

Do Financial Constraints and Capital Control matter for stock returns in Emerging countries?

Keywords: Stock Return; Financial Constraint; Capital Control; Financial Development

Abstract

This paper investigates the impact of financial development, and financial constraints, on stock returns using data, by firm-level and country level for 37 emerging countries. Furthermore, the KZ, WW and SA indexes were used to classified as being financially constrained and financially unconstrained. We aim to determine the relationship between financial development and financial constraints by using various firm-level and country-level variables for the period of 2004-2016. Our results suggest that the stock returns have a negative relationship with financial constraints when they are considered by themselves as well as when they are jointly considered with capital control.

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1. Introduction

There is an abundant literature investigating the relationship between financial development and economic growth (King and Levine, 1993; Bekaert and Harvey, 1995, 1997; Rajan and Zingales, 1998; Beck, Levine and Loayza, 2000). In the investigatory attempt to analyze the relationship between financial development and economic growth, multiple other topics were also studied. These topics varied from investigating causality (Rajan and Zingales, 1998; Abu-Bader and Abu-Qarn, 2008) to the possibility that the differences between the levels of financial development between countries were due to legal and accounting systems (Levine, Loayza and Beck, 2000).

On the other side, the issue of stock return has also been extensively studied and a wide variety of asset pricing model have been proposed in the literature (Sharpe, 1964; Litner 1965; Merton 1973; Fama and French, 1992, 1993, 1996, 2004; Banz, 1981; Lakonishok, Shleifer and Vishny, 1994; Kothari, et al, 1995; Carhart, 1997, etc.). The interesting aspect of the theory of finance is that riskier assets offer predictions of higher expected returns as way to reward the investors for assuming a higher risk. While these studies care about relationship between risk and return for the investors, we consider other aspects such as microeconomic factors which deal with firm level, macroeconomic which concerns country level, and financial development factors. The studies addressing the relationship between financial development and stock return are still limited. (Dellas and Hess 2005; Abugri 2008).

Our motivation for studying the relationship between financial development and stock return is based on the interest of seeing how the different measurements of financial development affect the stock returns of firms. Following the previous train of thought of Dellas and Hess (2005) and Abugri (2008), we use four measures of financial development (depth, access, efficiency and stability), while also considering a firm's financial constraint and the level of a country's capital control.

The financial development variables used in this study are complementary of each other. For example: Let's say there is a country in which a bank's loan standards have relaxed, banks give loans without strict rules, and banks do not

have correct risk or loan management. At first glance, an observer may see a rapid growth within the country which could be interpreted as a sign of deepening and raise in access to finance. Also, it may seem that the financial sector is efficient due to having no approval process and that allows the banks to lower their cost. The first impression would be that the financial sector was working well, until the loans turn bad. Once the loans turn bad, the reality of the situation would sink in. The system would be very unstable and the possibility of creating a crisis would be an almost certain one.

The main contribution of this paper is that we consider the effects of capital control for financially constrained firms on stock returns. By classifying the countries as having high or low capital control, we also contribute to the understanding of the features and differences of each group on stock market return. This distinction allows us to investigate if the relationship between capital control and financial constraints factors on stock returns for emerging economies.

This paper also contributes to the literature by considering how the presence of financial constraint impacts the decision to invest in the stock market. In the presence of financial constraint there are frictions that should be considered for investment decisions on stock market. The impact of the reductions of credit conditions will be higher for financially constrained firms making it more difficult to invest which can compromise their expected future cash flow and in turn the stock returns.

We employ an unbalanced panel data of 51 countries with 5,442 firms, including country and firm-level variables, for the period of 2004 to 2016; specifically, we use a robust fixed effect model to investigate how the relationship between the Fama-French (1993) three-factor model, macroeconomic performance, financial development variables, financial constraint indexes and stock return.

The paper is organized in 5 sections, including this introduction. Section 2 presents a brief literature review regarding previous studies in the topic of financial development and economic growth. Section 3 shows our methodology and describes the data. In section 4, we present our results and lastly, the conclusions are presented.

