying the result is the assumption that perfect competition between firms achieves a zero ex ante return net of tax.

In the following, we consider both kinds of constructions of the irreversible cost used in the two previous sections respectively, but start with the case where the sunk cost sustains production in the same period only. The strategy space of F is unchanged, but those of the countries are now extended to encompass a one-time offer, k, which is a continuous variable taking a positive number. The game is in Figure 4.4 presented in extensive form. Only the path when investment is undertaken in C_1 first is shown, since the game is symmetrical with respect to the countries.

---

11 The most plausible interpretation of k is a bribe or, to the extent that it does not surmount S, subsidized infrastructure. The latter may be seen as a measure to reduce the sunk cost. The interpretation of a tax holiday makes sense when the life span of subsidiaries is divided into two 'periods'. In the first, a host country is for some reason unable to violate an initial contract. The establishment of the subsidiary may not yet be completed, due to sequential investment, for example. In the second period investment has become sunk. In practice, tax holidays tend to last for several years and are probably respected first and foremost because violation would seriously discourage future investment.

12 The 'disgruntlement' cost can be interpreted as lost good-will for the firm.

The two potential host countries have the option to offer k^1 in t=0. Again, bidding is frictionless so that F can reject many offers and still accept one in t=0. Accepting an ex ante offer, say $k_1{}^1$, F obtains $k_1{}^1$ from C_1 as t=1 begins. Since k is a compensation for S, it is reasonable to assume that these payments are made simultaneously. C_1 then sets $\phi_1{}^1$. Before F has to decide how to respond, $k_2{}^2$ is offered by C_2. Either F rejects $k_2{}^2$ in preference of $q_1{}^1$, or it accepts $k_2{}^2$ and invests in C_2, spending S as $k_2{}^2$ is received in the beginning of t=2. C_2 then sets $\phi_2{}^2$.

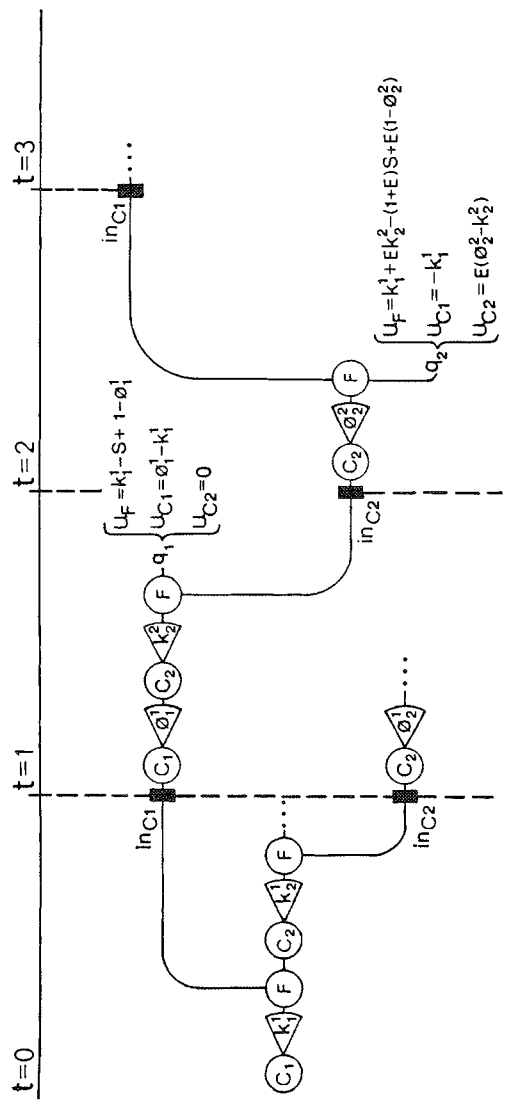
It can be questioned whether a country is prepared to offer k more than once. On the one hand, agents base decisions solely on future costs and benefits. On the other hand, it seems unreasonable that a firm which accepts a special incentive but then withdraws without giving anything in return could expect to be offered an incentive again. Although it makes the analysis a little bit more complicated, we make the plausible assumption that countries only offer initial incentives to firms that have not incurred losses to them in the past. In other words, a country is willing to offer an initial incentive to a firm on just one occasion. If the firm withdraws without producing the country will never offer it an initial incentive again. This construction is chosen because it is believed to render the most realistic analysis but, as will be commented on, it does not influence the distribution of gains.

As the two countries are symmetrical, a country can obtain investment in t=1 only if it offers a larger k than the other country. A certain k is offered only if it pays. Again there is no last period, but equilibrium can be determined with the help of Proposition 4.1. The result is stated as Proposition 4.2. It is proved below.

Proposition 4.2: When two identical countries can offer investment incentives, we have in equilibrium; $k_j{}^{1*} = \phi_j{}^{1*} = 1 - E(1-S)$, *j being the country which obtains direct investment. It is inconclusive which country is chosen so that there are two equilibria. In either the distribution of the gain is;* $u_F = 1 - S$, $u_j = O$.

Proof; Assume that $k_1{}^1$ is accepted by F. $q_1{}^1$ then requires; $(1 - \phi_1{}^1) \geq E(k_2{}^2 - S + 1 - \phi_2{}^2)$. Because C_1 would not offer any k again, a subsidiary set up in C_2 in t=2 makes Proposition 4.1 apply. We then know that; $\phi_2{}^2 = 1$, rendering 1 in tax revenue for C_2. C_2

FIGURE 4.4: Initial Incentives Offered by Two Identical Countries, Extensive Form.



is consequently prepared to offer $k_2^2 \leq 1$, which can be written as an equality since C_2 is willing to exhaust all but an infinitesimal gain to attract investment. By shifting location F can earn E(1 - S), which makes ϕ_1^1 restricted by; $(1 - \phi_1^1) \geq E(1- S)$. Since $\partial u_1/\partial \phi_1 > 0$, C_1 maximizes u_1 through; $\phi_1^{1*} = 1 - E(1-S)$, ϕ_1^{1*} being the highest tax compatible with q_1^1. The two countries are identical, so that ϕ^{1*} would be offered by either. Competition ensures that both offer $k^1 = k^{1*} = 1-E(1-S)$ ex ante, making it indeterminate which one obtains investment. No $k^{1**} \neq k^{1*}$ can make a country better off, since $k^{1**} < k^{1*}$ makes the other country obtain investment and $k^{1**} > k^{1*}$ incurs a real loss since $\phi^{1*} \leq k^{1**}$ in that case. Any $\phi^{1**} \neq \phi^{1*}$ must similarly be inferior. $\phi^{1**} < \phi^{1*}$ means less tax revenue and $\phi^{1**} > \phi^{1*}$ makes F relocate to the other country. k^{1*} and ϕ^{1*} thus form a unique equilibrium, ensuring; $u_F = k^{1*} - S + (1 - \phi^{1*}) = 1 - S$, and zero gain for both countries./[13]

Note that the equilibrium tax is the same as in Model 2, and that there are two alternative equilibria again, corresponding to direct investment in either country in t=1. However, the whole net profit from investment here accrues to the MNE. The distribution of gains is represented by the point VI in Figure 4.2, irrespective of which country is chosen as host. In this case, the opportunity to compete with initial incentives prevents countries from capturing any gain from direct investment.

What about the case when S can support production later? As seen in Section 4.4, the set-up of subsidiaries in both countries then forces both to offer $\phi^2 = 0$. Since no tax earnings can be expected for a host country in t=2, a country cannot afford to offer $k^2 > 0$. As in the preceding section, F can in t=2 earn E(1-S) from production in either country. Subsequent to investment in C_1 in t=1, an MNE's best alternative stems from a positive $(1 - \phi_2^2)$ instead of a positive k_2^2, but this does not affect equilibrium. Thus, the alternative rate of return is independent of the nature of the irreversible cost.[14] The outcome would be the same if C_1 was prepared to offer k again. C_2 would not be able to tax anything ex post investment, and could therefore not offer any k_2^2.

13 Any other outcome can be shown to be implausible. For example, if F withdraws from C_1 and accepts $k_2^2 = E$ and undertakes q_2^2 at $\phi_2^2 = 0$, we would get $u_F = 1+E-S$, $u_{C2} = - E$ and $u_{C1} = - [1-E(1-S)]$. Since this outcome is suboptimal for C_2, this country would instead set $\phi_2^2 = 1$ ex post investment in this country, causing $u_F = 1 - S$, and $u_{C2} = 0$. However, k_2^2 is not accepted since C_1 sets ϕ_1^{1*}, and thereby ensures F as much as it can get from moving to C_2.

14 The role of S in Model 2, in contrast to model 1, is to realize effective host country competition. In this section, this is already ensured by the investment incentives.

By assuming that a firm is deprived of all profit, Doyle and van Wijnbergen (1984) concluded that the irreversible cost is shifted onto the host country by means of a tax holiday. In contrast, we have shown that host country competition shifts the whole surplus from production (net of the irreversible cost) to the firm. Competition between countries forces them to offer the largest k they can afford. The discounted value of the tax holiday obtained by Doyle and van Vijnbergen, S, applies to k^{1*} (as well as ϕ^{1*}) only when E = 1. If E < 1, k^{1*} and ϕ^{1*} are larger. The discount factor determines the size of the investment incentive, but leaves the equilibrium distribution of the gains unaffected.

Again, host countries' ability to offer initial incentives makes them unable to extract any gains from direct investment. A host country is not able to tax the cost of setting up a subsidiary in the other country as well, as in the preceding section. Instead, an MNE is able to appropriate the whole net value of an investment project. However, so far we have considered only identical host countries. In practice, investment opportunities are likely to be different in different countries due to inequalities in labour productivity, geographical location, etc. The next section incorporates this possibility.

4.6 Model 4: Investment Incentives Offered by Dissimilar Countries

The preceding models are of limited relevance for the inter-country pattern of investment since only identical countries have been considered. The distribution of the gain has concerned a firm and a randomly selected host country. In practice, however, it is highly unlikely that the pre-tax profit generated from direct investment in two countries would be exactly the same. Moreover, a profit could probably be made in more than two countries, which opens up the possibility of competition between many potential host countries. To address these issues, this section allows host countries to be dissimilar. The one in which the pre-tax profit is the highest is referred to as C_1, and that with the second highest C_2. To begin with, only these two are considered. It will be seen, however, that the results obtained are robust with respect to any number of dissimilar countries.

Assume that the pre-tax profit (R) is 1 in C_1, as before, but 1-ß in C_2, where ß = [0, 1]. The larger ß is, the larger the difference in pre-tax profit between the two countries. This may be due to a difference in labour productivity, transport costs, etc. C_1 is consequently

the best location in terms of overall resource allocation, C_2 the second best. In case commitments were possible, C_1 could offer F a higher rate of return than C_2. When they are not, the inclusion of ß still leaves F unable to invest if there are no initial incentives and the irreversible cost is useful immediately only (as in Section 4.3). If the irreversible cost can be used later (as in Section 4.4), F normally maximizes u_F by investing in C_1. This case is not analyzed in detail here, since the outcome is trivial.

The consequences of dissimilar host countries are most interesting when initial incentives are admitted, as in Model 3 in Section 4.5. Think of that section as applicable when ß = 0. Then assume that ß > 0, but that there is effective host country competition, i.e. ß ≤ 1 - S - ES. The irreversible cost is modelled in terms of only supporting immediate production. Again, this construction lacks real importance. Figure 4.5 illustrates the game in extensive form.

We know from Proposition 4.1 that a country which succeeds in attracting F in t=2 is able to set $ø^2 = 1$. This means that C_1 can offer $k_1^2 \leq 1$ in case the subsidiary is first set up in C_2, and C_2 can offer $k_2^2 \leq (1-ß)$ in case the subsidiary is first set up in C_1. If in_1 has occurred in t=1, C_2 is willing to exhaust practically all its gains to attract the subsidiary. The result is that C_2 offers the maximum k_2^2 it can afford. Because it is known that C_2 will be able to tax the whole profit ex post investment in that country, C_1 sets its tax rate restricted by $(1 - ø_1^1) \geq E\ (1-ß\ -S)$. In the corresponding position, C_2 is restricted by $(1 - ø_2^1)(1 - ß) \geq E\ (1 - S)$. For respective country, utility-maximization ensures; $ø_1^1 = 1 - E\ (1 - ß - S)$ and $ø_2^1 = 1 - E\ (1 - S)/(1 - ß)$.

For C_1, $ø_1^1$ represents the ex post profit. For C_2, the ex post profit is; $ø_2^1(1 - ß) = 1-ß - E(1 - S)$. Clearly, $ø_1^1 > 0$, while $ø_2^1(1 - ß)$ may or may not be. In either case, the ex post profit is larger in C_1 than in C_2, the difference being (1+E)ß. Consequently, C_1 can always afford the largest k^1. Depending on whether C_2 can offer $k_2^1 > 0$ or not, $k_1^{1*} = \max\{1 - ß - E(1 - S), 0\}$, or rather infinitesimally more (being the smallest k_1^1 which guarantees in_{C1}). Ex post, C_1 ensures production through; $ø_1^{1*} = 1 - E(1 - ß - S)$, since this exactly compensates F for its best alternative investment. In analogy with the earlier sections, it can be verified that no $k_1^{1**} \neq k_1^{1*}$ or $ø_1^{1**} \neq ø_1^{1*}$ can pay. Investment and production in C_1 under k_1^{1*} and $ø_1^{1*}$ represent a unique equilibrium.

Refer to $k_1{}^1 > 0$ as case i), and $k_1{}^1$ = approximately 0 as ii). The i) case is applicable when there is a fairly small difference between the two countries, and/or fairly much discounting. It is restricted by $ß < 1 - E(1 - S)$, or $E < (1-ß)/(1-S)$. If these are not fulfilled, we have the ii) case. The distribution of the gain in the two cases is (see also Table 4.1) [15]

$$(4.7) \qquad u_F = k_1{}^{1*} - S + (1 - ø_1{}^{1*}) = \text{approximately} \begin{cases} 1 - S - (1 + E)ß & \text{in i)} \\ E(1 - ß - S) - S & \text{in ii)} \end{cases}$$

$$u_{C1} = - k_1{}^{1*} + ø_1{}^{1*} = \text{approximately} \begin{cases} (1 + E)\,ß & \text{in i)} \\ 1 - E(1 - ß - S) & \text{in ii)} \end{cases}$$

$u_{C2} = 0$ in i) and ii)

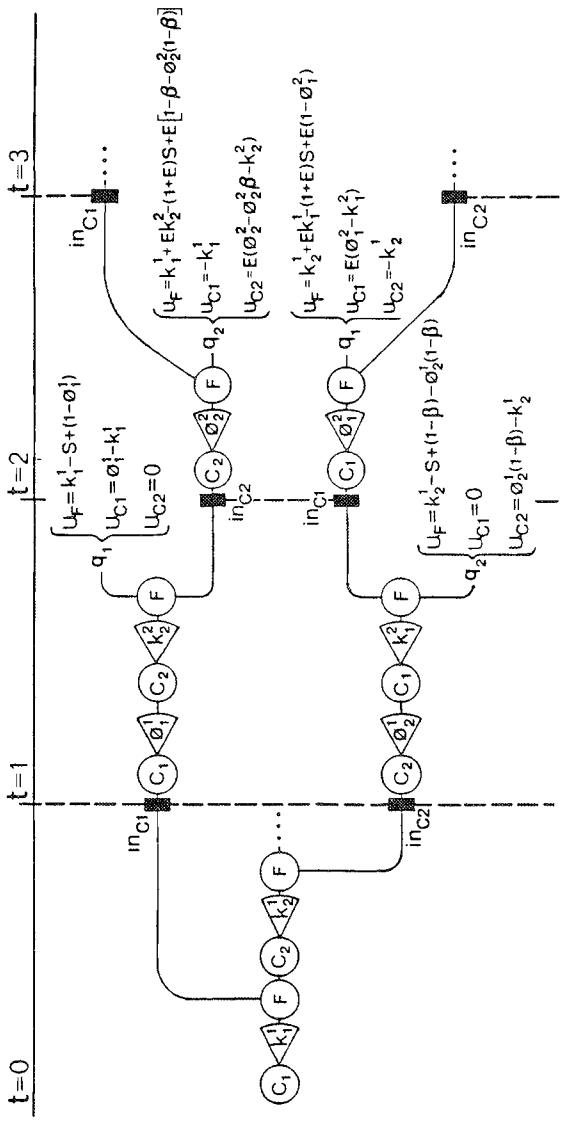
The equilibrium distribution depends on the parameters S, ß and E. Again, S and E represent different aspects of the mobility of an MNE's production apparatus. ß indicates the competitive strength of the best host country relative the second best. Begin with ß, whose role is fairly straightforward. The larger ß is, the larger the host country's share of the gains. This result is stated as Proposition 4.3;

Proposition 4.3: A firm is better off the more even the profit distribution between two alternative host countries, while a country is better off the more superior its investment opportunities to those of the second best country.

Figure 4.6 illustrates the distribution of gains for varying ß, E and S held constant. u_F is measured upward the vertical axis, u_C downward. The negative slope indicates that the host country's share increases in ß. When $ß = 0$ we have, as stated in proposition 4.2; $u_F = 1\text{-}S$, $u_C = 0$. As long as $ß < 1 - E(1 - S)$, so that we are in i), the host country earns $(1+E)ß$. Here, $E=1$ gives; $u_F = 1 - S - 2ß$ and $u_{C1} = 2ß$. S does not affect the distribution, while a smaller E favors F and diminishes the country's share. The role of E contrasts with Model 2 and may appear counter-intuitive. The reason discounting

15 The set-up can, in analogy with Figure 4.2, be illustrated in coalitional form. The i) case is characterized by the positively sloping t=1 line crossing the vertical axis above the negatively sloping t=2 line. The distance between their respective crossing measures what C_2 can tax ex post in t=1.

FIGURE 4.5: Initial Incentives Offered by Two Dissimilar Countries, Extensive Form.



favors F is that it weakens the alternative host country's competitiveness and therefore enables the second best country to offer a larger k_2^1 to begin with, forcing the best to offer more as well. As can be seen in Figure 4.7, a smaller E means a larger intercept for k, i.e. k's value at $ß = 0$. This dominates the reverse effect on $ø^1$.

In case ii), on the other hand, the situation is similar to Model 2. Here, the outcome is less favourable to F, the larger S is and the smaller E is. In this case k^1 is approximately zero in any case, while a smaller E weakens the competitiveness of the alternative country and raises the equilibrium tax rate. This holds as long as $ß \leq 1 - S - ES$. When ß lies in the interval $1 - S - ES < ß < 1 - S$, there is so weak host country competition ex post that the profit net of tax in C_1 is sufficient to cover only part of the sunk cost. Since this is known to F, C_1 must offer an initial incentive ex ante to compensate for the loss. When $ß \geq 1 - S$, finally, there is no effective host country competition at all ex post. We are back in the 'one firm - one country' case and F must be offered an initial incentive which compensates for the whole irreversible cost, that is, S (see Figure 4.7).

As has already been pointed out, $ß = 0$ represents the special case analysed in Model 3. Recall that it is then indeterminate which country obtains investment. As soon as ß surpasses zero by an infinitesimal amount, it is immediately given that the best country can outbid the second best, and obtain investment with a gain as illustrated in Figure 4.6. When countries are dissimilar, the results obtained hold for any number of countries competing to obtain direct investment. As stated, C_1 and C_2 are merely the best and second best countries in terms of pre tax profit. C_1 can offer the highest initial incentive ex ante. If a subsidiary has been set up here, the second best country must offer a smaller k when there is a third country which competes effectively. The reason is that the third country, ex post investment in the second, would offer a positive k, and so on until the last effectively competing country. However, C_2 must keep k_2^2 lower only because it has to prevent the firm from moving to the third country ex post and cannot therefore set the tax as high as when there is no such country. It is, just as before, willing to exhaust all its gain to attract direct investment. Thus, the results obtained are unaffected by the inclusion of any number of dissimilar countries.

FIGURE 4.6: Equilibrium Distribution of Gains over ß

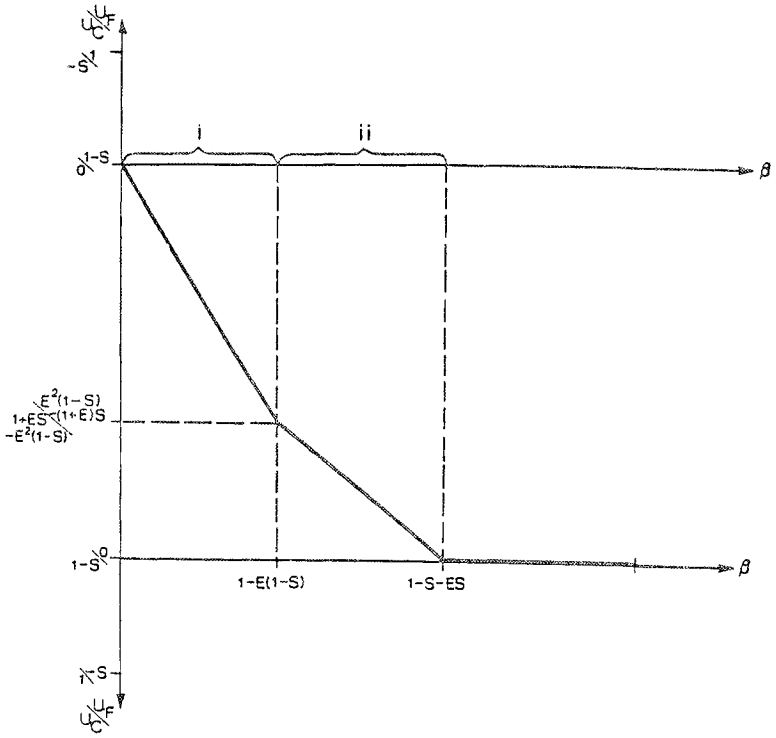
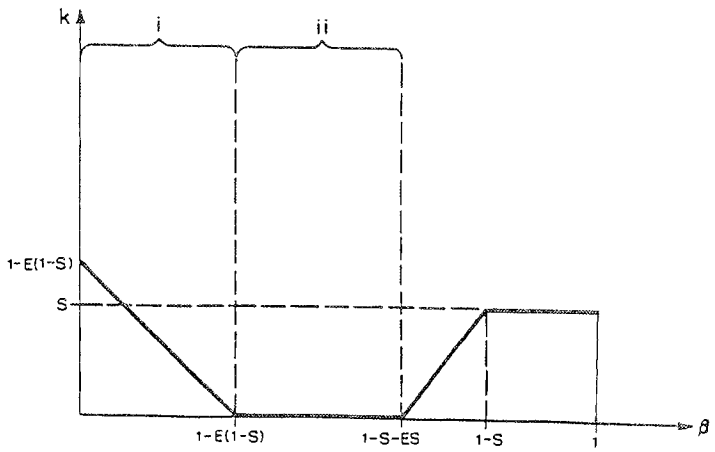


FIGURE 4.7: Equilibrium Relation between k and ß



4.7 Comparison of the Model Results

This section compares the results of the four models presented above. The equilibrium distribution of profits between an MNE and the chosen host country is summarized in Table 4.1 for each of the models. If production occurs, it is always in the first time period when the total gain is the largest possible (1-S). The total pay-off is the sum of the ex ante and ex post components. Ex ante refers to payments made when a subsidiary is set up and ex post to payments associated with production. The distribution of gains is also specified for the case when subsidiaries can be set up in the other country without delay, i.e. the case when E = 1. The column ($1/ \partial u/\partial E$) shows by a positive or negative sign which part is favoured by a smaller discount factor.

In the first model, there are two identical potential host countries, no initial incentives can be offered and the irreversible cost required for direct investment can only support production in the same period. Under these circumstances, a country which obtains direct investment is able to tax the entire profit so that direct investment is prevented in the first place.

The second model is identical to the first, except that the irreversible cost can sustain production in future periods. In this case, a host country can tax only as much as the value of production before tax would diminish by deferring it to the other country in the next period. The opportunity for an MNE to diversify its production apparatus internationally limits a host country's ability to tax a subsidiary. Direct investment is undertaken provided that the pre-tax profit is sufficient to finance the establishment of two subsidiaries. The gain of the investing firm diminishes with discounting and the size of the sunk cost, since these factors weaken the alternative of producing in the other country.

In models 3 and 4, where countries are allowed to offer initial incentives, the nature of the irreversible cost lacks importance. In model 3, where there are two identical countries, the whole profit net of the irreversible cost accrues to the MNE. The host countries' ability to compete for direct investment by offering initial incentives deprives them of any gains. The most general results derive from the fourth model, where host countries are allowed to be dissimilar in the quality of their investment opportunities. As soon as the two countries are the slightest different, there is again room for host country earnings. The

TABLE 4.1: Summary of Equilibrium Properties

(F = Firm, C = country obtaining direct investment)

Model 1: irreversible cost useful immediately only, no initial incentive

Period of production: -

Model 2: irreversible cost useful later, no initial incentive

Condition for equilibrium as in table: $E \geq S + ES$ (otherwise, no investment)

Distribution of gains

part	ex ante	ex post	Total	Outcome if E=1	$1/\partial u/\partial E$
u_F	- S	E (1-S)	E (1 - S) - S	1 - 2S	-
u_C	0	1- E (1-S)	1- E (1-S)	S	+

Period of production: 1

Model 3: Initial incentives allowed, identical countries

Distribution of gains

part	ex ante	ex post	Total	Outcome if E=1	$1/\partial u/\partial E$
u_F	1-E(1-S)-S	E(1-S)	1 - S	1 - S	0
u_C	-(1-E(1-S))	1- E(1-S)	0	0	0

Period of production: 1

Model 4: Initial incentives allowed, dissimilar countries

i) Conditions for equilibrium as in table: $E < (1 - ß)/(1 - S)$, equivalent to: $ß < 1 - E (1 - S)$ (otherwise, see 4 ii).
If $ß = 0$, model 3 is applicable.

Distribution of gains

part	ex ante	ex post	Total	Outcome if E=1	$1/\partial u/\partial E$
u_F	1-ß - E(1-S)-S	E(1-ß - S)	1-S-(1 + E)ß	1 - S - 2ß	+
u_C	-(1-ß - E(1-S))	1- E(1-ß - S)	(1 + E) ß	2ß	-

Period of production: 1

TABLE 4.1: cont.

ii) Conditions for equilibrium as in table: $E \geq (1 - ß)/(1 - S)$, equivalent to: $ß \geq 1 - E(1 - S)$ (otherwise, see model 4 i), and $ß \leq 1 - S - ES$.

Approximate distribution of gains

part	ex ante	ex post	Total	Outcome if E=1	$1/\partial u/\partial E$
u_F	-S	E(1-ß - S)	E(1-ß -S) -S	1 - ß - 2S	-
u_C	0	1- E(1-ß - S)	1- E(1-ß - S)	ß + S	+

Period of production: 1

country with the most favourable investment opportunities obtains a project, meaning that the pattern of direct investment is undistorted by effective host country competition. The host country earns more the more superior its investment opportunities to those of the second best country. The distribution of gains is also influenced by the 'mobility' of investment in the form of the discount factor and the sunk cost. The outcome will accord with the i) specification if there is sufficiently little discounting or a sufficiently small difference between the two countries. Otherwise it will accord with ii). The two specifications differ in that the second best country can afford to offer an initial incentive in the former, but not in the latter.

The fourth model is of the most general interest. It is valid for any number of dissimilar host countries, and includes the third model as a special case when there are only two countries which are exactly identical in terms of profit opportunities. The results of the first two models hinge on the limiting assumption that initial incentives are not allowed.

4.8 Concluding Remarks

Given complete information, it is a well-known result in 'one firm - one country' interaction that optimal host country taxation prevents direct investment in the first place. Ex post the establishment of a subsidiary, the host country is able to tax the whole profit so that the investing MNE loses its sunk cost. The inability of the host country to commit its future behaviour results in a suboptimal outcome as a potential mutual profit for a firm and a host country is foregone. The optimal plan of the host country can be characterized as 'dynamically inconsistent' in regard to direct investment. Since direct investment is observed in developing countries, this result seems disturbing.

This chapter has extended the mainstream 'one MNE-one host country' framework to the case when there are at least two potential host countries which compete for gains from direct investment. The set-up is most relevant for export-oriented direct investment, for which competition between host countries is relatively more important than for import-substituting investment. Using a sequential bargaining framework, taxation by effectively competing host countries has been found to lead to direct investment being undertaken in the country with the most favourable investment opportunities. The gain of the host country depends on the superiority of its investment opportunities in relation to those of the second best country, and the mobility of an investment project. Direct investment is prevented only in the implausible case where there are two exactly identical host countries, the sunk cost is able solely to sustain immediate production and where no initial incentives are allowed.

The finding of Doyle and van Wijnbergen (1984), that a host country offers an initial incentive which corresponds exactly to the sunk cost, is found to hold only when countries are identical and the discount factor is 1, or when there is no effective host country competition. When countries are dissimilar but compete effectively, an initial incentive may or may not be needed for investment to be undertaken. Its value depends on the degree of dissimilarity and the discount factor, except for the sunk cost.

The major result of this chapter, that host country competition limits the level of taxation, has been obtained without consideration to e.g. the indirect costs of damaging a business relationship that involves a sequence of projects. Such costs have to be added to the direct costs, and should consequently reinforce our major result rather than interfere with it.

