Source Country Characteristics and the Inflow of Foreign Direct Investment into Saudi Arabia

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1. INTRODUCTION

FOREIGN direct investment (FDI) is expected to contribute to the recipient country development. For this reason, there is a lot of research on what attracts FDI to particular locations (e.g. Chakrabarti, 2001; Bevan and Estrin, 2004; Blonigen, 2005). The determinants of FDI are usually identified as a result of a cross-country investigation, with the focus on the target-country characteristics, with a view to designing relevant policies to attract more FDI. There is also some literature on the source country determinants, mirroring to a great extent the factors identified in the cross-country studies. Such studies were conducted for selected countries only (see e.g. Grosse and Trevino, 1996, for the US; Kimino et al., 2007, for Japan; Thomas and Grosse, 2001, for Mexico; Pan, 2003, for China). Refocusing on the source rather than target countries has its advantages. Namely, apart from contributing to the understanding of the determinants of FDI, it can also provide some insight into the potential effect of investment on the host country.

There has been growing interest in the FDI in the Arab countries, partly driven by the concern about the relatively small amount of investment in relation to their position in the world economy (Bolbol and Fatheldin, 2006). Gemayel (2004) demonstrates that instability associated with investment risk is critical in explaining the level of foreign direct investment for the Middle East and North Africa (MENA) countries. Mina (2007) examines the Gulf Cooperation Council countries and concludes that while the quality of institutions, infrastructure and trade openness attract FDI, the role played by oil resources is not straightforward. Conventional factors attracting FDI such as market size,

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economic integration via international trade, wage rates and country risk, are investigated by Abdel-Rahman (2007) in the time-series analysis of the FDI inflows into Saudi Arabia. The Granger causality tests show that Saudi Arabia was successful in attracting FDI because of its overall economic performance, but the FDI inflows may not have affected growth. This coincides with Sadik and Bolbol’s (2001) conclusion that FDI generated spillover has not yet materialised in the Arab countries. This sober assessment should justify more emphasis on the sources of FDI rather than mere preoccupation with the factors attracting FDI into particular countries or regions. Our paper addresses this gap in the studies of FDI in Arab countries by analysing the FDI into Saudi Arabia, one of the largest economies in the region, in terms of source country characteristics. The paper contributes to the existing FDI literature in a number of ways. First, it provides a comprehensive analysis of inward FDI for a country that falls in-between traditional developing and developed economies. Second, we draw attention to the sensitivity of the results to the specification of the dependent variable. Using a count measure of foreign entries produces results different from the ones obtained when FDI activity is measured by investment expenditure. Finally, our results confirm the need to account for unobservable country-specific effects in order to identify the determinants of FDI and link them to the characteristics of investing countries.

We use a gravity-type model going beyond traditional economic size and geographical distance dimensions, to include some socio-economic and political variables. The number of investment projects as well as the amount of total investment inflow are examined for a panel of 33 countries in the period 1980–2005 using negative binomial and Tobit regressions respectively. The data on the size and origin of individual foreign investments are obtained from the Saudi Ministry of Commerce and supplemented with the information on the home countries drawn from different sources, such as the World Development Indicators and the Hofstede (2001) cultural distance indices.

The paper is organised as follows. Section 2 gives a brief overview of the determinants of FDI and provides a rationale for our choice of the explanatory variables. Data sources and the empirical model are discussed in Section 3. Empirical results are presented in Section 4. Finally, Section 5 draws conclusions.

2. THE DETERMINANTS OF FDI

The studies of the determinants of FDI traditionally rely on the Dunning (1992) eclectic theory built on the OLI (ownership, location and internalisation) advantages. Markusen and Maskus (2002), on the other hand, classify theoretical explanations of FDI as falling into two broad categories. The
factor-proportion model postulates that a multinational firm integrates production vertically, and locates stages of production in different countries on the basis of differences in relative factor prices resulting from different relative factor supplies. By contrast, the proximity-concentration or horizontal model assumes that production abroad is an alternative to exporting and a decision to locate subsidiaries abroad is a trade-off between proximity to markets and the economies arising from concentrated production (Brainard, 1997).

