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Determinants of FDI inflows in  
advanced economies:  
Does the quality of economic  
structures matter?

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### **Abstract**

This paper investigates the role of economic structures as determinants of FDI inflows. We expand on the existing literature by focusing on advanced economies, using a newly available measure of FDI which cleans the data from statistical artefacts, such as financial round tripping, and by relying on a wide variety of measures that proxy the quality of a country's economic structures. Our results show that there is an empirical relation from the quality of a host country's economic structures to FDI inflows. These results are robust to various economic specifications and are confirmed when restricting our sample to euro area countries only.

*J.E.L. classification: F21, F23, L51, O43.*

*Keywords: Foreign direct investment, economic structures, institutions, euro area countries.*

# 1 Non-technical summary

Foreign direct investment (FDI) has grown strongly as a major form of international capital transfer over the past decades. It is considered a key element for a country's economic integration and represents a key source to finance capital investment. Moreover, it also assures stability, as the "cold" FDI flows are seen as a more stable source of external financing than "hot" portfolio investment.

Commonly the FDI literature gives particular focus to developing countries and how inflows can improve their convergence towards living standards of already developed countries. This paper instead puts the emphasis on advanced economies, and in particular the euro area.

The euro area continues to be a key recipient of FDI. In 2015, the euro area accounted for 20% of the global stock of FDI. Yet, in recent years, attracting FDI inflows into the euro area has become increasingly challenging and the euro area has been losing importance as an investment destination. This decline in direct investment in euro area countries has led to calls to take measures to make the euro area a more attractive investment destination.

This paper attempts to provide a deeper understanding on the measures and factors which could encourage capital transfers into advanced economies and the euro area specifically with a particular focus on the role of structural and institutional features. Having well-functioning institutions and markets in the host country could from a theoretical point of view encourage capital transfers into a country for a variety of reasons. Among others, higher quality institutions not only provide a positive signal to foreign investors as they imply less investment risks, they can also generate real benefits to foreign investors by affecting the key parameters upon which the decision to invest in a foreign country is taken.

In addition to focusing on institutions we also explore a newly available FDI methodology which is able to clean as much as possible the FDI data of statistical artefacts such as financial round tripping.

Our results suggest that well-functioning economic structures are indeed a relevant determinant of FDI inflows in advanced countries, thereby suggesting that policies to attract FDI should also focus on improving these countries' economic structures. These results are also confirmed in our estimations which focus on euro area countries only.

Moreover, we also confirm earlier findings of the literature, namely the importance of other determinants of FDI inflows, such as labour costs, the size of the target market (as proxied by its economic activity), the trade openness of the recipient country as well its tendency to tax economic actors.

Comparing the empirical results using new FDI data, cleaned of statistical artefacts, such as financial round tripping, with those using series that do not correct for such artefacts we find that results indeed differ somewhat, but remain overall robust. Yet, caution is needed here, as the sample size of countries and the time series for which cleaned data are available is still not as encompassing as under the old methodology.

## 2 Introduction

Foreign direct investment (FDI) has grown strongly as a major form of international capital transfer over the past decades. Between 1980 and 2014, the world FDI stock – defined as cross-border expenditures to acquire or expand corporate control of productive assets – has increased from less than 1 trillion (or 6% of world GDP) to almost 25 trillion USD (or 33% of world GDP). This rapid growth in cross border investment has to a large extent been due to the reduction in trade and investment barriers, the harmonisation and mutual recognition of regulation and the removal of domestic impediments through reform and privatisation (see OECD, 2001). Instead of barriers, many countries now employ actual incentives to attract FDI. Incentive-based competition for FDI has meanwhile become a wide-spread phenomenon, involving governments at all levels (national and sub-national) in both OECD and non-OECD countries (Oman, 2000).

This improvement in the investment climate over the past decades has been influenced by the recognition of the benefits of FDI. Foreign direct investment is considered a key element for a country’s economic integration and represents a key source to finance capital investment (see Campos and Kinoshita, 2008). “Cold” FDI flows are seen as a more stable source of external financing than the “hot” portfolio flows, implying more stable macro-wide financial structures. Both theoretical and empirical studies have documented the positive impact of FDI on potential growth. Such effects materialise as FDI improves the transfer of technology and know-how, increases competition and pushes for more positive development of firms. However, studies have also shown that such effects only take place when a host country has reached a basic level of development and adopts appropriate policies (OECD, 2002). These channels, under the right conditions, can in turn be expected to make countries more competitive, productive and thus help stimulate their growth potential.

The euro area continues to be a key investor and recipient of FDI. This is the case despite that since the mid-2000s, emerging markets have becoming increasingly important as hosts to foreign-owned firms. In 2015, one third of the global inward FDI stock was directed to the EU and one fifth to the euro area (see Figure 1) and FDI continues to play a more important role for many euro area countries than for other industrial economies (such as the US or Japan).

In recent years, attracting FDI inflows into the euro area has become increasingly challenging. After the strong FDI inflows during the 1990s ahead of the creation of the monetary union and with the creation of the single market (see Shatz and Venables, 2000)<sup>1</sup>, the euro area has been losing importance as an investment destination, a trend which is continuing up to this day. As a result, the euro area share in world inward FDI has declined from 31% in 2008 to 21% in 2014, reflecting the decline in inflows in euro area countries while developing countries have witnessed historically high inflows (see Figure 1).

This decline in direct investment in euro area countries has led to calls to make the euro area a more attractive investment destination.<sup>2</sup> This however requires a deeper understanding on the measures and factors which could encourage capital transfers. This paper attempts to answer this question with a special focus on the role of structural and institutional features. Having well-functioning institutions and markets in the host country could encourage capital transfers into a country for a variety of reasons: it can provide a positive signal to foreign investors as they imply less investment risk. Moreover, they can also generate real benefits to foreign investors by affecting the key parameters upon which the decision to invest in a foreign country is taken (see Campos and Kinoshita, 2008).

Despite its relevance, there exists little empirical evidence on the link between FDI flows and well-functioning economic structures for advanced economies and even less so for the euro area. In this paper, we contribute to the literature by estimating the impact of well-functioning economic

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<sup>1</sup>Shatz and Venables (2000) refer inter alia to the work of Barrell and Pain (1997) who report that UK and German investment to the rest of the EU from the 1980s through 1992 rose sharply in those sectors that previously had the highest barriers to cross-border market entry.

<sup>2</sup>[http://trade.ec.europa.eu/doclib/docs/2011/may/tradoc\\_147884.pdf](http://trade.ec.europa.eu/doclib/docs/2011/may/tradoc_147884.pdf)

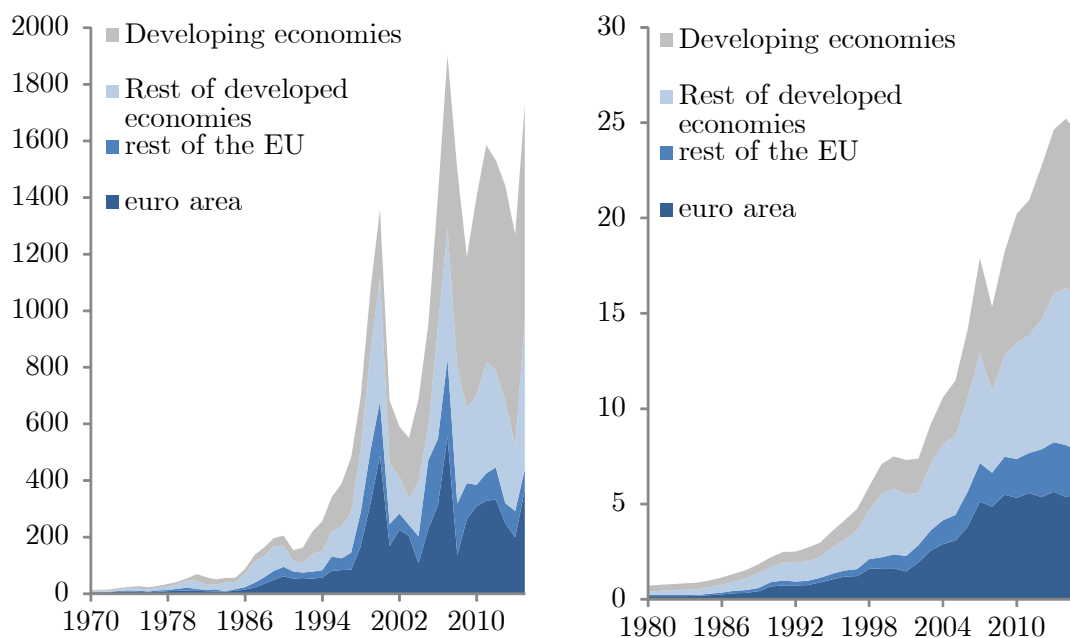


Figure 1: UNCTAD world inward FDI flows (LHS, billion USD) and stock (RHS, trillion USD)