It should be made clear that this chapter merely represents a point of departure for a more realistic analysis. In practice, adjustments will be required in order to study specific investment projects and countries. Moreover, 'taxation' has referred to the range of ex post policy measures that manipulate the behaviour of MNEs. As discussed in Chapter 3, all such policies do not aim at foreign exchange earnings. In particular, direct investment is likely to result in external effects, such as a spread of technology to domestic firms or environmental effects. The role of host country competition has been particularly debated in relation to the latter. In order to examine to what extent the results obtained here carry through when there are external economies, the next chapter extends the analysis to host country competition for pollution intensive direct investment. Thereafter, we turn to the other major host country policy, nationalization.

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5 FOREIGN EXCHANGE VERSUS POLLUTION

5.1 Introduction

Like any economic activity, direct investment usually results not only in profits, but also in various external economies. It is well-known that the pursuit of private gains does not maximize social welfare when there are external economies - meaning that market priced transactions do not incorporate all the costs and benefits associated with transactions between economic agents. One category of external economies, which has increasingly attracted attention as important for the undertaking of direct investment, is 'environmental' effects (see e.g. James, 1981). Activities which result in costly environmental effects, unless checked by pollution abatement, are in the following referred to as 'pollution intensive'.

As made clear, direct investment is motivated by the expectation that the transactions internalized abroad will generate a net benefit. Likewise, direct investment in pollution intensive activities may be motivated by the lack of an internalization of the costs of pollution. An increasing concern with environmental effects in industrialized countries has in the last decades materialized in higher operation costs for pollution intensive activities. Walter (1972) was the first to prophesy that this would result in extensive pollution intensive direct investment in developing countries, where regulations remain less strict.

A relatively high assimilative capacity for pollutants in a country, or low appreciation of environmental quality, constitutes a resource which can be expected to be exploited by industry. MNEs, which operate across the boundaries of nation states, are well suited to locate production where it is the most efficient. Due to their ability to play out individual countries against each other, however, it has been argued that MNEs 'blackmail' individual countries to accept environmental degradation as a price for

obtaining investment projects. This would cause too much pollution and possibly distort the pattern of direct investment.

To investigate these matters, we apply the framework developed in Chapter 4 to host country competition for pollution intensive direct investment. The term taxation (as used elsewhere in the study) is split up in 'taxation' and 'environmental protection'. The former is thought of as being concerned with foreign exchange earnings, the latter with reduction of pollution. In fact, environmental protection is seldom subject to universal standards, but a great deal comes about via explicit or implicit negotiation between MNEs and national governments, not least in developing countries (cf. UNCTC, 1985b). Whether it is designed as regulation, tax incentives, subsidies or a market for emission rights, is not considered here. Our concern is the level of protection chosen.

This chapter demonstrates how the findings of Chapter 4 can help to illuminate the role of host country taxation for a specific category of investment. The question is to what extent the results obtained in that chapter in any fundamental sense are affected by the inclusion of external economies, in the form of an adverse impact on the host country's environment. To clarify some deviations from observations in the real world, we also discuss the importance of imperfections in capital markets, in information and 'government failure'. One aspect of environmental effects which is not considered is their possible crossing of national boundaries. We are limited to effects which are internal to the nation states in which pollution occurs.[1]

The outline of the chapter is as follows. Section 5.2 presents the background by surveying the importance of MNEs in pollution intensive industries in developing countries. Building on the analysis in the preceding chapter, Section 5.3 analyses host country competition for pollution intensive direct investment. The implications for the pattern of direct investment are clarified in Section 5.4. Imperfections to our model are discussed in Section 5.5 and Section 5.6 summarizes the chapter.

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1 It is well-known that there may be 'global irrationality' in the uncoordinated behaviour of individual nations with respect to common resources such as the oceans or the atmosphere (Ward and Dubos, 1972, and Dasgupta, 1976). Likewise, there may be environmental spill-overs across national boundaries through e.g. rivers, oceans or the atmosphere.

5.2 Pollution Intensive Activities and Direct Investment

Environmental problems may arise as a consequence of almost any economic activity. The following sources of environmental effects were discussed by Walter (1975); gaseous discharges, liquid and solid discharges, thermal discharges, noise, radiation, disposal of solid waste, degradation of natural scenery and terrain, including the elimination of recreational opportunities, endangerment of wildlife species and congestion. Broadly speaking, we can distinguish between two kinds of pollution; production and consumption pollution.[2] We are concerned only with the former kind. An incorporation of consumption pollution would require consideration to the disposal of goods which have been forbidden or rejected in industrialized countries. However, the two are often intertwined with the latter enforcing the former.

It may be asked whether the environmental impact of direct investment deserves any special attention. At least two arguments, except for MNEs' possible capacity to blackmail individual countries, have been brought forward why there might be such a need. Firstly, the pure scope of these firms in pollution intensive industries makes their environmental record matter. Secondly, their dominance in technology gives them a general influence on industrial processes. This section discusses to what extent these two arguments motivate any special concern with the environmental impact of direct investment. The subsequent sections address the matter of bargaining between MNEs and potential host countries which compete for gains from direct investment.

UNCTC (1985b) suggested operational definitions for pollution intensive activities based on; the environmental policy attention attracted, environmental control data, and relative operating costs for cleaning. The sectors on these grounds identified as pollution intensive were largely; chemicals, agro-industry, aluminium, iron and steel, motor vehicles, nonferrous metals, petroleum and coal products, pulp and paper, and stone, clay and glass products. The sum of direct and indirect costs of environmental controls have been estimated to average some 39 to 52 per cent of the total costs in some of these industries.[3]

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2 Walter (1975, p. 28) identified four sources of environmental effects in the economic process; material-source pollution (caused by extraction and transportation of natural resources), process pollution, product pollution and residual pollution (related to the disposal of products once they have lived out their useful lives). Production pollution can be said to encompass the first two, consumption pollution the last two.

How important are MNEs in pollution intensive industries in developing countries? There are only tentative answers. The developing countries expanded their shares of the world's industrial value added in such industries between 1973 and 1980. Nevertheless, as of 1980, they had an over all share of value added greater than 25 per cent in just two branches, tobacco and petroleum refineries. The share of direct investment varied, but industrial expansion was in many cases achieved mainly by domestic industry. However, Dunning and Pearce (1981) demonstrated considerable direct investment in practically all the pollution intensive industries. The leading industry group for direct investment is chemicals, including intermediate and final consumer goods such as petrochemicals, pharmaceuticals, paints, plastic products, fertilizers and pesticides. Mining, petroleum extraction and refining, agri-business, refining of heavy metals, wood and paper processing and motor vehicles also rank among the most important.

Investment data from individual home as well as host countries further verifies that there is considerable direct investment in pollution intensive industries in developing countries. However, the consequences must be evaluated with respect to whether direct investment substitutes for domestic production or adds net to it. Although there seem to be plenty of examples of both kinds, this is generally difficult to know, and will depend on the time range considered.

The sheer size of direct investment does not alone allow us to determine its importance. The crucial question is how MNEs' technology compares to that of domestic firms, and how the latter is influenced. MNEs play a first hand role in the inter-country diffusion of technology in general, and in environmental management technology in particular. The transfers may be embodied in new investment, training, trade letters, licensing of control processes, direct sales of products or services, etc. The availability of advanced environmental management must, of course, be separated from its application. Advanced pollution control is in general not desired by affiliates, and is seldom forced upon them by parents. While the technologies employed by affiliates in developing countries tend to be more polluting than those at home, there is systematic evidence that

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3 See UNCTC (1985b, p. 35) for background data and further references.

they are less so than corresponding domestic firms (UNCTC, 1985b). However, there are considerable differences between individual MNEs.[4]

Given the scope of MNEs in pollution intensive industries and their importance for technology transfers, it must be concluded that their environmental impact on developing countries, whether good or bad, direct or indirect, is an issue of great concern. However, given large differences in environmental protection between industrialized and developing countries, pollution intensive industries can sooner or later be expected to flourish in the latter under any circumstances. Since MNEs normally employ a less polluting technology than domestic firms, direct investment per se is not crucial for possible environmental problems. Shedding light on pollution in developing countries calls rather for studies of pollution intensive activities in general. Thus, we are left with the bargaining strength of MNEs as an argument why they would require special attention in this context. In the following, we add negative external economies on the environment to the model framework presented in Chapter 4.

5.3 Bargaining with Environmental Protection

Pearson and Pryor (1978) argued that requirements of pollution abatement should neither favour nor discriminate foreign firms in relation to domestic. Throughout, the required level of cleaning should reflect the real resource costs in relation to the benefits of the social damage avoided. The crucial question here is whether host countries which compete for gains from direct investment have an incentive to deviate from the level of pollution control where the marginal cost equals the marginal social benefit.

First, let us review the framework in Section 4.6 where MNEs and dissimilar host countries maximize profits and socio-economic gains respectively over an infinite time horizon. MNEs choose the country in which to invest, and countries discriminate their policies vis-à-vis MNEs perfectly. Under these circumstances, there is a unique subgame perfect equilibrium in which production occurs in the country with the most favourable investment opportunities. The tax rate is determined by the returns to a project in the best country relative to the second best, and the project's 'mobility' as

4 Gladwin (1977) identified firm-specific characteristics in organization and management which seem to influence MNEs' environmental record.

given by the sunk cost and the discount factor. The reason is that a host country, ex post the set-up of a subsidiary, has to compensate an MNE for what it would earn from moving to another country and produce there instead. In order to gain anything, that second best country is prepared to exhaust practically all its gains to attract the project.

In equilibrium, a country which represents strictly better investment opportunities than its competitors has to give up only part of its gains, and is still able to attract direct investment. The smaller the difference to the second best country, the less of the gain the first best country is able to capture. Countries which represent the second or third best opportunities stretch their offers until they exhaust all their potential gains, but they are still unable to obtain a project since the best country taxes production just short of making it pay for the MNE to move.

This framework can be applied to pollution intensive direct investment which, in addition to profits, causes negative external effects. For the projects in question, countries can bargain not only with tax cuts, subsidies and incentives, but also with lax environmental protection. *How much* a host country has to give up to obtain direct investment still depends on the competitive strength of its investment opportunities in relation to those of competing countries, and on the mobility of investment. However, a country must now decide what combination of tax earnings and pollution control it desires. The choice is essentially between obtaining foreign exchange or preventing environmental degradation.

In terms of the goods-bads box in Figure 3.1 (page 39), the outcome of MNE-host country bargaining is along a diagonal line indicating the opportunity cost of the MNE, in turn determined by the attractiveness of the best alternative host country. *What* a host country gives up to obtain a project depends on its relative evaluation of foreign exchange and environmental quality. At the margin of how much a host country can acquire from an MNE, and yet retain a project, it has to balance one more dollar in pollution abatement against a dollar less of foreign exchange. Meanwhile, the benefit of pollution abatement is given by the social value of environmental protection. The social benefit of cleaning should equal the cost of pollution abatement at the margin, which should equal the social scarcity value of foreign exchange. There is nothing in this situation which motivates an environmental protection which deviates from the socially

optimal level. *Effective host country competition does not lead to socio-economically inefficient environmental degradation.*

This finding is consistent with the above reported stylized facts that MNEs are generally more polluting in developing countries than they are at home, but less so than corresponding domestic firms. With firm-specific advantages in e.g. technology, management, etc., and an experience of operations in industrialized countries, MNEs should have a lower marginal cost curve for pollution abatement than the domestic firms in a developing country. Moreover, given the plausible assumption that the social valuation of environmental protection increases with the level of income, developing host countries require a lower marginal cost for pollution abatement than industrialized home countries. The result is that MNEs are more polluting here than they are at home, but less so than domestic firms.

It can be noted that home countries, like host countries, do not generally set an indiscriminate standard of protection, but also bargain with individual firms. One may therefore ask whether the level of cleaning at home is restricted by a firm's possibility to move abroad. In analogy with the above analysis, the answer is no. The level of home country earnings is restricted by an MNE's possibility to move abroad, just as the earnings of a host country are restricted by those that could be achieved in another country. The form of the earnings, however, is determined in a trade-off between taxation and environmental protection. Again, the costs of cleaning should not deviate from the social benefits at the margin.

Summing up, host countries require as much taxation and pollution control as possible without losing direct investment to their competitors. The marginal cost of pollution abatement should equal the marginal social benefit of foregoing environmental degradation. Thus, the outcome can be expected to be socially optimal. Of course, this result hinges on the assumption that there are no imperfections to the model. In practice, information may be incomplete and agents do not always behave in an economically rational manner. Nevertheless, we only have to worry about such objections to the extent that they suggest systematic influences, a matter returned to in Section 5.5. Before that we consider the implications for the pattern of pollution intensive direct investment.

5.4 The Pattern of Direct Investment

In recent decades, new laws, regulations and private efforts in industrialized countries have enforced stricter environmental protection, which has led to higher costs for pollution intensive industries. This might be expected to give rise to a diffusion of such activities to developing countries where there is relatively less environmental protection. Following Walter (1972), Pearson (1976) forecasted that international differences in environmental control costs would change the volume and composition of the international investment flows. He predicted that the greater the differences in environmental control costs, the less spatially tied industries are to inputs or markets and the more successful past foreign operations have been, the greater the amount of relocation.

A number of empirical studies have examined to what extent prophesies such as these have been realized. Walter (1975) found some firm-level evidence of relocation of activities to developing countries when projects had been blocked at home for environmental reasons, but no evidence at the aggregate level that the pattern of direct investment would have been seriously affected by environmental considerations. Later studies, by e.g. Duerksen (1983) and Leonard (1984), have not found much relocation motivated by environmental control costs. The effects that have been found relate primarily to two industries, those producing highly toxic products such as asbestos, benzidine dyes and pesticides, and those producing heavy metals such as copper, zinc and lead. In both these industries, new investment has tended to be located in developing countries when plants are closed in industrialized countries.

On the whole, *there is fairly little evidence of environmentally motivated relocation of pollution intensive investment to countries with little environmental protection.* This has puzzled some observers. One response has been that 'environmental control costs do not matter'. Gladwin and Welles (1976) expressed scepticism concerning the potential for relocation, arguing that the elasticity of investment is low with respect to environmental control costs. Requirements of pollution abatement would not represent a sufficiently large cost shift for most MNEs to motivate relocation. Leonard (1984) argued that pollution intensive industries have adapted to environmental regulations by developing technological innovations rather than relocating across national boundaries.

Pearson and Pryor (1978)[5], on the other hand, maintained that the issue remains controversial until definite empirical estimates of environmentally induced shifts in location appear. It should also be emphasized that most studies have dealt only with flows of investment up to the 1970s, while pollution control in many industrialized countries did not become mandatory until the 1980s. Since it may take some time to relocate activities, it is possible that the late 1980s and 1990s will see larger effects of environmental control costs on the pattern of direct investment.

There is a close correlation between the stringency of environmental policy and income level (GDP/c). Meanwhile, most direct investment in the developing world is obtained by the relatively high income 'newly industrialized countries', in which environmental protection has been growing the most.[6] While this state confuses a simple comparison between the location of investment and the level of environmental protection, it is compatible with our notion that countries bargain on the basis of the attractiveness of their investment opportunities. In our framework, differences in host country earnings are the natural outcome of competition between dissimilar countries, while the inter-country differences in environmental protection reflect differences in the social value of pollution. The outcome does not give rise to any relocation of direct investment from countries with superior investment opportunities to those with less favourable ones. On the contrary, host country competition realizes that the country with the best investment opportunities is the one which obtains a project.

Given our assumptions, environmental effects influence the location of direct investment only to the extent that they alter the relative valuation of a project among potential host countries. In terms of the goods-bads box in Figure 3.1, the net of the horizontal and vertical dimensions of the box in two potential host countries change place. Another country can afford to offer an MNE the largest profit net of tax and pollution abatement costs. Such a change must stem from differences either in the assimilative capacity of the environment, or in the valuation of given effects.

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5 Pp. 192-193.

6 It can be noted that the 'very poor' countries, which had the most lax environmental protection, accounted for some 70 per cent of the population of developing countries while receiving some 2.6 per cent of direct investment in 1980-82. This is only a slightly larger share than ten years earlier.

It is sometimes argued that the developing countries are natural waste baskets for pollution. Faced with serious and acute problems requiring urgent investments, such as hunger, illiteracy, unemployment, rural-urban imbalances, chronic poverty, etc., these countries would simply not afford environmental protection. Ecological balance would be a luxury not affordable at the present level of development. Due to their many urgent needs, the socially optimal level of environmental protection would be lower in developing countries than in industrialized.

However, it cannot be taken for granted that the developing countries would constitute the optimal location for environmental activities. There is, in particular, no conclusive evidence that the developing countries would have a relatively high assimilative capacity for pollutants. The assimilative capacity of the environment may or may not be relatively larger in developing countries. A hot, dry climate may reduce the impact of some effluents, high rainfall reduces the impact on air quality, etc, but temperate industrial countries have a higher assimilative capacity than tropical developing for other effluents. Many biological and chemical compounds spread more easily in the latter, people are less resistant to diseases, etc.[7]

In addition, pollution may reduce the quality of productive resources such as physical capital, labour productivity, land, etc. Due to their limited capacity to cope with such problems and absence of safeguards, this generally poses a greater threat to developing than to industrialized countries. There are consequently many examples of 'horror stories' of environmental catastrophes in developing countries; the stripping of forests leading to destruction of land for all future, construction of dams destroying farming tribes, phosphate mining making entire islands uninhabitable, etc. Moreover, industries tend to be spatially concentrated in developing countries, and further expansion is likely to be undispersed. The possible counter-argument that the pollution intensity would be lower in industrial centres in developing countries than in the industrialized seldom holds any longer. The situation is generally the opposite today.

Thus, the assimilative capacity argument does not support an indiscriminate transfer of pollutants to developing countries, even if they may favor a transfer of certain pollutants. The differences in the valuation of environmental quality may motivate some additional transfer, but not when the outcome is a diminished productive capacity for

7 See further Walter (1975) and Pearson (1982).

the host country.[8] In any case, the so far scanty evidence that is currently available regarding relocation of direct investment from industrialized to developing countries may indicate that the net effect of the differences in assimilative capacity and the valuation of environmental impact does not generally alter the ranking of countries in terms of investment opportunities.

Summing up, the country with the best investment opportunities is the one which offers the most favourable conditions for an MNE, and therefore obtains a project. Environmental effects influence the pattern of direct investment only to the extent that their impact on the net value of a project is sufficient to alter the ranking of potential host countries. The reasoning hinges on the absence of imperfections to the model. The ensuing section discusses factors which are believed to be important for explaining deviations from the model results in the real world.

5.5 Factors Affecting the Model Results

By applying the model framework developed in Chapter 4 to pollution intensive direct investment, we have seen that the inclusion of external economies does not fundamentally alter the nature of the results obtained. Competition between potential host countries for gains from direct investment still produces an 'efficient' outcome. The host country which yields the highest net value of investment secures the project, and the cost of pollution abatement equals the benefit of preventing further environmental degradation at the margin.

We have already stated that our findings are consistent with some general observations of pollution intensive direct investment in the real world. Relatively little relocation of pollution intensive activities has so far been observed, the level of cleaning employed by MNEs in developing countries is lower than in the industrialized countries, but higher than that of domestic firms, etc. At the same time, however, the real world does display some serious deviations from the model results. In many developing countries the required pollution control is not only low, but non-existent. Certainly, the social

8 The realization that development and environmental protection are not only compatible but interdependent represents a major change of view, articulated particularly in the so-called 'Brundtland Report' (WCED, 1987)

benefit of pollution abatement is hardly zero in any country. Moreover, many developing countries experience overwhelming environmental problems today, partly due to pollution from industrial processes. The air quality in Mexico City, Beijing or Taipei, or the irreversible destruction of rain forests in Indonesia, Central Africa and Latin America, hardly bear witness of a socially optimal environmental protection.

In order to put the validity of our model results into perspective, this section discusses three sets of factors which may affect their realization in the real world; i) imperfections in the international capital markets, ii) imperfections in information and iii) 'government failure'.

i) The marginal cost of environmental protection to the host country should be equal to the social scarcity cost of foreign exchange. However, imperfections in the international capital markets may prevent the latter from being 'internationally efficient'.[9] As shown by e.g. Eaton and Gersovitz (1981), Sachs and Cohen (1982) and Sachs (1984), the existence of credit rationing may be explained in terms of the risk of debt repudiation, limited taxing power of the host country government over national wealth and imperfections related to the supply of loans (such as the risk of panic among creditors). As will be seen in Chapters 6 to 8 in this study, host country policies that interfere with the ownership of affiliates may similarly impede direct investment. Other factors that contribute to scarce capital are; debt burdens accumulated when interest rates were low and that require increased interest payments as a result of higher interest rates, budget deficits and soaring inflation causing overvalued exchange rates, barriers to imports from developing countries in industrialized countries, etc.

Due to such factors, many developing countries are today stuck with a marginal rate of return to capital which is higher than it is in the rest of the world. Viewed from a global perspective, this represents an inefficient allocation of resources. The countries in question value capital too highly compared to the case of a perfect capital market.

ii) It has been assumed that the cost and social benefit of pollution abatement are equal at the margin. In practice, there may be imperfections in information concerning both

9 There are three major conditions for a perfect capital market. Firstly, the marginal utility of consumption each period should equal the discounted utility of wealth. Secondly, investment should be undertaken each period until the marginal product equals the cost of capital. Finally, the discounted value of consumption should equal the discounted value of productive wealth.

the costs and the social benefits of cleaning. In particular, it may be extremely difficult to identify, quantify and value the environmental effects. The developing countries have relatively limited technical, economic and administrative expertise to trace effects, as well as check compliance with pollution control. Some developing countries have passed fairly rigorous environmental laws, but they are seldom enforced. Due to their relative lack of resources for information gathering, the developing countries can be said to suffer greater environmental risks than the industrialized countries.

An individual's perspective on risk may differ from that of all individuals in a society together. Under fairly strict assumptions, Arrow and Lind (1970) argued that, if risks are borne by the government, risk-spreading implies that society should be risk-neutral. This suggests that the risk for an unexpected outcome need not affect the choice of discount rate. In reality, imperfect risk-spreading may violate this proposition. The willingness of risk-averse individuals to pay extra in order to retain certain options for the future can theoretically be represented by an 'option value' (Weisbroad, 1964). Option values may be either positive or negative, however, and may affect the valuation of environmental effects in either direction.

More straightforward implications follow from a lack of markets which relate future environmental goods and services to current values. In the developing countries, the major environmental concern is the economic productivity of ecological systems.[10] An environmental impact tends to transcend through ecological chains, and materialize with a time lag. The ecological systems typically constitute imperfectly known resources, taking the form of collective goods or factors of production so that private incentives for their preservation are hampered. For the irreversible destruction of currently unknown values one can assess a 'quasi-option value' (cf. Fisher, 1981). However, it is impossible to assign a precise estimate to this value.[11]

Concerning the valuation of environmental effects there are, firstly, difficulties in accurately estimating e.g. recreation values, option values and bequest values, which

10 Cf. Freeman (1979) and Bojö et al., 1988.

11 Plants and animals may be unknown at the time of their extinction. For example, 10 000 species are currently lost each year in the tropical rains forests, according to some estimates. For an indication of some potential benefits foregone, it can be noted that one quarter of the prescription of drugs used in the United States derive from plants from the tropical forests (The Economist, 1988).

are not automatically articulated in markets.[12] In developing countries, such values tend to be neglected. Secondly, future consumer preferences are unknown today. Thirdly, environmental preferences are often unstable, and may adjust in either direction with improved information.

iii) A government which maximizes social welfare over a sufficiently long time horizon could account for socio-economically optimal investment in the provision of information on environmental degradation. Remaining risks that could not be taken care of by insurance markets should, ideally, be reflected in option values and quasi-option values. Adjustments could be made to take account of an expected future upgrading of consumer preferences for environmental quality. In practice, governments in the Third World have proved not to be much more inclined than private agents to spend resources on investigating or preventing environmental degradation.

This brings us to the matter of 'government failure'. With the school of public choice, it has become widely questioned whether economics and politics can be separated. A government need not maximize social welfare, but may act according to a self-interest which differs from that of society as a whole. Because a society is not made up of homogeneous households, regimes (whether autocratic or democratic) may choose to base power on certain, influential groups rather than other less articulate ones.

Like other social costs and benefits, environmental effects affect households or individuals unevenly. The acceptance of environmental degradation incorporates an inherent decision regarding the distribution of cuts in individual welfare. This can be made less painful politically by target the effects on groups that are the least likely to be aware of, and/or protest, their exposure to environmental risk. One aspect of this problem is the prevention of free publication and criticism of environmental mismanagement. Particularly societies without free elections tend to prevent competing movements from capitalizing on the need for changes in public intervention to prevent environmental degradation (Bojö et. al., 1988). In contrast, politicians seeking to maximize their self-interest can readily make use of foreign exchange earnings.

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12 One possible technique to estimate such values is to use implicit markets, in which the consumption of ordinary goods are linked to environmental values. Another alternative is to create artificial markets, which normally means asking consumers about their willingness to pay, referred to as contingent evaluation. Considerable difficulties pertain to both techniques, which may also be costly.

Imperfections in the international capital markets, imperfections in information and/or 'government failure' may upgrade the value of foreign exchange relative to environmental protection. Since host countries set environmental protection in a direct trade-off with 'taxation', it is likely that many countries choose to capture 'too' much of their gains from direct investment as foreign exchange earnings, and allow 'too' much pollution. Of course, a country which downgrades environmental quality relatively more than other, competing countries, may attract direct investment although the net value of such investment is not at a maximum in this country. In this case, the outcome is an investment pattern which runs contrary to an efficient inter-country allocation of resources. As made clear, such an outcome does not derive from host country competition per se, and it is not inherent to the behaviour of countries vis-à-vis MNEs. The causes are to be found in factors such as those discussed in this section, and the resulting bias against pollution control applies more or less to all economic activities, whether domestic or foreign-owned.

5.6 Summary and Conclusions

Applying the model framework developed in Chapter 4, we have analysed host country competition for pollution intensive investment projects. The inclusion of external economies has not affected the basic nature of the results obtained in that chapter. The net gain of a host country still depends on the quality of its investment opportunities in relation to the second best country, and the mobility of investment projects. The new element is that a host country must decide in what proportion to earn foreign exchange (through 'taxation') and in what proportion to accept pollution ('environmental protection').

We have seen that competition between host countries does not induce a suboptimal level of environmental protection. Moreover, differences in environmental protection, like differences in taxation between countries, do not influence the location of direct investment, unless they reflect differences in the assimilative capacity of pollution or in the valuation of given effects. Whether developing countries do represent the optimal location for pollution intensive activities is an open question. The limited relocation of such activities observed in practice may indicate that this is not generally the case.

The model results are consistent with many observations in the real world. For example, the level of cleaning employed by MNEs in developing countries is lower than it is at home, but higher than that of domestic firms. Nevertheless, there are deviations, such as a complete absence of environmental protection and an excessive amount of environmental degradation in many developing countries. The plausible reasons are to be found in imperfections in the international capital markets, imperfections in information and 'government failure'.

The findings may make it seem ill-advised to opt for international co-operation regarding environmental policies vis-à-vis MNEs, as is currently done through e.g. OECD and the United Nations.[13] One counter-argument is that we have not dealt with pollution that affects resources that are common to many countries. Leaving this out, a forced internalization of the costs for pollution within the polluting firms worldwide may still be motivated by the gains of speeding up the development and spread of environmental management. As with taxation in general, however, interference with environmental protection is not motivated by host country competition per se. On the contrary, this serves to achieve an efficient pattern of direct investment. Rather than striving for e.g. universal standards, a possible interference with pollution abatement could seek to establish it on the basis of a social evaluation of the costs and benefits. Polluters should be confronted with the costs they inflict whether they are domestic or foreign in a particular environment.

13 For a survey of international environmental co-operation, see UNCTC (1985b), pp. 75-84, where further references can be found.

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6 NATIONALIZATION OF MNE AFFILIATES BY COMPETING HOST COUNTRIES

6.1 Introduction

It is widely believed that international capital flows may be impeded or distorted by the behaviour of capital importing countries. For example, Eaton and Gersovitz (1981) showed that the risk of debt repudiation may constrain a country's international borrowing. Concerning direct investment, Chapter 4 suggested that taxation of MNE affiliates should not prevent or distort their undertaking when there is effective competition between potential host countries. We now turn to the other policy option dealt with in this study, i.e. nationalization.

There have been many studies of nationalizations over the years, among them; Truitt (1974), Moran (1974), Knudsen (1974), Williams (1975), Sigmund (1980), Kobrin (1980), Jodice (1980), Burton and Inoue (1984), and Juhl (1985). While the role of political motives is fairly clear, at least for so-called mass nationalizations, there is considerable uncertainty concerning the economic motives. This is unsatisfactory since economic factors seem to have become of great importance from the late 1960s with the rapid increase in selective nationalizations (cf. Chapter 2).

Theoretical studies dealing with economic motives for nationalization tend to be concerned with effects of the risk of the policy, rather than explaining when it would be likely to actually occur. In models with complete information, the occurrence of nationalizations tends to be ruled out since rational firms do not invest in the first place if they know they are to be nationalized. Eaton and Gersovitz (1983) can be said to suggest that nationalization is more likely when there is a high rate of discounting and plenty of domestic capital. Eaton and Gersovitz (1984), on the other hand, explains nationalization as random variation, suggesting that it would be stochastic in nature and not possible to relate to any systematic factors. However, neither of these explanations are very helpful

when confronted with the real world. As will be seen in Chapter 7 and 8, empirical studies have similarly had limited success in explaining when nationalization occurs. It is still unclear whether, for example, the policy is pursued at 'good times or bad times'. As long as it is unknown why and when host countries nationalize, one can at best speculate on the effects.

