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Participation Matters: Stock Market Participation and the Valuation of National Equity Markets

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PARTICIPATION MATTERS:

STOCK MARKET PARTICIPATION AND

THE VALUATION OF NATIONAL EQUITY MARKETS

By

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ABSTRACT

Equity markets are becoming an intricate part of economic growth. They provide a source of capital, among other things, that companies may use to grow, innovate, and compete in a domestic or the world market. With the increase of equity markets and their implications of economic growth there has been some recent research on the valuation of equity markets. Many of the political, economical, and institutional factors that are suggested to influence equity market valuation have been extrapolated from the research on bond markets and FDI. While concurring with many of the factors already discussed in the literature, this thesis suggests that a factor is missing in the analysis. I claim that stock market valuation is conditioned on the domestic stock market participation level within that country's stock market. I contend that an increase of stock market participation by the domestic populace, conditioned on the type of regime, will increase the valuation of the equity market of that country.

CHAPTER 1

INTRODUCTION

Introduction

Which political, economic, and institutional characteristics affect equity market performance? Much literature has been written on the political, economic, and institutional factors of economic growth (Barro 1996, Olson 1993, Commander and Zlatko 2011). However, the research literature has tended to be less focused on the equity market specifically. The equity market is becoming quite important when it comes to economic growth. It is responsible for large proportions of capital that may be invested in a country. The capital that is being garnished by equity markets is reaching high levels in comparison to national GDP (Asongu 2012, Mosley and Singer 2008). As these investments continue to grow it is becoming more evident that there is a need to understand the factors that affect a country's equity market performance.

This increase of investment in the equity market is valuable to economic growth for, at least two reasons. One reason is that investments in the equity market allow companies to grow and compete (Gopalan and Gormley 2012). Gopalan and Gormley (2012) discuss the influence of the 1997 stock market collapse in India and how it affected India's economic growth. Gopalan and Gormley (2012, 1574 -1575) also explain how the established companies would still function in the equity market, however the amount of new smaller companies that entered the equity market decreased in India after the stock market crashed in 1997. This would suggest that the stock market may have an effect on the emergence of new companies and competition in the market.

New companies are vital to economic growth and long run economic outcomes. They push established companies to remain innovative and looking towards the future. New companies may affect employment by creating jobs and opportunities. The importance of new companies is an obvious political concern, for there are many policies and grants within the United States and elsewhere that focus on helping businesses start up and succeed. If the equity market has an effect on these new emerging small companies, it may have an effect on economic growth.

A second reason why equity markets are important to economic growth is that they are another way for companies to procure capital other than through financial institutions. Levine and Zervos (1998) discuss how the equity market provides different forms of equity than the banking sector. Having diversity in the way that companies may gain capital then should be important for companies to grow. This may be especially true in nations where the banking sector may be weak, for the equity market may allow companies to gain capital when they are not able to in the banking sector. As mentioned earlier, capital allows companies to grow and innovate.

Since equity markets are an important component of economic growth and economic growth is important to everyone, then it should be important to understand how the economic, political, and institutional characteristics that make equity markets perform well. Knowing the characteristics that enhance economic performance of an equity market may allow those nations that want to enhance economic performance the ability to change some of their characteristics to boost the performance of the equity market. For instance, they may be able to change the restrictions that they have on liquidity to a policy that is more favorable to investors. This may increase the amount of capital that is available to companies to use and expand their companies,

which propels economic growth. If economic growth is important to countries then equity market performance should be vital as well.

Within the extant literature on economic growth is the impact of economic, political, and institutional characteristics that influence economic growth. These characteristics may have various effects on the different components of economic growth. For example, an interest rate increase may have a positive effect in the bond market while it has a negative effect in the equity market. In contrast, there are some characteristics that may have the same effect on all the different economic components. For instance, democracy may have the same positive effect across all of the components of the economy. With this variation it is necessary to evaluate the characteristics that affect the other components of the economy and see how they may apply to the equity market.

