



Economic Views

Foreign Direct Investment in Central and Eastern Europe

A case of boom and bust?

PRICEWATERHOUSECOOPERS 

Executive summary

- The central and eastern Europe (CEE) region experienced a five-fold increase in foreign direct investment (FDI) inflows between 2003 and 2008, rising from US\$30 billion to US\$155 billion. Russia was the destination which attracted much of this additional investment as its inflows rose from less than US\$8 billion in 2003 to more than US\$70 billion in 2008.
- The credit crunch and recession that ensued coincided with a collapse of FDI inflows to the CEE region. In the region as a whole, FDI inflows were 50% lower in 2009 when compared to 2008.
- The real estate sector, which has attracted a quarter of all FDI inflows into the CEE region since 2003, accounted for much of the aggregate investment fall in the region. Real estate FDI declined by 71% in 2009 when compared with 2008.
- Using econometric techniques to analyse the drivers of regional FDI inflows, we found that FDI as a share of GDP was higher in CEE countries with:
 1. higher relative per capita incomes
 2. lower relative labour costs in manufacturing
 3. lower investor riskiness as measured by credit risk premia on investment
 4. achieved or probable EU membership
- We also found country-level differences which did not change over time and could not be explained by the variables we tested in our model. These are likely to reflect factors such as historical ties between the destination country and major sources of FDI, as well as cultural practices and norms.
- Our model implies that the CEE would possibly have experienced a slowdown in FDI inflows after 2008, even in the absence of the global recession. This is due to the sharp rises in relative labour costs in the run up to 2008. The recession strengthened downward pressure on FDI inflows to CEE as rising credit risk premia and falling income per capita made the region less attractive to investors.
- We estimate that FDI to CEE declined from US\$155 billion in 2008 to US\$77 billion in 2009. Looking ahead, FDI is projected to recover only modestly from 2010 onwards and could reach around US\$172 billion by 2014.

Introduction

The central and eastern Europe (CEE)¹ region experienced a collapse in inward flows of foreign direct investment (FDI) during 2009. This followed strong growth between 2003 and 2008, during which FDI flows increased fivefold.

The collapse in FDI coincided with the credit crunch and economic recession. The intensity of the recession was not uniform across the region. Estonia, Latvia and Lithuania are likely to have experienced double-digit rates of contraction in economic output in 2009; Bulgaria and the Czech Republic are expected to see milder declines of less than 5% of output. Poland's economy is estimated to have grown in 2009.²

The disparities between countries in 2009 were even more acute for FDI. The year-on-year growth in FDI inflows ranged in 2009 from 55% in Slovakia to -71% in Latvia.

In this report PwC's Macro Consulting team analyses the level of FDI inflows to the CEE region as a whole, as well as the differences between countries in the region.

Our approach to this is threefold. First, we present FDI data assembled by the United Nations Conference on Trade and Development (UNCTAD) to track the major regional trends between 1997 and 2008. Second, we use aggregated company-level data to analyse FDI flow trends in 2009³. Finally, we use econometric techniques to analyse the drivers of regional FDI inflows and to consider possible scenarios for the future.

2003 – 2008: a 21st century gold rush?

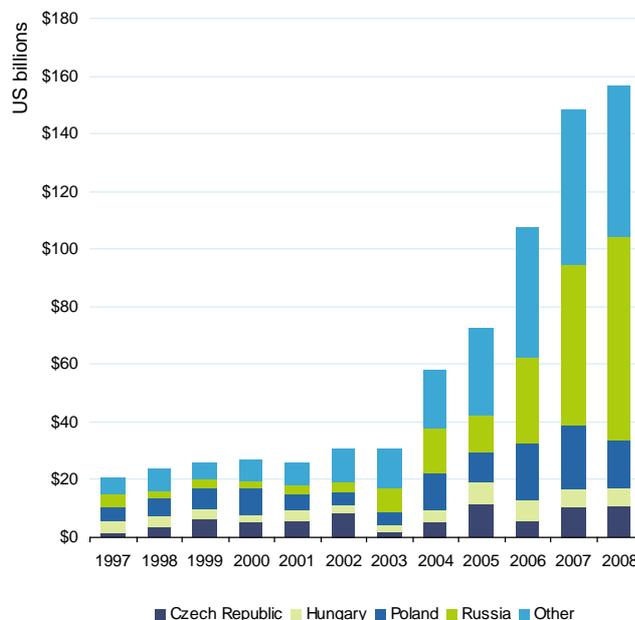
FDI inflows into CEE grew remarkably in the dozen years to 2008. The growth was modest at first; FDI rose from US\$20 billion in 1997 to US\$30 billion in 2003. From this base, however, inflows leaped more than five-fold in five years, reaching US\$155 billion in 2008 (see Chart 1). The increase in inflows coincided with the accession of the Baltic and central European states to the EU in 2004.