This chapter presents theoretical models of nationalization. Our aims are, firstly, to establish circumstances under which host countries nationalize MNE affiliates and, secondly, to derive conclusions regarding welfare effects and policy implications. We assume that the benefits of nationalization stem from the retention of profits that cannot be taxed. Concerning costs, there is a distinction between *direct* costs, relating to the MNE targeted, and *indirect* costs associated with other agents. The direct costs here constitute a reduction of profits due to the loss of the parent's ownership-specific advantages. In practice, there may also be reduced spin-off effects on domestic firms. The value depends on the technology of MNEs and host countries. As made clear, in this study indirect costs are considered only to the extent that they materialize through direct or portfolio investment. As far as this chapter is concerned, we are limited to indirect effects on the undertaking of direct investment. Chapter 4 suggested that the direct effects (costs) of taxation are normally sufficient to rule out a prevention of direct investment. With nationalization, we need to consider both direct and indirect costs.

In relation to previous work on nationalization, this chapter introduces at least three novelties. Firstly, it is considered that host countries may nationalize by random. Secondly, the discouraging effect of nationalization on direct investment is explicitly modelled. Thirdly, we analyse nationalizations not only by a single country, but by countries which compete for gains from direct investment. The findings of the chapter lay the basis for empirical tests in Chapter 7 and 8.

The outline of the chapter is as follows. Section 6.2 analyses the direct and indirect costs of nationalizations. We move from complete information to incomplete information and trigger strategy equilibria. Section 6.3 considers that a host country may play mixed strategies, thereby randomizing which firms are nationalized. It is shown that a mixed strategy equilibrium containing nationalization is compatible with the continued

undertaking of direct investment. Section 6.4 introduces a two-country framework and allows firm-specific profits from direct investment. Section 6.5 analyses the circumstances under which one or both countries nationalize. It is demonstrated that there are two subgame perfect equilibria which are unique for given parameter values. In one both countries nationalize, in the other, no country does. Section 6.6 investigates the factors that determine equilibria and may cause shifts between them. Section 6.7 summarizes and concludes the chapter.

6.2 Direct and Indirect Costs of Nationalization

As in Chapter 4, let us assume that direct investment requires sunk costs and that profits represent the entire value of production. The scale of a subsidiary is given by technology and its life span is represented by one time period, after which it depreciates completely. An MNE is taken to be risk-neutral and to maximize its overall profit net of tax. Given an exempt tax system at home, a subsidiary maximizes its return net of tax to the host country. With the risk of nationalization, it maximizes expected profit net of tax.

In Chapter 4, host country competition limited the optimal level of taxation due to MNEs' capacity to relocate subsidiaries and/or produce elsewhere. The analysis was directly concerned only with export oriented investment, for which nationalization often is the least of a threat since the parent's access to foreign markets tends to be crucial for profitability. As noted in Chapter 3, however, there is some host country competition for import substituting direct investment as well. Moreover, a host country's ability to tax a foreign-owned subsidiary may also be limited by the opportunities open to an MNE to use transfer price manipulations and by indirect effects such as the costs of damaging an ongoing business relationship.[1]

A limitation on what a host country may accomplish through taxation is the point of departure for this chapter. We label the host country's corporate income tax ø, which is

[1] It may be asked whether the optimal tax is influenced by the possibility to nationalize. While there may be some adjustment, it is possible to simplify by separating the determinants of the two policies. The optimal tax depends on a range of factors, among which the risk of nationalization exerts only a marginal impact. Not all projects are vulnerable to such risk, while 'all' projects are subject to the possibility of paying some tax.

such that $\phi = [0, 1]$. This is viewed as exogenously determined and fixed at the 'optimal' level where the host country's tax revenue is maximized, meaning that a further increase in ϕ does not generate larger host country earnings. Firms are left with a minimum share $(1-\phi)$. In other words, host countries maximize tax revenue but may still be unable to tax all profit. Compare with the notion of a 'Laffer curve' in tax income. By nationalizing, the host country may be able to do better.

To begin with a simple case, assume complete information and that one MNE contemplates whether to invest in a single host country only once. The game is illustrated in extensive form in Figure 6.1. If the MNE does not invest, both the MNE and the host country earn zero. If it does invest, the host country chooses whether or not to nationalize. In the event of nationalization, the MNE loses the sunk cost (S) while the host country earns the whole profit under domestic ownership (π^N). In the case of no nationalization, the MNE earns profit net of tax minus the sunk cost while the host country earns tax income from the foreign-run operations ($\phi\pi$).

Figure 6.2 illustrates the outcome in coalitional form. The utility of the MNE is measured along the horizontal axis, the host country's along the vertical. The candidates for equilibria are marked by dark colour. We have the points $(u_F, u_C) = (0, 0)$ and $(u_F, u_C) = (-S, \pi^N)$ and the diagonal line above the horizontal axis. The point $(u_F, u_C) = (0, 0)$ represents the case when investment is not undertaken, and $(-S, \pi^N)$ the case of nationalization. Since the parent company's ownership advantages are lost with nationalization, we have $\pi^N \leq \pi$, where the difference represents the direct cost. The MNE makes a loss in this case, since we are to the left of the vertical axis. The diagonal line, finally, shows the possible outcomes of operations under foreign ownership. The left-high endpoint is achieved by $\phi = 1$, while $\phi = 0$ places us in the right-low corner. An outcome below the horizontal axis is not possible since a negative tax has been ruled out.

Equilibrium is determined by solving the game by backwards induction. If $\phi > 1 - S/\pi$, we are along the diagonal line to the left of the vertical axis in Figure 6.2, meaning that the tax is too high to allow the MNE to cover its sunk cost. Given that this is not the case, the undertaking of direct investment depends on whether taxation or nationalization renders the largest host country earnings. The condition for ruling out nationalization is

FIGURE 6.1: One Firm - One Country Game, Extensive Form

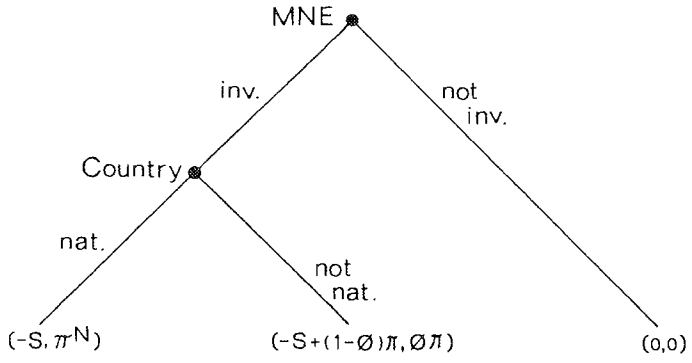
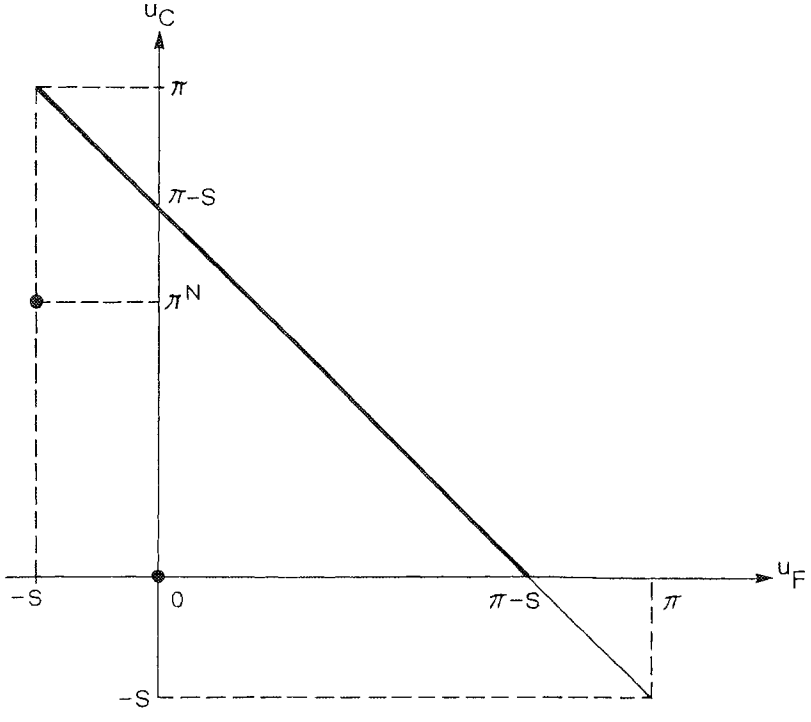


FIGURE 6.2: One Firm - One Country Game, Coalitional Form



(6.1) $\phi\pi \geq \pi^N$

We do not require a strict inequality, but assume that the host country abstains from nationalization if it earns as much from taxation. The critical tax, the lowest rate of tax that prevents nationalization from paying, is consequently

(6.2) $\phi^* = \pi^N/\pi$

The critical tax, ϕ^*, must be distinguished from the optimal tax, ϕ, discussed above. As can be seen from (6.2), the critical tax is given by the direct cost. With no such cost, so that $\pi^N = \pi$, the critical tax is 1. In that case nationalization always pays if investment is undertaken, unless the optimal tax is 1 as well. When $\pi^N \neq \pi$, the critical tax is lower than 1. Whether nationalization is pursued depends on the relationship between the optimal and the critical tax. If the optimal tax is lower, nationalization pays, so that the MNE does not invest in the first place, making $(u_F, u_C) = (0, 0)$ a unique equilibrium.[2]

In addition to direct costs, there may be indirect costs due to a possible loss of future direct investment. The game illustrated in Figure 6.1 is in practice not played just once, but is repeated with new MNEs and investment projects. In games containing repetition, so-called trigger strategy equilibria may enable players to achieve cooperative outcomes even when games are structurally noncooperative. This is when players are able to punish a player who deviates from expected behaviour. The two pillars of such equilibria are credible threats and that no player can deviate from the trigger strategy and thereby increase his own payoff given that the other players follow their trigger strategies (Friedman, 1986).

The relationship between MNEs and host countries has much in common with that between international creditors and debtors. As pointed out by Eaton and Gersovitz (1981) private creditors may take retaliatory actions to penalize defaulting debtors, of which one of the most important is exclusion from future borrowing. They assume that a

2 The question arises whether an MNE can prevent nationalization from paying by e.g. reducing π^N or raising ϕ (with a bribe for example). Compare with Magee (1977) and Eaton and Gersovitz (1984) who analyze how the threat of nationalization may distort the choice of technology. However, it is unclear how an MNE could bribe the host country without being nationalized anyway. Concerning π^N, an MNE can certainly reduce it in some activities, but not in all. Here, we neglect MNEs' opportunity to raise ϕ or reduce π^N.

country which fails to honor its implicit debt contract tarnishes its reputation and is cut off from international capital markets for ever. Likewise, granted incomplete information concerning countries' pay-off functions, but a notion of different kinds of host countries, a country may establish its character by nationalizing. MNEs can then pursue the strategy not to invest in a country which has nationalized (cf. Eaton and Gersovitz, 1983).

Assume that the game in Figure 6.1 is repeated for one potential investment project in each period. For convenience, we associate an MNE with one investment project, and assume that the profit level is the same for all direct investment. A country that nationalizes ruins its reputation and cannot attract MNEs thereafter. If the time horizon is finite, the problem is trivial. In case nationalization pays with respect to an individual project, it pays in the last time period. Since this is known beforehand, an MNE does not invest in that period, making the second-last the last in which investment is contemplated, and so on back to the start of the game. Thus, the outcome does not differ from the one-period game. If the time-horizon is infinite, however, there is no last time period. It is then possible to achieve a trigger strategy equilibrium.[3] The condition for such an equilibrium, with no nationalization, can in accordance with Friedman (1986) be determined as a limitation on the discount factor. Nationalization enables a country to retain the whole profit under domestic ownership, but MNEs pursue the strategy never to invest in a country which has nationalized. If the country does not nationalize, it earns taxes from direct investment over an infinite time horizon. Setting up the two alternatives as a sum of revenue terms and comparing the outcome, the condition for nationalization not to pay is obtained as

$$(6.3) \qquad \phi\pi / (1\text{-}E) \geq \pi^N + E\,0 / (1\text{-}E)$$

where E is the discount factor, delimited by E = [0, 1). (6.3) says that collecting taxes over an infinite time horizon must be at least as rewarding as nationalizing everything today and obtaining zero tax revenue for ever after. By rearranging (6.3) we obtain

$$(6.4) \qquad E \geq 1 - \pi\phi / \pi^N$$

3 There are other alternatives as well (cf. Segerström, 1988b), but these do not work in our set-up due to the limited choices available to the players.

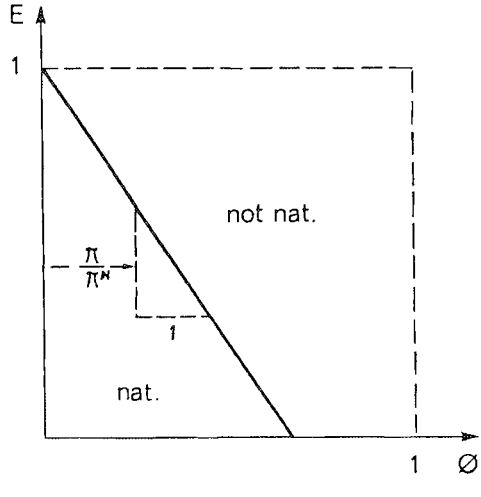
as the lowest discount factor compatible with continued investment flows. If the discount factor is so low that (6.4) is violated, the host country's future tax earnings foregone are too small to outweigh the gain of nationalizing today. As can be seen, nationalization is prevented by combinations of sufficiently high taxes and discount rates. By inserting (6.2) in (6.4), the latter is seen to be equivalent to

(6.5) $E \geq 1 - \phi/\phi^*$

The combinations of ϕ and E which exactly prevent nationalization from paying form a straight line, or boundary, with an intercept E = 1 and a negative slope as illustrated in Figure 6.3. When $\pi/\pi^N = 1$, so that there is no direct cost from nationalization, the right hand side in (6.5) is $1-\phi$, and the slope of the boundary -1. The greater the direct cost, the larger π/π^N, the smaller ϕ^*, and the greater the slope. The field in which nationalization pays shrinks. In the extreme case when $\phi^* = 0$, the boundary is vertical and nationalization does not pay no matter how small the discount factor and the optimal tax.

Thus, we have seen the combinations of direct and indirect costs that prevent nationalization when the time horizon is infinite and information incomplete. But is this

FIGURE 6.3: Nationalization in Trigger Equilibria



kind of trigger strategy equilibrium really credible? It can be noted that the usefulness of equilibria based on reputation effects for explaining international borrowing has been disputed by e.g. Bulow and Rogoff (1988). Since reputation models neglect countries' ability to bargain, they may overstate the possibility to cut off a country from world capital markets. Equilibria based on trigger strategies played by MNEs vis-à-vis host countries have similar weaknesses when evaluated against the real world experience. In practice, nationalization does not blow a country's reputation altogether. A great deal of direct investment often continues to be undertaken subsequent to nationalization. In particular, this applies to selective nationalization, which has often been accompanied by endeavors to attract new investment. In fact, the historical record assures us that MNEs generally act as individual agents, and do not formulate strategies collectively. If a host country has nationalized a subsidiary, an MNE that contemplates direct investment in the future does not abstain from direct investment if it still expects a non-negative profit.

The notion of trigger strategy equilibria suggests that it is not the occurrence but the risk of nationalization which matters. With effective trigger strategies, the policy is never observed (cf. Eaton and Gersovitz, 1983). We argue that a satisfactory theory of nationalizations must incorporate an explanation of when they do occur.

6.3 Mixed Strategy Equilibrium

As seen in the previous section, nationalization does not occur if a firm knows that it is to be nationalized if it invests. The host country has, however, the option to play mixed strategies, overtaking a share of direct investment while randomizing the specific targets. An individual firm may only calculate the probability that it will be targeted if it invests. This probability is equivalent to the share of investment nationalized by the host country. This construction, which may not seem wholly realistic, reflects the uncertainty perceived by individual firms in the real world.

Assume that there are n MNEs contemplating direct investment in each time period, where n is a large number. The level of profits, π, is taken to be the same for all investment, but be negatively related to the amount undertaken. Nevertheless, we assume that π is positive over the intervals dealt with, so that there are real gains to be divided

between MNEs and host countries from additional projects. The profits subsequent to nationalization, on the other hand, are determined by a host country's technology and entrepreneurial capacity. We view π^N as given and fixed over the intervals dealt with at a level below π.[4]

Firms do not form strategies collectively, but each firm sets up a subsidiary if and only if

$$(6.6) \qquad u_F = -S + \pi\,(1-\phi)\,(1-\lambda) + 0\,\lambda \geq 0$$

where S is the sunk cost required for direct investment, π the pre-tax profit and λ the risk of nationalization, which is restricted by $\lambda = [0, 1]$. (6.6) says that an MNE weighs its profit after tax with the probability of not being nationalized, and invests only if the expected profit, u_F, is non-negative. If (6.6) does not hold, the profit net of tax is not large enough to cover the sunk cost and compensate for the risk λ, so that direct investment is prevented in the first place. The host country, on the other hand, maximizes the discounted value of its earnings from direct investment at every point in time over an infinite time horizon. Viewed from time t, this can be written

$$(6.7) \qquad \max_{\lambda} u_C = \sum_{t=1}^{\infty} E^{t-1}\, n[\,\lambda_t\, \pi_t^N + (1-\lambda_t)\,\pi_t\,\phi_t]$$

subject to (6.6) for each firm. (6.7) says that the host country earns the whole profit under domestic ownership from nationalized direct investment, $n\lambda$ (where λ is equivalent to the probability that the host country nationalizes a specific investment project), and tax revenue from not nationalized investment, $n(1-\lambda)$.

In the following, we build on the notion of a reputation effect of nationalization. However, MNEs form there strategies individually, so that a firm views a country as destroying its reputation when a continuation of its present behaviour reduces the firm's expected profitability below zero. In analogy with the trigger strategy equilibrium, there

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4 It may be argued that π^N, in practice, falls with the amount of nationalization due to e.g. scarce entrepreneurial capacity in the host country. Incorporating this in the model would reduce the amount of nationalization, but not overthrow the nature of the results.

is consequently no further undertaking of direct investment in the country when (6.6) is violated. On these grounds, two main choices can be identified for the host country, 'optimal selective' and 'mass' nationalization. In the former, the host country nationalizes the greatest share of direct investment which allows (6.6) to be satisfied. To nationalize less is suboptimal. In the latter case, the host country nationalizes everything, i.e. $\lambda = 1$, since it is optimal to nationalize everything once (6.6) is violated. In analogy with (6.3), the condition for ruling out mass nationalization (rendering 'optimal selective' nationalization superior to 'mass'), is

$$(6.8) \qquad n[\lambda\pi^N / (1-E) + (1-\lambda)\, \phi\pi / (1-E)] \geq n[\pi^N + E\, 0 / (1-E)]$$

which says that nationalizing $n\lambda$ investment projects, and collecting tax revenue from $n(1-\lambda)$ over an infinite time horizon must be at least as rewarding as nationalizing n projects today and earning zero for ever after. By rearranging (6.8) we obtain

$$(6.9) \qquad E \geq (1-\lambda)(1 - \pi\phi/\pi^N)$$

as a limitation on what discount factor is compatible with selective nationalization. (6.9) is analogous to (6.4), from which it differs only by the inclusion of $(1-\lambda)$.

Now, assume that $\partial u_C/\partial\lambda > 0$ as long as (6.8) holds. This requires e.g. that $\pi^N > \phi\pi$, which must be fulfilled if nationalization is to be an issue at all. Returning to the host country's maximization problem, (6.7), this is subject to (6.6) for each firm and (6.9) for the aggregate of direct investment. The unique solution is obtained by writing (6.9) as an equality. By rearranging (6.9), we have

$$(6.10) \qquad \lambda^* = 1 - [E / (1 - \pi\phi/\pi^N)]$$

in equilibrium. λ^* is the share of direct investment nationalized each period over an infinite time horizon. This represents a mixed strategy equilibrium based on sequential rationality on the part of each player. It is equivalent to the subgame perfect equilibrium due to Selten (1975). Compare with Kreps and Wilson (1982). The reason is that, in each period, firms undertake direct investment as long as the host country does not blow

its reputation, that is, nationalizes sufficiently little direct investment not to make a continuation of the policy reduce firms' expected profits below zero. Investment projects keep coming until π has been sufficiently depressed to realize (6.10).[5] It is common knowledge that the host country then does the best it can by nationalizing the share λ^* of investment. If additional projects came in, the level of profits would decline, mass nationalization would pay for the host country and (6.6) would be violated. There is no way any player can increase his payoff by deviating from this equilibrium.

The result that mass nationalizations can not occur in equilibrium, while selective can, is consistent with the observations in Chapter 2 that the former are politically motivated and the latter pursued independently of the ideology of host country regimes. As can be seen from (6.10), the optimal amount of selective nationalization is larger, the greater the amount of discounting (the smaller the value of future investment), the lower the tax rate (the weaker the best alternative to nationalization) and the smaller the direct cost. The nationalized share is zero in case $E = 1 - \phi\pi/\pi^N$ in equilibrium. Whatever the level of nationalization, firms' expected profits need not be reduced to zero. For that to be the case, (6.6) and (6.9) must become equalities at the same time, which can not be taken for granted.

With optimal selective nationalizations we have seen that there is a continued flow of investment. However, the flow of direct investment is 'rationed' by the danger of mass nationalization. Moreover, the level of profit required for direct investment to be undertaken is higher the greater the share which is nationalized selectively. For these reasons, the risk of nationalizations discourages some direct investment from being undertaken. Potential mutual profits for MNEs and host countries are foregone, which provides a raison d'être for interference in the market to rule out nationalizations. However, the size of the potential welfare losses is indeterminate without knowing how much direct investment is actually discouraged by nationalizations.

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5 With equality we get a very 'shaky' equilibrium, since the host country is indifferent between nationalizing everything and nationalizing the optimal selective amount. This kind of equilibrium should then be referred to as 'weak best reply dominated equilibrium'. We abstain from this qualification, and view the equality as representing the approximate equilibrium.

To summarize, this section has determined a mixed strategy equilibrium for a single country when investment projects generate the same profit. In equilibrium, direct investment is motivated in each period until the expected profits of MNEs have been sufficiently depressed to exactly rule out mass nationalization. Some direct investment may be prevented from being undertaken due to the risk of nationalization, which provides a raison d'être for interference in the market.

A weakness of the above analysis is that no real consideration is given to the opportunity costs of MNEs, which prevents any determination of how much direct investment is discouraged by selective nationalizations. To account for this, we need an explicit formulation of the distribution of profits among different investment projects. In the next section we allow firms to be dissimilar, so that their expected rate of return after tax varies. In addition, we include two host countries which compete for gains from direct investment. Because firms may have different countries to choose between, the discouraging effect of nationalization in one country is influenced by the behaviour of the other one. Determining the behaviour of competing host countries is the task addressed in the rest of this chapter.

6.4 Framework of Two-Country Competition

The best alternative available to an MNE that contemplates undertaking direct investment in a country is often to undertake the investment in another, similar country. This opens up the possibility of competition between potential host countries. Minor (1988) wrote '...it appears important to examine host country behaviour in a global context rather than simply in terms of a host country-multinational investor dyad.' That there have been no previous investigations of the role of host country competition for nationalization may depend on the complexity of the set-up, and its sensitivity to arbitrary assumptions. Rather than developing a taxonomy of possibilities, we choose a set-up which is believed to be representative for a wide range of outcomes. Our ambition is to demonstrate what outcomes should be plausible. The model specification is crucial for the exact results, but similar implications follow from other possible constructions.

Assume that there are two potential host countries, A and B. In analogy with the previous section, we assume that reputation effects link periods so that mass nationalizations are prevented in either country. We simplify by viewing the number of possible investment projects each period, n, as a finite and given number which stops short of the level where mass nationalization pays. We abstain from determining how the profit level among firms is influenced by the flow of investment, and instead focus on dissimilarities in profitability between investment projects. Such differences make them differently sensitive to the risk of nationalization.[6] Comparing the two countries, each MNE invests where the highest, positive pay-off is expected. The choice hinges on profits before tax (π), tax rates (ϕ) and risks of nationalization (λ). Our assumptions are;

(π). The pre-tax profit varies between firms and possibly between countries. We assume that the profits in the two counties are characterized by a uniform distribution $\pi_A = [0, 1]$ and $\pi_B = [0, 1]$. The profit of a specific project (π_f) may or may not be dependent in the two countries. The degree of dependence is measured by the parameter $\mu = [1, \infty]$. When μ is 1, a project's profit in the two countries is completely independent, when it goes to infinity there is perfect correlation. μ can be interpreted as an indicator of the extent to which the two countries are substitutes for direct investment. See further note 7.

(ϕ). The tax rates are the same for all projects and equal in the two countries.

(λ). The risk of nationalization is again equal to the share of investment which is nationalized. In practice, it is likely that a host country's choice stands between nationalizing a *certain* positive amount of investment, or not nationalizing at all. As demonstrated in the preceding section, the optimal nationalization intensity is restricted by the level where all direct investment is discouraged when projects generate the same profit. An upper limit may also be motivated by scarce entrepreneurial capacity in the host country, reducing π^N with the amount of direct investment taken. A lower limit may be motivated by the symbolic nature of nationalization, making investors pay great attention to whether the policy at all occurs (reducing the marginal indirect effect of nationalizing additional direct investment). Alternatively, there may be indivisibilities in the amount of investment which can be taken effectively.

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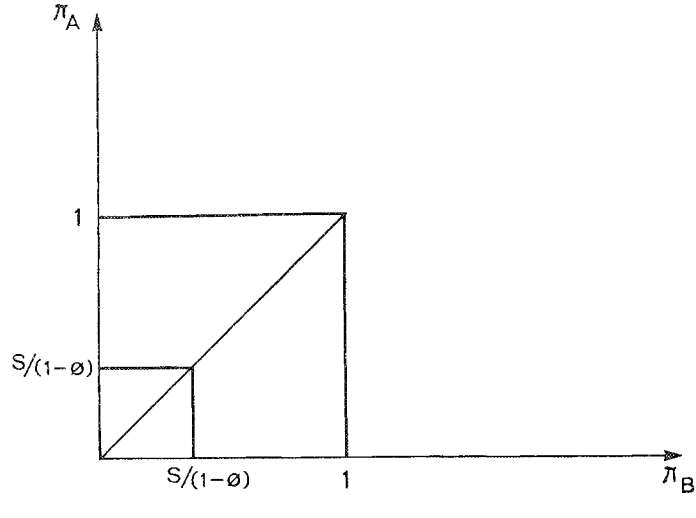
6 This could also be due to other plausible firm-specific characteristics in e.g. risk-aversion, technology, access to information, informal linkages to governments, etc.

For such reasons, a study of nationalization may focus on whether the policy at all occurs rather than the amount of investment which is taken. Thus, we consider here a country's dichotomous choice whether to nationalize a certain proportion of direct investment, or not nationalize at all. That is, λ either takes a given exogenously determined positive value in one or both of the two countries, or it is zero. If a country chooses the former, it is said to play a mixed strategy, if it chooses the latter it plays the pure strategy without any nationalization.

Figure 6.4 illustrates the distribution of MNEs' profits pre tax from direct investment in the two countries. It shows the case $\pi_A = [0, 1]$, $\pi_B = [0, 1]$, and $\mu=1$. The distribution of profits is uniform and independent in the two countries, so that there is an equal probability for a randomly selected firm to be positioned anywhere in the box. When there are no nationalizations, so that $\lambda_A = \lambda_B = 0$, the probability that a specific investment project is not undertaken in either country is represented by the smaller square in the low-left corner [S/(1-ø) times S/(1-ø)]. The reason is that a project with a profit in the two countries as represented by this surface cannot cover its sunk cost with its profit

FIGURE 6.4: Distribution of Profits in Two Countries



net of tax in any country. The probability that an investment project is located in country A is represented by the rest of the triangle above the vertical 45° dividing line, that of investment in country B by the rest of the triangle below that line.

Assume that the host countries are aware of the distribution of profits among firms, but have incomplete information concerning the profitability of *specific* projects, which is known only by an MNE itself. This is assumed to always hold, so that there is no learning over time concerning this firm characteristic. The construction is motivated by, for example, intra-firm transactions and transfer pricing blurring the profitability of affiliates. In particular, it is difficult for a host country to know the profitability of specific projects in its own territory compared to in another, competing host country. See further comments at the end of the next section.

The interaction between the two countries is dealt with in terms of a non-cooperative game. Each country maximizes its gains from direct investment over an infinite time horizon, and must take into account how the other country as well as MNEs behave. Figure 6.1 is applicable as an illustration in the extensive form of the game with respect to each MNE, with two qualifications. Firstly, an MNE chooses between country A and B. Secondly, the countries either nationalize a certain part of the direct investment that they obtain, randomizing the policy, or they play the pure strategy of not nationalizing.

