Social development and industry level foreign direct investment

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Summary

Investment is crucial for economic development. Foreign direct investment (FDI) can be particularly beneficial by facilitating a transfer of technology, and managerial and organizational know-how to developing countries. A number of empirical studies document a relationship between social development and aggregate FDI. In particular, socio-political stability and institutional quality, democracy and political freedom, and labour standards, appear to have an impact on aggregate FDI flows.

To get a more complete picture of how social development might affect FDI, however, studies of aggregate FDI flows should be complemented by analyses using industry level FDI data. There are several reasons why this is important. Foreign investment in different industries has a different developmental impact, and FDI policies should aim at attracting investment in the more favourable industries. Moreover, the sectoral composition of total FDI flows evolves over time, and to remain effective, FDI policies should target industries where there is substantial and growing cross-border investment activity. From an analytical point of view, studying industry level FDI brings us closer to the decision units creating the investment flows. Finally, from an empirical point of view, industry level data allows us to probe deeper into the relationships uncovered by aggregate studies.

Our comprehensive review of econometric studies using industry level FDI data, reveals that extremely little has been said about social development and FDI. Instead, the available studies provide a patchy account of the economic determinants of industry level FDI flows. In order to establish the impact of social development variables, we therefore conduct an econometric analysis of FDI flows at the industry level. The results highlight important similarities and differences among industries.

We find that democratic accountability has a negative association with FDI in the secondary industries, but a positive one in the tertiary ones. This result suggests that the relationship between democracy and FDI is more nuanced than indicated by aggregate FDI studies.

Law and order is found to be conducive to investment in both the secondary and tertiary industries. Internal conflict deters investment in the secondary sector. Neither law and order nor internal conflict have any effect on FDI in the primary industries, which might reflect an ability to effect private security arrangements in the extractive industries.

Corruption increases FDI flows in the tertiary sector, but is unimportant elsewhere. This relationship can be traced to the trade industry, and might reflect the frequency with which this industry encounters bureaucratic obstacles.

Finally, we find increased ethnic tensions to be associated with increases in foreign direct investment flows. Lagging the ethnic tension variable suggests,

however, that a causal relationship might exist in the secondary industries only. Moreover, the relationship depends on the inclusion of certain countries in the sample (Tunisia, Vietnam and the Philippines), making these countries prime candidates for more in-depth, qualitative country studies. Across countries, we find evidence that more ethnic tensions are associated with less FDI in the secondary and tertiary industries.

1. Introduction: Reasons for analyzing FDI flows by industry

Investment is critical for the economic prospects of developing countries. There is a strong relationship between investment and economic growth, and growth in turn reduces poverty in the long run (Levine and Renelt, 1992, Dollar and Kraay, 2002). Improving the investment climate of developing countries has therefore been a major topic in a number of recent World Bank publications (World Bank, 2003a,b), and the forthcoming World Development Report 2005 is devoted to this issue (World Bank, 2004).

One particular type of investment that has been given much attention, is foreign direct investment (FDI). There is a widespread belief that FDI represents more than a capital infusion to developing countries, it also provides access to technological, managerial and organizational innovations, and other resources that would otherwise be inaccessible to poor countries. Creating a climate favourable for foreign investment has therefore been a much debated and a heavily researched topic.

There is evidence to suggest that certain aspects of social development have an impact on aggregate FDI flows to developing countries. Social development can be defined as "development that is equitable, socially inclusive and therefore sustainable. It promotes local, national and global institutions that are responsive, accountable and inclusive and it empowers poor and vulnerable people to participate effectively in development processes".[1] Econometric studies have uncovered a relationship between aggregate FDI and social development indices capturing socio-political instability and institutional quality, democracy and political freedom, and labour standards (see Kolstad and Villanger, 2003).

The studies that have been performed on social development and aggregate FDI flows, have not been replicated on industry level FDI data. The studies of industry level FDI that do exist, focus largely on economic factors, not socio-political ones. There are a number of reasons why it is important to complement studies of aggregate FDI and social development, with analyses of industry level FDI determinants. In terms of developmental impact, foreign investment in different industries differs substantially. The sectoral composition of aggregate FDI flows evolves over time, so to predict the major determinants of future FDI flows, it is important to know the determinants of FDI in the sectors whose share of total FDI is growing. From an analytical point of view, studying industry FDI rather than aggregate FDI brings us closer to the decision units creating the investment flows. Theories of FDI activity underscore the multiplicity of motives underlying FDI decisions. From an empirical point of view, there is a chance that aggregate data obscures patterns of correlation between social development variables and FDI in individual industries, there might in other words be important determinants of FDI that have not been uncovered. Empirical studies of industry FDI flows

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[1] http://lnweb18.worldbank.org/essd/essd.nsf/SocialDevelopment/HOME

also suggest that there are significant differences in the economic determinants in different industries; there might be similar differences in social development determinants. Let us review each of these arguments in more detail.

The developmental impact of foreign direct investment depends, *inter alia*, on the degree to which a foreign firm invests in upgrading the resources of the host country, and creates linkages to domestic firms. Upgrading skills can have spill-over effects on the economy as a whole, and linkages facilitate the transfer of technology to domestic firms. Several studies suggest that skill upgrading and technology transfer differ markedly between industries. Te Velde (2002) suggests that skill formation in the host economy depends on the motive behind FDI activities; strategic asset seeking industries that "invent and implement leading-edge technologies, … require well-educated workers, whose skills can be augmented by specific training" (p. 14), whereas natural resource, efficiency or market seeking investors do not have the same incentives to upgrade skills.[2] Te Velde thus suggests that "attracting skill intensive FDI will help raise ... human capital formation" (p. 24). Ritchie (2002) similarly cites studies showing that high tech industries are more committed to upgrading skills. Resmini (2000) strikes a similar note in suggesting that the "transfer of knowledge varies from one sector to another, and is more evident in high-tech sectors" (p. 667). The point is that if certain industries are more attractive than others, it is important to create conditions that draw these industries to developing countries.

A different argument revolves around the changing composition of total FDI flows in the world economy. If policies to attract FDI are to remain effective, they must reflect trends in industrial location, highlighting sectors where there is substantial and/or growing cross-border investment activity. As an illustration of recent trends, figure 1 provides a decomposition of total FDI flows, into shares attributable to the primary, secondary and tertiary industries over the period 1986-2001.

While the secondary and tertiary industries accounted for comparable shares of total FDI in the late 1980s, the figure reveals that the service industries have increased their share markedly since then. The spike in tertiary FDI in 1999-2000 is perhaps a bit exaggerated, reflecting extensive mergers and acquisitions activity in this sector, but nevertheless the trend is clear. Service sector FDI has grown more important in total FDI flows, manufacturing FDI less so. The primary sector only contributes 3-11 per cent of total FDI in the period graphed. A further breakdown into individual industries could highlight yet more interesting temporal patterns, which could be used to inform policies to attract FDI in future.

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[2] This four-tiered breakdown of investment motivation is due to Dunning (1993).

Figure 1. A breakdown of total FDI according to the major industry groups, 1986-2001
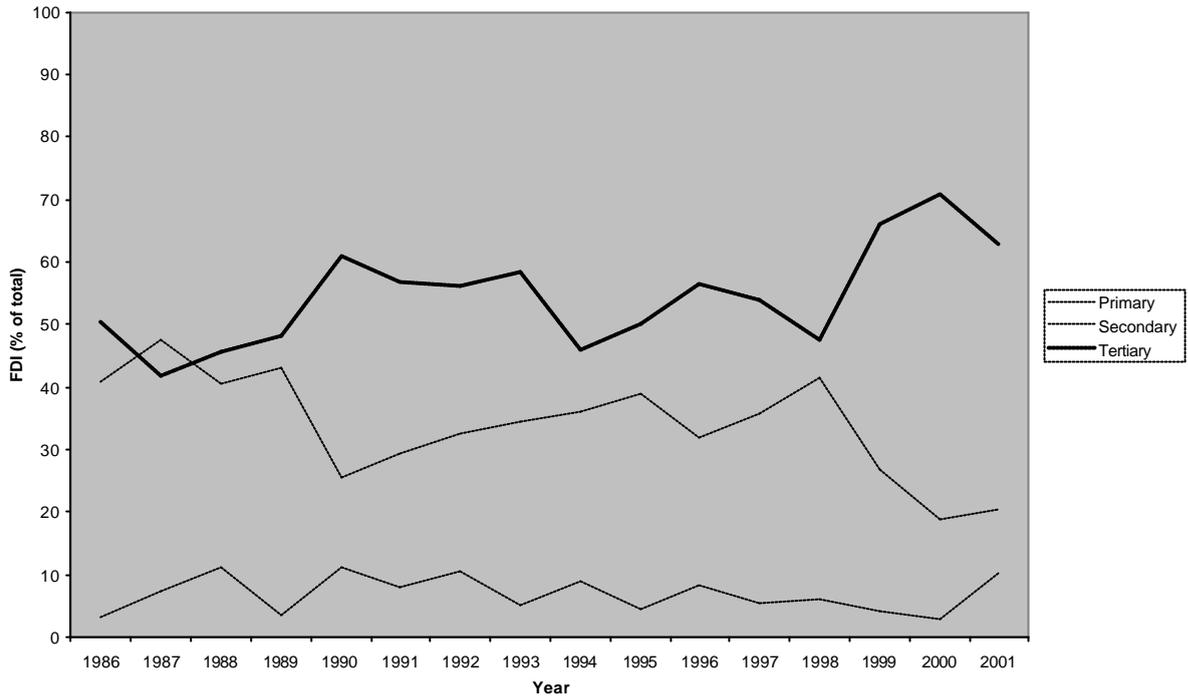
Data source: UNCTAD

From an analytical point of view, a troubling aspect of studying aggregate FDI flows, is that investment decisions of agents with possibly very different motivations are pooled together. By using industry level data, the sample of firms included is likely to be more homogeneous in its investment motivations, and the results might therefore provide a clearer view of what actually drives investment decisions. Ideally, firm level or even project level data would be preferable, but since this is unavailable to us, industry level data at least takes us part of the way.

Theories of FDI decisions do in fact highlight the idea that the motivations of investors are different. Though the basic motivation of firms is perceived to be profit or value maximization, firms may have derivative motivations that differ for instance according to the industry in which they operate. To take but one example, the famous eclectic paradigm due to Dunning (1993) suggests that there are four distinct motivations for foreign direct investment activity: To access markets, to increase efficiency, to access natural resources, or to control strategic resources. Dunning has been criticized for providing a taxonomy of investor motivation, rather than a model of investment. In the present setting, however, his taxonomy underscores the notion that there is considerable variation in investment motivation across industries.

In terms of empirical estimation of the determinants of FDI, there are two basic reasons why it is potentially risky to use data aggregated across industries. One is that variables that do actually influence FDI go undetected. This can happen when data from one industry in which there is a strong

correlation between some variable and FDI, is diluted by data from other industries where there is no correlation. The other is that determinants are identified for the aggregate data set, that have no significant relationship to FDI in any industry. The latter possibility is perhaps more remote than the first, but it is still a possibility. Where the aggregate analysis identifies determinants that do reflect some real correlation at the industry level, industry data can provide additional information by pinpointing the industries that give rise to the aggregate relationship.

