

**Analysis of developments in the fields of direct  
investment and M&A - 2010 Report  
Part II: The role of the free movement of capital in a  
period of crisis and recovery**

**Final Report to EC DG Internal Market & Services**

Prepared by



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## Glossary

### Terminology abbreviations

BRIC	Brazil, Russia, India and China
FDI	Foreign direct investment
IMF	International Monetary Fund
M&A	Mergers and acquisitions
OECD	Organisation for Economic Cooperation and Development
UNCTAD	United Nations Commission for Trade and Development

### Member State abbreviations

BE	Belgium	LU	Luxembourg
BG	Bulgaria	HU	Hungary
CZ	Czech Republic	MT	Malta
DK	Denmark	NL	Netherlands
DE	Germany	AT	Austria
EE	Estonia	PL	Poland
EL	Greece	PT	Portugal
ES	Spain	RO	Romania
FR	France	SI	Slovenia
IE	Ireland	SK	Slovakia
IT	Italy	FI	Finland
CY	Cyprus	SE	Sweden
LV	Latvia	UK	United Kingdom
LT	Lithuania		

## Executive Summary

This special report (Part II of the study) focuses on the role of free movement of capital and open investment regime in mitigating the effects of the financial crisis that began in 2007 and the subsequent economic crisis and promoting the economic recovery and sustained European economic growth.

### Foreign ownership of European companies during the economic crisis and the recovery

- Foreign ownership of the equity of the major publicly listed European companies is quite common and accounts, on average, for a significant share of companies' capitalisation. This share ranges from 40% to close to 100%.

### Openness to international capital flows and economic growth: a literature review

- The economic literature on the link between capital openness and economic growth highlights the potential role that capital openness could have in fostering economic, but the extent of this link is unclear as it is influenced by various factors.
- The empirical research suggests that the impact of restrictive capital controls depends on whether the economy is developed or developing, the economic climate (crisis or non-crisis period) and the external finance investment dependence of the industrial sector.
- The academic findings are that, in the case of developed countries, the beneficial growth effects of openness to capital flows are limited to non-crisis periods. The impact of financial openness has also been found to vary by industrial sector and the degree to which it relies on external finance. Industries that depend more on external finance tend to contract more in recessions, particularly where institutions are weak. Capital account openness allowing financially-dependent firms to still access foreign finance during the crisis may mitigate the contraction effect.
- Notwithstanding these influencing factors, academic research yields generally positive findings in respect of the effect of financial liberalisation on economic growth, with several studies finding that more liberalised economies tend to lose less during a crisis.
- Patterns of inward FDI, greenfield investment and M&A into the EU27 from third countries differ in the run-up to the 2008 economic recession and during the recession itself in 2009. Total inward FDI from third countries reached a peak in 2007, fell sharply in 2008 and recovered slightly in 2009; inward greenfield investment from third countries followed the same pattern. In contrast, inward M&A from third countries fell sharply in both 2008 and 2009.



- The private gross fixed capital formation financed by residents (i.e. total private gross fixed investment minus greenfield inward FDI) shows very different patterns in 2008 and 2009. Private gross fixed capital formation by residents fell in 2009 after having posted positive growth in 2008. In contrast, greenfield investment fell in 2008, as the financial crisis reached its apex, but then recovered already in 2009.
- Thus, real growth in GDP in the EU27 was reduced in 2008 by the collapse in inward greenfield FDI in the wake of the financial crisis.
- But, in contrast and more importantly, the recession in 2009 would have been almost half of a percentage point deeper in the absence of the recovery in greenfield inward FDI.

### Openness to international capital flows and economic growth: an econometric analysis

- We estimated the relationship between capital market liberalisation and economic growth using a (dynamic panel) regression model of macroeconomic variables (including the Chinn-Ito KAOPEN index of capital openness) on growth of GDP per capita at country level, with data from five-year periods beginning in 1988 to 2003. Sensitivity analysis showed the results to be robust to model specification.
- The results of the empirical analysis show that the benefit to an economy of having had open capital markets in 2008 and 2009 and over the coming years will be approximately 1.73% growth in GDP per capita over a five-year period.

### Conclusions on how the EU's open investment regime will help support the economic recovery

- The key finding is that both the analysis of the contribution of inward FDI to economic growth in 2009 and the econometric analysis show that free capital movement supported the EU economy during the recession.
  - Our analysis showed the clear importance of greenfield FDI as a driver of inward FDI and economic growth. Whilst only a very small proportion of total private gross fixed capital formation, greenfield inward FDI supported the EU27 economy in 2009 by offsetting, in part, the weakness emanating from other parts of the economy.
  - Moreover, the empirical analysis suggests that, in the context of an external crisis, an economy characterised by capital openness will experience growth on a per capita basis that is approximately 0.133% higher than an economy that is not open to capital flows.

## 1 Introduction

As noted in the inception report, Part II of the study focuses on the role of free movement of capital and open investment regime in mitigating the effects of the financial crisis that began in 2007 and the subsequent economic crisis and promoting the economic recovery and sustained European economic growth.

First, as background information for the subsequent discussion, the report provides in Section 2 information on the degree of foreign ownership of the main publicly listed companies in EU-27 Member States.

Next, in Section 3, the report presents a review of the literature on the relationship between openness to capital flows and economic growth. This literature review also informs the modelling and econometric analysis in Section 5.

A descriptive analysis of the direct contribution of inward FDI to growth in the EU during the recession and the recovery is provided in Section 4.

Section 5 presents an econometric analysis of the relationship between openness to capital flows and economic growth and discusses the conclusions for policy makers.

Finally, the overall conclusions of the special report as to how the EU's open investment regime will help support the economic recovery are outlined in Section 6.



## 2 Foreign ownership of European companies during the economic crisis and the recovery

In this section, we present some facts about the degree of foreign ownership of major publicly listed companies in EU Member States. We focus on publicly listed companies as data on ownership is generally only available through the reporting requirements for publicly listed companies.

Unfortunately, we have ascertained from the data provider that it is not possible to derive time series data on foreign ownership. We have also not been able to identify academic literature comparing the stability of foreign and domestic shareholders in a company.

### 2.1 Foreign ownership of European companies

#### 2.1.1 Background

As there exists no comprehensive data source providing pan-European information on foreign ownership of major publicly listed companies, the set for which such data would be collected individually was limited to the 25 largest companies from the 15 largest EU countries and to the 10 largest companies from the remaining 12 EU countries.

The size of the company was based on the company's market capitalisation on 29<sup>th</sup> April 2010 as reported by Bloomberg. The various companies covered by the present analysis are listed in Annex 1. Bloomberg also provides for most of these companies information on the distribution of ownership by nationality. April 29<sup>th</sup> is also the date at which the foreign ownership data were downloaded from Bloomberg.

In cases where such information was missing, additional web searches were undertaken to collate the required information. Typically, the information missing from the Bloomberg data set could be found in the annual reports of the companies of interest.

In the next section, we present averages of foreign ownership by country. Two types of average results are presented. The first is the simple arithmetic average of the percentage of foreign ownership across all companies in our sample in a given country.

However, as size (i.e., the market capitalisation) of the different companies in each country sample varies markedly, this does not provide a good picture of the degree of foreign ownership of the actual capitalisation of the market. Therefore, we present also the weighted average of the degree of foreign ownership of domestic companies where the weights are equal to the companies' shares of the total capitalisation of the companies analysed in each country.

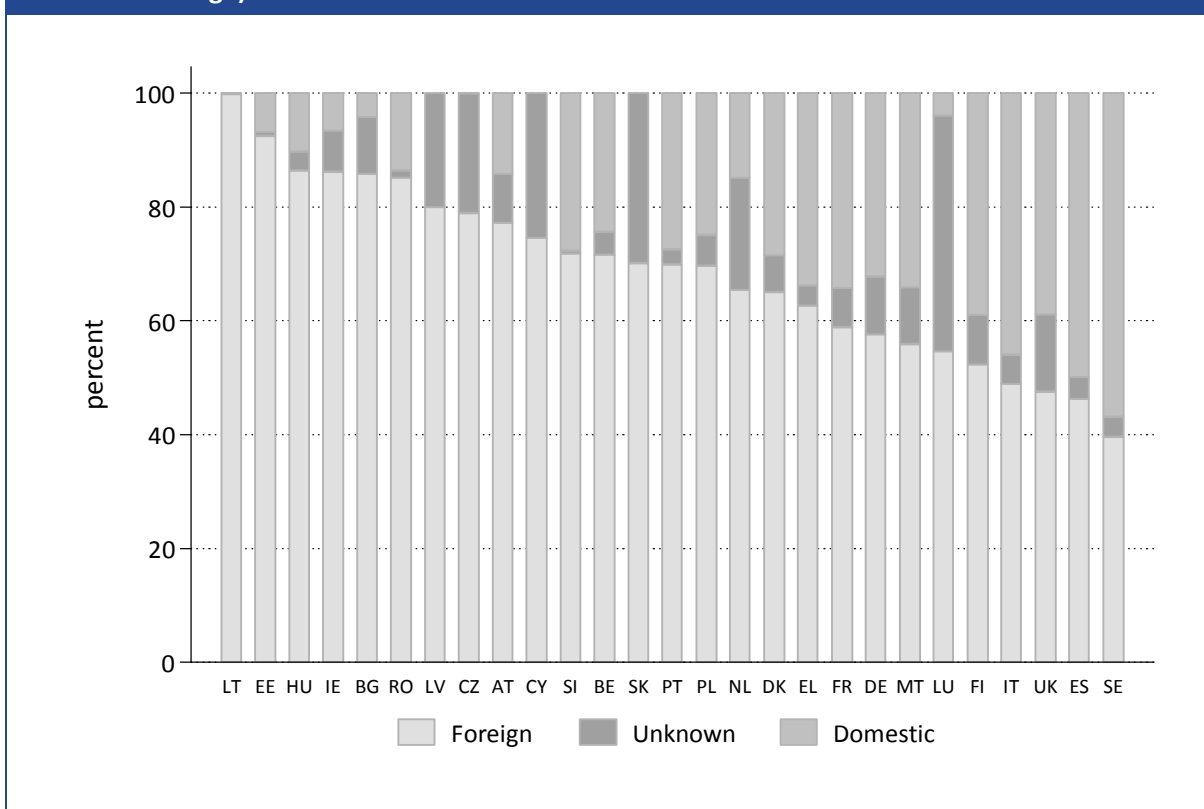
### 2.1.2 Foreign ownership of companies analysed on 29<sup>th</sup> April 2010

#### Arithmetic average

The average ownership structure of the major companies of interest in the EU27 is presented in the figure below. In the figure, each bar shows the average percentage foreign ownership, domestic ownership and unknown ownership. The unknown ownership represents the sum of unknown origin of the owner as reported on Bloomberg and the remaining ownership not reported in companies' documents according to Bloomberg.

As it can be observed, the largest foreign ownership is observed in Lithuania, Estonia and Hungary. The largest domestic ownership is observed in Sweden, Spain and the UK. It is important to note that the greatest proportion of unknown ownership is observed in Luxembourg.

**Figure 1: Structure of ownership of major public companies in the EU April 2010 (arithmetic average)**



Note: Foreign = Arithmetic average of foreign ownership in the selected publicly listed companies in a given country (in %); Unknown = Arithmetic average of foreign ownership in the selected publicly listed companies in a given country (in %); Domestic = Arithmetic average of domestic ownership in the selected publicly listed companies in a given country (in %).

Source: London Economics based on data from Bloomberg and reports of individual companies

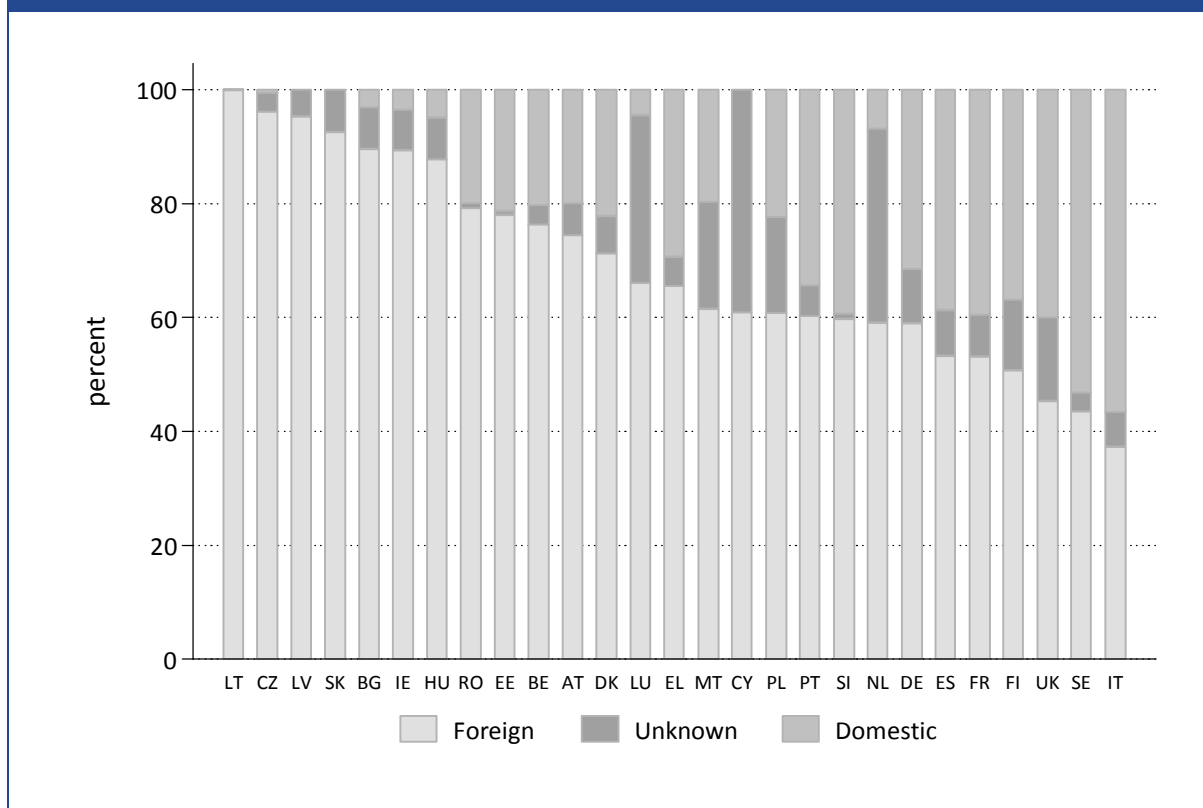
#### Weighted average

Next we present weighted averages of the degree of domestic and foreign ownership, with the weights attached to each company being equal to the company's share in the total capitalisation of the companies analysed in each country.



Once differences in capitalisation are taken into account, the aggregate picture changes somewhat. The greatest proportion of foreign ownership is observed in Lithuania, followed by Czech Republic, Latvia, Slovakia and Bulgaria. Alternatively, the lowest foreign ownership is in Italy, Sweden, the UK and Finland. It is important to note that the largest proportion of unknown ownership is observed in Cyprus.

