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The implementation of FDI in Viet Nam: an analysis of the characteristics of failed projects

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Characteristics of failed FDI projects
in Viet Nam

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This article examines the characteristics of licensed and unsuccessful foreign-direct-investment projects in Viet Nam during the period 1988-2000, focusing particularly on the problem of high failure rates. Using project-level data on licensed foreign direct investment provided by Vietnamese authorities, it analyzes how various project characteristics are related to the likelihood of failure. Applying a transaction cost approach, the article presents hypotheses regarding the characteristics of failed projects. Summarizing the results from a probit analysis, it appears that most of the failed projects were approved soon after 1988, in the form of joint ventures, located in poor areas and undertaken by non-East Asian investors. In addition, there is some evidence that small projects and projects in more protected industries exhibit higher failure rates.

Key words: FDI, Viet Nam

Introduction

Since the initiation of economic reforms in the mid-1980s, Viet Nam has made a rapid transition from a planned to an increasingly market-driven economy. Foreign direct investment (FDI) has played an important part in this process from early on. In fact, one of the first concrete steps towards renovation was to promulgate a law on foreign investment in 1987.[1] This resulted in the emergence of FDI as an important element of

          [1]   The first Law of Foreign Investment in Viet Nam was dated 29 December 1987. Several amendments have been made since then. The current law is dated 12 November 1996 (Viet Nam, National Assembly, 1996).

Vietnamese economic development. FDI commitments increased rapidly, albeit from a low level, both in terms of the number of projects and the amount of funds. By 1993, Viet Nam had licensed over 700 projects with a nominal aggregate investment value of $5.5 billion. By 2000, this had grown to nearly 2,400 projects with a planned investment capital of more than $30 billion. However, the actual implementation of projects has fallen short of the plans and failure rates are high – over one-fourth of the licensed projects have been terminated prematurely. This is not surprising, given Viet Nam's position on the development ladder. Viet Nam is not only in transition from plan to market, but is also suffering from many of the typical weaknesses of developing countries: poor infrastructure, shortages of physical and human capital, and weak institutions are only a few of the problems complicating project implementation (and national development).

One particular problem in the analysis of FDI in Viet Nam is the lack of information. It is hard to find comprehensive economic statistics – for instance, the State budget was considered a secret until 1999 – and the information that is available is subject to frequent revisions. The scarcity of reliable information is particularly notable when it comes to FDI. Viet Nam does not publish many data on the operations of foreign affiliates, and the statistical office did not even undertake regular surveys of foreign investors until the late 1990s. It is therefore impossible to undertake comprehensive analyses of actual investment, employment, productivity, and similar issues in a long-term perspective. However, Viet Nam does publish data on investment licenses, including information on investor characteristics and investment plans. In addition, the Ministry of Planning and Investment records instances in which investment licenses are withdrawn, either because the prospective investors decide not to realize their plans or because Vietnamese authorities are not satisfied with the implementation of the investment project.[2]

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[2] In addition, various sources, ranging from international organizations to Vietnamese business newspapers, publish aggregate figures of approved and/or disbursed FDI capital. In general, estimates provided by domestic sources are substantially higher than the corresponding estimates by international organizations (see Freeman and Nestor (2004) for a careful comparison of the available secondary data).

This article uses the data on licensed and withdrawn FDI projects in Viet Nam during the period 1988-2000 in order to examine how various investor and project characteristics are related to the likelihood of investment failure (defined as withdrawal of the investment license) in a probit model. Identifying the particular characteristics of failed FDI projects may reveal some of the main problem areas for foreign investors. Any conclusions are likely to be relevant also for projects that are still in operation. The findings will also to some extent fill the void caused by the lack of data on project implementation. To the best of the authors' knowledge, Ari Kokko and Mario Zejan (1996) are the only ones analyzing systematically FDI failures in a similar manner.[3]

The article is structured as follows. The next section provides a brief overview of FDI-related issues in the economic reform process and presents the characteristics of licensed investment. The subsequent section discusses the problem of weak performance. The section that follows introduces the transaction cost perspective as an explanatory framework, and presents the hypotheses regarding the causes for investment failures. The next section outlines the characteristics of withdrawn projects, together with a probit analysis of the likelihood of investment failure. The final section discusses the results and how they can be linked to areas where further reforms would be desirable.

Economic reforms and FDI in Viet Nam

After the Sixth Congress of the Vietnamese Communist Party in 1986, a broad economic reform agenda was introduced to decentralize decision-making and replace central planning with markets and prices. The so-called *Doi Moi* programme

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[3] A number of studies have examined FDI in Viet Nam, but they suffer from the lack of detailed data on project implementation. There is a vast literature on FDI activity in other developing and/or transitional economies, but it mostly covers determinants of FDI, while little is known about factors contributing to project failure. Furthermore, the results are difficult to generalize given the specific institutional environment in each country.

aimed at "the development of a multi-sector commodity economy operating along a market mechanism with State management and with a socialist orientation" (McCullough, 1998, p. 1). The resulting reforms, covering agriculture, industry, as well as domestic and international trade, yielded impressive results. The Law on Foreign Investment, approved by the National Assembly in December 1987, was one of the earliest legislative steps in the implementation of *Doi Moi*. The law established for the first time a regime under which FDI could enter Viet Nam, and the country soon gained a reputation among foreign investors as a promising location in East Asia. Licensed FDI rose rapidly from 28 projects representing a total of $140 million in 1988 to 345 new projects in 1995 and total licensed investments of $8.4 billion in 1996 (table 1). With inflows reaching almost 10% of GDP between 1994 and 1997, Viet Nam became the number one recipient of FDI among all developing countries and economies in transition in proportion to the size of its economy (FIAS, 1999).

The attractiveness of Viet Nam can largely be attributed to macroeconomic stabilization resulting from *Doi Moi* and investor expectations of continuing reforms and improvements in the general investment climate. In 1995, the long-lasting United States embargo was lifted, and Viet Nam entered discussions about several international trade agreements.[4] Further reform efforts were concentrated on restructuring the State-owned enterprises, the financial industry and public administration. The donor community welcomed these reforms, although due to conflicting political interests within the country, implementation was rather weak and several problems have remained until the present time (Hakkala *et al.,* 2001). For instance, the trade regime retains many import-substituting elements, and State-owned enterprises (SOEs) continue to dominate the economy at the expense of the private sector (despite a rapid increase in the number of private small and medium-sized companies and household enterprises over the past few years).[5] From the point of view of foreign investors, it

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[4] Viet Nam joined ASEAN in 1995, APEC in 1998, and has applied for membership in the WTO.