While this thesis applies the economic, political, and institutional characteristics that the extant literature claims affects the bond market, FDI and other economic factors, it argues that one important factor is missing in the literature: the amount of domestic participation in the equity market. While others look at the economic, political, and institutional characteristics, they do not see how these characteristics may be influenced by the domestic participation level. As more people are invested in the equity market and the participation level increases, those who are invested will pay more attention to the performance of the equity market. As this participation level increases, governments concern for the performance of the equity market may increase also. While all governments concerns may increase, democratic governments concerns may be more influenced by the participation levels.

In order to make this argument this thesis will begin by looking at the extant literature. Then I will explain the theoretical basis and hypotheses that I use to make the argument. I will

then discuss the model design that I use to evaluate the hypotheses and the results. I will then conclude with an explanation of where further research may go to help explain the influence of participation on equity market performance.

CHAPTER 2

LITERATURE REVIEW

Explanations of Equity Market Performance

There are differences in the types of policies, institutions, and investments that investors are looking for when investing in the stock market, the bond market, or Foreign Direct Investment (FDI) (Mosley and Singer 2008). In the equity market, investors are not as concerned about monetary policies and their effects on inflation, since equity market investments may be liquidated quickly. On the other hand, those invested in the bond market are very interested in monetary policies and their effects on inflation, for bond investments are long term investments which may not be liquidated quickly and therefore inflation could have a detrimental effect on the investor's return (Mosley and Singer 1008, 411). Foreign Direct Investment (FDI) is different than either the bond or equity markets, for it is an investment that is long term and direct in that it is done by building or purchasing capital in another country (Oatley 2010, 166-167). Therefore, investors that are looking at FDI investments in comparison to the stock or bond market may be more concerned about the type of regime, for democracies have many of the institutional characteristics that FDI investors like. For instance, Li and Resnick (2003) discuss the implications of regime type and how democracy may have good and bad characteristics that an investor will look for. In contrast, equity and bond market investors may not have the same concerns about the type of regime of the country that they will invest in. Each of the various types of investments are replete with different characteristics that investors will look for. We will look at how the political, economic, and institutional factors may affect the performance of a national equity market.

Since there is a limited amount of extant literature on the equity market, we will incorporate the literature on what characteristics are conducive to economic growth with the extant literature on the equity market specifically. When looking at the political aspects we will be specifically exploring the differences in the democratic domain by observing differences in partisanship, elections effects, and the representational differences that may all have an effect on equity market performance. We will begin with looking at partisan effects.

Political Explanations

In the extant literature on equity market performance there is support for a difference in government partisanship and the performance of the equity market. Leblang and Mukherjee (2005), examining the American and British stock markets, suggest that partisanship plays an influential role in the performance of the stock market. They claim that a left wing party having control or presuming to gain control of the executive branch will decrease the mean and volatility of the stock market and the right wing will increase the mean and volatility of the equity market (783). This would suggest that the left-wing party controlling the executive branch would decrease equity market performance, for there is a decrease in the mean of the equity market, and the right wing would increase equity market performance.

Full agreement on the implications of partisanship politics and its effects on the equity market are not observed throughout all of the literature. McGillivray (2003) agrees that there is a change in the equity market when there is a change in the partisan control of the government. However, her argument is that there will be a change in which industries will prosper from the partisan control (368). This argument would coalesce with much of the literature on protectionism and how industries would receive protection from foreign competition would be decided. There is also a connotation in the American context that certain industries may be

favored over others, such as the military industrial complex when a right-wing party comes into control of the office. These industries may receive more benefits and funding than if a left-wing party came into control (Roberts, 1990). The equity market will change and become more volatile when there is a shift in partisan control if there is a shift in industries that are benefitting and losing. Intuitively this makes sense, for there would be major changes in the industries that one invests in, since many of the investors changing their investments across stocks may create much volatility in the stock prices of the industries that are gaining and losing from the change in partisan control.