Empirical studies of FDI at the industry level do suggest that there is significant variation in what determines investment in different industries. The most explicit test of industry differences has been done by Resmini (2000), albeit only for a set of manufacturing industries. Using a Wald test to see if a set of independent variables have a significantly different impact on FDI in different sectors, she finds this to be true for most variables. For our purposes, the implication is that social development variables might potentially have a different impact on FDI in different industries.

In this study, we examine how social development affects FDI flows in separate industries. The aim is to establish if there are important sectoral differences, and if there are correlations that the aggregate studies have not detected. *Section 2* of this report briefly reviews the findings of the literature on aggregate FDI and social development, before conducting a more thorough review of available studies on determinants of industry level FDI. A main conclusion is that while there is evidence of a relationship between aggregate FDI flows and social development variables such as socio-political instability and institutional quality, democracy and political freedom, and labour standards, the existing studies of industry level FDI say extremely little about social development. Instead, the industry level studies provide a patchy account of the economic determinants of FDI.[3]

To fill in some of the blanks, we therefore conduct an econometric study of social development and FDI at the industry level in *section 3*. Our data on FDI is compiled by UNCTAD, using an industry classification that is a variant of the United Nations International Standard Industrial Classification of All Economic Activities (ISIC).[4] From the top level disaggregation into primary, secondary and tertiary industries, there is a further disaggregation into 33 individual industries. Obviously, it is beyond the scope of this report to address determinants in each of the 33 cases. Instead, we analyze the association between social development variables and FDI flows in the primary, secondary, and tertiary industry groups, before doing a more detailed analysis of certain select individual industries. The industries selected reflect the issues raised in this introduction, and also address nuances in investment flows at the primary, secondary and tertiary levels. *Section 4* concludes by summarizing the main findings of the study.

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[3] The review of past studies is fairly comprehensive. Readers interested in a short version only, can skip to the summary on p. 16.
[4] See appendix 1 for details.

2. Past empirical studies: Social development affects aggregate FDI, but little is known about its impact on industry level FDI

Past studies of aggregate FDI have identified certain social development variables as important for total FDI flows. Since the correlations uncovered in aggregate studies provide a useful basis of comparison for industry level studies, a brief review of the aggregate studies is provided below. This is followed by an overview of studies on industry level FDI, which provides information on relevant explanatory variables for our subsequent econometric analysis, and provides a point of reference for our subsequent results. To keep things manageable, the review of industry level studies focuses on studies published in academic journals, with a slant towards recent studies using recent data. Throughout this section, only host country determinants of FDI are discussed, and significance is reported at the 5% level.

Social development and aggregate FDI flows

A number of empirical studies have explored the relationship between social development variables and aggregate FDI flows. Three aspects of social development that have received particular attention, are socio-political stability and institutional quality, democracy and political freedom, and labour standards. There is evidence suggesting that all three aspects may have an impact on FDI flows.

In broad terms, *socio-political stability* and *institutional quality* exhibit a positive relationship to FDI, in the studies of Globerman and Shapiro (2002), Harms (2002), Biswas (2002), Habib and Zurawicki (2002) and Singh and Jun (1995). More specifically, Tuman and Eggert (1999), Kolstad and Tøndel (2002) and Kolstad and Villanger (2003) find various forms of *internal conflict* to deter FDI inflows. Similarly, Wei (2000) and Habib and Zurawicki (2002) find *corruption* to be a significant deterrent of FDI. Finally, Jensen (2002) finds *state capture* to deter FDI, Biswas (2002) sees a negative association of FDI with *regime duration*, and Oliva and Rivera-Batiz (2002) find a positive relationship between FDI and *the rule of law*.

Democracy is also found to matter for FDI flows. A higher level of *political rights* and *civil liberties* has a positive association with FDI inflows, in the studies of Harms and Ursprung (2002), Kolstad and Tøndel (2002), and Kolstad and Villanger (2003). Kolstad and Tøndel also find a positive association between *democratic accountability* and FDI. Similarly, Biswas (2002) sees higher flows of FDI to countries that are more democratic.

On the subject of labour standards, Cooke (1997) finds a significant impact of *labour regulations* on FDI stocks. Singh and Jun (1995) find a negative impact on FDI flows of *labour unrest*. And Kucera (2002) finds *female educational attainment* and *female representation in administrative positions* to have a positive association with FDI.

One should note that though the cited studies provide evidence for the importance of social development in attracting foreign capital, there are also studies that do not support this conclusion. In particular, variables reflecting socio-political stability and institutional quality, and democracy, exhibit no significant association with FDI in other studies (see e.g. Harms and Ursprung (2002) on socio-political stability and institutional quality, and Noorbakhsh et al (2001) and Kucera (2002) on political freedom). The results linking social development and FDI are thus not all that robust to changes in the data sample, or the variables used.

Determinants of FDI flows at the industry level

The studies that have been performed on industry level FDI, typically focus on one or a small set of industries. The number of published econometric studies varies significantly across industry categories. The secondary industries have met with the greatest attention; a number of studies have been performed on FDI in manufacturing as a whole, and on FDI in individual manufacturing industries. In the tertiary category, there are several studies on FDI in the financial sector, but little work has been done on other service sectors. In the primary industries, FDI studies are extremely sparse, which is surprising given the attention recently awarded foreign investment in the extractive industries.

The below review of available studies is limited to *econometric* studies in each of the three main industry categories. There are, however, a couple of survey studies conducted on a cross-section of industries that deserve to be mentioned. In a sense these surveys present hypotheses, some of which are tested more rigorously in the subsequent econometric studies.

Kreinin et al (1999) analyze a survey of the motivations behind Japanese outward FDI. Nine industries are studied, seven of which are secondary, and the last two agriculture and financial services. For each industry, the motivations cited by at least 40% of the respondents are presented in table 1.

The table reveals some interesting differences among sectors. While access to local and regional markets (reflected by the motivations "securing local markets" and "establishing production and distribution networks") is important for all the manufacturing industries, this is not a factor for the agricultural industry and financial services. Similarly, access to natural resources has a much higher level of importance for agricultural investment, than for investment in any other sector. And the motives deemed most important for the financial services sector, *viz.* financing and investing, and acquisitions and information, are unimportant for industries outside the service sector. So there is a case here for the idea that primary, secondary and tertiary industries differ in their investment behaviour. The motivations of individual secondary industries also exhibit interesting differences. In particular, access to cheap labour appears important only to the textile industry and the electronics industry, which at least in the former case reflects a labour intensive production technology. Another interesting observation from the material presented in Kreinin et al (1999), is that trade potential and

favourable government policies towards FDI are not deemed important by any of the industries surveyed. The impact of social development is, however, not tested by Kreinin et al.

Table 1. Major motivations for investment, Kreinin et al (1999)

Industry	Motivation
Agriculture	Natural resources (76%)
Processed food	Securing local markets (53%)
	Establishing prod&distr networks (44%)
	Natural resources (40%)
Textiles	Establishing prod&distr networks (65%)
	Securing local markets (60%)
	Cheap labour (58%)
Chemicals	Securing local markets (75%)
	Establishing prod&distr networks (55%)
Metals	Securing local markets (70%)
	Establishing prod&distr networks (43%)
Machinery	Securing local markets (71%)
	Establishing prod&distr networks (44%)
Electronics	Securing local markets (71%)
	Cheap labour (49%)
	Establishing prod&distr networks (48%)
Transportation equipment	Securing local markets (72%)
	Establishing prod&distr networks (62%)
Financial services	Financing and investing (43%)
	Acquisition and information gathering (42%)

Complementing the above survey, Alford et al (1997) conduct a survey of firms investing in Canada. Their results suggest that market access is the most important locational determinant for the manufacturing industries, consistent with Kreinin et al (1999). For the non-manufacturing industries, however, government regulations and restrictions are the most important. By implication, this study confirms the idea that manufacturing and non-manufacturing investment is based on different factors. The government regulations and restrictions important for non-manufacturing investment do not, however, appear to include social development variables.

In sum, survey studies of investor motivations suggest that investment behaviour differs significantly across industries. In particular, there are distinct differences between investment in the secondary industries, and other industries. While investment in manufacturing appears to be driven primarily by market access, other motivations underlie investment in the primary and tertiary industries. On the subject of social development, however, the two survey studies are largely mute.

Econometric studies of FDI in the primary industries

In the primary industries, there appears to be only one published econometric study, which focuses on agricultural investment. Burnham and Epperson (1998) survey 81 US fruit and vegetable importers/producers. Using a probit model to analyze the factors influencing the FDI decisions of these firms, they find that firms facing higher US tariffs on their products, are less likely to engage in FDI activities, and firms that can capitalize on higher cost differences, are more likely to do so. Though these firm-level results do not directly address the question of host country determinants of FDI, they do indicate that labour costs and trade openness are important for FDI decisions. However, since their study does not focus on host country determinants, it is difficult to compare the results to those of Kreinin et al (1999).

The sole econometric study of foreign direct investment in the primary industries, thus covers only the agricultural industry, does not explicitly assess host country determinants, and consequently does not address the issue of social development. No studies seem to have been published on other primary industries, in particular the extractive industries (mining, quarrying and petroleum). This gap is an important one to fill, given the fact that investment activity in the oil industry is frequently conducted in countries whose social development track record is fairly miserable.

Econometric studies of FDI in the secondary industries

The studies of manufacturing FDI can be divided into three groups according to their level of disaggregation. One set of studies estimates the determinants of FDI flows in manufacturing as a whole. Another set operates at a medium level of disaggregation, studying flows in several broad categories of manufacturing industries. A third set considers FDI in individual manufacturing industries, such as those at the two-digit level in the ISIC classification (see appendix 1). The first subsection below summarizes the results from the studies of FDI in manufacturing as a whole, and those using a broad classification of industries. The subsections that follow discuss available results for individual industries; food, chemicals, rubber, metals, machinery, electronics, and transportation equipment, respectively. For other industry categories (see appendix 1), econometric studies are unavailable.

Manufacturing as a whole, and disaggregated into broad categories

The following three studies in one way or another address the question of what determines FDI in the manufacturing industries as a whole. McCorriston and Sheldon (1998) do a time-series study of foreign acquisitions in US manufacturing 1980-95, using acquisitions as a share of GDP as their dependent variable. This study also analyzes acquisitions in individual industries, the results of which we return to below. Bajo-Rubio and Lopez-Puejo (2002) study FDI in the Spanish manufacturing sector, using a panel of 20 industries for the period 1986-92. Though this study is on industry-specific determinants of FDI, several variables that vary over time but not across industries are included. In a similar manner, Campa et al (1998) analyze data on FDI relative to imports for 219 US manufacturing industries 1984-91, including one variable which does vary over time but not across industries. The relevant results of the three studies are summarized in the below table.