Table 1. Foreign investment licenses per year and investment form, 1988-2000

(Million dollars and number)

Licensed FDI	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Joint ventures													
Value (million $)	140.6	180.6	346.5	813.2	1 188.9	1 854.7	2 835.0	4 975.3	6 803.2	2 229.2	2 526.3	606.7	45.3
Number	27	49	87	121	130	177	220	228	189	137	51	22	31
Wholly-owned													
Value (million $)	0	9.1	6.2	217.0	185.7	625.6	535.0	1050.5	1621.2	1004.9	623.9	341.3	337.1
Number	1	6	6	12	36	75	100	117	128	113	78	72	155
Total licensed FDI													
Value (million $)	140.7	189.7	352.7	1 030.2	1 374.5	2 480.3	3 370.0	6 025.8	8 425.9	3 234.1	3 150.2	948	382.4
Number	28	55	93	133	166	252	320	345	317	250	129	94	186
Average project size	5.0	3.4	3.8	7.7	8.3	9.8	10.5	17.5	26.6	12.9	24.4	10.1	2.1
Actual inflow (M$)	-	..	..	168	316	922	1 636	2 260	1 963	2 074	800	700	800

Source: State Committee for Cooperation and Investment and Ministry of Planning and Investment, *List of Licensed Projects* (various years). Data on actual inflows (disbursements) are IMF estimates.

Note: A dash (-) indicates that there was no licensed FDI in the relevant category, 0.0 indicates that the FDI value accounted for less than 0.05 million $.

is essential to note that Viet Nam's economic system is still in transition, with elements of both centrally planned and market-economy regimes. The Vietnamese economic and political climate has had implications not only for domestic industry but also for the profile of FDI in the country.

FDI commitments started to decrease sharply just before the Asian crisis and continued to do so until 2001. In 2000, licensed FDI had fallen back to $380 million, close to the level of 1990. Although part of the fall was due to excess capacity and decreased liquidity in the region, Viet Nam's competitiveness was also hurt by domestic problems resulting in a slowdown in reforms after the mid-1990s. These problems seem to have eased since about 2000, and some signs of a rebound in FDI inflows were seen in 2001 and 2002.

The structure of licensed FDI

The Foreign Investment Law allows foreign investors to enter Viet Nam in one of three forms: contractual business cooperation, joint venture enterprises, and enterprises with 100% foreign ownership.[6] Excluded are business contracts from most of the subsequent discussion and analysis, since it is not clear to what extent these transactions make up foreign *direct* investment.[7] The numbers include the share of Vietnamese partners in joint ventures, leading to an overestimate in the total FDI amounts. Most Vietnamese joint venture partners have little or no financial resources, and contribute their part of the capital in the form of land and expertise.

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[5] The introduction of a new Enterprise Law in 2000 was particularly important for the boom in private enterprise. It has led to the registration of tens of thousands of new formal enterprises: many of these are likely to be entirely new entities, although the majority probably existed in the informal sector prior to the simplification and liberalization of the rules.

[6] In addition, the Foreign Investment Law provides some details on build-operate-transfer (BOT), build-transfer-operate (BTO) and build-transfer (BT) project. See McCollough (1998) for further details on the law.

[7] In many cases, business contracts are likely to require foreign investment, but the foreign party may have little formal control over the operations in Viet Nam.

Since Viet Nam opened up for FDI in 1988, joint ventures have been the most common form of investment, often with an SOE as the Vietnamese partner. The International Monetary Fund estimated (IMF, 1999) that two-thirds of total FDI commitments during 1991-1998 were made in joint ventures with SOEs, and only 2% in joint ventures with the private sector. There are several reasons for this distribution. In the early years after the introduction of *Doi Moi*, SOEs were the only legal partners for foreign investors desiring to enter a joint venture. Even after that time, the privileged position of SOEs has left no other choices for many foreign investors seeking a Vietnamese partner. Private enterprises do not only account for a small share of the economy, but are often too small to meet the requirements of large foreign investors. Moreover, the various privileges of SOEs may appear useful to companies seeking a smooth entry into the Vietnamese market. The political contacts favouring SOEs in areas where rule of the law is not fully established, as well as their superior access to commercial land, contribute significantly to the attractiveness of SOEs as joint venture partners.

Some changes in the relative importance of the different investment forms have occurred in recent years. The share of wholly owned affiliates has increased, while the share of joint-venture projects has decreased. As can be seen in table 1, wholly owned affiliates have outnumbered joint ventures since 1998 and, in 2000, the licensed capital for wholly owned projects was for the first time larger than that for joint ventures. Before 1992, the number of wholly owned affiliates was small but started to increase soon thereafter. One explanation is an amendment to the Foreign Investment Law in 1992: it gave wholly owned projects the same status as joint ventures. Another reason is that information about Viet Nam was so scarce in the early years that almost all foreign investors needed local partners. In 1991, wholly owned foreign affiliates accounted for about 20% of total invested capital and 10% of the number of projects; by 2000 these proportions had risen to almost 90% and 83%, respectively. Wholly owned affiliates are typically greenfield investments – there are few suitable acquisition objects because the level of local technology is low compared to that of potential foreign investors, and because Vietnamese regulations have prohibited outright acquisitions of national firms.

The industry distribution of FDI has changed over the years. Construction was one of the most important industries at the beginning of the period, with a peak in 1996. The average project size in this industry has been large, with projects focusing on hotels, office construction and infrastructure. The decline in the share of that industry is a sign of a saturated market. Manufacturing industries (e.g. chemicals, construction materials and electric equipment) and services (mainly transportation, communication and finance) have become important in recent years. FDI in agriculture and textiles and clothing has been low but stable, with small average project size. Official Vietnamese figures also include a substantial amount of FDI in oil and gas exploration, although almost all projects in this industry are undertaken in the form of business contracts.

The Vietnamese trade regime has biased FDI towards import-substituting industries (heavy industry and production of consumer goods) and non-tradables (construction, transportation and telecommunications, office property and apartments). The majority of FDI projects involve industries with high effective rates of protection (ERPs). Over 60% of FDI during 1988-2000 was made in industries with an ERP of above 50%.[8] Moreover, exports have, until the most recent years, represented only a small share of the turnover of foreign affiliates. This pattern is the opposite of what has been declared as the preferred or ideal pattern in various policy documents. The Law of Foreign Investment (Viet Nam, National Assembly, 1996) presents a "List of favoured projects", in which production of export goods is given priority. Until recently, the export potential of industries such as textiles and garments, footwear and agriculture was hardly exploited by FDI, although Viet Nam has a comparative advantage in these labour-intensive industries (IMF, 1999). It is positive however that FDI in the export-processing zones seems to have focused on light manufacturing.

The geographical distribution of FDI is highly concentrated in urban areas such as Hanoi-Haiphong and Ho

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[8] For a detailed account of the ERPs in different industries, see annex 2.

Chi Minh City. These provinces, with only 12% of the total population (Viet Nam, General Statistical Office, 2000), received more than half of total FDI capital during the period of study.[9] All in all, the ten richest provinces (mainly in the South) attracted almost 80% of total FDI during 1988-2000, while the six poorest provinces (all in the North) received only 1%. The concentration of FDI is seen as a problem by the Government. In the so-called "List of favoured projects", priority is given to mountainous and remote regions, and regions with difficult economic and social conditions, but in reality the bias in favour of the metropolitan regions remains. However, there is no reason to expect any perfectly balanced distribution, since FDI is unlikely to go into regions in which purchasing power and transport networks are weak. As expected, agriculture and food processing are dominant activities in the rural areas, while construction and other services are almost exclusively located in the cities. Textiles and other manufacturing industries are equally spread between rural and urban areas.