structures on FDI inflows for 21 OECD countries in a panel data setting for the period 2005-2014. We also contribute to the literature by relying in our estimations on new FDI estimates based on the OECD BMD4 which cleans FDI data of statistical artefacts, such as financial round tripping. We further correct the underlying data through sample selection following the approach recently suggested by Blanchard and Acalin (2016). And finally, we consider a wider set of institutional factors to see to what extent the quality of labour/product market, business conditions, or political institutions are associated with FDI inflows into our sample countries. Our results show that well-functioning economic structures are indeed a relevant determinant of FDI inflows in advanced countries, thereby suggesting that policies to attract FDI into euro area countries should also focus on improving these countries' economic structures. These results are also confirmed in our estimations which focus on euro area countries only.

The remainder of the paper is organised as follows. Section 3 recalls the large literature that already exists on FDI and its determinants. Section 4 will introduce the empirical strategy applied and presents the main results. Section 5 concludes.

### 3 Literature Overview

Foreign direct investment (FDI) is defined as an investment involving a long-term relationship and reflecting a lasting interest and control by a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign direct investor (FDI enterprise or affiliate enterprise or foreign affiliate).<sup>3</sup>

The sharp rise in worldwide foreign direct investment during the 1980s and 1990s resulted in an equally rapid increase in economic literature studying the drivers of FDI. This literature has presented a variety of theoretical models and frameworks which attempt to explain FDI and the location decisions of MNEs. The most widely-known and cited framework in this regards was the OLI-framework as developed by John Dunning (1980).<sup>4</sup> In this framework MNEs engage in foreign

<sup>3</sup>This general definition of FDI is based on OECD, Detailed Benchmark Definition of Foreign Direct Investment, third edition (OECD, 1996), and International Monetary Fund, Balance of Payments Manual, fifth edition (IMF, 1993).

<sup>4</sup>Since then a number of other frameworks have been developed but to date, no single unifying theory of FDI

direct investment based on three advantages: *Ownership* advantages, *Location* advantages and *Internalisation* advantages. Locational advantages relate to the country-specific advantages that the firm gains when investing abroad. Internalisation advantages relate to the production kind of activities undertaken by the firm itself rather than licensing them to another party. Ownership advantages may include firm's superiority over its competitors in terms of marketing practices or on the technological front (see Alam and Shah, 2013).

In this paper, we focus on the host country locational determinants which can influence a firm's locational investment choice. In general terms, firms will choose the investment location that entails the highest expected profitability, i.e. either because it minimizes the cost of production (including reducing the riskiness of the investment) and/or maximises the expected return. The literature has put forward a number of host country advantages that could be considered to either lower the cost of production or increase expected return. These include:<sup>5</sup> a large sized market or a market with high potential (i.e. high growth or high GDP per capita); low relative factor prices (i.e., natural resources, labour cost, and human capital); high trade openness<sup>6</sup> and the existence of a common trade policy framework; macroeconomic stability (such as a stable exchange rate, low inflation and low debt); close geographical and cultural proximity; tax benefits or a low tax rate; high quality infrastructure; sound institutions and a stable political system.<sup>7</sup>

Empirically, the relevance of these host country characteristics for attracting FDI has been widely studied. Studies have used a variety of methodologies and approaches. Some studies have used micro firm level data to get a deeper understanding of the factors driving MNE FDI decisions. Other studies have looked into bilateral FDI flows between countries, often by means of a gravity-type model (inspired by the trade literature). Finally, there is a set of studies which look at aggregate FDI inflows into a country or a panel of countries. The various approaches reflect the availability of data and the research focus but also reflect the absence of a consensus as to how to model FDI flows.

The most tested hypothesis in the literature has been whether firms engage in FDI for market seeking or efficiency seeking reasons. The consensus emerging from this literature to date has been that for developed economies, market size and market potential (i.e. market seeking or horizontal FDI) are relatively more important determinants for inward FDI than is the case for developing countries, where labour costs (i.e. efficiency seeking or vertical FDI) are more relevant.<sup>8</sup> Close geographical proximity is also found to be an important driver of FDI. Shatz and Venables (2000) for instance stress the high level of vertical investment of US firms in Canada due to the geographical proximity – allowing producers to coordinate their production more easily as they slice it into sections. A common language in turn has been put forward as one explanation for the large share of US FDI in the EU being located in the UK and Ireland (see Antonakakis and Tondl,

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exists. Instead a variety of theoretical models have been developed that attempt to explain FDI and the location decision of MNEs. In a recent survey, Faeth (2009) lists nine existing theoretical models that have been developed in the literature. She finds that the different approaches do not necessarily replace each other, but instead that any analysis of FDI determinants should be explained more broadly by a combination of factors from a variety of theoretical models.

<sup>5</sup>See Antonakakis and Tondl (2010) for a detailed overview of the existing literature analysing the importance of all these host country characteristics.

<sup>6</sup>Note that ex ante it is not clear whether FDI flows and trade flows act as substitutes or complements. Both the theoretical and empirical literature remains inconclusive. However, for the EU, Martinez et al. (2012) have found that EU commercial integration and FDI reinforce each other, thus being complements rather than substitutes in Europe. This effect is apparent for the intra-EU FDI and also for investment coming from countries outside the EU.

<sup>7</sup>Good quality institutions are widely seen to help attract FDI as they reduce the riskiness of investment and thereby reduce the cost of doing business. However at the same time, some of the recent literature in international trade has argued that a firm may choose to engage in FDI as a mode of entry as opposed to outsourcing because of the hold-up problem (Antras, 2003), in which case FDI would be associated with poor institutional quality.

<sup>8</sup>See Brainard, 1997; Wheeler and Mody, 1992, Martinez et al., 2012 and Shatz and Venables, 2000. Note that while studies have found that horizontal as opposed to vertical FDI is more likely a motivation for firms to invest in developed economies, the empirical literature does point to the importance of labour costs and vertical FDI as a possible motivation for firms to invest in developed economies (see for instance but not exclusively Alam and Shah, 2010, who finds labour cost is a statistically significant determinant of FDI inflows in OECD countries.).



2010). The past stock of foreign investment has also been found as important in explaining FDI inflows.<sup>9</sup> And several studies have documented the strong positive effect of openness on inward FDI.<sup>10</sup> A higher tax rate has by contrast been found to reduce the likelihood of FDI (Razin and Sadka, 2007) though some studies could not find a significant link between the tax rate and FDI inflows (see for instance Alam and Shah, 2010 and Lahrèche-Révil, 2006).

Whereas the above classical determinants of FDI have been widely studied for a variety of regions and countries, the empirical literature on the impact of the quality of the infrastructure, macroeconomic and institutional factors has been more scant and almost solely focused on developing countries. For developing countries the broad consensus in the literature is that institutional quality is important to attract FDI. In the case of OECD countries, empirical evidence has to date been more mixed. Alam and Shah (2010) find that OECD FDI inflows cannot be linked to the quality of the infrastructure or political stability. By contrast Bénassy-Quéré et al. (2007) who study bilateral flows into both OECD and developing countries find that that institutions matter independently of GDP per capita. The authors find that public efficiency in a broad sense is a major determinant of inward FDI. This includes tax systems, easiness to create a company, lack of corruption, transparency, contract law, security of property rights, efficiency of justice and prudential standards. The extent of competition is also shown to matter, although capital concentration in both the source and the destination country has a positive impact on FDI.

## 4 Methodology, data and results

### 4.1 FDI data

Our dependent variable is the aggregate FDI inflow in line with several papers in the literature (e.g. Wong and Tang, 2011; Trevino and Mixon, 2004; Campos and Kinoshita, 2008). We do so in particular as stocks can suffer from discrepancies between original book and market value as the value of firms and FDI stocks change (Contessi and Weinberger, 2009). This makes their inter-temporal comparison problematic.