Table 2. Econometric results for manufacturing

Manufacturing			
Independent variable	Positive	Negative	Insignificant
Economic growth			Bajo-Rubio and Lopez-Puejo (2002)
Exchange rate expectations	Bajo-Rubio and Lopez-Puejo (2002)		
Exchange rate		Campa et al (1998), McCorriston and Sheldon (1998)	Bajo-Rubio and Lopez-Puejo (2002)
Inflation			Bajo-Rubio and Lopez-Puejo (2002)
Relative stock prices	McCorriston and Sheldon (1998)		

As is evident from the table, the three studies have focused on economic variables. Of these, inflation and economic growth do not appear to influence FDI in the manufacturing sector. Exchange rates have a negative relation to FDI in two studies, which indicates that an appreciation of the host country currency reduces FDI. Moreover, one study indicates that expectations that the host country currency will appreciate, increases FDI. Finally, one study finds that higher stock prices in the home country relative to the host country, increases FDI. None of the three studies uses market access as an explanatory variable, as opposed to the survey studies of Kreinin et al (1999) and Alford et al (1997). Nor do the studies incorporate social development variables as independent variables.

Resmini (2000) analyzes FDI flows from the European Union into 10 Central and Eastern European countries for the period 1991-1995. She disaggregates manufacturing FDI according to the Pavitt taxonomy, which has four categories: Traditional industries (e.g. food and textiles), scale intensive industries (e.g. chemicals, machinery, transport equipment), high tech industries (pharmaceuticals, electronics, precision instruments, air- and space craft), and specialized suppliers. The latter category is essentially a

miscellaneous one, and since there are no significant associations between FDI in this category, and the explanatory variables used, it is not discussed further here.

The relationship between FDI in the former three categories, and purely economic variables is as follows. FDI in the traditional industries is affected by market size, openness to trade, and the size of the manufacturing base in the host country. In the scale intensive industries, market size increases FDI, while distance decreases FDI. The results for the high tech industries are something of a puzzle: While distance decreases FDI, and wage differentials between home and host countries increases FDI, as one would expect, market size and openness actually decrease FDI. The size of the manufacturing base in the host country also exhibit a significant relationship with investment in the high tech industries, but the sign varies across estimations. With the exception of high tech industries, Resmini thus confirms the importance of market size to manufacturing FDI found in survey studies. Moreover, the importance of labour costs in high tech industries such as electronics, is reaffirmed. In addition, distance and openness to trade emerge as important determinants of FDI flows.

Resmini uses one explanatory variable which to some extent captures certain aspects of social development. The Operations Risk Index (ORI) from Business Environment Risk Intelligence (BERI) is a composite index of 15 criteria, which assesses the business environment of a country. Among the 15 criteria are policy continuity, bureaucratic delays, and enforceability of contracts, all relevant from a social development point of view. The ORI index proves significant and positive for both scale intensive and high tech industries, which indicates that social development might affect investment in these industries positively. For the traditional industries, however, there is no significant association. However, since the ORI index also includes many factors not related to social development, it is hard to draw firm conclusions on the basis of these results.

The food industry

Three studies have been performed on the food processing industry. Two of these studies analyze several industries, of which the food industry is one. The first of these is the study by McCorriston and Sheldon (1998), already mentioned above. The second is a study by Xing and Kolstad (2002), which examines US capital outflows to 22 countries in six industries, one of which is food processing. The results for the other industries are presented under the appropriate headings. Finally, Gopinath et al (1999) is dedicated to the analysis of the food industry only, studying US FDI into ten developed countries, 1982-94. Relevant variables used in the three studies are summarized in the below table.

Table 3. Econometric results for the food industry

Food industry			
Independent variable	**Positive**	**Negative**	**Insignificant**
GNP/cap	Gopinath et al (1999)		
GDP/cap			Xing and Kolstad (2002)
Wages		Gopinath et al (1999)	
Exchange rate		Gopinath et al (1999), McCorriston and Sheldon (1998)	
Food producer subsidies			Gopinath et al (1999)
Relative stock prices			McCorriston and Sheldon (1998)
Corporate income tax			Xing and Kolstad (2002)
Environmental regulations			Xing and Kolstad (2002)

The results on market size (measured as GNP or GDP per capita) are conflicting, with one study saying FDI is attracted by it, and another that is inconsequential. One study suggests that lower wages brings more FDI in the food industry. Two studies also find host country currency appreciations to deter FDI. A final four variables are found insignificant: Food producer subsidies, relative stock prices, corporate income tax, and environmental regulations. None of the three studies include social development variables.

The chemical industry

McCorriston and Sheldon (1998) and Xing and Kolstad (2002) also provide results for the chemical industry. The latter study finds market size to be insignificant for FDI in this industry, which contradicts the results of Kreinin et al (1999) and Resmini (2000). Exchange rates and corporate income tax are also found insignificant for this industry. McCorriston and Sheldon do, however, find relative stock prices to matter for acquisitions in this industry. And Xing and Kolstad (2002) finds a negative relation between environmental regulations and FDI in chemicals, which they explain by high pollution control costs in this industry. As already indicated, no social development variables are examined by the two studies.

Table 4. Econometric results for the chemical industry

Chemicals			
Independent variable	Positive	Negative	Insignificant
GDP/cap			Xing and Kolstad (2002)
Exchange rate			McCorriston and Sheldon (1998)
Relative stock prices	McCorriston and Sheldon (1998)		
Corporate income tax			Xing and Kolstad (2002)
Environmental regulations		Xing and Kolstad (2002)	

Rubber and plastic products: The tire manufacturing industry

The only study of the rubber industry actually focuses on a sub-category thereof; the tire manufacturing industry. Ito and Rose (2002) analyze data on FDI activities by a limited number of tire manufacturers in 54 host countries, 1982-1992. As the below table reveals, market size (as measured by GDP) has a positive association with FDI in tire manufacturing, whereas distance to the home market is negative for FDI. This is consistent with the results of Resmini (2000) on scale intensive industries. Two more variables are insignificant, political risk and the tax rate of the host country. The political risk index used is the credit rating from Institutional Investors, which to a large extent is based on economic variables. The index used thus to a very limited degree reflects social development.

Table 5. Econometric results for tire manufacturing

Tire manufacturing			
Independent variable	Positive	Negative	Insignificant
GDP	Ito and Rose (2002)		
Air distance home-host		Ito and Rose (2002)	
Tax rate			Ito and Rose (2002)
Political risk			Ito and Rose (2002)

Metals and metal products

McCorriston and Sheldon (1998) and Xing and Kolstad (2002) both study the determinants of FDI in metal manufacturing. However, while the former examines fabricated metals, the latter focuses on primary metals. The below table nevertheless summarizes the results from both studies. Again, Xing and Kolstad find FDI to be unaffected by market size, contrary to Kreinin et al

(1999). They also find corporate income taxes and environmental regulations insignificant. McCorriston and Sheldon, on the other hand, find acquisitions in the industry to be affected positively by increases in home country stock prices, and negatively affected by host country currency appreciations. As before, no social development variables have been studied for this industry group.

Table 6. Econometric results for metals and metal products

Metals			
Independent variable	Positive	Negative	Insignificant
GDP/cap			Xing and Kolstad (2002)
Exchange rate		McCorriston and Sheldon (1998)	
Relative stock prices	McCorriston and Sheldon (1998)		
Corporate income tax			Xing and Kolstad (2002)
Environmental regulations			Xing and Kolstad (2002)

Machinery

The two available studies on the machinery industry are also by McCorriston and Sheldon (1998) and Xing and Kolstad (2002). The below table reveals that the two studies have relatively little to say on the determinants of FDI in this industry. All five explanatory variables, none of which reflects social development, prove insignificant.

Table 7. Econometric results for the machinery industry

Machinery			
Independent variable	Positive	Negative	Insignificant
GDP/cap			Xing and Kolstad (2002)
Exchange rate			McCorriston and Sheldon (1998)
Relative stock prices			McCorriston and Sheldon (1998)
Corporate income tax			Xing and Kolstad (2002)
Environmental regulations			Xing and Kolstad (2002)

Electrical and electronic equipment

Of the two studies on electrical and electronic equipment, one is by Xing and Kolstad (2002). The other is a study by Kogut and Chang (1996) on Japanese investment in the United States, 1976-89. As for the other industries they study, Xing and Kolstad fail to find market size significant for FDI in this industry. They also find environmental regulations insignificant. They do, however, find investment to be higher in countries with higher corporate taxes, which they dismiss as counter-intuitive, though it might be the flip side of greater investment in human capital. The only host country determinant included in the study by Kogut and Chang, exchange rates, has a negative association with FDI, meaning that a host country currency appreciation decreases FDI in the electronics industry. Neither of the two available studies discuss social development variables.

Table 8. Econometric results for electrical and electronics equipment

Electronics			
Independent variable	**Positive**	**Negative**	**Insignificant**
GDP/cap			Xing and Kolstad (2002)
Exchange rate		Kogut and Chang (1996)	
Corporate income tax	Xing and Kolstad (2002)		
Environmental regulations			Xing and Kolstad (2002)

Transportation equipment

The final secondary category for which there are econometric results available is that of transportation equipment. Once more, Xing and Kolstad (2002) provide results for this category. In addition, a study by Co (1997) looks solely at investment in the automobile industry, by Japanese firms in the US 1974-92. The results of the two studies, summarized below, are not very informative. Market size (measured by GDP per capita and disposable income per capita) is insignificant, as are exchange rates, interest rates, taxes, and environmental regulations. Co includes a variable reflecting labour standards, but this also turns out insignificant.

Table 9. Econometric results for transportation equipment

Transportation equipment			
Independent variable	Positive	Negative	Insignificant
GDP/cap			Xing and Kolstad (2002)
Disposable income/capita			Co (1997)
Exchange rate			Co (1997)
Automobile financing interest rate			Co (1997)
Corporate income tax			Xing and Kolstad (2002)
US 1986 tax reform dummy			Co (1997)
Environmental regulations			Xing and Kolstad (2002), Co (1997)
Labour standards			Co (1997)

Econometric studies of FDI in the tertiary industries

The available econometric studies of service industries, are all of financial industries. Their scope and design differ, however. Yamori (1998) analyzes Japanese finance industry FDI flows into 39 countries 1990-94. Miller and Parkhe (1998) study the determinants of US banks' asset in 32 countries. And, finally, Moshiran (1997) examines determinants of FDI stocks in the US insurance industry, using time series data. Though these studies might be difficult to compare, examining different sections of the financial industry, and using very different dependent variables, for ease of exposition we summarize their results in table 10.