During the period of 1988-2000, firms from 50 economies invested in Viet Nam. Asia is now the most important source of capital. The main home economies during the study period were Taiwan Province of China, with 14% of the total licensed investment capital, and Hong Kong (China), with 11%. Japan, Singapore and the Republic of Korea are also among the larger actors. The predominance of Asian investors partly explains why FDI inflows fell so sharply following the onset of the Asian crisis in 1997.[10] Outside of Asia, the main early investments came from the former colonial power of France. The United Kingdom is another important European investor. The United States appeared among the investors after the embargo was lifted in 1995, while the relative importance of Australia, one of the leading investors in the early years, has declined.

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[9] The peak in 1998 observed for the central regions was due to one Russian project of $1.3 billion aimed at building a petroleum refinery in the province of Quang Ngai.

[10] Since the failure data presented in this article cover only years up until 1998, the effects of the Asian crisis will not be fully reflected in the subsequent analysis.

The distribution of FDI across industries has been similar for Asian and non-Asian investors, except for a somewhat higher presence of Asian firms in textile industries and non-Asian investors in other services. There does not appear to be any clear difference in the rural-urban distribution of investments for actors from Asia and the rest of the world, although Asian investors have been somewhat more concentrated in the southern regions. This may be due to the fact that there is a larger ethnic Chinese minority in the southern parts (especially in Ho Chi Minh City), and that these ethnic Chinese have been better integrated in the business networks of Southeast and East Asia. In recent years, Taiwan Province of China has been the leading investor in export-processing zones. One reason is that many of these zones were built and managed by Taiwanese entrepreneurs.

FDI performance

The figures described above capture *licensed* (also known as approved, authorized or planned) FDI. However, the amount of funds committed in licensing agreements does not necessarily say anything about how much has actually been *disbursed* (implemented or realized). The implementation rate of licensed FDI has been low. Comprehensive information in this respect is however not available. But there have been several attempts to estimate the realization rates on the basis on the limited surveys and reports available from the Vietnamese authorities. The World Bank's Foreign Investment Advisory Service calculated (FIAS, 1999), on the basis of official Vietnamese figures, that the implementation rate was only 34% for the period of 1991-1998. Prema-chandra Athukorala (1999) used an alternative data series for the period 1991-1996, based on a sample of individual project records. His findings suggested somewhat higher, but still disappointing, implementation rates.

However, low implementation rates do not necessarily say very much about the performance of FDI in Viet Nam. One reason is that a lag between approval and implementation is to be expected in any country, even if most projects turn out to be successful. Moreover, in a country that has just opened up to

FDI, and in which far-reaching reforms continuously change the character of the economy, early foreign investors must not only build up most of the production facilities from scratch, but are also forced to establish markets for material inputs, labour and final goods. In this kind of environment, it is not unreasonable that many investments require implementation times of several years.

Another problem for the estimation of implementation rates is that it is difficult to assess the value of actually implemented capital. Investors may overstate the value of their FDI to obtain a better bargaining position and to ensure that no new license has to be approved in the case of future expansion. Authorities may also exaggerate the value of investment to meet planning targets.[11]

A more meaningful picture of the conditions facing foreign investors may therefore be provided by data on the *survival* of licensed investment (Kokko and Zejan, 1996). By the end of 2000, the Vietnamese authorities or foreign investors had withdrawn 488 licenses granted by the Ministry of Planning and Investment between 1988 and 1998, while the remaining 1,600 projects approved during the period were formally still under implementation or in operation. The total investment value of the withdrawn projects was $6.7 billion, or about 23% of total licensed FDI during the period. Table 2 summarizes the data on cancelled FDI for the period 1988-1998. The most immediate observation should concern the very high failure rates during the first years of the study period. About half of all projects licensed during 1988-1990 were withdrawn. More recent investments appear to have been more successful.[12]

Most previous studies have estimated total *funds*

[11] Monthly data reveals an interesting pattern in the distribution of licensed investment capital over the year. Significantly more capital is licensed in the month of December, which raises concern about the quality of some of the projects approved in the end of the year.

[12] As pointed out by one of the referees, one of the reasons behind the high failure rates during the early years could be that the license applicant had no intention of enacting the project, but aimed to the sell the license to some other foreign affiliate.

Table 2. Withdrawn foreign investment licenses per year, 1988-1998

(Million dollars and number)

Withdrawn FDI	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total withdrawn FDI											
Value (million $)	117.8	95.4	126.5	224.8	130.2	92.0	881.3	1 492.7	2 875.0	656.4	17.7
Number	12	28	47	45	30	44	80	84	75	38	5
Value-based failure rate	0.84	0.50	0.36	0.22	0.09	0.04	0.26	0.25	0.34	0.21	0.01
Number-based failure rate	0.43	0.51	0.51	0.34	0.18	0.17	0.25	0.24	0.24	0.18	0.08

Source: State Committee for Cooperation and Investment and Ministry of Planning and Investment, *List of Licensed Projects* (various years).

Note: The value-based failure rate is the ratio of withdrawn FDI capital to total licensed FDI capital. The number-based failure rate is the ratio of withdrawn FDI projects to the total number of licensed FDI projects. The data include FDI projects licensed by the MPI. In 1997 and 1998, some projects were also licensed by local authorities, but we have no information regarding withdrawn FDI from these sources.

implemented or withdrawn, i.e. value-based failure rates. This measure may be adequate when trying to assess the overall effects or impact of FDI in an economy, but less useful when looking at the risk of failure for individual projects. Moreover, reported amounts of FDI may sometimes be exaggerated to make the project look more important, and size may therefore not be suitable to use as a weight when calculating failure rates. Number-based failure rates will therefore be used throughout the rest of this study.

A few additional caveats should be noted. Firstly, it may be wrong to assume that all projects not included in table 2 are in operation. In fact, many projects may have been cancelled without the knowledge of Vietnamese authorities. Secondly, some projects included in table 2 may not be true investment failures. No causes for license withdrawals are given in the data, but it is likely that a small number of the expired licenses refer to investments that have been completed and terminated according to plan. Thirdly, although most projects seem to fail during the first five years after licensing, with a peak in the second and third years, the observed failure rates for the last few years in the sample period are somewhat lower than what might be expected, even taking into account that the Vietnamese investment environment has improved over the years. One possible reason is simply that investors and authorities have had less time to recognize all failures of the most recently licensed projects. To circumvent the risk of classifying successful – but completed – investment projects as failures and to avoid truncation errors, only *projects that were withdrawn within five years after the licensing date* are classified as failures. Fourthly, this article has not been able to identify investors whose project plans failed before they received an investment license. Investors may abandon their project plans if the application requirements are considered too rigorous, if the licensing process takes too long time, or if they are not granted a license for the project. However, no information on project applications that were rejected or withdrawn before the completion of the licensing process is available.