Russia was the region's single largest recipient of FDI inflows in 2008, having experienced the largest increase over the period in value. FDI inflows rose from less than US\$5 billion in 1997 to more than US\$70 billion in 2008.

Another interesting trend over the period was the emergence of a number of the smaller CEE states as significant destinations for FDI. These states, which include Bulgaria, Croatia, Estonia, Latvia and Slovenia, had not attracted large amounts of FDI prior to 2003 but saw inflows rise markedly from 2004.

The Czech Republic, Poland, and Hungary have been major regional destinations for FDI inflows since the mid-1990s. These countries also saw FDI rise from 2003, although by a proportionately smaller amount than many of the other nations in the region.

Chart 1: CEE FDI inflows (nominal terms)



Source: UNCTAD

2009: the resilient and the hard-hit

To analyse trends in FDI in 2009, we turn to aggregated company-level data.

The credit crunch and recession that ensued coincided with a collapse of FDI inflows to CEE. In 2009, FDI inflows to the CEE region were 50% lower than in 2008. In all countries, except Slovakia, FDI inflows declined in 2009; although some countries were harder-hit than others (see Chart 2 below).

By far the largest destination for FDI in CEE between 1997 and 2008 was Russia, with a 29% share of all FDI inflows to the region. Russia experienced a 48% decline in FDI inflows in 2009. This was driven by a collapse in investment in the real estate and extractive industries, which in 2008 accounted for half of all FDI into Russia.

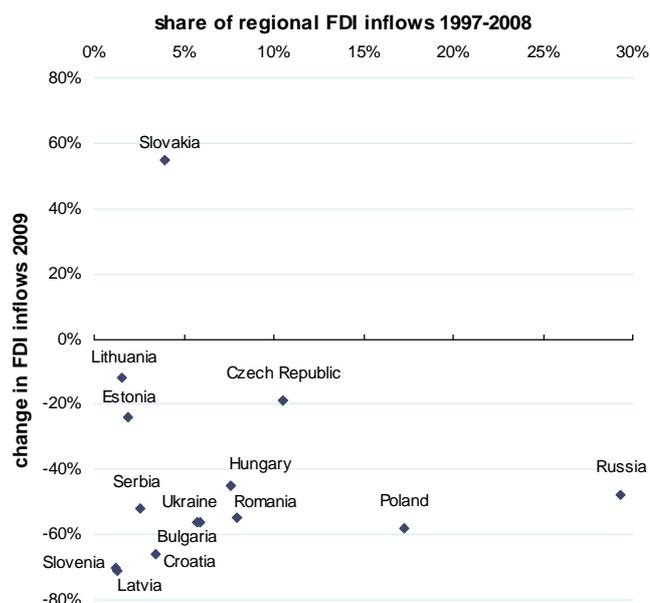
During 2008 there were a number of large investments in Russia, including the US\$4.5 billion investment by Quality Energy Petro Holding International. Similarly, the real estate sector saw three investment deals in excess of US\$1 billion in 2008. In 2009, such significant FDI flows were absent in the two key sectors.

¹ The countries comprising the CEE region for the purpose of this report are: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Serbia, Slovakia, Slovenia and Ukraine.

² Based on PwC's economic estimates produced in January 2010

³ The aggregated company-level data are provided by FDI Intelligence from the Financial Times Ltd. These data provide a unique insight into FDI trends in the region in 2009 and offer a high level of detail. However, the data are not directly comparable to the UNCTAD data used in our econometric analysis. The UNCTAD figures are based on a slightly wider definition of FDI which includes taking large and lasting equity stakes in existing companies as well as the more traditional 'greenfield' FDI. Therefore, we do not compare the aggregated company-level data to the UNCTAD data but use the former to analyse recent trends not yet reported by UNCTAD.