Theoretical models imply that factors such as proximity and market size make certain countries attractive locations for FDI. In order to analyse the importance of these factors in a cross-country setting, a gravity model, originally derived for trade flows, is used. Apart from traditional size and distance variables, a variety of factors encouraging and deterring foreign investment are used. Wei (2000) focused on the impact of the level of corruption on the FDI flows. Tong (2005) introduces the size of the ethnic Chinese population in the home and host country to investigate the impact of ethnic Chinese networks on bilateral FDI. The importance of the quality of institutions is considered by Bénassy-Quéré et al. (2007). For the European transitional economies the level and method of privatisation (Carstensen and Toubal, 2004) or transition progress indicator (Altomonte, 2000) are used. Such studies aim to explain why investors choose one country over another.

The studies of source country determinants have a different focus. Their interest lies in a single target country and the characteristics of the countries the investment originates from. In general, a range of economic, socio-political, and geographic factors are hypothesised to be important country-of-origin determinants of FDI but the set of determinants varies between the studies to fit in with the circumstances of the host country. Thomas and Grosse (2001) introduce wage differentials to test the hypothesis about efficiency-seeking maquiladora FDI into Mexico. Zhao (2003) includes market, financial and risk factors in order to explain FDI in China. Kimino et al. (2007) justify their emphasis on macroeconomic variables on the grounds that most of the investment into Japan is ‘market-seeking’ and such an investment is very responsive to changes in market size or exchange rate differentials. Our choice of explanatory variables is influenced by the existing studies of source country characteristics. However, for a country such as Saudi Arabia, the importance of intra-Arab investment flows has to be taken into account. Bölbol and Fatheedin (2006) posit that while foreign investments are in general governed by economic fundamentals, the intra-Arab investments are likely to be driven by factors based on proximity and contacts.

Our approach follows the gravity model framework, with traditional elements, such as GDP and distance, geographical as well as cultural. Existing economic links are measured by the amount of bilateral trade. We also consider the general economic climate in the source country, measured by the index of
economic freedom, as a factor that might stimulate outward investment. Finally, we look at the degree of similarity between Saudi Arabia and investing countries using the Hofstede (2001) index as well as the GDP per capita. Below, we justify the inclusion of each explanatory variable in more detail and comment on the expected effect on the inflow of FDI.

**a. Source Country Market Size**

Grosse and Trevino (1996) indicate that large economies would contain a large number of firms that are capable of expanding their operations in foreign markets. Larger and more affluent economies should have capital and resources, such as technical knowledge and marketing expertise necessary for operating abroad and meeting possibly different consumer demand in a target country. In most of the previous studies, market size turned out to be one of the major significant positive determinants of FDI (e.g. Grosse and Trevino, 1996, for the US; Kimino et al., 2007, for Japan; Gao, 2005, for China). However, for Mexico the size of source country turned out to be negatively related to the level of FDI (Thomas and Grosse, 2001). Nevertheless, we expect that there will be a positive relationship between source country size and FDI.

**b. Distance**

Greater distance between the source country and host country may discourage the flows of FDI. In the trade context, the geographical distance refers to the cost of transportation and the barriers to trade. For FDI, greater distance implies not only transportation cost but also difficulties in obtaining information or managing the business as well as legal, institutional and other costs. Most studies find a negative relationship between distance and the flow of FDI into the country (see e.g. Gao, 2005, for China). However, Liu et al. (1997) find the geographical distance variable statistically insignificant, which they attribute to the progress in transport and communication. Also, contrary to the results from other studies, Thomas and Grosse (2001) found a positive relationship between distance and FDI. This unexpected finding might be the result of the way they modelled the investment from the US to Mexico.