Whichever strategy is chosen, this is immediately known to all players. The expected profit net of tax in, say, country A must be weighed by an MNE with the probability that it is not nationalized there, which is $(1- \lambda_A)$. If an MNE does not invest in any country it earns zero, if it invests it spends S. When projects have been established, the countries decide whether to play the pure strategy of not nationalizing, or play the mixed strategy and nationalize the share λ of its investment. From nationalized subsidiaries, the host country earns π^N, which represents an expected average value, and foregoes $\phi\pi_f$, while MNEs lose their sunk costs. From subsidiaries which are not nationalized, the host country earns $\phi\pi_f$ and MNEs earn $(1-\phi)\pi_f - S$.

The game is reiterated each period as n MNEs decide whether and where to invest. The two host countries maximize their discounted payoffs over an infinite time horizon. Firms' investment decisions are influenced by the risk of nationalization in both

countries. In equilibrium, either country either pursues a mixed strategy with selective nationalizations, or plays the pure strategy with no nationalizations. The next section investigates what will prevail in a two-country equilibrium.

6.5 Two-Country Equilibrium

Which form of nationalization behaviour is pursued by two host countries which compete for gains from direct investment as outlined above? Two equilibrium concepts are used in the following. Firstly, the Nash equilibrium, according to which all agents maximize their utility given the best response of all other agents. Secondly, the subgame-perfect equilibrium introduced by Selten (1975). A combination of strategies forms a subgame-perfect equilibrium if, in every subgame, the strategies relating to that subgame is a Nash equilibrium.

Depending on whether one or both of the two countries nationalize in equilibrium, we have four possible outcomes with discounted pay-offs for the countries as shown in Table 6.1. u denotes the discounted present value of changes in a country's utility relative the state when both countries play the pure strategy without nationalization, superscript N stands for nationalization and superscript a for 'alone' - 'not nationalizing alone' or 'nationalizing alone'.

In the following, the most plausible outcomes are illustrated by a few numerical examples. From these we move on to the pay-off relations which determine equilibrium. Consider Table 6.2, which presents parameter values. Common values are given in the

TABLE 6.1: Two-Country Payoffs

	B not Nat.	B Nat.
A not Nat.	u_A, u_B	$u_A{}^a, u_B{}^{Na}$
A Nat	$u_A{}^{Na}, u_B{}^a$	$u_A{}^N, u_B{}^N$

TABLE 6.2: Numerical Example with Two Countries

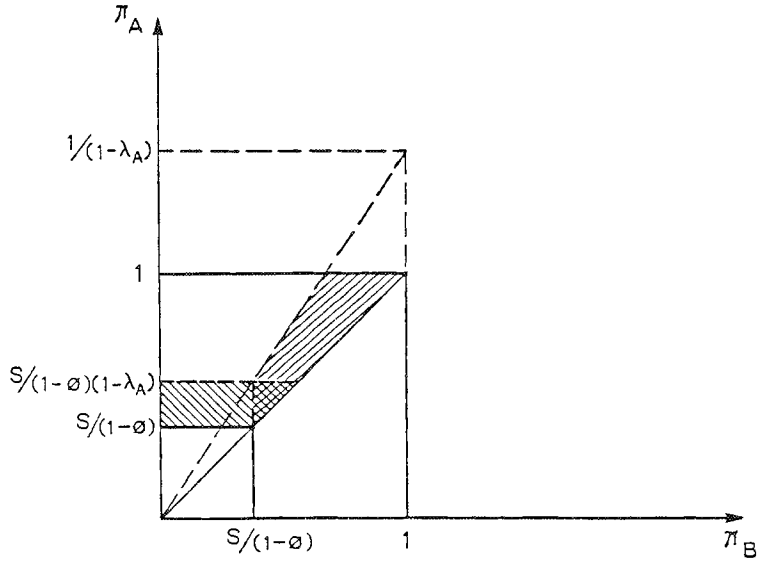
i - iii)			
$\pi_A = \pi_B = [0, 1]$	$S_A = S_B = 0.1$	$E = 0.5$	$\mu = 1$
i) $\phi = 0.2$,	$\lambda_A = \lambda_B = \{0, 0.2\}$,	$\pi_A^N = \pi_B^N = 0.3$	
ii) $\phi = 0.5$,	$\lambda_A = \lambda_B = \{0, 0.2\}$,	$\pi_A^N = \pi_B^N = 0.3$	
iii) $\phi = 0.5$,	$\lambda_A = \lambda_B = \{0, 0.2\}$,	$\pi_A^N = 0.3$, $\pi_B^N = 0.5$	

top row, while the lower rows present values that are specific for three numerical examples, denoted i) - iii). In all three, the distribution of profits in the two countries is independent and uniformly distributed between 0 and 1, the sunk cost is 0.1 and the discount factor 0.5. In the first two, the countries are symmetrical. π^N is 0.3, and the share of investment nationalized is either 0 or 0.2. Thus, the two countries choose between the pure strategy of not nationalizing at all and the mixed strategy of nationalizing 20 per cent of investment. The only difference between the first two examples is in the tax, which is 0.2 and 0.5 respectively. As will be seen, these two illustrate the only equilibria that are possible when the countries are symmetrical. In iii), π^N is higher in country B than in country A, which can be interpreted as country B having a relatively greater capacity to run nationalized firms.

Consider Figure 6.5 for an illustration of the case when only country A plays the mixed strategy. The positive λ_A reduces the expected profit in this country. In the case when country B does not nationalize, projects in the area which is only negatively-hatched do not find it worthwhile to invest in any country due to the risk of nationalization in country A. Those in the positively-hatched area are induced to locate in country B instead. In the case when country B nationalizes as well, country A discourages projects in the whole area which is negatively-hatched (which abstain from investing in either country). Country B then discourages a corresponding amount of investment.[7]

[7] It can be noted that with μ larger than one, the π_B axis is not orthogonal to the π_A axis as in Figure 6.4 and 6.5, but the angle between them is less than 90°. Say that, when $\mu = 2$, it is 45°. For a given λ, the relocating effect along the diagonal line from country A to country B is twice as large as when $\mu = 1$. The two countries can then be interpreted as twice as close substitutes for direct investment. If $\mu = \infty$, the two axes are parallell and the slightest difference in the risk of nationalization makes any project locate in the country with the lower risk.

FIGURE 6.5: Nationalization in Country A.



With parameter values as in Table 6.2, the two countries obtain the three sets of pay-offs given in Table 6.3. The figures represent pay-offs in percentage of the pre-tax profit of the average project, which is $\pi = 0.5$, relative the case of no nationalizations. Thus, we have throughout zero payoffs in row one-column one. In i), for example, a mixed strategy with $\lambda = 0.2$ in both countries results in an expected pay-off in both which is 16 per cent (of the average value of production) higher, as seen in row two-column two. In ii), nationalization in country A only results in a ten per cent lower pay-off in country A and a fourteen per cent higher in country B, as seen from row two-column one, since some investment projects are relocated to country B. Note that nationalization would occur in both countries throughout in case of collusion. If any other outcome generated a higher total pay-off, nationalization could never pay in our framework. This is not to say that nationalization is socially preferable, an issue returned to below. Solving for equilibrium, this is in the three examples as follows;

TABLE 6.3: Pay-off to Nationalization in Two Countries, Normal Form

i)

	B (not N)		B (N)	
A (not N)	0	0	0.06	0.10
A (N)	0.10	0.06	0.16	0.16

ii)

	B (not N)		B (N)	
A (not N)	0	0	0.14	-0.10
A (N)	-0.10	0.14	0.04	0.04

iii)

	B (not N)		B (N)	
A (not N)	0	0	0.14	0.06
A (N)	-0.10.	0.14	0.04	0.20

- In i) the mixed strategy on the part of both countries, i.e. $(u_A^N, u_B^N) = (0.16, 0.16)$, is a unique Nash and subgame perfect equilibrium. The tax rate is so low that it pays for a country to nationalize irrespectively of the behaviour of the other country. Both maximize utility by playing mixed strategies.

- In ii), both countries play pure strategies, i.e. $(u_A, u_B) = (0, 0)$, which is a unique Nash as well as subgame perfect equilibrium. Since $-10 < 0$, i.e. $u^{Na} < u$, it does not pay for a country to nationalize when the other country does not. Moreover, because $14 > 4$, i.e. $u^a > u^N$, it does not pay for a country to nationalize when the other one does. We have here a standard prisoner's dilemma situation. Although the countries together earn the most when both play mixed strategies, nobody does in equilibrium.

- In iii) the two countries are asymmetrical, with nationalization rendering a higher benefit in country B. Because we have $0.06 > 0$, i.e. $u_B^{Na} > u_B$ but $-0{,}10 < 0$, i.e. $u_A^{Na} < u_A$, it pays for country B, but not for country A, to nationalize when the other country does not. Since $0.04 < 0.14$, i.e. $u_A^{N} < u_A^{a}$, it does not pay for country A to nationalize when country B does. Thus, the outcome $(u_A^{a}, u_B^{Na}) = (0.14, 0.06)$ is a unique Nash as well as subgame perfect equilibrium. In this case, only one country plays the mixed strategy.

Table 6.4 summarizes the three equilibria demonstrated, as well as a fourth possible one, together with the pay-off relations on which they depend. The pay-off relations refer to whether it pays to play the mixed strategy when the other country does (left column), or whether it pays when the other country does not (right column). The mixed strategy equilibrium is referred to as 'nationalization' and the pure strategy as 'no nationalization'. In the three cases we have demonstrated, there is a unique Nash as well as subgame perfect equilibrium. In 1), both countries nationalize, in 2) neither does and in 3) only one country nationalizes.

With the pay-off relations given in the fourth example, there are two Nash equilibria, nationalization in both countries as well as in neither country. However, the latter is not subgame perfect, because it hinges on the incredible threat that a country would not follow if one country nationalized. Thus, nationalization in both countries is a unique subgame perfect equilibrium in the fourth case. This was not illustrated above, because no parameter values in our set-up allow $u^N > u^a$ and $u > u^{Na}$ to be fulfilled at the same

TABLE 6.4: Unique Equilibria in Two-Country Set-up

	Kind of Equilibrium	pay-off relations	example
1)	A nat, B nat, unique Nash and subg. perfect	$u^N > u^a$, $u^{Na} > u$	i
2)	No nat, unique Nash and subg. perfect	$u^a > u^N$, $u > u^{Na}$	ii
3)	A not nat, B nat., unique Nash and subg. perfect	$u^a > u^N$, $u^{Na} > u$	iii
4)	A nat, B nat, unique subg. perfect	$u^N > u^a$, $u > u^{Na}$	

time. It still deserves attention, since the correspondence may matter when there are many competing countries, which is relevant for the empirical analyses in the ensuing chapters.

Consider the degree of substitutability between the two countries in the different equilibria. The closer substitutes the two countries are, the larger the relocation of projects following from differing levels of nationalization. As can be checked in Table 6.4, in case 1) the two countries are sufficiently distant substitutes to make it pay to nationalize alone as well as nationalize if the other country does. Conversely, in 2) the two countries are sufficiently close substitutes not to allow it to pay to nationalize alone, and make it preferable not to follow when the other country nationalizes. For 3), however, it pays for one country to nationalize alone but not for the other to follow. This requires that the two countries are sufficiently close substitutes to make it pay to abstain from nationalizing when the other country acts, but distant enough to make it preferable to nationalize when the other country abstains from doing so. Likewise, in 4) the countries must be sufficiently close substitutes not to make it pay for a country to nationalize alone, but sufficiently distant to make it pay to follow if another country nationalizes.

It can be noted that the third equilibrium, in which only one country nationalizes, may have various properties. If the third example, given above, is adjusted so that $u_A^{Na} > u_A$, both countries are better off if they nationalize alone than they are in the case when neither country nationalizes. If, in addition, $u_A^{Na} > u_A^{a}$ and $u_B^{Na} > u_B^{a}$, both have an incentive to speed in order to play the mixed strategy first. If, instead $u_A^{Na} < u_A^{a}$ and $u_B^{Na} < u_B^{a}$, both countries have an incentive to wait as long as possible, since it is better to be the country that does not nationalize. It may under these circumstances be indeterminate which country acts. It could be expected, of course, that the most urgent respective least patient country, probably the one which has the most to gain, acts the fastest or is the most patient.

As mentioned, 1) and 2) are the only possible equilibria when the countries are symmetrical. This is because $u^{Na} > u^{N} - u^{a}$ must hold in that case.[8] Since $u = 0$ and u^{Na} is the only payoff which can be negative, it is seen from Table 6.4 that 3) and 4) cannot occur under these circumstances. With symmetrical countries we have either an

8 A country's gain from nationalizing alone (u^{Na}) is equivalent to the net gain when both countries nationalize (u^{N}) minus the discouraging effect when a country nationalizes alone (u^{a}), *plus* the union of the discouraging effects in the two cases (in Figure 6.5 represented by the field both negatively and positively hatched).

equilibrium in which both nationalize, or one in which neither country does. This does not rule out the third or fourth equilibria, since the real world is undoubtedly characterized by asymmetrical countries. Nevertheless, these can be expected to be less plausible than the first two, as seen from the conflicting properties in terms of substitutability which pertain to them.

It may be argued that host countries are, in practice, likely to have *some* information on the profitability of individual investment projects. In this case, nationalizations should not be pursued completely at random. Firms that do well and/or can be effectively run under domestic ownership would be particularly susceptible to take-over. This increases the disincentive effect on direct investment, because firms sense that they suffer a greater risk of being nationalized when they do well, so that the motivation for undertaking direct investment is reduced. In the extreme case of complete information, the firms that it would pay to nationalize are discouraged from investing in the first place, and no nationalizations will be observed. As long as we do not have complete information on the part of host countries, the nature of our results remain valid.

To summarize, this section has demonstrated the existence of two plausible equilibria which are unique for given parameter values when countries are symmetrical. In one, both countries nationalize with a certain probability, in the other neither of them nationalizes. An alternative equilibrium, in which only one country nationalizes selectively, hinges on asymmetry between the two countries and is argued to be less plausible. The next section discusses which factors determine equilibria or may cause shifts from a state with nationalization to one without, or vice versa.

6.6 Determinants of Nationalization

Consider Table 6.5 which summarizes the conditions which are crucial for determining subgame perfect equilibria in the two-country framework. If both $u^N > u^a$ and $u^{Na} > u$ are fulfilled, it is a unique Nash as well as subgame perfect equilibrium that both countries play the mixed strategy with selective nationalization. If $u^N > u^a$ is fulfilled, but not $u^{Na} > u$, nationalization in both countries is not a unique Nash, but still a unique subgame perfect equilibrium. If $u^{Na} > u$ is fulfilled, but not $u^N > u^a$, one country

TABLE 6.5: Conditions for Two-Country Subgame Perfect Equilibria

Pay-off relations	Kind of condition for outcome
$u^N > u^a$	sufficient condition for both countries to nationalize
$u^{Na} > u$	sufficient condition for one country to nationalize
$u^{Na} < u$	necessary condition for no nationalization
$u^N < u^a$	necessary condition for no nationalization

nationalizes and one does not. For no country to nationalize it is required that both $u^{Na} < u$ and $u^N < u^a$ hold.

The condition for nationalization in one country, $u^{Na} > u$, is normally fulfilled when $u^N > u^a$ is. With symmetrical countries we have seen that this is always the case. Thus, we can view $u^N > u^a$, the sufficient condition for nationalization in both countries, as the crucial condition for whether nationalization occurs. The rationale for this choice is underscored in the subsequent chapter, in which the analysis is generalized to a framework of many competing host countries. We argue that the occurrence of nationalization hinges on whether it pays for a country to nationalize when its competitor does, rather than whether it pays for a country to nationalize on its own. If this proposition is correct, it explains why it has not been possible to understand variations in nationalization between countries or over time by looking solely at the costs or benefits which prevail for individual countries.

The determinants of the condition $u^N > u^a$ may vary, but the following four factors should play a role, with an impact as indicated;

(π/π^N), the ratio of the profit under foreign ownership to that subsequent to nationalization, exerts a negative impact on nationalization.

(ϕ), the tax rate, which represents the extent to which a host country gains from direct investment under foreign ownership, exerts a negative impact.

(S), the sunk cost, exerts a positive impact as long as it is fairly small in relation to the profitability of most direct investment. The larger S is, the less investment a country attracts by not nationalizing when the other country does. If S is very large, its impact

becomes negative because nationalization in both countries would discourage more or less all investment. We neglect this possibility.
(μ), indicates the substitutability of the two countries, exerts a negative impact. The larger it is, the more investment a country attracts by not nationalizing when its rival does.

There are two additional factors which may be of interest. Firstly, the variation in the level of profits between firms may exert an impact. This is negative if the amount of direct investment discouraged, or attracted by a country which does not nationalize, increases. On the other hand, it may be positive if host countries have some information on what firms have higher profits, and thereby can increase the benefits from nationalization. Because its influence is ambiguous, this factor is omitted. Secondly, the discount factor (E) exerts a negative impact on nationalization if mostly future direct investment is discouraged. This is the case if there is some room for countries to nationalize by surprise, which is possible when, for example, MNEs estimate the risk of nationalization only partly on the basis of a country's past behaviour. As nationalization is or is not pursued, a reputation effect makes firms view a country as more or less inclined to nationalize.[9]

On this basis, we can formulate the following hypothesis on what factors determine whether nationalization occurs in two competing countries

$$N = \psi\,(E,\ \pi/\pi^N,\ \phi,\ S,\ \mu) \qquad (6.11)$$
$$\qquad\quad (-)\ (-)\quad (-)\ (+)\ (-)$$

which says that nationalization is more likely, the smaller the discount factor, the greater the rents that can be captured under domestic ownership relative to the profit under foreign (the smaller the direct cost), the lower the tax rate, the larger the sunk cost and the less the two countries are substitutes for direct investment. The last two factors represent different aspects of the 'mobility' of investment projects. The more mobile projects are, in the sense that the sunk cost is small or the level of profit in two competing countries similar, the smaller the probability that nationalization pays.

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9 Compare with (6.10), where the discount factor exerts a negative influence on the optimal amount of selective nationalization.

These factors can be interpreted as indicating which developments may cause a shift from an equilibrium with nationalization to one without, or vice versa. (6.11) suggests that nationalization may be started (be brought to an end) by the following factors; a decline (increase) in the discount factor, perhaps brought about by an increase (reduction) in the international interest rate; an increase (reduction) in the profits that can be captured under domestic ownership, possibly attributable to an increase (fall) in export prices or a greater (lesser) ability on the part of a host country to run a subsidiary on its own; a decline (increase) in tax rates; an increased (reduced) 'sunkenness' of investment or a wider (narrower) profit differential between competing host countries.

Is there a raison d'être to step in and prevent nationalization in the event that the policy pays? Again, the answer is 'yes', since some direct investment is discouraged and potential mutual profits are therefore foregone. In case nationalization is pursued in both countries, some direct investment is discouraged in both of them. In the event of countries adopting different degrees of nationalization, some projects are also relocated from where they can generate the greatest profits to where the profits are smaller, which involves an efficiency loss. If the absence of nationalization for some reason represents an undesirable distribution of gains between MNEs and host countries, the distribution should be adjusted by other measures which do not discourage direct investment from being undertaken. Once again, the fact that nationalization is not observed need not mean that the policy does not play a role. This matter is returned to in Chapter 8.

There may be varying opinions on which measures are the most appropriate to rule out the risk of nationalization. In principle, it could be achieved through any of the factors given in (6.11). For example, a higher discount factor could be induced, tax rates raised or stiffer host country competition stimulated until the equilibrium without nationalization would be assured. Of course, different measures affect the distribution of gains from direct investment differently, which must be taken into account. Note that stronger measures are required to prevent nationalization to the extent that host countries cooperate rather than compete non-cooperatively.

6.7 Summary and Conclusions

The benefits of nationalization can be assumed to derive from the retention of profits which cannot be taxed. Given complete information, rational firms do not invest in the first place if they are to be nationalized. With incomplete information and an infinite time horizon, MNEs may pursue a strategy where they do not invest in a country that has nationalized. Such trigger strategy equilibria can, in theory, prevent nationalizations at sufficiently high tax and discount rates. They do not seem realistic, however, because MNEs do not formulate strategies collectively, and because nationalizations do occur in the real world.

This chapter has considered that host countries may play mixed strategies, nationalizing firms selectively on a random basis. A country is taken to ruin its reputation only when it nationalizes a sufficiently large share of direct investment to reduce the expected profits of firms below zero. For a single country in which projects earn the same profit, there is a unique mixed strategy equilibrium that comprises the greatest amount of selective nationalizations that does not reduce firms' expected profit below zero, and which is therefore compatible with the undertaking of direct investment. However, the prospect of mass nationalization 'rations' the amount of direct investment which can be undertaken. Moreover, the greater the share of direct investment which is nationalized in equilibrium, the higher the pre-tax profits required to cover the risk for firms to be nationalized. Thus, the risk of nationalization discourages some direct investment from being undertaken.

The extent to which nationalization discourages direct investment is determined by the opportunity costs of firms, which are in turn determined by the availability of alternative investment locations. This is influenced by the behaviour of other potential host countries. For the purpose of investigating the nationalization behaviour of host countries that compete for gains from direct investment, we introduced a two-country framework. The countries face a dichotomous choice whether to play a mixed strategy with a certain 'optimal level' of selective nationalization or a pure strategy without any nationalization. Profits vary across projects according to a uniform distribution, and are more or less independent in the two countries. The countries are aware of the distribution, but have incomplete information on the profitability of specific projects.

In this framework, we have demonstrated two plausible subgame perfect equilibria, unique for given parameter specifications. In the first, both countries nationalize selectively, in the second neither country nationalizes. We argue that the crucial condition is whether it pays for a country to follow when the other one acts. It is suggested that nationalizations may start (terminate) due to a decline (increase) in the discount factor, an increased (reduced) profit under domestic ownership relative to foreign, a decline (increase) in tax rates, an increased (reduced) 'sunkenness' of investment or a wider (narrower) profit differential between competing host countries.

The condition for nationalization amounts to a requirement that two countries are sufficiently distant substitutes for direct investment, and that for no nationalization that they are sufficiently close substitutes. If import-substituting direct investment is characterized by less substitutability than export-oriented investment, nationalizations are more probable when there is a great deal of the former kind. It can be noted that Chapter 4 indicated a lower tax rate, the greater the degree of substitutability between host countries, which should increase the probability that nationalization pays. Clarifying these counteracting influences when both policies adapt simultaneously may be an interesting topic for future research.

In contrast to taxation, the possibility of nationalization may discourage some direct investment, and possibly distort its pattern across countries. From the point of overall welfare there is consequently a potential raison d'être for preventing nationalization. This can, in principle, be achieved through any of the factors mentioned above. If the distribution of gains between MNEs and host countries is considered socially suboptimal, this should be adjusted for by other means than nationalization.

So far, Chapters 4 and 6 have developed models of taxation and nationalization of MNE affiliates when potential host countries compete for gains from direct investment. The model results obtained form a conceptual basis and a starting point for an empirically relevant analysis. For example, Chapter 5 applied the findings on taxation to pollution intensive direct investment. As taxation refers to the total burden of policies that target the behaviour of MNEs, however, it is difficult to obtain consistent cross-country data on this policy. In the following we turn to empirical tests of the nationalization policy.

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7 CROSS-COUNTRY VARIATION IN NATIONALIZATION[1]

7.1 Introduction

As concluded in Chapter 2, the state which emerged in the international arena in the late 1960s has been characterized by sovereign nations subject to a lack of strict rules. Our working assumption is that host country behaviour from that time can be understood as motivated by socio-economic goals. This is not a particularly bold assumption, but it is supported by a number of studies. Concerning the period when selective nationalizations peaked, Kobrin (1980 and 1984), Jodice (1980) and Minor (1988) have demonstrated the importance of economic factors. The last of these studies also refuted previous allegations that political factors would have exerted a significant impact on the cross-country pattern of nationalizations.

In spite of the mentioned studies, there is still no satisfactory explanation of why and when countries actually pursue nationalization. The findings regarding the particular country characteristics that spurred nationalizations in the 1970s do not apply to the 1980s, when there have hardly been any nationalizations at all. To help fill the gap, the following two chapters will build on the notion developed in Chapter 6, namely that the nationalization behaviour of potential host countries which compete for gains from direct investment is interdependent.

In this chapter, we are concerned with the cross-country variation in nationalization over the period when the policy peaked, i.e. 1968-1979. Section 7.2 surveys the empirical record and points out weaknesses in some previous work. Our theoretical framework is presented in Section 7.3. The data base is introduced in Section 7.4. Section 7.5 discusses hypotheses and variables for empirical testing. A country's decision to

[1] This chapter builds on joint work with Kurt Brännäs, University of Umeå. See Andersson and Brännäs (1988a).

nationalize at all or not during the period 1968-1979 is explained by a Probit model in Section 7.6. Section 7.7 presents the results of the Probit test. The variation in the number of years of nationalization is explained within a framework of a count data Binomial regression model in Section 7.8. For its estimation, a semiparametric estimator is extended to this model type. The results of the Binomial regression are analysed in Section 7.9. The chapter is summarized in the final section. The results should be contrasted with those in Chapter 8, which examines the termination of nationalization in the late 1970s.

7.2. The Empirical Record

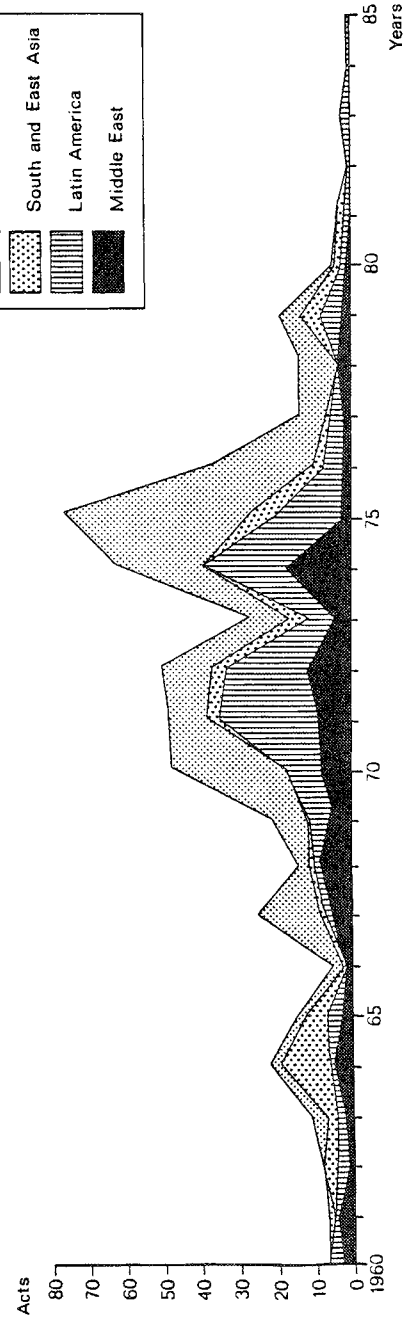
The unit of study in this and the following chapter is a so-called *act* of nationalization - which involves the taking over of any number of firms in a single industry in a given year.[2] Figure 7.1 illustrates the cross-time distribution of acts between 1960 and 1985, divided into four regions; the Middle East, Latin America, Asia and Africa (the latter two exclude the Middle East). Figure 7.2 illustrates the cross-time distribution by sectors; natural resources, manufacturing, agriculture, banking & insurance and others.[3] Figure 7.3 shows the number of countries acting each year by regions.

The total number of acts was fairly stable until the late 1960s. Exceptions were 1959 (not included in the figures), 1964-1965 and 1967. The peaks in these years partly stemmed from acts in Cuba, Indonesia and Tanzania in the respective years. In the late 1960s there was a sharp increase in the number of nationalizations, up to 53 acts per year on average in the first half of the 1970s. Figure 7.1 shows that the increase occurred across the Middle East, Latin America and Africa. Asia had a minor peak solely in 1964-65. Moreover, the number of countries that nationalized rose from ten or less each year before 1969 to a level of 20 to 30. This increase took place mainly in Latin America and Africa, while the Middle East experienced a peak between 1972-74. According to Kobrin (1980), 4.4 per cent of the stock of partially or wholly foreign-owned firms in developing countries at-year-end 1976, plus the expropriations, were taken over between 1968 and 1976. Jodice (1980) estimated that 12 per cent of the stock of direct investment

2 Concerning the data, see further Section 7.4.

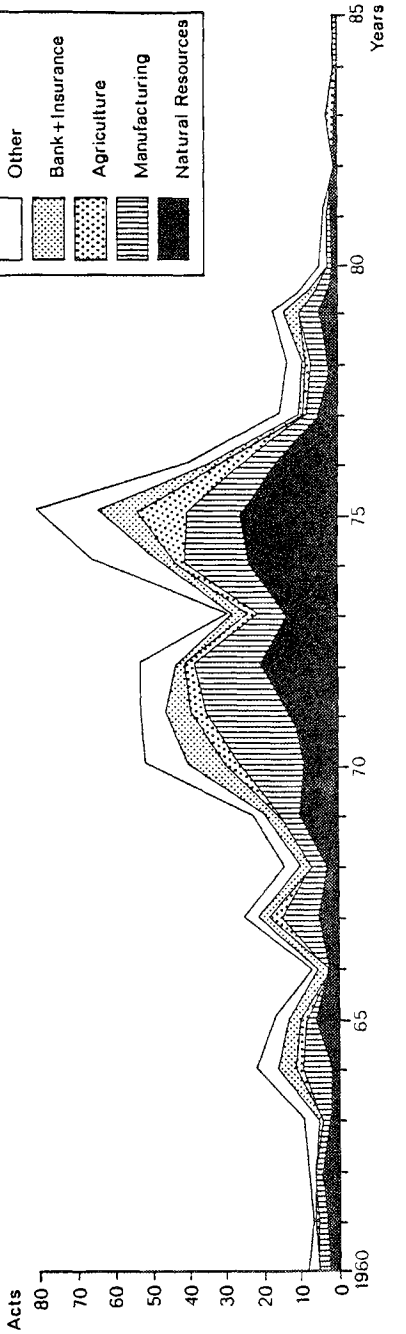
3 'Others' include utilities, transportation, communications and trade. Natural resources includes mining as well as petroleum.