Barring these caveats, the data used in this article identify those projects that have definitely been terminated, either because the investors gave up their plans or because the Vietnamese authorities cancelled their license due to slow implementation or other complaints.

Theories of investment failure

Even though most transnational corporations mainly look for locations with large markets and favourable factor costs, it is also clear that their investment decisions are often related to the relative *transaction costs* of doing business in the potential host country (Tejinder and Newhouse, 1995). In FDI, there are significant transaction costs related to the negotiation and enforcement of contracts, as well as costs connected to the day-to-day operations of business.

The transaction cost approach is relevant for the analysis of FDI in developing and transitional economies, since the general investment climate is not as stable as in industrialized countries. According to Douglass C. North (1990), efficient markets depend on supporting institutions that can provide the formal and informal rules of the game of a market economy. If institutions are unstable or unfamiliar, foreign investors face greater uncertainty and higher costs in negotiation and enforcement of contracts. They lack information about local partners, they must deal with agents inexperienced with business negotiations, and they are exposed to unclear regulatory frameworks, complex bureaucracies and corruption (Meyer, 2001). Consequently, countries in which market-based institutions are inefficient may have greater difficulties in attracting FDI. However, existing policies and conditions, although obstacles to the efficient conduct of business, do not necessarily deter a firm from FDI. Inherent localization advantages in the host country, such as a large domestic market or low wages, may outweigh high transaction costs. Investors' evaluations of expected profit opportunities will be directly reflected in application and licensing rates. After entry, previously unexpected risks may disturb implementation and

adversely affect the performance of investment projects. These *unpredicted* transaction costs would then affect failure rates.

Earlier studies have examined how transaction costs influence the decision to undertake FDI and the choice of location or entry mode.[13] This article employs the transaction cost approach to investigate how different project characteristics are related to transaction costs and hence to the risk for failure of licensed investments. It is hypothesized that investment failures are related to various kinds of unforeseen transaction costs that reduce the expected profitability of a planned project. The transaction costs influencing FDI in Viet Nam may be related to various economic, political, social or legal factors. The hypotheses regarding the characteristics of failed FDI projects, based on the transaction costs that these characteristics induce are presented below.

Some hypotheses

(a)   Early entrance into an emerging market is often seen as a success factor since it is possible to start building a brand early, choose the best partners and block the entry of competitors if the market for a certain product is limited.[14] However, the fact that Viet Nam was totally closed to foreign investors prior to *Doi Moi* made entry and establishment for first-movers especially complicated, since the costs of gathering relevant and accurate information about investment conditions were high.[15]

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[13] See for example Hennart (1989) on the choice of entry mode in general, Tejinder and Newhouse (1995) on the allocation of FDI in developing countries and Meyer (2001) on entry mode choice in transition economies.

[14] Mascarenhas (1992) and Rivoli and Salorio (1996) prepared early studies identifying timing as a critical factor in FDI strategies. Both stress the importance of a context-dependent analysis of the costs and benefits associated with different timing decisions.

[15] Luo (1998) argues that the costs of being early may be larger in economies in transition and emerging economies. However, empirical evidence from the Chinese market has been ambivalent: Pan and Chi (1999) found that early entrants outperform late movers, while Luo (1998) found that late movers are superior to early entrants with regard to the first three years' risk reduction and profitability.

These transaction costs have been falling over time, as more foreign investors have entered the country and newcomers learn from the experience of earlier entrants. The amount of information supplied by Vietnamese authorities about business conditions in Viet Nam has also increased over time. Moreover, revisions of the Foreign Investment Law have somewhat reduced the extent of bureaucracy involved in approval and implementation of projects in later years. All these factors should contribute to reducing transaction costs over time. Hence, it is hypothesized that failure rates should be lower for the most recent projects. However, one should be cautious when interpreting results due to the time lag in failure recognition mentioned earlier.

(b)   Some transaction costs can be expected to depend on the size of an investment project. Some fixed costs related to investment licenses and search for information about investment legislation and other conditions have to be incurred irrespective of the size of the investment. These fixed transaction costs are more significant for smaller projects. Moreover, larger projects are often undertaken by larger firms with more resources. These projects may therefore be preceded by more thorough evaluation and information collection, and may also be granted financial support from the foreign parent company if needed. In addition, there is evidence that larger projects enjoy preferential treatment in the licensing process, which reduces the time elapsed between application and granting.[16] A related measure of investment magnitude is the expected duration of a project, i.e. the time horizon of the investor. The impact of some transaction costs, especially those stemming from post-approval problems, may decrease with the expected duration. A few years' delay due to cumbersome bureaucracy may be disastrous for a short-term project, while the damage may not be as

[16] In 1994, the Prime Minister's Office took the authority to approve the more important FDI projects in terms of funds committed (those with an investment capital larger than $40 million).

large for a long-term project. Altogether, we expect transaction costs and hence failure rates to be lower for projects of larger magnitude, measured both as size of investment capital and expected duration.

(c)   The transaction costs related to various kinds of contacts between an FDI project and Vietnamese enterprises and authorities are likely to depend on the ownership structure of the project. However, the exact relation between the investment form and these transaction costs is not obvious. On the one hand, it is reasonable to expect that interactions with Vietnamese authorities, suppliers and customers are less costly for joint ventures than for wholly owned affiliates, since the Vietnamese partner may use its existing network of business and bureaucratic contacts to the benefit of the joint venture. On the other hand, a joint venture imposes additional transaction costs for the coordination of activities between the foreign investor and the Vietnamese partner. Earlier studies have emphasized the potential cost savings from joint ventures (e.g. Pan and Chi 1999 on China). But in the case of Viet Nam, many investors have complained about the difficulties involved in cooperating with Vietnamese partners. An explanation may be that most joint ventures are with SOEs that are not used to operating in a market economy and are often inefficient and uncompetitive by international standards. They may also have other objectives than profit maximization (Kokko and Sjöholm, 2000). All in all, it is hypothesized that these latter problems are more serious, and that the failure rates are higher for projects with a small foreign share.

(d)   The location in the host country is likely to affect both the production and transaction costs encountered by the foreign affiliate. Wages are higher in urban areas, but transport costs are lower because of proximity to the markets. There are other transaction costs that tend to favour the centre. For instance, the supply of trained labour is larger, since labour tends to migrate to locations with many firms. Moreover, there are large regional differences

in the availability, cost and quality of infrastructure (transportation, telecommunications, electric power etc.) and various other services in Viet Nam. In particular, costs are higher and supply is more erratic in rural areas, which will again favour the centre.[17] A more detailed picture of how location affects FDI is given by studying income levels. This article has categorized the provinces of Viet Nam into different income groups, based on a World Bank poverty map.[18] Each FDI project has been assigned a poverty rate according to its geographical location. It is hypothesized that transaction costs are larger for projects located in poorer areas, since these locations are less urbanized and provide poor infrastructure. Also, poverty is likely to have a negative impact on the human capital characteristics of the population, including health and education.[19] Altogether, we expect that failure rates are higher outside Hanoi and Ho Chi Minh City, and that FDI located in poorer areas is more likely to fail.