**Figure 2: Structure of ownership of major public companies in the EU April 2010 (weighted average)**



Note: Foreign = Weighted average of foreign ownership in the selected publicly listed companies in a given country (in %); Unknown = Weighted average of foreign ownership in the selected publicly listed companies in a given country (in %); Domestic = Weighted average of domestic ownership in the selected publicly listed companies in a given country (in %).

Source: London Economics based on data from Bloomberg and reports of individual companies

### Key observation

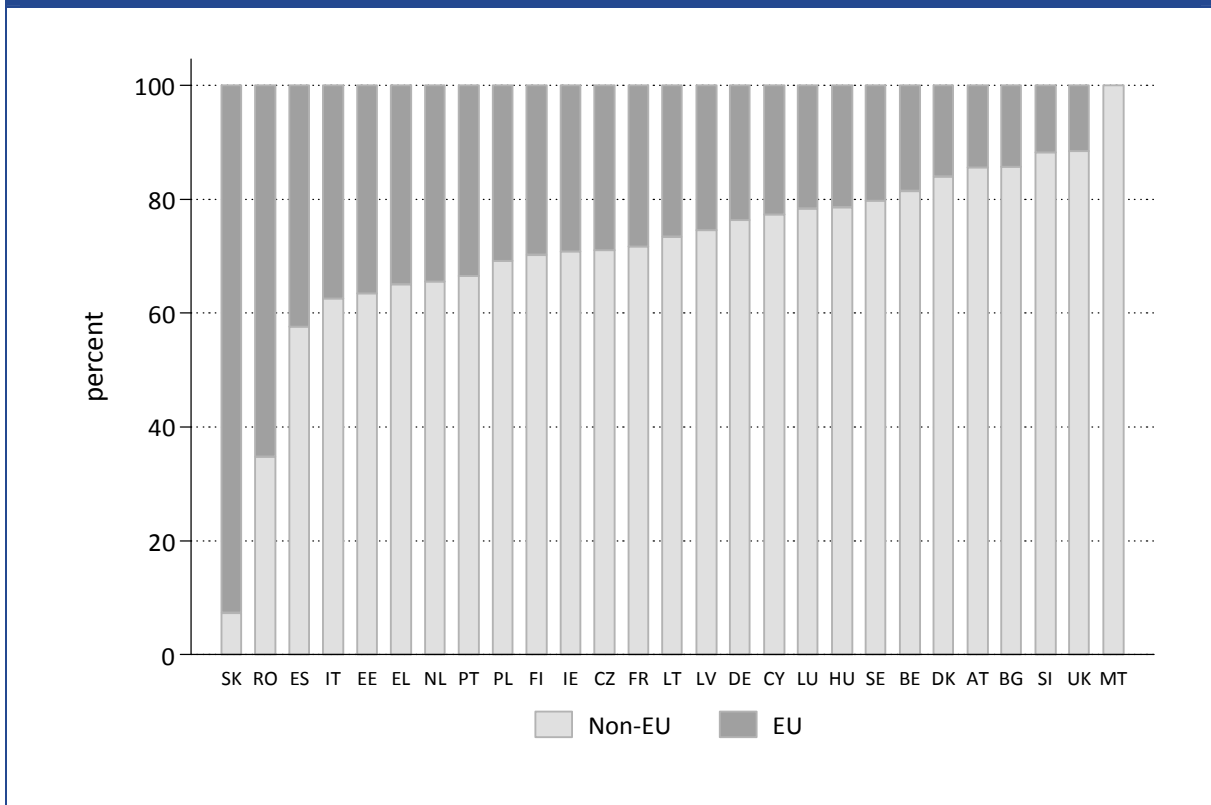
The key point to note is that foreign ownership of the equity of the major publicly listed European companies is quite common and accounts, on average, for a significant share of companies' capitalisation. This share ranges from 40% to close to 100%.

### 2.1.3 Distribution between foreign ownership from other EU Member States and third countries on April 29, 2010

In the figure below, the aggregate foreign ownership data reported above are separated into ownership by residents of non EU countries and residents of EU27 Member States. The average figures reported below are weighted averages with the weights being equal to relative market capitalisations (shares in total capitalisation).

As it can be observed, the largest proportion of foreign EU ownership is observed in Slovakia, Spain and Italy. Alternatively, the largest non-EU ownership is observed in Malta, the UK, Slovenia and Bulgaria.

Figure 3: Foreign ownership – other EU Member States and third countries



Note: Non-EU = Non-EU proportion of foreign ownership in the selected publicly listed companies in a given country (in %); EU = EU proportion of foreign ownership in the selected publicly listed companies in a given country (in %).

Source: London Economics based on data from Bloomberg and reports of individual companies



## 3 Openness to international capital flows and economic growth: a literature review

### 3.1 Introduction

Openness to international financial capital is synonymous with allowing financial integration with the world economy. Baele et al. (2004) describe a set of facilitating characteristics for financial integration, which are essentially the requirements for a competitive market: market participants face a common set of rules, have equal access to the set of financial instruments and services, and are treated equally when active in the market. They state that the law of one price (for a given product across the whole market, achieved by the influence of arbitrage) is a necessary but not sufficient condition, since access to markets may still be restricted.

### 3.2 Relevance of capital flows for developed and developing economies

Most research on capital openness and international capital flows has concentrated on developing economies; the common observation of developed economies is that they are relatively open to international capital flows in the period that has followed the abandonment of the Bretton Woods agreements.

However, the role of capital flows in high and middle income countries is currently of interest for a variety of reasons.

Firstly, the recent global crisis and the “credit crunch” that began in 2007 play a part, as lines of credit seized up the world over. Since then, there has been evidence of a multispeed recovery, with some countries faring better than others. The IMF’s *World Economic Outlook* (IMF, 2010b) states that the main concern for advanced economies and developing economies is different.

For advanced economies, the main concern is the spillover effect on capital flows from fiscal policies, designed to bolster the struggling economy, (though a previous edition, IMF 2010a, noted that banks need to rebuild capital stocks).

Developing economies, in contrast, would have more interest in assessing the effects of tightening or loosening controls on inflows and on outflows. The worry is that the (rapid) redirection of capital flows into developing countries may overwhelm them, and that restrictions on capital outflows will make it difficult to rebalance things.

It should be noted in counterpoint that IMF (2009a) found that financial openness increased financial risk exposure (and by implication the likelihood of a crisis) in data covering 18 emerging countries, including some eastern EU Member States, over the period January 1997 to December 2008. This risk is attenuated by trade openness, which has the opposite association with financial stress.

Not all developing economies are attracting increasing capital inflows. Particular concern has been raised about the low level of inflows into developing countries within Europe (Sachs, 2010; IMF, 2009b), though this is very dependent on the country.

The flows from developing economies is a more longstanding issue: the past decade has seen the emergence of sizeable internationally mobile funds originating from developing economies moving to advanced economies.

Indeed, Prasad et al. (2007) suggest one reason for the recent phenomenon of these “uphill” flows of capital from developing countries to developed ones is possibly the result of developing economies’ limited absorptive capacity for capital due to their own underdeveloped financial markets. Another reason, given by Anderson and Moreno (2005), is that the returns to capital in emerging markets are too uncertain, and that actual flows exhibit a preference for certainty.

A report on the strategies for developed economies following the most recent global crisis suggests that there are pools of saving (“pension funds, university endowments, sovereign wealth funds, some private equity funds, and even private individuals”) that in many cases can only be channelled through international capital flows, thus emphasising the importance of open capital markets in the recovery (OECD, 2010 p88).

### **3.3 Role of financial openness in fostering economic growth**

Baele et al. surmise that there are three main theoretical benefits of capital openness, or allowing the free movement of capital: “more opportunities for risk sharing and risk diversification, better allocation of capital among investment opportunities, and potential for higher growth”. Whether these benefits transpire depends not only on the constraints placed by capital controls, but also on the behaviour and preferences of people in the market.

The extent of the link between capital controls and economic growth is still the subject of debate. Some reasons for this stem from general problems of isolating the impacts of individual factors in a continually changing world. Others stem from the oblique nature by which constraints on capital flows can be assessed.

Eichengreen et al. (2009) synthesise studies from between 1998 and 2008 that have tried to establish the role of financial openness in fostering growth. The overall conclusions are that there is a difference between crisis and non-crisis periods (growth-enhancing benefits of capital account liberalisation are limited to non-crisis periods) and that the beneficial effects during non-crisis periods are limited to (financially and economically) developed countries. They begin their synthesis following Rodrik (1998), who had found no evidence of a relationship between capital account liberalization and growth.

Their pre-survey of the literature emphasises the use of firm-level data to analyse the benefits of an open capital account, since they say that the macroeconomic variables are confounded. The first studies they cite (which they also criticise for not distinguishing between crisis and non-crisis periods) try to find whether the subset of firms that are financially-dependent grow faster in economies with a more open capital account and whether the answer depends on the strength of institutions (that is, whether the country’s financial market is developed or not).



Beyond these studies, Eichengreen et al. cite a finding that firms that are financially-dependent benefit from capital account openness, but that this same openness has a negative effect on the growth of other firms in the economy (Cetorelli and Gambera, 2001). As such, this firm level finding that financial openness (i.e. freedom of capital movement) can encourage growth (Rajan and Zingales, 1998) is not necessarily extendable to the whole economy.

The overall thrust of Eichengreen et al.'s review is that industries more dependent on external finance contract more in recessions, and that the effects are stronger where institutions (accounting standards and creditors' rights) are weak. However, one paper (Dell'Ariccia et al, 2005) finds that the effect is somewhat mitigated if capital account openness means that the financially-dependent firms can still access foreign finance during the crisis. Dell'Ariccia et al. use the flow of foreign loans and bonds to the private sector as a proxy for capital account openness.

Héricourt and Poncet (2007), looking at 1999-2002 firm-level data on 2,200 domestic companies in China, come to the same conclusion, in distinguishing that private sector firms in China benefit from foreign investment to aid their expansion, whereas state-owned firms (with soft budget constraints supported by the state) are not affected by the presence of foreign firms.

Vlachos and Waldenstrom (2005), looking at 1980-1990, confirm the Rajan & Zingales result, but find that capital account liberalisation (on a variety of measures, such as the IMF *de jure* index, Quinn (1997) index, Bekaert et al (2005) dates, and cross border capital stocks and flows) has an effect on industry output growth in countries with a high level of financial development.

Other research suggests that domestic financial development may be an alternative to international capital flows to satisfy firms' needs for external finance, depending on how financial depth is measured. Vanassche (2004) finds that, if financial depth is measured by the sum of private credit and stock market capitalisation, financial depth is significant in explaining growth for firms dependent on external finance (and international financial integration is not). However, the reverse is found (international financial integration is significant, whereas financial depth is not) if financial depth is measured by stock market capitalisation alone.

Prasad et al (2007) consider growth of sectors (distinguished by dependence on external finance) against openness to capital flows (measured variously by stock of inward FDI relative to GDP; inward FDI stock plus portfolio capital all relative to GDP; net versions of these two measures; average current account deficit over sample period; and Chinn-Ito measure of capital account openness). They control for domestic financial development, but not crisis periods. Their findings are that foreign capital flows stimulate growth of financially-constrained firms where domestic financial markets are well developed, but there is no stimulation in the absence of such sophistication.

Levchenko et al (2008), distinguishing between decades to allow time-variant fixed effects, find that financial openness (gross capital flows over the period) is positively associated with sector output (growth and volatility), arising from firm entry rather than changes in productivity. The effect on growth is temporary, but the effect on volatility is very persistent. Aggregating produces a smaller effect on volatility because industries are diverse.

### 3.4 Measuring capital openness to estimate its contribution to economic growth

The concept of free capital movement is intuitively clear, but there are many pitfalls in making an objective assessment of the degree to which capital movement across borders is uninhibited.

A considerable obstacle is that there is no definitive link between measurements of capital flows and any constraints that might inhibit such flows. This is because the magnitude of the flows is dependent not only on regulatory constraints, but also on the relative incentives that economic actors have to invest in one country over another.

Put bluntly, if there are no incentives to invest, then the presence or absence of capital controls will have no impact on the level of investment. In a more plausible comparison, strong economic incentives to invest (e.g. high expected returns) concurrent with heavy capital controls might result in more capital flows than weak incentives and light capital controls.

A second problem is that the regulatory framework can be correlated with other factors that might encourage capital flows and growth, such as (domestic) financial liberalization, economic liberalization, strong and stable governance and institutions, and stable economic conditions.

Nevertheless, it is reasonable to expect that, in practice, there are reasons why an individual in one country would like to invest in another country, and so, in general, relaxing capital controls would result in greater capital flows.

Obstfeld and Taylor (2005) present several measures that they use to tease out the changes in capital controls during the 20<sup>th</sup> century and a short period previous.

The measures Obstfeld and Taylor present lay the evidence for the following line of reasoning:

*“Ceteris paribus, a greater degree of capital mobility should lead to larger flows and, with cumulation over time, larger stocks of foreign investment, We then relate the size of flows to saving and investment patterns, to see to what extent external flows mattered in terms of the overall composition of saving and investment. We finally consider the statistical relation between saving and investment rates, an oft-employed metric that asks whether saving and investment activities lean toward being delinked, as could occur theoretically for a fully open economy, or instead tend toward equality, as in a closed economy.”*  
(Obstfeld and Taylor, 2005, p48)

Obstfeld and Taylor’s first and most straightforward measure is the ratio of foreign assets to GDP, which they show has increased sharply since 1980 (from 25% to 92% in 2000), having dipped in the period of the Great Depression (from 20% in 1900-14 to 8% in 1930, and 5% in 1945) and only slowly increased following the Second World War (it was still 6% in 1960). It was not until around 1980 that the ratio reached levels previously experienced in the period 1900-14.

One possible reason for the slow return to previously high levels may be a modern era preference for domestic investment, though the reason for this “equity home bias” has not been established (see Warnock, 2002; Lewis, 1999; and Obstfeld and Rogoff, 2000).



Eichengreen et al. (2009), in their own work, cite some choices to be made in selecting which recorded data best capture the concepts they are trying to measure.

Of particular use to the estimation later in this report, is their discussion regarding measures of capital openness. Some of the issues raised in Obstfeld and Taylor (2005) can be recognised here. Eichengreen et al. list both *de jure* and *de facto* measures of openness.

On the *de facto* side, they list Lane and Milesi-Ferretti's (2007) use of external capital stock as a share of GDP, and on the *de jure* side, they include some binary (dummy) variables derived from an IMF annual publication (*Annual Report on Exchange Arrangements and Exchange Restrictions; AREAER*). Furthermore, they describe a continuous index variable, which Chinn and Ito (2006) calculated as a composite of the binary variables: called KAOPEN (also referred to as the Chinn-Ito index).

Eichengreen et al. find, in the sensitivity analysis of their own estimates, that using the Chinn-Ito (*de jure*) rather than the Milesi-Ferretti (*de facto*) measure of capital account liberalisation results in slightly weaker evidence of correlation with the growth of financially dependent sectors of the economy.