Another aspect that should be looked at is that of the differing ideologies of trade that each party has. McGillivray (2003), suggests that certain industries are favored by certain parties and these industries will benefit when their supportive party is in control of government. A party in control may help an industry by protecting an industry from foreign competition by implementing tariffs or quotas aimed at specific industries that they favor. This would go along with the ideology of certain parties that are observed as being more for free trade while others lean towards trade protectionism. Chinn and Ito (2005) argue that trade openness is needed for equity market development. If trade openness is needed for equity market development, it could be argued that the more open a country is the better the performance of the equity market. A party that comes in with a more protectionist ideology may change the performance of that market, for investors may deem it as being less efficient and profitable. Alternatively, if a party came in that was more free trade and less protectionist than the preceding party, investors should respond and the equity market should rise in performance. Whether it is an industrial shift or investors responding to the governing party's presumed trade orientation, there is a suggested political effect on the performance of the equity market.

Economic Explanations

Another explanation for the performance of an equity market in the literature is based on economic conditions, specifically inflation and monetary policy. Branch (1974, 49) claims that if there is high inflation the equity market will be depressed. He argues that there are multiple reasons that inflation will hurt the equity market. One is that there will be increased competition, which will lower the profits of the firm (49). Another important reason is that there will be a decrease in the profits that the investor will make, once they receive their dividends (49). Equity market investment is considered to be an investment in the future of a stock, if the economy is plagued with continual higher rates of inflation an investor could see a decrease in their investment and be deterred from investing, thereby decreasing the performance of the equity market.

This view of inflation is not supported throughout all of the literature. Mosley and Singer (2008) argue that inflation should not have an effect on equity market performance and is more pertinent to those who invest in bonds. They argue that the equity market is a short term investment and investors will not be as concerned about the inflation rate. Investors may actually move from the bond market into the equity market (412). Since funds are easier to liquidate in the equity market, it may be observed that inflation will not have the impact on equity market performance as others would suggest.

Broz (2002) is in agreement with Branch (1974) when he states "inflation is detrimental to growth" (863). However, Broz (2002) views inflation as a problem with monetary policy and suggests that having a good monetary policy is good for inflation, which is good for economic growth. He argues that this is done through transparency and that different regimes may use different monetary policies to control inflation (861). The argument is that countries may use

pegged rates or Central Bank Independence (CBI) to control inflation. This is an argument for overall economic growth and is not one necessarily attached to the equity market performance. However, if the economy does not grow and the industries are not prospering there will likely be an effect on the equity market. Investors invest to gain from their investment and will invest in places that they are able to gain the most utility from their investment. Therefore, monetary policies and inflation may affect the performance of equity markets.

Institutional Explanations

Institutions are the rules of the game (North, 1990). North (1990, 53) argues that the formal and informal rules are what culminate in the economic outcomes for a nation. If institutions determine the economic outcome, they should be instrumental in the performance of the equity market. Within the extant literature on institutions and economic growth there is a variation in how democratic and autocratic institutions effect economic growth and therefore by association performance of the equity market.

Commander and Nikoloski (2011) discuss how democracies favor economic growth by enforcing property rights and ensuring that investors will be able to collect on their gains from that investment (2-3). Mosley and Singer (2008) agree with this assessment and suggest that the more democratic a country is the higher the valuation of their equity market will be. On the other hand, Commander and Nikoloski (2011) make the point that democracies may focus too much on welfare and rents, which may hinder economic growth, while autocracies will not have these internal pressures and the economy can grow with fewer constraints.

Within this debate about which institutions are conducive to economic growth is that there are certain institutional factors that matter for growth and not the overall regime type. An

autocracy may grow as well as a democracy or vice versa, it all depends on some institutional characteristics. Barro (1996) argues that the rule of law and a free market are two institutional characteristics that a country must have to grow the economy. In support of his argument, Asongu (2012, 184) argues, "The main idea is that the process of increasing stock market value depends on appropriate policies that are the outcome of good governance," declaring that government policies are important to the development of equity markets. If the government has good institutions and policies that support growth, the economy will grow. The regime type is not the only thing that matters.

Olson (1993) describes how there may be variation within autocracies themselves. He suggests that if autocratic leaders have a long term view of economic outcomes, they will implement institutions and policies that are favorable for economic growth (571). On the other hand, an autocratic leader that has a short time expectancy of leading will not be as worried about investments, for the benefits are not received by them immediately (Olson 1993, 572). Olson (1993) points out that property rights and individual rights that enforce contracts are two of the factors that facilitate economic growth. If autocracies have policies and laws that will credibly commit them to ensure investors of these rights, they may have economic growth and investments at a higher rate than some of the advanced democracies (Olson 1993).