(e)   Viet Nam's historical legacy of a division into a northern and a southern part may influence the transaction costs of doing business. The traditionally more conservative, bureaucratic North has operated under socialism since the 1940s. The "renegade" South was heavily influenced by the United States and other Western countries until the

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[17]   In a study of United States investors in developing countries, Wheeler and Mody (1998) found that agglomeration-related factors, notably infrastructure quality, were critical for locational decisions. Wei *et al.* (1999) and Cheng and Kwan (2000) examined the determinants of the location of FDI in China. They found that the magnitude of national and regional markets, the level of international trade, good infrastructure, and preferential policies have positive effects on FDI, while wage costs have negative effects. They also found strong evidence for an agglomeration effect.

[18]   See annex 1 for a detailed presentation of the poverty measures used.

[19]   Anh and Meyer (1999) investigated the locational decisions of joint ventures in Viet Nam in 1988-1993. They found that investors committed greater capital to provinces with higher levels of literacy, which may reflect human capital considerations. On the other hand, in a survey of FDI in China, Cheng and Kwan (2000) found no significant effect of the education variable on FDI location.

mid-1970s. Judging by data on FDI licensing, the South seems to be the more popular location among foreign investors. This may be due to transaction costs related to contacts with Vietnamese companies being lower in the South. The transition of the South into a market economy has been smoother, creating a more dynamic and open business environment.[20] It is examined if the North-South division has any effect on failure rates, and hypothesized that FDI in the Northern regions is more likely to fail.

(f)   In addition to formal constraints, such as economic, political and judicial rules, firms are also affected by informal constraints, for example culture (North, 1990). Viet Nam has attracted investors from many economies, and some cultural characteristics are likely to influence the transaction costs of conducting business in the country. The vaguely defined concept of *Confucianist traditions* has emerged as a possible non-economic factor influencing firm performance. It suggests that investors from other East Asian economies with a similar cultural heritage may encounter fewer problems to adapt to the Vietnamese society.[21] Also, the organizational culture may be more similar among firms stemming from the same geographical region, making cooperation smoother and hence reducing transaction costs.[22] It is hypothesized that FDI by East

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[20] Anh and Meyer (1999) suggest that the business environment is perceived as more positive in the South, but that Northerners have a higher level of education. Northerners may therefore be better positioned to take jobs that require technical skills, leaving manual labour and informal sector jobs to less-educated Southerners.

[21] Mead (1994) notes that the greater cultural differences between the partners, the more difficult it is to attain successful business relationships.

[22] Many authors have attempted to describe the special features of Asian business organization. For example, Redding (1996) argues that there are three common cultural determinants that affect the way Asian organizations are structured: (i) paternalism, which implies a more or less authoritarian societal structure with a strong sense of vertical social order, discipline and dependence upwards; (ii) personalism, which refers to the reliance on specific relationships as the means of ensuring trust in business dealings; and (iii) collectivism (whereas Western societies tend to be individualistic).

Asian investors (ASEAN, the newly industrializing economies and Japan) should exhibit lower failure rates.

(g)   The trade policies of the host country, notably the promotion of import substitution through tariff and non-tariff barriers, can affect the prospective rate of return of investments. The ERP measures the extent to which value added in domestic industries is altered by the various taxes and subsidies on trade. A positive ERP indicates that the returns to capital and labour are higher than they would have been in the absence of government policies. A negative ERP means that a firm or industry is worse off than under free trade. Firms with high ERPs should consequently be able to charge higher prices and lead a more comfortable life as a result of protection. However, there is a risk that soft budget constraints and inefficient production in industries with comparative disadvantages dominate any potential benefits from protectionism. Moreover, when companies rely on bureaucratic decisions and are not under competitive pressure, resources that should have been used for productive means may go to unproductive activities such as lobbying and corruption. In such a climate, the "hassle" of doing business, as perceived by foreigners, increases. Applying the transaction cost approach, one could therefore argue that transaction costs are likely to be higher in more protected industries. Using ERP estimates for Vietnamese industries calculated by the Centre for International Economics (CIE, 1998), each FDI project has been assigned a tariff rate according to the type of product to be produced.[23] Due to the ambiguous theoretical effects of protection, one cannot define any strong *a priori* hypothesis for the relationship between ERP and investment failure, and this matter has to be left for the empirical analysis.

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[23] For an account of ERP measures at the industry level, see annex 2. No account has been taken fo policy changes affecting ERPs, since continuous data on ERPs are not readily available.

The characteristics of failed FDI

It has been hypothesized that the risk for failure should be higher for joint-venture projects because this form of investment may be exposed to higher transaction costs. Table 3 shows that the failure rates for joint ventures in Viet Nam have constantly been higher than those for wholly owned affiliates during the period of study. It appears that, in many cases, cooperation problems outweigh positive effects such as smoother entry to market and use of the Vietnamese partners' existing network. The low failure rates for wholly owned projects may also be explained by the fact that only foreign investors with low-risk projects have been willing to establish wholly owned affiliates. Investors coming to Viet Nam in recent years seem to be aware of the troubles with joint ventures and have therefore preferred the wholly owned investment form (see table 1).

Data in table 4 indicate that labour-intensive industries such as agriculture and food processing exhibited high failure rates in the early years but that performance has improved recently. Failure rates were also high for the construction industry during the earlier years. "Other manufacturing" and "other services" industries, which received the largest shares of FDI, have exhibited low failure rates in recent years.

Yearly failure rates for different regions are shown in table 5. It is clear that the northern and central regions had the highest failure rates throughout the whole study period, except for the years 1992 and 1993. This may indicate support for the hypothesis that investment in poorer areas is less successful, since the southern provinces are on average richer. There is no support however in the table for the hypothesis that rural areas

Table 3. Failure rates per year and investment form, 1988-1998

Failure rates	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Joint ventures	0.44	0.53	0.53	0.36	0.20	0.18	0.31	0.31	0.29	0.24	0.10
Wholly owned	-	0.33	0.17	0.17	0.11	0.16	0.12	0.12	0.16	0.09	0.07

Notes and sources: see table 2.

in general should exhibit higher failure rates. One explanation can be that investors are already aware of the higher transaction costs in the countryside and therefore account for them when planning their projects.

There seems to be no clear pattern in failure rates between foreign investors of different national origin (table 6). According to the hypothesis, projects undertaken by investors from East Asian economies should exhibit lower failure rates. Taiwan Province of China and Hong Kong (China) seem to have been able to improve performance in recent years, but so do European investors. Australian projects seem to have been less successful in recent years, but the figures should be interpreted with caution due to the small number of observations for investments from Australia and New Zealand.