It is not just geographical distance but also cultural differences that are expected to reduce the flow of FDI between countries. Cultural similarities are often captured by a common language or the existence of a common border (e.g. Gao, 2005). In the case of Saudi Arabia, all neighbouring and close-by countries are also Arab, so we do not include a language or border dummy. Instead, we use the Hofstede (2001) index as a proxy for transaction costs.
arising from cultural differences. Cultural values are evaluated for individual countries\(^1\) in four main categories: power distance, uncertainty avoidance, individualism/collectivism and masculinity/femininity. We measure cultural distance by the sum of the absolute values of the differences between the home country and the Saudi rating for each of the four dimensions.

We also measure similarities between Saudi Arabia and the countries the investment originates from by the difference between source country GDP per capita and Saudi GDP per capita. In the context of trade models, similarities in the per capita incomes of the trading partners lead to more trade in accordance with the Linder hypothesis (McPherson et al., 2001). Grosse and Trevino (1996) expect a similar link to hold for FDI, so that firms from more affluent countries should be more likely to invest in the US. We include the difference in the per capita incomes without a prior expectation about the sign but as an attempt to identify the types of countries which invest in Saudi Arabia.

c. Economic Freedom

The studies of the determinants of FDI invariably come up with the conclusion that the economic stability of the host country, the quality of institutions and the general climate for foreign investment have been important in attracting FDI (e.g. Gemayel, 2004; Méon and Sekkat, 2004). The concept of economic freedom, measured by the Heritage Foundation Index, embraces the removal of legislative obstacles as well as the creation of a general climate stimulating investment. Many empirical studies confirm that economic freedom has a positive effect on the inflow of FDI. For example, Quazi (2007) found that economic freedom increased FDI in East Asian countries. Similarly, Bengoa and Sanchez-Robles (2003) found a positive relationship between economic freedom and FDI in Latin America.

While economic freedom and stability of the host country play an important role in attracting FDI, the significance of economic freedom of the source country is not clear. A high index of economic freedom might indicate the environment conducive to entrepreneurship necessary for foreign expansion so, consequently, a positive relationship between economic freedom of the home country and FDI outflow is to be expected. On the other hand, a poor business climate and higher risk might stimulate FDI outflows to relatively more stable economies, implying a negative relationship. The empirical evidence here is mixed. Kimino et al. (2007) conclude that a stable and favourable business climate in the home countries increases FDI inflows from these countries to Japan. However, in their analysis of FDI in Mexico, Thomas and Grosse

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\(^1\) Some 40 countries are included in the Hofstede (2001) study but only a single score is given to Arab countries.
(2001) show that as political risk increases and business environment in the home country deteriorates, firms are more likely to escape or diversify away from that political risk by investing abroad. We include an index of economic freedom as a way of investigating the characteristics of countries the investment comes from.

d. Bilateral Trade

Exports and FDI are two alternative modes for multinationals to enter foreign markets. Thus, at a firm level, trade and FDI are often substitutes. At an aggregate level, it is not clear whether FDI and trade are substitutes or complements. The view that trade and FDI complement each other rests on the assumption that engagement in international trade improves the ability to undertake FDI. Exporting requires fewer resources than FDI and offers a way of obtaining more information about the market and business environment in the host country before making a commitment.

Most studies confirm the positive and complementary effect of trade on FDI. Grosse and Thomas (2001) find strong support for existing levels of trade being positively associated with FDI in Mexico. Liu et al. (1997) identify a high degree of integration between a host and home country represented by exports and imports as an important determinant of FDI in China. More recent evidence for China in Zhao (2003) also confirms that FDI and bilateral trade complement each other. In contrast to this, Kimino et al. (2007) find a substitution rather than complementary effect between export performance and FDI, which they attribute to the nature of foreign investment in Japan. With such conflicting results, we intend to investigate the substitutability or complementarity between FDI and trade without any prior expectations about the relationship between the two.

e. Past Investment

Past inward investment can be a significant determinant of current investment. Agglomeration effects, measured by the number of previous FDI entries into a particular location, have a very strong impact on attracting future investment as shown by List (2001). Girma (2002) confirms the importance of agglomeration effects, where new investments cluster in the sectors already characterised by a strong foreign presence. Clearly, past investment might be an important consideration when choosing between different locations, be it different countries, regions or industries. With a single host country, and an emphasis on source country characteristics, the importance of past investment is better seen in the context of an approach stressing the fixed set-up cost of FDI (Razin et al., 2003). Previous FDI indicates that an investor has already borne a cost in the past and this may help to reduce the set-up cost of a new
investment. Following this interpretation, we expect a positive impact of past FDI on future investment.

