How Stock Markets Respond to Dynamic Changes in FDI, GDP and Oil Prices? A Dynamic Panel Quantile Approach

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Motivation

Analysis of the distribution of the stock markets' performance, by taking into consideration dynamic changes from FDI, oil prices and GDP

- To what extent the behavior of FDI, oil prices and GDP impacts the performance of stock markets?
- What is the behavior pattern of the previously identified determinants along the stock markets' performance distribution?

Aims

- To mensurate the effects of the behavior of FDI, oil prices and GDP on the performance of stock markets.

- To verify linearities or non-linearities along the stock markets' distribution, accordingly to the behavior of determinant factors, namely, FDI, oil prices and GDP.

Prior Literature and Hypotheses

Authors	Variables	Research Questions
He & Long (2003)	FDI market expansion advantage and FDI cost reduction among US MNE	FDI comes out as a market expansion advantage regarding to the excess value added and foreign involvement
Adam & Tweneboah (2009)	FDI and stock market development	FDI flows create economic growth and promote macroeconomic stability, by attracting investors and thus developing financial markets
Azman-Saini *et al*. (2010)	FDI, financial markets indicators and economic growth	The FDI promotes economic growth from a level (threshold) of financial markets development (e.g. Banking System)
Hsu *et al.* (2011)	FDI, business cycle and industrial dissimilarity	FDI flows replace the trade as the main cause of business cycle co-movements

Prior Literature and Hypotheses (cont.)

Authors	Variables	Research Questions
Basher & Sadorsky (2006)	Oil prices risk and stock markets returns.	Oil prices betas play an important role on emerging stock markets returns
Para Park & Ratti (2008) and Miller & Ratti (2009)	Oil prices shocks and oil price volatility	Oil prices shocks impact on US and European stock markets
Croux & Reusens (2012) and Goh *et al.* (2013)	Economic activity and stock markets performance	Stock prices predict the behavior of economic activity in low frequencies (equal or more than 1 year); US economic activity forecasts the behavior of Chinese stock markets.

Methodology

Methodological design and Database:

- The paper intends to analyse the impact of FDI, oil prices and GDP along the stock market's distribuition.
- For this purpose, it is used annual panel data for eight Eurozone countries: Germany; Austria; Spain; Finland; France; Netherlands; Italy; and Portugal. All the data are in log values and the sample period is 1995–2012.
- The dataset used in the current study is collected from several databases, namely, Datastream, UNCTAD, European Central Bank warehouse, Eurostat, OECD.

Empirical Strategy:

- Dependent variable: stock markets correspond to the benchmark stock markets index of each country in the Eurozone study.
- Independent variables: FDI and GDP of the countries under study and the prices of Brent as a proxy variable of Oil Prices.
- Empirical Model: Quantile Approach is used for estimating the effects of dynamic changes from the variables FDI, GDP and Oil prices on the performance of stock markets in different quantiles (Q1, Q2, Q3, Q4).

Methodology (cont.)

- Model specifications (static and dynamic):

The Static panel data has the following specification :

$$\ln SMK_{i,t} = \alpha + \beta \ln FDI_{i,t} + \beta \ln OIL_{i,t} + \beta \ln GDP_{i,t} + \varepsilon_{i,t}$$

In turn, the dynamic panel data has the following specification :

$$\ln SMK_{i,t} = \alpha + \beta_1 \ln SMK_{i,t-1} + \beta \ln FDI_{i,t} + \beta \ln FDI_{i,t-1} + \beta \ln OIL_{t} + \beta \ln OIL_{i,t-1} + \beta_3 \ln GDP_{i,t} + \beta \ln GDP_{i,t-1} + \varepsilon_{i,t}$$

Where, $\ln SMK_{i,t}$ is the stock market performance, $FDI_{i,t}$ is the inward FDI, $OIL_{i,t}$ corresponds to oil prices and $GDP_{i,t}$ corresponds to gross domestic product