Market size is suggested as an important determinant of finance sector FDI, by both Yamori (1998) and Moshiran (1997), using GNP per capita and wealth as proxies for market size. Miller and Parkhe (1998) find a similar result for the banking sector, where host countries with a greater sum of deposits get more banking FDI. Market growth, however, appears to have a negative impact on FDI, as judged by the negative relationship between GNP change and FDI found by Yamori. There are conflicting results on how the level of trade with the home country affects FDI, and Moshiran finds a negative impact of the host country level of trade on FDI. Contrary to the findings for some manufacturing sectors, Moshiran finds a host country currency appreciation to increase FDI in the insurance industry. He also finds a higher rate of return to attract FDI, whereas wages have no effect. All three studies cited in the table 10 see a positive impact of total FDI or FDI in the manufacturing sector, on FDI in the financial industries, suggesting that financial firms follow their clients abroad.[5] Finally, Yamori gets conflicting

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[5] In earlier studies, Nigh et al (1986), Sabi (1988), and Goldberg and Johnson (1990) all find FDI in finance to be affected positively by total FDI flows. Goldberg and Johnson (1990) also confirm the importance of market size for finance industry FDI. Cf. Yamori (1998).

results for the country risk index from Euromoney. As economic variables comprise 75% of this index, it reflects social development only to a very limited degree, which makes it hard to draw any meaningful conclusions from the results on this variable.

Table 10. Econometric results for financial services

Finance			
Independent variable	**Positive**	**Negative**	**Insignificant**
GNP/cap	Yamori (1998)		
Wealth	Moshiran (1997)		
Long run change GNP		Yamori (1998)	
M2/GNP			Yamori (1998)
Trade with home country	Yamori (1998)	Miller and Parkhe (1998)	
Trade (host country)		Moshiran (1997)	
Exchange rate change			Yamori (1998)
Exchange rates	Moshiran (1997)		
Real interest rate			Yamori (1998)
Rate of return	Moshiran (1997)		
Wages			Moshiran (1997)
FDI	Miller and Parkhe (1998)		
FDI manufacturing	Yamori (1998)		
Stock FDI manufacturing	Moshiran (1997)		
Stock FDI in banking		Moshiran (1997)	
Country risk	Yamori (1998)		Yamori (1998)

Summary

Studies of aggregate FDI flows suggest that there is a relationship between FDI and social development variables such as socio-political stability, institutional quality, democracy, and labour standards. However, from the studies performed on industry level FDI, there is very little to learn about social development and FDI. Resmini (2000) finds that an aggregate index of operations risk has a significant association with FDI in scale intensive and high tech secondary industries. This index includes components such as policy continuity, bureaucratic delays, and enforceability of contracts, but also many components that do not reflect social development, so the results are hard to interpret. Of the studies on individual secondary industries, Co (1997) finds labour standards to be unimportant for FDI in the automobile industry, while Ito and Rose (2002) find a country risk index to be insignificant for FDI in the tire manufacturing industry. In the tertiary industries, Yamori (1998) gets inconclusive results on the relationship between a country risk index and FDI in the finance industry. The country risk indices used in the latter two studies are only weakly related to social development variables. So if we accept that there is some relationship between social development and aggregate FDI, very little work has been done to track this relationship in industry level FDI data.

Though the reviewed studies say little about social development, they provide some information on the economic determinants of FDI in different industries, which is valuable to the choice of control variables in further analysis. In the primary industries, the available information is extremely limited. Existing studies of the agricultural industry suggest that access to natural resources, tariffs and labour costs might be important determinants of FDI. Unfortunately, systematic studies of the determinants of FDI in the mining, quarrying and petroleum industries are even more limited.

In the secondary industries, there is evidence suggesting that market size is an important determinant of FDI in manufacturing as a whole, and in broad industry categories. Exchange rates also seem to affect FDI in manufacturing. Openness to trade appears to influence foreign investment in traditional and high tech industries, while home-host distance affects FDI in scale intensive and high tech industries. In addition, labour costs appear to have an impact on FDI in high tech secondary industries.

The importance of some of these variables are confirmed by studies of individual secondary industries, and further variables added. Available results on the food industry, suggest market size, wages and exchange rates as important determinants. FDI in the chemical industries is affected by relative stock prices and environmental regulations. FDI in the tire manufacturing industry, a sub-category of rubber and plastic manufacturing, suggests that market size and distance is important. Foreign investment in metal production, varies with exchange rates and relative stock prices. In electronics, corporate taxes and exchange rates prove important. For the machinery and transportation equipment industries, all tested explanatory variables in the available studies were insignificant.

Finally, studies of FDI in the tertiary industries, are limited to the financial industries. Several studies confirm that market size is an important determinant of FDI in finance. There is also ample evidence that FDI in finance is positively associated with FDI in general or in manufacturing, suggesting that the financial industry follows it clients abroad. Moreover, exchange rates and rates of return might affect finance industry FDI. So might trade, but the results on this variable conflict.

3. An econometric analysis of the determinants of FDI flows by industry

Our data panel consists of 66 developed and developing countries over the period 1989 - 2000. We make use of UNCTAD's new database that contains information on FDI inflows disaggregated according to industry, and we employ 12 different indicators of social development. Five control variables are used in this study, where GDP, trade, inflation and economic growth are taken from the World Bank's Global Development Network Database, and we supplemented these with a year dummy.[6] In our choice of controls we were constrained by data availability, which means that some variables used in previous studies of industry level FDI are not included here. The country sample and descriptive statistics for the different variables are listed in appendix 3.

We take full advantage of the panel dimension of the data set. Thus, we are able to track how FDI flows are associated with changes in different social development variables over time, and not only within a country, but also between countries. Correcting for country-specific patterns of FDI flows is important in order to come up with some general policy recommendations that are valid across countries. Panel data sets also provide a larger set of observations as compared to time-series and cross-sectional data sets, and thereby increase the number of degrees of freedom as well as reducing multicollinearity in the regressions. Thus, the use of panel data sets improves the efficiency of econometric estimates.

We started out with the view that FDI is likely to contribute to development. However, since development implies that a large share of the population must have increased their welfare, we choose to evaluate FDI in per capita terms. Hence, the dependent variable in this study is gross FDI inflows per capita, which then also takes into account differences in country size. Based on previous empirical work, we tested out five control variables in our regressions; GDP growth as an indicator of investment opportunities, macroeconomic stability as indicated by inflation, market size as measured by GDP per capita, openness as reflected by the ratio of trade (exports + imports) to GDP, and we also included a variable to capture a possible time trend. Several of these control variables proved significant in different industries and are thus included in the respective regressions.

Table 11 gives an overview of the variables used in our analysis, and also their sources. In addition to the control variables, we have 12 variables that proxy various aspects of social development, one of which is taken from Freedom House and the other 11 from the Political Risk Services group / International Country Risk Guide (PRS-ICRG). Note that for the PRS-ICRG indices, a higher score implies better conditions, whereas on the Freedom House index, a lower score implies better conditions.

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[6] See http://www.worldbank.org/research/growth/GDNdata.htm

Table 11. Variables and sources of data

VARIABLE	SOURCE
Dependent variables	
Industry level foreign direct investment per capita (logged)	UNCTAD
Control variables	
Gross domestic product per capita (logged)	World Bank
Trade (Imports + exports) as % of GDP	World Bank
Inflation (logged)	World Bank
Growth in gross domestic product	World Bank
Time trend	
Social development indicators	
Civil liberties	Freedom House
Socio-economic conditions	PRS group ICRG
Corruption	PRS group ICRG
Democratic accountability	PRS group ICRG
Religious tensions	PRS group ICRG
Bureaucratic quality	PRS group ICRG
Ethnic tensions	PRS group ICRG
Law and order	PRS group ICRG
Internal conflict	PRS group ICRG
External conflict	PRS group ICRG
Government stability	PRS group ICRG
Military in politics	PRS group ICRG

The 12 social development indices capture the following. We use the civil liberties index of Freedom House, which assesses the extent to which citizens are free to develop views, form organisations and assert their autonomy from state intervention. Socio-economic conditions is a composite index which captures a whole range of issues from infant mortality and medical provision to housing, unemployment and interest rates. The corruption index measures perceived corruption in the political system.

The democratic accountability index of PRS-ICRG captures the degree to which a country has free and fair elections, but also takes into account whether elected governments are responsive to their electorate while in office. The PRS-ICRG index on religious tensions measures whether dominant religious groups seek to restrict civil liberties or political rights, and whether secessionist religious groups are present in a country.

The index of bureaucratic quality measures the strength of the bureaucracy in absorbing external shocks, and its independence from political pressure. The law and order index measures the degree to which there is a strong and impartial legal system, and whether laws are generally obeyed. The ethnic tensions index captures the degree of strife that can be attributed to racial, national or linguistic divisions, while the internal conflict index measures political violence.

The index of external conflict assesses the level of conflict with other countries, and captures aspects ranging from trade restrictions and embargos to political disputes, armed threats and war. Government stability measures the ability of governments to implement its policies, and its chance to remain in office. Finally, the military in politics index captures the risk or reality of a military regime (PRS group, 1998).

Since we only have data for investment that is actually carried out, we are not able to bring into the analysis investment that never took place due to the factors we are studying here. Our guess is, for example, that fierce internal conflicts would induce some investors to avoid a particular country. So if all investors go to other countries because of the conflict, then there will be no FDI observations for the country with large conflicts and the relationship will be grossly underestimated. Another issue is that data on separate industries seems to require a rather advanced level of data collection. Our dataset contains countries that have the ability to manage the disaggregated figures, and hence is skewed towards richer countries.

Determinants of FDI flows in the primary industries

Using FDI in the primary industries as the dependent variable, we ran a series of regressions testing the impact of the social development variables listed in table 11. The results of these estimations are summarized in table 12.[7] As it turns out, the only social development variable to be significantly correlated with FDI in the primary industries, is ethnic tensions. This implies that several of the variables found to matter for aggregate FDI flows, have no impact on FDI in the primary industries. For instance, while aggregate studies suggest that democratization seems to increase the total FDI inflows, our results indicate that improvements in accountability do not tend to increase FDI flows in the primary sector.

For the ethnic tensions variable, we find a large and highly significant (1 %) positive relationship with primary sector FDI, which implies that greater ethnic tensions are correlated with increases in FDI inflows. This result is robust to the inclusion of other explanatory variables in different combinations, and is sustained both if we look at changes in ethnic tensions within and across countries. We supplemented the fixed effect estimation with OLS regressions to see how the levels co-vary when we do not control for country-specific characteristics. The significance of ethnic tensions is sustained; countries with higher levels of ethnic tensions tend to have higher levels of FDI flows.

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[7] For ease of exposition, we summarize the results from our econometric analyses in tables of the below kind, relegating the exact results to appendix 2.

Table 12. Regression results of fixed effects estimation for the primary sector. Dependent variable: log (FDI per capita)

Primary industries			
Independent variables	Positive	Negative	Insignificant
GDP growth	X		
Year	X		
Log GDP			X
Log inflation			X
Democratic accountability			X
Ethnic tensions		X	
Ethnic tensions, lagged values			X
Ethnic tensions, excluding Tunisia			X
Civil liberties			X
Law and order			X
Internal conflict			X
Bureaucratic quality			X
Corruption			X
Socio economic conditions			X
Military in politics			X
Religion in politics			X
External conflict			X
Government stability			X

The result that increased ethnic tensions within a country seem to move in tandem with larger inflows of FDI to this country is something of a puzzle. In order to investigate this result in more detail, we disaggregate FDI to the primary sector into two main constituents; extractive industry investment and agricultural investment. The former category consists of FDI that flows towards mining, quarrying and petroleum, and accounts for 95 % of the foreign direct investment in the primary sector. The agricultural category, whose share of FDI to the primary sector is only 3 %, contains investment in agriculture, hunting, fishing and forestry.