Within the regime type debate, it has been observed that different policies may have an impact on stock markets. One policy that is observed to have an impact on equity market performance is that of shareholder rights. Laporta et al. (1998) discuss the variation in shareholder rights that have come from civil law and common law and how they may affect investment. They suggest that countries with common law give the best protection to shareholders (1129). It is suggested that countries that have strong shareholder rights will have

better performing equity markets (Mosley and Singer 2008, Laporta et al., 1998). Countries that provide a strong commitment to rights and ensuring investors of their gains seem to have a de facto advantage when it comes to garnishing investments from investors. It may be assumed that these advantages would come to those countries that are more democratic, for democratic institutions are more associated with individual rights and protecting them through the institutions and policies that they have implemented.

Explaining the performance of an equity market cannot be done with one variable. As we have observed it is not determined by just a specific institution or type of regime. Nor is it determined by a single economic or political factor. From the literature there is no solid agreement on the one thing that will make an economy or equity market grow. What the literature has argued is very important and needs to be considered when looking at the performance of the equity market. However, there is a missing piece to the puzzle that the literature does not discuss in an elucidating way within all of these factors, and that is the stock market participation levels within each of these countries and how it may affect equity market performance.

CHAPTER 3

THEORIES AND HYPOTHESES

Explaining Why Some Equity Markets Perform Better Than Others

Since much of the literature discusses bond markets and FDI and only a small portion has focused on equity markets. I rely, in large, part on Mosley and Singer (2008), who have extrapolated from the bond and FDI literature to develop a theory and hypotheses for the determinants of equity market performance. They have suggested that there are similarities and differences between the different markets and how they perform. This is based on certain institutional characteristics and policies of governments. It is suggested that investors will invest in national markets that have property rights, rule of law, stable institutions and various other institutional and market institutions characteristics.

The similarities and differences led to the development of three hypotheses:

1. Institutional hypotheses:
    a. "Investors [will] impose higher equity valuations in countries with more democratic political institutions." (Mosley and Singer 2008, 411-412).
    b. Shareholder protections will show a positive correlation to investor evaluation (Mosley and Singer 2008, 412).
2. Policy hypotheses:
    a. Investors will favorably evaluate national markets that allow for quick liquidity of their assets (Mosley and Singer 2008, 412).

These three hypotheses have suggested that certain institutions and policies may affect the equity market valuations in various ways. They suggest that democracies, vote share, capital account

openness to have a positive effect on the stock market, while fiscal policies will have no effect on the valuation of the stock market. This article does not dispute these hypotheses, however it does question whether there is another dynamic at work that may be interacting with the democratic institutional variable.

Stock Market Participation and Equity Market Performance

Institutions and policies are critical in equity market valuations, however they do not tell the whole story. There is a piece to this puzzle that is missing. One cannot just know what institutions and policies are influential in higher equity market valuations; one must also ask, "What mechanism is at work to stimulate these preferential institutions and policies"? This is what is missing from the extant literature on equity market performance.

The theoretical background for my hypotheses is derived from the selectorate theory and another similar theory.[1] Selectorate theory assumes that leaders want to stay in power. It also assumes that there is a portion of the society that elects and helps leaders maintain power. The selectorate theory is part of a strategic model that describes how politicians pursue their interest of staying in power (Bueno De Mesquita 2010). It suggests that there is a selectorate that is within each state that is influential in who has the power within that state. Within this selectorate is a winning coalition, who make up all of the members of the selectorate whose support is needed for a leader to gain or maintain power. The selectorate theory suggests that leaders have to be attentive to the interests of citizens that help them maintain their power.

[1] The rational political ambition theory is derived from the selectorate theory by Ray (2008) and has many similar assumptions. The similarity allows for the use of the selectorate theory without going into detail.

With this theory it is assumed that politicians will do the bidding of those who are in a position to help them maintain power. Based on this theory I claim that politicians will pass policies that are favorable to the equity market in those nations that have a larger percentage of their own citizens that are invested in their domestic equity market.