Their overall finding is that capital account liberalisation “promotes the growth of more financially dependent industries in crisis periods and has no effect in non-crisis periods”. They extend their analysis to consider whether different types of countries experience different effects. Here, they find that openness does not significantly affect countries unless they have a high level of financial development, in which case it has a positive effect. Similar results are found for openness when countries are distinguished by their accounting standards or a measure of institutional strength (approximated by measures of rule of law or creditor rights). In both cases, good standards and openness are associated with growth, even possibly in times of crisis in the case of accounting standards.

An earlier paper by Eichengreen and Leblang (2003) looks at the macroeconomy in its entirety, rather than distinguishing between sectors. This level of focus has a longer and more widespread heritage than models at the sector level, partly because of data availability and partly because of estimation techniques.

In order to overcome the problems in estimation resulting from the macroeconomic variables being confounded, Eichengreen and Leblang make use of the Arellano-Bond estimation<sup>1</sup>, which uses lags and lagged differences of (selected) explanatory variables to instrument for the actual variables of interest. This estimation method reduces the problems of country-specific effects and also of auto-correlation (shocks to the system being correlated over time).

As with Eichengreen et al., there is a strong emphasis in this paper on distinguishing the effects of openness during a crisis from its more general effects. The analysis of openness is anchored on a pragmatic growth model, which relates economic growth per capita to GDP per capita (relative to the US), school enrolment rates, fixed effects dummies for countries (to approximate institutional

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<sup>1</sup> The original work was developed by Arellano & Bond (1991), and tweaked by Arellano and Bover (1995), and Blundell and Bond (1998). For a good introduction to the purpose and practice of the estimation technique, see Elitz Mileva (2007).

quality) and global financial regimes. Further control variables for their study of recent history (1975-1995) include inflation, trade (imports plus exports) as a share of GDP, government consumption as a share of GDP and the black market premium on foreign exchange rates.

In this paper, Eichengreen and Leblang represent capital controls (the reverse of openness), using a dummy variable. They estimate the effects by including their measure of capital controls alongside the occurrences of banking and currency crises, both domestically and in other countries. For the crises, they count the number of crises starting within each period, and also consider the effects of the interaction of capital controls and crises (thus measuring the effect of capital controls during a crisis).<sup>2</sup>

The reasoning is much the same as explained above in the sectoral analysis: liberalised capital markets should lead to resources being more efficiently allocated within the economy and hence economic growth. However, crises imply an unstable financial system, which will suffer from poorly functioning capital markets, so capital controls may have a different effect.

Eichengreen and Leblang investigate their hypothesis through a series of datasets, periods and model specifications, mainly exploring long time-series (1880-1997), but also the recent period (1975-1995). One of the findings is that the models are quite consistent in the estimated effects associated with capital controls, showing little evidence of significant effect outside of crises, and an insulating effect during crises. Their findings are somewhat mixed as a result of the variables and interactions of capital openness and crises being quite correlated, and some findings are only significant when the estimated model restricts the effect of capital controls to be one that neutralizes the effects of a crisis.

For a long period, the measurement of capital openness in research was limited to binary variables, which starkly defined a country as having, or not, restrictions on the flow of international capital. Within the last 15 years, several authors have sought to increase the depth of data by constructing their own indices, designed to rate countries against a spectrum of values (Quinn, 1997 and 2003; Miniane, 2004; Chinn and Ito, 2002, 2006, 2007).

### **3.4.1 The Chinn-Ito index (KAOPEN)**

Chinn and Ito (2007) give an overview of the developments in measures of capital openness, in a paper introducing their own measure. Most measures of capital openness have been developed by converting the qualitative information published in the IMF's *AREAER* into binary variables. The Chinn-Ito index stands out against its peers both for being a measure of the intensity of capital openness and one that is wide in coverage (from 1970-2005, across 181 countries)<sup>3</sup>.

Chinn and Ito make three criticisms that would apply to most of the set of measures of capital controls previously used in research. The first is a lack of measurement of intensity of capital controls, the second is a lack of distinction between controls according to the flow direction and

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<sup>2</sup> Each crisis is different, and there is a strand of research focused on classifying the gestation and fallout of crises. Krugman (2010) succinctly distinguishes between three broad types of currency crisis and their various (positive or negative) effects, for instance. In general, it is estimated that twin (concurrent currency and banking) crises are twice as disruptive as currency crises alone, which in turn are twice as disruptive as banking crises (Bordo et al., 2001).

<sup>3</sup> They have updated their index annually, since its inception, and are currently working on the 2010 release (covering 2008 data).



type of transaction each control affects, and the third is that the varying effectiveness of capital controls mean it is very hard to distinguish between *de jure* and *de facto* capital controls.

The Chinn-Ito measure, which they call KAOPEN, is a composite measure, which combines four separate strands of information from *AREAER* into one index measure, using an estimation process to adjust for any correlation between the four individual measures. The four separate strands are those by which the IMF categorised the information in the *AREAER* summary tables up until 1996.<sup>4</sup>

Chinn and Ito state that two of the strands – restrictions on capital account transactions and current account transactions – are the most commonly used information from these tables, citing Glick and Hutchison (2001) and Grilli and Milesi-Ferretti (1995) as two amongst many papers to have used these to construct binary variables.

By using all four measures, Chinn and Ito go some way to addressing the criticisms they made of previous quantifications of controls, in particular the lack of detail on intensity of controls. They compare their index with other measures of capital openness and find that theirs correlates well with both long-standing ones and more recent or short time-series ones that have the advantage of containing greater detail on intensity (Quinn, 1997, 2003), disaggregation (Miniane, 2004) or distinction between controls on inflows and outflows (Potchamanawong, 2007).

They state that, since their *de jure* measure is focused on the regulatory aspects of capital account openness, it is difficult to compare it with *de facto* measures “based on the interest rate parity (UIP or RIP) approach such as Cheung, et al. (2003) or those on deviations from no arbitrage profits conditions such as De Gregorio (1998)”.

The composition of KAOPEN, which is calculated using information for all countries over all time periods, is as follows:

$$KAOPEN_t = f(k_{1,t}, k_{2,t}, SHAREk_{3,t}, k_{4,t}), \quad \text{with} \quad SHAREk_{3,t} = (k_{3,t} + k_{3,t-1} + k_{3,t-2} + k_{3,t-3} + k_{3,t-4})/5$$

Where

$k_1$  = presence of multiple exchange rates

$k_2$  = restrictions on current account transactions

$k_3$  = restrictions on capital account transactions

$k_4$  = requirement of the surrender of export proceeds

The function uses Principal Component Analysis (PCA) to calculate a score that counts the independent contributions of each of the component variables. The weights of the individual components in the final score are as follows:

$$(k_1, k_2, SHAREk_3, k_4) = (0.25, 0.52, 0.57, 0.58).$$

<sup>4</sup> Chinn and Ito point out that the *AREAER* since 1997 has provided more detailed information (disaggregating the four existing strands), but that the additional detail is not currently helpful in constructing a time-series as the period is too short for analysis. They cite Mody and Murshid (2005) as giving the rationale for extending the use of the four strands beyond 1996.

This implies that  $k_1$  has about half as much importance as each of the other three in contributing to the final KAOPEN score.

Chinn and Ito conclude a preference their index because it is detailed enough to describe the intensity of capital controls across countries and over time, but it is also wide in its coverage (geographically and temporally) and transparently constructed so as to be of greater usefulness in research. Their index matches the overall patterns of other indices of capital openness, correlating well with longer-established indices as well as more detailed ones. They note that their index is a *de jure* index and that it is difficult to make meaningful comparisons with *de facto* indices.

### 3.5 Potential determinants of economic growth

There is a rich vein of literature studying the various potential determinants of growth, which are important to consider in any estimated model designed to extricate the specific effect of capital openness.

Sala-i-Martin (2002) reviews the then-current position of empirical growth economics, stating that the early findings in the recent investigations of the effect of institutions were that institutions were an important factor in economics growth.

Indeed Rodrik, Subramanian and Trebbi (2004) find that institutions trump geography, using the composite measure of property rights and strength of rule of law in Kaufman et al. (2002) for their measure of institutions, which they say is a wider definition than the PRS measure used by Acemoglu et al. (2001). Their other notable control variables are a measure of geography (distance from the equator; malarial risk) and trade as an index of *de facto* openness, using nominal trade as a share of nominal GDP (rather than as a share of PPP-adjusted GDP, which they criticise for being confounded with labour productivity).

Sachs (2003) takes the opposing view, stating that geography is a driver of growth independent of institution effects, citing ecological conditions as being influences beyond the influence of institutional conditions, which are modelled to be inherited from previous imperial rule. His measure of geography is the transmission of infectious diseases (malaria), whilst his (instrumental variable) measure of institutions is the historical mortality of British soldiers in the early 19<sup>th</sup> Century (as created by Acemoglu, Johnson, and Robinson, 2001; used also in papers by Easterly and Levine, 2002; and Rodrik, Subramanian, and Trebbi, 2002 and 2004). He takes a similar stance in another paper (Sachs, 2004), stating that one reason for some countries in Africa failing to exhibit catch-up growth is that they are stuck in a poverty trap founded on geographical constraints.

Glaeser et al. (2004) take a rather different tack, producing evidence that institutions are not drivers of growth themselves, but are, rather, an intermediate manifestation arising from increases in human capital, which cause both good institutions and growth. They cite three measures of the quality of institutions, but criticise all three for being observations of the actions of institutions, rather than judgements of the inherent quality of the institutions. They consider one, a measure of the constraints on executive power (the Polity IV measure), to be better than the other two (risk of expropriation and government effectiveness). The latter two are not good measures because they score dictatorships the same as democracies, so long as the actions are the same, even though a dictator has the ability to change laws at will.



Polity IV<sup>5</sup> is a 21-point index, ranging in integer values from -10 to 10, which reflects the combined score (each on a scale from 0 to 10) of the level of democracy and of autocracy in a country. It has been constructed for 163 countries for the period 1800-2008.

The Polity IV measure is not exempt from criticism, since Glaeser et al. find that its volatility is correlated with regime change, but it does attempt to reflect the underlying parameters that much more recently begun work on constitutional constraints, such as electoral rules (Persson and Tabellini, 2003; Beck et al., 2001) and the independence of and strength of legislative review of the judiciary (La Porta et al., 2004).

Glaeser et al. go further, by hypothesising and showing evidence that average years of schooling may be the underlying factor affecting growth. They postulate that schooling is a causal factor in institutions, given schooling is highly correlated both with measures of institutions, such as (colonial) settler mortality, and ecological conditions, such as malarial risk. Prasad and Rajan (2008) find that actual capital inflows may also have an indirect role to play in stimulating institutional improvements (subject to there being a basis to build on) in emerging economies.

Doppelhofer and Weeks (2005) provide a technical and empirical paper illustrating the importance of joint-determinancy of explanatory variables on growth, stating that being aware of such jointness (as substitutes or complements) is important for inferring the determinants of growth, and, hence, policy making.

One potential factor in growth, the black market premium on exchange rates, is much less of an issue during the recent period than two decades ago, when fixed or pegged exchange rates were much more common. As such, it might have relevance in estimates using historical data going back several decades, but not so much for the recent period. As Jayaratnam (2003)<sup>6</sup> describes, black markets, which were tolerated during the 1970s and 1980s, virtually disappeared from the mid-1990s upon exchange rate liberalisation in many developing countries.

### 3.6 Financial liberalisation and economic growth

Bonfiglioli and Mendicino (2005) estimate a model that considers the effects of financial liberalisation and banking crises on economic growth. Their set up quite closely matches the approach taken by Eichengreen and Leblang (2003). Bonfiglioli and Mendicino use the Arrellano-Bond estimation procedure on a panel of 90 countries over five-year non-overlapping periods observed in the period 1975-1999. They measure financial liberalisation in each country as the average value during each period of two variables: capital market openness (using the binary data from *AREAER* on capital market restrictions) and equity market liberalisation (based on Bekaert et al., 2003).

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<sup>5</sup> <http://www.systemicpeace.org/polity/polity4.htm>

<sup>6</sup> The purpose of the paper, incidentally, is to assess whether the black market premium affects net FDI inflows, which the author finds it does not.

They find that financial liberalisation is generally associated with economic growth and that “[b]anking crises are harmful for growth, but to a lesser extent in countries with open financial systems and good institutions”<sup>7</sup>.

Bordo and Meissner (2007) draw parallels between the characteristics of the present global financial system and the one that existed in the period 1880-1913. Their overall finding is that the impact of foreign capital inflows on growth manifests over a long lag period (if at all). Furthermore, they found that “[c]ountries with credible [political] commitments and sound fiscal and financial policies avoided major financial crises and achieved higher per capita incomes”; having more developed financial systems was another corollary of higher growth.

The authors note that their inclusion of data on financial crises might explain why they fail to find as strong a relationship between inflows and growth as that found by Schularick and Steger (2006), who also looked very closely at the same period.

Whereas most studies focus on economic growth (usually measured by GDP per capita), Kose et al. (2008) consider the effect of capital openness on (total factor) productivity (TFP) growth. Kose et al. base their findings on data over the period 1966–2005 for 67 countries, of which two-thirds are developing countries.

They find that TFP growth is positively affected by *de jure* capital openness, but do not find the same link with *de facto* capital openness. However, they say the aggregate measure of *de facto* capital openness conceals two opposing effects: FDI and portfolio equity liabilities have a positive association with TFP growth while external debt has a negative one (though this is not as strongly expressed in countries with more developed financial markets and better institutions).