It is interesting to note that while ethnic tensions is positively correlated with FDI flows into mining, we do not find any relationship between this variable and FDI flows into agriculture. The result suggesting that more ethnic tensions seem to increase FDI inflows into the extractive industries is highly significant (1 %) and robust to the econometric specification. Is it possible that investors in the extractive industries can take advantage of ethnic tensions in the struggle to extract valuable resources like oil and minerals? If this is the case, why do we not see a similar pattern in agriculture?

One hypothesis is that where there are greater ethnic tensions, the government may be in more dire need of revenue. This could stem from the possibility that it is harder to continue in office where there is ethnic rivalry; where each ethnic group struggles for power, more resources are needed to secure re-election. Alternatively, if a government sees a low probability of being re-elected, it may be in a rush to implement its policies while in office, or it might want to appropriate some of the resources for the benefit of its own

constituency. Another reason why we would expect more ethnic tensions to spur the government to generate more revenue is that it is costly to patch up social rifts of this kind.

In any case, a more needy government implies that the multinational companies know that there is a greater possibility of keeping a larger share of the surplus, than with a government that is not in a strained situation. Hence, a stronger bargaining position for these companies might increase their investment in a country. This could also explain why we do not have a similar association between ethnic tensions and agricultural investment. If there are less possibilities for a government to tax investment in agriculture, due to e.g. lower margins (or mobile capital), then there may not be much to bargain about in the first place. If this is the case, then ethnic tensions should not influence FDI to these sectors.

We will return to these questions in subsequent sections, but note also another hypothesis. It may be that FDI in the extractive industries and ethnic tensions are linked by nothing more than a common cause, such as the presence of a valuable resource. The idea that natural resources create rent-seeking and turbulence is a familiar one known as the "resource curse", and investment in extraction certainly requires an object of extraction. If this is the case, we are talking correlation rather than causation. It is, however, also possible that foreign investment in the extractive industries might intensity ethnic rivalries for a share of the surplus. Thus, causality might run in the other direction as compared to the above hypothesis.

Fortunately, the panel structure of the data enables us to test the direction of the relationship. If ethnic tensions influence the investment decisions, then we would expect that lagged values of ethnic tensions would be significant explanatory variables of current FDI. Four different lags were tested out, ranging from the ethnic tensions in the previous year to the level of ethnic tensions four years earlier. The lagged variables are highly correlated with each other, so, in order to avoid multicollinearity, each lagged variable was entered into the regressions individually. This approach results in insignificant coefficients for all the lagged ethnic tension variables in this sector, both in OLS and fixed effect estimation (see table 22). Note that increases in ethnic tensions last year is significantly correlated with contemporary increases in FDI in the primary sector, but this result is not robust to the inclusion of other variables. Thus, the hypothesis that increased ethnic tensions result in more FDI is not supported by these results.

We also tested whether specific patterns in certain countries could be the source of the correlation between contemporary increases in ethnic tensions and FDI flows. It is interesting to note that the fixed effect results for FDI to the primary sector are dependent on Tunisia being in the sample. Excluding this country renders ethnic tensions insignificant in these regressions, including all specifications with lags. The above results are thus extremely sensitive to changes in the country sample.

Nevertheless, the OLS estimation still yields a significant relationship between ethnic tensions and FDI to the primary sector. This result is sustained even if Tunisia is dropped, but this country continues to impact the level of significance of this variable. This implies that countries that have high levels of ethnic tensions also have a high inflow of FDI to the primary sector. However, none of the lagged values of ethnic tensions are significant in the OLS estimation. Again, this can be taken in disfavour of the view that ethnic tensions influence the investment decisions of multinationals in this sector.

Determinants of FDI flows in the secondary industries

It is interesting to note that while improvements in democratic accountability do not have any impact on FDI flows to the primary sector, we find that democratization would decrease the inflow of FDI to the secondary sector (table 13). Moreover, democratic accountability is highly significant (at the 1 % level) in this sector, and is robust to the inclusion and exclusion of other variables. Similarly, the results on the civil liberties index, affirm the negative association between democratization and FDI in the secondary industries. This may indicate that the creation of pressure groups, freedom of the press and the opportunity to participate in decision-making may actually be a discouraging factor to potential foreign investors in the secondary sector.[8]

One possible reason why this pattern does not show up in the primary sector could be that it is often the more educated who participate in democratic decision-making. If this is the case, it might imply that democratization will work to improve the working conditions and increase salaries of the more educated. This, in turn, will reduce the profits more in the secondary industries than in the primary industries since the share of educated domestic workers are higher in the former sector. Further, if there is unemployment in the unskilled rural segment, this will imply that unionizing and the creation of pressure groups may not increase the labourers' bargaining position in any substantial way in the primary sector. From the companies' point of view, then, there will be less of a negative impact from improvements in democratic accountability in this sector, and this is expressed through the lack of correlation between democratic accountability and FDI in the primary industries.

When we look at the other social development variables in question, it is evident that there is a sharp contrast between the primary and the secondary sector. We are able to explain a much larger share of the variance in the FDI flows to secondary sector (34 % compared to 19 % in the primary sector), and several social development variables are found to be significantly correlated with FDI in this sector. Traditional strategies for industrialisation and development have highlighted the importance of increased investment in

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[8] There is little variation in the democratic accountability variable within countries, so we also used random effect (R.E.) estimation to look at averages across countries. The R.E. estimation is not rejected according to a standard Hausman test, so both approaches are valid. It turns out that democratic accountability does not show up as significant in the R.E. estimation, which implies that after correcting for individual country specific effects there seems to be no relationship between changes in accountability across countries and FDI flows.

the secondary sector. Our results indicate that governments have a set of tools for attracting FDI to the manufacturing sector if they focus on social development.

Table 13. Regression results of fixed effects estimation for the secondary sector. Dependent variable: log (FDI per capita)

Secondary industries			
Explanatory variables	**Positive**	**Negative**	**Insignificant**
GDP growth			X
Year	X		
Log GDP			X
Log inflation			X
Democratic accountability		X	
Ethnic tensions		X	
Ethnic tensions, lagged values 1-2 years			X
Ethnic tensions, lagged values 3-4 years		X	
Ethnic tensions, excluding Tunisia			X
Ethnic tensions, excluding Tunisia Lagged values 1-2 years			X
Ethnic tensions, excluding Tunisia Lagged values 3-4 years		X	
Ethnic tensions, excluding Tunisia, Philippines and Vietnam Lagged values 3-4 years			X
Civil liberties	X		
Law and order	X		
Internal conflict	X		
Bureaucratic quality			X
Corruption			X
Socio economic conditions			X
Military in politics			X
Religion in politics			X
External conflict			X
Government stability			X

Law and order and internal conflict are highly significant (1%) and robust, and have the expected correlation. Thus, a society that improves its legal framework, or reduces political conflicts will tend to have greater FDI flows to the secondary sector.

One explanation of why these factors are not important in the primary sector may be that this sector is dominated by mining and petroleum activities, which are highly capital intensive. We would expect that industries that rely heavily on a healthy and educated labour force would be more sensitive to factors that secure the workers, compared to industries where they need few workers. Few workers, much capital and large margins give the opportunity for private finance of security, as is evident in the oil industry. It may be much more costly for a manufacturing firm to finance security for a large local work force than for an oil company to make sure that their few foreign experts are safe.

For the secondary sector, however, we also find a significant relationship between changes in ethnic tensions and changes in FDI flows within countries. Here, the fixed effect estimation yields less significant (5%) estimates between countries compared to the primary sector, but continues to be significant at the 1 % level for changes in ethnic tensions within countries. So, as in the primary sector, more ethnic tensions appear to be associated with higher FDI flows in the secondary sector. In order to track the source of this correlation, we disaggregated the FDI flows into sub sectors with different labour, capital and knowledge requirements. Table 20 (appendix 2) shows the results for the food and beverages and the textile industry, both of which are typically labour intensive, together with the results for chemicals, which represents the capital-intensive industries, and electronics, which is more advanced in terms of personnel skills and technology.

The dividing line seems to run between labour intensive industries on the one hand, and the rest of the industries on the other hand. We find no evidence of any impact of ethnic tensions on FDI for typical labour intensive industries, like the food and beverages industry and the textile industry. Moreover, there is some evidence of a significant relationship between ethnic tensions and FDI for chemicals and electronics, which seems to be the source of the correlation we found for the secondary industries.

This result is consistent with the hypothesis spelled out in the previous section, that industries that have high margins, and/or that are easy targets for taxation (e.g. due to immobility), may attain a better bargaining position in fractionalized societies. The chemical and electronics industries are capital and skill intensive industries that may find it harder to relocate than industries primarily using unskilled labour such as the textile industry, and margins are likely higher in the former two than in the latter. The former industries could thus be more favourably taxed in ethnically divided societies than elsewhere, which makes societies of this kind more attractive investment locations.

Turning to the lagged variable approach, the results differ from those obtained for the primary sector. We find that increased ethnic tensions three and four years earlier will tend to increase contemporary FDI flows to the secondary sector, even if we exclude Tunisia. This result supports the view that ethnic tensions seem to influence the foreign direct investment decisions of multinational companies.

To check whether some countries have a disproportionate impact on the results, we excluded Tunisia from the sample and then ran fixed effect estimation where one other country was excluded. Repeating this procedure for all countries reveals that two additional countries have a large impact on the significance of the three- and four-year lagged variables. Excluding Tunisia and the Philippines or Tunisia and Vietnam from the sample lowers the significance of the three-year lagged variable from 1 % to 10 %. Excluding all three countries makes the ethnic tensions variable insignificant. The four-year lag dropped from 1 % to 10 % when Tunisia and the Philippines were

excluded, while it became insignificant upon the exclusion of Tunisia and Vietnam and of all three countries.

Running OLS on the full sample, with and without lags, and checking for disproportionate influence from certain countries, reveals a significant relationship opposite in sign from the initial fixed effect estimations. Across countries, then, more ethnic tensions appear to be associated with less FDI in the secondary sector. Since the fixed effect estimations take country specific characteristics into account, whereas OLS does not, the estimated OLS coefficients might reflect some unobserved country characteristic. The differences in results might also stem from the fact that fixed effect estimations are based on changes in the variables, whereas OLS is based on their levels.

Even if our results do not reject the hypothesis that more ethnic tensions may induce foreign investors to take advantage of the situation in particular countries and thus increase their investment, further research is needed. In particular, it seems warranted to inquire deeper into the pattern that emerges for Tunisia, Philippines and Vietnam by conducting a qualitative study of the relationship between ethnic tensions and FDI in these countries.