Chart 2: FDI trends by country



Source: FDI Intelligence from the Financial Times Ltd, UNCTAD, PwC analysis

Poland attracted the greatest value of FDI inflows in the region after Russia. In 2009, FDI inflows to Poland declined by more than the regional average. As in Russia, coal, oil, natural gas and real estate were key recipient sectors. Combined with the financial services sector, these accounted for more than half of all FDI into Poland in 2008. Whilst the Polish economy avoided recession, the financial services sector was at the centre of the global downturn in 2009. FDI into Poland in 2009 declined by 67% in real estate, 74% in extractive industries and 86% in financial services.

The Czech Republic, which historically has attracted around 10% of FDI inflows into the region, experienced a much smaller 2009 decline than the region overall. In 2008, the Czech Republic saw significant FDI from the automotive sector; investments from Daimler, Volkswagen and Peugeot-Citroen totalled almost US\$1 billion. Real estate and alternative energy were the other key sectors for FDI in 2008. The latter was driven by two large investments by Japan Wind Development and Itochu. In 2009, total FDI into the Czech Republic declined by 19%. These key sectors experienced declines in FDI in 2009 of around 30% in real estate and alternative energy, and 65% in automotive equipment and components combined.

Slovakia is unique amongst the countries we analysed as FDI rose by 55% in 2009. This rise was driven by an announced US\$2.3 billion real estate investment by TriGranit. This single investment accounted for more than 40% of total Slovakian FDI inflows in 2009.

Latvia and Slovenia experienced the largest declines in FDI inflows in 2009, at 71% and 70%, respectively. Historically both countries have attracted a small proportion of FDI in the region, and so share almost exactly the same spot on Chart 2.

In Latvia, more than 60% of total FDI inflows in 2008 were in the real estate sector, valued at around US\$2 billion. In 2009, there was just one investment in this sector, amounting to US\$100 million. This picture was mirrored in Slovenia where real estate FDI inflows had also accounted for a large share of the total. The US\$430 million in real estate FDI in 2008 was followed by only one real estate investment in 2009, valued at US\$5 million.

2009: a sectoral shift

Individual country analysis highlights the importance of real estate and extractive industries in attracting FDI to the region. This is borne out in aggregated CEE data, where these two sectors accounted for more than a third of total FDI inflows between 2003 and 2009 (see Table 1 below).

There was a 71% decline in total real estate FDI into the region in 2009. This is also likely to have hit suppliers of this sector. Building materials and wood products FDI fell by 60% and 68%, respectively. The worldwide fall in car sales is also reflected in FDI data: automotive equipment sector FDI fell by 67% in 2009 and automotive component FDI declined by 81%.

Table 1: FDI trends in twenty largest sectors

Sector	Annual change in FDI inflows in 2009	Share of regional FDI inflows, 2003-2009
Real estate	-71%	25%
Coal, oil and natural gas	-52%	13%
Transportation	-34%	6%
Alternative energy	31%	6%
Automotive equipment	-67%	5%
Metals	-70%	5%
Food and tobacco	-16%	5%
Building materials	-60%	5%
Wood products	-68%	4%
Automotive components	-81%	3%
Paper, printing and packaging	-49%	3%
Electronic components	43%	2%
Consumer products	-52%	2%
Consumer electronics	-82%	2%
Hotels and tourism	-17%	2%
Communications	14%	1%
Industrial machinery	-34%	1%
Warehousing and Storage	-42%	1%
Chemicals	171%	1%
Rubber	-79%	1%

Source: FDI Intelligence from the Financial Times Ltd, PwC analysis; figures may not sum due to rounding

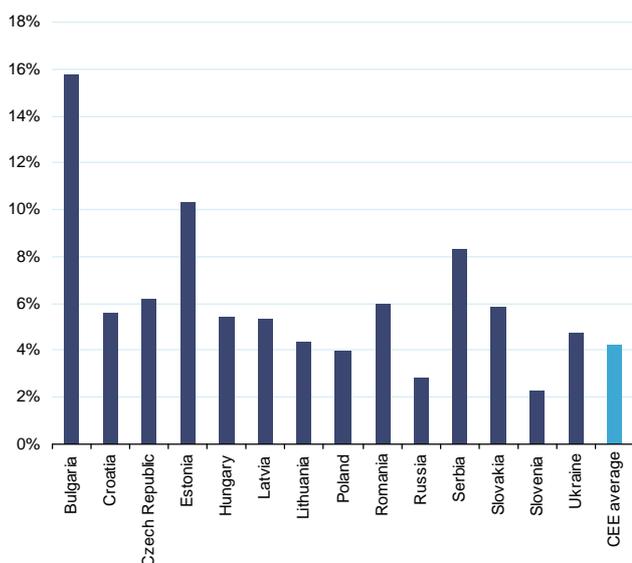
Not all sectors saw lower FDI inflows in 2009. The value of alternative energy FDI projects rose last year, as did inflows into the electronic components sector. The chemicals sector, although a relatively minor industry in the overall CEE FDI picture, experienced a 171% jump in inflows in 2009. This was driven by a US\$1 billion investment by Mitsubishi in Russia.