2. Literature Review

There is a vast amount of literature that investigates the link between financial development and economic growth (King and Levine, 1993; Bekaert and Harvey, 1995, 1997; Rajan and Zingales, 1998; Beck, Levine and Loayza, 2000). Financial development arises when financial instruments, markets, and intermediaries alleviate transaction cost and information enhancement allowing for financial functions to be carried out in a better way. Since every one of the financial functions potentially has an influence on saving and investment decisions, it can be stated that it also influences economic growth (Levine, 2005)

Bekaert and Havey (2002) provide a brief look at what is meant by emerging markets, issues that have come up in their study, and things that have been learned in the past 20 years. The authors present the thought that the basic idea

behind the term emerging markets is just that; The countries being classified emerging “emerge” from their less-developed status to join a group of developed countries.

Dellas and Hess (2005) pool emerging and mature markets and investigate how the moments of stock returns are affected by the financial development of the country based on standard measures of financial development such as size, quality of banking systems and stock market liquidity (which is measured as the ratio of total shares traded as a percentage of GDP). The authors investigate how the distribution of asset returns may depend on how well the financial system carries out specific functions. This can be done directly (through the monitoring of managers and exertion of corporate control, and the provision of liquidity) or indirectly (through macroeconomic volatility, and production structure and trade patterns). The indirect relationships that are highlighted explain how financial development affects stock returns are: first, through its effects on the macroeconomic growth and volatility and secondly, through its effect on the structure of production and pattern of international trade; however, the main focus of the study is on the macroeconomic volatility.

A report by the International Organization of Security Commissions (IOSCO) emerging markets committee (2007) concluded that due to the fact that investors are attracted to higher levels of liquidity, it plays an important role in the development of a market and economic growth. Factors that typically lower transactions cost, that facilitate trading and timely settlement and those that ensure that large trades have only a limited impact on market prices are the factors that affect market liquidity. One of the threats to small and less developed markets due to the process of globalization, is that the domestic market’s liquidity is may dry up because of the transfer of liquidity to major markets in the region. The authors conclude that regardless of whether the efforts were direct or indirect, several markets have shown that the initiatives have had a positive effect on liquidity while others suggest that it is still a work in progress.

Calomiris, Love and Peria (2012) argue that the effect of stock liquidity may have on returns is ambiguous. One possibility is that an increase in liquidity could contribute to a steeper decline in equity prices, due to the fact that investors choose their most liquid risky assets to sell during a liquidity squeeze. On the other hand, in the case of a crisis, liquidity becomes more valuable, which implies that relatively illiquid stocks could experience relative price declines. The observed effects liquidity has on returns are similar. If liquid stock declines during a crisis, it could be said that the relatively illiquid stocks will show similar or even greater decline in value.

Abugri’s (2006) work investigates whether the interaction in key macroeconomic indicators such as exchange rates, interest rate, industrial production and money supply in four specific Latin American countries significantly explain market returns. The author concludes that because the response of the market returns from shock to macroeconomic variables tends to vary from country to country, they cannot be determined a priori. Furthermore, the results also pointed to global variables having significant and consistent effects on the market returns which serve to emphasize the importance of external shocks in Latin American markets.

3. Data and Methodology

3.1 Data

This paper consists of firm-level and country-level data in order to implement the proposed empirical model. All data used is in U.S dollars due to the fact that the various economies are studied and it is useful to look at this information from the perspective of an international investor rather than a local one. The firm-level data covers 5,442 listed companies in 51 countries from the period of 2004 to 2016. All the information dealing with firm-level data was collected from the ORBIS database, which contains information of over 200 million companies worldwide. A complete description of all variables and a list of all countries are in Table A and B (See Appendix A)

The country-level variables used are: market volatility, GDP annual growth rate, and measures of financial development. The variables associated with the measure of financial development are from the database Global Financial Development Database (World Bank) of Čihák, Demirgüç-Kunt, Feyen, and Levine (2013), updated in June 2017. In order to consider the possibility that the reactions from the stock returns are not only dependent on microeconomic factors, we also employ country-level variables to analyze the association between stock market returns and macroeconomic conditions.

As the main focus of this study is to understand the effects of financial development in stock returns, we employ four measures of the financial system following the study of Čihák et al. (2012). The first measurement of financial development is that of Depth which is a proxy used to approximate the size of the stock markets. This variable is defined as the sum of stock market capitalization to GDP (which is the most common choice when approximating the size of stock markets) and the outstanding volume of debt securities (private and public) to GDP (which is the most common choice for bond markets).

