Host Country Institutions and Firm-level R&D Influences: An Analysis of European Union FDI in China

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Abstract

The paper investigates the effects of institutions and their interaction with firms' research & development (R&D) levels on foreign direct investment (FDI) inflows in China based on a sample of 680 European Union (EU) firms over the period of 1998 to 2008. Employing panel data estimation approaches and further augmented with the cross-validation technique, our results indicate that EU FDI in China is influenced by the host country's institutions, rendering support to the institutional theory. Our analysis indicates that the rule of law, institutional reforms and the interaction between institutional reforms and R&D have significant effects on FDI inflows in China. Further analysis suggests that the coefficient for the interaction between the rule of law and R&D is positive and significant after World Trade Organisation (WTO) entry implying that the effects of reforms following the WTO entry much outweigh the impact of rule of law in EU firms' decisions to invest in China. We also find evidence that EU firms tend to adjust their FDI levels in China in an attempt to reach the desired investment level.

Keywords: European Union firms; China; Host country institutions; Firm-level R&D.

1. Introduction

Prior studies have documented that institutions in host countries play a pivotal role in multinational enterprise (MNE) location and investment decisions (White et al., 2015; Grosse and Trevino, 2005; Doh et al., 2005; Bevan et al., 2004; Henisz, 2000). Narula and Dunning (2000) argue economic and institutional factors (i.e., created assets) are not only valued much higher than conventional "natural assets" such as access to raw materials, cost of labour and fear of protectionism; but in all cases, their importance have increased significantly in recent years. The importance of host country institutional environment stems from a number of factors including: (i) host country institutions represent locational advantages that make the host country attractive to potential foreign direct investors (Dunning, 1998); (ii) MNEs are increasingly seeking locations that offer the best institutional environments for their core competencies to be utilized efficiently (North, 1990). Khoury and Peng (2011) note that the nature of institutional environment in host country does not only influence the comparative efficiency of governance structures but also defines the conditions under which foreign investment occurs. Overall, it is argued that host country institutions provide a framework for assessing a country's strengths and weaknesses to help foreign investors capture the environmental complexities facing MNEs to facilitate the formulation of investment strategy and decisions (Hoskisson et al., 2000; Grosse and Trevino, 2005).

While a number of studies have examined the role of institutions in attracting FDI, relatively little attention has been given to the effects of interaction of host country institutional variables and firms' R&D intensity on FDI inflows in emerging countries (Papanastassiou, 1997; Doh et al., 2005). As far as we are aware, the studies of Papanastassiou (1997) and Doh et al. (2005) are the only papers that have examined simultaneously the effects of R&D and host country institutions of the U.S. firms abroad. It is important to point out that these studies did not investigate how firm level R&D interacts with host country institutions to influence FDI inflows. However, foreign firms making investments in a foreign market transfer their firm-specific assets (often proprietary assets) to that

market and the quality of institutions provides an important means to protect these assets from unwarranted dissemination (Khoury and Peng, 2011). Thus, foreign firms with proprietary assets such as R&D entering foreign markets greatly rely on institutional structures in host countries to minimize uncertainty and risk of dissipation of these assets (Oxley, 1999; Trevino and Mixon, 2004).

In this study, we extend prior literature by asking the following questions: (i) To what extent do Chinese institutions influence FDI inflows from the EU? (ii) What are the effects of the interaction between R&D intensity and host country institutions on EU FDI in China? We choose China as an empirical setting to explore the above questions for the following reasons. China, just like other emerging countries, has weak institutions which encompass weak legal system, problems of intellectual property enforcement, corruption, and rule of law, which can cause greater transactional hazards, make firm returns less predictable and uncertain thereby deterring FDI inflows (Xu, 2011). Second, China's accession to the WTO marked a milestone in the transformation and integration of China into the world economy through a number of reforms agreed as part of conditions for entry with palpable implications for FDI inflows into China. Despite the massive reforms after the WTO, no study provides evidence regarding the interaction between the WTO related reforms, rule of law, firm-specific R&D and FDI inflows in emerging market context. This study therefore fills this research gap.

This paper makes two primary contributions to the literature. First, we examine the role of emerging country institutions and how firm-specific R&D capability of the EU firms interacts with host country institutions to influence FDI inflows into emerging markets. Emphasizing how specific institutional elements shape MNE strategies and impact FDI inflow decisions provide an improved understanding of what really informs investment strategies of MNEs. Second, the institutional environment in which FDI activities are located is of increasing importance to MNE managers as they seek to protect their strategic assets and leverage their innovative capabilities across countries. The results of our study enrich the extant research by shedding lights on the determinants of FDI in

emerging market context and contribute to the institutional theory. More specifically, the study of EU MNE investments in China offers the opportunity to examine how a country with distinctive institutions fits into institutional-based view. It is important to point out that although this study focuses on China, the findings have implications for other emerging and developing economies as the reforms in these countries have centred on improving institutions to help attract capital funds and technology which are often scarce in emerging markets.

The rest of the paper is structured as follows. Section 2 reviews literature on FDI activity, institutional reforms in China and theoretical background underpinning the study. Section 3 presents the hypotheses of the study. Section 4 presents the sample selection and methods used in this study, followed by an analysis and discussion of the regression results. The final section concludes the paper and discusses the implications of the study.

2. FDI reform policies and theoretical background

2.1. European Union FDI inflows in China

The value and volume of inward FDI in China have witnessed a rising trend over the past three decades. The official statistics from MOFCOM indicate that- as illustrated in Figure 1- total FDI into China increased from US$916 million in 1983 to US$131 billion in 2017, which is a staggering increase of over 14 thousand percent.[1] Similarly, Figure 2 indicates that FDI from the EU to China increased in terms of value from US$3.98 billion in 1998 to US$8.79 billion in 2017.

In 2009, EU companies invested €5.3 billion in China according to MOFCOM, with almost half of EU FDI to China going into the manufacturing sector, particularly machinery, transport equipment and chemical products. Further analysis of the inward FDI from the TRIAD (i.e., EU, United States and Japan) into China over the 1998-2008 period suggests that compared with the

[1] Although China began to receive FDI in 1979, official data on inward FDI by country of origin are available only from 1983 onwards.

U.S. and Japan, the EU recorded an annual average growth of 8.9% as a leading investor in China. During the financial crisis of 2007-2008, FDI inflows stabilized at US$5.41 billion, while that of the U.S. and Japan fell to US$3.19 billion and US$3.95 billion, respectively (MOFCOM, 2010). Overall, the European Union has been among the leading investors in China over the 1998-2017 period.

(Insert Figures 1 & 2 here)

2.2. Institutional theory and reforms in China

Previous literature (see North, 1990; Child and Rodrigues, 2005, Bevan et al., 2004; Hoskisson et. al., 2000) highlight the importance of institutions in shaping the investment behaviour of firms. As a result, recent empirical literature have utilized the institutional-based view to analyse both micro-organisational and macro-organisational phenomena in the context of emerging countries (see Khoury and Peng, 2011; Du and Boateng, 2015). These studies suggest that the explanatory power of institutional theory is ascribed to the fact that government and societal influences are stronger in emerging economies than in developed countries (Hoskisson et al., 2000; Du and Boateng, 2015). Institutions defined as "the rules of the game" help shape the strategies, structures, and competitiveness of firms (North, 1990). The role of an institution within an economy is to reduce both transaction and information costs through the reduction of uncertainty, ensures a stable structure that facilitates interaction and allows enterprises to move beyond institutional barriers (Oliver, 1991). Prior empirical studies have confirmed that regulative institutions and reform policies in host countries have a strong influence on FDI inflows. Researchers such as Busse and Hefker (2007) and Du and Boateng (2015) echo similar view and document that developing and emerging countries carry out institutional and market reforms to attract resources like capital funds, management skills and innovative technologies they do not have via FDI. Scholars argue that institutions which are "friendly" towards FDI, such as stable economic policies, security of property rights, less ownership restrictions, and non-corrupt bureaucracy, are conducive to attracting FDI

from MNEs (Bevan et al., 2004; Grosse and Trevino, 2005; Pajunen, 2008). More importantly, good institutions provide foreign investors with the confidence required to engage in R&D investment abroad with little fear for risk of asset dissipation. However, weak institutions in a host country such as weak legal systems and corruption are perceived to be hazards that increase transaction costs and chances of private asset being appropriated. Grosse and Trevino (2005) found institutional variables such as corruption and political risk to exert negative influence on FDI inflows in Central and Eastern Europe. Similarly, Busse and Hefeker (2007) study of 83 developing countries showed that government stability, corruption, law and order and quality of bureaucracy are highly significant determinant of FDI inflows. In summary, the overall thrust of the institution-based view is that a firm's internationalization strategy is shaped by the institutional framework of the host country.

Despite the continuing importance and usefulness of the analytical framework advanced by North (1990), it should be noted that the institutions-as-rules framework is parsimonious and ignores important institutional features (North, 2005). McCloskey (2016) shares similar view and points out the limitations of the institutions-as-rules approach. According to McCloskey (2016), rules do not constrain behaviour ("rules are, well, rules", p. 2) and that institutionalised behaviour is often followed without enforcement by the state. Thus, McCloskey (2016) emphasises the motives that make people follow a rule of behaviour through their beliefs and norms as against institutionalised rules that people are forced to follow as espoused by North (1990). The argument of McCloskey (2016) is consistent with the views of Greif (2006: p.7) who noted that rules "are nothing more than instruction that can be ignored". However, Greif (2006) contends that taking the reasons that people follow rules as exogenous to the analysis, as North's institutions-as-rules approach does, is useful for a number of purposes. For example, Acemoglu and Robinson (2006; 2012) point out that it is particularly useful in the "institutions as power" school of New Institutional Economics which has wide applications.

In the context of China, we have observed unprecedented reforms in the institutional environment over the past two and a half decades in general and after entry into WTO in particular. We argue that these reforms may help explain the distinctiveness of the foreign firms' behaviour regarding FDI inflows in China. In this context, we briefly summarize the main developments and changes in Chinese government policies towards inward FDI in the pre- and post- WTO accession in Table 1.