The drivers of FDI inflows

We constructed an econometric model of FDI inflows to CEE in order to understand better the aggregate FDI inflows to the region and the observed differences between countries. The model statistically tested a number of theories that seek to explain FDI as a share of Gross Domestic Product (GDP).

The historical average level of FDI inflows to CEE was around 4% of GDP between 1997 and 2008. Bulgaria, Estonia and Serbia all recorded higher levels; Russia and Slovenia were below the regional average (see Chart 3 below).

Chart 3: Average level of FDI as a share of GDP (1997-2008)



Source: UNCTAD, IMF, PwC analysis

The first step in our analysis was to identify, based on economic theory, possible factors influencing FDI inflows (see Box 1 below). Examples of these possible factors are the perceived riskiness of the region, labour costs relative to western Europe, and the revenue potential of the domestic consumer market.

Many of the hypotheses we tested were found to have an impact on FDI when tested in isolation. Combining these factors into a single model allowed us to isolate the most significant factors in driving FDI inflows. FDI as a share of GDP in CEE was found to be higher in countries with:

- higher relative per capita incomes;

- lower relative labour costs in manufacturing⁴;
- lower investor riskiness as measured by credit risk premia; and
- achieved or probable EU membership.

For relative per capita incomes and labour costs we found that the variables had the strongest explanatory power when using a two-year lag. This appears sensible in the context of FDI decision-making. Before an investment decision is realised, such as building a new factory in a foreign country, it will take time to find a suitable location, arrange planning, design the building, and so forth. Therefore, there is a delay between the original decision to invest and the committed investment amount showing up in FDI statistics.

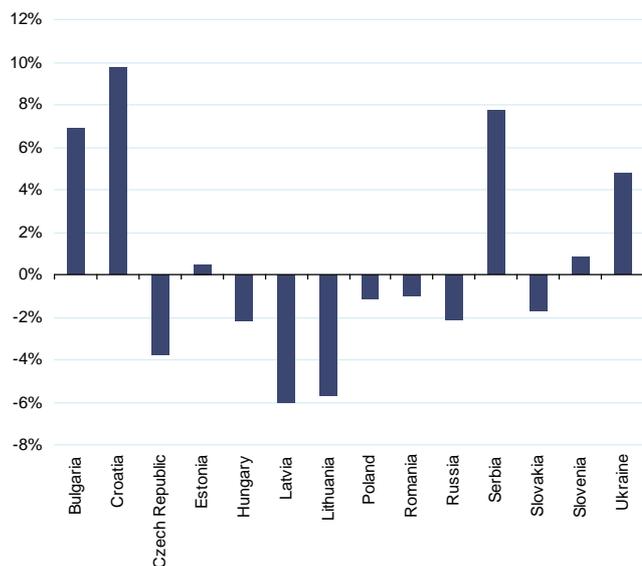
A further insight from the model is that the CEE region would possibly have experienced a slowdown in FDI after 2008 even in the absence of the global recession. This is due to the sharp increases in relative labour costs in the run-up to 2008. The recession strengthened downward pressure on FDI inflows to the CEE as rising credit risk premia and falling income per capita made the region less attractive to investors.

We also found country-specific fixed effects to be a driver of FDI as a share of GDP (see Chart 4). Fixed effects in this case are country-level differences which do not change over time and could not be explained by the variables we tested. They are likely to reflect factors such as historical ties between the destination country and major sources of FDI, as well as cultural practices and norms.

For many of the countries the country-specific fixed effects are close to zero. This suggests that FDI as a share of GDP is close to the level predicted by our model using the four key variables listed above.