As noted in the literature survey, finding determinants of FDI has been a long-standing endeavour, given the importance of foreign direct investment for economic development in the host country (i.e. its role of supplying capital, providing a source of technology and know-how spillover). As in any empirical analysis, an accurate measurement of the variable to be explained is essential. However, given the significantly changing landscape of corporate legal forms and financial accounting, past vintages of FDI data found it increasingly difficult to correctly match the origin of the direct investor to the direct investment recipient country. Borga (2015) gives a telling example: according to FDI statistics using the last vintage (the OECD Benchmark Definition, 3rd edition) the British Virgin Islands, Mauritius or Cyprus have been among the top foreign direct investors in China, Russia or India. Clearly, these records are not traditional domestic firms in these countries, but companies from other countries investing abroad through a holding company or affiliate located in a third country.

To address these concerns, we use in this paper a new OECD database on FDI statistics available since March 2015, which corrects for many of these data limitations.<sup>11</sup> OECD (2015) lists the main changes applied to the methodology in this new manual: first, the statistics on a directional

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<sup>9</sup>For Ireland, Barry and Bradley (1997) report that surveys of executives in the computer, instrument engineering, pharmaceutical, and chemical sectors show that their decision to locate in Ireland is strongly influenced by the presence of other key firms in their industries.

<sup>10</sup>See for instance Campos and Kinoshita (2008); Trevino et al. (2008); de Boyrie (2010); Sekkat and Veganzones-Varoudakis (2007).

<sup>11</sup>In 2014 most OECD countries started to implement the latest international standards for Foreign Direct Investment (FDI) statistics, which are reflected in the “OECD Benchmark Definition of FDI, 4th edition” (BMD4). In addition to the 4th generation definition, the data are for the most part also based on the updated balance of payments statistics published by Central Banks and Statistical Offices following the recommendations of the IMF’s “Balance of Payments and International Investment Position Manual, 6th edition” (BPM6).

basis are improved by having statistics compiled excluding Special Purpose Entities (SPE). Some investments are undertaken by parent companies into purely operational direct investment entities abroad without economic activity and which holds foreign equity and runs large amounts of capital in transit, most often for tax advantages. Controlling for investment into SPEs reduces the overstatement of FDI statistics and therefore provides a more realistic picture of source and destination for FDI (OECD 2015b).

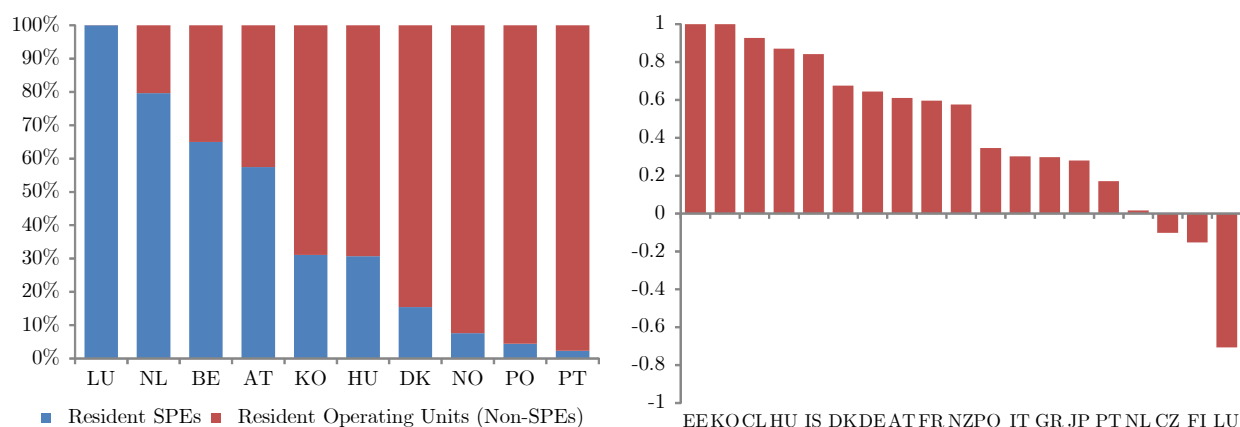


Figure 2: Average 2013-2014 Share of FDI into Special Purpose Entities (SPEs) and non-SPEs (LHS) and correlation between FDI inflow- and outflow (excluding SPEs)

Figure 2 shows the break-down into SPE and non-SPE for a selection of OECD countries. For a number of countries included in our sample, SPE flows account for more than half of the total FDI in the country. This demonstrates the importance of accounting for these different types of flows when analysing the determinants of FDI flows in countries.

Second, the new manual also extends the directional principle with a view to better capture the direction and degree of influence of the investment and to remove some double-counting in the FDI statistics when debt only passes through affiliated entities (so called ‘fellow enterprises’).<sup>12</sup> The previous benchmark definition stipulated that lending by a resident fellow enterprise to a foreign fellow would be recorded under outward investment. However, this treatment did not accurately reflect the direction and degree of influence exerted by resident and non-resident direct investors in the reporting economy. For example, a resident fellow did not exert any influence over a foreign fellow if it made a loan to that foreign fellow enterprise, as the influence remains with the direct investor common to both enterprises. So, if the direct investor is not resident in the economy, such loans should not be recorded as outward investment (OECD, 2015a). For countries with a significant number of fellow enterprises the impact can be quite significant. The OECD (2015a) shows that this correction through the new benchmark definition has a significant impact for some countries. The changes would range from a 10% reduction in the outward stock of Finland (2008) to a 67% reduction in the inward stock of Belgium (2009).

Third, the new BMD4 also suggests compiling inward investment positions according to the Ultimate Investing Country (UIC) to identify the country of the investor that ultimately controls the investments in their country, instead of focussing on the immediate investor.

Overall, the new OECD database using the BMD4 produces more meaningful FDI statistics that enable a better understanding which countries are the main source and destination of FDI.

<sup>12</sup> An enterprise in one country may be related to another enterprise in the same (or another) country without either of them being a direct investor in the other, but through both being directly or indirectly influenced by the same common parent enterprise which is a direct investor in at least one of the enterprises in question.



Using the new dataset, however, also has a downside, as historical data applying this new concept are still limited. We therefore use a panel dataset from 2005 to 2014 for 21 OECD countries.

Moreover, despite the good efforts of the BMD4 guidelines, FDI flows could still be biased. Blanchard and Acalin (2016) for example argues that measured FDI inflows in some cases are just flows going in and out of the country on their way to their final destination, with the stop due in part to favourable corporate tax conditions. They suggest that high correlation between FDI in- and outflow indicate financial round-tripping. Chart 2 depicts the correlation between FDI in- and outflow and indeed shows that in particular for five cases the correlation coefficient remains fairly even after cleaning the data of SPEs, namely for Estonia, Korea, Chile, Hungary and Iceland.

## 4.2 Structural data

One of the primary interests of this paper is to understand the extent to which well-functioning economic structures are important drivers of FDI inflows into advanced OECD and euro area countries. Well-functioning economic structures can cover a large number of areas, including fundamental political institutions, labour and product market regulations and broader framework conditions. There exist a large variety of datasets that can proxy for them. In this paper we focus on those measures that are available on an annual basis and have a sufficiently broad coverage. We consider both measures that aim to proxy the overall functioning of economic structures in countries and measures that focus on specific areas.

As regards those measures that proxy the overall functioning of economic structures we consider the Global Competitiveness index (GCI), the Heritage and the Fraser Economic Freedom indicators. The GCI has been developed by Xavier Sala-i-Martin and Elsa V. Artadi. The index considers twelve pillars of competitiveness.<sup>13</sup> The impact of each pillar on competitiveness varies across countries, in function of their stages of economic development. Therefore, in the calculation of the GCI, pillars are given different weights depending on the per capita income of the nation. The weights used are the values that best explain growth in recent years. The Heritage indicator covers ten different perspectives, namely on property rights, corruption, overall fiscal policies, government spending, business regulations, labour regulations, monetary policy, trade policies, investment policies and financial regulation. The Fraser Institute database provides indices of economic freedom based on three key notions: individual choice and voluntary transaction, free competition, personal and property protection. These notions are then detailed along several aspects of the economy, using miscellaneous sources such as the World Economic Forum Global Competitiveness Report, the PRS Group International Country Risk Guide, or even more classical sources such as the IMF International Financial Statistics (see Benassy-Quere et al, 2007).