(Insert Table 1 here)

3. Hypotheses development

3.1. WTO entry and FDI inflows

China's accession to the WTO has led to further opening up of China to FDI activity. Foreign investors are now allowed to enter some sectors that were barred from foreign investors (Hong, 2008). To comply with WTO rules, the Chinese government agreed to accelerate legislative and institutional reforms, make policies stable and predictable, remove special protections given to state-owned enterprises, create an impartial, competitive business environment and unify market regulations (Jiang, 2006). The above changes appear consistent with the argument put forward by Ozawa (1992) and Wysokinska (1998) that FDI affects and reflects the structural transformations in the economy. The reforms of institutions after the entry into WTO may therefore attract more FDI into China. To investigate the role of institutional liberalization towards FDI, we introduce a time dummy for pre-WTO and post-WTO accession (after 2001) as a proxy of institutional reforms outlined in Table 1. Thus, ceteris paribus, we hypothesize that:

Hypothesis 1*: The liberalization/institutional changes carried out after China's WTO entry in 2001 is positively related to EU FDI inflows.*

3.2. Rule of law and FDI in China

The general changes that accompanied China's entry into the WTO (a proxy for institutional change) did not include the rule of law. However, rule of law is an indicator for the quality of the

legal environment and has implication for foreign investors. The "rule of law" captures the perceptions of the extent to which agents have confidence in and abide by the rules of society and, in particular, the quality of contract enforcement, property rights, the police and the courts as well as the likelihood of crime and violence (Bannaga et al., 2013). Consistent with findings of Grosse and Trevino's (2005) in Central and Eastern Europe, we contend that the quality of legal institutions is positively related to FDI inflows because it reduces uncertainty and lowers the cost of doing business. However, this assertion is valid only if the rule of law plays effective roles. Researchers such as Herrera-Echeverri et al. (2014) support the contention that quality of legal environment increases the level of investors' confidence in host country institutions and the willingness to engage in FDI activity. Conversely, inadequate legal quality, poor law enforcement and poor legal environment have a negative effect on FDI activity (Aidis et al., 2012).

In the context of China, the establishment of the rule of law has become a priority of Chinese government since 1999. The constitution has been amended and the rule of law has been enshrined. The Central Committee of the Communist Party has decided to make courts more independent and to penalize officials who interfere with the administration of justice. Despite the changes and massive reforms, a number of researchers suggest that problems relating to the rule of law still exist (see Wu et al., 2007). The development of the rule of law in China is based on the socialist legal system that bears Chinese characteristics (The Economist, 2014). For example, Rajagopalan and Zhang (2008) point out that the weaknesses in the legal system in China include laxity in the enforcement standards, and weak judiciary system. For example, China does not have judicial precedents and Chinese government through National People's Standing Committee provides interpretation tools to help Chinese business implement various laws and regulation (Ho et al., 2012). This may lead to inconsistency in the application of the laws when there is a dispute between MNEs and the state. Thus, this raises questions about the independence of judiciary and law enforcement

agencies, and whether any increase in the quality of rule of law in China may attract more FDI. In light of the above, we hypothesize that:

Hypothesis 2*: The level of the rule of law quality in China is negatively related to EU FDI inflows into China.*

3.3. Corruption

Corruption refers to acts by which the power of public office is used for personal gain in a way that contravenes the rules of the game (Jain, 2001). The literature on FDI determinants indicates that corruption has influence on FDI inflows (Wei, 2000). However, the results appear mixed. For example, Cuervo-Cazurra (2006) reported that corruption is beneficial in attracting FDI inflows in developing countries. He showed that corruption leads to relatively higher FDI inflows in countries with high level of corruption. However, studies such as Grosse and Trevino (2005) and Wei (2000) found the increase in corruption in the host country to be negatively associated with FDI. Similarly, Zhao et al. (2003), Barassi and Zhou (2012) argue that corruption distorts the allocation of resources, increases transaction costs and negatively affect FDI inflows. Smarzynska-Javorcik and Wei (2005) reported a significant and negative impact of corruption on FDI. Although China is relatively successful in attracting FDI, corruption is seen as a challenge to China's economy and to its social reforms. In the light of this, we hypothesize that:

Hypothesis 3*: The level of corruption is negatively related to EU FDI inflows into China.*

3.4. Interactions of R&D & WTO entry

A number of researchers such as Dunning (1993) suggest that R&D capability is positively related with FDI, and this notion has received theoretical and empirical support. It is thus argued that firms possessing technological advantage may enter foreign markets to recover their costly R&D[2], prevent product obsolesce and gain market share (Tihanyi and Roath, 2002). Researchers such as

[2] Following Wei and Liu (2006), R&D intensity is proxied as intangible assets scaled by total assets.

Stoian and Filippaios (2008) and Lin (2010) have rendered some support and document that R&D increases the probability of firms' international expansion. However, a number of researchers such as Patel and Vega (1999) and Busse and Hefeker (2007) emphasize the importance of host country institutions on MNE R&D location and investment decisions. Lenway and Murtha (1994) and Murtha and Lenway (1994) echo similar view and point out that institutional environment is a critical determinant of where MNEs locate their investment, and what types of investment will be made. It may therefore be argued that FDI entry decisions and for that matter FDI inflows may be conditioned by the interaction between institutional reforms and a firm's R&D intensity. MNEs will be inclined to invest in an environment that has a system that gives protection and allows ownership of proprietary assets such as R&D to be exploited in the host country without undue risk and appropriation of their assets by other parties. This argument suggests that liberalization of foreign investment regulations and reforms designed to improve the host country's institutions may interact to create environment for FDI inflows to occur consistent to OLI paradigm (Estrin et al., 1997; Grosse and Trevino, 2005). This may be especially important in emerging countries where the level of uncertainty appears high due to opaque regulatory regimes, complex procedures and poor institutions which often lead to high transaction costs and risk of asset dissipation (Grosse and Trevino, 2005). Despite the above argument, no study has explicitly tested the effects of interaction between reforms after WTO entry and R&D on FDI inflows. In this study, we argue that the reforms after the WTO entry may give EU firms more confidence to engage in FDI activities in China despite the fact that WTO rules WTO litigation processes are cumbersome and costly. Thus, we argue that:

Hypothesis 4*: The interaction of EU firms with high R&D activities and institutional changes associated with WTO accession will be positively related with FDI inflows in China.*

3.5. Control variables

Based on the extant literature, a number of control variables are taken into account, including: export intensity (Lin, 2010), firm leverage (Stoian and Filippaios, 2008; Forssbaeck and Oxelheim,

2008), and firm age (Luo et al., 2009). In addition, we control for profitability, wages and firm size. Profitable firms have more resources with which to undertake further expansion via FDI (Cantwell and Sanna-Randaccio, 1993). Locations that have a lower cost of labour can attract greater FDI flows (Sethi et al., 2003). The empirical evidence tends to suggest that lower wages attract FDI; however, other studies have found mixed results (e.g., Owen, 1982). The size of a firm reflects its capacity to engage in investments abroad (Buckley and Casson, 1976). Following Trevino and Grosse (2002), we control for product innovation which is measured as the natural logarithm of output involving new product innovation. We control for advertising intensity, which serves as a proxy for a firm's ability to differentiate its products from those of its competitors. The view related to firm-specific advantages recognizes the importance of tangible assets (Dunning and Lundan, 2008). Therefore, we include a tangible asset variable, operationalized as fixed assets per employee, to capture the role of such assets. We also control for individual ownership, as private/personal owners are more likely to face more constraints in China compared to corporate entities (Zhou et al., 2015).

Prior studies that have investigated the location advantages-based variables of OLI paradigm indicate that market size (GDP); trade openness and exchange rate exert influence the MNE decision to expand into the international markets (Uddin and Boateng, 2011). Researchers such as Duanmu and Guney (2009) argue that a higher GDP (market size) implies better prospects for FDI inflows into the host country. This is because as markets increase in size, so do the prospects for higher demand within the economy and consequently FDI, in order to meet the demand in that economy. We therefore control the market size. The ratio of trade to GDP is often used as a measure of the openness of a country and is also interpreted as a measure of trade restrictions. A greater degree of openness encourages a higher inflow of FDI, primarily because open markets are more attractive as a destination of FDI (Chakrabarti, 2001). We also control for the exchange rate. Table 2 provides

details of data sources, the proxies/definitions of the variables, the theoretical justification, and their expected effects on FDI inflows into China.

(Insert Table 2 here)

4. Data and methodology

4.1. The sample

We construct our sample based on the data on foreign activities of EU manufacturing firms in China from the Annual Reports of Industrial Enterprises Statistics compiled by the National Bureau of Statistics of China (NBS). The annual report covers the population of firms (both foreign and local) with an annual turnover of over five million Renminbi (about US$785,000) inside China. The dataset contains information on firm ownership structure, industry affiliation, geographic location, establishment year, employment, gross output, sales, R&D, value added, net fixed assets, exports, and employee training expenditures. The original dataset covers an unbalanced panel of EU firms spanning the period 1998-2008 with data for 33 two-digit manufacturing industries and over 400 four-digit industries (the year 2009 was not included as for some of our variables we had missing data).

All firms in China, whether local or foreign, are required by law to complete the census survey conducted by NBS. Therefore, the dataset is valuable for the following reasons. First, census data are reliable and internally consistent for empirical studies (Pan et al., 1999). Second, as a specialist body mandated to carry out the census survey, the NBS pays special attention to ensuring the quality of the data and the accuracy of the information in the report and identifying and eliminating inconsistency in the reported figures. A notable feature of these data is that the information disclosure by firms is compulsory, leading to a 100% response rate. Third, our dataset covers a period up to 2008 where recent firm level data are available, and that allows us to control for observable and unobservable firm-level characteristics to reduce aggregation bias. The multi-year

census data enable us to employ a panel data structure to test our models. Thus, we can investigate firms' foreign investment activities over time and test the dynamic causal relationship, which is the main advantage over static cross-sectional data (Dunning, 1998; Gao et al., 2010).

Another feature of the dataset is that EU firms are classified under five ownership categories: state-owned, collective-owned, corporate-owned, privately owned, and Hong Kong, Macao and Taiwan-owned (HKMT-owned), while a continuous measure of other ownership composition is constructed from the dataset by looking at the fraction of capital paid by other investors. This is the key variable as far as this paper is concerned, as it identifies the level of treatment received by EU firms in China.[3] This feature remains a unique enterprise identifier irrespective of the dynamics of ownership change. In this study, we focus on privately (personal) owned share variables and the other variable is the largest (dynamic) change among ownership structure under the more liberal Chinese FDI policy with respect to ownership. Accordingly, we identified less than 0.9% personal share capital at the start of the sample (i.e., 1998), and by the end of the sample period (2008), more than 18% of these firms were still under majority EU ownership capital. The dataset has the necessary time-series information for dynamic panel data analysis by the GMM technique. Our final dataset consists of an unbalanced panel of 2,932 observations from 680 EU firms over the period 1998-2008 in China after standard data filtering. We follow the criteria from the first Economic Census in classifying the EU firms into 30 sectors in large- and middle-sized manufacturing industries and into 9 industries according to their SIC classes.