The second variable used in measuring financial development is Access which is used as to describe the degree to which the public can access financial market. The access financial development variable addresses the characteristics of a functioning financial systems overcoming market friction. This will provide financial services to diverse firms and household, and will not focus on the large firms and wealthy individuals. This measurement is comprised of market concentration which reasons that a higher degree of concentration indicates greater difficulties for access for newer or smaller issuers. This proxy is defined as the percentage of market capitalization outside of the top 10 largest companies.

The third measure of financial development that is used is Efficiency which takes into consideration the intermediating resources and the facilitation of financial transactions. In financial markets, the emphasis is placed on the measuring of transactions rather than on the direct measurement of the cost of the transactions. The suggested measurement for efficiency is stock market turnover ratio which is defined as the total value of shares traded during the period divided by the average market capitalization for the period.

Lastly, the fourth measure used to represent stability for financial markets is market volatility. Due to the fact that the financial stability plays an important role in the broader topic of macroeconomic stability, this issue is often independently researched. This variable is defined as the average of the 360-day volatility of the national stock market index.

The independent variables in our analysis came from multiple sources. The data for openness, GDP growth rate, and Real interest rate were collected from the World Bank's World Development Indicators. Furthermore, the observations considered company value, Tobin's Q and size were also collected from ORBIS since they are at firm-level. The index used in order to measure capital control was taken from the work written by Fernandez, Klein, Rebucci, and Schinlder and Uribe (2015).

3.2. Empirical model and estimation

To estimate the effects of financial development on stock return, we use the fixed effect model for considering the heteroscedasticity-robust estimator. The equation (1) represents a general model which will be expressed in different versions as data is classified in different groups.

$$R_{it} = \alpha_i + \beta_1 Fama_French_t + \beta_2 Macro_variables_t + \beta_3 FD_variables_t + \varepsilon_{it} \quad (1)$$

where R_{it} is the stock return; i is the firm; t is the year; α_i is the firm-specific effect; $Fama_French_t$ are the variables used dealing with the three factor model which are: Risk Premium, SMB, and HML. $Macro_variables_t$ are the variables used dealing with the macroeconomic variables such as the GDP growth, real interest rate, openness, capital control and liquidity; $FD_variables_t$ indicates the different financial development variables; and ε_{it} is the error term.

The sample will be separated into two groups taking into consideration high capital control and low capital control. By generating these two groups, we are able to compare the effects that financial development may have on stock returns depending on the group. We also separate the sample considering the presence of financial constraints on firms to investigate the impact of financial development on stock return based on their financial constraint.

In order to examine the presence of financial constraint, we use three different indexes: the KZ, WW and SA index. These financial constraints indexes are constructed in a way that they signify that the higher the value for the index, the higher the financial constraint. The value of each index is calculated for each firm so the sample can be divided into quintiles based on the values of the index and then the firms classified. The first two quintiles are classified as being financially unconstrained, and the firms that belong to the last two quintiles are classified as financially constrained.

The indexes are constructed in such a way that the higher the value for the index, the higher the financial constraint. These indexes are computed for each firm; therefore, the sample is divided into quintiles based on the values of each index and the firms classified in a way that those that belong to the first two quintiles will be categorized as financially unconstrained whereas those that belong to the last two quintiles will be categorized as financially constrained.

The KZ index, which was proposed by Lamont et al (2001), follows the following equation:

$$KZ_{it} = -\left(1.0019 \frac{CF}{K_{t-1}}\right)_{it} + (0.2826Q)_{it} + \left(3.1392 \frac{D}{TotCap}\right)_{it} - \left(39.3678 \frac{Div}{K_{t-1}}\right)_{it} - \left(1.3148 \frac{Cash}{K_{t-1}}\right)_{it} \quad (2)$$

where i is the firm; t is the year; K_i is the fixed assets; CF_{it} is the cash flow variable; Q_{it} is the Tobin's Q ; D_{it} is the debt variable; $TotCap_{it}$ is the total capital defined as the sum of debt plus stockholders' equity; Div_{it} is the dividends and $Cash_{it}$ is the cash, defined as cash plus short-term investments.