Determinants of FDI flows in the tertiary industries

First, it is very interesting to note that changes in democratic accountability seem to be positively correlated with FDI to the tertiary sector, which suggests that democratization tends to increase FDI to this sector (table 14). Bearing in mind that democratization is negatively correlated with FDI to the secondary sector, and that the coefficients in both regressions are of similar size, we have the explanation of why this variable is not significant in our overall sample. Thus, the result from aggregated FDI studies that democratization is associated with more FDI probably conceals a more subtle relationship, namely that FDI to the secondary sector may be negatively affected by democratization and improvements in people's rights, while there is the opposite relationship in the tertiary sector. This is important for policymakers because the industry structure will indicate whether one can use democratization as an instrument in attracting FDI.

So if our results capture a causal relationship where more empowered people make a better work force that in turn attracts more FDI to the tertiary sector, this implies that it would be more profitable to start the democratization and liberation process in the areas of the country that offers opportunities for that particular type of investment. Moreover, governments that solely focus on the primary or secondary sector to attract FDI, or where there for some reason or another are poor opportunities for FDI in the tertiary sector, there seems to be no such extra benefits from democratization. Hence, one should promote other dimensions of social development in addition to traditional variables in order to attract FDI.

Table 14. Regression results of fixed effects estimation for the tertiary sector. Dependent variable: log (FDI per capita)

Tertiary industries			
Explanatory variables	**Positive**	**Negative**	**Insignificant**
GDP growth	X		
Year	X		
Log GDP	X		
Log inflation			X
Democratic accountability	X		
Ethnic tensions		X	
Ethnic tensions Lagged values, 1-4 years			X
Civil liberties			X
Law and order	X		
Internal conflict			X
Bureaucratic quality			X
Corruption		X	
Socio economic conditions	X		
Military in politics			X
Religion in politics			X
External conflict			X
Government stability			X

In contrast to the findings from the primary sector, but in line with the results from the secondary sector, our estimates suggest that law and order may play a role in attracting FDI to the tertiary sector. Moreover, the coefficients of the law and order variable seem of a similar magnitude in both the secondary and tertiary sectors, which implies that there will be a similar inflow of FDI in both sectors from an improvement in the legal framework. The result is very robust in the sense that it remains significant at the 1 percent level in both sectors no matter which of the other variables we enter into the regression.

Based on the finding that internal conflicts are negatively related to FDI flows to the secondary sector, it is interesting to note that the same factor is unrelated to the flows to the tertiary sector. Hence, reductions in the conflict level of a society will increase FDI flows in the secondary sector but will have no impact on the aggregated flows in the tertiary sector. Disaggregating into sub-industries reveals that a plausible explanation for this pattern could stem from investors' apprehension of having plants, factories or other less mobile assets damaged in conflicts. We find a highly significant relationship in the chemicals and electronics industries, while there is no relationship in textiles and only a weak relationship in food and beverages. However, we also find that the aggregated analysis of the tertiary sector, where no relationship was found between internal conflicts and FDI, actually conceals that there is a highly significant negative impact on FDI in the trade industry.

Corruption enters significantly only in the tertiary industry regressions, and more corruption is associated with larger inflows of FDI. This is quite surprising for two reasons. First, we expected that corruption would primarily affect FDI in the extractive primary industries. Second, we would expect

increased corruption to decrease foreign investment. Investigating the disaggregated figures for the tertiary sector reveals that among the four largest sub-industries, which account for 85 % of FDI to this sector, it is only in trade that corruption is significant (tables 20-21 in appendix 2). Hence, it seems corruption can function as an instrument to elude trade regulations. However, it is an open question whether FDI in the trade industry increases corruption, or whether increasing corruption attracts more FDI.

We find FDI in the tertiary industries to be positively correlated with socio-economic conditions. Since this is a composite variable, however, it is difficult to explain the exact mechanism behind this result.

Recall the initial result that increased ethnic tensions indicated that more FDI would flow to the primary and secondary sectors. The same result is found for the tertiary sector. However, disaggregating the tertiary sector reveals that among the four largest industries, it is only in the trade sector that this result is sustained. We do not find any relationship between ethnic tensions and foreign investment in transport, business or finance. However, these results do not shed light on our hypothesis regarding the association between ethnic tensions and FDI because it is difficult to evaluate the mobility and profitability in these industries.

Turning to the investigation of the lagged values of ethnic tensions, note that we only report the results from using one year lag (table 22) in the tertiary sector. None of the lags were significant in the fixed effect estimation, which indicates that previous increases in ethnic tensions in a country do not change the contemporary FDI flows in the tertiary sector in a country. A pattern of country dependence similar to what we found in the two other sectors is also present here. The significant relationship between increases in ethnic tensions and increased FDI flows to this sector hinges on the inclusion of Tunisia. There is, however, less influence from including the Philippines in the sample, and Vietnam does not alter the results. Note also that OLS estimation yields a positive and significant relationship between all four lags and inflows of FDI to the tertiary sector when entered individually into the same specifications as reported above. Thus, countries with higher levels of ethnic tensions have lower inflows of FDI, which again might reflect country specific characteristics.

4. Concluding remarks

In the literature on the determinants of foreign direct investment, very little work has been done on the topic of social development and industry level FDI. In this report, we conduct an econometric study which suggests that there are important sectoral differences in the relationship between social development variables and FDI. In addition, this study complements aggregate FDI studies in important ways, by casting doubt on some aggregate results, providing more nuance to others, and by identifying relationships not uncovered by aggregate studies.

Democratic accountability is negatively associated with FDI in the secondary industries, and positively associated with FDI in the tertiary industries. This suggests that the relationship between democratization and FDI is a more complex one than suggested by aggregate studies. Given the trend towards more service sector FDI in recent years, democratization becomes an important variable to consider. Moreover, in high tech secondary industries such as electronics, reputed to have substantial spillover effects on host country economies, democratization in the form of civil liberties appears to increase FDI. In the primary sector, we find no evidence that foreign investors care about the level of democracy in host countries.

Law and order is associated with increases in FDI in the secondary and tertiary industries. Internal conflict appears to decrease FDI in the secondary sector. That these aspects of a stable and predictable business environment have an impact on investor behaviour is not all that surprising, nevertheless, aggregate FDI studies have provided very mixed evidence on law and order. Neither law and order nor internal conflict affect FDI in the primary sectors, which might reflect an ability to make private security arrangements in the extractive industries.

Corruption is only related to FDI in the tertiary industries, where a higher level of corruption attracts foreign investment. This relationship can be traced to the trade industry, and might thus be explained by the frequency with which this industry encounters bureaucratic obstacles. Reverse causation is also a possibility; higher investment activity in certain sectors might lead to a higher perceived level of corruption. With reference to the South East Asian economies, an argument has been made that corruption can actually be compatible with economic development (Khan, forthcoming). There are however, many attendant risks to a strategy of corruption tolerance, which make it an unattractive development strategy (Fjeldstad and Tungodden, 2003).

We find increased ethnic tensions to be associated with increases in foreign direct investment flows, which runs contrary to some aggregate studies (Kolstad and Tøndel, 2002). This result is not a robust relationship in that it depends on the inclusion of three countries in our sample (Tunisia, Vietnam and Philippines). We have suggested that the observed pattern might be due to shifts in relative bargaining power between foreign investors and host country

governments, a hypothesis that is not falsified by our results from lagged values of the ethnic tensions index in the secondary sector. However, to reveal whether there exists a causal relationship running from increased ethnic tensions to increased inflows of FDI in some countries as suggested in this study, it would be beneficial to probe deeper into this pattern by implementing qualitative country studies of Tunisia, the Philippines and Vietnam.

As emphasised above, many of the findings of this study require additional analysis in order to establish the mechanisms behind them. Further econometric analysis of the industry level data we have used here will no doubt turn up yet more interesting insights, than the ones we have been able to incorporate into this study. Moreover, one might consider using case study techniques to examine more closely the specific mechanisms through which social development variables affect investment. As in other studies of the kind conducted here, certain methodological problems emerge. As noted several times in the interpretation of results, the question of causation is often an open one. Furthermore, the robustness of the findings should be examined using different data sources, sets of explanatory variables, and estimation techniques.

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Appendix 1: Industry classifications

Table 15. UNCTAD industrial classification, ISIC correspondence

UNCTAD industrial classification	ISIC categories included
Primary	
Agriculture, hunting, forestry and fishing	01, 02, 05
Mining, quarrying and petroleum	10,11,12,13,14
Secondary	
Food, beverages and tobacco	15,16
Textiles, clothing and leather	17,18,19
Wood and wood products	20,21
Publishing, printing and reproduction of recorded media	22
Coke, petroleum products and nuclear fuel	23
Chemicals and chemical products	24
Rubber and plastic products	25
Non-metallic mineral products	26
Metal and metal products	27,28
Machinery and equipment	29
Electrical and electronic equipment	30,31,32
Precision instruments	33
Motor vehicles and other transport equipment	34,35
Other manufacturing	36
Recycling	37
Tertiary	
Electricity, gas and water	40,41
Construction	45
Trade	50,51,52
Hotels and restaurants	55
Transport, storage and communications	60,61,62,63,64
Finance	65,66,67
Business activities	70,71,72,73,74
Public administration and defense	75
Education	80
Health and social services	85
Community, social and personal service activities	90,91,92
Other services	1120,93,95,99
Private buying and selling of property	
Unspecified	

Source: http://r0.unctad.org/en/subsites/dite/fdistats_files/WIDindustrial.htm

Appendix 2: Results from the econometric analysis

Table 16. Regression results of fixed effects estimation for the primary and secondary sectors. Dependent variable: log (FDI per capita)

Expl. Variables	Primary 1	Primary 2	Primary 3		Second. 1	Second. 2	Second. 3
GDP growth	0.051**	0.054**	0.050**		0.030***	0.025	0.023
	(0.024)	(0.025)	(0.025)		(0.020)	(0.020)	(0.020)
Year	0.179*	0.194*	0.0196*		0.157*	0.170*	0.165*
	(0.025)	(0.026)	(0.026)		(0.026)	(0.027)	(0.028)
Log GDP					0.697***	0.638	0.778***
					(0.427)	(0.449)	(0.460)
Log inflation							
Trade (in % of GDP)							
Infrastructure							
Democratic accountability		**-0.296****	**-0.209*****			**-0.212***	**-0.180*****
		(0.121)	**(0.124)**			**(0.096)**	**(0.099)**
Ethnic tensions			**-0.390***				**-0.151**
			(0.146)				**(0.114)**
Constant	-13.69*	-12.50*	-11.05*		-17.92*	-16.54*	-17.11*
	(0.21)	(0.54)	(0.76)		(3.45)	(3.67)	(3.69)
R^2 Within	0.15	0.17	0.19		0.19	0.21	0.21
Between	0.04	0.04	0.02		0.56	0.50	0.50
Overall	0.01	0.01	0.01		0.49	0.43	0.44
# obs.	388	370	370		463	440	440
# groups	58	54	54		66	61	61

* significant at 1 %, ** significant at 5 %, *** significant at 10%

Table 17. Regression results of fixed effects estimation for the primary and secondary sectors continued. Dependent variable: log (FDI per capita)