4.2. Descriptive statistics

Table 3 reports descriptive statistics and all of the correlations are fairly low with the exception of trade openness, firm size and exchange rate variables, which show high correlations. Consequently, we carried out a variance inflation factor (VIF) test, and all of the factors are well below the

[3] The sample includes firms from the following EU countries: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Italy, Luxembourg, Portugal, Spain, Sweden, and the United Kingdom.

acceptable level of 10 except -by default- the quadratic terms, namely, *R&D*^{2} and *Firm size*^{2}. With respect to the mean values of the explanatory variables, firm profitability is 6.4%. The leverage ratio is approximately 51%. Private/personal ownership is less than 1%, which appears to be low. The established age of the EU firms is over 14 years. Regarding the export intensity, approximately 17% of EU firms' sales are in the form of exports. Finally, the R&D intensity is just over 3%.

(Insert Table 3 here)

4.3. Analysing FDI determinants

To test our hypotheses, we adopt three econometric approaches in the panel regression estimation: OLS, random effect (RE) and fixed effect (FE). We report both RE and FE outputs for comparative purposes even though the Hausman test favors the latter. Beside these, in order to provide some robustness with respect to endogeneity, simultaneity and heterogeneity concerns and to conduct regressions based on autoregressive &dynamic models, we also use the difference- and system-GMM estimations (see Arellano and Bond, 1991; Arellano and Bover; Blundell and Bond, 1998).

While it is widely acknowledged that regression analysis provides useful forecasts, a number of studies indicate that the use of cross-validation can strengthen the robustness of regression results (Armstrong, 1985). More recently, studies by Woodside (2013) and Soyer and Hogarth (2012) echo similar views and called on researchers in management to move beyond standard regression analyses. Responding to this call, we also use cross-validation technique to check the robustness of our results.

Our multiple regression equation is as follows:

$$FDI_{it} = \alpha + \sum_{k=1}^{n} \beta_k * \text{Institutional}_k + \sum_{k=1}^{m} \gamma_k * Controls_k + \varepsilon_{it} \quad (1)$$

where *Institutional* refers to the set of our main variables of interest related to enterprise reforms and institutional factors pertaining to rule of law and corruption and their interaction with *R&D*; *Controls* refers to the set of our control factors relating to macroeconomic and firm-specific factors;

α (constant term), β's and γ's are estimable coefficients; ε is the error term; *i* and *t* stand for firm and time, respectively. FDI is either *FDI 1* or *FDI 2*.

5. Regression results and discussions

This section reports the regression results and discusses the influences of host country institutional factors and their interaction with the investing firm R&D on FDI decisions in China. Our initial findings reveal that time and industry dummies are not statistically significant. This may be expected because all of the firms in our sample are from the manufacturing sector, and some institutional factors already account for time effects. Hence, we do not include these dummy variables in our models, noting that the inclusion of these dummies does not change the robustness of the results.

5.1. Institutional factors and FDI inflows in China

Table 4 reports the regression results based on three methods.[4] The estimations indicate that institutions in China have significant effects on inward FDI from the EU. We find WTO dummy (a proxy for institutional changes associated with WTO) to exert a positive and significant influence on FDI inflows in China. The findings suggest that China entry into WTO appears to be beneficial thereby exerting a positive influence on FDI inflows. Perhaps the compliance of WTO rules which enjoined China to reform specific institutions regarding FDI procedures, and corporate governance system appears to engender confidence among EU investors. Hypothesis 1 is therefore supported.

The coefficients of *Rule of law* and *Corruption* have negative and positive signs, respectively, with the *Rule of law* having significant parameters at the 1% level in all models. The negative relationship between the rule of law and inward FDI suggests that despite enterprise and other regulatory reforms in China, it appears that the quality of the rule of law with regards to its effectiveness still remains weak thereby exerting a negative effects FDI inflows made by European

[4] Censored Tobit regressions were conducted because our dependent variable is limited and cannot take negative values. The Tobit results (not reported) are very similar to the OLS estimates.

Union firms. Hypothesis 2 is therefore supported. The results may be explained by the fact that China still lacks a quality legal system, rendering the enforcement problematic (Rajagopalan and Zhang, 2008). For example, a case between the state and foreign investors are likely to go in the Chinese government's favour, as the laws can change at random. Moreover, the intellectual property rights (IPR) infringement is a huge problem for European firms in China. According to EU report in 2007, seven out of ten European businesses operating in China indicate that they have been victims of IPR violations. This report also indicates that European manufacturers estimated that IPR theft cost them 20% of their potential revenues in China, and this may explain the results. Regarding corruption, our results indicate that corruption appears to have an insignificant effect on FDI inflows. Hypothesis 3 is therefore not supported with this set of results.

We also considered the possibility of the non-monotonic association of FDI with R&D and size.[5] The results confirm non-linear associations for these factors. Therefore, we report the results below assuming a non-linear (reverse U-shaped) association of FDI with *R&D* and firm size. Our results in table 4 show that higher R&D intensity improves FDI inflows into China, but after some point, R&D and FDI inflows move in the opposite directions. The findings further reveal that firm size and FDI are positively (negatively) linked for smaller (larger) firms; suggesting that size constitutes an important source of monopolistic advantages for EU firms, which is consistent with the findings by Pradhan (2004) for Indian manufacturing firms.

5.2. Interaction of R&D and WTO entry

[5] Pradhan (2004) argues that FDI and size and R&D may be linked non-monotonically due to monopolistic advantage such that FDI first increases with size but then decreases after the threshold point. The hypothesis of a positive link between R&D and the propensity to undertake FDI has been extensively tested and confirmed (e.g., Grubaugh, 1987; Lall, 1980; Lin, 2010; Lin and Yeh, 2005; Markusen, 1995). Conversely, concerning labor-seeking investments, the literature generally indicates a negative relationship as international delocalization in search of low labor costs is less likely for firms basing their competitive advantages essentially on product and process innovation. As regards resource-seeking investments, the empirical evidence seems to suggest a negative link (Dunning, 1993). On the other hand, Paul and Wooster (2008) report no significant link between R&D and FDI. Our paper thus considers these conflicting arguments and hence empirically examines the presence of a non-linear link between FDI and R&D. When the parabolic terms of R&D and firm size are dropped in the regression models, the results for the other variables do not change their quality. Yet, we prefer to include these terms as explained above.

Regarding the interaction between R&D and WTO entry, the coefficients are consistently positive and significant. Hypothesis 4 is therefore supported. The results indicate that liberalization of foreign investment regulations and enterprise reforms designed to reduce the host institutional barriers interact with firm R&D to influence FDI inflows in China. These findings imply that FDI entry decisions are affected not only by the R&D intensity of foreign firms but also are conditioned by its interaction with institutional reforms in the host country.

Regarding the control variables, we find a number of macroeconomic variables, namely, market size, trade openness and exchange rate to exert significant influence on FDI inflows in China. The results render some support for location-based advantages of OLI paradigm (Dunning, 1993).

Regarding the results for firm-specific control variables, we find wages, profitability, tangible assets, personal owned shares, export intensity and firm leverage to have significant influence on FDI inflows. However, we find that private/personal ownership and profitability to have a negative and significant effect on FDI inflows in China

(Insert Table 4 here)

5.3. Sub-Sample Analysis of WTO Entry

China's entry into the WTO induced additional liberalization. To investigate whether Chinese accession to the WTO changed the pattern of EU firms' FDI inflows into China over the period in question, we divide our data into two time periods as pre- and post-WTO (i.e., 1998-2001 and 2002-2008, respectively). Table 5 reports the FE results only because Hausman test suggests that the RE and OLS models can be rejected in favour of the FE and also the regression model is not dynamic.

(Insert Table 5 here)

Regarding the results of institutional variables, namely, the rule of law appears to a negative and significant in the regression model of post-WTO period. This finding is similar to the full sample results reported in Table 4 with the exception of the coefficient which appears lower for post-WTO

period. This finding is unsurprising in the sense that the changes which occurred in the post-WTO era did not include the legal and judiciary systems. We find that corruption has a negative and significant effect on FDI in the post-WTO period. This finding may be explained by the fact that after the implementation of WTO accession agreements, firms in China may have become relatively transparent due to reforms such as improved standards of reporting systems, accountability and awareness and the detrimental effects of corruption on FDI inflows. Yet, it seems their attempts failed to convince the foreign investors. The results therefore do not lend support to hypothesis 3. On the other hand, the coefficients of the R&D and $R\&D^2$ also exhibit a positive and negative signs consistent with the findings in Table 4.

We probe further the influence of WTO entry on FDI inflows in China. Consequently, we analysed whether the results of the interaction between the rule of law and EU firm R&D is altered or moderated by the reforms accompanying WTO entry in the period of 2002-2008. Our regression results indicate that the coefficient of the interaction term is negative but insignificant prior to the WTO entry. However, the coefficient for the interaction between the rule of law and R&D becomes positive and significant after the WTO entry. The findings suggest that the negative effect of this interaction term is nullified by the reforms which accompanied the WTO entry. The results appear interesting and suggest that EU firms with high R&D investment in particular, see the WTO entry has led to some improvements in rule of law, thereby influencing in their decision to invest in china. The results are robust after controlling for macroeconomic and firm-specific determinants of FDI. Regarding the control variables, one exceptional observation is trade openness and exchange rate appear significant only for the post-WTO period. The positive impact of trade openness may be because the Chinese government liberalization of foreign trade policy for the manufacturing industry after WTO membership thereby leading to more inward FDI in China, as posited by conventional theories.

5.4. Robustness check and dynamic analyses

One concern in analysing the relationship between institutions and FDI is the endogeneity problem. The regression of institutions on FDI that underlies the "institutional effect" argument is a classic example of a regression that is likely to suffer from two endogeneity problems such as reverse causality and measurement error. For example, it may be argued that FDI inflows rather lead to reforms in the institutions. However, using fixed effects method would not alleviate the endogeneity problem (Istaitieg and Rodriguez, 2006). Moreover, FDI determinants change over time (see Dunning, 2000). In particular, we believe that institutional reforms after China's accession to the WTO may explain the FDI determinants of EU firms in China. To account for this and mitigate the distortions caused by fixed effects, we also employ the difference-GMM and system-GMM methods to check the robustness of our results. The system estimator regression results only are reported in Table 6. We also employed an alternative measure for R&D based on aggregate R&D expenditure divided by sales. The GMM results (robust to the diagnostic tests with valid instruments) reported in Table 6 appear more or less similar to that documented in Table 4 and Table 5.