Results and Discussion

Table 1 - Quantile regression and OLS regression (Static Panel Data)

Dependent Variable: SMKi,t					
Independent Variable	OLS	Q1	Q2	Q3	Q4
CONST	5,52208***	3,52029***	7,13481***	7,75569***	6,81968***
$FDI_{i,t}$	-0,23272***	-0,10895	-0,20327**	-0,32622***	-0,08982
$OIL_{i,t}$	0,28108**	0,43305**	0,21360	-0,01383	0,28169
$GDP_{i,t}$	0,34679***	0,37572***	0,19184*	0,34882***	0,31280**
R^2/Pseudo R^2	0,09209	0,07061	0,04900	0,06907	0,15588

*** 1% significance level; ** 5% significance level; * 10% significance level

Results and Discussion (cont.)

Table 2 - Quantile regression and OLS regression (Dynamic Panel Data)

Dependent Variable: SMKi,t					
Independent Variable	OLS	Q1	Q2	Q3	Q4
CONST	0,78309***	0,44554	0,61938**	0,84029***	1,05504***
SMK_{t-1}	0,95750***	0,91812***	0,95286***	0,98405***	1,05839***
FDI_t	0,00857	0,00287	0,01371	0,01186	0,08046
$FDIt_{-1}$	-0,06775***	-0,09092**	-0,07506**	-0,02804	-0,03529
OIL_t	0,10015	0,17602	0,00416	-0,06342	0,31846*
OIL_{t-1}	-0,24965***	-0,29987***	-0,10026	-0,05844	-0,54935**
GDP_t	0,05608	0,04935	0,05652	0,04356	0,12586
GDP_{t-1}	-0,00849	0,06289	0,00141	-0,03980	-0,19264
R^2/Pseudo R^2	0,94687	0,77864	0,77091	0,77784	0,79596

*** 1% significance level; ** 5% significance level; * 10% significance level

Results and Discussion (cont.)

Prior Literature	Hypotheses	Outcomes	
		Signal (expected)	Signal (obtained)
Claessens *et al.* (2001), Alfaro *et al.* (2004) Tweneboah (2009), Azman-Saini *et al.* (2010), Boyer & Zheng (2009), Lizardo & Mollick (2009)	H_1: The inward FDI has a significant and positives effect on stock markets performance	+	- significant at lower quantiles
Park & Ratti (2008), Nandha and Faff (2008), Oberndorfer (2009), Kilian and Park (2009, Jammazi & Aloui (2010), Lee & Zeng (2011), Arouri (2011), Scholtens & Yurtsever (2012), Ciner (2013)	H_2: The Oil prices have a significant and negative effects on stock markets performance	-	- significant at lowest and highest quantiles
Canova & Nicolo (1995), Arouri (2011), Mauro (2003), Deb & Mukherjee (2008)	H_3: The GDP has a significant and positive effect on stock markets performance.	+	+ (n.s.)

Final Remarks

Findings

- The empirical findings reveal non-linearities between FDI with Stock Markets; and Oil prices with Stock markets; since the independent variables have negative and significant effect on lower quantiles and significant and negative effect on lowest and highest quantiles
- The GDP has positive effect on lower quantiles and negative effect on lower quantiles but non significant

Possibles causes:

- The negative effects from FDI to stock markets may be linked to the deindustrialization of Europe for Emerging markets
- Oil prices have a negative impact on stock markets may be to speculation and capital outflows from stock markets to oil markets and commodities markets
- The non significance of GDP on stock markets may be the consequence of need revealed by the stock markets for getting information from fiscal policies and sovereign debt

Limitations and Future Research

Limitation:

- The sample used in current study is small, insofar as 1995 to 2012. The number of countries considered in the study is also small. However, these two limitations are due to data availability

Future Research:

- This study only relates to Eurozone countries, so future research can be focused on non-Eurozone countries as well as on debt market (for instance, bonds and credit default swaps), in order to contrast the results now obtained along the distribution of stock markets' performance

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THANK YOU

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