FIGURE 7.1: The Cross Time Distribution of Nationalizations across Regions



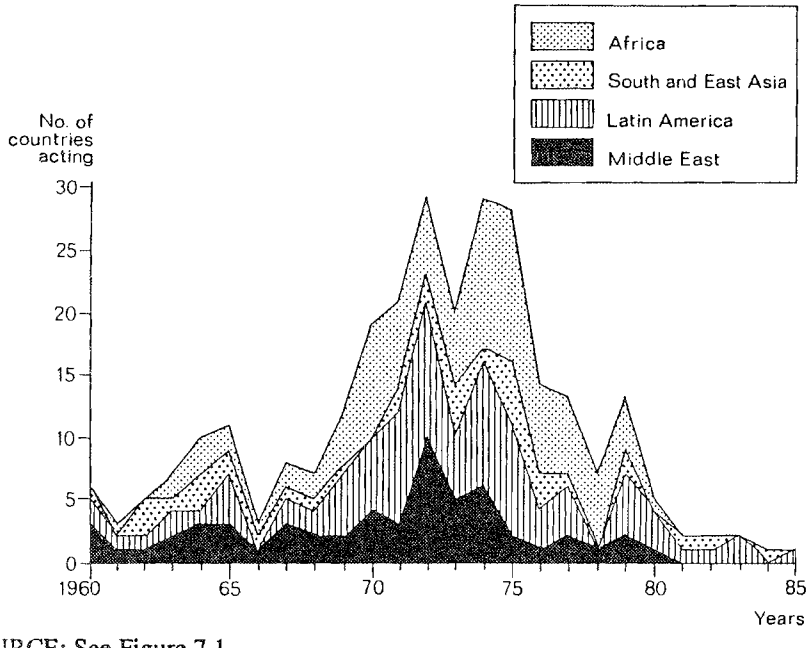
SOURCES: Data obtained from Kobrin 1986, Minor (1987).

FIGURE 7.2: The Cross Time Distribution of Nationalizations across Sectors



SOURCES: See Figure 7.1.

FIGURE 7.3: The Number of Countries Undertaking Nationalization across Regions



SOURCE: See Figure 7.1.

in developing countries in 1967 was nationalized up to 1976. There was extensive nationalization during these years, but it was still modest in relation to the total stock of direct investment.

It should be recalled from Chapter 2 that nationalization was held back by the threat of retaliatory home country action up to the late 1960s. Most acts were so far of a 'mass' character, and primarily politically/ideologically motivated.[4] From the late 1960s, however, there was a rapid increase in selective nationalizations, which were pursued independently of the ideological orientation of host countries. These acts were relatively inconspicuous, and often accompanied by encouragement to obtain new investment.

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4 Among the major nationalizations driven primarily by political motives can be mentioned those in the Soviet Union (1918), East Europe (late 1940s and 1950s), Cuba (1959), Indonesia (1965) and Tanzania (1967). Concerning political/ideological motives behind nationalization, see Vernon (1971) and Lipson (1985).

From the 1960s, nationalization has been associated with industry and project related factors. Kobrin (1980) found that *sectoral belonging, ownership technology, level and maturity of technology* and *home country belonging* influence the propensity of certain activities to be nationalized. The sectoral distribution 1960-79 was; natural resources 31 per cent, manufacturing 27 per cent, agriculture 9 per cent, banking & insurance 12 per cent and others 21 per cent.[5] Drawing a comparison with the number of firms in the period 1960-76, natural resources, infrastructure and banking and insurance had the highest propensity to be nationalized. Manufacturing and trade were relatively less vulnerable. Meanwhile, wholly owned subsidiaries were the target of some 75 per cent of all acts. Investment that had reached a mature phase of its life cycle, possessed a technology that was easy to copy and had developed local management, was highly susceptible to takeover. Investment that originated in responsive home countries, such as the U.S., Great Britain and France, was somewhat more secure on average. In a more general discussion, De la Torre and Neckar (1988) distinguish between industry, corporate, structural and managerial factors as determinants of activities that may be nationalized.

The number of nationalizations have fluctuated considerably over the years. It turned out that the 1968-1976 phase constituted a spectacular peak. 72.1 per cent of all the acts undertaken between 1960-85 took place during these years. From a record high of 83 acts in 1975, the number of nationalizations declined to an average of 16 per year 1977 to 1979, which is only slightly above the level before 1968. Figure 7.3 confirms that the downturn also applied to the number of countries acting, although there was a minor increase in 1979. In the first half of the 1980s, nationalization stabilized at a low level.

The downturn in nationalization is analyzed in Chapter 8. Here, we are concerned with cross-country variation in the policy at its peak. There have been a great many empirical studies of nationalization, particularly in business administration. Based on the experiences of Zaire and Zambia, Shafer (1985) related the costs of nationalization to the strength, resources and autonomy of a state. Burton and Inoue (1984) explained the occurrence of the policy among different sectors in terms of a country's stage of economic development. Juhl (1985) supported the view that nationalization increases

5 These shares differ from those in Kobrin (1980), which are based on 1960-76 only.

with a country's capacity to assume responsibility for an affiliate. Here, we focus on Jodice (1980) who explained some 60 per cent of the cross-country variation in natural resource nationalization 1968-76 by combining socio-economic and political explanatory variables in a multiple regression model. The following explanatory variables were reported as significant;

(1) the level of modernity of a country (measured by GNP/c), exerting a curvilinear effect,
(2) government capacity (measured by the ratio of central government revenue to GDP),
(3) economic performance failure (measured by instability of export earnings),
(4) lack of government dependence on bilateral aid from the United States, and
(5) 'collective protest' and 'internal war' in a country, indicating political threat directed against the government respective its ability to withstand such pressure.

The first two variables would reflect the ability of host countries to run nationalized subsidiaries on their own. The propensity to nationalize would increase with the level of economic development and administrative capacity of a country. However, the most developed countries would already have nationalized their natural resources in 1967, causing the curvilinear effect. Policy failure matters, according to Jodice, because '...nationalization is rooted in the frustration of politicians'. The fourth variable is a disincentive since dependence on U.S. aid makes countries vulnerable to sanctions from the major, as well as most responsive, home country. The fifth variable indicates domestic pressure to take forceful action against MNEs. Where authorities have difficulty in handling domestic opposition, nationalization comes in handy as a way of demonstrating power of action.

Jodice's conclusions can be summarized as a view that nationalization occurs because weak regimes capable of running nationalized firms need scapegoats in times of crisis. The influence of his political variable has been questioned because others have been unable to replicate his result. Minor (1988) finds no significant impact from this variable, and concludes that 'there is no simple relationship between political threat or instability and the propensity to nationalize'. Political factors are therefore excluded here, although there are examples of selective nationalizations where they did play a role.

Jodice's study is generally regarded as one of the most successful in the field. However, it does not explain variation in nationalization outside natural resources or the period with which he was concerned. The downturn after 1976 can not be explained by e.g. 'less policy failure'. It could, of course, be argued that all possible targets had been taken at the time. This is, however, doubtful given real world observations of what investment remains. Moreover, the time pattern of nationalizations in natural resources does not deviate much from that in other sectors, in which the termination can even less be explained by the above factors. We do not yet have a clear picture of when and why nationalization can be expected to occur.

7.3 Theoretical Framework

It was demonstrated in Chapter 6 that when two countries compete for gains from direct investment, the amount discouraged by nationalization depends on the behaviour of both of them. A country discourages more investment if it nationalizes alone than if both do, as it then loses investment projects to the other one. Two plausible equilibria, unique for given parameter values, were demonstrated, one in which nationalization pays in both countries, one in which it does not in either of them. It was argued that the crucial condition for which equilibrium prevails was whether or not it pays to nationalize when the other country does.

Again, nationalization is mainly a measure to prevent repatriation of profits, which suggests that the objective is short term foreign exchange earnings. The gain has to be weighted against losses which are primarily of a long-run character. A loss of firm-specific advantages which are inherent to the parent company, and possibly a discouragement of future undertaking of direct investment, means that capital, technology, employment, risk-diversification, etc., is foregone by the host country. To the extent that nationalization is a matter at all, there should be a trade-off between capturing short term gains and suffering relatively long-term losses.[6]

6 The motivation of short-run foreign exchange earnings is supported by observations of nationalizing countries' indebtedness and servicing requirements, level and diversification of export earnings and exposure to commodity price fluctuations. Other related factors of importance concern the trade regime, monetary and exchange rate policy, the rigidity of import requirements, etc. (cf. De la Torre and Neckar, 1988).

The two-country analysis can be generalized to a framework of many potential host countries which compete for gains from direct investment. The following condition for a firm undertaking direct investment in country i was given in Chapter 3

(7.1) *f in i iff*: $E\,[[(1-\phi_i)\pi_i - \emptyset_i]\,(1-r_i) - S_i] \geq \max\,[\,E\,[[(1-\phi_j)\pi_j - \emptyset_j]\,(1-r_j) - S_j], 0]$ where $j \neq i$

which says that the firm f sets up a subsidiary in country i if and only if its expected rate of return is positive and higher than it is in the best alternative host country, j. π is pre-tax profit, ϕ corporate income tax, $\emptyset$ a lump-sum tax, r the estimated risk of nationalization and S the sunk cost required for investment. Host countries, on the other hand, must consider whether investors pull out or abstain from investing in the future in case they nationalize. The policy pays provided that the benefits outweigh the direct and indirect costs. Country *i*:s maximization problem, again restated from Chapter 3, can be written

$$(7.2)\quad \max_{\phi,\emptyset,\lambda} \sum_{t=1}^{\infty} \sum_{f=1}^{n_t} (1-\lambda_f)\,(\phi_{ft}\,\pi_{ft} + \emptyset_{ft} + X_{Gft} - X_{Bft}) + \lambda_f\,(\pi_{ft}^{N} + X_{Gft}^{N} - X_{Bft}^{N})$$

s.t. f in *i* , $\phi = [0, 1]$, and $\lambda_f = \{0, 1\}$

where X_G and X_B are the value of positive and negative external effects, and superscript N marks profits and external effects subsequent to nationalization. Again, (7.2) says that country i maximizes its utility over an infinite time horizon and a potential flow of n investment projects each period. Gains accrue from each project through nationalization or taxation, as well as from external effects, subject to the constraint that projects are undertaken, which is (7.1) for each MNE.

As in the preceding chapter, the level of taxation is taken to be fixed at an optimal level where it does not discourage direct investment. How much is discouraged by nationalization depends on the availability of alternative investment opportunities. Since each project is characterized by firm-specific advantages, countries are likely to be differentially close substitutes for different projects. From the perspective of an individual country, it matters more or less how all competing countries behave. Generally speaking, the greater the number of competing countries that nationalize as well, the smaller the

discouraging effect on direct investment, and the smaller the captured rent which makes nationalization pay. The fewer competing countries that nationalize, the larger the discouraging effect and the larger the captured rent required for the policy to pay.

Against this background, we can in the extreme think in terms of two 'global' equilibria in host country behaviour, one in which all countries nationalize selectively, one in which none do. In the first, it pays to nationalize because others do that as well. MNEs perceive no great differences in the risk of being nationalized in different locations, and the policy consequently causes relatively little discouragement to direct investment. The firms that abstain from direct investment in a country, due to the risk of being nationalized, are those that abstain in developing countries altogether. In the second equilibrium, it does not pay for individual countries to nationalize, because others would not follow in case they did, so that they would lose direct investment to their competitors.

In between the extremes, there may be intermediate stages in which not all countries act one way or the other. With more than two countries, there is certain to be asymmetries between individual countries and their competitors. Moreover, with countries that are differentially close substitutes for investment projects, there may be groups of countries which do or do not nationalize depending on the behaviour of their closest competitors. There may also be individual outliers due to extreme costs or benefits, or political motives.

In a world with many developing countries that compete for gains from direct investment, the disincentive effect of being one of a few which pursue nationalizations is likely to be pronounced. This is because most projects will have fairly similar alternative locations where they do not face the risk of being nationalized. The gain of being one of a few countries which abstain from nationalization may be less pronounced, however, since a particular country is a suitable host for a limited number of projects. It is consequently unlikely that it pays for a country to nationalize alone, which supports the argument that the crucial condition for nationalizations is whether it pays for other countries to follow when an individual country acts. In a state where nationalization is largely absent, the reason is not that it does not pay for individual countries, but that it would not pay for others to follow if a country acted. If others were to follow,

nationalization would pay and the policy would be enacted on a great scale. The implication is that small exogenous changes may set off nationalizations across a great number of countries.

In the opposite situation, where nationalizations are pursued by many countries, the policy would be discontinued if it paid for some to stop when others acted. However, the incentive for an individual country to stop may be weak for the reason given above. Thus, it seems plausible that the termination of nationalization requires other factors, apart from the discouragement of direct investment, such as a depressed stock of investment projects that can be taken, increased economic retaliation by home countries or international organizations, discouragement of portfolio investment, etc. These issues are returned to in Chapter 8.

The notion of two equilibria in the nationalization policy is in line with the historical record, although the extreme states of *all* or *no* countries acting at a particular time have not been observed. Only a few countries acted each year up to the late 1960s, and in the 1980s. Furthermore, as discussed in Chapter 2, most nationalizations up to the late 1960s were of a mass character and, hence, mainly politically motivated. Concerning the 1980s, the distinction between 'mass' and 'selective' nationalization as defined by Kobrin (1984) cannot be made. However, a look at the countries that acted strongly suggests that political motives did play an important role in this period.[7] Thus, the economically motivated nationalizations have been even more concentrated than appears from the distribution of the total number of acts, displayed in Figure 7.1 to 7.2. In the period 1968 -1979, nationalizations were pursued by a majority of the developing countries. The period examined by Jodice (1980) falls within this interval. In the following we seek to explain the cross-country variation in nationalization during the 'peak' of the policy.

7.4 Data

It is difficult to obtain consistent data on nationalization. Rather than developing a new data base we use the most comprehensive, if not most extensive, one available. This is based on a systematic scanning of secondary sources by Kobrin for 1960-1979 and

7 Among them were, for example, Iran, Nicaragua, Mexico and Bolivia.

Minor (1987) for the subsequent years up to 1985. Nationalization is used as a term for the seizure of equity, and concerns only direct investment - debt repudiation is a more suitable term in the case of portfolio investment. The divestment must be involuntary and cause the deprivation of ownership per se. Four types are included; formal expropriation, intervention, forced sale and contract renegotiation leading to transfer of ownership.

The data base includes a total of 574 acts, encompassing about 1550 individual firms. While most nationalizations from 1960 are included, some categories may be under-represented, notably forced sales. Burton and Inoue (1984) examined an even larger data base, consisting of 1857 cases, including for the first time Japanese firms. Their data are less comprehensive in some respects, however, and not as up to date as those used here.

The seriousness of nationalization in the eyes of investors depends on compensation, practice of negotiation and other factors which are hard to observe or quantify. Likewise, the number of acts or firms taken, which have been used in some previous tests, are inadequate proxies for the amount of nationalization. Thus, it is difficult to test explanations of the value, intensity or extension of the policy. We instead undertake two model based tests of whether countries nationalize at all, which should be more appropriate. A related test follows in Chapter 8.

The sample we are testing for includes 67 observations (countries), which are all developing countries with a stock of direct investment of at least $ 60 million on average 1972-1974 according to UNCTC (1983). Three countries with missing values in one variable had to be excluded, reducing the number of observations to 64.[8] The lower limit is used to avoid inclusion of countries where nationalization was ruled out due to a lack of targets. Together the countries excluded were hosts for less than 2 per cent of the total stock of direct investment in developing countries.[9]

8 Zimbabwe, Mauretania and Guinea had missing values. The remaining countries and the number of years in which they nationalized can be seen in Figure 7.6 - 7.7, and Table 7.4.

9 The countries excluded due to a small stock of investment all have low GDP or GDP/c, indicating a small capacity to attract direct investment. Their exclusion is motivated by our aim to seriously test the role of effects related to the discouragement of direct investment. The following countries nationalized but were excluded because of a small stock; Antigua, Afghanistan, Burma, Cambodia, Laos, Nepal, Benin, Chad, Central African Republic, Sierra Leone, Swaziland, Somalia, Uganda, Abu Dhabi, Bahrain, Dubai, Lebanon, Oman, Quatar, Syria and Yemen. An additional 22 countries with a too small stock did not nationalize.

Since the data report nationalizations each year in each country it would be possible to use corresponding observations of explanatory variables. This kind of panel data would enable powerful tests of structural shifts and dependence between observations. A final verification or falsification of hypotheses related to the existence of two equilibria will require testing based on panel data. There are difficulties, however. Firstly, it is far from certain how agents form their expectations concerning the future. To what extent do they extrapolate past trends and to what do they foresee future changes? Secondly, the requirement of yearly data would prevent inclusion of a number of countries for which data could not be obtained. Tests based on a single set-up of explanatory variables are less dependent on the dynamic model specification. For variables which remained at a fairly steady level, we use values for individual years, and for the others we make estimates roughly corresponding to the average of the period studied.

7.5 Hypotheses and Variables

We have suggested that nationalization is motivated by large outflows of foreign exchange which can be prevented through this policy, *and* by a great need on the part of a host country to do so. The larger the rent that can be withheld through nationalization in comparison to taxation, and the higher the opportunity cost for foreign exchange, the greater the potential benefits of nationalization. Thus, we expect characteristics associated with the benefits of nationalization to exert a significant influence on the cross-country variation in the policy. Because most countries nationalized in the period dealt with, we do *not* expect a decisive influence of factors related to the indirect effects of discouraging direct investment.[10] However, there should be some effects of that kind. These would be the more pronounced the closer substitutes countries were to countries that did not nationalize.

Two tests are undertaken in the following. Firstly, if any nationalization destroys a country's reputation, one should focus on the dichotomous choice as to whether a country nationalizes at all. The question is whether the net value of a great many factors pushed the net benefit of nationalization above zero at any time. A Probit model is used for the

10 As discussed in Chapter 3, discouragement of direct investment should not be expected to be directly observable.

analysis. Secondly, nationalization may exert a marginal impact on a country's reputation. Given that a reputation can be restored - that past acts become less important as long as a country does not act anew - the policy's frequency in time should matter. Every time a country acts anew, this signals a danger of a continuation. When it does not act it signals that there is less danger of a continuation. Based on this conception, we use a Binomial regression model to explain cross country variation in the frequency of the policy.

The dependent variables are respectively;
- in the Probit model a dichotomous variable taking the value zero if a country did not nationalize 1968-1979, and otherwise one,
- in the Binomial regression model, the number of years 1968-1979 in which countries undertook at least one act of nationalization, indicating how often they inflicted the indirect costs on themselves.

The definitions of explanatory variables and descriptive statistics are found in Table 7.1. The choice of explanatory variables has been motivated by the goal to obtain appropriate proxy variables for which data are available for a great number of countries. The rationale for their inclusion, and the expected impact, is as follows for each variable;

X_1 = *The stock of direct investment* is the prime indicator of the indirect effect of discouraging direct investment. The greater the stock, the greater the amount of direct investment that may be pulled out of a country. In particular, the size of the stock indicates the potential for reinvestment as well as repatriation of profits which may occur in response to the policy. Thus, we expect a significant negative impact on nationalization if the disincentive effect is of great importance. However, the variable may also indicate the availability of suitable targets. If this effect dominates, we expect a positive impact.

X_2 = *The growth rate* is a proxy variable for an economy's 'soundness', or economic performance. Firstly, it is negatively related to the opportunity cost of foreign exchange. High growth should make foreign creditors more willing to provide lending, foreign as well as domestic firms less inclined to capital flight, provide better prospects for export earnings, and so forth. Secondly, growth should enhance the attractiveness of taxation, because the host country is a more attractive location for future activities and foreign

investors therefore more inclined to reinvest rather than repatriate profits excessively.[11] Thus, we expect a negative impact on nationalization.[12]

X_3 = *The size of the economy* (GDP) is a proxy variable for capital mobility between a country and the rest of the world, i.e. the sensitivity of investment flows with respect to host country action (cf. Huizinga, 1988). The larger the economy, the less easily is direct investment discouraged by nationalization. Thus, if the discouraging effect is important, we expect a significant positive impact of GDP on nationalization.

X_4 = *The income level* (GDP/c) indicates the level of sophistication in the host economy, including the quality of its infrastructure. Because this is related to a country's ability to attract direct investment, there should be a negative impact on nationalization to the extent that the disincentive effect exerts a major role. On the other hand, the income level also indicates a country's capacity to run nationalized firms on its own. This is the argument made by Jodice (1980) for a positive impact on a country's propensity to nationalize.

TABLE 7.1: Variable Definitions and Descriptive Statistics

Variable	Definition	Mean	Median	Standard Deviation	n
X_1	Direct Investment (Stock, 1974)	778	340	1337	67
X_2	Average Growth (1970-1979)	4.3	4.5	3.1	67
X_3	GDP (1974)	12684	3528	22524	67
X_4	GDP/capita (1979)	1553	740	2523	67
X_5	Export Commodity Concentration (Per cent)	39.8	36.1	26.6	64
X_{5D}	Export Commodity Concentration (low/high)	0.25	0	0.44	64

11 In addition, it is probable that the spin-off effects of direct investment increase in the growth rate, because an expanding economy is more apt to take advantage of business opportunities.

12 Because high growth also enhances a country's capacity to attract direct investment, it may be associated with the disincentive effect. That would then render a negative impact as well. If that is so, we expect the other proxy variables for that effect to be significant as well.

X_5 = *Export commodity concentration*, indicates the vulnerability of a country's external position. A positive impact is expected because a high concentration is likely to make fluctuations in e.g. commodity prices spur a great need of short-term foreign exchange earnings. Two alternative measures are used. Firstly, the largest of the share of fuels, minerals and metals in percentage of total merchandise exports in 1970 and 1980. Secondly, a dummy variable (X_{5D}) taking the value 1 if this share surpassed 80 per cent in either of those years, otherwise zero. The dummy is motivated by a high concentration being likely to exert an impact, while variation at a low level should not matter.

Summing up, we expect the cross-country variation in nationalization 1968-1979 to be determined by the rate of growth and the export commodity concentration, because these variables should be negatively respectively positively related to the potential benefits of nationalization. The other variables are argued to be associated primarily with the indirect effects from discouraging direct investment, which should be relatively unimportant for explaining cross-country variation in nationalization in the period studied.

7.5 The Probit Model

Consider a dichotomous choice model where a country either does or does not nationalize. Because there may be overt or covert compensation, nationalizations may in some cases not really represent acts of forced divestment, but occur with the consent of the MNEs targeted. In order to lessen the risk that such events classify countries as having nationalized when they should not, we actually require that a country undertook at least two acts of nationalization in the period studied in order to be recorded as having nationalized. This renders a country the value 1 (indicating nationalization).

In the following we make only a brief presentation of the Probit model. For a more thorough discussion, see Amemiya (1981). For a related model test, see Lall (1986). Let the expected gain of nationalization be $X\beta^*$, where X is a vector corresponding to the attributes of individual countries and β^* is a vector of unknown parameters. For the i:th country the decision to nationalize is taken if and only if

(7.3) $X_i\beta_* + \varepsilon_i > 0$

where $\varepsilon_i \sim N(0, \sigma^2)$. The probability that the country nationalizes can be determined from the distribution of ε_i and is given by $1-\phi(-X_i\beta)$, where $\phi(.)$ is the standard normal distribution function. The log likelihood function is maximized with respect to $\beta = \beta_*/\sigma$ due to the standard identifying condition. The β can be interpreted as the impact of various country attributes on the probability to nationalize.

7.7 Results of the Probit Model

The resulting estimates are given in Table 7.2. The first two runs include the commodity concentration variable in percentage (X_5) respective dummy form (X_{5D}), all other variables included. In the third run, the dummy construction is retained, and the variable with the smallest t-value in the second run (X_1) has been dropped. Logarithmic form has been used for (X_1), (X_3), (X_4) and (X_5) in order to partly restrict the dominating impact of a few very large observations.

Some alternative measures of the explanatory power of a Probit model, suggested by Amemiya (1981), are given below the estimates in Table 7.2. The explanatory power increases in the first and decreases in the last three. Comparing the first two runs, it can be seen that the dummy construction is superior in all measures except for the Effron R2. The third run is similarly superior to the first.[13] Since we have a good argument for the dummy construction, we pay most attention to the runs based on this argument. Because all known scalar criteria are subject to weaknesses (cf. Amemiya, 1981), we focus on the t-values of the explanatory variables in the following.

As can be seen, the stock of direct investment (X_1) has the smallest t-value. Moreover, its sign varies, being negative with the commodity concentration in percentage form and positive with the dummy construction. This suggests that the disincentive effect on direct investment did not play a major role. However, GDP (X_3) is significant at the 5 per cent level in the first and third runs and exerts a positive impact as expected. GDP/c (X_4) is

[13] The second and third runs generated fairly similar estimates. The explanatory power of the second is the highest, however, except for the SSR weighted.

significant at the 10 per cent level in the second run, and exerts a negative impact as expected. The t-values of these variables are only at the margin of being significant, however, and they are not robust with respect to the model specification. Although there may have been a certain disincentive effect, the results indicate that it was not of primary importance. Before drawing definite conclusions on this point, however, we consider the Binomial model.

The rate of growth (X_2) and export commodity concentration (X_{5D}), on the other hand, render inconclusive results. Both exert an impact as expected and are not only significant at the 5 per cent level but have the highest t-values in all three runs. That the above discussed indicators of the effect of discouraging direct investment did not display any

TABLE 7.2: Estimation Results of the Probit Model
T-values in parentheses. Size of sample = 64.

Variable	ß	ß	ß
Intercept	- 0.197	0.845	0.643
	(- 0.65)	(0.46)	(0.36)
ln X_1	- 0.126	0.175	-
	(- 0.56)	(0.67)	-
X_2	- 0.321	- 0.319	- 0.327
	(- 3.23)	(- 2.95)	(- 3.07)
ln X_3	0.405	0.339	0.431
	(2.00)	(1.48)	(2.41)
ln X_4	- 0.034	- 0.461	- 0.382
	(- 0.16)	(- 1.65)	(- 1.51)
ln X_5	0.221	-	-
	(1.79)	-	-
X_{5D}	-	2.246	2.067
	-	(2.83)	(2.90)
Effron R2:	0.81	0.48	0.23
No. of wrong predictions (per cent)	66.6	34.4	42.2
Sum of squared residuals:	42.0	22.0	26.5
SSR weighted:	$1.01 .10^{13}$	$2.65 .10^{12}$	$6.67\ 10^{11}$

convincing impact suggests that the impact of both these variables derive from their association with the benefits from nationalization, as discussed above. We could look at marginal effects to obtain more information on the different effects. However, the Probit model must be regarded a fairly coarse method in our case. As made clear, we do not believe that an act of nationalization destroys a country's reputation altogether. With a Binomial regression model we should be able to obtain more reliable results.

7.8 Binomial Model and Estimation[14]

The use of a Probit model for examining cross-country variation in nationalization is not without difficulties. Given that nationalization exerts a gradual and transitory effect on a country's reputation, the policy's frequency in time should matter. In examining cross-country variation in the frequency of nationalization 1968-1979, the number of years a country acted is used as the dependent variable. The variable is obviously discrete and ranges from 0 to maximally 12 years.

We view nationalization in each year as a Bernoulli distributed random variable. Under independence between years the resulting variable, the number of years of nationalization, is then binomially distributed. In a Binomial regression model, one typically sets the probability of nationalization p equal to a distribution function to guarantee that the estimated probability remains in the permissible range. With a logistic function we have the Bernoulli probabilities of nationalization or non-nationalization in each year in the form of a Logit model. With a standard normal distribution function we instead have the Probit model. The use of a wider class of distribution functions have been proposed by e.g. Prentice (1975), who suggested the generalized F distribution as a way to reduce the risk of distributional misspecifications.

Here, we adopt the logistic distribution (and supply some empirical support for the specification below), so that the probability of nationalization for the i:th country is

(7.4) $p_i = 1 / (1+ \exp (X\beta))$

14 This and the subsequent section are based on joint work with Kurt Brännäs, University of Umeå, see Andersson and Brännäs (1988a).

where X is the (1 x k) vector of explanatory variables and ß the (k x 1) vector of unknown parameters to be estimated.

The decision to nationalize is not expected to be perfectly independent over the years but, without panel type data, we cannot study this matter in any depth and detail. Moreover, and perhaps due to potential dependence between years, the variance of the number of years of nationalization is not smaller than the mean (cf. Figure 7.4), as it should with the binomial distribution. As a consequence, we propose to use a Binomial regression model that takes the 'over dispersion' or unobserved heterogeneity into account. Over dispersion can e.g. arise due to omitted, proxy or error contaminated variables, or to random parameters (cf. Brännäs and Rosenqvist, 1988).