⁴ This variable includes the impact of exchange rate levels as labour costs were computed in euro. Exchange rate volatility was not tested separately and was also excluded from the academic papers we reviewed.

Chart 4: Country-specific fixed effects on FDI as a share of GDP



Source: PwC analysis

Bulgaria, Croatia, Serbia and Ukraine have positive fixed effects as they all exhibit much higher levels of FDI as a share of GDP than can be explained by the other variables in our model. For Bulgaria, this effect adds 6.9% to the level of FDI as a share of GDP, equivalent to a boost to inward FDI of US\$3 billion in 2008 prices. The fixed effect in Croatia is 9.8%, Serbia 7.7% and Ukraine 4.7%.

The countries with the most negative fixed effects are Latvia and Lithuania. These countries are EU members, have low credit risk premia and low relative manufacturing labour costs. Our model, in the absence of the fixed effects, predicts them to attract above-average levels of FDI as a share of GDP, whereas the data show that FDI as a share of GDP has been close to the regional average.

Box 1: Hypotheses on the determinants of FDI inflows as a share of GDP

The first step in our econometric approach was to identify hypotheses of which factors affect FDI inflows (measured as a share of GDP) into CEE between 1997 and 2008. These hypotheses, along with the variables used to test them, are listed below.

Table I: Possible determinants of FDI inflows across Eastern Europe

Hypothesis	Variable tested	Results from our econometric analysis
Low relative labour costs is expected to attract investment into the region, especially for the type of FDI focussed on manufacturing goods for export to higher-income markets.	Manufacturing labour costs relative to Germany	Significantly negative impact with a two year lag
Reforming and deregulating markets may increase FDI inflows through reducing barriers to entry and improving the ease of operating in the country.	Reform of internal markets index from the European Bank for Reconstruction and Development	Not significant
Rising incomes in CEE may encourage international companies to enter the market in order to serve the local population and produce goods and services for domestic consumption.	GDP per capita relative to the Euroland average	Significantly positive impact with a two year lag
Many CEE countries have either joined the EU, or have begun negotiations to do so. This may encourage FDI through the reform of institutions and markets accompanying EU membership, as well as improved access to markets and expectations of greater economic stability.	Progress towards EU membership (dummy variable which is phased from 0 at the beginning of negotiations; to 1 upon a country joining the EU)	Significantly positive impact
Financial market efficiency, combined with economic stability and fiscal sustainability are expected to affect the risk premia required by investors to hold assets. It is expected that a decline in risk premia over time would lead to a rise in investment inflows.	Credit risk premia demanded by investors	Significantly negative impact
Strong economic growth may attract investors as it implies the economy offers greater opportunities for strong returns.	GDP growth	Not significant
Economies with an endowment of natural resources may attract FDI in order to fund exploration, development and transport infrastructure for these resources.	Dummy variable based on oil and gas production relative to GDP (data for production of other natural resources was not available on a consistent basis)	Not significant
The geographically-closer CEE economies to the main western European markets may attract more inward FDI than those further east, as their exports would represent lower transport costs.	Straight-line distance from each CEE country's capital city to Munich	Not significant

Beyond 2009: a return to boom times?

Having established the likely drivers of FDI inflows to CEE, we assessed the potential for future growth. We first estimated the aggregate value of FDI in 2009 based on company level data (see Chart 2). We estimated that FDI in the CEE region declined from US\$155 billion in 2008 to US\$77 billion in 2009. Next, we projected FDI levels from 2010 to 2014 under three scenarios.

Within the context of the model, we considered the key uncertainties facing the region as:

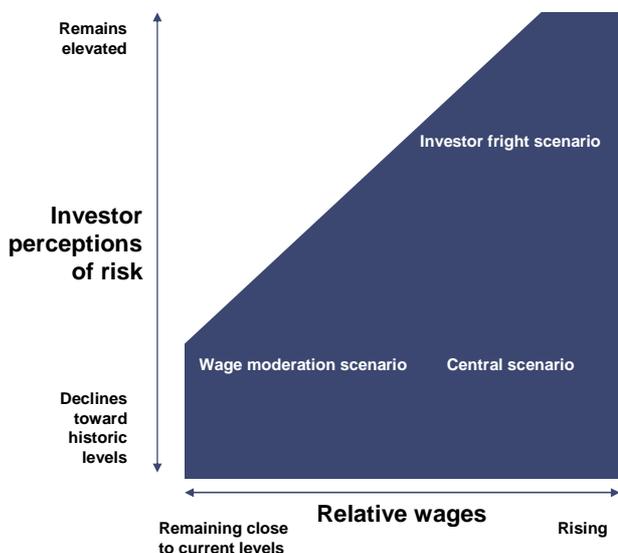
- Investors' perceptions of risk – whether credit risk premia will remain at their current elevated levels or return towards pre-credit crunch levels; and
- CEE wages relative to Germany – these depend on both national wage growth and exchange rate movements.