3. DATA DESCRIPTION AND EMPIRICAL MODEL

In our study of FDI activities, we focus on the source country determinants of FDI flows, with the purpose of trying to identify the characteristics of countries that tend to invest in Saudi Arabia. We use a unique dataset obtained from the Saudi Ministry of Commerce which records all domestic and foreign investments. These data list all foreign projects registered with the Saudi government, thereby representing all instances of foreign entry into Saudi Arabia. For each individual project there is information about the date of registration, the size of investment in terms of financial expenditure, the industry and geographical location of the investment, and, most importantly, the country of origin.

Although the data on investments go back to 1960, initially very few foreign projects took place, so we have limited our analysis to the period 1980–2005. In this period over 6,000 foreign investments occur but for some countries only a very small number of projects take place over all those years. Some investments originate from offshore financial centres such as the British Virgin Islands but we exclude these asUNCTAD (2006) recognises that with such investments it is difficult to identify the actual country of origin. In the end our panel consists of 33 countries. Investments originate from developed countries like the USA, UK, Japan, Germany and France and developing countries from afar as well as from the region. For each country–year combination we total up the number of projects as well as the overall investment expenditure. In terms of the number of projects, Jordan, Syria, Egypt and Lebanon are the leading investors. However, the largest overall investment flows come from the United States, Japan, France and Sweden.

On the basis of the discussion of possible explanations of the inward investment in Section 2, we postulate the following panel model to explain variation in the source country investment into Saudi Arabia:

\[
F{D}{I}_{it} = f(S\text{ize}_{it}, \text{Distance}_{i}, \text{Cultural Distance}_{i}, \text{Economic Distance}_{it}, \text{Economic Freedom}_{i}, \text{Bilateral Trade}_{it}),
\]

where the country subscript \(i\) varies from 1 to 33, and the time subscript \(t\) varies from 1 to 25 to cover the years 1980–2005. We also investigate the impact of past investments in some specifications. The definitions of variables are summarised in Table 1 and the correlation matrix is given in Table 2. As the nearby countries are similar in terms of income and economic and cultural environment, the respective variables are relatively highly correlated. The
dependent variable is measured in two ways: as a number of projects from country \( i \) in year \( t \) and as a logarithm of the total real investment inflow from a given country in a given year. Size, geographical distance, and exports and imports are expressed using the logarithms. FDI inflows are assessed on the basis of the register of new investment projects maintained by the Saudi Ministry of Commerce. Bilateral trade flows come from the IMF *Direction of Trade Statistics*. The Hofstede cultural indices and the Heritage Economic Freedom indices come from the relevant websites. The remaining variables are obtained from the World Bank *World Development Indicators*.

In order to estimate the overall number of projects as well as total investment, the techniques chosen have to be suitable for modelling a salient feature

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### TABLE 1
Main Variables and their Definitions

| Variable                        | Definition                                                                                                                                 |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| **FDI**                         | The inflow of FDI from a given source country in a given year, measured by:                                                              |
|                                 | – the number of projects;                                                                                                                 |
|                                 | – total real investment.                                                                                                                  |
| **Size**                        | Size of the source country measured by the real GDP.                                                                                       |
| **Distance**                    | Geographical distance between Riyadh and other capital cities.                                                                               |
| **Cultural distance**           | The sum of absolute differences between Saudi Arabia and a source country in four dimensions (Power Distance, Uncertainty Avoidance, Individuality, Masculinity). |
| **Economic distance**           | The difference between the source country and Saudi real GDP per capita.                                                                     |
| **Economic freedom**            | The Heritage Index of Economic Freedom.                                                                                                     |
| **Bilateral trade**             | Measured by:                                                                                                                             |
|                                 | – real exports from the source country to Saudi Arabia;                                                                                     |
|                                 | – real imports from Saudi Arabia.                                                                                                           |
| **Past investment projects**    | The average number of FDI projects in the past three years.                                                                               |