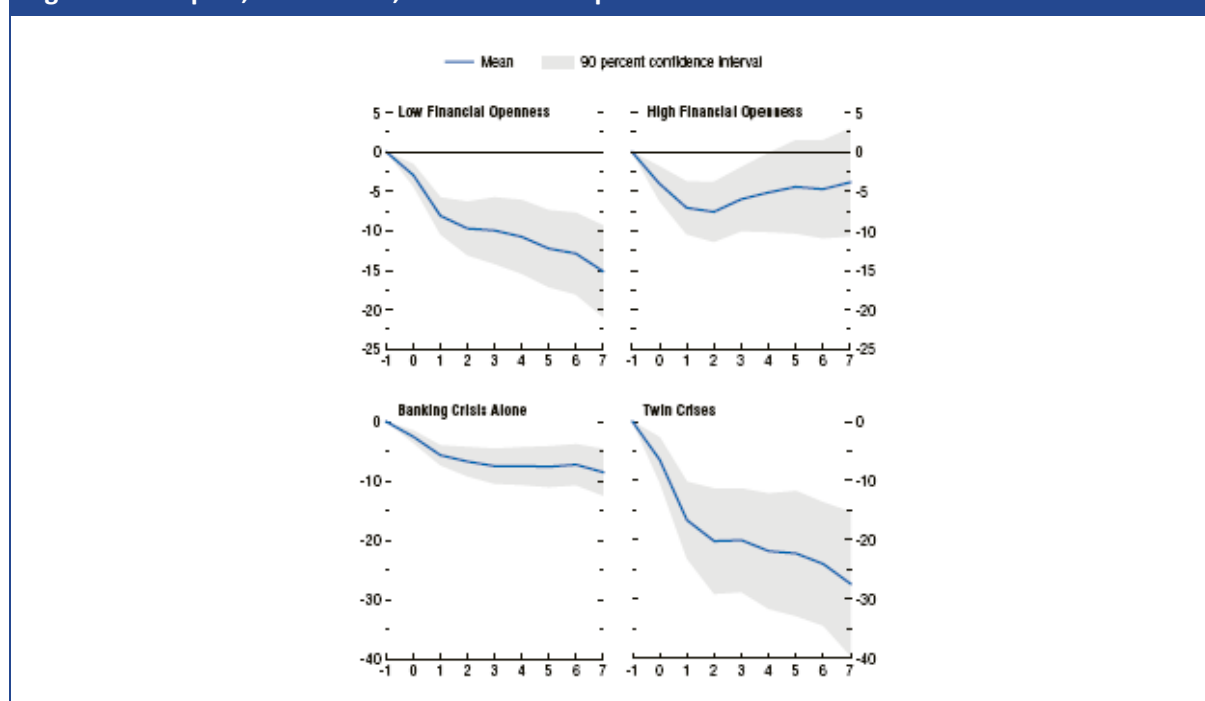
### 3.7 Recent experience

The IMF’s *World Economic Outlook* (IMF, 2009c) includes an estimation of the various influences that might affect GDP during a crisis. Their regression is based on data from about 50 banking crises that occurred over the past four decades. They find that (*de facto*) financial openness is associated with smaller losses in a crisis; stating that this is consistent with findings that deeper financial integration reduces the risk of a sudden stop in capital flows and enhances the ability to smooth spending (Calvo, Izquierdo, and Mejía, 2008; Abiad, Leigh, and Mody, 2009). Their findings are weaker when estimated with more explanatory variables added, and their work also illustrates the losses associated with banking and twin crises.

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<sup>7</sup> Institutions are measured by means of property rights (Hall and Jones, 1999) and contractual rights (La Porta et al., 2003).



Figure 4: Output<sup>1</sup>, Twin Crises, and Financial Openness<sup>2</sup>

Note: (1) Output in percent of precrisis trend; mean difference from year  $t = -1$ ; first year of crisis at  $t = 0$ ; years on x-axis. (2) Financial openness is measured using the ratio of external assets and liabilities to GDP. Twin crises are defined as simultaneous banking and currency crises. The figure reports output evolution for banking crises and twin crises and for crises with financial openness below and above the sample median, respectively.

Source: from p138 of IMF (2009c) (original source: Lane and Milesi-Ferretti (2006); and IMF staff calculations)

Chowdhury and Mavrotas (2006), looking at just three developing countries (Chile, Malaysia and Thailand) over the period 1969 to 2000, suggest that the causality between FDI and growth is circumstance dependent. For Chile, they find that GDP causes FDI, whereas for the two Asian countries, the authors find the causality is bi-directional. The authors do not, however, make any suggestions for what factors might cause the direction of causality to vary.

Capital controls can be imposed for a variety of reasons and in either direction: Ostry et al. (2010) suggest that a particular worry for developing countries may be a rush of short-term inflows destabilising the economy. They suggest that an economy operating near full potential, and with the resources to support temporary capital controls, would benefit from their use (in conjunction with complementary domestic policy) and that even if circumvention is possible, the extra cost involved may be enough to slow the flow of “hot money”.

A popular example of capital controls during a crisis is the experience of Malaysia following the 1997 Asian crisis. Dornbusch (2002), however, holds that the Malaysian economy did not benefit greatly from the use of capital controls, and rather that the rhetoric around the controls helped sustain the power base of the incumbent Prime Minister. Dornbusch suggests the imposition of capital controls was unnecessary on the basis that Malaysia was no more vulnerable than the other countries in the region, and the imposition happened once the worst of the crisis had passed. He states that Malaysia’s subsequent economic performance was neither significantly better nor worse than its neighbours’, so the case for or against capital controls remains inconclusive.

Bird and Rajan (2001) consider whether increasing flows of inward FDI reduce the likelihood of experiencing a crisis. Their focus is on developing countries, and specifically the experience during the Asian crisis of 1997. Their view is that Malaysia, which was a large receiver of FDI inflows, was not less susceptible than other Asian countries to the crisis that occurred.

Kaplan and Rodrik (2002) also look at the effects of the capital controls that Malaysia imposed. In contradiction to Dornbusch (and others, including Krugman, 1999, whom they quote), they postulate that the crisis was not abating in Malaysia at the inception of controls. Particularly, they cite the differential between onshore and offshore exchange rates as indicative of the speculative pressure that had continued to mount on Malaysia (but had faded in Korea and Thailand).

Kaplan and Rodrik judge capital controls to have been beneficial, by casting their comparison during the period when Malaysia's peers (Thailand and Korea) were subject to IMF policies, instead of judging the economic position several years later. They make their judgement on the controls on four counts: (financial) effectiveness, economic, political and long-term.

The authors cite findings (Kaminsky and Schmukler, 2000; Edison and Reinhart, 2001) that Malaysia was able to constrain capital flows with its controls, which were not circumvented, and which successfully lowered the interest rate, stabilised the exchange rate and reduced the "comovement of Malaysian overnight rates with regional interest rates".

On the second count, Kaplan and Rodrik find that Malaysia did recover more quickly and its economy performed better than in the absence of capital controls (with the counterfactual being that IMF policy recommendations would have been imposed).

As Dornbusch did, Kaplan and Rodrik allude to the political benefits of establishing capital controls for the existing Prime Minister. They have less to remark on the long-term benefits or costs of capital controls, their article being written not sufficiently long after the crisis period to make judgements.



## 4 Inward foreign direct investment into the EU and other selected countries, domestic private investment and economic growth during and the recession and recovery

### 4.1 Background

In the present sub-section, we will analyse how inward foreign direct investment fared relative to gross domestic capital formation and the contribution it made to economic growth. This analysis is undertaken at the EU-wide level using the FDI figures released by Eurostat.

### 4.2 Methodological approach

As is well known, FDI comprises both M&A related flows and greenfield or other physical investment related flows. For simplicity, all the greenfield and other physical investment related inflows will henceforth be labelled greenfield FDI.

Of interest from a public policy point of view is the relative performance of the two components of FDI and the contribution of FDI to economic growth.

Greenfield investment directly results in investment in structures, plants, etc. which, *ceteris paribus*, raises the capital formation of an economy and hence stimulates GDP growth. Thus, the relative patterns of greenfield investment during the recession and recovery are of policy interest. We measure this by the absolute level of greenfield investment and its contribution to domestic investment and hence GDP growth

In contrast, the support to economic growth provided by cross-border M&A to economic growth can be less certain.

- If the M&A results only in a transfer of funds to the owners of the company being sold, the M&A may stimulate economic activity if the funds received by the previous owners are recycled into an expansion of productive assets.
- In contrast, if the previous owners use these funds to acquire financial assets, the M&A will only support economic activity if the financial transactions undertaken by the previous owners contribute to reduce funding constraints faced by other actual or potential companies.
- Obviously, in cases where the M&A involves also a direct injection of funds into the company, the benefits are more direct as it will increase the receiving company's cash-flow position and possibly reduce or eliminate funding constraints faced by the company.
- That being said, the M&A transaction may also over the longer run boost productivity at the target firm and, possibly through spill-over effects, at other companies. There exists significant body of literature on this aspect of foreign ownership which has been discussed in the 2008 Special Report and we do not propose to repeat this analysis here. The focus is on the short term stimulus, if any, of FDI.

Unfortunately, official FDI data from Eurostat and UNCTAD do not breakdown FDI into the two components of interest, namely greenfield and M&A. However, it is possible to construct an M&A time series variable for the EU27 and individual Member States using the Zephyr database and deduct the estimate of M&A thus obtained from the official FDI inflow figures to generate a rough measure of the level of greenfield investment.

We use the adjective “rough” because the collection and construction of the M&A data in the Zephyr database is not subject to the same rigorous data quality processes as the official statistics.

Nevertheless, for purpose at hand, the adopted approach will provide:

- 1) a useful indication of the relative performance of the two types of inward FDI;
- 2) allow one to compare the patterns of greenfield and M&A investment during the recession and subsequent recovery with that of gross capital formation; and,
- 3) derive an estimate of the rate of real GDP growth that would have prevailed in the absence of the inward FDI

The analysis focusing on the respective patterns of inward M&A and greenfield FDI during the recession and recovery is undertaken with data in current prices.

Next, an estimate of the level of private domestic fixed capital formation in the absence of FDI is derived by deducting from total private domestic fixed capital formation (at current prices) reported by Eurostat in the national accounts data the estimate of greenfield FDI obtained through the process described above.

Thus, so far, the various data manipulations allow one to compare patterns of M&A, greenfield FDI and gross private capital formation (at current prices) through the recession (and the recovery) when data become available.

In order to derive an estimate of the contribution of FDI to economic activity during the recession and the recovery, the estimate of greenfield FDI is transformed into a variable at constant 2000 prices using the fixed capital formation price index (2000=1000) published by Eurostat in the national accounts database.

This estimate of greenfield FDI can then be deducted from the published figures of the level of GDP (chain-linked at 2000 prices) published by Eurostat in the national accounts database to obtain the level of GDP that would have prevailed in the absence of the inward FDI.

The difference in the annual growth rate of the two series provides an indication of the extent to which inward FDI supported economic growth.

The methodology described above provides only an estimate of the direct effect of the inward FDI coming in the form of greenfield investment. It does not take account of the any indirect or secondary adjustments that may have taken place in the economy in the absence of the inward FDI. In order to consider all the secondary and indirect effects one would need to use general



equilibrium models which typically perform very poorly during periods of shock-induced recessions and the subsequent recoveries.

Moreover, the methodological framework does not allow for the M&A inflow to have an impact on the economy as the channels through which this may or may not happen are multiple and there exist no data which would allow one to make informed judgements of the use by the original owners of the proceeds of the M&A deals.

### 4.3 Inward greenfield investment and M&A into the EU27 and private gross capital formation during the recession and the recovery in the EU27

#### 4.3.1 Inward FDI, inward M&A and inward greenfield FDI

The data reported in the figure below show clearly that the patterns of inward FDI, greenfield investment and M&A into the EU27 from third countries differ in the run-up to the recession and during the recession:

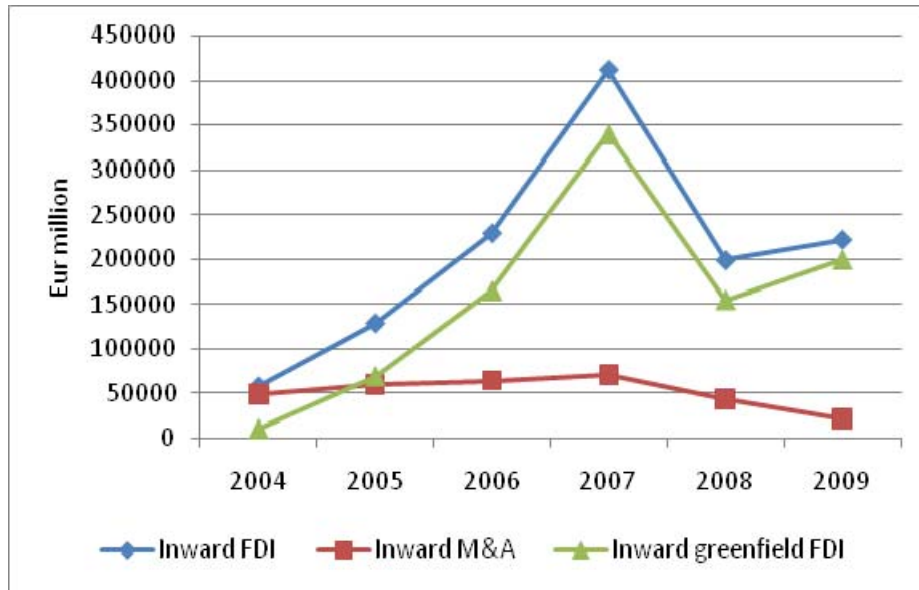
- Total inward FDI reached a peak in 2007, fell sharply in 2008 and recovered slightly in 2009;
- Inward greenfield investment followed the same pattern;
- In contrast, inward M&A fell sharply in both 2008 and 2009.

**Table 1: Annual growth in inward FDI, M&A and greenfield investment FDI flows into EU27 from extra-EU27 (Rest of the World) (%)**

	2007	2008	2009
Inward FDI	79.7	-51.7	11.6
Inward M&A	11.1	-38.3	-49.8
Inward greenfield FDI	106.3	-54.5	29.0

*Source: London Economics calculations based on Eurostat FDI and national accounts statistics (gross private capital formation) and M&A data from Zephyr database (see Part I report for details)*

Figure 5: Split of intra-EU inward FDI between greenfield and M&A FDI inflows for EU27 from extra-EU27 (Rest of the World)



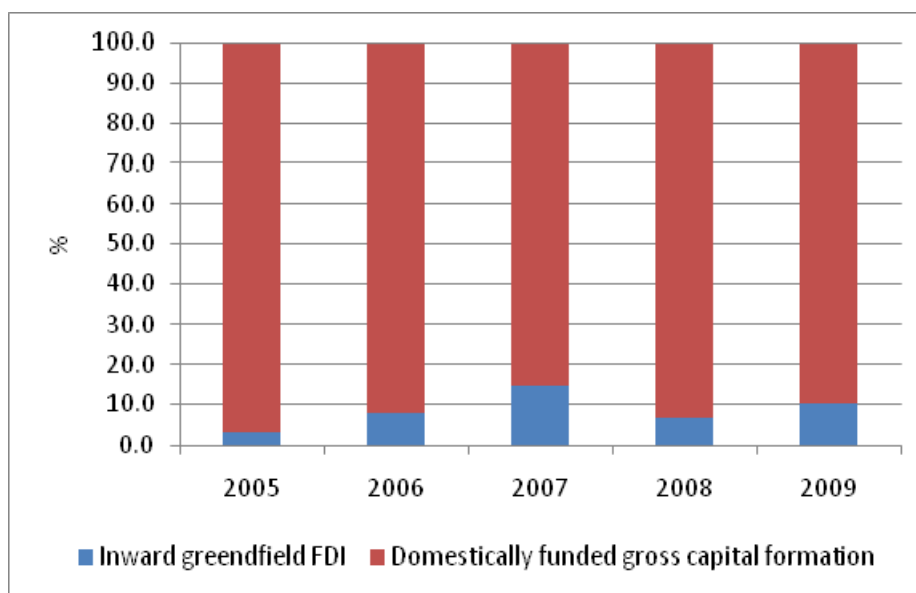
Source: London Economics calculations based on Eurostat FDI and national accounts statistics (gross private capital formation) and M&A data from Zephyr database (see Part I report for details)

#### 4.3.2 Inward greenfield FDI, total private gross capital formation and domestically funded private gross private capital formation

As noted earlier, the next step in the methodology consists in comparing the pattern of greenfield inward FDI to that of the private gross fixed capital information financed by domestic residents. It is worth noting that greenfield inward FDI accounts for only very small proportion of total private gross fixed capital formation.