Table 4. Failure rates per year and industry, 1988-1998

Failure rates	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Agriculture, fishing, forestry and mining	0.80	0.50	0.53	0.29	0.26	0.27	0.46	0.30	0.33	0.25	0.13
Food products, beverages and tobacco	-	0.60	0.67	0.47	0.30	0.50	0.25	0.37	0.33	0.21	0.23
Textiles and clothing	0.43	0.33	0.22	0.37	0.17	0.19	0.17	0.11	0.29	0.08	-
Other manufacturing industries	0.33	0.53	0.42	0.33	0.18	0.15	0.20	0.18	0.19	0.20	-
Construction, hotels and restaurants	0.50	0.57	0.64	0.38	0.11	0.09	0.33	0.39	0.29	0.15	-
Other service industries	0.00	0.45	0.54	0.22	0.08	0.05	0.25	0.27	0.16	0.11	0.06

Notes and sources: see table 2.

Table 5. Failure rates per year and region, 1988-1998

Failure rates	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Ho Chi Minh City	0.36	0.52	0.41	0.35	0.18	0.17	0.15	0.24	0.21	0.09	-
Hanoi-Haiphong	-	0.45	0.40	0.32	0.15	0.08	0.29	0.25	0.23	0.09	-
Southern provinces	0.45	0.50	0.65	0.23	0.25	0.01	0.22	0.23	0.19	0.19	0.09
Central provinces	1.00	0.67	0.70	0.50	0.13	0.05	0.44	0.38	0.29	0.24	0.14
Northern provinces	0.50	1.00	0.56	1.00	0.17	0.14	0.47	0.19	0.44	0.35	0.20

Notes and sources: see table 2.

Table 6. Failure rates per year and foreign party, 1988-1998

Failure Rates	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Taiwan Pr. China	-	1.00	0.39	0.31	0.30	0.24	0.18	0.17	0.15	0.17	0.00
Hong Kong (China)	0.25	0.53	0.57	0.40	0.11	0.24	0.23	0.42	0.18	0.06	0.00
Other Asia	0.67	0.20	0.48	0.33	0.21	0.15	0.21	0.15	0.26	0.18	0.11
Australia and New Zeeland	0.67	0.67	0.50	-	0.10	0.07	0.30	0.18	0.44	1.00	0.50
Europe	0.38	0.48	0.56	0.36	0.16	0.15	0.38	0.37	0.25	0.15	0.00
North and South America	0.33	0.60	0.60	-	0.13	0.33	0.47	0.45	0.12	0.31	0.33

Notes and sources: see table 2.

Judging from the tables, it appears that the FDI projects most likely to be withdrawn were joint ventures, approved soon after 1988, without any clear characteristics regarding size, industry, location, or foreign party. However, it should be noted that, since several investment characteristics coincide in the projects, it is difficult to tell from these descriptive statistics what kind of features actually contributed to increasing the risk of failure. For example, if investments by Asian investors are on average small, it is difficult to determine if investor nationality or size has been the major factor influencing failure. Therefore a multiple probit regression has been conducted to estimate the likelihood of an FDI project to be withdrawn.

Probit analysis of investment failures

The database shows whether or not a foreign investment license has been recalled. Labelling this characteristic as 1 in the case of failure and 0 otherwise, allows obtaining a dichotomous dependent variable, *FAIL*, that requires an appropriate estimation method. The existence of a continuous variable y^*, linearly dependent on a vector of explanatory variables X is postulated, corresponding to a set of attributes relating to age, size, expected duration, entry mode, industry, location and nationality of the foreign investor – and a vector of parameters β. That is:

$$y^* = X'\beta$$

The variable *y** could be interpreted as an index of the negative impact that transaction costs have on an investment project. When the index is positive, the project fails. *y** cannot be observed, but it is assumed that there is a certain threshold value, such that *y** is greater than this threshold value for failed projects. On the other hand, the outcome of this process is observed, that is, if a license has been withdrawn or not. Labelling the event *failed* with 1 and *not failed* with 0, allows getting a proxy variable for *y**. It is assumed that the probability of a given investment to fail is given by:

$$p(y^*>0) = p(y = 1) = F(X'\beta)$$

where (*F*) is the standard normal cumulative distribution function. This case is known as the *probit model*, and maximum likelihood estimates can be computed. The hypotheses regarding the causes for investment failures were presented above. To test them, the following explanatory variables have been defined.[24]

(a) *AGE* measures the time since an individual investment license was approved (in logs).[25] *AGE* is expected to be positively related to the likelihood of investment failure.
(b) *SIZE* measures the size of the project by total investment capital (in log). *SIZE* is expected to have a negative impact on investment failure.
(c) *DUR* measures the expected duration of the project in years (in log). *DUR* is expected to have a negative sign.
(d) *JV* is a dummy variable equal to 1 for joint ventures and 0 for wholly owned projects. *JV* is expected to be positively related to the probability of project failure.
(e) *OWN* measures the equity share of the foreign investor in a project. For wholly owned projects, the share is always

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[24] Descriptive statistics for the independent variables can be found in annex 3.

[25] It seems realistic to assume that transaction costs decreased faster in the years soon after the initiation of reforms than today. This is why the time variable is used in its logarithmic form. Year $1999 = t_0$. Corresponding arguments apply for several of the other continuous variables that are also used in logarithmic form.

100%. For joint ventures, it may vary but is at maximum 70%.[26] *OWN* is expected too have a negative effect on project failure.

(f) *CITY* is a dummy variable taking the value 1 if the project is located in the Ho Chi Minh City or Hanoi-Haiphong regions and 0 otherwise. *CITY* is expected to have a negative impact on the likelihood for a project to fail.

(g) *POOR* measures the poverty level for Vietnamese provinces (in log). The variable has categorical values of ordinal properties.[27] It is hypothesized that projects located in poorer provinces are more likely to fail, and thus the coefficient for *POOR* is expected to be positive.

(h) *SOUTH* is a dummy variable equal to 1 if the project is located in the southern part of Vietnam and 0 if it is located in the north. *SOUTH* is expected to be negatively related to the probability to fail.

(i) *ASIA* is a dummy variable equal to 1 if the foreign investor stems from an East Asian country and 0 otherwise. *ASIA* is expected to have a negative impact on the likelihood to fail.

(j) *ERP* measures the effective rate of protection for different industries of the Vietnamese economy. The variable has categorical values of ordinal properties.[28] As discussed earlier, we cannot assign any definite *a priori* hypothesis for the relation between *ERP* and *FAIL*.

When checking the level of correlation between the descriptive variables, one finds that the variable pairs *SIZE* and *DUR*, *JV* and *OWN*, and *CITY* and *POOR* are highly correlated (with correlation coefficients of 0,5 or higher).[29] These correlations were expected, since these variables measure related project characteristics: large projects often have a long expected duration; joint ventures per definition have a foreign share of less than 100% while the opposite is true for wholly owned

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[26] This is because the legal requirement for establishment of a joint venture includes the obligation of a 30% Vietnamese equity share.

[27] See annex 1.