### TABLE 2
Correlation Matrix

|             | 1    | 2    | 3    | 4    | 5    | 6    | 7    |
|-------------|------|------|------|------|------|------|------|
| **Size**    | 1    |      |      |      |      |      |      |
| **Distance**| 0.62 | 1    |      |      |      |      |      |
| **Cultural distance** | 0.71 | 0.75 | 1    |      |      |      |      |
| **Economic distance** | 0.61 | 0.30 | 0.60 | 1    |      |      |      |
| **Economic freedom** | 0.54 | 0.53 | 0.73 | 0.72 | 1    |      |      |
| **Exports from source country** | 0.50 | 0.13 | 0.30 | 0.40 | 0.45 | 1    |      |
| **Imports from Saudi Arabia** | 0.40 | −0.06 | 0.11 | 0.25 | 0.24 | 0.56 | 1    |

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of an investment flow from a panel of countries, namely, that there might be countries from which there is no investment in a particular year. First, the dependent variable is the number of projects originating from a particular country in a given year and it assumes non-negative integer values. The common assumption is that such count data are generated by a Poisson-like process, with the conditional mean equal to the conditional variance. However, in empirical applications the variance often exceeds the mean leading to over-dispersion and necessitating other approaches to modelling (Winkelmann and Zimmermann, 1995). We choose a negative binomial model (Long, 1997) and verify whether it is appropriate for our data.

Apart from the number of foreign projects, we also use total investment as a dependent variable. Although there might be some country–year observations with zero FDI, ignoring these zero entries would lead to serious misspecification. This point was raised in the context of trade models, where McPherson et al. (2000) stress the need for using a censored dependent variable in order to include information on all potential trading partners even if a country in question exported zero dollars’ worth of goods to that potential partner. Razin et al. (2003) treat FDI as a two-fold decision: whether to invest at all in a particular country and how much to invest. Therefore, the most appropriate method of modelling FDI is to jointly estimate a participation equation and the volume of FDI equation by employing the Heckman selection procedure. Linders and de Groot (2006) also recognise the importance of accounting for the occurrence of zero flows. They argue that the choice of method should be driven by both economic and econometric considerations. In their particular application the sample selection model turns out to be the preferable approach. We also consider different methods of modelling to deal with zero flows.

4. EMPIRICAL RESULTS

Apart from traditional determinants of FDI used in the gravity model, we also investigate the impact of past investment. In the context of panel data with non-zero values of dependent variables, this would lead to a dynamic panel data approach (see e.g. Driffield, 2002) with the possibility of investigating the lags. With our dependent variable being either count data or flow data with a substantial number of zeros, we look for a consistent way of introducing past investment. Somewhat arbitrary, we measure past investment as an average number of investment projects in the previous three years. Past investment defined in the above way enters the list of explanatory variables in the negative binomial regression and is also used to test the hypothesis of the fixed set-up cost of FDI flows (Razin et al., 2004).
Our initial interest is in the number of foreign investments from a particular country in a particular year. The results are presented in Table 3. We start with the simple pooled negative binomial regression, ignoring possible country-specific effects. Then we explore the panel nature of the data in the fixed and random effects negative binomial regressions. In the notes to Table 3 the results of various statistical tests are included. First, a test of the overdispersion parameter alpha is carried out. When alpha is zero, the negative binomial distribution is equivalent to a Poisson distribution. In this case, alpha is significantly different from zero confirming that the negative binomial model is more appropriate. The second test favours the random effects model over a pooled regression with a single constant term. A pooled regression does not control for heterogeneity among investing countries and might lead to statistically meaningless results. Both the fixed and random effects versions produce similar results and the Hausman statistic suggests that the random effects version is statistically justifiable.