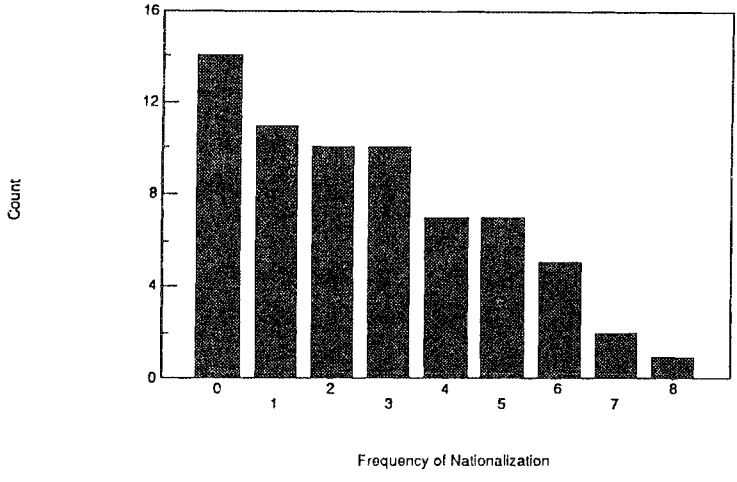
Treating the over dispersion as a random variable θ (with an unknown distribution function) we write the probability $p = 1/(1+\exp(X\beta + \theta))$. Dunn et al. (1987) suggested a semiparametric estimator to a related type of model. The unknown ß parameters and the shape of the unknown continuous distribution function are estimated jointly. The latter is estimated by a discrete distribution function. The Q points of increase are mass points (θ_j) and the increments (q_j) are probabilities corresponding to each mass point, where j = 1... Q. From general theory it is known that the number of mass points (Q) is finite (Simar, 1976, Lindsay 1983ab, Heckman and Singer, 1984). When the model is estimated without a constant term, the mass points can be interpreted as constant terms. It is possible to predict which constant term is the most likely for each country by logistic discrimination, see below.

The density function to be used for estimation is for the *i*th country written in the form of a finite mixture model

$$(7.5) \qquad Pr(y_i) = \Sigma_j^Q q_j \begin{bmatrix} 12 \\ y_i \end{bmatrix} \lambda_{ij}^{(12-y_i)} / (1+\lambda_{ij})^{12}$$

where $\lambda_{ij} = \exp(X\beta + \theta_j)$ and q_j is the probability associated with mass point θ_j. The log-likelihood function is

FIGURE 7.4: The Number of Years of Nationalization. Frequencies[15]
Mean = 2.63, Variance = 4.76, n = 64.



$$(7.6) \qquad \ell = \Sigma_i^N \log \Sigma_j^Q q_j \lambda_{ij}^{(12-y_i)} / (1+\lambda_{ij})^{12}$$

which is maximized with respect to ß, the probabilities q_j and the mass points θ_j.

To decide on the number of mass points, Dunn et al. (1987) among others used the informal criterion to add mass points (increase Q) until the estimates of these start to coincide. We instead use a theoretically motivated criterion function (cf. Lindsay, 1983ab). Examples of its use in count data models were given by Brännäs and Rosenqvist (1988). As a criterion for the selection of Q, the function

$$(7.7) \qquad D(\theta) = \sum_{i=1}^{N} Pr(y_i|\theta) / Pr(y_i) - N$$

is evaluated for all values $\theta \in \Omega$. This function, which has not been used previously in this kind of models, allows us to investigate features in the data which cannot be directly

15 To avoid confusion it can be repeated that 'frequency' refers to the number of years in which a country nationalized, and is not counted over a number of countries.

observed, but which help to understand the way they are structured. The denominator is evaluated at estimates ß, θ_j and q_j and $Pr(y_i|\theta)$ at ß. Lindsay (1983ab) provided conditions on the range and potential gaps of Ω. The global maximum of the likelihood function is obtained at the Q for which $D(\theta) \leq 0$. The maximizing estimates (ß', θ', q', Q) have the property that $D(\theta'_j) = 0$. For other values on θ, $D(\theta) < 0$.

The parameter estimates are obtained by the simplex method applied to the negative of the log-likelihood function (7.6).[16] To estimate the value of Q and to ascertain that the obtained solution is indeed a global maximum, the function in (7.7) is evaluated. The associated covariance matrix is calculated using the Berndt et al. (1974) approximation and with Q treated as fixed. The computational work can perfectly well be performed on a PC. The probability that a given country is associated with a particular mass point or constant term j (j = 1,... Q), is obtained by the Bayes rule as

(7.8) $\quad Pr(j|y_i) = q_j \, Pr(y_i|j) / Pr(y_i)$

The expression takes the form of a logistic distribution function and is usually named the logistic discriminant function.

7.9 Results of the Binomial Model

The parameter estimates with standard errors are presented in Table 7.3. By dividing the former with the latter, t-values are obtained. The two parts of the table correspond to each of the two constructions of export commodity concentration. From the inverse shape of the probability of nationalization, it is seen that to conclude on the impact of a variable its sign has to be changed. The results are highly similar to those of the Probit test. The export concentration variable is significant and negative in both constructs (X_5 or X_{5D}), i.e. an increase raises the probability of nationalization. The growth rate (X_2) exerts a negative impact which is significant in the (X_5) case, but not in the (X_{5D}) case. There is an insignificant impact of the other variables at the 5 per cent level. The stock of direct investment (X_1) exerts a negative impact when (X_5) is used and positive when (X_{5D}), that of country size (X_3) is positive and that of income (X_4) negative.

16 The routine is AMOEBA in Press et al. (1986).

TABLE 7.3: Estimation Results of the Binomial Model

Standard Errors are given in parenthesis. The three constants for the semiparametric estimator are mass points of the mixing distribution.

Variable	X_{5D}	X_5
$\ln X_1$	- 0.122	0.045
	(0.200)	(0.169)
X_2	0.126	0.212
	(0.080)	(0.052)
$\ln X_3$	-0.143	-0.300
	(0.166)	(0.153)
$\ln X_4$	0.380	0.185
	(0.237)	(0.167)
$\ln X_5$		-0.192
		(0.091)
X_{5D}	-1.383	
	(0.381)	
Const 1	1.199	3.300
Const 2	-0.032	2.161
Const 3	-1.292	0.285
q_1	0.593	0.182
q_2	0.372	0.697
q_3	0.035	0.121
χ^2	98.4	119.7
l	-376.94	-380.88

As in the Probit test, nationalization relates predominantly to factors associated with the benefits, i.e. export commodity concentration and growth. The signs and impact of the other variables are as anticipated with modest but not very important indirect effects of discouraging direct investment.

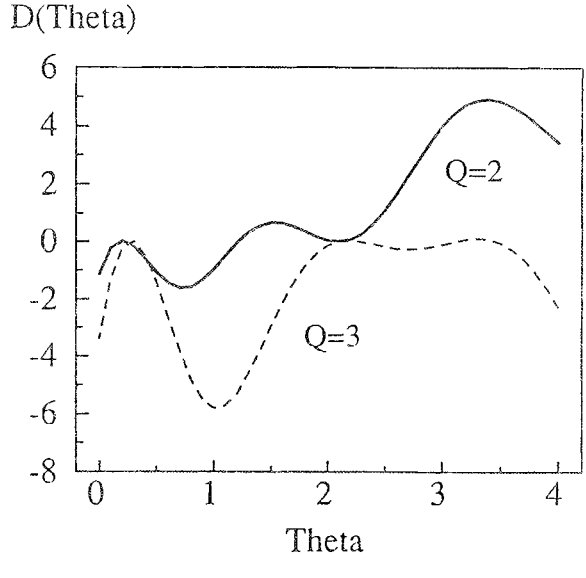
In Figure 7.5, the $D(\theta)$ function is given for the X_5 case. The number of mass points required for a global maximum of the likelihood function is $Q = 3$, since $D(\theta) \leq 0$ in this case. For $Q = 2$, $D(\theta)$ is still positive.[17] The goodness of fit measure, χ^2, is high for all

[17] It is the same in the X_{5D} case.

estimated models, which is due to the poor fit of a small number of observations. The relative likelihood function based on the generalized F distribution with Q=1 is very flat, which implies that there is no support in the data for choosing between probit and logit specifications.

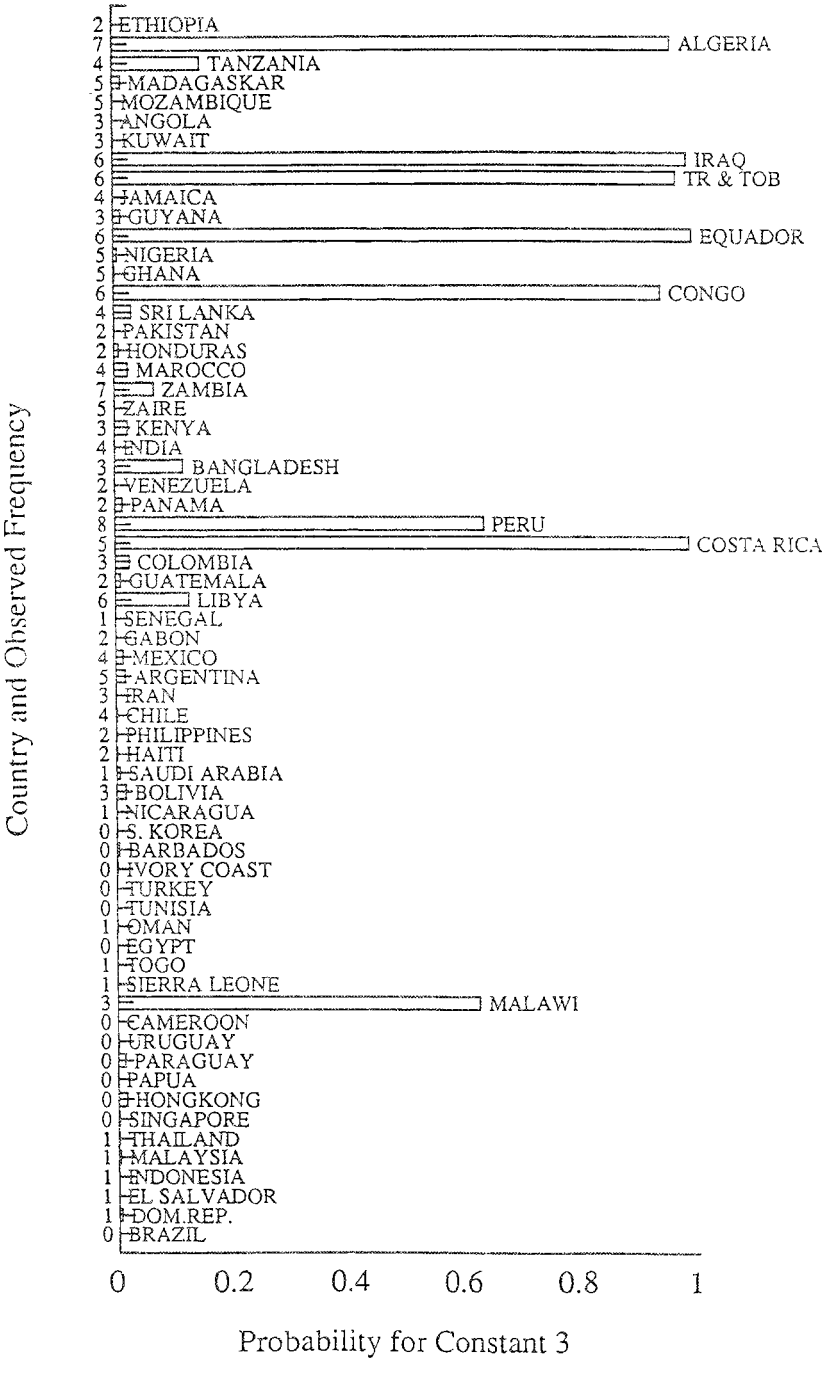
The reason for different constants is related to omitted variables, or differences in structural relationships. The calculated logistic discrimination probabilities for the highest constant (0.285 with probability 0.121 in the X_5 case) are displayed in Figure 7.6. The figure can be interpreted as illustrating to what extent countries had a higher frequency of nationalization than was motivated by the explanatory variables included in the estimation. As can be seen, it is mainly countries with a high frequency of nationalization which have a high probability for the largest constant. However, it seems difficult to find any common feature for these countries which would separate them from the others.[18]

FIGURE 7.5: The D(θ) functions (Q = 2, 3) for the Mixed Binomial Model
Based on X_5.



18 It has been suggested that these countries would have a higher political stability and at the same time strong national sentiments. It is doubtful, however, whether this could be statistically verified. As mentioned, the reverse allegation made by Jodice (1980), that political instability explains the propensity of countries to nationalize, has been refuted by previous studies.

FIGURE 7.6: Logistic Discrimination Probabilities for the Highest Constant Based on X_5.



To speculate briefly, the clustering of developing countries around different mass points may be due to their position vis-à-vis other developing countries, with which they compete for direct investment, and the behaviour of those countries. Note that the countries with a high probability for the largest constant are found in the Middle East, Latin America or Central Africa. In fact, all the countries with a high probability for the largest constant, as predicted by logistic discrimination, were located in the midst of areas of a high concentration of nationalization. A possible interpretation is that they nationalized more than was motivated by their record in the dependent variables due to this position, rendering a relatively small disincentive effect of nationalization on direct investment. Moreover, countries like Algeria, Iraq and Trinidad and Tobago also nationalized as part of 'global waves' within the petroleum industry.

The implications of different mass points can be further demonstrated by considering some marginal effects. Figure 7.7 reports the predicted effect on the frequency of nationalization due to an increase in the rate of growth (X_2) by one per cent unit. This effect, as well as that due to a lessened export concentration (X_5) by factor 0.9, are also given in Table 7.4, column 1 and 2 respectively. As can be seen, a change in the rate of growth exerts the largest influence. Still, a one per cent increase in the rate of growth would not reduce the nationalization frequency by more than 0.6 at the most.[19] By using the most likely constant, as predicted by logistic discrimination, some of the effects become more pronounced, see columns 3 and 4 in Table 7.4. According to these estimates, a one per cent increase in the growth rate would, for example, reduce the nationalization frequency by 0.636 in Congo and Trinidad and Tobago, which represent several times' greater effects for these countries than is predicted with the mean over the mass points. The reason is that the estimate based on the most probable mean allows complete shifts between mass points. As can be seen from a comparison between Figure 7.6 and Table 7.4, column 3 and 4, a substantially larger reduction in nationalization with the 'most probable mean' compared to the 'mean' is predicted for countries with a high probability for the largest constant, e.g. Congo, Costa Rica, Ecuador, Congo and Malawi.

19 Or rather 0.564, which is the highest value recorded in the first column in Table 7.4. This was recorded by Angola and Iran.

FIGURE 7.7: Countrywise Predicted Reduction in Nationalization Frequency Due to a One Per Cent Unit Increase in the Rate of Growth

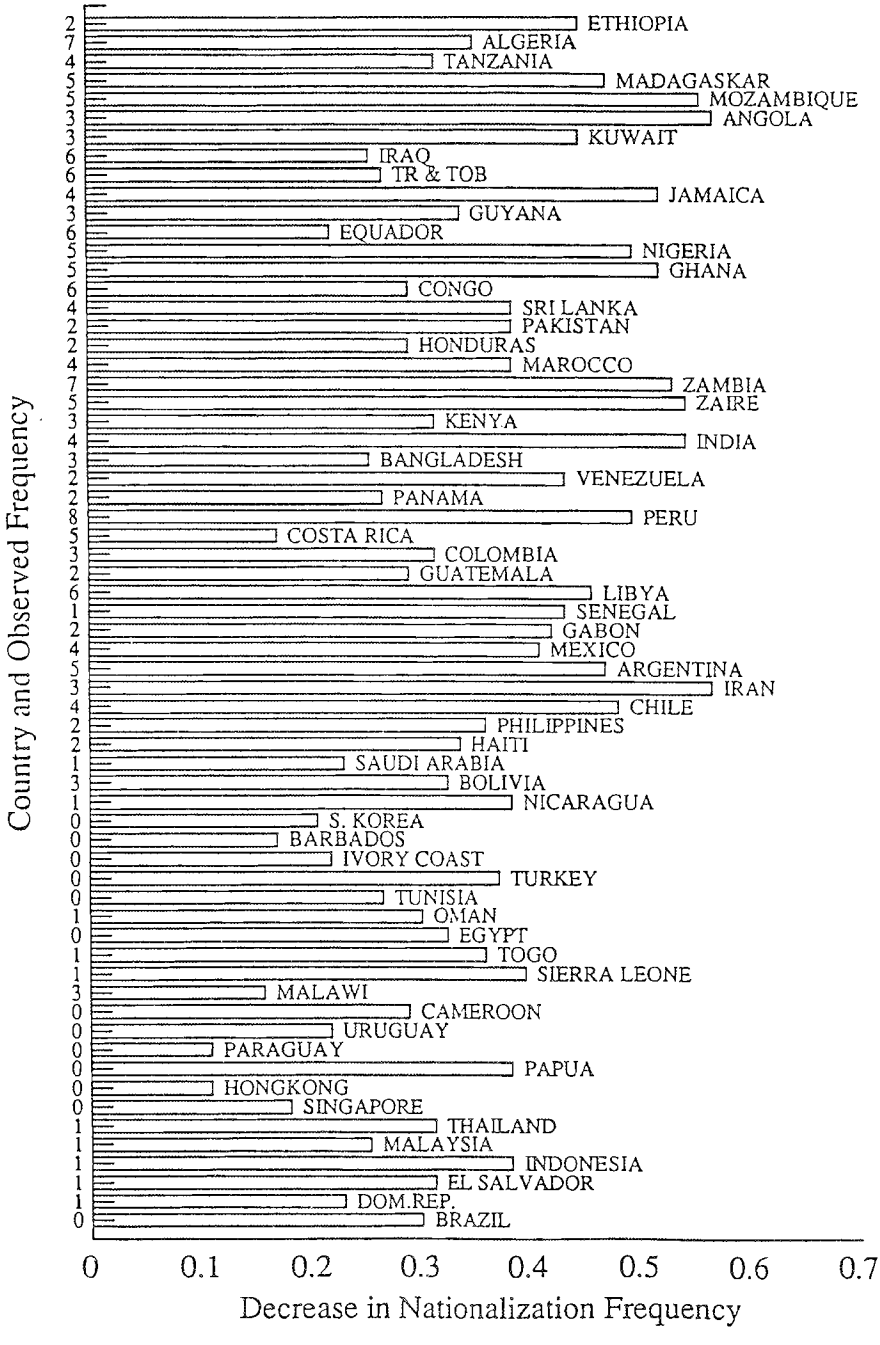


TABLE 7.4: Countrywise Predicted Reduction in Nationalization Frequency Due to a One Per Cent Unit Increase in the Rate of Growth and a Lessened Export Commodity Concentration by Factor 0.9

Effects are given for the predicted mean of the mixture distribution (columns 2 and 3) and for the mixture components with the highest probability as predicted by logistic discrimination (columns 4 and 5).

Country	Observed Frequency	Mean: Growth Rate	Mean: Concentration	Most Prob Mean: Growth Rate	Most Prob Mean: Concentration
BRAZIL	0	0.3	0.072	0.288	0.06
DOM. REP.	1	0.228	0.036	0.204	0.036
EL SALVADOR	1	0.312	0.048	0.312	0.048
INDONESIA	1	0.384	0.156	0.384	0.156
MALAYSIA	1	0.252	0.084	0.228	0.072
THAILAND	1	0.312	0.084	0.3	0.084
SINGAPORE	0	0.18	0.06	0.156	0.048
HONGKONG	0	0.108	0	0.072	0
PAPUA	0	0.384	0.144	0.168	0.072
PARAGUAY	0	0.108	-0.012	0.084	0
URUGUAY	0	0.216	-0.012	0.192	-0.012
CAMEROON	0	0.288	0.096	0.264	0.084
MALAWI	3	0.156	-0.012	0.492	-0.048
SIERRA LEONE	1	0.396	0.12	0.408	0.12
TOGO	1	0.36	0.132	0.372	0.144
EGYPT	0	0.324	0.12	-0.936	-1.14
OMAN	1	0.3	0.132	0.288	0.12
TUNISIA	0	0.264	0.096	0.24	0.096
TURKEY	0	0.372	0.072	0.168	0.036
IVORY COAST	0	0.216	0.036	0.204	0.036
BARBADOS	0	0.168	0.012	0.132	0.012
SOUTH KOREA	0	0.204	0.036	0.168	0.024
NICARAGUA	1	0.384	0.048	0.396	0.048
BOLIVIA	3	0.324	0.132	0.324	0.132
SAUDI ARABIA	1	0.228	0.096	0.204	0.096
HAITI	2	0.336	0.096	0.336	0.084
PHILIPPINES	2	0.36	0.108	0.36	0.108
CHILE	4	0.48	0.192	0.516	0.216
IRAN	3	0.564	0.228	0.624	0.264
ARGENTINA	5	0.468	0.084	0.516	0.084
MEXICO	4	0.408	0.144	0.432	0.144
GABON	2	0.42	0.18	0.444	0.192
SENEGAL	1	0.432	0.144	0.468	0.156
LIBYA	6	0.456	0.192	0.504	0.216
GUATEMALA	2	0.288	0.048	0.264	0.048
COLOMBIA	3	0.312	0.072	0.312	0.072
COSTA RICA	5	0.168	0	0.516	-0.012
PERU	8	0.492	0.18	0.468	0.168
PANAMA	2	0.264	0.072	0.252	0.072
VENEZUELA	2	0.432	0.192	0.468	0.192
BANGLADESH	3	0.252	-0.06	0.24	-0.06
INDIA	4	0.54	0.132	0.6	0.144
KENYA	3	0.312	0.108	0.312	0.108
ZAIRE	5	0.54	0.216	0.612	0.24
ZAMBIA	7	0.528	0.228	0.588	0.252
MAROCCO	4	0.384	0.144	0.408	0.144
HONDURAS	2	0.288	0.06	0.276	0.06
PAKISTAN	2	0.384	0.072	0.396	0.072
SRI LANKA	4	0.384	0.096	0.396	0.096
CONGO	6	0.288	0.12	0.636	0.252
GHANA	5	0.516	0.12	0.588	0.144
NIGERIA	5	0.492	0.204	0.552	0.228
EQUADOR	6	0.216	0.084	0.588	0.216
GUYANA	3	0.336	0.12	0.348	0.132
JAMAICA	4	0.516	0.168	0.576	0.18
TR & TOB	6	0.264	0.108	0.636	0.264
IRAQ	6	0.252	0.108	0.624	0.264
KUWAIT	3	0.444	0.192	0.468	0.192
ANGOLA	3	0.564	0.168	0.552	0.168
MOZAMBIQUE	5	0.552	0.12	0.612	0.132
MADAGASKAR	5	0.468	0.108	0.516	0.108
TANZANIA	4	0.312	0.072	0.312	0.072
ALGERIA	7	0.348	0.156	0.624	0.252
ETHIOPIA	2	0.444	0.084	0.48	0.084

If the grouping around different mass points is due to the behaviour of other countries with which a country is a close substitute for direct investment, our results suggest that influences stemming from independence between countries may explain considerably more variation in nationalization than marginal effects related to the explanatory variables. Relatively small shifts in country characteristics or exogenous factors would then be able to induce large changes in nationalization behaviour across countries.

Figures 7.8 A-B illustrate the connection between the rate of growth and the frequency of nationalization under different constants for two individual countries, Peru and Mexico. Similar figures could be constructed for any country. As can be seen, the frequency in nationalization falls smoothly with the rate of growth for each constant. With a shift from one constant to another, however, there are very large potential shifts in nationalization, particularly between constant 2 and constant 3.

7.10 Conclusions

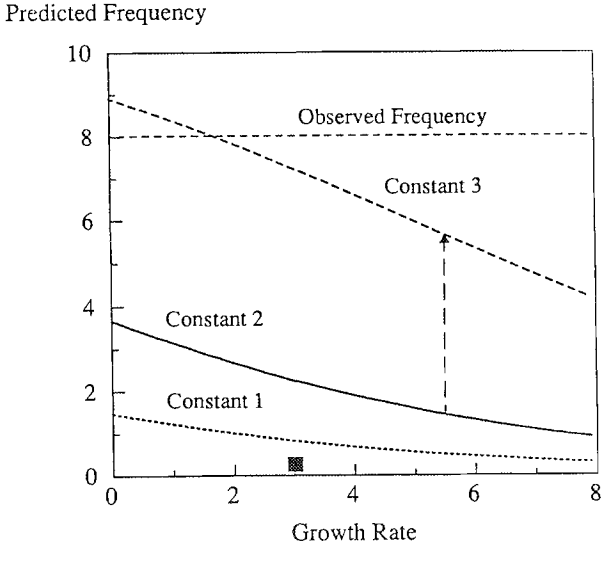
In this chapter we have investigated the cross-country variation in nationalization during 1968-79, which constitutes the peak of the policy. We have reasoned in terms of a reputation framework, in which acts of nationalization may discourage future direct investment from a country. The extent to which this occurs depends on the behaviour of other countries which compete for direct investment. During the peak of the policy, we postulated that variables associated with the disincentive effect explain relatively little of the cross-country variation in nationalization, which instead depends mainly on factors associated with the benefits of nationalization.

We argued that a study of nationalization should not focus on the number of acts or firms taken. Instead, we have used a Probit model to explain variation in what countries at all nationalized, and a Binomial model to explain variation in nationalization frequency over time. The hypotheses set up and the results of the two model based tests are compared in Table 7.5. The results are highly similar.

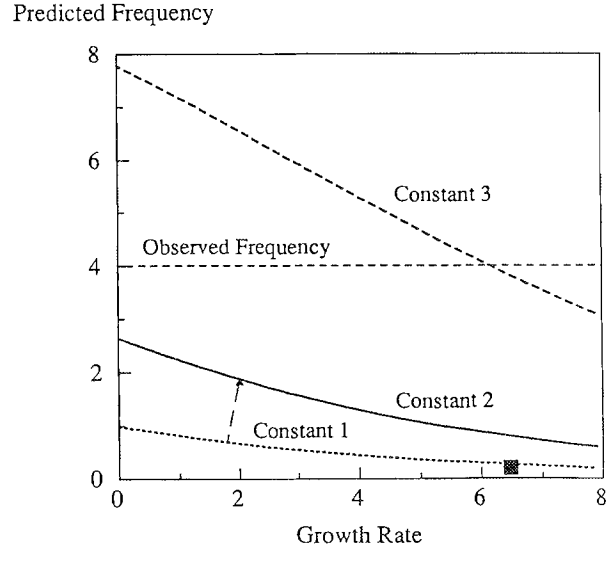
FIGURE 7.8: Predicted Effect on Nationalization Frequency of the Rate of Growth for A) Peru and B) Mexico

The three effect curves give the effect on each of the 3 mixture components (Constants 1-3) with other variables kept at observed values. The actually observed growth rate is indicated by a mark quadrangle. The arrow indicates the position and size of the switch between most likely constants as predicted by logistic discrimination.

A) Peru



B) Mexico



Except for country size (X_3) in the Probit test, the results were as anticipated. That economic growth (X_2) and commodity concentration in exports (X_5) turned out significant throughout, while no other variable did, suggests that cross-country variation in nationalization in the period studied can be explained by a need of foreign exchange earnings rather than the costs of discouraging direct investment. The variables associated with the latter, the stock of investment (X_1), country size (X_3) and income level (X_4), generally had signs as expected but without significant influence.

Of the marginal effects, the rate of growth was found to exert the largest influence. However, the semiparametric estimator employed in the Binomial model enabled an investigation of unobserved heterogeneity in the data. A clearcut grouping of countries arose, with the constant term varying over sub-sets of countries. Predictions based on 'the most probable mean', which allows shifts between constant terms, magnified some of the marginal effects. The existence of sub-sets speaks for omitted variables or different structural relationships among groups of countries. They are in line with our notion that countries' behaviour is influenced by that of other countries with which they compete for direct investment.

TABLE 7.5: Hypotheses and Results of the Probit and Binomial Models
Significance referring to the 5 per cent level.

Variable	Expected impact related to the benefits	Expected impact related to the disc. eff.	Expectation of significant impact	Probit result	Binomial result
X_1		-	no	- / + (not sign.)	- / + (not sign.)
X_2	-		yes	- (sign.)	- (sign./not sign.)
X_3		+	no	+ (sign.)	+ (not sign.)
X_4		-	no	- (not sign.)	- (not sign.)
X_{5D}	+		yes	+ (sign.)	+ (sign.)

In contrast to previous studies of nationalization, such as Jodice (1980), our framework allows for a general understanding of nationalization over time and between more or less all sectors. Our findings call for a reinterpretation of some of Jodice's results, the political already excluded and the role of government unchallenged. U.S. official development assistance matters merely because it is *one* factor influencing, in this case restricting, the extent to which a country can gain foreign exchange by nationalizing. A loss of foreign exchange in the form of U.S. aid may directly outweigh the rents captured. Similarly, variability of export earnings matters because it is related to the need of foreign exchange, not because it indicates policy failure. Concerning the income level, a negative impact was recorded but it was not significant. That countries with high income would have nationalized their natural resources already is an argument of little use in the case of other sectors. There is consequently no evidence, as Jodice suggested, that countries with a higher income level would nationalize more.