[28] See annex 2 and 3.

[29] For a complete correlation matrix, see annex 4.

projects, and city regions are richer than countryside provinces. However, high correlations make it difficult to distinguish the separate effects of the correlated variables. Therefore it has been decided to run separate test regressions with different combinations of the variables above, to avoid including highly correlated variables in any model.

In the final model, among the variables measuring investment magnitude, *SIZE* has been chosen over *DUR*. This is because duration may be somewhat problematic to interpret as a characteristic related to failure. It can be assumed that investors and authorities, for various reasons, may hesitate to recognize a long-term project as failed during the first few years after licensing. They may simply keep up hope since there is still much time left for the project to be implemented in the future. Also, the more fundamental question of whether the duration stated in investment licenses is based on investor expectations of full project length or appointed by authorities weakens the variable. Among the variables measuring ownership structure, *JV* has been chosen since the continuous variable *OWN* did not appear to have any significant effect when disregarding wholly owned projects. This suggests that foreign share *within* a joint venture does not influence the risk for investment failure, and the dummy variable *JV* is therefore better suited to explain the effect of ownership. Among the variables measuring the impact of location, it has been found that *POOR* was significant also when disregarding projects in the cities. This means that even when comparing countryside provinces, high poverty levels have a negative effect on investment survival. The categorical variable *POOR* is therefore better suited than the dummy variable *CITY* to measure the influence of location on investment failure. Moreover, one of the variables, *SOUTH*, was not used in the final model because it did not gain significance in any of the test estimations. The weak result for *SOUTH* indicates that the difference in investment climate between the northern and southern parts of Viet Nam that is often put forward may be exaggerated.

Taking into account the above-mentioned relations, a model has been postulated in which the likelihood of investment failure is a function of the explanatory variables, with expected effects in parentheses:

$$FAIL = f[AGE\ (+),\ SIZE\ (-),\ JV\ (+),\ POOR\ (+),\ ASIA\ (-),\ ERP\ (?)]$$

The regression results are presented in table 7 below.

The column entitled Regression 1 shows the results of an estimation that excludes the variable ERP, which is missing for about one-quarter of the observations (where the investment project concerns non-tradables, like infrastructure and services, for which it is not possible to calculate effective rates of protection). The column Regression 2 includes only those 1,406 observations for which the variable ERP is defined. The results confirm that, within the first five years after licensing, projects approved in the early years of transition, in the form of joint ventures, located in poor areas, and undertaken by non-East Asian investors, were more likely to fail during 1988-1998. Moreover, there is some evidence that small projects and projects in more protected industries exhibited higher failure rates. These

Table 7. Probit analysis of the probability of investment failure
Dependent variable: *FAIL*

Independent variables	Regression 1	Regression 2
AGE	0,273 (4,06)***	0,219 (2,74)***
SIZE	-0,034 (1,63)	-0,067 (2,46)**
JV	0,508 (6,58)***	0,641 (7,46)***
POOR	0,192 (3,85)***	0,150 (2,63)***
ASIA	-0,166 (2,43)**	-0,152 (1,84)*
ERP	—	0,077 (1,91)*
Number of observations	1977	1406
Pseudo R2	0,051	0,072
Log likelihood	-1046,651	-735,221

Note: Figures in parentheses are z-statistics. ***, ** and * denote significance at the 1, 5 and 10 % levels of confidence. Critical values of the z-statistic are 1,645, 1,96 and 2,575 for the 10, 5 and 1 % significance levels.

findings are consistent with the corresponding hypotheses regarding the transaction costs related to these characteristics.[30]

In addition, some interesting findings emerge when controlling for dummy variables. When controlling for *JV*, the performance of wholly owned projects is found to be less sensitive for nationality of the investor (*ASIA*) and year of licensing (*AGE*). Apparently, these factors were more important for investors who cooperate closely with Vietnamese partners. Holding *CITY* constant, *ASIA* had no significance for projects located in rural regions. Controlling for *SOUTH*, *AGE* and *JV* were less significant for investments in the North. The weakness of *AGE* may result from the fact that economic conditions have not improved as rapidly in the northern parts of Viet Nam, and the year of entry therefore has had little importance for investment performance. Finally, controlling for *ASIA*, none of the variables *SIZE* and *POOR* had any significant impact on investment failure for non-Asian investors. This may indicate that for investors from a very different economic and cultural climate, investment magnitude or location does not matter as much for performance. Possibly, the ability to adapt to the new environment is more important than specific investment characteristics.

Summary and conclusions

This article examined the characteristics of licensed and failed investment projects in Viet Nam between 1988 and 1998. A first concluding observation is that the likelihood of failure is determined by a host of different investment characteristics. None of the variables examined above stands out as a dominant explanation for failure, which means that no simple solution to the problem of low implementation can be given. FDI in Viet Nam is influenced by a variety of economic, political, social

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[30] Tests for robustness over time were done since underlying conditions have not been stable over the period of study, and one could expect changes in the impact of some variables due to policy changes, new regulations etc. However, no support has been found for a non-monotonous relationship for any of the variables in the final model.

and legal factors, which are difficult to condense into a few quantitative dimensions. Still, the results regarding the characteristics of failed projects provide some hints about the performance of FDI in Viet Nam.

One explanation for the high failure rates observed for joint ventures are difficulties in cooperation between the foreign investors and their Vietnamese partners. Knowing that most Vietnamese joint venture partners are SOEs, these findings highlight the need to improve the performance of the State-owned enterprise sector. However, this is not easily done and will take time. Yet, many FDI projects, in particular smaller projects, might be better suited to collaborate with a private Vietnamese enterprise in the future (although the weak position of the private sector in Viet Nam has made it difficult to do so until recently). To become more attractive for foreign investors, it is likely that the Vietnamese private sector must first be allowed to compete on equal terms with the SOEs. This requires reform in several areas, for instance concerning access to formal credit institutions and legislation regarding land use rights.

A related problem is the remaining import substitution bias in Vietnamese trade policy. The results of this article show that foreign affiliates in protected industries exhibited higher failure rates, which underlines the negative effects of operating in industries with comparative disadvantages. If protection levels were reduced and companies made subject to stronger competitive pressure, rent-seeking activities would decrease and resources would be reallocated to labour-intensive industries in which Viet Nam has its comparative advantage.

The results also show that investments located in richer areas are less likely to fail. This reflects the positive effects of agglomeration, since the richer areas are more urbanized and provide better infrastructure, closeness to markets, and better possibilities to cooperate with other enterprises. Attempts to attract FDI to poor (rural) areas have not proved successful.