In order to capture these uncertainties, we created a Central and two alternative scenarios for our projections, supported by different assumptions for two of the key drivers we found for FDI, relative labour costs and investor risk perceptions (see below). Our most-likely Central scenario assumes a phased moderation in risk premia, such that they return to pre-credit crunch averages by 2014, and nominal wage growth which follows its historic relationship with nominal GDP growth.

Our 'Investor fright' scenario simulates the impact of credit risk premia remaining elevated. The 'Wage moderation' scenario simulates the impact of weaker nominal wage growth in the CEE relative to nominal GDP growth. An alternative way of considering the Wage moderation scenario, which we have not tested here, could be an appreciation of the euro relative to the floating CEE currencies.

For consistency, we use IMF forecasts for exchange rates, GDP per capita and nominal GDP growth in the countries. Furthermore, we assume similar timing of EU membership and negotiations in each scenario.⁵

Chart 5: Assumptions used in the scenario projections

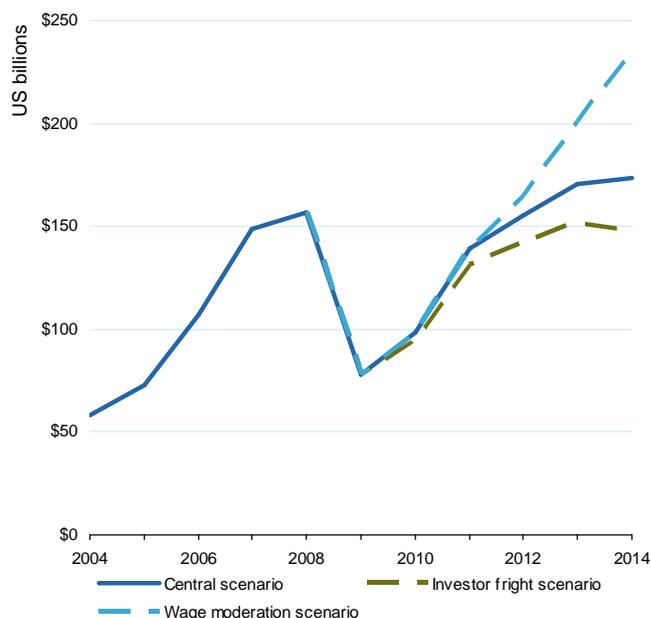


⁵ The construction of this dummy variable and assumptions over EU membership are described in the Annex below.

Source: PwC analysis

Under the Central scenario, we project FDI spending would rise to US\$97 billion in 2009 from the estimated US\$77 billion in 2009. Growth in FDI from 2010 is initially constrained by the lagged impact of the recession on GDP per capita. As the economic recovery gathers pace, rising relative labour costs also constrain growth in FDI inflows. Credit risk premia boost FDI inflow growth from 2010 as they decline from their credit crunch peaks. Projected FDI in CEE reaches US\$172 billion in 2014, but it takes until 2013 for the 2008 peak to be surpassed.

Chart 6: FDI inflows and projections (nominal terms)



Source: UNCTAD, PwC analysis and projections

The Investor fright scenario differs from the Central scenario as countries' credit risk premia remain elevated at 2009 levels over the forecast period. Under this scenario, the recovery in FDI is weaker. By 2014, the value of FDI to the CEE region is US\$147 billion. This is US\$8 billion below the 2008 peak in current dollars, and would represent a larger decline in real terms.

The Wage moderation scenario differs from the Central scenario as wages in the CEE region are projected to grow only at the rate of inflation. In this scenario wages relative to Germany remain lower than in the Central scenario – where CEE wages growth is based on its historical relationship with nominal GDP growth. In this projection, FDI inflows start to outperform the Central scenario from 2012 as the lagged impact of wage moderation boosts investment.