Besides using aggregate measures, we also consider indicators which proxy the quality of specific policy areas which in either the existing empirical or theoretical literature have been put forward as most essential in determining international investors' FDI decisions: (i) institutional quality; (ii) the efficiency of product market; (iii) the ease of doing business and (iv) the efficiency of labour markets.

To measure the institutional quality we make use of the World Governance Indicators of the World Bank. The World Governance Indicators from the World Bank are a research dataset initiated by Daniel Kaufmann and Aart Kraay. It summarizes the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents. The data are gathered from a number of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms. The efficiency of product markets is measured by a composite OECD indicator for competition in energy, transport and communication. Moreover, the Global Competitiveness sub-indicator on product market efficiency complements the view of

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<sup>13</sup>The twelve pillars are: institutions; appropriate infrastructure; a stable macroeconomic framework; good health and primary education; higher education and training; efficient goods markets; efficient labour markets; developed financial markets; the ability to harness the benefits of existing technologies; and its market size, both domestic and international; by producing new and different goods using the most sophisticated production processes; innovation.

the pure regulatory stance in these markets. In terms of broader framework conditions for doing business, we focus on the World Bank’s sub-indicators on enforcing contracts and starting a business as these are the most relevant indicator for investors. But also inefficient structures in labour markets can introduce unnecessary burden for foreign investors. We therefore analyse the link between FDI inflow and the OECD Employment Protection Legislation index as well as the Global Competitiveness sub-index on labour market functioning.

### 4.3 Econometric approach

For our empirical approach, we draw on the existing literature on the determinants of FDI. However, as already noted in section 2, there exists no consensus in the theoretical literature regarding the modelling approach and determinants of FDI. Faeth (2009) even concluded based on his empirical testing of the various theories that in fact there exists no single theory, but a variety of theoretical models attempting to explain FDI. Thus, any analysis of FDI determinants should be explained more broadly by a combination of factors from a variety of theoretical models. Put differently, the various FDI theories are typically compatible with one another (see also Antonankakis and Tondl, 2010). As a result, in our baseline model specification, we focus on the variables which have been most commonly identified in the existing literature as relevant determinants of FDI. More specifically we include a proxy for market size/potential (i.e. the host country’s nominal GDP), labour costs (i.e. the unit labour cost), the degree of trade openness and the tax rate in the host country. We then add various measures of the quality of institutions and economic structures. Based on this, the baseline equation therefore takes the following functional form:

$$y_{i,t} = \alpha + \beta_1 gdp_{i,t} + \beta_2 tax_{i,t} + \beta_3 openness_{i,t} + \beta_4 ULC_{i,t} + \beta_5 INST_{i,t} + D_i + \varepsilon_{i,t} \quad (1)$$

where  $y_{i,t}$  is the country-specific natural logarithm of the FDI inflows,  $gdp_{i,t}$  the country-specific natural logarithm of nominal GDP (in PPPs),  $tax_{i,t}$  the country-specific annual tax revenues in percent of GDP,  $openness_{i,t}$  a measure of trade openness measured as exports plus import in relation to the country’s GDP,  $INST_{i,t}$  captures a wide range of proxies for the well-functioning of national economic structures and institutions,  $ULC_{i,t}$  the country-specific unit labour cost as well as fixed or random effects ( $D_i$ ), where suggested through relevant statistical tests. Annex A provides details on the source for all data used.<sup>14</sup>

We estimate our baseline specification in a panel setting. A panel data approach has the advantage that it uses all the information available which is not detectable in pure cross-sections or in pure time series. Moreover, the panel approach is also chosen given that the new OECD database, as elaborated in Section 3.1, does not yet contain long time-series for many countries.

We apply various econometric specifications, to test the sensitivity of our results to changes in the underlying empirical models. We start with standard panel models (fixed effects, random effects and pooled OLS, depending on the relevant statistical tests, see below) in line with e.g. Bénassy-Quéré et al (2007). We test for unit roots in various ways. Given the short sample size ( $T$ ) and the relatively large size of countries ( $N$ ), panel unit root tests can suffer from severe size distortions. We conduct panel unit root test following Harris and Tzavalis (1999) for balanced panel (restricting our sample to the 13 countries for which data are balanced) which is able to correct for the sample size bias. In addition, we also conducted panel unit root tests for the longer, non-cleaned, time series using UNCTAD data to maximise the time span and found that FDI inflows were not exhibiting unit roots.

However a key well-known concern in the literature regarding our analysis is that some regressors may be potentially endogenous or predetermined in determining FDI flows. For example, FDI might

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<sup>14</sup>We also tested in our analysis the significance of other possible control variables which are sometimes in the literature considered as relevant. This includes GDP growth, inflation, education expenditure, infrastructure investment, innovation expenditure. Yet, none of the above-mentioned variables were statistically significant in any of our regressions.

be attracted to a country that has a higher GDP (due to its market size) but at the same time, higher economic activity may also be enhanced by the presence of FDI. If this is the case, and we were to run the ordinary least squares (OLS) regression on equation (1), the estimate would be biased as the error term is correlated with the explanatory variables.

To account for this potential endogeneity, we apply system GMM as proposed by Arellano and Bover (1995) and Blundell-Bond (1998) building on Arellano-Bond (1991). This is also done to check for possible dynamic effects in the regressions, i.e. to see whether FDI inflows are correlated with past observations. Compared to the baseline regression, this means adding the lagged dependent variable on the right hand side.

System GMM is a very frequently used tool in the econometric literature, yet it is essential that its preconditions are met, as otherwise instrumental variable regression (IV) is actually preferable. With a view to test whether GMM is actually more desirable than IV, we will in particular need to see whether estimating a dynamic model is justified (i.e. is the lagged dependent variable significant) and whether heteroskedasticity is present. In this case, the GMM estimator is more efficient than the simple IV estimator. By contrast, if heteroskedasticity is not present, the GMM estimator is no worse asymptotically than the IV estimator. We will use the Pagan and Hall (1983) test for no heteroscedasticity. In case of homoscedasticity and if the lagged dependent variable is not significant we would use simple IV regressions. Also, however, for this approach we will need to ensure that two assumptions are satisfied. First, relevant instruments would need to be distributed independently of the error process, and second, they would need to be sufficiently correlated with the included endogenous regressors.

## 4.4 Results

### 4.4.1 Main control variables across various econometric specifications

Table 1 shows the estimation results for the main control variables from our benchmark regression (1), based on a variety of specifications (as discussed in Section 4.3). As regards the standard panel estimation methodologies, we report the results for the pooled OLS and random effects panel model. This choice is based on the results from the Hausman and Breusch-Pagan Lagrange multiplier test which reject fixed effects over random effects but only just prefer random over pooled OLS.

However, as noted in Section 4.3, it may be important to control for endogeneity in our estimations. We therefore also consider system GMM and IV estimations. As regards the system GMM, we treat in our estimation all variables except the unit labour costs as endogenous to be most encompassing in targeting possible endogeneity. We allow for a broad set of lags as instruments, which as by a Sargan test are seen as appropriate instruments. However, to account for the possibility of instrument proliferation, we also check whether limiting the instruments to a smaller subset changes our results, which is not the case.<sup>15</sup> In terms of results, the system GMM approach seems very robust to the results of our main control variables as depicted by pooled OLS and random effects estimates. Yet, the estimate of the dynamic variable, i.e. the lagged dependent FDI inflow is not significant. While the results are comforting, as noted in Section 4.3, GMM is not always preferable over IV. By contrast, given the potential pitfalls of GMM pointed out by Hayashi (2000) the GMM estimator can have poor small sample properties in case of non-heteroscedasticity. In particular, Wald tests tend to over-reject the null. We therefore conduct Pagan and Hall (1983) tests for no heteroscedasticity which cannot be rejected. We therefore conclude that IV estimation is preferable to GMM.

In terms of econometrics for the IV regression, a test of overidentifying restrictions (Sargan-Hansen) suggests that also here instruments are overall appropriate. Yet, while we might be quite confident of some instruments' independence from the error term, we might be more concerned about others. In that case a GMM distance or C test may be used. The test is defined as the difference of two Sargan-Hansen statistics: one for the equation with the smaller set of instruments,

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<sup>15</sup>The Table is available from the authors upon request.

where the suspect regressors are treated as endogenous, and one for the equation with the larger set of instruments, where the suspect regressors are treated as exogenous. Interestingly the results suggest that OLS would be consistent, except for the case of GDP, where the test suggests that the variable might in fact be correlated with the error term and therefore requiring IV.