In summary, it can be argued that to make FDI more successful, Viet Nam might do well to focus on broad economic

and institutional reforms to create a sound investment climate rather than directing FDI into special forms, industries or regions. An important ingredient in a sound investment climate is a stable and transparent legal framework. Improvements in infrastructure and a more predictable legal framework would probably be more efficient in attracting new FDI than any financial incentives that the Government can afford to provide. Furthermore, FDI licensing policies could be simplified to allow faster entry. In a somewhat longer perspective, it can be questioned whether the approval process has a function to fill, or if it is possible to rely on the natural selection that results from investors' own decisions. The main conclusions from the perspective of foreign investors refer to the risks and transaction costs involved in joint ventures with SOEs, and the agglomeration benefits related to locating in the main urban centres. Both these conclusions should, of course, be tempered by the expected benefits from collaborating with SOEs (which are likely to be particularly important if the public sector is a major customer) and by any preferences gained from investing outside the main urban centres.

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Annex 1. Poverty levels, by region

Province	Poverty level	Province	Poverty level
Southern region (Bac Bo)		Quang Ngai	3
Minh Hai	2	Quang Nam (Da Nang)	2
Soc Trang	2	Thua Thien	3
Kien Giang	2	Quang Tri	3
Vinh Long	2	Quang Binh	3
An Giang	2	Ha Tinh	3
Dong Thap	2	Nghe An	3
Tra Vinh	2	*Northern region (Nam Bo)*	
Ben Tre	2	Thanh Hoa	3
Long An	2	Ninh Binh	3
Tien Giang	1	Hoa Binh	3
Ho Chi Minh City	1	Nam Ha (Ha Nam)	2
Tay Ninh	1	Thai Binh	2
Ba Ria Vung Tau	1	Ha Tay	2
Dong Nai	1	Hanoi	1
Can Tho	1	Haiphong	2
Song Be	1	Hai Hung	2
Lam Dong	1	Vinh Phu	3
Ninh Thuan	2	Ha Bac	3
Central region (Trung Bo)		Quang Ninh	2
Binh Thuan	1	Lang Son	4
Dac Lac	2	Cao Bang	4
Khan Hoa	2	Ha Tuyen	4
Phu Yen	3	Yen Bai	3
Gia Lai	3	Lao Cai	4
Binh Dinh	2	Son La	4
Kon Tum	3	Lai Chau	4

Source: World Bank 2000.
Note 1.   The poverty levels used for construction of the variable *POOR* are based on the percentage share of poor individuals in each province. In provinces with poverty level 1, 0-25% of the population can be considered poor; poverty level 2: 25-45%; poverty level 3: 45-60%; and poverty level 4: 60-100% (according to a World Bank headcount).
Note 2.   For construction of the dummy variable *SOUTH*, the division line between north and south was drawn between the provinces Thua Thien and Quang Nam (Da Nang), where the latter belongs to the southern part.

Annex 2. Effective rates of protection, by industry
(Per cent)

Industry	ERP
Forestry	0.0
Fishing	24.1
Mining	0.8
Fuels	17.3
Tea and coffee processing	91.6
Sugar	90.0*
Tobacco, alcohol and beverages	185.4
Other foodstuffs	65.0
Leather, footwear and bleaching	23.3
Paper and paper products	127.4
Petroleum and natural gas	n/a
Fertilizers and pesticides	-5.6
Chemical products	-2.2
Pharmaceuticals	22.7
Soaps and detergents	162.5
Rubber and rubber products	179.0
Plastic and plastic products	139.9
Other chemical products	44.4
Ceramics, glass and porcelain	102.4
Cement	133.0[a]
Other non-metallic minerals	20.0
Manufacture of non-ferrous metals	-4.7
Manufacture of ferrous metals	416.1
Equipment and machinery	9.9
Electrical and electronic products	59.8
Other metallic products	50.2
Other industry	65.1

Source: CIE (1998).
Note: The list excludes non-traded industries.
[a] Estimated ERP has been adjusted for quantitative restrictions.
Note 1. For construction on the variable *ERP*, industries were classified into four groups according to the ERP in % (as calculated by CIE, 1998). The groups were given a value 1-4, where 1 represents a level of protection as measured by the ERP of less than 0%; protection level 2: ERP 0-50%, protection level 3: ERP 50-100%; and protection level 4: more than 100%. Industries producing non-tradable goods (mainly belonging to the tertiary sector) were excluded.

Annex 3. Additional statistics: explanatory variables

AGE	Min.	Max.	Mean	Std. dev.
years	1	11	4.97	2.30

Note: A log transformation of the variable was used in the regression.

SIZE	Min.	Max.	Mean	Std. dev.
$millions	0.02	2110.67	14.88	71.28

Note: A log transformation of the variable was used in the regression.

DUR	Min.	Max.	Mean	Std. dev.
Years	2	70	22.30	10.03

Note: A log transformation of the variable was used in the regression.

JV	Min.	Max.	Mean	Std. dev.	N=0	N=1
	0	1	0.70	0.46	601	1384

OWN	Min.	Max.	Mean	Std. dev.
Per cent	0	100	73.90	19.46

CITY	Min.	Max.	Mean	Std. dev.	N=0	N=1
	0	1	0.51	0.50	974	1009

POOR	Min.	Max.	Mean	Std. dev.	N=1	N=2	N=3	N=4
	1	4	1.34	0.61	1451	417	98	18

Note: A log transformation of the variable was used in the regression.

SOUTH	Min.	Max.	Mean	Std. dev.	N=0	N=1
	0	1	0.69	0.46	607	1377

ASIA	Min.	Max.	Mean	Std. dev.	N=0	N=1
	0	1	0.71	0.45	578	1407

ERP	Min.	Max.	Mean	Std. dev.	N=1	N=2	N=3	N=4
	1	4	2.75	0.96	154	403	495	359

Annex 4. Correlations

(Bivariate correlations between dependent variables)

	AGE	SIZE	DUR	JV	OWN	CITY	POOR	SOUTH	ASIA	ERP
AGE	1.00	-0.23**	-0.38**	0.22**	-0.23**	0.16**	-0.10**	0.07**	-0.02	-0.04
SIZE	-0.23**	1.00	0.66**	0.09**	0.00	-0.04*	-0.02	-0.03	-0.01	0.15**
DUR	-0.38**	0.66**	1.00	-0.13**	0.22**	-0.09**	-0.01	-0.07**	0.05**	0.08**
JV	0.22**	0.09**	-0.13**	1.00	-0.89**	0.23**	0.08**	-0.20**	-0.09**	0.06*
OWN	-0.23**	0.00	0.22**	-0.87**	1.00	-0.21**	-0.09**	0.17**	0.13**	-0.05**
CITY	0.16**	-0.04*	-0.09**	0.23**	-0.21**	1.00	-0.45**	-0.21**	-0.05*	0.03
POOR	-0.10**	-0.02	-0.01	0.08**	-0.09**	-0.45**	1.00	-0.33**	-0.05*	-0.04
SOUTH	0.07**	-0.03	-0.07**	-0.20**	0.17**	-0.21**	-0.33**	1.00	0.05*	-0.01
ASIA	-0.02	-0.01	0.05	-0.09**	0.13**	-0.05*	-0.05*	0.05*	1.00	0.04
ERP	-0.04	0.15**	0.08**	0.06*	-0.05**	0.03	-0.04	-0.01	0.04	1.00