**Figure 6: Relative shares of domestically financed private gross capital formation and greenfield investment**



Source: London Economics calculations based on Eurostat FDI and national accounts statistics (gross private capital formation) and M&A data from Zephyr database (see Part I report for details)

The private gross fixed capital formation financed by residents (i.e. total private gross fixed investment minus greenfield inward FDI) show very different patterns in 2008 and 2009:

- Private gross fixed capital formation finance by residents fell in 2009 after having posted positive growth in 2008;
- In contrast greenfield investment fell in 2008, as the financial crisis reached its apex, but then recovered already in 2009.

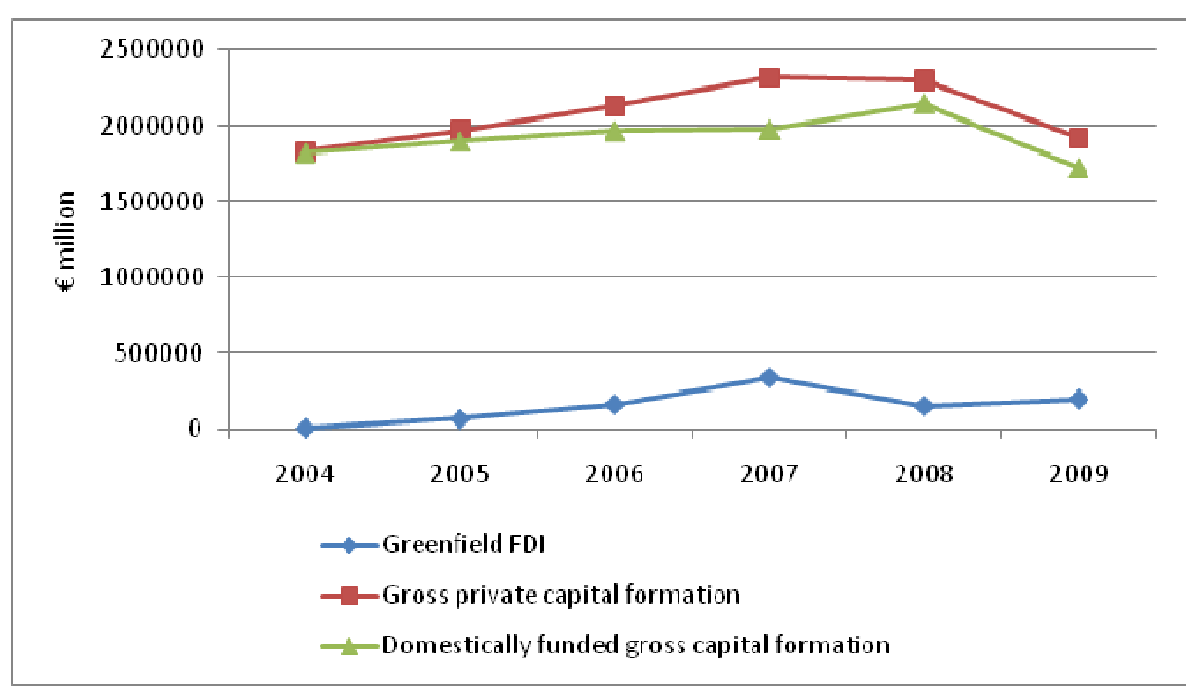
Thus, while greenfield inward investment held back total gross capital formation in 2008 and hence economic growth in that year, the opposite is true in 2009 during which inward greenfield investment actually supported economic activity. This point is discussed in the next sub-section.

**Table 2: Annual growth in inward M&A and greenfield investment FDI (%)**

	2007	2008	2009
Inward greenfield FDI	106.3	-54.5	29.0
Total fixed gross private capital formation	8.8	-0.6	-16.7
Domestically funded gross private fixed capital formation	0.6	8.7	-20.0

Source: London Economics calculations based on Eurostat FDI and national accounts statistics (gross private capital formation) and M&A data from Zephyr database (see Part I report for details)

Figure 7: Comparison of gross private capital formation, gross private capital formation financed domestically and gross private capital formation financed through inward FDI



Source: London Economics calculations based on Eurostat FDI and national accounts statistics (gross private capital formation) and M&A data from Zephyr database (see Part I report for details)

### 4.3.3 Implications for real GDP growth

As noted earlier, the implications for real GDP growth of the level (and changes therein) of inward greenfield FDI can be assessed by comparing the actual level of GDP (at constant prices) with the level of GDP (at constant prices) that one would obtain if the inward greenfield FDI (at constant prices) had been nil over the period of interest.

The information provided in the table below shows that:

- 1) Real growth in GDP in the EU27 was lower in 2008 due to a collapse in inward greenfield FDI in the wake of the financial crisis;
- 2) More importantly, the recession would have been almost half of a percentage point deeper in the absence of greenfield inward FDI. In other words, greenfield inward FDI supported the EU27 economy in 2009 by offsetting, in part, the weakness emanating from other parts of the economy.



**Table 3: EU real GDP growth with and without inward greenfield FDI – 2004 – 2009 (%)**

	2006	2007	2008	2009
Actual growth rate of real GDP	3.19	2.91	0.71	-4.22
Growth rate of real GDP in the absence of inward greenfield FDI	2.37	1.51	2.30	-4.65
Difference in GDP growth rate	0.82	1.40	-1.60	0.42

Note: Real GDP in the absence of greenfield FDI is obtained by a) transforming the greenfield data presented in the figures above into greenfield FDI in real terms by dividing the nominal greenfield FDI data by the fixed capital formation price index, 2000=100 (based on euro) from the Eurostat database.

**Source: London Economics calculations based on Eurostat FDI and national accounts statistics**

## 5 Openness to international capital flows and economic growth: an econometric analysis

The relationship between capital market liberalisation and economic growth is currently a very pertinent issue, with the world experiencing in 2008 the first global financial crisis for at least 20 years.

We therefore investigate what relationships appear with the latest data available for analysis.

The approach we have chosen most closely resembles that of Eichengreen and Leblang (2003), whose model estimated the effect of macroeconomic variables on growth of GDP per capita at country level.

We follow their pragmatic model of economic growth, and utilise the same estimation technique established by Arrellano and Bond (1991). We also use their same data source on crises (Bordo et al (2001) which contains data to 1998), supplemented with data from Laeven and Valencia (2008, 2010) to bring it up to date. However, rather than use a dummy variable of capital controls to measure capital market liberalisation, we use the KAOPEN index measure of capital openness (Chinn and Ito, 2006), a time series continuous variable measure that was not available to Eichengreen and Leblang. However, Eichengreen et al. (2009) did use this index in the sensitivity analysis for their work at sector level, noting that it did not produce as strongly significant results as the binary variable they used for their base model.

### 5.1 Model

Our model takes the following variables into consideration:

$$\text{GROWTH5} = f(\text{YPC}, \text{PE}, \text{SE}, \text{KAOPEN}, \text{DOM5}, \text{INT5}, \text{KAOPEN} * \text{DOM5}, \text{KAOPEN} * \text{INT5})$$

where

GROWTH5 = real GDP growth during five-year period (calculated as difference in log values)

YPC = (log of) domestic GDP/ US GDP

PE = (log of) primary school enrolment rate

SE = (log of) secondary school enrolment rate

KAOPEN = capital openness

DOM5 = number of domestic crises during five-year period

INT5 = number of international [=global, within regression sample, less domestic] crises during five-year period



KAOPEN\*DOM5, interaction of KAOPEN and DOM5

KAOPEN\*INT5, interaction of KAOPEN and INT5

In addition to this, we add the following controls:

GOVT\_CON = government consumption as share of GDP

TRADESIZE = (imports + exports) as share of GDP

INFLATION = Inflation, consumer prices (annual %)

POLITY2 = Polity IV governance measure (POLITY2 is a cleaned-up version for regression analysis)

Unless specified that it is during the five-year period, all values are taken for the variables at the beginning of the five-year period.

The variables specified in our model can be measured in a variety of ways. We have chosen those we consider most closely matched to the meaning of the concepts in our model, subject to sufficient data availability. As such we use PPP-adjusted GDP for measuring relative GDP<sup>8</sup>, and gross enrolment rates for schooling<sup>9</sup>.

## 5.2 Data

Our data sources are all publicly available, and are as follows:

- World Bank WDI & GDF – GDP, enrolment, inflation, government consumption, trade size
- Bordo et al. (2001) – banking and currency crises from 1972-1998
- Laeven and Valencia (2008, 2010) – banking and currency crises from 1998 to 2008
- Chinn and Ito (2009) – capital openness index 1970-2007
- Integrated Network for Societal Conflict Research – Polity IV index of constraints on the executive 1800-2008

Our initial dataset, based on data availability contains data on about 50 countries, and is essentially constrained only by the availability of financial crises data.

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<sup>8</sup> We do not do so with five-year growth of GDP per capita. The correlation between five-year growth of GDP per capita in constant US dollars and PPP-adjusted terms is almost perfect, except for one very striking outlier (Australia, 1983). Given that we can be more confident of the constant US dollar values, we use these. There are no similar such outliers in the measure of relative GDP per capita.

<sup>9</sup> We would prefer to use net rates (which consider only the target age group) rather than the gross rates (which count everyone enrolled at that education level), but the data are only available since 1998 for most countries, so we cannot use these within our model.

To focus our analysis on countries most like those within the EU, we restrict our sample to “middle high” and “high” income countries, as defined within the World Bank data. This reduces the dataset to 39 countries, and this is the sample we use for our analysis.<sup>10</sup>

Our data covers five non-overlapping five-year periods (starting 1983, 1978, ..., 2003), which, including the lags, means that our estimates are based on a sample from five-year periods beginning in 1988 to 2003. We chose this period for two reasons. Firstly, we were interested in the effects of openness in the current global financial system, which, although continually evolving, is broadly the same since the mid-1980s (as opposed to the one that existed immediately in the aftermath of the collapse of Bretton Woods in the early 1970s). Secondly, some of our preferred variables (relating to relative GDP per capita and enrolment, as explained above) only exist for more recent years.

### 5.2.1 Descriptive statistics

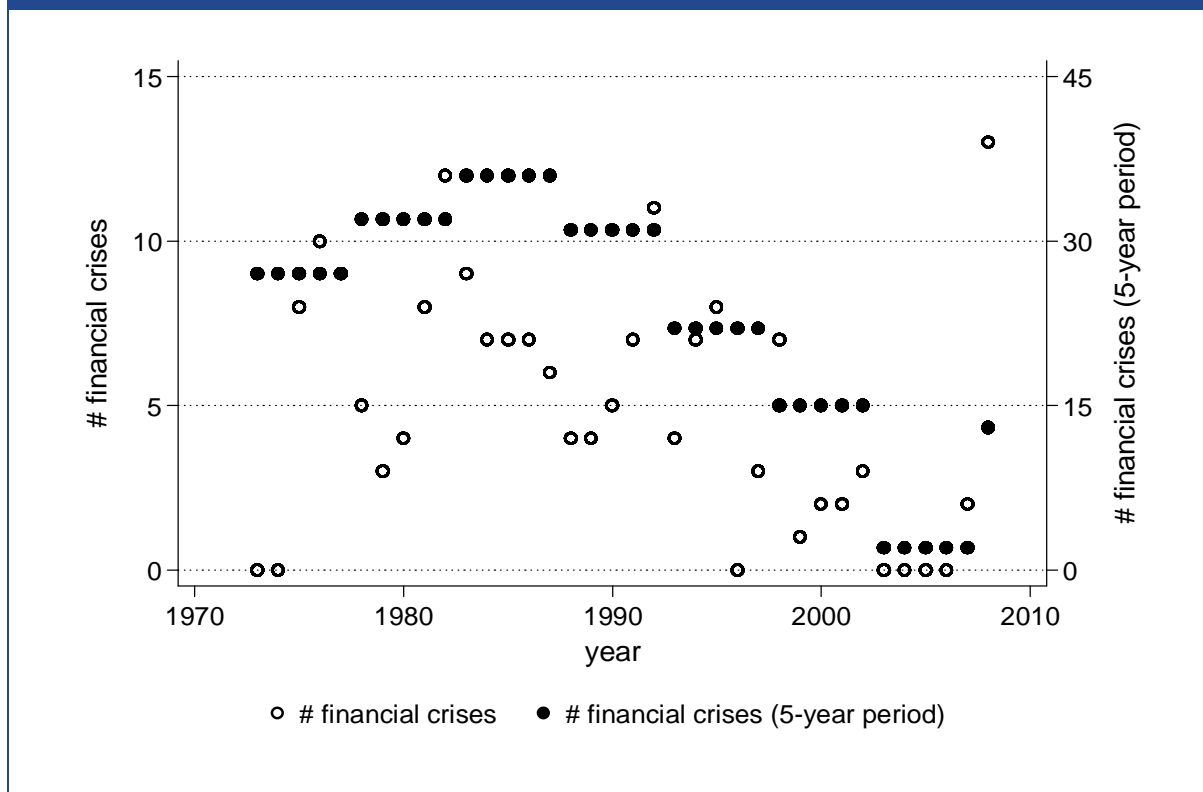
One of the characteristics of the recent period was a general reduction in the occurrence of financial crises between the 1970s and 2000s. The financial crisis that began in 2007 followed a period of unusual calm in the past four decades.

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<sup>10</sup> Due to missing data in two variables, we only have 36 countries in our regression estimates. The countries in our regression sample are: Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, Colombia, Costa Rica, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Italy, Jamaica, Japan, Korea, Malaysia, Mexico, Netherlands, New Zealand, Norway, Peru, Portugal, South Africa, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States, Uruguay, and Venezuela. Hong Kong, Iceland and Singapore are excluded from the regression model.