When the inflow of FDI is measured by the number of foreign projects (Table 3), the main gravity-type variables, namely size and geographical distance, display the expected signs and are statistically significant in all cases. The coefficient on the cultural differences has the right sign but is statistically significant only in the pooled regression. Once country-specific heterogeneity is controlled for, cultural differences become statistically insignificant. Economic distance, measured by the difference in the income per capita, is negatively related to the number of foreign projects in all versions, suggesting that Saudi

|                                | Pooled            | Fixed Effects  | Random Effects |
|--------------------------------|-------------------|----------------|----------------|
| **Size of source country**     | 0.2754*** (5.89)  | 0.3939*** (3.29) | 0.4509*** (4.48) |
| **Geographical distance**      | -0.4529*** (-5.05) | -0.9145*** (-3.11) | -0.7824*** (-3.48) |
| **Cultural distance**          | -0.0122*** (-6.75) | 0.0120 (0.31)    | -0.0041 (-0.88)  |
| **Economic distance**          | -0.0281*** (-3.91) | -0.0704*** (-3.69) | -0.0727*** (-4.37) |
| **Economic freedom**           | 0.0614*** (6.28)  | 0.1230*** (5.71) | 0.1123*** (6.07) |
| **Exports from source country**| 0.0513*** (3.60)  | 0.0055 (0.27)    | 0.0064 (0.32)    |
| **Imports from Saudi Arabia**  | -0.0158 (-1.00)   | -0.0242 (-1.17)  | -0.0289 (-1.44)  |
| **Past investment projects**   | 0.0444*** (6.05)  | 0.0028 (1.49)    | 0.0035*** (2.00) |
| **Log L**                      | -1,517.13         | -1,217.84       | -1,408.55       |

Notes:
- \( n = 693; \) year dummies included; \( t \)-statistics in parentheses; \( t \)-statistics based on robust standard errors in pooled regression; *, **, *** denote significance at the 10%, 5%, 1% levels, respectively.
- Test statistics:
  - Poisson vs negative binomial test of alpha = 0: Chi-sq(1) = 2,379.98***;
  - Pooled vs random effects: Chi-sq(1) = 410.01***;
  - Fixed vs random effects Hausman test: Chi-sq(30) = 2.19.
Arabia might receive investment from the countries at a lower level of development. The index of economic freedom is always positive and significant in all specifications, so investments originate from countries characterised by an advanced business and investment environment.

The link between FDI and trade is not clear. A positive coefficient on the exports from the source country to Saudi Arabia suggests that penetration by trade accompanies FDI. However, exports (to Saudi Arabia) are significant in the pooled regression only. Imports are insignificant in all three specifications, so the existence of some economic links between the countries, such as those involved in importing, does not seem important. Familiarity with the host economy, as indicated by the past investment in the most recent period (preceding three years), has a positive impact on FDI in the pooled regression and in the random effects version.

We also analyse FDI in terms of investment inflows rather than the number of projects. With the dependent variable being the value of investment inflow and censored at zero, we consider three possible approaches to dealing with the zero flows. First, we estimate investment by OLS using only positive observations. Then a Tobit model is used to take into account the observations where no investment from a particular country in a particular year takes place. We pool all the year–country observations as well as explore the panel nature of the data in the random effects model. The Tobit model assumes that the same set of factors determines the value of uncensored observation (how much is invested) and whether an observation is censored (whether a country invests in Saudi Arabia at all). This assumption is relaxed in the Heckman sample selection approach (Heckman, 1979). We use Heckman’s two-step procedure to estimate the flow of FDI and to identify the factors affecting participation in FDI. The results are presented in Table 4, and the list of explanatory variables is the same as in Table 3.