(Insert Table 6 here)

We examine whether EU firms optimize their FDI levels in China due to various costs and benefits by looking at the effect of lagged FDI on current FDI. The coefficient estimates on lagged FDI are consistently positive, in the [0, 1] range and statistically significant except in one case.[6] The findings imply that there is some evidence that EU firms tend to adjust their FDI level in China in an attempt to reach the desired level. Our results are in line with the conclusion drawn by Carstensen and Toubal (2004) who examined FDI in Central and Eastern European countries using country-level data. The sensitivity of the coefficient estimates on lagged FDI to the FDI definition regarding the significance level means that firms seem to adjust the relative level of FDI compared to total capital

[6] As expected, the magnitude of the coefficients pertaining to the lagged FDI under the system-GMM setting is higher when compared to the difference-GMM setting because for the latter such coefficients tend to be downward-biased.

rather than to the absolute FDI when models 3 and 4 are compared. Our finding that past FDI feeds forward subsequent FDI is consistent with the results obtained by Luo et al. (2008).

5.5. Path dependency framework

According to Teece et al. (1997), firms' dynamic capabilities are related to their competence to integrate well, build, and reconfigure internal and external factors to respond to the constantly changing environment. In other terms, the competitive advantage, profitability and innovativeness of firms partly depends on the path they have adopted. The authors then go on to imply that quasi-irreversible commitments makes past very relevant and the current position of firms is dependent upon past path. As firms update their knowledge and build up experience, one can contend that corporations that had FDI activities in the past are more likely to continue to invest compared to their peers that have no FDI experience into a specific region or country. Similar to this setting, Duanmu (2014) finds that FDI location choice is strongly path dependent on the past trading links between the host and the home countries. The notion that internationalization by companies is a dynamic process is also acknowledged by Araujo and Rezende (2003), and Casillas et al. (2012) who examine the export behavior of firms with survey data, and Gao and Pan (2010) who examine US multinational firms' sequential entries in foreign markets (China).

The fact that the coefficient estimates on our lagged FDI are positive and significant is in line with the path dependence framework. In specific, Gao and Pan (2010) argue that it should be more reasonable for a firm to have slow pace when switching from low to high resource commitment, which implies the slow speed of adjustment and high adjustment costs when the speed is too high. As a more related paper, Busse et al. (2011) adopt the system-GMM estimation method and report positive and strongly significant lagged FDI coefficients that vary between zero and one (similar to ours) and state that these findings strongly support the path dependence process.

5.6. Cross-validation tests

Table 7 reports the result of cross-validation test of the sub-samples using the FE model. Spearman's *rho* and independent *t*-test indicate that the model does have acceptable predictive validity. The signs of the coefficients in each sub-sample maintain its consistency.

(Insert Table 7 here)

To confirm the result above, a second validation test was carried out using the system-GMM setting.[7] The coefficients of each sub-sample group model were used to predict the dependent variable of two sub-samples. A predictive validation test was made comparing the results obtained with the two dependent variables (FDI 1 and FDI 2) of each sub-sample. Again, Spearman's *rho* and independence test indicate that the models do have acceptable predictive validity as reported in Table 8.

(Insert Table 8 here)

6. Conclusion

This study extends the existing literature on the determinants of FDI to an emerging country which has experienced unprecedented reforms over the past three decades. Our regression results indicate that the quality of host country institutions plays an important role in explaining the EU FDI flows into China after controlling for macroeconomic and firm-specific factors, rendering support to the institutional theory. We find the rule of law in China to exert a negative and significant influence on inward FDI. This finding implies that despite legislative reforms resulting in the improvement of the rule of law in China, the rule of law in China remains problematic and impedes inward FDI. The policy implication here is that, China needs to improve further the overall legal environment, particularly the intellectual property rights laws and their enforcement to help reduce transaction costs and encourage personal/private investors seeking opportunities to grow in China. Similar concerns hold for the effective tackling of corruption in order to attract more foreign investment. Regarding the enterprise and other institutional reforms, the positive relationship between the

[7] For brevity, we do not report the corresponding difference-GMM results but they are available upon request.

institutional reforms and FDI inflows implies that institutional reforms (liberalization of FDI procedures, and corporate governance reforms) put in place to comply with WTO's rules are steps in the right direction and should be pursued further.

The study also finds the interaction between WTO entry and R&D facilitates FDI inflows in China. The results imply that FDI entry decisions are not only influenced by the R&D intensity of foreign firms but are conditioned by its interaction with enterprise and institutional changes in the host country. In order to gain more insights into the effects of WTO entry on FDI inflows in China, we test whether the effects of the interaction between the rule of law and EU firm R&D is moderated by the institutional changes which accompanied WTO entry. Our regression results indicate that the coefficient for the interaction between the rule of law and R&D is positive and significant after WTO entry. The results imply that the effects of reforms which accompanied the WTO entry affected the rule of law and positively influence EU firms' decision to invest in China. Another implication to be drawn from the findings of this study is that understanding the role of host country institutions may serve as a lesson for policy makers and senior managers in other emerging countries regarding the policy changes to be implemented to attract FDI into their countries. Regarding firm-specific level R&D and firm size, the study finds that R&D activities and firm size have non-linear relationship with FDI inflows (reverse U-shape).

While this paper has shed some lights on the institutional influences and their interaction with R&D on FDI inflows in China by EU firms, it is important to point out that our dataset is limited to 2008 due to the absence of more recent EU firm data compiled by National Bureau of Statistics of China. More studies appear warranted using more recent data, when data becomes available. Future studies should concentrate on the effects of both formal and informal institutions and their interaction with firm-specific R&D intensity on FDI inflows using cross-country data involving emerging and developing to enable generalizability to a more larger population.

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References

Acemoglu, D., Robinson, J., 2006. De Facto political power and institutional persistence, Am Econ Rev. 96(2), 325,-330.

Acemoglu, D., Robinson, J., 2012. Why nations fail: The origins of power, prosperity, and poverty, New York: Crown

Aidis, R., Estrin, S., Mickiewicz, T., 2012. Size matters: Entrepreneurial entry and government, Small Bus Econ, 39 (1), 119-139

Araujo, L., Rezende, S., 2003. Path dependence, MNCs and the internationalisation process: a relational approach. Int. Bus. Rev. 12 (6), 719-737.

Arellano, M., Bond, S., 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations, Rev. Econ. Stud. 58 (2), 277- 297.

Arellano, M. & Bover, O., 1995. Another look at the instrumental variable estimation of error-components models. J. Economet. 68 (1), 29-51.

Armstrong, J. S., 1985. Long-range forecasting, New York: John Wiley.

Bannaga, A., Gangi, Y., Abdrazak, R., Al-Fakhry, B., 2013. The effect of good governance on foreign direct investment inflows in Arab countries, App. Financ Econ. 23 (15), 1239-1247.
.

Barassi, M.R., Zhou, Y., 2012. The effect of corruption on FDI: a parametric and non-parametric analysis, European J. Pol. Econ. 28 (3), 302-312.

Bevan, A., Estrin, S., Meyer, K., 2004. Foreign investment location and institutional development in transition economies, Int. Bus. Rev. 13 (1), 43-64.

Blundell, R., Bond, S., 1998. Initial conditions and moment restrictions in dynamic panel data models, J. Economet. Rev. 87 (1), 115-143.

Buckley, P.J., Casson, M., 1976. The future of the multinational enterprise. London: Macmillan Press.

Busse, M., Hefeker, C., 2007. Political risk, institutions and foreign direct investment. Euro. J. Pol. Econ. 23, 397-415.

Busse, M., Nunnenkamp, P., Spatareanu, M., 2011. Foreign direct investment and labour rights: a panel analysis of bilateral FDI flows. App. Econ. Let, 18 (2), 149-152.

Cantwell, J., Sanna-Randaccio, S., 1993. Multinationality and firm growth. Weltwirtschaftliches Archiv, 129 (2), 275–299.

Carstensen, K., Toubal, F., 2004. Foreign direct investment in Central and Eastern European

countries: a dynamic panel analysis, J. Comp. Econs. 32 (1), 3-22.

Casillas, J.C., Moreno, A.M., Acedo, F.J., 2012. Path dependence view of export behaviour: a relationship between static patterns and dynamic configurations. Int. Bus. Rev. 21 (3), 465-479.

Chakrabarti, A.. 2001. The determinants of foreign direct investments: sensitivity analyses of cross-country regressions, Kyklos, 54 (1), 89–114.

Child, J., Rodrigues, S.B., 2005. The internalization of Chinese firms: a case for theoretical extension? Manag Org. Rev. 1 (3), 381-410.

Cuervo-Cazurra, A., 2006. Who cares about corruption? J. Int. Bus. Stud. 37 (6), 1057-1072.

Doh, J.P., Jones, G. K., Mudambi, R., Teegan, H., 2005. Foreign research and development and host country environment: an empirical examination of U.S. international R&D, Manag. Int. Rev. 45 (2), 121-154.

Du, M., Boateng, A.. 2015. State ownership, institutional effects and value creation in cross-border mergers and acquisitions by Chinese firms. Int. Bus. Rev. 24, (3), 430-442.

Duanmu, J.L., 2014. A race to lower standards? Labor standards and location choice of outward FDI from the BRIC countries. Int. Bus. Rev. 23 (3), 620-634.

Duanmu, J. L.. Guney, Y., 2009. A panel data analysis of locational determinants of Chinese and Indian outward foreign direct investment, J. Asia Bus. Stud. 3 (2), 1-15.

Dunning, J.H., 2000. The eclectic paradigm as an envelope for economic and business theories of MNE activity, Int. Bus. Rev. 9 (2), 163-190.

Dunning, J.H., 1998. Location and the multinational enterprise: a neglected factor? Journal of Int. Bus. Stud 29 (1), 45-60.

Dunning, J.H., 1993. Multinational enterprises and the global economy, Wokingham, UK and Reading, MA: Addison Wesley.

Dunning, J., Lundan, M., 2008. Institutions and the OLI paradigm of the multinational enterprise, Asia Pac. J. Manag. 25 (4), 573-593.

Estrin, S., Prevezer, M., 2011. The role of informal institutions in corporate governance: Brazil, Russia, India and China compared, Asia Pac. J. Manag. 28 (1), 41–67.

Forssbaeck, J., Oxelheim, L. 2008. Finance-specific factors as drivers of cross-border investment an empirical investigation, Int. Bus. Rev. 17 (6), 630-641.

Gao, G.Y., Pan, Y., 2010. The pace of MNEs' sequential entries: Cumulative entry experience and the dynamic process. J. Int. Bus. Stud. 41 (9), 1572-1580.