**TABLE 1. Linking FDI inflows to main control variables**

	(1)	(2)	(3)	(4)
	OLS	RE	System GMM	2SLS
FDI inflows (t-1)			0.081 (0.550)	
log GDP	1.053*** (0.000)	1.001*** (0.000)	0.963*** (0.000)	1.052*** (0.000)
Tax revenues	-0.050*** (0.002)	-0.038 (0.102)	-0.061*** (0.006)	-0.060*** (0.003)
ULC	-3.723*** (0.000)	-4.797*** (0.000)	-3.240*** (0.009)	-3.131** (0.013)
Openess	1.623*** (0.000)	1.530*** (0.000)	1.512*** (0.000)	1.604*** (0.000)
Constant	-14.661*** (0.000)	-13.007*** (0.000)	-12.922*** (0.000)	-14.751*** (0.000)
Observations	165	165	133	128
R-squared	0.612	0.607		0.604
Number of cnt	21	21	21	21

\*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10% p-values are shown in brackets.

Based on the above assessment we conclude that the IV estimation is preferable to GMM. However, for completeness, we nevertheless report the regression results from 4 different specifications, namely the OLS, random effects, IV and GMM estimation. These results are reported in Table 1. Overall, the Table shows that our various specifications lead to broadly similar estimation results and are overall in line with the existing literature. The results show that high GDP is associated with higher inflow of FDI. Higher GDP captures the market potential in terms of purchasing power and size. This finding is in line with the existing literature for advanced economies (see e.g. Resmini, 2000 and Alham and Shah, 2013) which also conclude that market size (in their case GDP per capita) matters to attract FDI inflows. In addition, we find that the supply of inexpensive labour (relative to labour productivity) in the host country seemingly attracts foreign investors. A number of studies in the literature have come to similar conclusions for advanced economies (such as inter alia Alham and Shah, 2013, Woodward and Rolfe, 1993; and Bevan and Estrin, 2004). Our results also show that the degree of a countries' trade openness is linked to FDI inflows. The larger the weight of exports and imports in overall GDP of a country, the more it seems able to attract FDI. This confirms for instance the results by Wagle (2010). At the same time, countries tending to extract significant taxes from economic agents seem to be less able to absorb FDI flows, as shown by the negative coefficient for the tax revenues. Most studies have to date found such a negative relationship between tax rates and FDI flows (see for instance di Giovanni, 2005). However, some other studies, such as Wheeler and Mody (1992), found no significant role in taxes for attracting or deterring FDI inflows.

#### 4.4.2 The impact of the new database

One of the innovations of this paper is the use of the new OECD database on FDI, which for the first time corrects for the presence of SPEs in FDI flow data for a large set of countries. It is of course interesting to compare the regressions of the new data cleaned from the presence of SPEs with the total FDI inflow including SPEs. Table 2 puts together the benchmark regressions with cleaned FDI

data from Table 1 and the regressions with the overall FDI data. The most significant difference is that the lagged FDI in the system GMM context is now significant if SPEs are not eliminated from the data. Working with the non-cleaned data would have therefore given a somewhat distorted picture about the potential dynamic features of the model. Apart from that, however, results remain overall robust and also the coefficients' magnitude does not vary significantly.

**TABLE 2. Comparing regression results with revised and old FDI data**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS		RE		System GMM		2SLS	
	w/o SPE	Total	w/o SPE	Total	w/o SPE	Total	w/o SPE	Total
Inflow (t-1)					0.081 (0.550)	0.464*** (0.000)		
log GDP	1.053*** (0.000)	1.165*** (0.000)	1.001*** (0.000)	1.056*** (0.000)	0.963*** (0.000)	0.623*** (0.000)	1.052*** (0.000)	1.188*** (0.000)
Tax rev.	-0.050*** (0.002)	-0.076*** (0.000)	-0.038 (0.102)	-0.036 (0.183)	-0.061*** (0.006)	-0.053*** (0.007)	-0.060*** (0.003)	-0.089*** (0.000)
ULC	-3.723*** (0.000)	-3.233*** (0.000)	-4.797*** (0.000)	-6.273*** (0.000)	-3.240*** (0.009)	-1.752** (0.016)	-3.131** (0.013)	-2.193* (0.078)
Openness	1.623*** (0.000)	2.740*** (0.000)	1.530*** (0.000)	2.287*** (0.000)	1.512*** (0.000)	1.553*** (0.001)	1.604*** (0.000)	2.827*** (0.000)
Constant	-14.661*** (0.000)	-16.394*** (0.000)	-13.007*** (0.000)	-12.973*** (0.000)	-12.922*** (0.000)	-8.313*** (0.004)	-14.751*** (0.000)	-17.382*** (0.000)
Observations	165	219	165	219	133	177	128	171
R-squared	0.612	0.580	0.607	0.550			0.604	0.571
# of cnt	21	27	21	27	21	27	21	27

\*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10%. p-values are shown in brackets.

If at all, non-cleaned FDI data seem to underestimate the drag of high ULC on FDI inflows a bit, while they seem somewhat positively biased as regards the potential trade openness has in attracting FDI into a country. The limited difference of the two types of data in the panel context could be explained by just a few countries for which the presence of SPEs is significantly distorting the picture (recall Figure 2). However, it is important to note the limited difference should not lead to the conclusion that this bias had no relevance in past studies. First, there are certainly significant differences for the countries most affected by the presence of SPEs. Thus country analysis of FDI determinants would be severely biased without the correction. Second, and most importantly, it has to be recalled that the sample of this analysis is fairly short and not all countries yet report the SPE / non-SPE breakdown. Hence, while the preliminary preview of the comparison seems relatively comforting an (backward) extended data-set might lead to different conclusions.

#### 4.4.3 Further cleaning FDI data in the spirit of Blanchard and Acalin (2016)

As discussed in Section 4.1 even with the cleaned data, FDI figures should be treated with caution as elaborated on by Blanchard and Acalin (2016). With a view to ensure that data are not biased by e.g. financial round-tripping, he suggests to remove countries with a high correlation between FDI in- and outflows. In doing so, we remove the five countries with the highest correlation as depicted in Figure 2. Aside of Korea and Iceland which were dropped in the regressions due to data availability, we further exclude Estonia, Chile, and Hungary. Excluding those countries, our overall results are robust, when comparing those shown in Table 2 with those in Table 3.

In terms of magnitude of coefficients, removing Estonia, Chile and Hungary, results in slightly higher impacts from GDP, ULC and openness on FDI inflows, while the effect of taxes is slightly less pronounced. Yet, these differences are overall negligible.

**TABLE 3. Comparing the regression results with revised and old FDI data - dropping countries with high correlation between FDI in- and outflows**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS		RE		System GMM		2SLS	
	w/o SPE	Total	w/o SPE	Total	w/o SPE	Total	w/o SPE	Total
Inflows (t-1)					0.058 (0.691)	0.450*** (0.002)		
log GDP	1.095*** (0.000)	1.250*** (0.000)	1.068*** (0.000)	1.153*** (0.000)	1.012*** (0.000)	0.626*** (0.009)	1.111*** (0.000)	1.278*** (0.000)
Tax rev.	-0.045** (0.012)	-0.077*** (0.000)	-0.031 (0.263)	-0.044 (0.143)	-0.060** (0.017)	-0.060*** (0.002)	-0.053** (0.014)	-0.090*** (0.000)
ULC	-4.561*** (0.001)	-3.584** (0.012)	-6.641*** (0.000)	-7.486*** (0.000)	-4.400** (0.018)	-1.524 (0.303)	-3.314* (0.052)	-1.491 (0.396)
Openness	1.667*** (0.000)	2.871*** (0.000)	1.604*** (0.000)	2.434*** (0.000)	1.568*** (0.000)	1.583*** (0.003)	1.687*** (0.000)	2.996*** (0.000)
Constant	-15.433*** (0.000)	-18.484*** (0.000)	-13.845*** (0.000)	-14.543*** (0.001)	-13.267*** (0.000)	-8.169* (0.056)	-16.499*** (0.000)	-20.344*** (0.000)
Observations	144	192	144	192	115	155	111	150
R-squared	0.616	0.574	0.608	0.545			0.605	0.568
# of cnt	18	24	18	24	18	24	18	24

\*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10%. p-values are shown in brackets.