My thesis hypothesizes that stock market participation will have a positive effect on stock market valuations no matter what type of regime a country has and the strength of that relationship will increase as the regime becomes more democratic. Therefore, regime type will have a positive marginal effect on equity market valuations at any level of stock market participation. I suggest that regime type does not stand alone by itself.

Support for my hypothesis comes from varying statements throughout the extant literature. Mosley and Singer (2008) suggest, "the responses of investors to policies and institutions also have implications for future government policy choices" (408), which supports the idea that investors in the equity market will have an impact on the government policies. If investors have influence on policy choices that a government makes, then I would assume that those investors within the country would have more influence on policies than those not in the country, for they may influence the political leaders ability to remain in power.

More support for the hypothesis and the theory may also be extracted from much of the extant literature on economic growth. For instance, Broz and Frieden (2001) state, "Interest group and partisan pressures, the structure of political institutions, and the electoral incentives of politicians therefore influence exchange rate regime and level decisions" (317). This supports my hypothesis by declaring how the politicians are persuaded by the interests of the selectorate for specific policies. Marshall and Fisher (2013) also suggest the relevance of the selectorate's influence when they state, "government objectives emphasize macroeconomic outcomes—

because voters care about this, and governments seek future election" (3). Mosley and Singer (2008, 421) add to these authors' support for the hypothesis when they suggest, "when a higher proportion of a nation's citizens have assets in the national equity or bond market (for instance, in locations where a greater proportion of retirement savings is privately, rather than publicly, held and provided), the interests of domestic voters may align with those of foreign-based asset holders in the same market" (Mosley and Singer 2008: 421).

While not all specifically claim in the literature that there is a direct effect between the equity market performance and a leader's interest, there is one that does directly support this theoretical claim. In a manuscript by Alter and Goodhart (2003), they argue that the stock market is a signal for the present state of the economy and what the future of that economy will be (3). They also argue that in the American context people will approve of the president, in part, based on the way that their investments perform (6). If the president approval rating depends on the performance of the stock market, then it should matter to a leader how it performs. This is if the leader needs that portion of the selectorate to stay in power. The people view it in terms of what they gain from the market and the leader gains utility by making sure that the selectorate remains supportive.

Now that I have described the theoretical basis and the hypothesis and how they are supported, I need to discuss how my independent variables will be operationalized and added into a model of equity market performance. Along with this added variable I will operationalize the rest of the variables used by Mosley and Singer (2008). I will discuss the variables in the next section beginning with the dependent variable and going on to the independent variables and then injecting the new stock market participation variable.

CHAPTER 4

RESEARCH DESIGN AND MODEL SPECIFICATION

Dependent Variable

Following Mosley and Singer (2008), I use the Price-to-Earnings ratio (P/E ratio) as the dependent variable to measure stock market performance. The P/E ratio for an individual company is calculated by taking the annual average of the price of its stock and dividing it by the annual average earnings of that stock. The ratio provides a value of how many dollars a person needs to invest in a stock to receive a dollar in earnings. The lower the P/E ratio the greater the return on the investment. The aggregate national stock market's P/E ratio is calculated by taking the individual companies that are on the stock market and weighting their P/E ratios with the company's proportion of the national stock market (Mosley and Singer 2008, 413). As argued by Mosley and Singer (2008, 414), this dependent variable has three specific advantage that others do not capture. First is that the P/E ratio is more of a valuation than a measure of return, which is what my study wants to measure. The second advantage is that "the P/E ratio measures investors' valuation of the stock market relative to market earnings, and therefore isolates the cross-national and over-time variation in investor confidence that might otherwise be lost in a measure of market returns" (414), which helps with comparing the different nation's stock markets and how they are evaluated by investors. And the last advantage is that it uses the valuation of the stock, which is what is used in the investor's vernacular (Mosley and Singer 2008). These three advantages set this variable apart from others and allows one to take the valuation of the market into perspective and not just the instantaneous changes that may occur within a market at a given time.

Independent Variables

Following Mosley and Singer (2008) I divide my independent variables into four distinct categories:

- political institutions
- fiscal policy
- market characteristics
- macroeconomic and financial controls.