Greif, A., 2006. Institutions and the path to the modern economy: Lessons from medieval trade, Cambridge: Cambridge University Press.

Grosse, R., Trevino, L.J., 2005. New institutional economics and FDI location in Central and Eastern Europe, Manag. Int. Rev. 45 (2), 123-145.

Grubaugh, S.G., 1987. Determinants of direct foreign investment. Rev. Econ. Stat. 69 (1), 149-152.

Henisz, W.J., 2000. The institutional environment for multinational investment, J. Law Econ. Org. 16 (2), 334-364.

Herrerra-Echeverri, H Haar, J., Estevez-Breton, J.B., 2014. Foreign direct investment, institutional quality, economic freedom and entrepreneurship in emerging markets, J. Bus. Res. 67 (9), 1921-1932.

Ho, D., Lau, A. & Young, A., 2012. Enterprise ownership and control in China: governance with a Chinese twist, Bus. Horizons 55 (6), 575-582.

Hong, J., 2008. WTO accession and foreign direct investment in China, J. Chinese Econ. For. Trad. Stud. 1 (2), 136-147.

Hoskisson, R., Eden, L., Lau, C., Wright, M., 2000. Strategy in emerging economies, Acad. Manag. J. 43 (3), 249-267.

Istaitieh, A., Rodriguez, J.M., 2006. Factor-product markets and firm's capital structure: a literature review, Rev. Financ. Econ. 15 (1), 49-75.

Jain, A. K., 2001. Corruption: a review, J. Econ. Sur. 15 (1), 71-121.

Jiang, C., 2006. A re-examination of technology transfer in Sino-foreign joint ventures after China's WTO accession, J. Am. Acad. Bus. 9 (2), 133-138.

Khoury, T. A., Peng, M. P., 2011. Does institutional reform of intellectual property rights lead to more inbound FDI? Evidence from Latin America and the Caribbean, J. Wor. Bus. 46 (3), 337-345.

Lenway, S.A., Murtha, T., 1994. The state as strategist in international business research, J. Int. Bus. Stud. 25 (3), 513-535.

Lall, S., 1980. Monopolistic advantages and foreign involvement by U.S. manufacturing industry. Ox. Econ. Pap. 32 (1), 102-122.

Lin, F.J., 2010. The determinants of foreign direct investment in China: the case of Taiwanese firms in the IT industry, J. Bus. Res. 63 (5), 479-485.

Lin, H., Yeh, R., 2005. The interdependence between FDI and R&D: an application of an endogenous switching model to Taiwan's electronics industry. App. Econ. 37 (15), 1789-1799.

Luo, X., Chung, C.N., Sobczak, M., 2009. How do corporate governance model differences affect foreign direct investment in emerging economies? J. Int. Bus. Stud. 40 (3), 444-467.

Luo, L., Luo, Y., Liu, C., 2008. Multilevel determinants of subsequent FDI in China. Thund. Int. Bus. Rev. 50 (2), 105-120.

Markusen, J. R., 1995. The boundaries of multinational firms and the theory of international trade. J. Econ. Persp. 9 (2), 169-189.

McCloskey, D., 2016. Max U vs. Humanomics: A critique of neo-institutionalism, J. Int. Econ. 12(1), 1-27.

MOFCOM., 2010-2017, Ministry of Commerce of the People's Republic of China. Foreign Direct Investment Statistics. Beijing, PRC.

Murtha, T. P., Lenway, S.A., 1994. Country capabilities and the strategic state: how national political institutions affect multinational corporations' strategies, Strat. Manag. J. 15 (52), 113-130.

Narula, R., Dunning, J.H., 2000. Industrial development, globalisation and multinational enterprises: New realities for developing countries, Ox. Dev. Stud. 28 (2), 141-167.

National Bureau of Statistics of China (NBS). The Annual reports of industrial enterprises statistics, 1998-2009. Beijing, PRC.

North, D.C., 1990. Institutions, institutional change and economic performance. Cambridge: Cambridge University Press.

Oliver, C., 1991. Strategic responses to institutional process, Acad. Manag. Rev. 16 (1), 145-179.

Owen, R. F., 1982. Inter-industry determinants of foreign direct investment: a Canadian perspective. In Alan M. Rugman, Ed., New Theories of the Multinational Enterprise, pp. 303–318. London: Croom Helm.

Oxley, J.E., 1999. Institutional environment and the mechanisms of governance: the impact of intellectual property protection on the structure of inter-firm alliances, J. Econ. Beh. Org. 38 (3), 283-309.

Ozawa, T., 1992. Foreign direct investment and economic development, Trans. Corp. 1 (1), 27-54.

Pajunen, K., 2008. Institutions and inflows of foreign direct investment: a fuzzy-set analysis. J. Int. Bus. Stud. 39 (4), 652-669.

Pan, Y., Li, S., Tse, D. K., 1999. The impact of order and mode of market entry on profitability and market share, J. Int. Bus. Stud. 30 (1), 81-104.

Papanastassiou, M., 1997. Firm strategies and the research intensity of US MNEs' overseas operations: An Analysis of host country determinants, in Pearce, R.D. (Ed.), Global competition and technology, London: Macmillan Press, 153-179.

Paul, D.L., Wooster, R. B., 2008. Strategic investments by US firms in transition economies. J. Int. Bus. Stud. 39 (2), 249-266.

Patel, P., Vega, M., 1999. Patterns of internationalisation of corporate technology: location vs. home country advantages, Res. Pol. 28 (2-3), 145-155.

Pradhan, J.P., 2004. The determinants of outward FDI investment: a firm level analysis of Indian manufacturing, Ox. Dev. Stud. 32 (41), 619-639.

Rajagopalan, N., Zhang, Y., 2008. Corporate governance reforms in China and India: Challenges and opportunities, Bus. Hor. 51 (1), 55-64.

Sethi, D., Guisinger, S.E., Phelan, S.E., Berg, D. M., 2003.Trends in foreign direct investment flows: a theoretical and empirical analysis. J. Int. Bus. Stud. 34 (4), 315-326.

Soyer, E., Hogarth, R. 2012. The illusion of predictability: how regression statistics mislead experts, Int. J. Forecast. 28 (3), 695-711.

Stoian, C., Filippaios, F., 2008. Dunning's eclectic paradigm: a holistic, yet context specific framework for analysing the determinants of outward FDI: evidence from International Greek investments, Int. Bus. Rev. 17 (3), 349-367.

Teece, D. J., Pisano, G., Shuen, A. (1997). Dynamic capabilities and strategic management. Strat. Manag. J. 18 (7), 509-533.

The Economist 2014. The Rule of Law in China; China with legal characteristics, November 1, Beijing. Available: wwomist.com/2014/11/01. Accessed on 4th July, 2018.

Tihanyi, L., Roath, A.S., 2002. Technology transfer and institutional development in Central and Eastern Europe, J. Wor. Bus. 37 (3), 188-198.

Trevino, L.J., Daniels, J. D., 1994. An empirical assessment of the preconditions of Japanese manufacturing foreign direct investment in the United States. Weltwirtschaftliches Archiv, 130 (3), 576- 599.

Trevino, L.J., & Grosse, R. (2002). An analysis of firm-specific resources and foreign direct investment in the United States, Int. Bus. Rev. 11(4), 431-452.

Trevino, L.J., Mixon, F.G., 2004. Strategic factors affecting foreign direct investment decisions by multi-national enterprises in Latin America, J. Wor. Bus. 39 (3), 233-243.

Uddin, M., Boateng, A., 2011. Explaining the trends in cross-border mergers and acquisitions in the UK: an analysis of macroeconomic factors, Int. Bus. Rev. 20 (5), 547-556.

Wei, S-J., 2000. How taxing is corruption on international investors? Rev. Econ. Stat. 82 (1), 1-11.

Wei, Y., Liu, X., 2006. Productivity Spillovers from R&D, Exports and FDI in China's Manufacturing Sector. J. Int. Bus. Stud. 37 (4), 544-557

Woodside, A., 2013. Moving beyond multiple regression analysis to algorithms: calling for adoption of a paradigm shift from symmetric to asymmetric thinking in data analysis and crafting theory, J. Bus. Res. 66 (4), 463-472.

Wu, J., Boateng, A., Drury, C., 2007. An analysis of the adoption, perceived benefits, and expected future emphasis of Western management accounting practices in Chinese SOEs and JVs, Int. J. Acc. 42 (2), 171-185.

Wysokinska, Z., 1998. Impact of foreign direct investment on export competitiveness, Russian East Euro. Finan. Trad. 34 (4), 64-87.

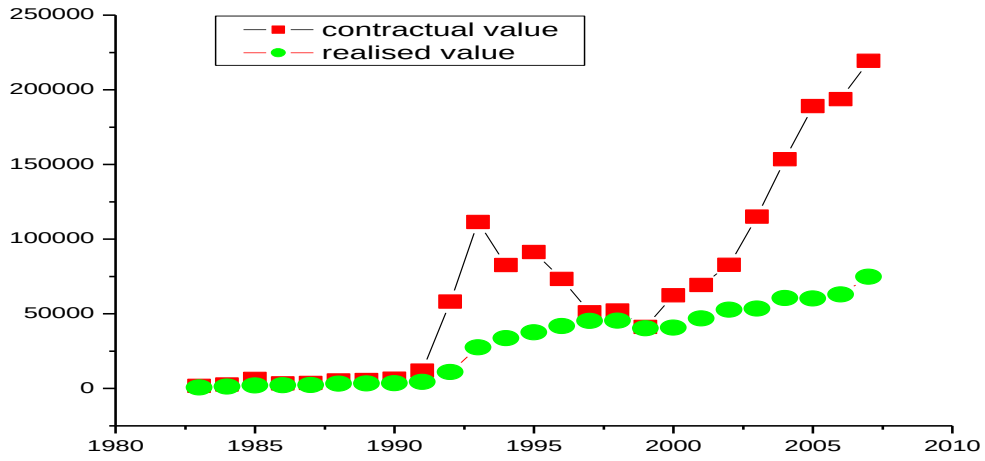
Xu, C., (2011). The fundamental institutions of China's reforms and development. J. Econ. Lit. 49 (4), 1076-1151.

Zhao, J.H., Kim, S., Du, J., 2003. The impact of corruption and transparency on foreign direct investment: An empirical analysis, Manag. Int. Rev. 23 (2), 116-129

Zhou, B., Guo, J., Hua, J., Doukas, J., 2015. Does state ownership drive M&A performance? Evidence from China, Euro. Financ. Manag. 21 (1), 79-105.