#### 4.4.4 The role of structural variables

We now turn to widening the set of explanatory variables with a view to gauge the link between a set of structural variables and FDI inflows. Table 4 summarises the coefficients of structural variables under various modelling frameworks.

We conducted regression adding one individual structural variable at a time. In line with Bénassy-Quéré et al (2007), we decide to not introduce all structural variables jointly in the regression given the tendency for policy settings in different domains to be highly correlated (e.g. countries with rigid labour markets often also display limit competition in product markets). Including all variables jointly would thus generate multicollinearity, thereby biasing the significance of our coefficient estimates.

Against this background we extend the regressions noted in Table 1 by one structural variable respectively. We note that the coefficients of the other variables are highly robust to the choice of the added structural indicators. In order to improve visibility of the structural coefficients, we suppress the other coefficients of the regression in Table 4, but report them in the Annex (Table B2) for completeness.

Before turning to the results, we should note that conducting the relevant statistical tests for the appropriate choice of the econometric approach, our conclusions remain hardly unchanged.<sup>16</sup> In terms of structural variables, the endogeneity test (described in Section 3.4.1) treats them as clearly exogenous. Hence, they are not instrumented in IV and GMM regressions. Again, following the reasoning described in Section 4.4.1, we tend to prefer IV over system GMM results.

<sup>16</sup> Only for the choice between random effects and pooled OLS, in the majority of cases for the different structural variables, the Breusch-Pagan Lagrange multiplier test preferred pooled OLS, which we report in column (1) of Table 4.



**TABLE 4. Linking FDI inflows to institutional variables**

	OLS	IV GMM	System GMM
Structural headline indicators			
Global Competitiveness Index	0.465** (0.035)	0.523** (0.034)	0.572** (0.014)
Heritage Economic Freedom Index	0.025* (0.068)	0.036** (0.026)	0.027 (0.120)
Fraser Economic Freedom Index	0.521** (0.014)	0.782*** (0.002)	0.744*** (0.005)
Product Market			
OECD Product market regulation	0.259 (0.112)	0.322 (0.132)	0.525** (0.029)
GCI product market efficiency	0.617** (0.011)	0.725** (0.012)	0.769*** (0.003)
Framework conditions			
World Bank DB Index on enforcing contracts	0.019** (0.013)	0.026*** (0.005)	0.025*** (0.000)
World Bank DB Index on starting a business	0.014 (0.108)	0.022* (0.061)	0.017* (0.054)
Labor markets			
GCI Labor market efficiency	0.328* (0.052)	0.373** (0.046)	0.406** (0.050)
OECD EPL	-0.303*** (0.004)	-0.414*** (0.000)	-0.412** (0.015)
Quality of political institutions			
Overall quality of governance	0.302 (0.124)	0.430* (0.068)	0.511** (0.038)
Regulatory efficiency	0.456* (0.077)	0.591* (0.052)	0.565 (0.113)
Rule of Law	0.270 (0.131)	0.404* (0.063)	0.430* (0.057)
Corruption	0.182 (0.113)	0.250* (0.066)	0.287* (0.067)

\*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10%. p-values are shown in brackets.

In terms of estimation results for the structural variables, we find strong support that higher quality economic structures and political institutions matter for attracting FDI. Looking at the composite indicators, a higher economy-wide quality of institutions tends to be associated with higher FDI inflows. It also seems of great importance, according to our analysis, that the country inherits stable political institutions, which ensure low corruption, but in particular a good rule of law. This is also confirmed in particular by the World Bank indicator for the strength of enforcing contracts. Estimates suggest that the more a country is able to ensure an efficient and credible judicial system, the more foreign investors are ready to invest. More specifically, the ability to enforce contracts is closely linked to FDI inflows in our regressions. This is in line with Blonigen (2005), who argues that poor legal protection of the firm's assets increases the probability of future expropriation by the host country government and thus deters FDI. Yet, also the importance of the functioning of the labour market institutions is surprisingly strong. Both the GCI index and the (reversely scaled) OECD EPL indicator suggest that higher quality labour market institutions can promote more FDI inflow. Our results are in line with e.g. Gross and Ryan (2008) who find that different EPL regulations in Western Europe in the 1980/90s can explain the flow of Japanese FDI flows into the different countries.

As a means of robustness check, we include time fixed effects in our main regressions, including the structural determinants. Our results are highly robust to the inclusion of these fixed effects, as shown in Table B2 in the Annex B. Some institutional variables even become significant which have not been significant in some specifications before. However, some of the World Bank Governance indicators, which have been only significant at the 10% significance level before, turn insignificant. Our results are also robust to the use of heteroskedastic-consistent and autocorrelation-consistent standard errors. Yet, the same caveat with respect to some of the weakly significant World Bank indicators in the IV regression applies.

#### 4.4.5 Zooming in on euro area countries

The selected country sample, namely the focus on advanced economies is an important feature of this paper. In this section, we now zoom in on a sub-set of the countries in our sample, namely the twelve euro area countries for which data are available. We do so using two different approaches.

First, we estimate equation (1) only for the subset of euro area countries. Second, we include a euro area dummy and interaction terms with the variables of interest for the full sample.

We start by looking at the main control variables. Comparing the results with the overall sample (i.e. Table 1), there are some differences when looking at Table 5 (EA subsample) and Table 6 (interactions). First, on the question of the model's dynamics (i.e. the system GMM estimations) the two approaches signal slightly diverging perspectives. Looking at the subsample it seems that the lagged FDI inflow is relevant for euro area countries. Yet, the sign of the coefficient is fairly counter-intuitive. Higher inflows last year tend to undergo a sort of downward correction in the subsequent year, i.e. some sort of mean reverting process. The dynamic property is also not confirmed when looking at it through the lenses of interaction terms, which is not significant for the euro area countries.

Second, on GDP the responsiveness of FDI inflows to higher economic activity, wealth or market size in Table 5 for euro area countries is slightly less pronounced than for the OECD sample. The picture is even strengthened in Table 6, which suggests that GDP (except in one specification) does not really matter for EA countries. Third, taxes are not significant for euro area countries as suggested in both approaches, indicating that other factors matter more for investment decisions. Fourth, and by contrast, the impact of ULC is significantly more pronounced when focussing on euro area countries. FDI inflows tend to have a much higher sensitivity to excessive labour costs than for the full sample, which also is confirmed by the significant interaction terms of euro area countries.

**TABLE 5. Linking FDI inflows to main control variables - focus on euro area countries (subsample)**

	(1) OLS	(2) RE	(3) System GMM	(4) 2SLS
FDI inflows (t-1)			-0.245*** (0.002)	
log GDP	0.902*** (0.000)	0.903*** (0.000)	1.103*** (0.000)	0.807*** (0.000)
Tax revenues	-0.012 (0.671)	-0.018 (0.573)	-0.013 (0.624)	0.020 (0.573)
ULC	-8.001*** (0.000)	-7.987*** (0.000)	-11.529*** (0.009)	-9.492*** (0.013)
Openness	1.702*** (0.000)	1.703*** (0.000)	2.212*** (0.000)	1.649*** (0.000)
Constant	-9.012*** (0.002)	-8.820*** (0.000)	-9.640*** (0.000)	-6.599* (0.078)
Observations	95	95	76	75
R-squared	0.595	0.595	0.591	0.553
Number of cnt	12	12	12	12

\*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10%. p-values are shown in brackets.