Figure 8: Number of banking and currency crises in the World each year



Source: Bordo et al. (2001), Laeven and Valencia (2008, 2010)

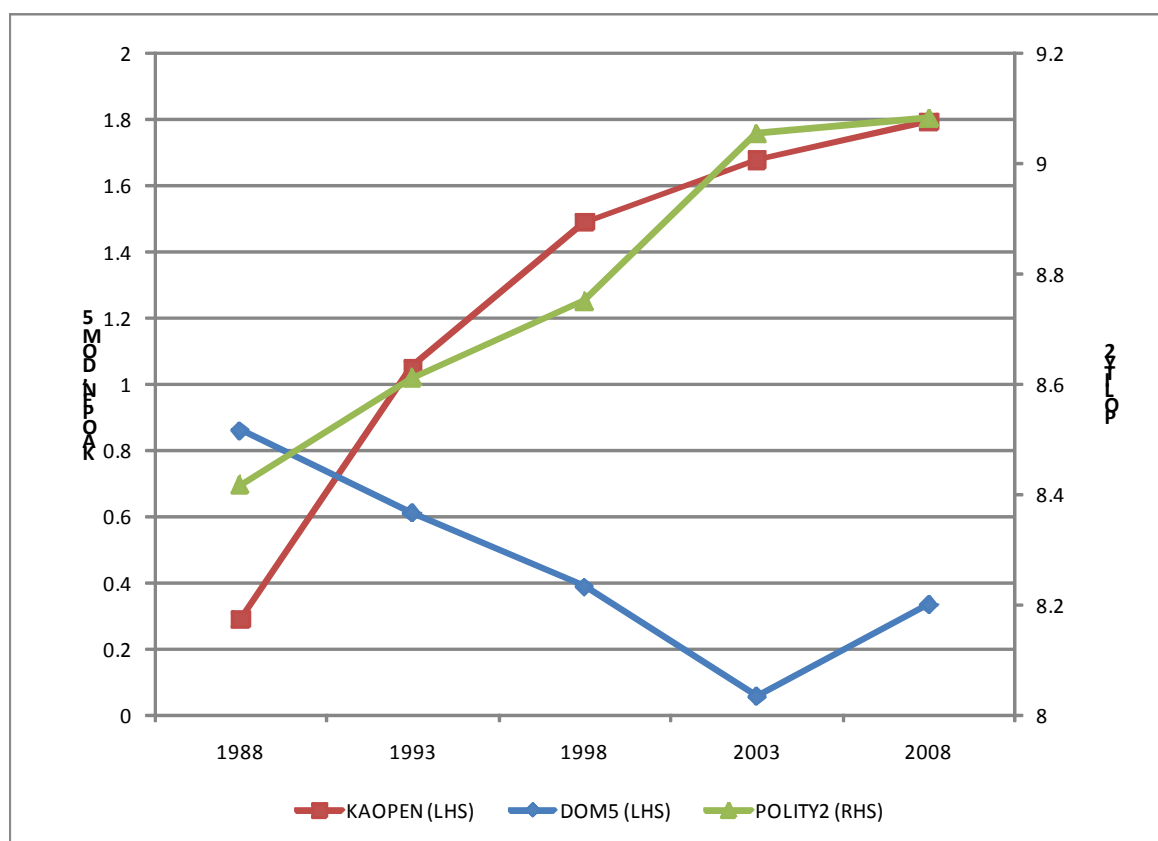
Details on the period values of KAOPEN, DOM5 and POLITY2 in each of the countries in our sample are given in tables in Annex 2.

The average value of KAOPEN rose over the period (meaning countries' capital markets were becoming more open), though the rate of growth has slowed since 1998. An important finding is that the 2008 KAOPEN score was unchanged from the 2007 score for all EU27 countries in our sample (listed in Annex 2), indicating that there was no reactionary increase in capital controls following the crisis. Of the non-EU economies in the sample, some increased capital controls (including the USA, Israel, Brazil and Chile) whilst others became more open (including Turkey, Malaysia, Korea and Colombia).

Analysis of DOM5 shows that the trend of progressively less frequent crises over the whole period at the world level bears out for most countries individually also.

Noteworthy aspects of the data are that the POLITY2 value does not change over time for 22 out of the 36 countries in our regression sample. The only EU Member State to have a change in value during the period is Belgium (from 10 in 2003 to 8 in 2008).

Figure 9: Average scores for KAOPEN, DOM5 and POLITY2 for data used in model



Source: London Economics calculations on data from Chinn and Ito (2009), Bordo et al. (2001), Laeven and Valencia (2008, 2010) and Polity IV (2010).

### 5.3 Model estimation results

Our principle finding is that, amongst financially well-developed countries, capital openness alone and at times of domestic crisis has a neutral association with growth, but has a statistically significant positive association with growth during times of an international crisis (a crisis occurring outside of the country of interest). The value of the coefficient on the interaction term (KAOPEN\*INT5) is about 0.1, representing the estimated effect of capital openness on real GDP growth during five-year period in the presence of an external crisis.

We estimate the full model first, then estimate excluding primary school enrolment from the model (as its estimated coefficient is not found to be significant). The results are essentially unchanged by this amendment.



Table 4: Model estimation results

Variable	Model specification 1	Model specification 2
YPC (PPP-adjusted)	-33.494471***	-34.930791***
PE (GROSS)	-19.91	
SE (GROSS)	4.296752	2.337267
POLITY2	0.3055588**	0.32954518**
TRADESIZE	0.16812907***	0.17743569**
INFLATION	-0.00376	-0.00328
GOVT_CON	-1.1545887***	-1.1945142***
KAOPEN	-1.19575	-1.33122
DOM5	-4.4831526***	-4.457582***
INT5	-1.2860136***	-1.3182071***
KAOPEN* DOM5	0.254932	0.244574
KAOPEN* INT5	0.10508241***	0.1117257***
CONSTANT	-10.947203***	-11.086653***
AR(2) TEST [P-value]	-0.34 [0.7346]	-0.65 [0.5150]
SARGAN TEST [P-value]	20.36 [1.0000]	29.51 [1.0000]
N [countries]	136 [36]	136 [36]

Note: \* Significant at the 10% level; \*\* Significant at the 5% level; \*\*\* Significant at the 1% level

Source: London Economics' calculations

### 5.3.1 Sensitivity analysis

The value of the coefficient on KAOPEN\*INT5 is generally about 0.10 and is usually found to be significant, even when various sensitivity tests around model specification are considered.

**Table 5: Model estimation results - sensitivity analysis**

Variable	Model specification 1	Model specification 3	Model specification 4
YPC (PPP-adjusted)	-33.494471***		
YPC (constant US \$)		-6.637423*	-6.6794814*
PE (GROSS)	-19.91	-9.96787	
SE (GROSS)	4.296752	7.341725	6.756689
POLITY2	0.3055588**	-0.03372	-0.01802
TRADESIZE	0.16812907***	0.061807	0.061968
INFLATION	-0.00376	-0.00444	-0.00421
GOVT_CON	-1.1545887***	-0.97920771***	-0.99894323***
KAOPEN	-1.19575	-0.81966	-0.79284
DOM5	-4.4831526***	-5.1073977***	-5.1331137***
INT5	-1.2860136***	-0.76258666**	-0.76802951**
KAOPEN* DOM5	0.254932	0.799707	0.808933
KAOPEN* INT5	0.10508241***	0.071962	0.072236
CONSTANT	-10.947203***	-6.6364258**	-6.6849256**
AR(2) TEST [P-value]	-0.34 [0.7346]	-1.37 [0.1721]	-0.65 [0.5169]
SARGAN TEST [P-value]	20.36 [1.0000]	27.32 [1.0000]	30.82 [1.0000]
N [countries]	136 [36]	136 [36]	136 [36]

Note: \* Significant at the 10% level; \*\* Significant at the 5% level; \*\*\* Significant at the 1% level

Source: *London Economics' calculations*

## 5.4 Conclusions for policy makers

The effect of capital openness in the presence of an external crisis is approximately 0.1. Amongst the countries included in our estimated model, the lower quartile value of KAOPEN was 1.17 in 2007 and the upper quartile was 2.5. Thus the approximate difference in KAOPEN between countries with relatively closed and relatively open capital markets was 1.33.

The impact of relative openness is thus  $0.1 * 1.33 = 0.133\%$  growth per capita per five-year period, per external crisis. The more disrupted the international financial system, the more useful capital openness is in accessing finance, and thus fostering growth.

Illustratively, the number of international crises beginning in 2008 was 13. If the relationship estimated in our model remains unchanged in the future and there are no further crises before 2013, this implies that the benefit to an economy of having relatively open capital markets will be approximately 1.73% growth in GDP per capita over the five-year period.

Based on our estimation, we can only state that this effect is associated with openness at the time of the event of crises. We are unable to determine, with the data we have, whether the impact of openness is more important during or immediately following the crisis (in the recovery stage), as we do not have data on the duration of the crises.

Importantly, no EU Member State in our sample reacted to the crisis by reducing capital openness (as illustrated by KAOPEN scores being the same in 2008 as in 2007), allowing the European economies to continue benefitting from the positive impact of relative capital openness on economic growth.



**Table 6: Distribution of KAOPEN (Chinn-Ito index) by year**

Year	Lower quartile	Median	Upper quartile
2000	1.166992	2.500014	2.500014
2001	1.166992	2.500014	2.500014
2002	1.166992	2.500014	2.500014
2003	1.166992	2.500014	2.500014
2004	1.166992	2.500014	2.500014
2005	1.166992	2.500014	2.500014
2006	1.166992	2.500014	2.500014
2007	1.166992	2.500014	2.500014
2008	1.166992	2.500014	2.500014
1972-2008	-0.7820527	1.166992	2.500014

Source: Chinn-Ito kaopen\_2007.xls

## **6 Conclusions on how the EU's open investment regime stabilised the EU economy and will help support the economic recovery**

This section presents evidence-based conclusions, drawing on the analysis presented in this report, on the extent to which the EU's open investment regime helped stabilise the EU economy, cushioning it from the full brunt of the recessionary forces, and more importantly, how it will help support the economic recovery.

The key finding of this special study is that both the analysis of the contribution of inward FDI to economic growth in 2009 and the econometric analysis show that free capital movement supported the EU economy during the recession. More specific findings and conclusions are discussed below.

The economic literature on the link between capital openness and economic growth highlights the potential role that capital openness could have in fostering economic growth, but the extent of this link is unclear as it is influenced by certain factors.

Developed economies tend to benefit more growth effects of capital openness during non-crisis periods, but in times of crisis, both developed and developing economies benefit from openness to capital flows.

The impact of financial openness has also been found to vary by industrial sector and the degree to which it relies on external finance. Industries that depend more on external finance tend to contract more in recessions, particularly where institutions are weak. The effect can be somewhat mitigated if capital account openness allows financially-dependent firms to continue accessing foreign finance during the crisis. This latter point is the policy-relevant conclusion and suggests that capital openness may cushion the impact of a crisis on the economy.

Moreover, academic research yields generally positive findings in respect of the effect of financial liberalisation on economic growth, with several studies finding that more liberalised economies tend to lose less during a crisis.

Our analysis also showed the clear importance of greenfield FDI as a driver of inward FDI and economic growth. Our assessment showed that real growth in GDP in the EU27 was somewhat lower in 2008 due to a collapse in inward greenfield FDI in the wake of the financial crisis. More importantly, the recession would have been almost half of a percentage point deeper in the absence of greenfield inward FDI. Whilst only a very small proportion of total private gross fixed capital formation, greenfield inward FDI supported the EU27 economy in 2009 by offsetting, in part, the weakness emanating from other parts of the economy.

Whilst no definitive measure of capital openness exists, we chose the Chinn-Ito KAOPEN index of capital openness, based on a review of the most notable alternatives, in order to empirically estimate the relationship between capital market liberalisation and economic growth.



The results of the empirical analysis show that the benefit to an economy of having open capital markets during the financial crisis that began in 2007 and over the coming years will be approximately 1.73% additional growth in GDP per capita over a five-year period.

Importantly, no EU Member State included in the empirical analysis reacted to the crisis by reducing capital openness (as illustrated by KAOPEN scores being the same in 2008 as in 2007) allowing the European economies to draw on this growth buffer.

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## Annex 1 List of major publicly listed companies for which data on foreign ownership was collated

**Table 7: Names of major publicly listed companies covered by foreign ownership analysis**

Austria		Belgium		Bulgaria		Cyprus	
ERSTE GROUP BANK AG	96	ANHEUSER-BUSCH INBEV NV	97	VIVACOM	100	BANK OF CYPRUS PUBLIC CO LTD	84
OEST ELEKTRIZITATSWIRTS-A	97	FORTIS BANQUE - BANK - AUC	100	SOPHARMA AD SOFIA	100	EURASIA DRILLIN-GDR REGS	-
OMV AG	96	KBC GROEP NV	98	PETROL AD	100	MARFIN POPULAR BANK PUBLIC C	98
RAIFFEISEN INTL BANK HOLDING	99	GROUPE BRUXELLES LAMBERT SA	98	CORPORATE COMMERCIAL BANK AD	100	PROSAFE SE	84
VOESTALPINE AG	92	BELGACOM SA	95	CHIMIMPORT AD	100	AFI DEVELOPMENT-GDR REG S	-
VIENNA INSURANCE GROUP	97	DEXIA SA	99	RAILWAY INFRASTRUCTURE HOLDI	-	SONGA OFFSHORE SE	91
TELEKOM AUSTRIA AG	95	DELHAIZE GROUP	87	CB FIRST INVESTMENT BANK AD	100	PROSAFE PRODUCTION	91
IMMOEAST AG	97	SOLVAY SA	97	MONBAT AD	100	HELLENIC BANK PUBLIC CO LTD	100
ANDRITZ AG	90	FORTIS	85	ALBENA AD	100	MIRLAND DEVELOPMENT CORP	100
STRABAG SE-BR	98	COLRUYT SA	96	BULGARIAN AMERICAN CREDIT BA	100	DEEP SEA SUPPLY PLC	97
OESTERREICH VOLKSBANKEN-PART	100	UCB SA	98	VIVACOM	100	BANK OF CYPRUS PUBLIC CO LTD	84
EVN AG	100	CNP -CIE NATL A PORTEFEUILLE	99	SOPHARMA AD SOFIA	100	EURASIA DRILLIN-GDR REGS	-
UNIQA VERSICHERUNGEN AG	100	UMICORE	80	PETROL AD	100	MARFIN POPULAR BANK PUBLIC C	98
WIENERBERGER AG	86	MOBISTAR SA	96	CORPORATE COMMERCIAL BANK AD	100	PROSAFE SE	84
MAYR-MELNHOF KARTON AG	93	BEKAERT NV	95	CHIMIMPORT AD	100	AFI DEVELOPMENT-GDR REG S	-
IMMOFINANZ AG	93	TELENET GROUP HOLDING NV	97	RAILWAY INFRASTRUCTURE HOLDI	-	SONGA OFFSHORE SE	91
BWIN INTERACTIVE ENTERTAINME	87	SOFINA	99	CB FIRST INVESTMENT BANK AD	100	PROSAFE PRODUCTION	91
OESTERREICHISCHE POST AG	95	S.A. D'IETEREN N.V.	98	MONBAT AD	100	HELLENIC BANK PUBLIC CO LTD	100
LENZING AG	100	ACKERMANS & VAN HAAREN	98	ALBENA AD	100	MIRLAND DEVELOPMENT CORP	100
OBERBANK AG	100	FLUXYS-D	100	BULGARIAN AMERICAN CREDIT BA	100	DEEP SEA SUPPLY PLC	97
VORARLBERGER KRAFTWERKE AG	-	BANQUE NATIONALE DE BELGIQUE	100				
AGRANA BETEILIGUNGS AG	100	KBC ANCORA	100				
INTERCELL AG	79	SOLVAC SA-REG	100				
RHI AG	98	ELIA SYSTEM OPERATOR SA/NV	100				
FLUGHAFEN WIEN AG	98	COFINIMMO	88				