Further study of the interdependence in host country behaviour requires testing of shifts over time in structural relationships through use of panel data. With the help of such data it may also be possible to verify whether the grouping of observations obtained here actually stems from interdependence between competing countries, or if there are other explanations.

A simpler way to support the notion of different global equilibria in nationalization would be to study the discouragement of direct investment in a period with little nationalization, and contrast the results with those obtained here. Unfortunately, the limited cross-country variation and the dominance of mass nationalizations outside the 1968-79 period prevents meaningful testing. However, the discouraging effects should also be expected to play a major role during shifts from one state to another. This matter is investigated in the following chapter.

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8 DURATION OF NATIONALIZATION

8.1. Introduction[1]

As we have seen, the previously rising trend in the number of nationalizations of MNE affiliates was interrupted in the mid 1970s. Practically all countries stopped pursuing the policy over a period of about five years, and there have been very few acts in the 1980s. This seems to contradict the mainstream theory of obsolescing bargain (Vernon, 1971), according to which host countries' capacity to capture rents as well as run subsidiaries on their own increases over time.

There is currently a general uncertainty regarding the reason for the termination of the nationalization policy, and whether or not it is likely to recur. The risk of a recurrence of nationalization is sometimes put forward as a major cause of the low level of direct investment in developing countries in recent years. The 'Multilateral Investment Guarantee Agency' (MIGA), a multilateral insurance agency offering long-term coverage (3 to 15 years) against non-commercial risks, was established as a member in the World Bank Group in 1988. See further Chapter 9.

This chapter addresses the question why nationalization more or less terminated throughout the developing world in the late 1970s. We are concerned with the broad developments, not with phenomena isolated to specific countries. Hypotheses are formulated and a model based test for the duration of nationalization is used for empirical testing. It is considered whether there may be a risk of a return to nationalizations in the future. Indeed, it is suggested that this risk may restrain direct investment in developing countries, in spite of the fact that the policy is not pursued at present. One way of reducing this effect is to take steps that alleviate the developing countries' acute need of foreign exchange.

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1 This chapter is based on joint work with Kurt Brännäs, University of Umeå. See Andersson and Brännäs (1988b).

The chapter is organized as follows. Section 8.2 discusses previous explanations for the termination of nationalization. Section 8.3 analyses the termination of nationalization by building on the notion of two equilibria in the market for direct investment, and generates hypotheses for empirical testing. Section 8.4 presents the data, the duration model and the statistical estimation. The results of the estimation are given in Section 8.5. Section 8.6 concludes and discusses some policy implications.

8.2 Previous Explanations for the Termination

The nationalizations of MNE affiliates are in Figure 7.1 to 7.3 depicted for the period 1960 to 1985. From the peak in 1975, the nationalizations fell to an average of 16 acts per year in 1977 to 1979. The decline seems to have begun in the Middle East and been followed in Latin America and Africa. Over these years, there was also a downturn in the number of countries which nationalized, although there was a minor revival in 1979. In the first half of the 1980s, the number of nationalizations stabilized at a very low level. The average annual number of acts was 2.5, which is the lowest for the whole twenty-six year period for which data are available. The acts that did occur were mainly in Latin America and Asia. The decline was practically universal with respect to sectors, only the share of takings in agriculture increased 1980-1985.

No predictions had been made regarding the termination of nationalization before it actually occurred. On the contrary, on the basis of the work of Bronfenbrenner (1955) and, later, Vernon (1971) on the theory of 'obsolescing bargain', it was widely expected that this policy would continue at an increasing rate. According to Vernon´s theory, the developing countries improve their access to technology and export markets via the development process, which reduces the direct costs of nationalization. In addition, Gilpin (1975) prophesied deteriorating conditions for foreign investment in general due to the decline of the U.S. hegemony in the world economy. This can be interpreted in terms of a reduction of the indirect costs of nationalization. The termination of the nationalization policy implies, however, that the 'balance of power' has not shifted in favour of the developing countries. If it has, it is not reflected in the occurrence of nationalizations.

A number of explanations for the termination of nationalization in the late 1970s have been suggested. These are more or less consistent with prevailing theory. They can be summarized as follows;[2]

1) Ventures in resource extraction are the most attractive targets for nationalization. In the late 1970s, all suitable targets within this category would have been taken.

2) With a decline in the terms of trade for developing countries and, in particular, a fall in commodity prices, profits would have been reduced and there would have been less rents to capture through nationalization. Like the first argument, this concerns mostly natural resource extraction.

3) MNEs would not have continued to set up vulnerable investment projects in developing countries due to the risk of nationalization. The investment flows would have declined and the developing countries been left without targets.

4) As the developing countries became more pragmatic, and the symbolic value of nationalization faded, countries would have learned that nationalization does not pay and come to view firms as a package of benefits and costs subject to manipulation.

5) The administrative, managerial and technical capabilities of host countries would have improved and they would have become more skillful in appropriating rents from direct investment in other ways than through nationalization.

6) Following the rapid increase in nationalization in the early 1970s, MNEs would have made greater efforts to make subsidiaries dependent on parent companies, increasing the direct costs of nationalization.

7) Real interest rates rose in the late 1970s, which made bank loans harder to come by. In combination with projections of dismally low commodity prices, this made the Third World willing to adjust its policies to share potential risks as well as profits.

Although some of these explanations have merit to them, they all have shortcomings. It can be seen from Figure 6.2, which depicts nationalization per sector, that only a modest proportion was targeted at resource extraction. Moreover, nationalization in this sector does not display a time-pattern markedly different from other sectors. This rules out the first explanation, and casts doubt on the second, as the sole causes of the termination. However, a decline in commodity prices can affect profits not only in resource extraction itself, but also in downstream activities and, ultimately, throughout the whole economy.

2 See e.g. UNCTC (1983 and 1988), Kobrin (1984) and Minor (1987).

What should really matter, however, is the level of profits that can be captured by nationalization. Changes in commodity prices constitute a subset of the factors that influence those profits. In the following, we examine the explanatory power of export prices, which ought to be related to the kind of profits that are possible to capture through nationalization.

The importance of MNE defence has been much documented. Certain projects are simply not located in countries where there is a risk of nationalization. However, this is not to say that the developing countries would have been left without targets. The argument that the flows of investment would have declined was refuted in Chapter 3. The major trend in direct investment to developing countries was sluggish in the 1970s, but there was no actual fall in the flow until after the peak of nationalization was over. By looking further at the flow of direct investment in individual years, we have already concluded that there is no simple relationship with nationalization.

Likewise, there is no unequivocal empirical support for the fourth explanation. As discussed by Moran (1985), the historical record provides ample examples of nationalizations having turned out both as fallacies and as success stories. The argument that the developing countries would have 'learned that nationalization does not pay' says nothing of why this was the case.

The fifth explanation is of a somewhat different nature. If it is correct that host countries managed to appropriate more gains through alternative measures, the termination of nationalization does not contradict the theory of obsolescing bargain. Kobrin (1984) suggested that nationalization was more or less replaced by regulatory controls. This would have included foreign exchange and remittance restrictions, limitations on access to factor markets and on output as well as changing rules on domestic value added, taxation and export performance requirements. It is true that there has been a sharpening of some host country policies, for example requirements for shared ownership with domestic counterparts. However, this is hardly representative for the major trend in host country behaviour.

Minor (1987) noted that the Benchmark of U.S. Investment Abroad (1981) reported that many U.S. subsidiaries were subject to performance requirements. What matters, however, is the development of such policies over time. Consider Table 8.1-8.3 which summarize data for U.S. direct investment in manufacturing in 'all developing countries', Latin America, Asia and Africa. Figures are given for two years, 1977 when the decline in nationalization had just begun, and 1982 when it had been completed. It is true that the data comprises only U.S. investment, but although the policy 'level' is likely to be different for investment from different home countries (cf. Kobrin, 1980), the general trends should not be. For each region, investment is tentatively divided into export-oriented and import-substituting, see further note 4.

To show how the basis for tax earnings developed, Table 8.1 reports the net income of affiliates. As can be seen, there was mostly a decline in Latin America, Africa and overall, and an increase in Asia. The change in the regional income shares represents first and foremost a spectacular shift from Latin America to Asia, particularly for import-substituting investment. In this category, affiliates in Latin America and Asia were responsible for 60.0 per cent and 38.7 per cent respectively of all earnings in 1977. This had been overturned to 6.2 per cent and 85.3 per cent respectively in 1982. For export-oriented investment, the corresponding shift was from 67.5 per cent and 24.4 per cent in 1977 to 37.9 per cent and 49.6 per cent in 1982.

Table 8.2 reports foreign income tax in millions of dollars, as well as the tax and income ratio. In relation to income, import-substituting investment paid on average considerably more tax than export-oriented investment.[3] For both categories, affiliates in Africa and Latin America paid the highest tax ratio, and those in Asia the lowest. Between 1977 and 1982, the Latin American and African tax ratios increased while those of Asia declined. In absolute nominal terms, the tax payments increased in most cases. However, the real increase was small for import-substituting investment, and certainly negative for export-oriented. This is a reflection of the real decline in reported profits before tax.

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3 This is in line with the competitive conditions discussed in Chapter 3. For export-oriented investment, there is primarily competition between host countries, for import-substituting primarily between firms. This suggests a higher tax and income ratio for the latter kind.

TABLE 8.1: Net income of Manufacturing U.S. Direct Investment in Developing Countries, 1977 and 1982

Region	Kind of inv.[4]	Net income of affiliates (mill.USD) 1977	1982	Share of all dev. countries (per cent) 1977	1982	Per cent change in share 1977-1982
Dev countr. Total	Exp.	896	782	100.0	100.0	0
	Imp.	600	482	100.0	100.0	0
Latin America	Exp.	605	296	67.5	37.9	- 43.8
	Imp.	360	30	60.0	6.2	- 89.7
Asia except Middle East	Exp.	241	388	24.4	49.6	+ 103.3
	Imp.	232	411	38.7	85.3	+ 120.4
Africa	Exp.	35	18	3.9	2.3	- 41.0
	Imp.	17	14	2.8	2.9	+ 3.6

SOURCE: United States Department of Commerce, 1981 and 1985.

TABLE 8.2: Foreign Income taxes in Manufacturing U.S. Direct Investment in Developing Countries, 1977 and 1982

Region	Kind of inv.	Tax payments of affiliates (mill.USD) 1977	1982	Foreign inc. tax and income ratio (per cent) 1977	1982	Per cent change in ratio 1977-1982
Dev. countr. Total	Exp.	491	553	35.4	41.4	+ 17.9
	Imp.	611	884	50.5	64.7	+ 28.1
Latin America	Exp.	373	392	38.2	57.0	+ 49.2
	Imp.	431	674	54.5	95.7	+ 75.6
Asia except Middle East	Exp.	82	128	25.4	24.8	- 2.4
	Imp.	155	180	40.0	30.5	- 23.8
Africa	Exp.	24	16	40.7	47.1	+ 15.7
	Imp.	16	23	48.5	62.2	+ 28.2

SOURCE: See Table 8.1.

[4] Exp. = Export-oriented direct investment, including food and associated products, primary and fabricated metals and electric and electronic products. Imp. = Direct investment which substitutes for imports to the local market, including chemicals and allied products, machinery except electrical and transportation equipment. Of course, this classification is very rough. It can be noted that the period 1977-1982 saw a general shift from import-substitution towards export-orientation within many industries.

TABLE 8.3: Investment Incentives and Performance Requirements, U.S. Direct Investment in Developing Countries, 1977 and 1982

Region	No. of affiliates 1977	1982	Prop. firms receiv. i.i.[5] 1977	1982	Per cent change in share 1977-82	Prop. firms receiv. p.r.[6] 1977	1982	Per cent change in share 1977-82
Dev. countries Total	7627	5760	11.9	15.0	+ 26.0	11.0	9.0	- 18.2
Latin America	4804	3562	12.7	17.1	+ 26.8	11.8	10.3	- 12.7
Asia except Middle East	1596	1270	10.6	15.1	+ 42.5	8.3	6.5	- 21.9
Africa	683	549	9.6	10.5	+ 9.4	13.7	9.7	- 29.2

SOURCE: See Table 8.1.

Table 8.3 illustrates the development of performance requirements and investment incentives. The three regions had a fairly similar proportion of affiliates reporting subject to these policies in 1977. The proportion subject to investment incentives increased markedly in Asia and Latin America between 1977 and 1982, up to 15-17 per cent, and less so in Africa which lagged behind with about 10 per cent. The proportion of affiliates subject to performance requirements, on the other hand, declined in all three regions - and more in Africa than elsewhere.

To summarize, the data show drastic changes in the inter-country distribution of profits, some differences in policy levels but fairly uniform changes across continents in the case of the latter. Except for Asia, there was an increase in the tax and income ratio between 1977 and 1982. Still, there was only a marginal, or even negative, real increase in host country tax earnings. Meanwhile, there was a universal decline in the proportion of firms

5 i.i.=investment incentives from foreign governments, including tax concessions, tariff concessions, subsidies and other incentives.

6 p.r.= performance requirements of foreign governments, including exports of a minimum amount, employment of a minimum amount of local personnel or a minimum amount of labour content in value added. Performance requirements concerning import restrictions, transfer of technology and maintenance of a specific ratio between exports and imports of inputs are not included since the statistics are less comprehensive for these kinds. However, the general trends presented in Table 8.3 are unaffected by the inclusion of these other kinds of performance requirements.

subject to performance requirements and an increase in the proportion of firms receiving investment incentives. Relatively more affluent Asia and Latin America had a more marked increase in investment incentives than Africa, while poorer Africa had the most marked decline in performance requirements.

Although there is still a multitude of host country policies restricting the behaviour of MNEs, these changes indicate that nationalization was discontinued parallel to a stagnation in host country earnings from alternative policy measures. Meanwhile, UNCTC (1983 and 1988) report increased endeavors to guarantee orderly conditions for foreign investors. Labour relations have been legislated, infrastructure provided, restrictions concerning profit repatriation diminished, special export processing zones offering particularly generous conditions developed, etc. All in all, the developing countries alleviated their burdens on direct investment and increased their endeavors to obtain new investment over the years when nationalization terminated. The fifth explanation does not account for the cessation of nationalization either.

The five explanations discussed concern factors that influence the benefits of nationalization. The sixth, by contrast, is concerned with the direct costs. It argues that these would have increased due to an improved capacity within MNEs to make subsidiaries dependent on parent companies. Many MNEs switched strategy with the rapid increase in nationalization, giving up the control of e.g. extraction and processing of natural resources, but focusing on retained control over distribution and transportation.[7] It can be recalled, however, that Vernon (1971) in the theory of 'obsolescing bargain' prophesied that the direct costs to nationalization would decline with the development process. This was believed a major factor increasing the number of nationalizations in the early 1970s. Why would the development have shifted dramatically in favour of MNEs after 1975 when there was no marked decline in the flow of investment?

While the above explanations appear insufficient taken one at the time, they may together present a more convincing picture. Trying a composite explanation, it can be recalled from Chapter 2 that regimes in newly independent countries perceived political gains from nationalizing, which contributed to setting the policy off on a large scale in the late

7 See Lipson (1985) or Moran (1985) for different strategies.

1960s. In particular, it was viewed as important for national sentiments to acquire control over a country's natural resources. Activities closely related to extraction and processing of natural resources also belong to those that are the easiest to run reasonably well under domestic ownership.

In the mid 1970s, by contrast, most developing countries were not newly independent any longer, and there were not as many attractive targets for nationalization. The home country governments had switched to a flexible strategy which offered fewer political gains from nationalization, and MNEs had adopted an effective economic defence. Thus, the political gains of nationalization had diminished along with the economic. At the same time, there was an ideological change on an international scale. The support for regulatory regimes had weakened while a greater confidence was shown in market forces. In this situation, the developing countries directed their efforts first and foremost towards learning how to gain from direct investment by cooperating with foreign investors. They dropped their plans for nationalization, as well as the most inhibiting regulations and restrictions, and instead insisted on joint ventures and developed positive investment incentives.

This scenario should reflect part of the developments that brought nationalization to an end. If it is correct, and the developing countries have actually learned how to gain from direct investment under foreign ownership, there need not be much concern about a return to nationalization in the future. However, we argue that this is not the whole story. In fact, it seems unlikely that the abrupt termination of nationalization in the late 1970s would be entirely related to a shift in any kind of benefits or direct costs. After all, it is difficult to argue convincingly that there would have been virtually no projects left for which the benefits of nationalization outweigh the direct costs. Hence, there is good reason to seek the prime cause for the cessation of nationalization within the category of indirect costs.

The strength and nature of the indirect costs to nationalization have changed over time. The threat of home country retaliation, economic or military, discouraged nationalization up to the late 1960s. Even as this factor later wore off, Jodice (1980) found that dependence on American aid exerted a negative influence on nationalization 1968-1976.

The role of international organizations has become important. The World Bank, for example, was in 1971 mandated to deny credit to countries that nationalized. Without disputing the role of home countries and international organizations, these are excluded here. As was made clear in Chapter 3, we investigate whether host country policies can be understood in terms of economic gains vis-à-vis direct or portfolio investment.

This is where a seventh explanation comes in. As background, consider the general deterioration of the economic environment which began in the early 1970s. After the collapse of the Bretton Woods system of fixed exchange rates, and its replacement by a regime of floating rates, huge imbalances in international payments emerged. These were accompanied by steep and abrupt changes in the terms of trade between groups of countries. Increasing and persistent inflation and unemployment followed, and there was a loss of forward momentum in world production and trade. The world economy had entered a period of growing uncertainty and instability (UNCTC, 1983).

The greater uncertainty in the world economy together with a higher opportunity cost for foreign exchange caused by higher interest rates would, the argument goes, have made it more attractive for developing countries to accept direct investment and let MNEs share the risks for business operations rather than run them on their own.[8] There are some serious question-marks, however. In past studies, nationalization was generally found to be associated with balance of payments difficulties, suggesting that the objective is normally to capture short-term gains of foreign exchange when such are greatly needed. Why would balance of payments difficulties have drastically induced countries to terminate nationalization in the late 1970s?

In fact, this explanation is somewhat misleading. Real interest rates were low when the nationalization policy was brought to an end. Inflation soared in the early 1970s and made real interest rates negative through most of the decade. Moreover, commercial borrowing became available for developing countries to an extent which had never been encountered previously, enabling new, attractive financing options. Real interest rates did not really climb until 1978, or even 1979. At this time the peak of nationalization was well over.

8 See Pollio and Riemenschneider (1988).

Thus, we still do not have the whole picture. In the following, we build on the framework developed in the previous chapters, and present new hypotheses for the termination of nationalization. These are tested with the help of a duration model.

8.3 New Hypotheses

The explanations discussed above have reasoned in terms of one country-one firm interaction. As elaborated in the previous chapters, different potential host countries are, in practice, substitutes for direct investment. With a scarcity of factors that MNEs can provide, these countries can be expected to compete in order to attract direct investment. When there are two competing countries, Chapter 6 showed that a country which nationalizes 'alone' discourages more direct investment than a country which nationalizes when its competitor does. In Chapter 7, this was extended to a framework of many countries. A notion of two global equilibria in host country behaviour was introduced, with nationalization a viable policy either in 'many' or in 'few' countries. This received some empirical support as tests based on Probit and Binomial models verified that the cross-country variation in nationalization at the peak of the policy was related to factors associated with the benefits rather than the costs of discouraging direct investment.

To further examine the notion of two equilibria, this chapter analyses the termination of nationalization in the late 1970s, which is viewed as a shift from an equilibrium with nationalization to one without. The first question concerns why there was such a shift at that time. As discussed in Chapter 7, the gains made by countries that successfully attract investment from competitors who nationalize should hardly be sufficient to terminate this policy when in occurs in many countries. Rather, a termination should be set off by other factors, unrelated to the discouragement of direct investment. There may, for example, be other indirect effects. As the number of competing countries which pursue nationalizations decreases, however, those that continue would be confronted with the policy´s increasingly negative impact on the undertaking of direct investment. Thus, we expect factors associated with the disincentive effect on direct investment to exert a growing impact during the termination of nationalization.

Let us review the developments in the international capital markets in the mid and late 1970s. From about 1974, the OPEC countries were unable to absorb their rapidly rising export revenues. The World Bank (1985) pointed out that they initially had a strong preference for bank deposits and favoured the Eurodollar market over domestic banking systems. The result was a swift expansion of liquidity directed toward international lending. Real interest rates fell and new borrowers were looked for. Except for the macro-economic forces working to increase bank lending, there were factors specific to the behaviour of banks pushing in the same direction at the time. These were the increased efficiency of international banking, changes in the portfolio objectives and preferences of banks making them emphasize balance sheet growth rather than the immediate rate of return, and the development of mechanisms to deal with sovereign risk through so-called cross-default clauses. Although the latter served to reduce spread and fees carried on loans and the indirect cost to nationalization, it did not make all countries eligible to lending.

In 1974 and the following years, a number of developing countries consequently found that they could borrow commercially at favourable rates for the first time. As made clear by e.g. Eaton et al. (1986), borrowers' net worth is of little help in understanding sovereign debt. Banks estimated the prospects for default or rescheduling prior to lending, using macro-economic data as well as subjective judgements. There was a stronger incentive to secure a reputation as a reliable business partner. In other words, the improved access to commercial borrowing increased the indirect costs to nationalization.

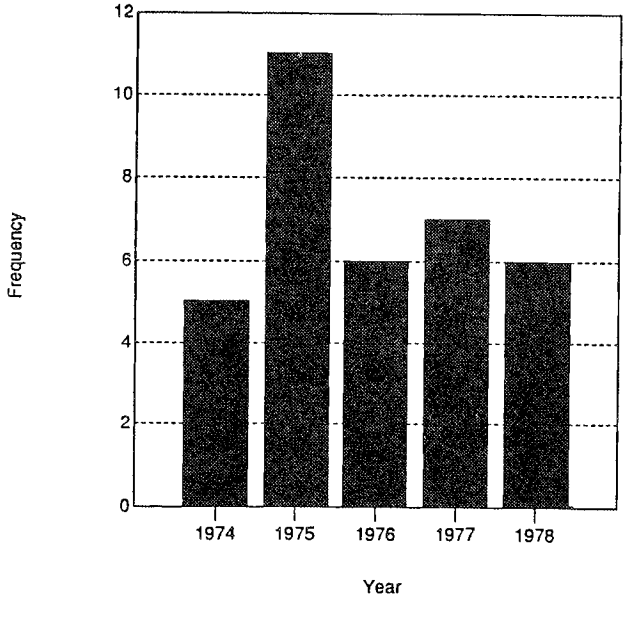
In the previous chapter, we argued that nationalizations of MNE affiliates are driven by short-term gains of foreign exchange. Our hypothesis is that some countries which previously found nationalization economically sound, when there were high rents to capture, now found that it was no longer as attractive since they could obtain foreign exchange at low cost to the extent that they abstained from nationalization. As these countries ceased to nationalize, the ones that continued found themselves more and more alone, and sensed the risk of losing future direct investment to their competitors if they continued. Thus, countries were gradually shifted to the state in which nationalization does not pay.

In order to investigate this explanation, we use a model which tests for how long countries remained in the nationalization stage. For this we use the conventional term duration model, see e.g. Lancaster (1979). As argued in the preceding chapter, as a result of the adverse effects of nationalization on the reputation of a host country, it becomes important whether or not the policy occurs, or with what frequency in time. In any case, there are no consistent data on the size or seriousness of nationalizations, the dollar value of assets taken, the amount of compensation paid, etc.

Even as the countries included in the test did not nationalize every year, practically all of the countries displayed a more or less clearcut sequence of acts from the rapid increase in selective nationalizations in the late 1960s up to the mid or late 1970s when they ceased to nationalize. This makes it straightforward to reason in terms of the 'duration' of a nationalization stage, which is thought of as the equilibrium in which it pays to overtake direct investment selectively. The period considered is 1974-78, in which commercial borrowing was available for developing countries and interest rates were low.

FIGURE 8.1: Duration of Nationalization Frequencies

Annual data, n=35.



Our dependent variable is *the duration of countries' stage with nationalizations*, measured from 1974. It takes the value 1 for countries which nationalized for the last time in 1974, 2 for countries which did so in 1975, and so forth. For the distribution of observations, see Figure 8.1. For model estimation it is important to recognize that the duration variable is available in discrete (end of year months) form and is truncated at the end of 1978.

The definitions of the explanatory variables and descriptive statistics are presented in Table 8.4. *The stock of direct investment* is the prime variable expected to be associated with the possible indirect effect of discouraging direct investment (cf. Chapter 7). The greater the stock, the more investment there is to discourage, so that there should be a negative impact on the duration of nationalization. The variable also indicates the amount of suitable targets for nationalization. If that role dominates, we expect a positive impact.

Included in the model test are also the two other possible proxy variables for the discouraging effect used in the preceding chapter; *GDP* and *GDP per capita*. A positive impact is expected from the former, since it takes more to discourage investment from a

TABLE 8.4: Variable Definitions and Descriptive Statistics

Variable	Definition	Mean	Median	Standard Deviation	n
X_1	Direct Investment (Stock, 1974)	807	340	975	35
X_2	Average Growth (1970-1979)	2.6	3.6	4.7	35
X_3	GDP (1974)	12002	2990	20801	34
X_4	External Debt Ratio (Change, 1973-1978)	67	33	93	33
X_5	Export Price (Change, 1970-78)	261	197	216	32
X_6	GDP/capita (1979)	1390	630	2863	35

larger economy (cf. Huizinga, 1988). At the same time, a negative impact is expected from the latter because a higher income level implies that there is more potential direct investment to discourage.

The *rate of growth* was in Chapter 7 found to be the major determinant of the cross-country variation in nationalization. Again, this is associated with an economy's 'soundness' or general economic performance, and should be reversely related to the benefits of nationalization. If the termination of nationalization was due to general economic improvements, and a decline in the opportunity cost of foreign exchange, we can expect that the rate of growth is negatively related to the duration of nationalization. The reliance on foreign borrowing is indicated by the change in the *external debt ratio* between 1973 and 1978. A negative change has been set to zero, since only an increase should affect nationalization behaviour. Finally, given that the fall in commodity prices played a role, we expect the development of the *export price* to exert a positive impact.

The first three explanatory variables (X_1, X_3, X_6) lay at a fairly steady level during the period of estimation, so that they are only measured in individual years. The last three (X_2, X_4, X_5) are related to countries' performance during the sample period, which should influence the cross-country distribution of duration times. For the rate of growth, we use the average value for the whole period 1970-79, since the level over a longer time range influences the basic soundness of the economy. Likewise, the change in the export price over a longer time range is important for the level of profitability in industry. Concerning the external debt ratio, we have suggested that it is an increase from about 1973, when a supply of inexpensive credit emerged for the developing countries, which should be negatively related to the duration of nationalization.

To summarize, the duration of nationalization should be negatively correlated with foreign borrowing and positively with the export price. If the indirect effects related to the risk of discouraging direct investment played an increasing role, we expect variables associated with these to cut the duration of nationalization.

8.4 Data, Duration Model and Estimation

The data base was presented in Chapter 7. The countries included here are those which undertook nationalizations in the first half of the 1970s and which had a stock of direct investment of at least 60 million USD on average in 1972-1974, with one exception.[9] Analogous with the previous section, countries with a smaller stock are excluded to avoid cases where nationalization ceased because practically everything had been taken. The proportions for geographic regions are; South America 0.17, Central America 0.17, Africa 0.46, The Middle East 0.09 and Asia 0.11.

The data is available at an annual level so that estimators designed for discretized or grouped data are appropriate. From Monte Carlo experimentation, Brännäs (1987) concluded that the most reliable estimator and test statistics for such data are, at present, based on the likelihood function. This is the approach adopted here. The specification of a density for the duration t appears less crucial with grouped data, as we have here, than for exactly observed data. In addition, we have to consider that the data are truncated to the right as the observation period is limited. The maximum likelihood estimator (ML) then maximizes the likelihood function

$$(8.1) \qquad L = \prod_{i=1}^{N} [F(U_i) - F(L_i)] / F(T)$$

where U_i is the upper and L_i the lower limit in months of each country's duration of nationalization. The T represents the common truncation time, and N the number of observations.

In line with a number of previous studies of duration phenomena we assume that t is Weibull distributed (e.g. Lancaster 1979). The distribution function is then of the form

$$(8.2) \qquad F(t) = 1 - \exp(-\wedge(t))$$

---

9 The exception is Libya, which is unique in that it lost half its stock of direct investment in the last year it nationalized, 1974. This dramatic reduction suggests that Libya nationalized to the extent that further possible targets were lost.

where $\wedge(t) = t^{\alpha} \exp(X\beta)$. The expectation of t is $\exp(-\alpha^{-1} X\beta)\,\Gamma(1+\alpha^{-1})$, where $\Gamma(.)$ is the gamma function. Corresponding to the Weibull variable t is

(8.3) $\quad y = \ln t = -\alpha^{-1} X\beta + \alpha^{-1} w$

where w is extreme value distributed. The estimates of the unknown parameters α and ß are in the truncated and grouped Weibull case obtained iteratively by maximizing the logarithm of the likelihood function with a Newton-Rapson procedure. The standard errors of estimates are obtained from the Hessian matrix.