Each group has independent variables within them to measure certain characteristics of that category. I begin with the political institutions group.

The political institutions category is made up of four variables. The first independent variable measured in this category is the regime type, which we will label as "polity". Polity IV scores regime type from a -10 to +10, with -10 being a complete autocracy and +10 being a complete democracy. Figure 1 has the scores for each of the 25 countries. This is taken from the idea that democratic nations have better legal rights and property protections (Li, 2006), and so equity valuations should be higher in democracies than autocracies.

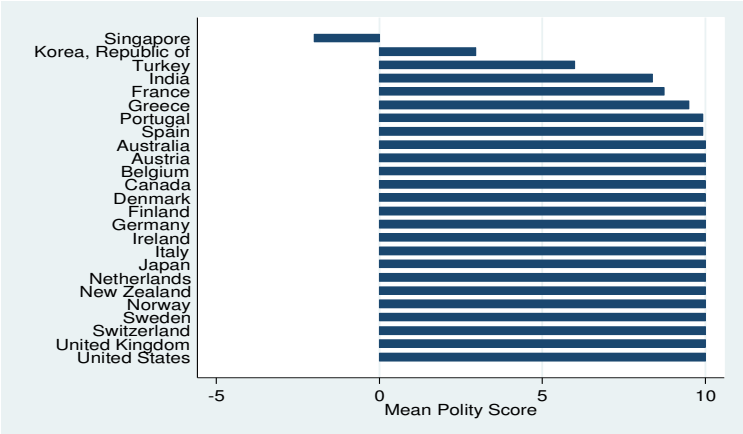

Figure 1. Polity Scores for the 25 Countries

The second variable is the stability of the government based on the argument that investors look for governments that offer political stability. Heinsz (2002) measures the degree to which the government constrains the ability of governments to change policies (Mosley and Singer 2008, 414). This variable is measured on a scale from 0 to 1. A 0 will equal a country with no political constraints and a 1 will be high political constraints. These constraints are on the ability to change the policies that are already in place. It is calculated by the number of veto players in the institutional design, the number of seats in the legislature, and the alignment of parties between the executive and legislative (Henisz Witold 2002).[2]

Finally, there are two dichotomous variables in this group. The share voter rule, which is a one vote per share rule, and the common law rule. A country is given a 1 if it has a one share - one vote rule and a 0 otherwise. If a country follows common law it will receive a 1, and if it does not it will receive a 0. These two independent variables measure how the investor will be able to judge if they will have adequate litigation procedures and the ability to have a say in their investment in conjunction with their share amount.

Hypotheses for the political institution variables:

(1) Democratic countries will be associated with higher equity market valuations than autocratic countries.

(2) Countries that have more political constraints on the government to change policies will be associated with higher equity market valuations.

[2] Heinsz Witold 2002 Appendix A for a complete explanation on the methodology for computing the political constraints value for each nation and year.

(3) The existence of the one share one vote rule in a country will be associated with higher equity market valuations.

(4) Countries that have the common law rule will be associated with higher equity market valuations.

Fiscal policy is comprised of just one variable. For fiscal, policy I use Mosley and Singer (2008) and their variable fiscal debt. Fiscal debt is how much the government spends over the amount that they receive from the revenues that they gather. It is gathered from the World Bank, World Development Indicators and is measured as "fiscal debt as a percentage of GDP" (Mosley and Singer 2008, 422).

Hypothesis for fiscal policy variable:

(1) As the fiscal debt of a country increases there will be a decrease in the valuation of that country's equity market.

Characteristics of the domestic market are captured by three variables. The first is the size of the market relative to the size of its economy. The overall size of the market is measured by total market capitalization and that is then divided by gross domestic product (GDP). Markets that are large relative to the overall size of the economy should be more attractive to investors.

The second variable is the dividend yields, which are how much a person expects to get paid for each dollar that they invest. The bigger the dividend, the more one will make off each share of investment. Dividend yields are measured by "Dividend per share as a percentage of share price" (Mosley and Singer 2008, 422). This measures whether the size of the profit outweighs other characteristics.