**TABLE 6. Linking FDI inflows to main control variables - focus on euro area countries (interactions)**

	(1)	(2)	(3)	(4)
	OLS	RE	System GMM	2SLS
FDI inflows (t-1)			0.218	
			(0.276)	
FDI inflows (-1)*EA			-0.363	
			(0.108)	
EA	-1.961	1.150	-7.198	-8.131
	(0.713)	(0.872)	(0.243)	(0.271)
log GDP	0.788***	0.865***	0.599**	0.455
	(0.000)	(0.001)	(0.024)	(0.148)
log GDP*EA	0.125	0.035	0.520*	0.390
	(0.587)	(0.907)	(0.089)	(0.239)
Tax revenues	-0.046	-0.027	-0.022	-0.047
	(0.182)	(0.533)	(0.557)	(0.348)
Tax revenues*EA	0.055	0.023	0.013	0.079
	(0.195)	(0.683)	(0.782)	(0.175)
ULC	-0.624	-2.382	-0.939	1.586
	(0.770)	(0.352)	(0.663)	(0.569)
ULC*EA	-4.823*	-4.038	-5.384*	-7.114**
	(0.067)	(0.195)	(0.055)	(0.038)
Openess	0.365	0.564	-0.153	-0.907
	(0.595)	(0.517)	(0.829)	(0.435)
Openess*EA	1.306*	1.032	2.138***	2.546**
	(0.070)	(0.269)	(0.005)	(0.032)
Constant	-9.995	-11.604	-7.689	-2.890
	(0.040)	(0.067)	(0.146)	(0.672)
Observations	165	165	133	128
R-squared	0.650	0.6435	0.6737	0.650
Number of cnt	21	21	21	21

\*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10%. p-values are shown in brackets.

Fifth, also the importance of openness seems particularly important for euro area countries. Again, the interaction terms for euro area countries are significant for most specifications.

Turning to the importance of structural variables, Table 7 indicates that results are overall relatively similar compared to the benchmark results under the full sample. In terms of coefficients' magnitude, euro area countries FDI inflow seems more sensitive to the quality of institutions, as expressed by the higher coefficients for several of the variables. In particular all composite indicators show higher coefficients compared to the rest of the sample. Only the indicators for starting a business and the OECD product market regulation are not statistically significant in any specification for the euro area countries, while they were in the case of the full sample.

**TABLE 7. Linking FDI inflows to institutional variables - focus on euro area countries (subsample)**

	OLS	IV GMM	System GMM
Structural headline indicators			
Global Competitiveness Index	0.591 (0.100)	0.751* (0.067)	0.691*** (0.001)
Heritage Economic Freedom Index	0.048* (0.083)	0.070** (0.031)	0.047** (0.029)
Fraser Economic Freedom Index	0.845** (0.017)	0.951** (0.018)	1.035*** (0.000)
Product Market			
OECD Product market regulation	0.020 (0.943)	0.017 (0.954)	0.282 (0.379)
GCI product market efficiency	0.688 (0.126)	0.997* (0.071)	0.797*** (0.001)
Framework conditions			
World Bank DB Index on enforcing contracts	0.017* (0.063)	0.022* (0.050)	0.028*** (0.000)
World Bank DB Index on starting a business	0.016 (0.252)	0.016 (0.338)	0.021** (0.016)
Labor markets			
GCI Labor market efficiency	0.429 (0.279)	0.562 (0.190)	0.537*** (0.002)
OECD EPL	-0.172 (0.537)	-0.110 (0.680)	0.069 (0.728)
Quality of political institutions			
Overall quality of governance	0.478 (0.238)	0.586 (0.115)	0.744*** (0.005)
Regulatory efficiency	0.674 (0.143)	0.781* (0.092)	0.934** (0.022)
Rule of Law	0.432 (0.250)	0.624* (0.070)	0.714*** (0.002)
Corruption	0.396 (0.130)	0.478** (0.050)	0.554*** (0.003)

\*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10%. p-values are shown in brackets.

**TABLE 8. Linking FDI inflows to institutional variables - focus on euro area countries (interactions - part 1)**

	OLS	IV GMM	System GMM
Structural headline indicators			
Global Competitiveness Index	0.442 (0.142)	0.392 (0.237)	0.533 (0.197)
Global Competitiveness Index*EA	0.037 (0.924)	0.247 (0.561)	-0.008 (0.988)
Heritage Economic Freedom Index	0.007 (0.698)	0.011 (0.641)	0.009 (0.655)
Heritage Economic Freedom Index*EA	0.051* (0.090)	0.069* (0.051)	0.054* (0.083)
Fraser Economic Freedom Index	0.103 (0.708)	0.323 (0.377)	0.381 (0.195)
Fraser Economic Freedom Index*EA	0.955** (0.025)	0.874* (0.097)	0.859** (0.021)
Product Market			
OECD Product market regulation	0.528 (0.142)	0.269 (0.556)	0.474 (0.290)
OECD Product market regulation*EA	-0.406 (0.287)	-0.052 (0.918)	-0.076 (0.881)
GCI product market efficiency	0.187 (0.568)	0.063 (0.868)	0.147 (0.593)
GCI product market efficiency*EA	0.921* (0.061)	1.412** (0.014)	1.301*** (0.000)
Framework conditions			
WB DB Index on enforcing contracts	0.018 (0.337)	0.026 (0.259)	0.028 (0.203)
WB DB Index on enforcing contracts*EA	0.001 (0.950)	-0.000 (0.997)	-0.006 (0.790)
WB DB Index on starting a business	0.014 (0.322)	0.023 (0.238)	0.018 (0.351)
WB DB Index on starting a business*EA	0.000 (0.989)	-0.002 (0.930)	-0.002 (0.920)

\*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10%. Standard deviations are shown in brackets.

**TABLE 9. Linking FDI inflows to institutional variables - focus on euro area countries (interactions - part 2)**

	OLS	IV GMM	System GMM
Labor markets			
GCI Labor market efficiency	0.3435 (0.144)	0.365 (0.259)	0.507 (0.184)
GCI Labor market efficiency*EA	-0.000 (1.000)	0.235 (0.623)	-0.043 (0.933)
OECD EPL	-0.666*** (0.000)	-0.836*** (0.000)	-0.887*** (0.000)
OECD EPL*EA	0.515* (0.067)	0.535 (0.109)	0.662** (0.047)
Quality of political institutions			
Overall quality of governance	-0.089 (0.755)	-0.083 (0.808)	-0.101 (0.716)
Overall quality of governance*EA	0.695* (0.065)	0.907** (0.044)	1.086*** (0.001)
Regulatory efficiency	-0.027 (0.943)	-0.070 (0.874)	-0.130 (0.726)
Regulatory efficiency*EA	0.872* (0.075)	1.184** (0.039)	1.348*** (0.005)
Rule of Law	0.012 (0.962)	0.024 (0.937)	0.010 (0.974)
Rule of Law*EA	0.4392 (0.154)	0.721 (0.081)	0.779 (0.046)
Corruption	-0.018 (0.908)	-0.011 (0.949)	-0.016 (0.924)
Corruption*EA	0.451** (0.049)	0.604** (0.028)	0.707*** (0.002)

\*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10%. p-values are shown in brackets.

Again looking at it through the lenses of interaction terms (Table 8 and 9), the importance of sound institutions and economic structures for euro area countries cannot be overstated. Almost half of the interaction terms for structural variables are significantly positive suggesting a higher sensitivity of euro area countries FDI inflows to the quality of institutional designs.

The greater sensitivity to both labour costs and to the quality of institutions for euro area countries would underline the importance of having adaptable economic structures for countries in the monetary union. It could be argued that foreign investors are *ceteris paribus* more wary of higher labour costs and lower quality institutions in euro area countries as they gain relative importance as an adjustment channel if a country is not able anymore to react to shocks through other channels such as setting national monetary policies or adjusting via exchange rate changes.

## 5 Conclusion

Advanced economies, and among those, euro area countries, remain important destinations for FDI inflows. In 2015, the euro area accounted for one fifth of the total stock of inward FDI. In recent years, the euro area has however been losing importance as an investment destination as investors have increasingly shifted their investments towards emerging market and developing economies. Given the potential beneficial effects of FDI for domestic investment and growth, there have been calls to make the euro area a more attractive investment destination.

This paper contributes to this debate by analysing which factors could make the euro area a more attractive investment destination. To date, the empirical literature mostly studied the determinants of FDI for developing countries. In this paper, we focus on the determinants for advanced economies and in particular on the role of the quality of economic structures. In addition, we differ with the existing literature on FDI by applying a newly available FDI data methodology which is able to clean as much as possible the FDI data of statistical artefacts such as financial round tripping.

Our results suggest that the quality of institutions and economic structures does matter for attracting FDI inflows in advanced economies. We looked at both broader composite indicators, such as the Global Competitiveness Index or the Heritage and Fraser Economic Freedom index, which cover a very wide set of political institutions, among others property rights, corruption, overall fiscal policies, government spending, business regulations, labour regulations, monetary policy, trade policies, investment policies or financial regulation. In addition, however, we also test for the importance of specific institutions. We find that basic rights, such as rule of law, property rights or the regulatory efficiency are important for decisions on FDI, but that also the well-functioning of labour markets and product markets are relevant considerations for foreign investors. Our empirical results are confirmed when narrowing our sample from all OECD to euro area countries only. In fact, the magnitude of the coefficients is even higher, suggesting that FDI inflows are even more sensitive to the quality of institutions when looking at euro area countries.