Figure 1

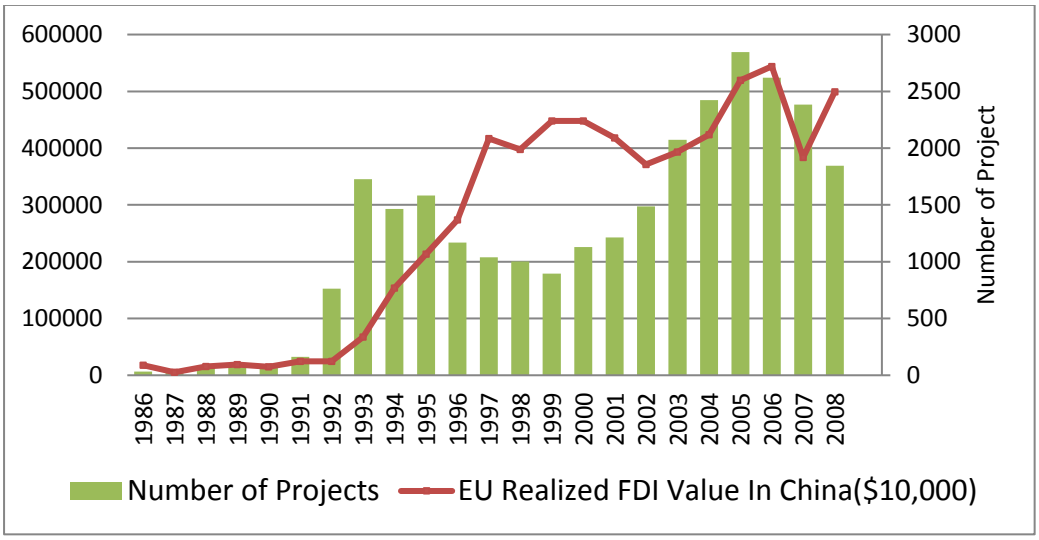
FDI in China 1983-2008 (Unit: US$10, 000).



Source: Compiled by the author according to FDI Statistics from MOFCOM (Ministry of Commerce People's Republic of China), which was previously known as MOFTEC (Ministry of Foreign Trade and Economic Cooperation in China).

Figure 2

EU realized FDI and the number of projects in China, 1986-2008.



Source: MOFCOM.

Table 1: FDI-related institutional changes in China.

Phases	Reform policy	Relevant Legislation
1978-2000	China established bilateral ties between the EU and China regarding trade and investment relations which amounted to €4 billion in 1988. China's first law permitting and governing the establishment and operations of foreign economic entities in China.	The Equity Joint Venture (EJV) Law (July 1979).
	Allowed wholly foreign-owned enterprises in addition to equity joint ventures (EJVs). Provisions for the encouragement of foreign investments (also known as the article 22). Contractual joint ventures allowed in addition to wholly foreign-owned enterprises & EJVs. Abolished a provision that the chairman of the board of joint venture should be appointed by Chinese investors.	Wholly Foreign-Owned Enterprises Law (April 1986). Law on Provision of the State Council on the Encouragement of FDI (October 1986). The Contractual Joint Venture law issued in 1988. Equity Joint Venture Law Amendment, 1990.
	Protection against nationalisation. Reclassification of companies into limited liability company and the company limited by shares. Foreign joint ventures and wholly foreign-owned enterprises are classified as limited liability companies (1994). Additional incentives for export, import substitution and high-tech project.	1st Company Law, 1994. Catalogue of Encouraged Hi-Tech Products, 2003.
	National economic development policy. Opening up retail & wholesale sectors, accounting and information consultancy, banking and decentralized. Guidance on sectors in which FDI suit China's economic and social development plan. Protection of lawful rights and interests of foreign investors. Opening up of the banking sector. Private enterprises acknowledged.	Deng Xiaoping's Southern Journey, 1992. Provisions on guiding FDI and the Catalogue for the guidance of Foreign Investment Industries, 1995. Constitutional amendment, 1999. The contractual joint venture law amended in October 2000 to comply with WTO commitment before WTO entry.
2001 WTO Entry & onwards	Trade and investment liberalisation: Opening up service and other sectors to international trade. FDI classified into 'encouraged', 'permitted', 'restricted' and 'prohibited' categories. China progressively lowered its tariffs from 42.9 per cent in 1992 to 15.3 per cent in 2002. Implemented the General Agreement on Trade-Related Aspects of Intellectual Property Rights. Foreign firm foreign exchange restrictions on payments and remittances abolished. Equal access to domestic and overseas suppliers. Removal of mandatory export requirement. Business plan filing abolished.	Amended the Catalogue for the Guidance of Foreign Investment Industries, March 2002 and November 2004. WTO Requirements.

Government focus on macroeconomic matters rather than the operations of individual enterprises.	
Simplified company establishment requirements and expand the rights of shareholders.	The Company Law amendment, October 2005.
Encouragement of FDI in Hi-Tech industries to accelerate the pace of introducing advanced technology from abroad and quality level of FDI.	Catalogue of Encouraged Hi-Tech Products (2003, amended in 2006).
Expansion/revision of the list of 'encouraged' FDI.	Catalogue for the Guidance of Foreign Investment Industries (amended in 2007).
Liberalised regulatory process and foreign exchange control and exchange rate allowed to move up and down by 5 per cent margins. Changed foreign exchange regime to a 'buy-to-use' policy in place of 'earn-to-use' policy in early 1990s.	State Council Directives, 2006.

Notes: Source: Compilation by authors based on various reports on FDI in China.

Table 2: Measurement of Variables

Variable name	Definition	Sign	Theoretical Justification	Data source
FDI 1 (Dep. Var)	Natural logarithm of foreign capital invested by sample firms			NBS
FDI 2 (Dep. Var)	Foreign capital over total capital invested by sample firms			NBS
Main Variables				
Rule of law	Rule of law in China; according to our construction, using World Bank Database on Governance (WBGD). Scores range from -2.5 to 2.5 (with 2.5 being least corrupt, that is sound political institutions, a strong court system).	-	Institutional factor	WBDG
Institutional reforms	WTO dummy, which takes a value of 1 for the 2002-2008 period (greater reforms); 0, for the 1998-2001 period; proxy for political liberalisation	+	Institutional factor	WTOSD
Corruption	Corruption index in China; according to our construction using ICRG database provided by Political Risk Services.. Scores range from 1 to 6 (with 6 being least corrupt).	-	Institutional factor	ICRG
R&D Intensity	1. Intangible assets to total assets (Wei & Liu, 2006): 2. R&D expenditure scaled by Sales		Ownership-specific	NBS
Control Variables				
Technology	Natural logarithm of intangible assets	+	Ownership advantage	NBS
Profitability	Operating profits over total assets	+	Ownership advantage	NBS
Firm size	Natural logarithm of total assets	+	Ownership advantage	NBS
Wages	Natural logarithm of real wages	+	Efficiency seeking	NBS
Tangible assets	Fixed assets to number of employees		Ownership advantage	NBS
Personal owned shares	Personal capital over total capital	+	Transaction Cost	NBS
Firm age	Natural logarithm of years since establishment in China	+	Location advantages	NBS
Openness	Exports plus imports over GDP in China (i.e., economic openness of host country)	+	Host country Location factor	WBDI
Market size (GDP)	Natural logarithm of gross domestic product of China	+	Host country Location factor	WBDI
Export intensity	Export sales over total sales	+	Market seeking	NBS
Innovation	Natural logarithm of output involving new product innovation	+	Ownership advantage	NBS
Advertising	Advertising expenditures to sales	+	Market seeking	NBS
Leverage	Total liabilities over total assets	-	Location factor	NBS
Exchange rate	Exchange rate between Euro and Chinese Yuan	-/+	Location factor	WTOSD

Notes. All monetary values are in constant (2008) China RMB Prices. NBS is National Bureau of Statistics of China. ICRG is international country risk guide, the political Risk Service (PRS) group. WTOSD is World Trade Organization Statistics Division. WBDI is World Bank Development Indicator. WBGD is World Bank Database on Governance

Table 3: Descriptive statistics and correlation matrix.

	Mean	S.D.	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*	*(16)*	*(17)*	*(18)*
1. FDI 1	10.225	3.027																		
2. FDI 2	0.759	0.289	0.59**																	
3. Rule of law	-0.409	0.046	-0.13**	-0.14**																
4. Corruption	1.655	0.441	-0.08**	-0.05*	-0.20**															
5.Tangible assets	10.597	2.02	0.46**	-0.02	-0.06**	0.02														
6. Wage	8.809	1.555	0.35**	-0.05*	-0.12**	0.03	0.66**													
7. Technology	4.877	4.498	0.16**	-0.08**	0.22**	0.27**	0.34**	0.18**												
8. Profitability	0.064	0.179	-0.10**	-0.03	-0.06**	-0.04*	-0.09**	0.06**	-0.11**											
9. Firm size	12.072	1.618	0.44**	-0.06**	-0.07**	0.01	0.84**	0.79**	0.27**	0.02										
10. Market size	28.251	0.369	0.03	0.11**	-0.66**	0.17**	0.06**	0.19**	-0.24**	0.11**	0.11**									
11. Openness	0.585	0.127	-0.03	0.07**	-0.64**	0.31**	0.04*	0.17**	-0.15**	0.11**	0.09**	0.94**								
12. Personal share	0.006	0.055	-0.11**	-0.13**	-0.03	0.03	-0.04*	-0.05*	0.01	0.01	-0.05*	0.03	0.04*							
13. R&D	0.031	0.055	0.05*	-0.02	0.15**	0.12**	0.04*	-0.10**	0.58**	-0.20**	-0.04*	-0.17**	-0.13**	0.05**						
14. Firm age	2.571	0.439	0.07**	-0.09**	0.08**	-0.11**	0.09**	0.26**	-0.01	0.05*	0.17**	-0.14**	-0.17**	-0.11**	-0.10**					
15.Export intensity	0.167	0.275	0.13**	0.20**	-0.14**	-0.04*	0.12**	0.11**	-0.04*	0.02	0.08**	0.07**	0.03	0.02	-0.07**	-0.04*				
16. Innovation	1.855	4.379	0.11**	-0.17	-0.05*	-0.06**	0.17**	0.25**	0.06**	0.02	0.25**	-0.03	-0.06**	0.02	-0.02	0.11**	0.03			
17. Advertising	1.228	2.656	0.05*	0.00	-0.17**	0.23**	0.16**	0.29**	0.08**	0.01	0.21**	0.37**	0.39**	-0.03	0.03	0.07**	-0.07**	0.05*		
18. Leverage	0.512	0.261	0.01	0.05*	-0.01	0.04*	0.11**	0.16**	0.02	-0.40**	0.19**	0.02	0.02	-0.04*	-0.04*	-0.06**	0.03	0.03	0.06**	
19. Exchange rate	9.624	1.216	-0.11**	-0.03	-0.37**	0.26**	0.03	0.14**	-0.25**	0.07**	0.07**	0.67**	0.74**	0.03	-0.17**	-0.11**	-0.07**	-0.10**	0.30**	0.03

Notes: The asterisk * (**) indicates correlation is significant at the 0.05 (0.01) level (two-tailed, Pearson). See Table 2 for the definition of the variables.