Expl. Variables	Primary 4	Primary 5	Primary 6	Second. 4	Second. 5	Second. 6	Second. 7
GDP growth	0.045***	0.051**	0.046***	0.025	0.021	0.021	0.019
	(0.024)	(0.025)	(0.025)	(0.0)	(0.020)	(0.021)	(0.021)
Year	0.172*	0.190*	0.0190*	0.152*	0.166*	0.151*	0.160*
	(0.026)	(0.027)	(0.027)	(0.026)	(0.028)	(0.027)	(0.028)
Log GDP				0.625	0.550	0.723	0.694
				(0.429)	(0.453)	(0.465)	(0.464)
Democratic accountab.		**-0.281****	**-0.190**		**-0.191****		**-0.157**
		(0.123)	**(0.126)**		**(0.097)**		**(0.100)**
Ethnic tensions			**-0.396***			**-0.200****	**-0.155**
			(0.147)			**(0.111)**	**(0.114)**
Civil liberties	**0.216**	**0.137**	**0.162**	**0.287****	**0.261****	**0.296****	**0.267****
	(0.180)	**(0.184)**	**(0.182)**	**(0.144)**	**(0.149)**	**(0.147)**	**(0.148)**
Constant	-14.22*	-12.90*	-11.50*	-18.05*	-16.55*	-17.90*	-17.15*
	(0.49)	(0.75)	(0.91)	(3.45)	(3.68)	(3.68)	(3.70)
R^2							
Within	0.15	0.17	0.19	0.20	0.21	0.21	0.22
Between	0.06	0.04	0.03	0.42	0.15	0.35	0.22
Overall	0.00	0.00	0.00	0.39	0.22	0.37	0.28
# obs.	387	369	369	459	436	436	436
# groups	58	54	54	65	60	60	60

* significant at 1 %, ** significant at 5 %, *** significant at 10%

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Table 18. Regression results of fixed effects estimation for the secondary sector continued. Dependent variable: log (FDI per capita)

Expl. Variables	Second. 7	Second. 8	Second. 9	Second. 10	Second. 11 R.E.	Second. 12 R.E.	Second. 13 R.E.
GDP growth	0.027	0.021	0.018	0.019		0.030	
	(0.019)	(0.019)	(0.019)	(0.019)		(0.019)	
Year	0.147*	0.128*	0.127*	0.131*	0.129*	0.129*	0.114*
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.021)	(0.021)
Log GDP							0.939*
							(0.153)
Log inflation							
Democratic accountab.	**-0.307***	**-0.221****	**-0.267***	**-0.234***	**-0.120**	**-0.114**	**-0.082**
	(0.094)	**(0.095)**	**(0.095)**	**(0.096)**	**(0.093)**	**(0.093)**	**(0.090)**
Ethnic tensions		**-0.419***	**-0.504***	**-0.503***	**-0.225****	**-0.221****	**-0.225****
		(0.115)	**(0.116)**	**(0.116)**	**(0.106)**	**(0.101)**	**(0.096)**
Civil liberties		**0.248****	**0.254****	**0.238****	**-0.159**	**-0.184****	**0.062**
		(0.140)	**(0.138)**	**(0.138)**	**(0.101)**	**(0.103)**	**(0.103)**
Law and order	**0.609***	**0.767***	**0.582***	**0.622***	**0.586***	**0.582***	**0.384***
	(0.108)	**(0.116)**	**(0.128)**	**(0.130)**	**(0.116)**	**(0.116)**	**(0.114)**
Internal conflict			**0.171***	**0.170***	**0.135***	**0.133***	**0.127***
			(0.053)	**(0.053)**	**(0.053)**	**(0.053)**	**(0.052)**
Bureaucratic quality				**-0.297****	**0.121**	**0.106**	**-0.297****
				(0.172)	**(0.142)**	**(0.143)**	**(0.153)**
Constant	-13.31*	-12.91*	-13.17*	-12.67*	-14.08*	-14.10*	-20.47*
	(0.54)	(0.70)	(0.69)	(0.75)	(0.70)	(0.70)	(1.21)
R^2							
Within	0.26	0.30	0.31	0.32	0.26	0.27	0.28
Between	0.15	0.00	0.00	0.03	0.40	0.41	0.57
Overall	0.22	0.07	0.04	0.01	0.38	0.38	0.50
# obs.	440	436	436	436	436	436	436
# groups	61	61	60	60	60	60	60

* significant at 1 %, ** significant at 5 %, *** significant at 10%

lgdp is dropped because of multicollinearity

R.E. : Random effects estimation

Table 19. Regression results of fixed effects estimation for the tertiary sector. Dependent variable: log (FDI per capita)

Expl. Variables	Tertiary 1	Tertiary 2	Tertiary 3	Tertiary 4	Tertiary 5	Tertiary 6	Tertiary 7 R.E.
GDP growth	0.035*	0.048*	0.049*	0.050*	0.046*	0.037**	0.032***
	(0.016)	(0.018)	(0.018)	(0.018)	(0.017)	(0.018)	(0.017)
Year	0.219*	0.200*	0.191*	0.189*	0.168*	0.171*	0.204*
	(0.022)	(0.024)	(0.024)	(0.024)	(0.025)	(0.025)	(0.020)
Log GDP	0.999*	1.521*	0.967**	1.083*	1.057**	1.084*	0.916*
	(0.371)	(0.411)	(0.440)	(0.445)	(0.439)	(0.436)	(0.144)
Democratic accountab.		**0.110**	**0.067**	**0.101**	**0.162***	**0.182**	**0.171**
		(0.088)	**(0.089)**	**(0.091)**	**(0.091)**	**(0.091)**	**(0.084)**
Ethnic tensions		**-0.176***	**-0.330***	**-0.334***	**-0.379***	**-0.343***	**-0.159***
		(0.100)	**(0.108)**	**(0.108)**	**(0.107)**	**(0.107)**	**(0.088)**
Civil liberties		**0.016**	**0.016**	**-0.002**	**-0.002**	**-0.003**	**-0.078**
		(0.131)	**(0.129)**	**(0.130)**	**(0.128)**	**(0.127)**	**(0.097)**
Law and order			**0.382***	**0.409***	**0.482***	**0.440***	**0.327***
			(0.119)	**(0.120)**	**(0.121)**	**(0.121)**	**(0.105)**
Internal conflict			**0.031**	**0.030**	**0.040**	**0.031**	**0.021**
			(0.050)	**(0.050)**	**(0.049)**	**(0.049)**	**(0.046)**
Bureaucratic quality				**-0.248**	**-0.140**	**-0.158**	**-0.320**
				(0.156)	**(0.157)**	**(0.156)**	**(0.138)**
Corruption					**-0.381***	**-0.369***	**-0.170***
					(0.114)	**(0.113)**	**(0.099)**
Socio-economic conditions						**0.113***	**0.128***
						(0.044)	**(0.042)**
Constant	-20.71*	-24.63*	-20.98*	-21.46*	-20.38*	-21.28*	-20.52*
	(2.99)	(3.28)	(3.43)	(3.44)	(3.40)	(3.40)	(1.13)
R^2 Within	0.39	0.40	0.43	0.43	0.45	0.46	0.44
Between	0.61	0.63	0.61	0.63	0.56	0.58	0.66
Overall	0.58	0.57	0.57	0.58	0.55	0.56	0.61
# obs.	492	450	450	450	450	450	450
# groups	67	60	60	60	60	60	60

*significant at 1 %, ** significant at 5 %, *** significant at 10%*

Table 20. Regression results of fixed effects estimation for specific industries in the primary, secondary and tertiary sectors. Dependent variable: log (FDI per capita)

Expl. Variables	Food and beverage.	Textiles	Chemicals	Electronics	Business	Finance
GDP growth	0.008	0.005	0.031	0.062	0.039	0.022
	(0.026)	(0.033)	(0.027)	(0.045)	(0.026)	(0.025)
Year	0.131*	0.059	0.080*	0.065	0.190*	0.211*
	(0.028)	(0.039)	(0.032)	(0.052)	(0.031)	(0.029)
Democratic accountab.	**-0.032**	**-0.015**	**-0.214**	**-0.177**	**0.266**	**-0.012**
	(0.141)	**(0.200)**	**(0.167)**	**(0.226)**	**(0.177)**	**(0.132)**
Ethnic tensions	**0.105**	**-0.503**	**-0.339*****	**-0.559****	**-0.036**	**-0.022**
	(0.183)	**(0.241)****	**(0.194)**	**(0.283)**	**(0.186)**	**(0.170)**
Civil liberties	**-0.305**	**-0.244**	**-0.181**	**-0.465**	**0.206**	**-0.278**
	(0.206)	**(0.254)**	**(0.220)**	**(0.357)**	**(0.221)**	**(0.204)**
Law and order	**-0.072**	**0.435**	**0.373*****	**0.377**	**-0.310**	**-0.143**
	(0.196)	**(0.278)**	**(0.204)**	**(0.320)**	**(0.217)**	**(0.197)**
Internal conflicts	**0.087**	**0.018**	**0.280***	**0.249****	**-0.018**	**0.090**
	(0.069)	**(0.096)**	**(0.076)**	**(0.113)**	**(0.081)**	**(0.066)**
Bureaucratic quality	**0.124**	**-0.205**	**0.280**	**-0.613**	**0.270**	**-0.204**
	(0.217)	**(0.299)**	**(0.231)**	**(0.485)**	**(0.260)**	**(0.208)**
Corruption	**0.089**	**-0.218**	**-0.235**	**-0.613**	**-0.033**	**0.230**
	(0.159)	**(0.199)**	**(0.158)**	**(0.485)**	**(0.199)**	**(0.155)**
Socio-economic conditions	**0.154****	**0.013**	**0.141****	**0.190*****	**0.293***	**0.154***
	(0.066)	**(0.081)**	**(0.071)**	**(0.100)**	**(0.071)**	**(0.061)**
Constant	-15.16*	-12.25*	-15.71*	-11.22*	-16.65*	-13.97*
	(1.20)	(1.60)	(1.30)	(2.01)	(1.73)	(1.22)
R^2						
Within	0.18	0.08	0.23	0.22	0.31	0.22
Between	0.47	0.04	0.19	0.26	0.12	0.51
Overall	0.37	0.04	0.08	0.15	0.11	0.34
# obs.	249	189	217	130	224	333
# groups	38	33	35	24	37	50

*significant at 1 %, ** significant at 5 %, *** significant at 10%*

R.E. : Random effects estimation

Table 21. Regression results of fixed effects estimation for specific industries in the primary, secondary and tertiary sectors continued. Dependent variable: log (FDI per capita)

Expl. Variables	Transport	Trade
GDP growth	0.067**	-0.002
	(0.035)	(0.017)
Year	0.402*	0.120*
	(0.043)	(0.020)
Democratic accountability	**0.139**	**0.252***
	(0.195)	**(0.102)**
Ethnic tensions	**-0.135**	**-0.530***
	(0.244)	**(0.120)**
Civil liberties	**0.217**	**-0.006**
	(0.255)	**(0.122)**
Law and order	**0.319**	**0.199**
	(0.275)	**(0.132)**
Internal conflict	**0.011**	**0.155***
	(0.093)	**(0.051)**
Bureaucratic quality	**-0.608***	**-0.051**
	(0.342)	**(0.163)**
Corruption	**-0.005**	**-0.242***
	(0.245)	**(0.112)**
Socio-economic conditions	**0.290***	**(0.060)**
	(0.091)	**(0.045)**
Constant	-18.12*	-13.11*
	(1.60)	(0.77)
R^2		
Within	0.39	0.30
Between	0.07	0.09
Overall	0.23	0.12
# obs.	315	356
# groups	50	50

* significant at 1 %, ** significant at 5 %, *** significant at 10%
R.E. : Random effects estimation

A Hausman test rejected the hypothesis that the fixed effects are uncorrelated with the regressors in the "food and beverages" regression. Hence, the results from the random effects estimation are biased, and therefore not shown.