Moreover, we also confirm earlier findings of the literature regarding the other determinants of FDI inflows, such as labour costs, the size of the target market (as proxied by its economic activity), the trade openness of the recipient country as well its tendency to tax economic actors.

Comparing new FDI data, cleaned of statistical artefacts, such as financial round tripping, we find that results indeed differ somewhat, but remain overall robust. Yet, caution is needed here, as the sample size of countries and times for which cleaned data are available is still not as large as the entire sample available under the old methodology.



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# Appendices

## A Description of the dataset

**FDI inflows:** Data from the OECD, applying the OECD's Benchmark Definition (BMD) 4 and the IMF's Balance of Payments and International Investment Position Manual, 6th edition (BPM6).

**Global Competitiveness Index:** The World Economic Forum is the source of the Global Competitiveness Index. The composite index covers 12 pillars, including overall institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, product market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication and innovation.

**Fraser Economic Freedom Index:** The headline index measures the degree of economic freedom present in five major areas: size of government; legal system and security of property rights; sound money; freedom to trade internationally; and regulation. The latter covers – in two sub-indices – both labour and product market regulation. Data are gathered by the Fraser Institute.

**Nominal GDP:** annual data from the OECD.

**Heritage Economic Freedom Index:** annual figures from Heritage Foundation for the overall score of Economic Freedom; quarterly figures are obtained through linear interpolation and standardised by the overall mean and standard deviation across countries. The overall Index of Economic freedom is the average of ten different freedom indicators: property rights, freedom from corruption, fiscal freedom, government spending, business freedom, labour freedom, monetary freedom, trade freedom, investment freedom and financial freedom.

**Doing Business Indicators:** Data are compiled by World Bank. The composite indicator contains several pillars of relevance for FDI, such as the sub-index on enforcing contracts or starting a business.

**Employment Protection Legislation Index:** Is the version 1 of the Indicator on the Strictness of employment protection from the OECD (EPRC\_V1).

**Worldwide Governance Indicators:** Data are compiled by the World Bank. The project reports aggregate and individual governance indicators for over 200 countries and territories over the period 1996–2015, for six dimensions of governance, including voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption.

**OECD Product Market Regulation Index:** Data are supplied by the OECD.

**Unit labour costs:** Data compiled by the OECD. Unit labour costs measure the average cost of labour per unit of output. They are calculated as the ratio of total labour compensation per hour worked to output per hour worked.

**Openness:** Trade openness is expressed as export plus imports in percent of nominal GDO. The data source is OECD.

**Tax revenues:** The data are total tax revenues expressed in percent of GDP. The data source is OECD.

## B Additional estimation results

**TABLE B1. Linking FDI inflows to institutional variables - dropping countries with high correlation between FDI in- and outflows**

	OLS	IV GMM	System GMM
Structural headline indicators			
Global Competitiveness Index	0.667*** (0.007)	0.714** (0.012)	0.833*** (0.000)
Heritage Economic Freedom Index	0.027* (0.064)	0.038** (0.039)	0.034** (0.049)
Fraser Economic Freedom Index	0.508** (0.026)	0.757*** (0.007)	0.829*** (0.004)
Product Market			
OECD Product market regulation	0.437** (0.018)	0.630*** (0.008)	0.633** (0.013)
GCI product market efficiency	0.759*** (0.005)	0.892*** (0.006)	0.926*** (0.000)
Framework conditions			
World Bank DB Index on enforcing contracts	0.017** (0.031)	0.025** (0.013)	0.024*** (0.001)
World Bank DB Index on starting a business	0.016 (0.103)	0.022 (0.100)	0.020* (0.065)
Labor markets			
GCI Labor market efficiency	0.347* (0.053)	0.385* (0.055)	0.442** (0.025)
OECD EPL	-0.272** (0.017)	-0.394*** (0.003)	-0.403** (0.024)
Quality of political institutions			
Overall quality of governance	0.441** (0.041)	0.584** (0.028)	0.746*** (0.002)
Regulatory efficiency	0.508* (0.070)	0.618* (0.070)	0.761** (0.034)
Rule of Law	0.419** (0.034)	0.588** (0.018)	0.676*** (0.001)
Corruption	0.289** (0.025)	0.372** (0.019)	0.464*** (0.004)

\*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10%. p-values are shown in brackets.

**TABLE B2. Entire regression table with main control and institutional variables (part 1)**

log GDP	0.883***	0.965***	0.994***	1.083***	0.905***	0.930***	1.036***
Tax revenues	-0.063***	-0.050**	-0.047**	-0.22	-0.057***	-0.052**	-0.069***
Openess	1.314***	1.344***	1.425***	1.742***	1.129***	1.189***	1.690***
ULC	-3.603***	-3.210**	-3.231**	-5.673***	-2.952**	-3.906***	-4.251***
Structural headline indicators							
GCI	0.526**						
Heritage Index		0.036**					
Fraser Index			0.728***				
Product market							
OECD PMR				0.322			
GCI PM efficiency					0.725**		
Framework conditions							
Enforcing contracts						0.026***	
Starting a business							0.022*
Constant	-12.328***	-15.236***	-19.389***	-15.955***	-14.497***	-13.041***	-15.042***
Observations	123	123	95	109	123	123	123
R-squared	0.630	0.630	0.691	0.579	0.634	0.638	0.630

The regressions show the results of the two-stage least squares regression \*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10%. p-values are shown in brackets.

**TABLE B2. Entire regression table with main control and institutional variables (part 2)**

log GDP	0.985***	1.008***	1.012***	0.989***	1.005***	1.017***
Tax revenues	-0.055***	-0.048**	-0.055***	-0.055***	-0.052**	-0.056***
Openess	1.499***	1.703***	1.373***	1.304***	1.380***	1.408***
ULC	-3.658***	-5.113***	-4.008***	-3.508***	-4.246***	-3.967***
Labour market						
GCI	0.373**					
OECD EPL		-0.414***				
Quality of political institutions						
Overall quality of governance			0.430*			
Regulatory efficiency				0.591*		
Rule of law					0.404*	
Corruption						0.250*
Constant	-14.397***	-11.569***	-13.740***	-13.753***	-13.524***	-13.670***
Observations	123	108	110	110	110	110
R-squared	0.629	0.691	0.672	0.672	0.672	0.672

The regressions show the results of the two-stage least squares regression \*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10%. p-values are shown in brackets.



**TABLE B3. Linking FDI inflows to institutional variables - including time fixed effects**

	OLS	IV GMM	System GMM
Structural headline indicators			
Global Competitiveness Index	0.378* (0.096)	0.459* (0.057)	0.412* (0.078)
Heritage Economic Freedom Index	0.024* (0.071)	0.033** (0.038)	0.025* (0.025)
Fraser Economic Freedom Index	0.476** (0.026)	0.726*** (0.004)	0.650*** (0.004)
Product Market			
OECD Product market regulation	0.202 (0.257)	0.307 (0.162)	0.369* (0.091)
GCI product market efficiency	0.512* (0.053)	0.663** (0.024)	0.556** (0.032)
Framework conditions			
World Bank DB Index on enforcing contracts	0.018** (0.019)	0.025*** (0.005)	0.021*** (0.004)
World Bank DB Index on starting a business	0.021** (0.025)	0.026** (0.031)	0.026** (0.027)
Labor markets			
GCI Labor market efficiency	0.297* (0.083)	0.345* (0.062)	0.329* (0.086)
OECD EPL	-0.304*** (0.003)	-0.404*** (0.000)	-0.401*** (0.007)
Quality of political institutions			
Overall quality of governance	0.251 (0.207)	0.368 (0.104)	0.424* (0.060)
Regulatory efficiency	0.415 (0.114)	0.516* (0.077)	0.503 (0.143)
Rule of Law	0.230 (0.202)	0.350 (0.093)	0.348* (0.092)
Corruption	0.149 (0.199)	0.212 (0.106)	0.241* (0.075)

\*\*\* denotes significance at 1% level, \*\* at 5% and \* at 10%. p-values are shown in brackets.

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