Table 4: Regression results for the FDI determinants.

	OLS	RE	FE
Rule of law	-14.4308 (1.4638)***	-14.3276 (1.3902)***	-14.0578 (1.4852)***
Institutional reforms	1.2303 (0.3029)***	1.2294 (0.2857)***	1.3842 (0.2989)***
Corruption	0.0702 (0.1747)	0.1231 (0.1678)	0.2096 (0.1821)
R&D	5.3992 (2.3865)**	4.9874 (2.5640)**	4.0115 (2.0040)**
$R\&D^2$	-15.5231 (6.1831)**	-14.3463 (6.5798)**	-7.4045 (9.0071)
Institutional reforms*R&D	2.3301 (1.3061)*	2.6512 (1.2635)**	0.7268 (0.3516)**
Wage	0.0897 (0.0521)*	0.1125 (0.0560)**	0.1285 (0.0732)*
Technology	-0.0046 (0.0187)	-0.0165 (0.0196)	-0.0389 (0.0238)*
Profitability	-2.1186 (0.2957)***	-1.9465 (0.3204)***	-1.1246 (0.4344)***
Firm size	0.7859 (0.1293)***	0.7256 (0.1379)***	1.1512 (0.2417)***
Firm size ^{2}	-0.0114 (0.0054)**	-0.0084 (0.0060)	-0.0446 (0.0137)***
Market size	2.4382 (0.4728)***	2.2989 (0.4502)***	2.9817 (0.6167)***
Openness	-11.728 (1.9124)***	-11.4973 (1.8182)***	-10.3721 (1.9452)***
Tangible assets	0.2574 (0.0457)***	0.2233 (0.0515)***	0.0817 (0.0782)
Personal owned shares	-5.4425 (0.8475)***	-5.7005 (0.8725)***	-7.4734 (1.1436)***
Firm age	-0.1673 (0.1164)	-0.1890 (0.1358)	-2.2262 (1.0112)**
Export intensity	0.4668 (0.1768)***	0.5030 (0.2007)**	0.4821 (0.3193)
Innovation	-0.0123 (0.0115)	-0.0031 (0.0127)	0.0328 (0.0170)*
Advertising	0.0082 (0.0204)	0.0147 (0.0216)	0.0293 (0.0280)
Leverage	-1.3483 (0.2018)***	-1.3631 (0.2355)***	-0.9156 (0.3948)**
Exchange rate	-0.4483 (0.0702)***	-0.4721 (0.0669)***	-0.5483 (0.0717)***
Constant	-64.6145 (12.605)***	-60.1211 (12.0317)***	-72.8430 (15.4928)***
No. of firms/Observations	680 / 2932	680 / 2932	680 / 2932
Adjusted R^2	0.3086	0.3125	0.1590
F/Wald statistic (*p*-value)	63.28***(0.00)	1028.55***(0.00)	20.09***(0.00)
Breusch-Pagan (*p*-value)		75.20***(0.00)	
Hausman (*p*-value)			69.58***(0.00)

Notes: The dependent variable is *FDI 1* in all models. *Firm size*^{2} and *R&D*^{2} are the squared terms of *Firm size* and *R&D*, respectively. *Institutional change* as WTO dummy is one for 2002-2008; zero, otherwise. The standard errors robust to heteroscedasticity, clustered by firm level, are reported in the parentheses. The Breusch-Pagan LM test compares the pooled OLS and random effects estimations; the significant *p*-value rejects the null hypothesis that there are no panel effects, hence favouring the random effects results. Hausman test compares fixed effects and random effects estimations; the significant *p*-value rejects the null hypothesis that the unobserved entity heterogeneity is uncorrelated with the regressors, hence favouring the fixed effect results. (*), (**) and (***) indicates that the coefficients are significant or the relevant null hypothesis is rejected at the 10, 5 and 1 percent level, respectively. See Table 2 for the definition of variables.

Table 5: Sub-sample analysis: impact of WTO accession**.**

	1998-2001 (pre-WTO)	*2002-2008 (post-WTO)*
Rule of law	3.3710 (8.5869)	-10.4199 (2.7380)***
Corruption	0.5420 (0.9932)	-2.1906 (0.6429)***
R&D	-2.1339 (15.6836)	28.5371 (11.4157)**
$R\&D^2$	0.8807 (23.4911)	-11.7959 (10.5810)
Rule of law*R&D	-8.4585 (35.6203)	59.1673 (25.1716)**
Wage	0.1633 (0.0997)*	0.0653 (0.1152)
Technology	-0.0548 (0.066)	0.0022 (0.0319)
Profitability	-0.7643 (0.7930)	-0.7031 (0.5906)
Firm size	1.8718 (0.4077)***	1.3049 (0.3458)***
Firm size ^{2}	-0.0966 (0.0255)***	-0.0477 (0.0195)**
Market size	3.8359 (6.7593)	0.2404 (0.8565)
Openness	0.0000 (0.0000)	13.0453 (5.3323)**
Tangible assets	-0.0052 (0.2562)	-0.0222 (0.0905)
Personal owned shares	-17.3764 (2.0899)***	-5.6937 (1.3921)***
Firm age	-2.5314 (5.0006)	-1.8167 (1.2357)
Export intensity	-0.0269 (0.7668)	-0.0936 (0.4062)
Innovation	0.0063 (0.0333)	0.0439 (0.0223)**
Advertising	0.0000 (0.0000)	0.0081 (0.0320)
Leverage	0.1355 (0.8434)	-0.6536 (0.5332)
Exchange rate	0.0000 (0.0000)	-1.0094 (0.1033)***
Constant	-98.4697 (175.6559)	0.2300 (21.8239)
No. of firms/Observations	309 / 786	606 / 2146
Adjusted R^2	0.2159	0.2014
F statistic (*p-value*)	7.45***(0.00)	19.16***(0.00)

Notes: The dependent variable is *FDI 1* in both models. The standard errors robust to heteroscedasticity, clustered by firm level, are reported in the parentheses. (*), (**) and (***) indicates that the coefficients are significant or the relevant null is rejected at the 10, 5 and 1 percent level, respectively. See Table 2 for the definition of variables.

Table 6: Dynamic analysis of FDI determinants using the GMM method.

	Difference-GMM		System-GMM	
	(1): *FDI 1*	(2): *FDI 2*	(3): *FDI 1*	(4): *FDI 2*
Lagged FDI	0.0191 (0.0069)***	0.0067 (0.0118)	0.0141 (0.0051)***	0.0946 (0.0101)***
Rule of law	-5.8714 (0.8591)***	-0.5516 (0.0689)***	-7.1058 (0.7078)***	-0.6266 (0.0592)***
Institutional change	1.0493 (0.1057)***	0.0785 (0.0075)***	1.1427 (0.0797)***	0.0887 (0.0065)***
Corruption	-0.2193 (0.0740)***	-0.0238 (0.0071)***	-0.1443 (0.0418)***	-0.0214 (0.0046)***
R&D	10.3721 (2.9516)***	0.8225 (0.2169)***	20.1093 (1.7526)***	0.0700 (0.1665)
$R\&D^2$	-28.0694 (9.6199)***	-1.8468 (0.7006)***	-47.2352 (5.5201)***	0.5514 (0.5285)
Institutional reforms*R&D	3.2037 (1.1112)***	0.2230 (0.0749)***	2.5003 (0.6037)***	0.2339 (0.0521)***
Wage	0.3449 (0.0540)***	0.0386 (0.0064)***	0.1848 (0.0293)***	0.0172 (0.0049)***
Technology	-0.0466 (0.0113)***	-0.0039 (0.0010)***	-0.0798 (0.0090)***	-0.0017 (0.0010)*
Profitability	-2.5620 (0.4170)***	-0.1359 (0.0395)***	-3.1498 (0.1833)***	-0.2250 (0.0221)***
Firm size	0.7556 (0.2646)***	-0.0406 (0.0279)	0.3422 (0.1591)**	0.2959 (0.0344)***
Firm size ^{2}	-0.0365 (0.0144)***	-0.0001 (0.0016)	-0.0009 (0.0071)	-0.0153 (0.0015)***
Market size	2.0868 (0.3399)***	0.0742 (0.0323)**	0.7109 (0.1319)***	0.1094 (0.0124)***
Openness	-0.9462 (0.8930)	-0.0287 (0.0762)	-2.5474 (0.5348)***	-0.0685 (0.0497)
Tangible assets	0.0184 (0.0884)	0.0204 (0.0083)**	0.3628 (0.0326)***	0.0194 (0.0043)***
Personal owned shares	-5.1929 (2.1541)**	-0.4261 (0.1275)***	-6.8176 (1.5515)***	-0.8039 (0.0850)***
Firm age	-4.2310 (1.0196)***	-0.0934 (0.0525)*	-0.0457 (0.0870)	-0.0260 (0.0139)*
Export intensity	1.8683 (0.3283)***	0.1338 (0.0270)***	0.5582 (0.1113)***	0.1402 (0.0162)***
Innovation	0.0162 (0.0172)	-0.0019 (0.0015)	-0.0087 (0.0072)	-0.0044 (0.0010)***
Advertising	-0.0231 (0.0216)	-0.0003 (0.0017)	-0.0146 (0.0108)	0.0030 (0.0013)**
Leverage	-1.2845 (0.2817)***	-0.0271 (0.0326)	-0.3152 (0.1611)**	0.0364 (0.0237)
Exchange rate	-0.4184 (0.0522)***	-0.0379 (0.0042)***	-0.4740 (0.0446)***	-0.0475 (0.0040)***
Constant	n/a	n/a	-16.3099 (3.9058)***	-3.7788 (0.4025)***
No. of firms / Observations	490 / 1538	490 / 1538	680 / 2235	680 / 2235
Wald (*p-value*)	734.83***(0.00)	486.57***(0.00)	4107.27***(0.00)	1717.98***(0.00)
AR (1) (*p-value*)	-7.36***(0.00)	-6.39***(0.00)	-7.22***(0.00)	-6.60***(0.00)
AR (2) (*p-value*)	-0.31 (0.76)	-1.05 (0.29)	1.09 (0.28)	1.64 (0.11)
Hansen J (*p-value*)	142.42 (0.20)	139.18 (0.26)	206.66 (0.13)	188.45 (0.41)
Difference-in-Hansen (*p-value*)	n/a	n/a	67.96 (0.14)	65.24 (0.19)
Number of instruments: *(t-2* to *t-4)*	151	151	208	208