Whited and Wu (2006) suggested another index, which is aptly name the WW index. This index is shown through the following equation:

$$WW_{it} = -0.091 \left(\frac{CF}{TA}\right)_{it} - 0.062 DDIV_{it} + 0.021 \left(\frac{LTD}{TA}\right)_{it} - 0.044 Size_{it} + 0.102 ISG_{it} - 0.035 SG_{it} \quad (3)$$

where i is the firm; t is the year; CF_i is the cash flow variable; TA_{it} is the total assets; $DDIV_{it}$ is a dividend payer dummy; LTD_{it} is the long-term debt; $Size_{it}$ is the logarithm of the firm's total assets; ISG_{it} is the industry's sales growth and SG_{it} is the firm's sales growth.

Hadlock & Pierce (2010) create an index which uses two of the most relative exogenous variables, firm size and age, otherwise known as the SA-index. Due to the fact that this index can be calculated for each individual firm, this financial constraint index is said to be firm-specific. Furthermore, this index is capable of coping with time varying changes, meaning that a firm can alter from a degree of financial constraints during a particular period (Clearly, 1999), while being continuous and facilitating the usage of this index.

$$SA_{it} = -0.737S_{it} - 0.043S_{it}^2 - 0.040A_{it} \quad (4)$$

where i is the firm; t is the year; S is the firm's size and A is the firm's age. The size of the firm is calculated as the logarithm of book assets. Also, age is defined by the number of years in activity (Silva & Carreira, 2010).

4. Discussion of Results

The descriptive statistics of the date helps to understand some of the features of the specific dataset. The advantage of the descriptive statistics in our case is that they allow the interpretation of raw data and for us to make observations based solely on that screen.

Table 1 shows the mean and the standard deviation of the main variables used in this work for the sample. The variables used in the Fama and French three factor models are presented. The risk premium variable shows that the risk free rate is lower than the market risk. The mean for the SMB variable, which deals with the size of the market, is negative. The negative sign means that the big firms have a greater value of the market than the small firms. The HML variable has a bigger mean and standard deviation which implies that firms with low book-to-market ratio have a bigger market capitalization than those with high book-to-market ratio.

Table 1. Descriptive statistics for all sample and considering low and high capital control.

VARIABLES	All Sample		Capital Control			
			Low		High	
	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Stock Return	0.159	0.737	0.063	0.602	0.142	0.754
Risk Premium	0.0262	0.229	0.129	0.361	0.110	0.435
SMB	-0.118	0.220	-0.155	0.314	-0.099	0.191
HML	-0.171	0.265	-0.019	0.301	-0.199	0.218
GDP Growth	6.810	2.566	4.236	3.930	7.952	3.158
Real Interest Rate	4.026	6.124	5.060	10.80	3.223	4.112
Capital Control	0.864	0.140	0.462	0.237	0.977	0.024
Openness	0.636	0.357	0.700	0.339	0.617	0.295
Depth	0.973	0.391	1.224	0.862	0.748	0.248
Access	4.215	0.170	3.914	0.350	4.223	0.165
Efficiency	1.387	1.331	0.459	0.501	1.047	0.681
Stability	0.240	0.096	0.223	0.100	0.242	0.115
Liquidity	0.871	0.392	0.473	0.243	0.733	0.349

This table shows the mean and the standard deviation of variables by the overall sample, then divided into low and high capital control groups.

In Table 2 we show the descriptive statistics for firms classified by financial constraints. The table does not present high differences between the indexes for stock return and risk premium and HML. The highest differences can be seen in the WW and SA indexes for variable SMB, this may be to the fact that both indexes are constructed based on size of firms. In general, other firm-specific variables do not present big differences between constrained and unconstrained firms. The Tobin's Q, represented by the firm market capitalization divided by the total assets, shows an exception. The mean shows that values for unconstrained firms for all three indexes are bigger.

Table 2. Descriptive statistics by financial constraints.