8.5 Results

The estimation results are given in Table 8.5. Two runs have been undertaken, one with all explanatory variables included (the unrestricted model), and one where the three least significant variables are excluded (the restricted model). When all variables are included, none of the possible proxy variables for the discouraging effect is significant (X_1, X_3 and X_6). However, all have signs as expected with a discouraging effect. The rate of growth, X_2, which was the major determinant of the termination of nationalization, had the smallest t-value of all variables. Excluding X_2, X_3 and X_6, the stock of direct investment (X_1) turns out to have a significant and shortening impact on the duration of nationalization. Since the stock is the most certain indicator of the discouraging effect, this seems to have played an important role. Moreover, an increase in the stock of investment with 1 per cent (all other variables fixed at mean levels) shortens the duration considerably, by about 3 months according to the unrestricted model and by about 4 months according to the restricted model (cf. Table 8.5). The (statistically insignificant) effects of a 1 per cent increase in GDP (X_3) and GDP/capita (X_6) are of the same order.

The disincentive effect does not alone explain the termination of nationalization. As can be seen in Table 8.5, an increase in the external debt ratio (X_4) cuts the duration of nationalization while increased export prices (X_5) prolongs it. Both exert a significant impact, but the marginal effects are fairly small. It is therefore plausible that these variables explain mainly which countries began to terminate nationalization (X_4), and which did not do so (X_5) respectively. The variables associated with the disincentive

TABLE 8.5: Weibull Model Results

Maximum likelihood estimates (t-values in parenthesis) and estimated mean effects in months of a 1 per cent change in each mean.

Variable	Estimates		Effects	
$\ln X_1$	0.522	0.766	-2.91	-4.14
	(1.28)	(2.91)		
X_2	0.068	-	-0.79	-
	(0.58)			
$\ln X_3$	0.325	-	-2.97	-
	(1.00)			
X_4	0.009	0.007	-0.07	-0.05
	(2.23)	(2.06)		
X_5	-0.010	-0.007	0.31	0.22
	(-2.50)	(-2.63)		
$\ln X_6$	0.515	-	-3.58	-
	(1.11)			
Constant	-17.191	-12.273		
	(-3.78)	(-4.76)		
α	2.687	2.534		
H: $\alpha = 1$	(3.17)	(3.18)		
l	-35.0	-37.4		

effect, on the other hand, exerted a 'large impact' by explaining which countries nationalized the longest and which were the least likely to discourage a great deal of direct investment. This reasoning is partly supported by the large α estimate, from which we can conclude that the propensity to stop nationalization increased over time (positive duration dependence). This suggests that the disincentive effect should have prevented nationalization with an accelerating power as more and more countries terminated.

The l is the log likelihood function value. The assumed Weibull distribution receives support from a plot of ln(-ln(1-F*)) against ln t, where the form of this particular plot is obtained from (8.2). F* is an estimate of the distribution function. The pattern does not deviate much from a straight line, as can be seen in Figure 8.2. A plot of the expected uniform order statistic against an ordered truncated distribution function (Figure 8.3) suggests that the assumed model specification cannot be rejected. Again, this is due to the

FIGURE 8.2: Log-log Plot to Test for a Weibull Distribution

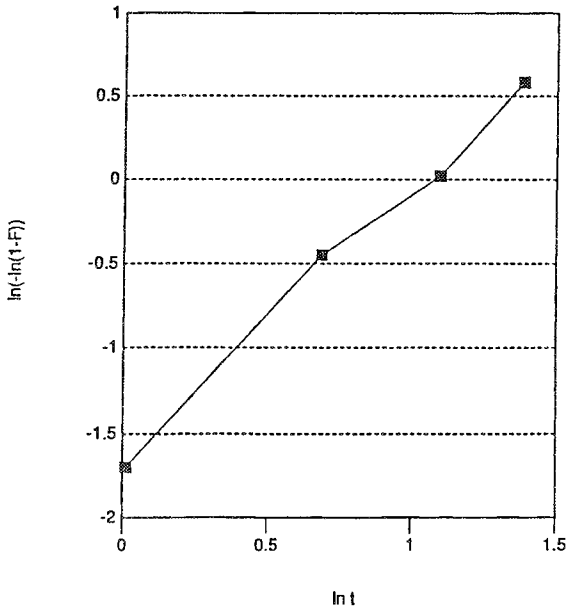
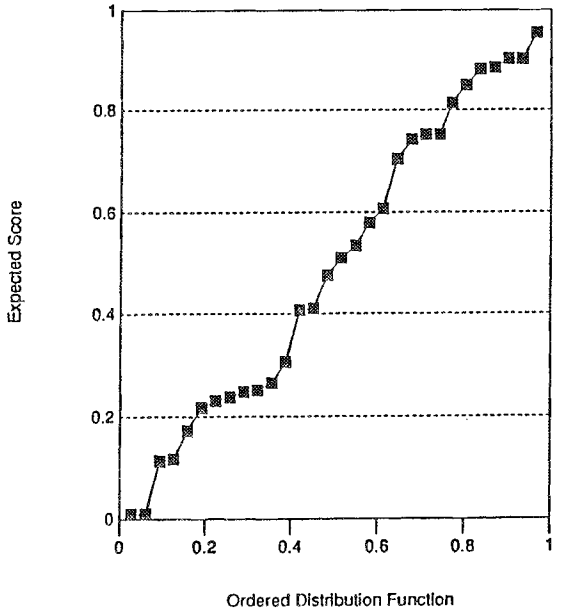


FIGURE 8.3: Plot of Expected Uniform Order Statistic Versus Ordered Truncated Distribution Function

Evaluations at mid year months.



relatively small deviation from a straight line (cf. Cox and Hinkley, 1974, Chapter 3). Attempts to use Powell's (1986) symmetrically trimmed least squares estimator for continuous but truncated data were not successful due to flatness in the criterion function.

A simple but rather weak test was performed to test whether nationalizations in each geographic region are terminated uniformly over time, or in some more clustered form. The number of times that the observed cumulative frequency exceeds the expected and hypothetical uniform cumulative frequency is approximately binomially distributed. Probabilities for the outcomes or more extreme outcomes can then be calculated. The binomial probability of 3 or more out of 4 possible (p=0.5 and both cumulative frequencies have equal maxima) is 0.0625. This is a p-value and implies that the hypothesis of a uniform termination time distribution can be rejected at the 10 per cent level. The p-value for the Asian and South and Central American countries is 0.0625, for African countries 0.3125 and for Middle East countries 0.9375. Thus, there is some evidence of clustering in the Asian and American continents.

8.6 Concluding Remarks

The nationalizations of MNE affiliates stopped abruptly among the developing countries in the late 1970s. The political gains of pursuing nationalizations had declined as most developing countries were not newly independent any longer and the home countries had come to adopt more flexible strategies. Meanwhile, there were fewer attractive economic targets as natural resources had often been taken already and MNEs had improved their defence against the policy. Nevertheless, these factors do not provide a thorough explanation for the termination of the nationalizations. It is unlikely that any shifts in benefits or direct costs would have left the developing countries without any targets. The prime cause of the termination must be sought within the category of indirect costs.

This chapter has undertaken a duration model test of nationalization in the late 1970s. The stock of direct investment was found to exert a negative impact on the duration of nationalization. The marginal effect of this variable was substantial, from which we conclude that the costs of discouraging direct investment played a major role for the

cessation of the nationalization policy. The two other variables included as proxies for this effect did not exert a significant impact, but had signs as expected. Moreover, changes in the external debt ratio and in export prices both exerted a significant impact. The results suggest that the availability of inexpensive commercial borrowing, and possibly a fall in commodity prices, contributed to bringing about the termination of nationalization.

The conclusion that the costs of discouraging direct investment played a major role for terminating the nationalizations contrasts with Chapter 7, which examined cross-country variation in the policy at its peak. Together, these two chapters tentatively confirm the notion of two equilibria in host country behaviour. Given that this conclusion holds, it should be possible to verify shifts in structural relationships along with the shifts between equilibria. In order to explicitly test for this effect, we need to formulate hypotheses which can be examined with the help of panel-data.

Again, our results suggest that nationalization ended due to a combination of access to inexpensive borrowing, a fall in commodity prices and the increasingly negative impact on direct investment from continuing when most other countries had stopped. What has happened since then? From the late 1970s, real interest rates have been high and most developing countries have been constrained in their commercial borrowing. As multi-billion dollar debts have accumulated and exports to the industrialized economies have been squeezed by import quotas and other kinds of protectionism, the developing countries' need of foreign exchange has become more desperate than ever. In this situation direct investment is increasingly viewed as a favourable source of foreign capital, employment opportunities and an increase in output and exports. The observed host country policies have become more benevolent than ever, and the recent investment revival in developing countries is expected to continue over the next decade.

In the present situation, when the stock of direct investment is depressed and there are forecasts of an increase in the flows of investment, there is good reason for developing countries to abstain from nationalization. Nevertheless, if our analysis is correct, the implications for a future return to the policy may not be encouraging. Once the stock of investment reaches a high level in relation to the potential for continued flows, the

overwhelming need for foreign exchange earnings again constitutes a motive for nationalization. Given that others would follow in case a country acted, selective nationalizations would be started again - in many countries. The obscure threat of this possibility may hold back direct investment from developing countries, in spite of the presently hospitable host country attitudes.

The current endeavors of many developing countries to obtain direct investment, lowered tax rates, free profit repatriation, etc., further reduce their foreign exchange earnings from direct investment, particularly because MNEs tend to repatriate excessively rather than reinvest in troubled economies. This increases the attractiveness of nationalization, the risk of which again hampers direct investment, etc. The situation is not likely to improve much with a multilateral insurance agency or louder rhetoric. It does not matter how benevolently countries promise to behave if nationalization may turn out to be profitable subsequent to the undertaking of direct investment, and MNEs do not invest in the first place if they expect that to happen, even if there would be full compensation. The acute scarcity of foreign exchange in developing countries has to be addressed if more direct investment is to be realized.

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9 SUMMARY AND CONCLUSIONS

9.1 The Field of Study

The developing countries generally suffer a lack of capital, materializing in a shortage of foreign exchange. A great many factors contribute to this state; rudimentary financial markets, the accumulation of foreign debts when interest rates were low, that now require burdensome interest payments, barriers to trade in industrialized countries, imperfections in international capital markets that lead to credit rationing, unsound macro-economic policies in developing countries themselves, etc. As labour is abundant and capital scarce relative to the industrialized countries, there should consequently be a high rate of return to appropriate investment projects.

Moreover, the developing countries are also scarce in other factors which tend to be pivotal in the development process; technology, human capital, entrepreneurial skills, etc. Attracting foreign direct investment, which is undertaken by so-called multinational enterprises (MNEs), is increasingly viewed as a favourable means of obtaining capital as well as these other complementary factors of production. Direct investment is defined as equity investment which establishes a subsidiary owned and controlled in a foreign country. A fairly small number of MNEs, which originate in industrialized countries, are responsible for the bulk of direct investment.

The realization of direct investment requires the consent of an MNE and a host country. In spite of a potential for mutual profits, there is also a partial trade-off in their respective gains. Tax payments represent costs to an MNE, but government revenue for a host country. Spin-off effects on the productivity of domestic firms is desirable for a host country, but means that potential competitors arise for an MNE. Pollution abatement means that negative environmental effects are foregone for a host country, but lead to higher costs for an MNE, etc. For sovereign countries, there are no uniform rules for the

sharing of costs and benefits. The developing countries gain from direct investment primarily as hosts, and should be expected to earn as much as they can in this capacity.

In contrast to most previous work, this study considers that direct investment is traded in a market where it is supplied by firms and demanded by host countries. Due to the developing countries' continual scarcity of the factors that MNEs can provide, we would expect tangible competition between them for gains from direct investment. This has also been verified empirically by e.g. Guisinger (1985). To simplify, let us assume that host countries may either manipulate the behaviour of MNEs, or acquire control by taking over ownership. The policies related to these two kinds of measures are referred to as *taxation* and *nationalization* respectively. The division of gains, as realized through either, influences both resource allocation and the welfare effects of direct investment.

By analyzing the behaviour of competing host countries, this study aims at casting new light on which policies can be expected to be adopted in the developing world vis-à-vis MNEs. In turn, this has implications for the impact of direct investment on resource allocation and social welfare. The task requires an investigation of the interaction between MNEs and host countries, as well as how this is affected by developments in the market for direct investment as a whole. Our results are reported in the ensuing summary. Section 9.3 discusses the policy implications of our findings.

9.2 Summary

Following the introduction, *Chapter 2* presents the empirical background to host country policies vis-à-vis direct investment. So-called foreign property rights first emerged due to reciprocal interests between European states, but were unilaterally forced upon the poor countries. With the rapid increase in direct investment in Latin America in the 19th century, a disharmony became evident between capital exporting and capital importing countries. The former maintained an entitlement to 'prompt, adequate and effective compensation' when property rights were violated, the latter fought for their *sovereignty*.

First, the poor countries strove for the right not to be subject to military intervention during investment disputes, later for the right to nationalize with only partial

compensation to foreigners. During the course of the 20th century, the developing countries have gradually eliminated the essential nature of foreign property rights through diplomatic cooperation. Nevertheless, the major home countries, notably the United States, long continued to defend direct investment through superior military and economic strength.

Until the late 1960s, the threat of retaliation from home countries was so severe that host country behaviour that violated the traditional norms was mostly ruled out on economic grounds. Most nationalizations were of a 'mass' character, targeting firms indiscriminately and driven primarily by political/ideological motives. At this time, however, a majority of the developing countries nationalized direct investment without mandatory retaliation form home countries. The MNE - host country relationship has since then been marked by a lack of strict rules, or enforcement of rules, and economic motives seem to have been of great importance for shaping host country behaviour.

In the 1970s, the nationalizations were mostly selective, inconspicuous and accompanied by endeavors to attract new investment. Parallel to the increase in nationalization, the taxation of MNE affiliates was tightened as developing countries became increasingly capable of extracting gains from direct investment under foreign ownership. In the late 1970s, however, the trend in the MNE-host country relationship switched from conflict towards harmonization and liberalization. Nationalization became less frequent again, at the same time as taxation policy was also generally on the retreat. Meanwhile, there was a declining flow of direct investment to developing countries, relative to both direct investment worldwide and to other capital flows to developing countries. The flow also became highly concentrated to a fairly small number of countries. Today, an investment revival is anticipated in the developing countries.

Chapter 3 presents the theoretical background of MNE - host country interaction. As expounded in the eclectic theory, or OLI-framework, the profitability of direct investment is today viewed as driven by ownership advantages, locational advantages and the superiority of internalization of activities within a firm to other alternatives (Dunning, 1977). With potential profits for an MNE and a host country, the two sides are assumed to maximize their profits and socio-economic gains respectively from direct investment at each point in time.

Because direct investment requires costs that are to be sunk, the crucial distinction in time is between the stages *ex ante* and *ex post* the establishment of a subsidiary. Once operations have started, costs fall and benefits accrue which should at the least compensate an investing firm for its sunk costs. Through taxation or nationalization, however, a host country may increase its gains ex post the establishment of a subsidiary. Two kinds of effects may delimit the value of either policy; *direct effects* relate to the MNE targeted and *indirect effects* to other agents. Those other agents may be other MNEs or creditors which abstain from direct and portfolio investment respectively. Home country behaviour is not explicitly considered, but an exempt tax system is assumed in home countries, so that host countries' tax rates matter to MNEs.

The mainstream view of the MNE-host country relationship is that of a bargaining game within a bilateral monopoly. The major theory in this tradition is 'the theory of obsolescing bargain', or 'changing balance of power', as first elaborated by Vernon (1971) and Moran (1974). This postulates that the bargaining power of the developing countries increases over time as they acquire improved access to technology and export markets, and investments become sunk. However, in the last decade there have been drastic shifts in host country policies among a great number of developing countries which seem to run contrary to the prevailing theory.

As made clear, this study is not concerned with one firm-one country interaction, but starts out with the view of a market in which direct investment is supplied by firms and demanded by countries. The share of gains acquired by host countries can be characterized as the 'price' for direct investment. The characteristics of the market differ for e.g. import-substituting and export-oriented direct investment. Competition between host countries is relatively more important for the latter.

In the mainstream 'one firm-one country' framework with complete information, it is well-known that optimal host country taxation prevents direct investment from being undertaken in the first place. The host country can tax the whole profit as a subsidiary has been set up, and the MNE would therefore lose the sunk cost required for direct investment if it invested. Using a sequential bargaining framework, *Chapter 4* analyses for the first time how the profits from investment projects are divided when there is non-cooperative competition between host countries through taxation. The set-up is the most

relevant for export-oriented direct investment or investment which targets a group of markets including that of the host country. The possibility of nationalization, which is the most viable for import-substituting investment, is not considered.

Chapter 4 demonstrates that optimal host country taxation does not normally impede the undertaking of direct investment when there is effective competition between potential host countries. Moreover, a country with more favourable investment opportunities than its competitors is able to attract a project, which means that the pattern of direct investment is undistorted by taxation. The division of profits depends on how favourable the host country's profit opportunities are relative to those of the second best country, the sunk cost and the discount factor. These factors also determine whether a host country offers an initial incentive to an investing firm. The finding of Doyle and van Wijnbergen (1984), that there is an initial incentive which corresponds exactly to the irreversible cost, holds only when countries are identical and the discount factor is one, or when there is no effective host country competition.

Hence, Chapter 4 suggests that competition between potential host countries for gains from direct investment restrains their ability to tax the profits. The only exception is the implausible case when there are two exactly identical host countries, the sunk cost is only able to sustain immediate production and no initial incentives are allowed. In practice, the level of taxation is likely to be further limited by MNEs' capacity to transfer price or indirect costs related to the damage to a business relationship which involves a sequence of projects.

Chapter 5 applies the framework developed in Chapter 4 to host country competition for investment with negative external effects on the environment. In addition to 'ordinary' taxation, host countries can compete for such 'pollution intensive' direct investment with lax pollution control. Thus, we distinguish between 'taxation' and 'environmental protection'. It has been argued that MNEs 'blackmail' individual countries to accept pollution as a price for obtaining investment. This would cause a relocation of pollution intensive activities to the developing countries, and an excessive level of pollution.

The fundamental results of Chapter 4 are found to be unaffected by the presence of external economies. The undertaking of 'pollution intensive' direct investment is not prevented or distorted by taxation or pollution control, and a host country's gain is still determined by the quality of its investment opportunities relative to those of the second best country, and the mobility of investment. The difference is that a host country now chooses the combination of tax earnings and environmental degradation that it desires. Nothing induces a deviation from the level of pollution control where the cost equals the social benefit at the margin. Thus, the outcome can be expected to be socially efficient. To what extent developing countries actually represent the optimal locations for pollution intensive activities is an open question.

The model results are generally consistent with the observed pattern of direct investment and the level of pollution control adopted by MNEs. The complete lack of pollution control in many developing countries, and the consequent excessive level of pollution, is not due to their competition for gains from direct investment. The probable reasons are instead to be found in imperfections in the international capital markets and in information, and 'government failure'.

Chapter 6 presents theoretical models of nationalization. The policy is assumed to be motivated by the seizure of profits that can not be taxed. It is considered that host countries may nationalize projects at random. An optimal amount of selective nationalization is compatible with the undertaking of direct investment, since firms still expect a non-negative profit. Mass nationalization (comprising all direct investment), on the other hand, is not compatible with the undertaking of direct investment. In any case, certain projects are discouraged, because the stock of direct investment is depressed in order to prevent mass nationalization from being profitable, or because higher profits are required to compensate for the risk of selective nationalization.

When firms can choose between two possible host countries, the nationalization behaviour of these countries is interdependent. Under plausible circumstances, two subgame perfect equilibria are demonstrated which are unique for given parameter values. In the first, both countries nationalize selectively, in the second neither country does. It is argued that the crucial condition for which one prevails is whether it pays for a country to

follow when the other nationalizes. The condition for nationalization can be interpreted as a requirement that two countries are sufficiently distant substitutes for direct investment, whereas for non-nationalization they must be sufficiently close substitutes.

It is suggested that nationalizations may start (terminate) due to a decline (increase) in the discount factor, an increase (reduction) in the profit under domestic ownership relative to foreign, by a decline (increase) in taxes, an increased (reduced) 'sunkenness' of investment or a declining (increasing) similarity between the level of profits in the two competing countries. Again, the risk of nationalization discourages some direct investment from being undertaken, which provides a raison d'être to interfere in the market to rule out nationalizations.

In order to examine the cross-country variation in nationalization in the period 1968-1979, which constituted the peak of the policy, *Chapter 7* extends the two-country framework in Chapter 6 to many countries. Broadly speaking, the greater the number of competing countries that nationalize, the smaller the disincentive effect and the smaller the captured rent necessary for nationalization to pay for a country. The fewer the other countries that nationalize, or can be expected to follow if a country nationalizes, the larger the disincentive effect and the larger the captured rent required for nationalization to pay. This speaks in favour of two 'global' equilibria, one in which more or less all developing countries nationalize selectively, one in which hardly any do.

The period studied in Chapter 7 can be characterized as an 'equilibrium' in which most countries nationalized. There are no consistent data on the seriousness or scope of nationalizations. Avoiding a quantification of the policy, we undertake two new kinds of tests which build on the notion that nationalizations exert an adverse impact on a country's reputation. Firstly, a Probit model is used to explain the dichotomous choice facing countries whether they did or did not nationalize in the period studied. Secondly, given that a reputation is gradually revived over time as long as there is no continuation of nationalization, a Binomial regression model explains cross-country variation in the frequency of the policy in time.

The Probit test and the Binomial regression largely verify the proposed hypotheses. The cross-country variation in nationalization correlates with variables that are associated with

the benefits of the policy rather than the discouragement of direct investment. The former are the rate of growth and export commodity concentration, which exert a significant negative and positive impact respectively. The latter are the stock of direct investment, GDP and GDP/c, which (with one exception) do not exert a significant impact at the five per cent level, although they largely possess the expected signs. In addition, an unexplained clustering of countries, which appears in the Binomial estimation, is consistent with interdependence between nationalizations in competing host countries. The findings call for a reinterpretation of the results of Jodice (1980), which is one of the leading empirical studies in the field.

The findings of Chapter 7 should be contrasted with those of *Chapter 8,* which is concerned with the duration of nationalization in the late 1970s. At that time, countries ceased to nationalize throughout the developing world, and the policy has been virtually non-existent in the 1980s. Among the previous explanations put forward were, for example, the arguments that nationalization was terminated because countries ran out of possible targets, learned from past experience that nationalizations do not pay, became more skillful in appropriating gains from investment under foreign ownership, because MNEs made countries unable to run subsidiaries efficiently on their own, or because other financing options than the acceptance of direct investment became too costly for the developing countries. Some of these explanations have merit to them, but they do not provide the entire picture.

Chapter 8 uses a duration model to test the factors that caused countries to terminate nationalizations between 1974-78. The test period is truncated, since the model is valid only when commercial borrowing was available at a relatively low real interest rate. The hypotheses set up are largely supported. Firstly, the duration of nationalization is shortened by foreign borrowing. This is explained by the fact that developing countries were eligible for foreign borrowing to the extent that they did not nationalize. Secondly, it increases with a positive change in export prices, which is associated with the profits that can be captured under domestic ownership. Thirdly, a negative and significant impact of the stock of direct investment on the duration suggests that discouragement of direct investment played a major role for terminating the nationalizations.

The findings of Section 8 may signal a risk of a return to nationalization. Interest rates are high again today, commercial borrowing is more or less blocked for most developing countries and the supply of foreign exchange is squeezed in other ways as well. Subsequent to a revival of direct investment in the developing world, nationalizations could be on again in many countries, given that individual countries sensed that others would follow in case they nationalized. This gloomy perspective may prevent a potential revival of direct investment in developing countries, although host country attitudes and policies today are more benevolent than ever. The increased endeavors of the developing countries to obtain direct investment, lowered tax rates, free profit repatriation, etc., further reduce their foreign exchange earnings from direct investment, particularly because MNEs tend to repatriate excessively rather than reinvest in troubled economies. This increases the attractiveness of nationalization, the risk of which again limits the undertaking of direct investment, and so on. This kind of state is detrimental to both MNEs and host countries, since potential mutual profits are foregone.

Together, the findings of Chapter 7 and 8 provide tentative support for the notion of two equilibria in host country behaviour. However, further tests based on panel data are required to finally verify or falsify our conclusions. This is the object of future research, which will be turned to shortly.

9.3 Policy Implications

As has already been noted, the analyses in this study yield some policy implications. However, we do not attempt to advise the individual agents in the market for direct investment. On the contrary, the point of departure for this work is the assumption that firms as well as countries act in their own interest at every point in time. Instead, policy implications are concerned here with whether there is any rationale for interference by the international community into the behaviour of multinational enterprises or the policies pursued by host countries. A raison d'être for such interference implies that it is in the interest of both firms and countries.

It is well-known that in an efficient capital market, the marginal rate of return in different countries would equal the international interest rate. It is equally accepted that various

imperfections in the international capital markets may prevent portfolio investment from achieving this goal and make countries subject to credit rationing. It has been argued similarly that the risk of adverse host country policies vis-à-vis foreign firms would discourage direct investment from developing countries. Multinational firms, on the other hand, have often been accused of treating individual nations unfairly, taking advantage of their weaknesses and exploiting their resources.

The findings of this study suggest that taxation of MNE affiliates do not normally prevent or distort the undertaking of direct investment as long as there is effective competition between host countries. There would consequently be no raison d'être for interfering with host country policies that manipulate the behaviour of subsidiaries. This is applicable to direct investment which gives rise to external economies. Concerning 'pollution intensive' direct investment, which causes negative external effects on the environment unless checked by pollution abatement, there is no raison d'être to interfere in order to, for example, establish universal standards of pollution control among countries. Inter-country policy cooperation may still be motivated by the gains of speeding up technical progress in pollution abatement. Alternatively, there may be welfare gains from inducing governments to strive for a socially optimal level of environmental protection. However, this lies outside the scope of this study. As with taxation in general, the MNE-host country relationship does not *per se* pose any need for interference with pollution control.

The risk of host country policies which interfere with the ownership of MNEs, on the other hand, may prevent direct investment from being undertaken and possibly distort the pattern of direct investment. Competition between potential host countries for gains from direct investment need not rule out nationalization, because 'all' countries may pursue the policy selectively, and thereby avoid losing investment projects to each other. This study has argued that nationalization becomes increasingly probable, the greater the pressure on foreign exchange in developing countries. With direct investment prevented by the risk of a return to nationalization among host countries, the latter make increasingly large concessions in order to attract investment. This further depresses their availability of foreign exchange and increases the risk of a return to nationalization.

The substantial decline in direct investment that has occurred in most of the Third World in the 1980s may signal that investors, in fact, do sense a risk of a return to nationalization. The World Bank (1987) and UNCTC (1988) have prophesied a rapid increase in direct investment in the late 1980s and 1990s. If our conclusions are correct, an investment revival is likely to be hampered. As noted in the summary, this is detrimental to both MNEs and the developing countries, and provides a raison d'être for interference in the market to rule out the risk of nationalization.

The establishment of a multilateral insurance agency (MIGA) with the World Bank in 1988 represents an effort to curb the adverse effects of a risk of e.g. nationalization. In contrast to national guarantee programs, it is the result of common efforts on the part of capital-exporting and capital-importing countries to encourage equity investment, especially in the developing countries. In the event of expropriations, breaches of contract and wars or civil disturbances, a guarantee holder is entitled to compensation in accordance with well specified contracts. Any disputes between guarantee holders and MIGA in connection with contracts are to be settled in accordance with arbitration rules.

It is doubtful to what extent MIGA can relieve the consequences of the risk of a return to nationalization. Firms do not invest in the first place if they expect to be nationalized, even if there will be full compensation. In any case, they would have to pay the insurance fees. Under the present circumstances, when the stock of direct investment is depressed and the majority of the developing countries do not nationalize, there is actually little immediate threat of outright nationalizations. The risk which has to be taken seriously is that of a widespread return to nationalization at a future stage when more investment projects have been established but the developing countries are still scarce in foreign exchange.

Thwarting the economic rationale for nationalization is a matter of altering the costs and benefits associated with the policy among developing countries. An effective strategy towards this end would both impose obligatory retaliation by the international community, which warrants palpable indirect costs for countries which nationalize, and relieve the fundamental causes of the developing countries' urgent need of foreign exchange. The latter must encompass an alleviation of the excessive debt burdens of many developing countries, rather than temporary solutions which only serve to pile new debt on top of old. Measures which seek one without the other run the risk of achieving no results.

Hardly any promise of costly retaliation against countries that nationalize is credible in the face of many dissidents. Multinational enterprises will not respond to investment opportunities, no matter how profitable, if they do not expect to be able to capture the gains.

One component in a strategy designed to support a non-nationalization regime may be an organized 'supervision' of the indicators likely to trigger the policy, and a preparedness for preventive actions in times of distress. Those indicators could be, for example, the potential profits under domestic ownership relative to those captured by host countries under foreign ownership, the developing countries' terms of trade, the barriers to exports from these countries, reductions in the potential future flows of direct investment, declining discount rates due to raised interest rates, etc. Of course, the risk of a return to nationalization must not be used as a threat by the community of developing countries. All agents in the market ought to become committed to a stage where direct investment is not discouraged by the fear of a return to the policy. To the extent that the distribution of gains between MNEs and host countries is in some sense 'unfair' or 'inefficient', adjustments should be made by other means than nationalizations of affiliates.

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