Notes: The dependent variable is *FDI 1* in models 1 and 3; it is *FDI 2* in models 2 and 4. The standard errors robust to heteroscedasticity are reported in the parentheses. Wald statistic tests the joint significance of estimated coefficients; asymptotically distributed as χ^2(df) under the null of no relationship. AR(1) and AR(2) are the first and second order autocorrelation of residuals, respectively; which are asymptotically distributed as N(0,1) under the null of no serial correlation. Hansen J is the test of over identifying restrictions, asymptotically distributed as χ^2(df) under the null of instruments' validity. We tested for the endogeneity of firm-specific factors using the 'Difference-in-Hansen" statistic, for which the null hypothesis states that the lagged differenced instruments used for the equations in levels are exogenous in the system-GMM setting. The results show that the endogenous factors are *lagged FDI* (by default), *R&D*, *Wage*, *Profitability*, *Export intensity*, *Innovation* and *Leverage* whereas the exogenous factors are *Firm age*, *Firm size*, *Advertising*, *Personal owned shares*, *Tangible assets* and *Technology*. We do not employ yearly dummies as variables or instruments because of their correlation with the country-level factors. For a firm to be included in the GMM regressions they should have at least 3 consecutive years' data. This leaves us a sample with 2,235 (1,538) observations out of 2,932 for the system-GMM (difference-GMM) method, respectively; noting that we lose further observations for the latter due to the absence of level equations. (*), (**) and (***) indicates that the coefficients are significant or the relevant null is rejected at the 10, 5 and 1 percent level, respectively. See Table 2 for the definition of variables. The constant term is transformed out by difference-GMM as this method eliminates it by first-differencing.

Table 7: Cross validation tests for the fixed effects results.

	First sub-sample	*Second sub-sample*
Rule of law	-8.2815 (2.1129)***	-18.7234 (1.9017)***
Institutional reforms	0.6558 (0.3268)**	1.6213 (0.3588)***
R&D	7.8357 (3.8449)**	3.2508 (1.5707)**
$R\&D^2$	-35.8138 (19.1291)*	-13.4779 (7.8470)*
Institutional reforms*R&D	1.7219 (0.6950)**	1.5040 (0.7479)**
Wage	0.1226 (0.0905)	0.1861 (0.1114)*
Technology	0.0077 (0.0370)	-0.0337 (0.0293)
Profitability	-1.2086 (0.5129)**	-1.6563 (0.7982)**
Firm size	1.3017 (0.2925)***	1.1227 (0.4194)***
Firm size ^{2}	-0.0562 (0.0180)***	-0.0241 (0.0141)*
Market size	1.2603 (1.0007)	3.6556 (0.7543)***
Openness	-4.0194 (2.0044)**	-11.4909 (2.0732)***
Personal owned shares	-10.5605 (1.4561)***	-2.4551 (1.4388)*
Firm age	-1.5252 (0.8706)*	-3.4458 (1.2515)***
Innovation	-0.0090 (0.0251)	0.0759 (0.0225)***
Leverage	-0.9545 (0.5306)*	-0.8915 (0.5873)
Exchange rate	-0.2740 (0.0932)***	-0.8595 (0.0925)***
Constant	-28.1453 (24.9626)	-89.3086 (18.9963)***
No. of firms/Observations	382 / 1466	298 / 1466
Adjusted R^2	0.1112	0.2584
F statistic (*p*-value)	7.85***(0.00)	23.57***(0.00)
Spearman's rho	0.3114***	0.3697***
Independence t-test (*p*-value)	0.0000	0.0000

Notes: The dependent variable is *FDI 1* in both models. The standard errors robust to heteroscedasticity, clustered by firm level, are reported in the parentheses. (*), (**) and (***) indicates that the coefficients are significant or the relevant null is rejected at the 10, 5 and 1 percent level, respectively. See Table 2 for the definition of variables.

For cross-validations, the main sample was randomly split equally in terms of number of observations into two groups. The model was run separately for each sub-sample. The regression coefficients for the first group were employed to predict the *FDI* values for the second group and a correlation test was run for the pairs. We repeated the procedure for the second sub-sample, noting that the non-core insignificant variables from the full sample were not included in this analysis. The null hypothesis for the Independence test states that the predicted values of *FDI* for the second (first) sub-sample based on the regression coefficients for the first (second) sub-sample are independent from the actual *FDI* values for the first (second) sub-sample. The *p-values* above reject the null hypothesis; Spearman correlation coefficients are significant at the 1% level; there is consistency regarding the statistical significance and signs of coefficient estimates across the sub-samples, implying that our main results are cross validated and the predictive ability of the models is satisfactory.

Table 8: Cross validation tests for the system-GMM results.

	FDI 1		FDI 2	
	First sub-sample	Second sub-sample	First sub-sample	Second sub-sample
Lagged FDI	0.0712 (0.0025)***	0.0185 (0.0021)***	0.3039 (0.0063)***	0.0797 (0.0034)***
Rule of law	-4.1167 (0.2683)***	-16.7529 (0.5000)***	-0.2119 (0.0288)***	-1.0925 (0.0172)***
Institutional reforms	1.0121 (0.0546)***	1.5046 (0.0510)***	0.0822 (0.0054)***	0.1234 (0.0023)***
Corruption	-0.1314 (0.0234)***	-0.3718 (0.0174)***	-0.0273 (0.0028)***	-0.0373 (0.0022)***
R&D	9.1041 (1.0831)***	19.5413 (0.7930)***	-0.0578 (0.1379)	0.8028 (0.1014)***
$R\&D^2$	-21.6539 (3.1631)***	-54.7969 (2.842)***	0.6314 (0.4386)	-1.3968 (0.2817)***
Institutional reform*R&D	4.5334 (0.4939)***	1.9675 (0.3129)***	0.8002 (0.0660)***	0.1348 (0.0579)**
Wage	-0.0063 (0.0129)	0.0486 (0.0165)***	0.0006 (0.0021)	0.0365 (0.0016)***
Technology	-0.0076 (0.0036)**	-0.0964 (0.0048)***	-0.0026 (0.0005)***	-0.0054 (0.0004)***
Profitability	-2.4865 (0.1137)***	-1.3963 (0.0773)***	-0.2348 (0.0113)***	-0.1257 (0.0139)***
Firm size	0.4798 (0.0400)***	0.9701 (0.1471)***	0.1400 (0.0079)***	0.1737 (0.0208)***
Firm size ^{2}	-0.0042 (0.0022)*	-0.0310 (0.0052)***	-0.0071 (0.0004)***	-0.0105 (0.0008)***
Market size	1.1084 (0.0701)***	1.8831 (0.0694)***	0.0815 (0.0078)***	0.1387 (0.0054)***
Openness	-3.9054 (0.2949)***	-5.1634 (0.2108)***	-	-
Tangible assets	0.2334 (0.0117)***	0.6416 (0.0108)***	0.0052 (0.0025)**	0.0329 (0.0025)***
Personal owned shares	-8.7741 (1.2630)***	-2.4186 (0.6546)***	-0.7915 (0.0493)***	-0.5723 (0.1018)***
Firm age	-	-	-0.0275 (0.0116)**	-0.0592 (0.0102)***
Export intensity	0.3561 (0.0660)***	0.3447 (0.0378)***	0.1107 (0.0113)***	0.1378 (0.0103)***
Innovation	-	-	-0.0037 (0.0005)***	-0.0065 (0.0004)***
Advertising	-	-	0.0012 (0.0007)*	0.0052 (0.0009)***
Leverage	-0.4635 (0.0763)***	-0.1547 (0.0492)***	-	-
Exchange rate	-0.0896 (0.0159)***	-1.0519 (0.0286)***	-0.0206 (0.0015)***	-0.0909 (0.0018)***
Constant	-28.1581 (1.8416)***	-50.4871 (1.7381)***	-2.2885 (0.2194)***	-3.8966 (0.1897)***
Firms / Observations	382/ 1160	289 / 1075	382/ 1160	289 / 1075
Wald (*p-value*)	10456.43***(0.00)	273091.24***(0.00)	20973.87***(0.00)	467102.19***(0.00)
AR (1) (*p-value*)	-4.26***(0.00)	-6.12***(0.00)	-4.62***(0.00)	-5.11***(0.00)
AR (2) (*p-value*)	-1.25 (0.17)	-1.13 (0.26)	0.28 (0.75)	0.17 (0.86)
Hansen J (*p-value*)	166.13 (0.29)	162.94 (0.34)	149.68 (0.63)	161.18 (0.35)
Difference-in-Hansen (*p-value*)	61.95 (0.11)	59.17 (0.14)	45.09 (0.59)	38.88 (0.82)
Number of instruments: *(t-2* to *t-4)*	177	176	177	176
Spearman's rho	0.7977***	0.6524***	0.0837***	0.0608**
Independence t-test (*p*-value)	0.0000	0.0000	0.0000	0.0463

Notes: The dependent variable is *FDI 1* or *FDI 2*. The standard errors robust to heteroscedasticity are reported in the parentheses. Wald statistic tests the joint significance of estimated coefficients; asymptotically distributed as χ^2(df) under the null of no relationship. AR(1) and AR(2) are the first and second order autocorrelation of residuals, respectively; which are asymptotically distributed as N(0,1) under the null of no serial correlation. Hansen J is the test of over identifying restrictions, asymptotically distributed as χ^2(df) under the null of instruments' validity. The 'Difference-in-Hansen" test's null hypothesis states that the lagged differenced instruments used for the equations in levels are exogenous. (*), (**) and (***) indicates that the coefficients are significant or the relevant null is rejected at the 10, 5 and 1 percent level, respectively. See Table 2 for the definition of variables. See also Table 6 and Table 7 for notes related to cross-validation and GMM instruments. The *p-values* above reject the null hypothesis; Spearman correlation coefficients are significant at the 1% level; there is consistency regarding the statistical significance and signs of coefficient estimates across the sub-samples, implying that our main results are cross validated and the predictive ability of the models is satisfactory.