In the Wage moderation scenario, FDI into the CEE region is projected to rise to US\$234 billion in 2014, as rising GDP per capita boosts growth – but this is not accompanied by commensurately higher levels of wage growth, which could deter FDI.

Conclusions

The CEE region has experienced a roller-coaster ride in FDI inflows since 2003. The strong growth that followed the last two rounds of EU expansion was halted by the global

recession. FDI inflows in 2009 were 50% down on the amount in 2008.

However, there is still significant variation amongst CEE countries. We found that the countries with the highest levels of FDI as a share of GDP shared the following characteristics: EU membership or negotiations toward membership, high relative per capita incomes, low manufacturing labour costs relative to Germany and low credit risk premia.

Many other hypotheses accounting for the strong growth in FDI inflows were found to have an impact when tested in isolation. But when combined into a single model the factors above were found to be the most significant.

A key insight from our analysis is that the increases in relative manufacturing labour costs up to 2008 would possibly have caused a slowdown in FDI inflows even in the absence of the global recession. The recession strengthened downward pressure on FDI inflows to CEE as rising credit risk premia and falling income per capita made the region less attractive to investors.

Our analysis also suggests that FDI inflows will not immediately bounce back to previous highs. The bust which followed the long boom will have persistent effects in the region. Under our Central scenario, it will take until 2014 for the region's FDI inflows to surpass the 2008 level.

Annex – Econometric approach

This section outlines our model of FDI projections.

We used a fixed effects panel data model, and drew upon a number of academic papers when specifying the model and determining the methodology. A selection of the most useful papers is listed on the right.

The data which went into the model is described in the table below. Much of the economic data and forecasts are taken from the International Monetary Fund's World Economic Outlook October 2009. We sourced labour cost data from the International Labour Organisation and data on reform of internal markets was from the European Bank for Reconstruction and Development. The latter was not included in the final model specification.

The model also incorporates some dummy variables. We included dummies to measure the impact of EU negotiations and membership over the period. We also used a natural resources dummy to test if the presence of natural resource reserves were found to have an impact on FDI as a share of GDP. The natural resources dummy did not prove to be significant.

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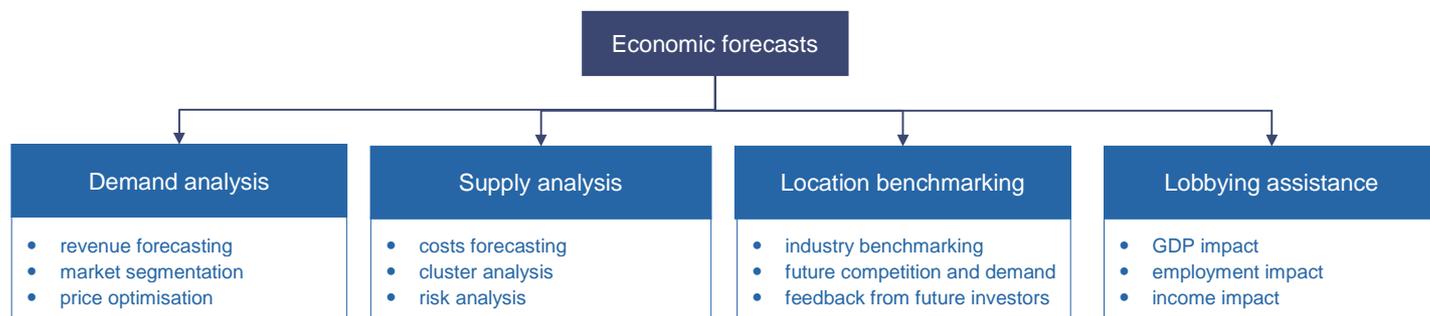
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William Davidson Institute Working Paper 342.

Final specification of FDI model	
Dependent variable	FDI inflows as a share of GDP
Explanatory variables	Relative GDP per capita, two year lag (GDP per capita was relative to Euroland average)
	Credit risk premia (data produced by PricewaterhouseCoopers based on credit ratings and yields on government debt relative to a risk free investment)
	Progress towards EU membership (dummy variable which is phased from 0 at the beginning of negotiations to 1 upon a country joining the EU). We assume that Russia and Ukraine do not commence membership negotiations by 2014; Croatia joins the EU in 2012 and Serbia joins the EU in 2016.
	Manufacturing labour costs (in euro) relative to Germany, two year lag

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