Source:

Bloomberg



Table 8: Names of major publicly listed companies covered by foreign ownership analysis

Czech Republic		Denmark		Estonia		Finland	
CEZ AS	98	NOVO NORDISK A/S-B	94	TALLINK GROUP LTD	100	NOKIA OYJ	76
KOMERCNI BANKA AS	99	A P MOLLER - MAERSK A/S - B	97	OLYMPIC ENTERTAINMENT GROUP	98	FORTUM OYJ	95
TELEFONICA O2 CZECH REPUBLIC	98	DANSKE BANK A/S	96	AS TALLINNA VESI-A EQUITY	99	SAMPO OYJ-A SHS	89
UNIPETROL AS	100	VESTAS WIND SYSTEMS A/S	82	TALLINNA KAUBAMAJA AS	100	KONE OYJ-B	95
PRAZSKA ENERGETIKA	100	CARLSBERG AS-B	88	AS MERKO EHITUS	100	UPM-KYMMENE OYJ	85
PHILIP MORRIS CR AS	99	TDC A/S	100	NORMA AS	100	STORA ENSO OYJ-R SHS	87
SEVEROMORAVSKA PLYNARENSKA	-	NOVOZYMES A/S-B SHARES	95	AS NORDECON INTERNATIONAL	100	METSO OYJ	84
VYCHODOCESKA PLYNARENSKA AS	100	COLOPLAST-B	90	SILVANO FASHION GROUP AS	96	WARTSILA OYJ	91
PEGAS NONWOVENS SA	97	WILLIAM DEMANT HOLDING	99	AS HARJU ELEKTER	100	NESTE OIL OYJ	98
PRAZSKE SLUZBY	-	FLSMIDTH & CO A/S	79	EKSPRESS GRUPP AS	100	OUTOKUMPU OYJ	94
CEZ AS	98	DSV A/S	89	TALLINK GROUP LTD	100	KESKO OYJ-B SHS	87
KOMERCNI BANKA AS	99	TRYGVESTA AS	99	OLYMPIC ENTERTAINMENT GROUP	98	POHJOLA BANK PLC	97
TELEFONICA O2 CZECH REPUBLIC	98	DANISCO A/S	81	AS TALLINNA VESI-A EQUITY	99	SANOMA OYJ	98
UNIPETROL AS	100	H LUNDBECK A/S	99	TALLINNA KAUBAMAJA AS	100	ELISA OYJ	95
PRAZSKA ENERGETIKA	100	JYSKE BANK-REG	98	AS MERKO EHITUS	100	RAUTARUUKKI OYJ	96
PHILIP MORRIS CR AS	99	ROCKWOOL INTL A/S-B SHS	95	NORMA AS	100	NOKIAN RENKAAT OYJ	86
SEVEROMORAVSKA PLYNARENSKA	-	TOPDANMARK A/S	97	AS NORDECON INTERNATIONAL	100	YIT OYJ	94
VYCHODOCESKA PLYNARENSKA AS	100	SYDBANK A/S	95	SILVANO FASHION GROUP AS	96	ORION OYJ-CLASS B	86
PEGAS NONWOVENS SA	97	D/S NORDEN	91	AS HARJU ELEKTER	100	STOCKMANN OYJ ABP-B SHARE	100
PRAZSKE SLUZBY	-	KOBENHAVNS LUFTHAVNE	100	EKSPRESS GRUPP AS	100	CARGOTEC OYJ-B SHARE	97
		GN STORE NORD A/S	91			KONECRANES OYJ	86
		NKT HOLDING A/S	93			OUTOTEC OYJ	78
		SIMCORP A/S	93			TALVIVAARA MINING CO PLC	95
		JEUDAN A/S	100			KEMIRA OYJ	98
		TORM A/S	98			TIETO OYJ	95

Source:

Bloomberg

Table 9: Names of major publicly listed companies covered by foreign ownership analysis

France		Germany		Greece		Hungary	
TOTAL SA	86	SIEMENS AG-REG	91	COCA-COLA HELLENIC BOTTLING	98	MOL HUNGARIAN OIL AND GAS NY	95
EDF	100	E.ON AG	89	NATIONAL BANK OF GREECE	85	OTP BANK PLC	87
SANOFI-AVENTIS	88	SAP AG	95	OPAP SA	94	MAGYAR TELEKOM TELECOMMUNICA	98
BNP PARIBAS	89	BASF SE	89	HELLENIC TELECOMMUN ORGANIZA	97	RICHTER GEDEON NYRT.	93
GDF SUEZ	97	DEUTSCHE TELEKOM AG-REG	96	ALPHA BANK A.E.	84	BUDAPESTI ELEKTROMOS MUVEK	100
L'OREAL	98	BAYER AG	92	PUBLIC POWER CORP	96	EGIS PLC	95
FRANCE TELECOM SA	93	DAIMLER AG-REGISTERED SHARES	83	EFG EUROBANK ERGASIAS	98	FHB MORTGAGE BANK PLC	100
LVMH MOET HENNESSY LOUIS VUI	97	ALLIANZ SE-REG	92	HELLENIC PETROLEUM SA	100	TISZA CHEMICAL GROUP PLC	100
AXA SA	93	RWE AG	94	EMPORIKI BANK OF GREECE SA	100	EMASZ	100
SUEZ SA - FRACTIONAL	100	DEUTSCHE BANK AG-REGISTERED	86	PIRAEUS BANK S.A.	89	ZWACK UNICUM RT	100
SOCIETE GENERALE	88	VOLKSWAGEN AG	100	VIVARTIA SA	100	MOL HUNGARIAN OIL AND GAS NY	95
CREDIT AGRICOLE SA	97	AUDI AG	100	TITAN CEMENT CO. S.A.	97	OTP BANK PLC	87
DANONE	88	BAYERISCHE MOTOREN WERKE AG	97	DRYSHIPS INC	94	MAGYAR TELEKOM TELECOMMUNICA	98
CARREFOUR SA	90	MUENCHENER RUECKVER AG-REG	92	AGRICULTURAL BANK OF GREECE	100	RICHTER GEDEON NYRT.	93
VIVENDI	85	DEUTSCHE POST AG-REG	95	MOTOR OIL (HELLAS) SA	99	BUDAPESTI ELEKTROMOS MUVEK	100
VINCI SA	89	HENKEL AG & CO KGAA VORZUG	-	MARFIN INVESTMENT GROUP SA	95	EGIS PLC	95
AIR LIQUIDE SA	86	METRO AG	97	DIANA SHIPPING INC	97	FHB MORTGAGE BANK PLC	100
SCHNEIDER ELECTRIC SA	91	LINDE AG	95	AEGEAN MARINE PETROLEUM NETW	100	TISZA CHEMICAL GROUP PLC	100
COMPAGNIE DE SAINT-GOBAIN	95	MERCK KGAA	90	TT HELLENIC POSTBANK S.A.	100	EMASZ	100
PERNOD-RICARD SA	91	THYSSENKRUPP AG	96	BANK OF GREECE	99	ZWACK UNICUM RT	100
LAFARGE SA	95	FRESENIUS MEDICAL CARE AG &	97	JUMBO SA	96		
CHRISTIAN DIOR	99	DEUTSCHE BOERSE AG	89	VIOHALCO	100		
PPR	96	BEIERSDORF AG	98	ALAPIS HOLDING INDUSTRIAL	96		
BOUYGUES SA	96	MAN SE	96	ATHENS WATER SUPPLY & SEWAGE	100		
AREVA - CI	98	ENBW ENERGIE BADEN-WUERTTEMBERG	100	ELLAKTOR SA	97		

Source: Bloomberg



Table 10: Names of major publicly listed companies covered by foreign ownership analysis

Ireland		Italy		Latvia		Lithuania	
ACCENTURE PLC-CL A	94	ENI SPA	93	LATVIJAS GAZE	100	TEO LT	100
COVIDIEN PLC	96	UNICREDIT SPA	89	VENTSPILS NAFTA	100	LIETUVOS ENERGIJA	100
CRH PLC	88	ENEL SPA	95	LATVIAN SHIPPING CO	100	LIETUVOS DUJOS	100
SHIRE PLC	90	INTESA SANPAOLO	90	GRINDEKS	99	RYTU SKIRSTOMIEJI TINKLAI	100
INGERSOLL-RAND PLC	96	ASSICURAZIONI GENERALI	96	JSC LATVIJAS KRAJBANKA	100	VAKARU SKIRSTOMIEJI TINKLAI	100
EXPERIAN PLC	97	TELECOM ITALIA SPA	93	LIEPAJA METALURGS	100	LIFOSA PVA	100
RYANAIR HOLDINGS PLC	90	SNAM RETE GAS	96	LATVIJAS BALZAMS	-	LIETUVOS ELEKTRINE	100
ISHARES S&P 500 INDEX FUND	92	SAIPEM	95	OLAINES KIMISKI-FARMACEITISK	100	BANKAS SNORAS	100
WARNER CHILCOTT PLC-CLASS A	99	FIAT SPA	97	VALMIERAS STIKLA SKIEDRA	100	SANITAS	100
KERRY GROUP PLC-A	96	LUXOTTICA GROUP SPA	99	LATVIAN BRIDGES	-	KLAIPEDOS NAFTA PVA	100
ISHARES PLC-ISHARES FTSE 100	90	ATLANTIA SPA	96	LATVIJAS GAZE	100	TEO LT	100
ISHARES DJ EURO STOXX 50	75	BANCA MONTE DEI PASCHI SIENA	98	VENTSPILS NAFTA	100	LIETUVOS ENERGIJA	100
ISHARES EURO CORPORATE BOND	97	MEDIASET SPA	97	LATVIAN SHIPPING CO	100	LIETUVOS DUJOS	100
ELAN CORP PLC	96	MEDIOBANCA SPA	95	GRINDEKS	99	RYTU SKIRSTOMIEJI TINKLAI	100
ISHARES MSCI EMERGING MKTS	83	UBI BANCA SCPA	91	JSC LATVIJAS KRAJBANKA	100	VAKARU SKIRSTOMIEJI TINKLAI	100
ISHARES MSCI WORLD	86	TERNA SPA	93	LIEPAJA METALURGS	100	LIFOSA PVA	100
BANK OF IRELAND	98	FINMECCANICA SPA	96	LATVIJAS BALZAMS	-	LIETUVOS ELEKTRINE	100
DCC PLC	92	EDISON SPA	100	OLAINES KIMISKI-FARMACEITISK	100	BANKAS SNORAS	100
SMURFIT KAPPA GROUP PLC	97	A2A SPA	99	VALMIERAS STIKLA SKIEDRA	100	SANITAS	100
CHARTER INTERNATIONAL PLC	94	BANCA CARIGE SPA	99	LATVIAN BRIDGES	-	KLAIPEDOS NAFTA PVA	100
ISHARES MSCI JAPAN FUND	95	PARMALAT SPA	86				
ISHARES MSCI AC FAR EAST XJP	91	BANCO POPOLARE SCARL	88				
ALLIED IRISH BANKS PLC	91	EXOR SPA	99				
ISHARES GBP CORPORATE BOND	100	MEDIOLANUM SPA	99				
PADDY POWER PLC	95	PRYSMIAN SPA	89				

Source: Bloomberg

Table 11: Names of major publicly listed companies covered by foreign ownership analysis							
Luxembourg		Malta		Netherlands		Poland	
ARCELORMITTAL	95	HSBC BANK MALTA PLC	100	ROYAL DUTCH SHELL PLC-A SHS	81	PKO BANK POLSKI SA	-
TENARIS SA	99	UNIBET GROUP PLC-SDR	-	UNILEVER NV-CVA	-	BANK PEKAO SA	97
EVRAZ GROUP SA - GDR REG S	-	BANK OF VALLETTA PLC	100	ING GROEP NV-CVA	-	POLSKA GRUPA ENERGETYCZNA SA	100
RTL GROUP	100	INTERNATIONAL HOTEL INVEST	100	KONINKLIJKE PHILIPS ELECTRON	85	KGHM POLSKA MIEDZ SA	94
UBS-ETF MSCI EMU I	-	MALTA INTNL AIRPORT-A SHARES	100	HEINEKEN NV	89	TELEKOMUNIKACJA POLSKA SA	97
MILICOM INTL CELLULAR S.A.	98	GO PLC	100	KONINKLIJKE KPN NV	86	POLSKIE GORNICTWO NAFTOWE I	99
SES	-	FIMBANK PLC	100	KONINKLIJKE AHOLD NV	92	POLSKI KONCERN NAFTOWY SA	96
TERNIUM SA-SPONSORED ADR	-	LOMBARD BANK (MALTA) PLC	100	EADS NV	96	BANK ZACHODNI WBK SA	99
DB X-TRACKERS EMERG MARKET	94	MEDSERV PLC	100	ASML HOLDING NV	92	BANK HANDLOWY W WARSZAWIE SA	100
REINET INVESTMENTS SCA	100	MALTAPOST PLC	100	AKZO NOBEL	89	ING BANK SLASKI SA	100
ARCELORMITTAL	95	HSBC BANK MALTA PLC	100	AEGON NV	89	BRE BANK SA	99
TENARIS SA	99	UNIBET GROUP PLC-SDR	-	TNT NV	89	ENEA SA	100
EVRAZ GROUP SA - GDR REG S	-	BANK OF VALLETTA PLC	100	HEINEKEN HOLDING NV	99	GETIN HOLDING SA	99
RTL GROUP	100	INTERNATIONAL HOTEL INVEST	100	RANDSTAD HOLDING NV	94	CENTRAL EURO DISTRIBUTION CP	95
UBS-ETF MSCI EMU I	-	MALTA INTNL AIRPORT-A SHARES	100	KONINKLIJKE DSM NV	89	TVN SA	98
MILICOM INTL CELLULAR S.A.	98	GO PLC	100	REED ELSEVIER NV	84	BANK MILLENNIUM SA	100
SES	-	FIMBANK PLC	100	CNH GLOBAL N.V.	100	BANK BPH	100
TERNIUM SA-SPONSORED ADR	-	LOMBARD BANK (MALTA) PLC	100	HAL TRUST	100	GRUPA ZYWIEC SA	100
DB X-TRACKERS EMERG MARKET	94	MEDSERV PLC	100	WOLTERS KLUWER	88	GLOBE TRADE CENTRE SA	98
REINET INVESTMENTS SCA	100	MALTAPOST PLC	100	CORIO NV	91	ASSECO POLAND SA	97
				VOPAK	96	KREDYT BANK SA	100
				FUGRO NV-CVA	-	GRUPA LOTOS SA	99
				QIAGEN N.V.	89	CYFROWY POLSAT SA	99
				BOSKALIS WESTMINSTER	93	FORTIS BANK POLSKA S.A.	100
				NEW WORLD RESOURCES NV-A	98	MONDI SWIECIE SA	100