Variables	KZ Index				WW Index				SA Index			
	Unconstrained		Constrained		Unconstrained		Constrain		Unconstrained		Constrain	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Stock Return	0.266	0.776	0.260	0.695	0.366	0.793	0.282	0.674	0.109	0.673	0.145	0.781
Risk Premium	0.0545	0.228	0.0449	0.234	0.0494	0.181	0.0499	0.257	0.0227	0.257	0.0369	0.213
SMB	-0.127	0.215	-0.093	0.225	-0.190	0.266	-0.066	0.197	-0.098	0.194	-0.172	0.228
HML	-0.182	0.264	-0.183	0.285	-0.162	0.256	-0.191	0.292	-0.163	0.279	-0.170	0.244
Tobin's Q	1.161	1.915	0.776	1.532	1.194	1.365	0.987	1.342	1.022	2.112	1.000	1.844
Size of Firm	11.45	2.189	12.95	2.150	13.90	1.239	10.56	1.123	10.49	2.189	14.35	2.55
Book Value	1.927	2.969	2.025	3.307	2.372	2.628	1.677	2.206	1.731	3.091	1.882	2.786
Sales Growth	1.015	0.208	1.022	0.165	1.030	0.134	1.018	0.107	1.018	0.223	1.025	0.185
Dividends rate	0.023	0.723	0.009	0.022	0.031	0.073	0.042	0.095	0.086	14.42	0.132	11.32
Debt rate	0.461	0.808	0.729	1.463	0.489	0.203	0.414	0.252	1.282	17.77	0.684	6.819

This table shows the mean and the standard deviation of variables by the overall sample, then divided into financial constraints.

In order to analyze the effects of the Fama and French (1993) three factor model, the macroeconomic and financial development variables on stock returns we estimate four models by adding a set of group variables in each model, with the last model containing all variables. Our analysis will be focus on model (4), based on the criteria Bayesian information criterion (BIC) and Akaike information criterion (AIC).

Table 3. Fixed-Effect Robust Regression.

Variables	(1)	(2)	(3)	(4)
Risk Premium	0.378*** (0.014)	0.187*** (0.016)	1.009*** (0.030)	0.668*** (0.054)
SMB	0.441*** (0.027)	-0.486*** (0.027)	0.065* (0.035)	0.066* (0.039)
HML	0.707*** (0.023)	-0.759*** (0.022)	0.673*** (0.025)	-0.995*** (0.028)
GDP Growth _{t-1}		-0.041*** (0.001)		0.016*** (0.002)
Real Interest Rate _{t-1}		0.006*** (0.002)		0.019*** (0.004)
Capital Control _{t-1}		0.637*** (0.069)		-0.864*** (0.117)
Openness		-0.750*** (0.026)		-0.885*** (0.046)
Depth			0.411*** (0.021)	-0.425*** (0.032)
Access			0.842*** (0.043)	1.245*** (0.066)
Efficiency			0.165*** (0.017)	0.292*** (0.022)
Stability			3.512*** (0.065)	2.843*** (0.120)
Liquidity			0.013 (0.066)	-1.714*** (0.128)
AIC	72477	42797	68244	40277
BIC	72502	42863	68304	40375
R-squared	0.077	0.137	0.234	0.259
Number of Firms	11,046	11,038	9,525	9,286
Observations	57,185	55,581	41,880	41,012

The dependent variable is stock return. The table represents the fixed-effect robust regression for emerging countries. Robust standard errors are in parentheses. The symbols *, ** and *** represent the significance of estimators for 10%, 5% and 1% respectively.

As expected the risk premium and the SMB (Small Minus Big), which represents the difference between small and big firms, are positive and significant in order to explain the stock returns. On the other hand, the HML (High Minus Low) variable, which represents the difference between the average of the returns of high book-to-market ratio and low book-to-market ratio, is negative and significant. This indicates that low growth portfolios have higher market capitalization than those of high growth portfolios for emerging countries.