First, it is important to employ a technique catering for the presence of zero flows. The OLS estimation based only on non-zero flows provides very little insight into the determinants of FDI, with economic distance as the only significant variable. The Tobit results offer a range of explanations, with many significant variables displaying the expected signs. For the Heckman two-step procedure, the variables affecting selection but not necessarily the size of a flow need to be identified. We posit that it is past investments that affect selection only, with the remaining variables determining both the decision to invest in Saudi Arabia as well as the amount of FDI. Past investment, measured

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2 Only a random effects model is included as standard econometric packages do not provide an adequate estimation method for the fixed effects version (Stata, 2005).

3 Although the procedure can be carried out with the same set of variables, Wooldridge (2006) argues for an exclusion restriction to distinguish sample selection from a misspecified functional form.
### TABLE 4
The Determinants of Foreign Investment Inflow

|                           | OLS on Non-zero Values (n = 475) | Pooled Tobit | Random Effects Tobit | Heckman FDI Inflow | Heckman Selection |
|---------------------------|---------------------------------|--------------|----------------------|-------------------|-------------------|
| **Size of source country** | 0.0102 (0.23)                   | 0.1002** (2.25) | 0.1042* (1.79)       | -0.0079 (-0.26)   | 0.1200* (1.76)    |
| **Geographical distance** | 0.1289 (1.35)                   | -0.0912 (-1.49) | -0.1172 (-0.99)      | 0.1610 (1.51)     | -0.2803** (-2.20) |
| **Cultural distance**     | -0.0018 (-0.63)                 | -0.0045* (-1.72) | -0.0047* (-1.98)     | -0.0013 (-0.56)   | -0.0047* (-1.97)  |
| **Economic distance**     | 0.0243*** (2.15)                | 0.0212** (2.17) | 0.0213** (2.27)      | 0.0233** (2.08)   | 0.0251** (2.37)   |
| **Economic freedom**      | -0.0126 (-1.35)                 | 0.0094 (1.40)  | 0.0110 (1.06)        | -0.0153** (-1.96) | 0.0231** (2.22)   |
| **Exports from source country** | 0.0012 (0.14)                   | -0.0118 (-1.19) | -0.0140 (-0.83)      | 0.0051 (0.66)     | -0.0779*** (-3.78) |
| **Imports from Saudi Arabia** | 0.0116 (1.16)                   | 0.0002 (0.02)  | -0.0027 (-0.16)      | 0.0116 (1.23)     | 0.0142 (0.67)     |
| **Past investment projects** | 0.0024 (1.05)                   | 0.0041* (1.79) | -0.0001 (-0.01)      |                  | 0.4468*** (4.05)  |

Rho

R-squared 0.1098

Log L -722.20 -717.05 -899.25

Notes:

n = 693; number of censored observations = 218; year dummies included; t-statistics based on robust standard errors in parentheses; *, **, *** denote significance at the 10%, 5%, 1% levels, respectively; likelihood-ratio test for pooled vs random effects for Tobit: Chi-sq(1) = 10.31***.
by the number of projects undertaken in the past rather than the overall size of investment, is intended to test the hypothesis of fixed set-up costs of FDI flows (Razin et al., 2004). Further discussion is based on the Tobit and Heckman results.

When the value of investment inflow rather than the number of foreign projects is analysed, a slightly different picture emerges. The size of the source economy remains significant and positive in most specifications. Geographical distance is no longer an obstacle to FDI, although a cultural distance between the source and the recipient country is. In contrast to the results in Table 3, when the investment activity is measured by the size of FDI inflow it turns out that the coefficient on economic distance becomes consistently positive. Neither economic freedom nor trade links with the source countries are significant in the Tobit specifications. Past investment projects are a significant determinant only in the pooled Tobit regression but according to the likelihood-ratio test there are significant source-country effects making inferences from the pooled regression inappropriate.