Table 22. Including lagged variables: Regression results of fixed effects estimation for the primary, secondary and tertiary sectors. Dependent variable: log (FDI per capita).

We use fixed effect estimation as the main approach, but all of the specifications are also run with OLS. These estimates are not reported here, and note that several different specifications have been tested for all three sectors. The results from using a four year lag were not significant in any specification, and are not reported here.

Expl. Variables	Primary 1	Primary 2	Primary 3	Primary 4		Second. 1	Second. 2
GDP growth	0.050**	0.024	0.023	0.021		0.023	0.020
	(0.025)	(0.022)	(0.022)	(0.023)		(0.020)	(0.019)
Year	0.196*	0.172*	0.186*	0.183*		0.165*	0.166*
	(0.026)	(0.023)	(0.026)	(0.026)		(0.028)	(0.025)
Log GDP						0.778***	0.637
						(0.460)	(0.447)
Log inflation							
Trade (in % of GDP)							
Democratic accountability	**-0.209***	**-0.181***	**-0.134**	**-0.134**		**-0.180***	**-0.163***
	(0.124)	**(0.104)**	**(0.105)**	**(0.110)**		**(0.099)**	**(0.089)**
Ethnic tensions	**-0.390***					**-0.151**	
	(0.146)					**(0.114)**	
Ethnic Tensions, t-1		**-0.214***					**-0.127**
		(0.131)					**(0.111)**
Ethnic Tensions, t-2			**-0.139**				
			(0.129)				
Ethnic Tensions, t-3				**0.079**			
				(0.136)			
Constant	-11.05*	-11.71*	-12.39*	-13.40*		-17.11*	-16.10*
	(0.76)	(0.66)	(0.67)	(0.68)		(3.69)	(3.62)
R^2							
Within	0.19	0.17	0.16	0.15		0.21	0.21
Between	0.02	0.03	0.04	0.02		0.50	0.49
Overall	0.01	0.002	0.001	0.003		0.44	0.45
# obs.	370	346	320	300		440	412
# groups	54	53	51	51		61	60

*significant at 1 %, ** significant at 5 %, *** significant at 10%*

Table 22 continued

Expl. Variables	Second. 3	Second. 4		Tertiary
GDP growth	0.031**	0.028***		0.048*
	(0.014)	(0.015)		(0.016)
Year	0.137*	0.148*		0.204*
	(0.020)	(0.021)		(0.021)
Log GDP	0.568	0.464		1.093*
	(0.355)	(0.373)		(0.460)
Democratic accountability		**0.067**		**0.147***
		(0.074)		**(0.079)**
Ethnic tensions, t-1				**-0.131**
				(0.095)
Ethnic Tensions, t-3	**-0.140**	**-0.221***		
	(0.069)	**(0.089)**		
Civil liberties				**-0.080**
				(0.120)
Law and order				**0.171***
				(0.104)
Internal conflict	**-0.079**			**0.017**
	(0.086)			**(0.043)**
Bureaucratic quality				**-0.196**
				(0.133)
Constant	-16.21*	-15.11*		-21.56*
	(2.88)	(3.08)		(3.24)
R^2 Within	0.23	0.21		0.45
Between	0.62	0.48		0.68
Overall	0.58	0.47		0.63
# obs.	385	357		425
# groups	58	58		59

* significant at 1 %, ** significant at 5 %, *** significant at 10%

Appendix 3: List of countries and descriptive statistics

Our dataset contains 66 countries with at least two years of information on industry-level FDI flows and corresponding information on social development:

Argentina, Australia, Austria, Bangladesh, Bolivia, Brazil, Bulgaria, Canada, Cape Verde, Chile, China, Colombia, Costa Rica, Czech Republic, Denmark, Dominican Republic, Ecuador, El Salvador, Estonia, Finland, France, Germany, Guyana, Honduras, Hong Kong, China, Hungary, India, Indonesia, Ireland, Italy, Jamaica, Jordan, Kazakhstan, Kyrgyzstan, Lao People's Democratic Republic, Lithuania, Malaysia, Mauritius, Mexico, Morocco, Netherlands, Nicaragua, Norway, Oman, Pakistan, Paraguay, Peru, Philippines, Portugal, Republic of Korea, Russian Federation, Singapore, Spain, Sweden, Switzerland, TFYR of Macedonia, Thailand, Trinidad and Tobago, Tunisia, Turkey, United Kingdom, United States, Venezuela, Viet Nam, Zambia.

Table 23. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP growth	518	3.563622	3.682971	-12.6003	18.83041
Log GDP	519	8.419438	1.474179	4.957212	10.68371
Trade	483	78.53521	55.11911	5.20687	396.6755
Log inflation	432	1.777109	1.376728	-2.879301	8.920216
FDI to the primary sector	498	647.2604	2003.458	-2237.941	19943.57
-agriculture, hunting, forestry	368	27.24739	116.4642	-429.3015	1030
-mining, quarrying, petroleum	423	728.2711	2149.865	-2237.941	19929.17
FDI to the secondary sector	551	2792.438	10502.42	-5487.85	143274
-food, beverages, tobacco	323	315.8549	984.1931	-7249	7757
-textiles, clothing, leather	254	142.1313	539.7095	-584.4586	5940.115
-chemicals, chemical products	276	848.8422	2743.089	-5800	26196
-electrical and electronic equipment	161	1100.992	4117.307	-1864.737	38407
FDI to the tertiary sector	572	5047.701	16515.78	-3115.173	205728
-trade	468	834.0077	2451.528	-11218.89	19563
-transport	433	959.8477	5414.099	-4231.211	83319
-finance	445	1772.293	5382.835	-10894	64191
-business	299	2880.522	11393.63	-430.9505	169048.1
Democratic accountability	480	4.464583	1.463115	0	6
Ethnic tensions	480	4.741667	1.173798	1	6
Civil liberties	517	2.638298	1.510533	1	7
Law and order	480	4.510417	1.439053	1	6
Internal conflict	480	9.979167	2.245753	2	12
Bureaucratic quality	480	2.784375	1.102694	0	4
Corruption	480	3.90625	1.401447	0	6
Socio-econ. Conditions	480	6.297917	1.762754	1	11
Military in politics	480	4.472917	1.671103	0	6
Religion in politics	480	5.175	1.080574	1	6

Table 24. Correlation coefficients

	Total FDI	GDP growth	Log GDP	Trade	Log inflation	Democr. accounta	Ethnic tens.
Total FDI	1.0000						
GDP growth	-0.0194	1.0000					
Log GDP	0.7822	-0.0751	1.0000				
Trade	0.2184	0.2583	0.0546	1.0000			
Log inflation	-0.5369	-0.1746	-0.5814	-0.1441	1.0000		
Democratic accountab.	0.5386	-0.1887	0.6605	-0.1027	-0.3725	1.0000	
Ethnic tensions	0.4229	0.0000	0.4793	0.0872	-0.2094	0.4538	1.0000
Civil liberties	-0.5629	0.2116	-0.6870	0.1347	0.3147	-0.7209	-0.3479
Law and order	0.6701	-0.0189	0.7779	0.1316	-0.6277	0.6346	0.4560
Internal conflict	0.5719	-0.0017	0.6135	0.2335	-0.5371	0.5754	0.4889
Bureaucr. quality	0.5633	-0.0069	0.8259	0.0677	-0.5829	0.6506	0.3538
Corruption	0.5602	-0.0961	0.7293	0.0352	-0.4210	0.7122	0.3837
Socio-economic conditions	0.4308	0.2237	0.5032	0.1274	-0.3755	0.2053	0.1734
Military in politics	0.6239	-0.0817	0.7651	0.2082	-0.4936	0.6984	0.4476
Religion in politics	0.6995	-0.1394	0.6396	0.0824	-0.2955	0.4448	0.4165
Government stability	0.3513	0.0617	0.1445	0.1671	-0.3315	0.1257	0.1307
External conflict	0.4427	-0.0848	0.4306	0.0072	-0.3064	0.4195	0.3808

	Civil liberties	Law and order	Internal conflict	Bureaucrat. quality	Corruption	Socio- ec. cond.	Military in politics
Civil liberties	1.0000						
Law and order	-0.5932	1.0000					
Internal conflict	-0.4353	0.7911	1.0000				
Bureaucratic quality	-0.5691	0.7193	0.5610	1.0000			
Corruption	-0.6752	0.7063	0.5378	0.6954	1.0000		
Socio- economic conditions	-0.3161	0.4139	0.3024	0.4767	0.3228	1.0000	
Military in politics	-0.6379	0.7304	0.7079	0.7149	0.7106	0.3674	1.0000
Religion in politics	-0.4282	0.4837	0.4476	0.3748	0.4570	0.3434	0.5048
Government stability	-0.0060	0.2249	0.2751	0.0960	0.0493	0.1260	0.1446
External conflict	-0.3335	0.4128	0.4882	0.2312	0.2809	0.1875	0.4446

	Religion in politics	Government stability	External conflict
Religion in politics	1.0000		
Government stability	0.1973	1.0000	
External conflict	0.4472	0.1849	1.0000

Summary

Investment is crucial for economic development. A number of empirical studies document a relationship between social development and aggregate foreign direct investment (FDI). This study complements aggregate studies by conducting an econometric analysis of the relationship between social development variables and FDI flows at the industry level.

We find that democratic accountability has a negative association with FDI in the secondary industries, but a positive one in the tertiary ones. This result suggests a more nuanced relationship between democracy and FDI than indicated by aggregate studies.

Law and order is found conducive to investment in both the secondary and tertiary industries. Internal conflict deters investment in the secondary sector. Neither law and order nor internal conflict affect FDI in the primary industries, which might reflect an ability to effect private security arrangements in the extractive industries.

Corruption increases FDI flows in the tertiary sector, but is unimportant elsewhere. This relationship can be traced to the trade industry, possibly reflecting the frequency with which this industry encounters bureaucratic obstacles.

Finally, increased ethnic tensions are associated with greater FDI flows. However, we find evidence of a causal relationship in the secondary industries only. Moreover, the relationship depends on the inclusion of certain countries in the sample.

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