Source: Bloomberg



Table 12: Names of major publicly listed companies covered by foreign ownership analysis

Portugal		Romania		Slovakia		Slovenia	
GALP ENERGIA SGPS SA-B SHRS	97	OMV PETROM SA	99	SLOVNAFT AS	100	KRKA	98
EDP-ENERGIAS DE PORTUGAL SA	93	BRD-GROUPE SOCIETE GENERALE	99	VSEOBECNA UVEROVA BANKA AS	100	TELEKOM SLOVENIJE DD	100
PORTUGAL TELECOM SGPS SA-REG	83	TRANSGAZ SA MEDIAS	100	TATRA BANKA	100	PETROL	100
JERONIMO MARTINS	93	ALRO SLATINA	100	ZENTIVA AS	100	MERCATOR POSLOVNI SISTEM	100
BANCO ESPIRITO SANTO-REG	95	BANCA TRANSILVANIA	99	VOLKSBANK SLOVENSKO AS	-	ZAVAROVALNICA TRIGLAV DD	100
CIMPOR-CIMENTOS DE PORTUGAL	99	ROMPETROL RAFINARE SA	100	ASSECO SLOVAKIA	100	SAVA	100
BANCO COMERCIAL PORTUGUES-R	95	TRANSELECTRICA SA	100	DEXIA BANKA SLOVENSKO AS	100	ABANKA VIPA DD	100
BRISA-AUTO-ESTRADAS PORTUGAL	99	SIF 5 OLTENIA	97	ADSK GPSA SLOVENSKO AS	100	NOVA KREDITNA BANKA MARIBOR	98
SONAE	100	SIF 3 TRANSILVANIA	98	CEMMAC A.S.	-	LUKA KOPER	100
BANCO BPI SA.- REG SHS	90	SIF 1 BANAT-CRISANA	97	INCHEBA A.S.	-	PIVOVARNA LASKO	100
PORTUCEL EMPRESA PRODUTORA	99	OMV PETROM SA	99	SLOVNAFT AS	100	KRKA	98
REDES ENERGETICAS NACIONAIS	100	BRD-GROUPE SOCIETE GENERALE	99	VSEOBECNA UVEROVA BANKA AS	100	TELEKOM SLOVENIJE DD	100
ZON MULTIMEDIA SERVICOS DE T	99	TRANSGAZ SA MEDIAS	100	TATRA BANKA	100	PETROL	100
SEMAPA-SOCIEDADE DE INVESTIM	98	ALRO SLATINA	100	ZENTIVA AS	100	MERCATOR POSLOVNI SISTEM	100
MOTA ENGIL SGPS SA	98	BANCA TRANSILVANIA	99	VOLKSBANK SLOVENSKO AS	-	ZAVAROVALNICA TRIGLAV DD	100
SONAECOM SGPS SA	100	ROMPETROL RAFINARE SA	100	ASSECO SLOVAKIA	100	SAVA	100
BANIF SGPS SA-REG	100	TRANSELECTRICA SA	100	DEXIA BANKA SLOVENSKO AS	100	ABANKA VIPA DD	100
ALTRI SGPS SA	97	SIF 5 OLTENIA	97	ADSK GPSA SLOVENSKO AS	100	NOVA KREDITNA BANKA MARIBOR	98
TEIXEIRA DUARTE- ENGENHARIA C	100	SIF 3 TRANSILVANIA	98	CEMMAC A.S.	-	LUKA KOPER	100
SONAE INDUSTRIA SGPS SA/NEW	100	SIF 1 BANAT-CRISANA	97	INCHEBA A.S.	-	PIVOVARNA LASKO	100
IMPRESA SGPS	100						
FINIBANCO-HOLDING SGPS SA	100						
MARTIFER SGPS SA	100						
GRUPO MEDIA CAPITAL SGPS	100						
SAG GEST-SOLUCOES AUTOMOVEL	100						

Source: Bloomberg

Table 13: Names of major publicly listed companies covered by foreign ownership analysis

Spain		Sweden		United Kingdom			
BANCO SANTANDER SA	84	HENNES & MAURITZ AB-B SHS	98	BHP BILLITON PLC	85		
TELEFONICA SA	88	ERICSSON LM-B SHS	94	BP PLC	80		
BANCO BILBAO VIZCAYA ARGENTA	90	NORDEA BANK AB	97	HSBC HOLDINGS PLC	83		
IBERDROLA SA	92	TELIASONERA AB	98	RIO TINTO PLC	88		
INDITEX	98	VOLVO AB-B SHS	98	VODAFONE GROUP PLC	81		
ENDESA SA	100	ATLAS COPCO AB-A SHS	96	GLAXOSMITHKLINE PLC	81		
REPSOL YPF SA	91	SVENSKA HANDELSBANKEN-A SHS	98	UNILEVER PLC	88		
CRITERIA CAIXACORP SA	100	SANDVIK AB	97	LLOYDS BANKING GROUP PLC	95		
IBERDROLA RENOVABLES SA	98	INVESTOR AB-B SHS	97	BARCLAYS PLC	80		
GAS NATURAL SDG SA	99	SKANDINAVISKA ENSKILDA BAN-A	98	BRITISH AMERICAN TOBACCO PLC	86		
ACS ACTIVIDADES CONS Y SERV	99	SCANIA AB-B SHS	99	ASTRAZENECA PLC	84		
ABERTIS INFRAESTRUCTURAS SA	99	SVENSKA CELLULOSA AB-B SHS	91	ANGLO AMERICAN PLC	88		
MAPFRE SA	98	SWEDBANK AB - A SHARES	96	BG GROUP PLC	85		
BANCO POPULAR ESPANOL	97	SKF AB-B SHARES	93	STANDARD CHARTERED PLC	85		
CIA ESPANOLA DE PETROLEOS SA	100	ASSA ABLOY AB-B	94	TESCO PLC	86		
BANCO ESP CREDITO (BANESTO)	100	ELECTROLUX AB-SER B	95	ROYAL BANK OF SCOTLAND GROUP	97		
FERROVIAL SA	99	TELE2 AB-B SHS	95	SABMILLER PLC	94		
RED ELECTRICA CORPORACION SA	93	SKANSKA AB-B SHS	95	DIAGEO PLC	81		
ACCIONA SA	98	ALFA LAVAL AB	96	RECKITT BENCKISER GROUP PLC	88		
BANCO DE SABADELL SA	95	SWEDISH MATCH AB	95	CARNIVAL PLC	91		
EDP RENOVAVEIS SA	97	SSAB AB-A SHARES	98	IMPERIAL TOBACCO GROUP PLC	86		
ZARDOYA OTIS SA	99	INDUSTRIVARDEN AB-A SHS	100	EURASIAN NATURAL RESOURCES	96		
ACERINOX SA	97	GETINGE AB-B SHS	97	NATIONAL GRID PLC	84		
ENAGAS	93	RATOS AB-B SHS	98	CENTRICA PLC	84		
FOMENTO DE CONSTRUCC Y CONTRA	98	KINNEVIK INVESTMENT AB-B	98	PRUDENTIAL PLC	85		

Source: Bloomberg



## Annex 2 Descriptive statistics of data used in econometric analysis

**Table 14: Summary statistics for regression sample**

Variable	Mean	Standard deviation	Minimum	Maximum
GROWTH5	10.91064	10.55832	-35.47025	37.61844
YPC	-0.7111527	0.6032114	-1.981256	0.0430078
PE	0.0442802	0.0786005	-0.1468817	0.4141791
SE	-0.1104653	0.2646652	-0.8737954	0.4721668
POLITY2	8.527027	2.8102	-2	10
TRADESIZE	70.23216	55.24261	15.74346	397.3045
INFLATION	31.8684	172.2768	-13.84541	1927.984
GOVT_CON	16.89334	5.489617	4.32191	31.63107
KAOPEN	1.183741	1.506959	-1.831187	2.500014
DOM5	0.4487179	0.7975355	0	3
INT5	17.05128	10.38348	1	31

Source: London Economics' calculations

**Table 15: Correlations for regression sample**

	GROWTH5	YPC	PE	SE	POLITY2	KAOPEN	DOM5	INT5
GROWTH5	1.0000							
YPC	-0.0699	1.0000						
PE	-0.1786	-0.3955	1.0000					
SE	0.0956	0.7305	-0.1432	1.0000				
POLITY2	-0.0769	0.6030	-0.1814	0.5059	1.0000			
KAOPEN	0.0216	0.6492	-0.1901	0.6273	0.3796	1.0000		
DOM5	-0.4118	-0.2806	0.1083	-0.4091	-0.2817	-0.3515	1.0000	
INT5	-0.1227	-0.0433	-0.0707	-0.3424	-0.0986	-0.3087	0.3079	1.0000

Source: London Economics' calculations

Country	1988	1993	1998	2003	2008
Argentina	8	7	7	8	8
Australia	10	10	10	10	10
Austria	10	10	10	10	10
Belgium	10	10	10	10	8
Brazil	8	8	8	8	8
Canada	10	10	10	10	10
Chile	-1	8	8	9	10
Colombia	8	9	7	7	7
Costa Rica	10	10	10	10	10
Denmark	10	10	10	10	10
Finland	10	10	10	10	10
France	9	9	9	9	9
Germany	10	10	10	10	10
Greece	10	10	10	10	10
Hong Kong SAR, China	n/a	n/a	n/a	n/a	n/a
Iceland	n/a	n/a	n/a	n/a	n/a
Ireland	10	10	10	10	10
Israel	9	9	9	10	10
Italy	10	10	10	10	10
Jamaica	10	9	9	9	9
Japan	10	10	10	10	10
Korea, Rep.	6	6	8	8	8
Malaysia	4	4	3	3	6
Mexico	0	0	6	8	8
Netherlands	10	10	10	10	10
New Zealand	10	10	10	10	10
Norway	10	10	10	10	10
Peru	7	1	1	9	9
Portugal	10	10	10	10	10
Singapore	-2	-2	-2	-2	-2
South Africa	4	8	9	9	9
Spain	10	10	10	10	10
Sweden	10	10	10	10	10
Switzerland	10	10	10	10	10
Turkey	7	8	7	7	7
United Kingdom	10	10	10	10	10
United States	10	10	10	10	10
Uruguay	9	10	10	10	10
Venezuela, RB	9	8	8	6	5

Source: Polity IV



Table 17: The variable KAOPEN					
Country	1988	1993	1998	2003	2008
Argentina	-1.135522	1.433596	2.233410	-0.086388	-0.782053
Australia	2.500014	2.500014	1.700201	1.166992	1.166992
Austria	1.166992	1.966805	2.500014	2.500014	2.500014
Belgium	0.550969	2.500014	1.700201	2.500014	2.500014
Brazil	-1.831187	-1.831187	-1.135522	0.446821	0.713426
Canada	2.500014	2.500014	2.500014	2.500014	2.500014
Chile	-1.831187	-1.831187	-1.831187	1.966805	2.233410
Colombia	-1.831187	-1.831187	-1.135522	-1.135522	1.166992
Costa Rica	-1.831187	-1.135522	0.980030	1.246634	1.246634
Denmark	1.433596	2.500014	2.500014	2.500014	2.500014
Finland	1.166992	1.966805	2.500014	2.500014	2.500014
France	-0.086388	2.233410	2.500014	2.500014	1.450880
Germany	2.500014	2.500014	2.500014	2.500014	2.500014
Greece	-1.135522	-0.086388	0.917671	2.500014	2.500014
Hong Kong SAR, China	2.500014	2.500014	2.500014	2.500014	2.500014
Iceland	-1.135522	-0.086388	1.166992	1.166992	-1.135522
Ireland	-0.086388	1.700201	2.500014	2.500014	2.500014
Israel	-1.135522	-0.086388	-0.868918	1.700201	2.500014
Italy	-0.086388	2.233410	2.500014	2.500014	2.500014
Jamaica	-1.135522	0.117858	1.966805	2.500014	1.966805
Japan	2.500014	2.500014	2.233410	2.500014	2.500014
Korea, Rep.	-0.086388	-0.086388	-1.135522	-0.086388	0.180217
Malaysia	2.500014	1.246634	0.446821	-0.086388	1.166992
Mexico	-0.782053	1.166992	1.166992	0.117858	1.166992
Netherlands	2.500014	2.500014	2.500014	2.500014	2.500014
New Zealand	2.500014	2.500014	2.500014	2.500014	2.500014
Norway	-0.086388	1.166992	2.233410	2.500014	2.500014
Peru	-1.831187	1.433596	2.500014	2.500014	2.500014
Portugal	-0.086388	1.433596	2.500014	2.500014	2.500014
Singapore	2.500014	2.500014	1.450880	2.500014	2.500014
South Africa	-1.831187	-0.782053	-1.135522	-1.135522	-1.135522
Spain	-0.086388	1.166992	2.500014	2.500014	2.500014
Sweden	1.166992	1.433596	2.500014	2.500014	2.500014
Switzerland	n/a	n/a	2.500014	2.500014	2.500014
Turkey	-1.135522	-0.086388	-1.135522	-1.135522	0.117858
United Kingdom	2.500014	2.500014	2.500014	2.500014	2.500014
United States	2.500014	2.500014	2.500014	2.500014	2.233410
Uruguay	1.246634	0.980030	1.966805	2.500014	2.500014
Venezuela, RB	-0.782053	-1.135522	1.966805	-0.069104	-0.764769

Source: Chinn-Ito kaopen\_2007.xls

Country	1988	1993	1998	2003	2008
Argentina	3	2	2	0	0
Australia	1	0	0	0	0
Austria	0	0	0	0	1
Belgium	0	0	0	0	1
Brazil	2	1	2	0	0
Canada	0	0	0	0	0
Chile	0	0	0	0	0
Colombia	0	0	1	0	0
Costa Rica	0	0	0	0	0
Denmark	1	1	0	0	1
Finland	2	1	0	0	0
France	1	1	0	0	1
Germany	0	0	0	0	1
Greece	0	0	0	0	1
Hong Kong SAR, China	0	0	0	0	0
Iceland	0	0	0	0	1
Ireland	1	0	0	0	1
Israel	0	0	0	0	0
Italy	2	1	0	0	0
Jamaica	2	1	0	0	0
Japan	1	0	0	0	0
Korea, Rep.	0	2	2	0	0
Malaysia	0	1	2	0	0
Mexico	1	3	0	0	0
Netherlands	1	0	0	0	1
New Zealand	1	0	0	0	0
Norway	0	0	0	0	0
Peru	3	0	0	0	0
Portugal	0	0	0	0	1
Singapore	0	0	1	0	0
South Africa	2	1	0	0	0
Spain	1	1	0	0	1
Sweden	2	0	0	0	1
Switzerland	0	0	0	0	1
Turkey	2	3	2	0	0
United Kingdom	1	0	0	1	0
United States	0	0	0	1	0
Uruguay	0	0	2	0	0
Venezuela, RB	1	3	1	0	0

Source: Bordo et al. (2001), Laeven (2010)