The results for the Heckman model deserve separate discussion. First, there are a large number of factors affecting selection compared with relatively few significant determinants of the size of the flow. Moreover, some of the factors work in the opposite direction. This gives support to the selection model as an approach preferred over the Tobit model where the same factors affect censored and uncensored observations and the marginal effects display the same sign for both categories. The size of the source country and distance, both geographical and cultural, affect the selection into becoming an investor in Saudi Arabia but they do not determine the size of the flow. Countries characterised by a high index of economic freedom and high income per capita are more likely to become investors but the size of investment inflow is positively related to economic distance but negatively to economic freedom. From the selection equation, there is some evidence that investing in Saudi Arabia does not coincide with exporting to this market. The negative coefficient indicates that source countries exporting to Saudi Arabia are less likely to establish production facilities there. Similar, substitution rather than complementary, effect was identified for Japan, and Kimino et al. (2007) attribute this to the characteristics of the Japanese economy which make it an unlikely location for outsourcing or an export platform for the region. In the case of Saudi Arabia, more research is required to identify the sectors in which FDI occurs in order to provide satisfactory explanations.

The inclusion of past investment projects in the selection equation was dictated by an attempt to verify the hypothesis of the existence of set-up costs of FDI. If set-up costs play an important role in determining whether a source country undertakes an investment, then there should be a negative correlation between the error terms of the flow and the participation equation (Razin et al.,
2004). In Table 4, past investment projects are positive and significant in the selection equation. However, the coefficient of correlation between the flow and participation equations (rho), although negative as expected, turns out to be insignificant.

5. CONCLUSION

The objective of this paper was to investigate to what extent source country characteristics applied previously to other countries explain the inflow of FDI into Saudi Arabia. A unique database obtained from the Saudi Ministry of Commerce listing all new investment projects involving foreign ownership was used to construct a panel of 33 countries for the 1980–2005 period. The number of investment projects is estimated using negative binomial regression, and total investment inflow is modelled using the Tobit regression and the Heckman selection procedure, in order to account for some country–year observations with zero FDI flows. The conclusions drawn from the analysis employing panel-based techniques differ from the results obtained from pooled regression models. Once unobservable country-specific effects are taken into account some coefficients become statistically insignificant. The determinants of FDI also differ depending on whether foreign investment is measured in terms of investment expenditure or the number of individual foreign projects. When investigating total FDI inflows, it turns out that there are a large number of factors affecting the decision to invest in Saudi Arabia compared with relatively few determinants of the actual size of the investment.

With Saudi Arabia being a developing country but with a relatively high income per capita due to oil exports one could expect the determinants of FDI to be different from those for traditional developing or developed countries. Standard gravity-type explanations hold to a great extent, with the size of the source economy positively related and the distance negatively related to the inflow of FDI. It is the geographical distance that hinders investment when FDI is measured in terms of the number of foreign projects, while cultural distance matters if FDI is measured by the total investment expenditure. In many specifications a positive impact of past investments is apparent, indicating that set-up costs may be lower for an investing country which has already acquired some familiarity with the Saudi economy via past FDI initiatives.

Certain characteristics of the investing countries are also identified, making it possible to speculate about the scope for possible spillovers. It is reassuring that the coefficient on economic freedom is positive and significant in most specifications as it suggests that the investing countries are characterised by an advanced business environment. However, it is not clear whether the investment comes from more technologically advanced countries. The coefficient on economic
distance is negative when FDI is measured by the number of investment projects. The size of investment is positively related to economic distance suggesting that volume-wise important investments come from countries characterised by high income per capita. The commonly acknowledged relationship between FDI and bilateral trade does not apply to Saudi Arabia and there is some evidence that the countries that export to Saudi Arabia do not invest there.

Compared with other regions and types of economies, there is a limited amount of research on FDI in Arab countries. This paper is the first attempt to analyse the inflow of FDI into Saudi Arabia from the perspective of source country characteristics. Saudi Arabia receives FDI from a range of countries, including most advanced industrialised economies as well as neighbouring Arab countries. Our study demonstrates that some determinants of inward FDI previously established for developed and developing countries as the target recipients of FDI do not necessarily hold for Saudi Arabia. With the increasing importance of South–South investment recognised by UNCTAD (2006), more research using disaggregate data is needed to identify factors affecting FDI and attribute them to some unique characteristics of Arab countries and oil-exporting countries.

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