Table 4. Fixed-Effect Robust Regression considering financial constraints.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Risk Premium	-0.342*** (0.069)	-0.465*** (0.090)	1.237*** (0.039)	-0.247*** (0.068)	-0.354*** (0.087)	1.238*** (0.039)
SMB	-0.068** (0.031)	-0.135*** (0.040)	0.209*** (0.036)	-0.048 (0.032)	-0.128*** (0.041)	-0.211*** (0.036)
HML	-0.200*** (0.029)	0.093*** (0.035)	0.318*** (0.034)	-0.225*** (0.029)	-0.090** (0.036)	-0.319*** (0.034)
Real Interest Rate _{t-1}	0.019*** (0.002)	0.032*** (0.002)	0.003 (0.002)	0.0211*** (0.002)	0.033*** (0.003)	0.004* (0.002)
Openness _{t-1}	2.595*** (0.200)	2.431*** (0.245)	2.811*** (0.139)	2.840*** (0.202)	2.587*** (0.247)	2.834*** (0.138)
Depth	-0.719*** (0.077)	-1.011*** (0.097)	1.979*** (0.081)	-0.747*** (0.077)	-1.086*** (0.098)	-2.001*** (0.080)
Access	1.554*** (0.238)	0.743** (0.305)	0.639*** (0.163)	1.724*** (0.238)	0.861*** (0.313)	-0.620*** (0.162)
Efficiency	0.055** (0.025)	0.115*** (0.033)	0.212*** (0.016)	0.008 (0.025)	0.073** (0.032)	-0.209*** (0.016)
Stability	4.962*** (0.178)	5.059*** (0.241)	6.541*** (0.140)	5.423*** (0.175)	5.516*** (0.225)	6.519*** (0.139)
Liquidity	0.597* (0.329)	0.541 (0.424)	3.918*** (0.188)	1.121*** (0.330)	0.958** (0.425)	3.959*** (0.188)
KZ _{CONST}	-0.127** (0.055)			-0.073 (0.057)		
High Control* KZ _{CONST}	-0.201*** (0.018)					
GDP growth* KZ _{CONST}	0.022*** (0.006)			0.010 (0.007)		
WW _{CONST}		-0.294*** (0.084)			-0.468*** (0.084)	
High Control* WW _{CONST}		-0.231*** (0.039)				
GDP growth* WW _{CONST}		0.032*** (0.008)			0.037*** (0.009)	
SA _{CONST}			-0.046 (0.060)			-0.125** (0.0605)
High Control* SA _{CONST}			-0.066** (0.027)			
GDP growth* SA _{CONST}			0.016** (0.007)			0.019*** (0.007)
Low Control* KZ _{CONST}				-0.222*** (0.060)		
Low Control* WW _{CONST}					-0.001 (0.041)	
Low Control* SA _{CONST}						0.211*** (0.061)
R-squared	0.400	0.438	0.422	0.398	0.435	0.423
Number of Firms	4,902	3,477	4,072	4,902	3,477	4,072
Observations	20,427	12,050	17,568	20,427	12,050	17,568

The dependent variable is stock return. The table represents the fixed-effect robust regression considering financial constraints. Robust standard errors are in parentheses. The symbols *, ** and *** represent the significance of estimators for 10%, 5% and 1% respectively.

The effects of macroeconomic variables, such as GDP growth and real interest rate, on stock return are positive and significant. For the capital control, the effect is negative and significant, indicating that the more capital control the lower stock returns. The impact of the openness variable is also negative a significant, this means that greater trade openness makes domestic firms- and hence domestic stock returns – more susceptible to world economic conditions (Dellas and Hess, 2005).

When dealing with depth, we see a negative and significant relationship. Since depth measures the size of the stock market, we must note that if there is an increase in the size of the stock market, there will be decrease in the stock returns of the firms. The variables dealing with access, efficiency and stability all have a positive impact on stock return. The results for liquidity show negative impact for emerging countries because the liquidity in the first moment can be channeled for real investment, due to short term immediate necessity of new endeavors.

In order to better understand the presence of financial constraints and the role of capital control on the stock returns we use the following three financial constraints indexes: KZ, WW and SA. In addition, to capture the effect of capital control for constrained firms we include the interactions of high and low capital control with financially constrained firms. With this purpose we classify the sample of emerging countries as having low and high capital control and interact them with the indexes of financial constraints. We also check the role of economic activity and financial constraints on asset prices. Table 4 present the estimates of six models considering these interactions.

According Table 4 the impact of financially constrained firms on stock return is negative and significant. Likewise, emerging countries with high capital control and whose firms are constrained have a higher negative impact on stock returns. This relationship has the same behavior for the three indexes of financial constraints, indicating that more capital control associated with financial constraints reduce stock returns.

Additionally, more economic activity has a positive impact on stock return even when the firms are considered financially constrained, for all three indexes of financial constraints. On the hand, when looking at emerging countries with low capital control and financially constrained firms, the results are ambiguous.

As suggested by Blundell-Wignall and Roulet (2013) higher capital control could result in several negative effects on economic activity of a country and in turn affecting negatively asset prices. Some of these effects are a reduction of supply of capital, a raise in the cost of financing, reduction the access to international capital markets and an increase of financial constraints. The authors also highlight the fact that there is considerable microeconomic evidence showing that if emerging countries lift capital controls, they experience the positive effects that are outlined in the economic theory.

5. Conclusions

In this paper, we analyze the Fama-French (1993) three-factor model with macroeconomic variables and financial development variables on stock returns. Additionally, we interact financial constraints with capital control and also with economic activity in order to capture both, the effect of these relationships on stock returns. We consider three financial constraint indexes suggested in the literature (KZ, WW and S.A). To capture the effect of emerging countries capital control, we classify them by high and low levels of capital control.

An interesting aspect of the using capital control as a classifying factor in this research is that fact that it enables us to understand the way that capital control with financially constrained firms affect stock returns. In the same way, we attempt to capture the effect of economic activity interacting with financially constrained firms on stock returns. For this purpose, we estimate a robust fixed effect model using panel data with 5,442 firms from 51 emerging countries from the period ranging from 2004-2016.

In the first regression, we find that the variables dealing with risk premium and SMB, as expected have a positive impact on stock returns. On the other hand, the HML variable has a negative impact on stock return. This indicates that low growth portfolios have higher market capitalization than those of high growth portfolios for emerging countries. We also find a relevant effect of the macroeconomic variables on stock return. When dealing with financial development variables, we see that depth has a negative impact, while access, efficiency and stability have a positive impact on stock return.

Lastly, the main findings of this paper, is that the presence of financial constraints alone and jointly with capital control show that there is a negative impact on stock returns. However, when the effect of financial constraints is considered jointly with capital control, the negative effect on the stock returns is sharper. Similarly, the results of the interaction between financial constraints and economic activity indicate a positive effect on stock returns, as there is an increase in economic activity even when the firms are financially constrained.

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APPENDIX

List of Countries	
Argentina	Poland
Bahrain	Qatar
Bosnia and Herzegovina	Romania
Botswana	Russian Federation
Brazil	Saudi Arabia
Bulgaria	Serbia
Chile	South Africa
China	Sri Lanka
Colombia	Thailand
Costa Rica	Tunisia
Croatia	Turkey
Ecuador	United Arab Emirates
Egypt, Arab Rep.	Venezuela, RB
Ghana	Vietnam
Hungary	
India	
Indonesia	
Jamaica	
Jordan	
Kazakhstan	
Kenya	
Kuwait	
Lebanon	
Macedonia, FYR	
Malaysia	
Mauritius	
Mexico	
Mongolia	
Montenegro	
Morocco	
Namibia	
Nigeria	
Oman	
Pakistan	
Panama	
Peru	
Philippines	

Source: International Monetary Fund

<http://www.imf.org/external/pubs/ft/weo/2017/01/weodata/groups.htm#wa>

List and description of Variables	
Stock Return	$(\text{Closing Price}_t - \text{Closing Price}_{t-1}) / \text{Closing Price}_{t-1}$
SD Stock Return	Standard Deviation of Stock Return
Company Market Value	Log (Market Capitalization Firms)
Tobins Q	Total Market Value of firm / Total Asset Value
Size of Firm	Log (Total Assets)
GDP Growth	$(\text{GDP}_t - \text{GDP}_{t-1}) / \text{GDP}_{t-1}$
Real Interest Rate	Real Interest Rate
Capital Control	Overall Capital Control
Openness	Importations+ Exportations / GDP
Liquidity	Private Credit by Deposit Money Banks by GDP
Depth	$(\text{Stock market capitalization} + \text{Domestic private debt}) / \text{GDP}$
Access	Market Capitalization Excluding Top 10 Companies / Total Market Capitalization
Efficiency	Stock Market Turnover Ratio
Stability	Stock Price Volatility