The last measure in this group is the Chinn-Ito index, which measures the openness of each market using the IMF's annual Report on Exchange Arrangements and Exchange Restrictions (Chinn and Ito, 2006). The more open a market is, the higher its evaluation should be. The variable ranges from -2.66 to 2.66 (Mosley and Singer 2008, 416).

Hypotheses for market characteristics:

(1) Larger markets, relative to the size of the economy, will be associated with higher equity market valuations.

(2) Markets that pay higher dividends will be associated with higher equity market valuations.

(3) More open markets are associated with higher equity market valuations.

Finally, macroeconomic and financial controls are included. The first variable is annual inflation, which is the average annual increase in the amount of money that it takes to purchase goods this year compared to last year. This variable is taken from the World Bank, World Development Indicators. If a country has a high inflation rate it may push investments into the equity market from other markets in a country (Mosley and Singer 2008). In contrast, Branch (1974, 49) declares that inflation will decrease the stock market. Inflation plays a role in evaluating equity markets and needs to be included in any evaluation of an equity market.

Another market characteristic that is evaluated in the model is GDP per capita. If a country has a large GDP per capita it may be presumed that the equity market in the country will be bigger and perform better. GDP is measured by "Standard deviation of the annual rate of change in gross domestic product per capita over the period 1995-2004. Source: Derived from World Bank, World Development Indicators" (Mosley and Singer 2008, 422).

Hypotheses for market characteristics:

(1) As inflation increases in a country there will be a decrease in the equity market valuation for that country.

(2) As the GDP per capita increases for a country the equity market valuation for that country will increase.

Stock Market Participation

Stock Market Participation was collected from Giannetti and Koskinen (2010), where they calculate the proportion of citizens that are privately invested in the stock market. It is measured as a percentage from 0 to 1. Mosley and Singer (2008) have 34 countries in their model. My model consists of only 25 of the 34 countries, for there was no available data on the following countries for stock market participation:

1) Chile
2) Colombia
3) Indonesia
4) Israel
5) Malaysia
6) Mexico
7) Philippines
8) South Africa
9) Thailand

In Figure 2 we can observe the amount of stock market participation within the 25 countries in the study.

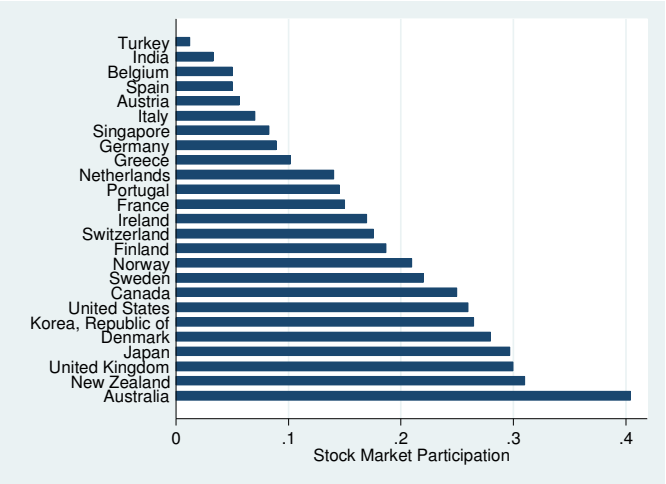

Figure 2. Histogram of Stock Market Participation in the 25 Countries

The stock market participation data does not include those that have employee or social investments, it is just the proportion that have private stock. I assume that this will capture the proportion of people who are paying attention and interested in their national stock market, therefore they will favor better policies for increased valuations of the stock market to maximize their utility. I also assume that as a country increases in democracy, stock market participation will increase in its effect on the valuation of the stock market.

Hypotheses for stock market participation:

(1) As stock market participation in a country increases there will be an increase in equity market valuation in that country.

(2) The positive effect of stock market participation will increase as a country becomes more democratic.

Design

I first begin by replicating Mosley and Singer's (2008) cross-sectional design, which uses OLS regression with averaged data from 1995 to 2004 across 34 countries, to evaluate the hypotheses for their paper. My contribution will consist of adding the "Stock Market Participation" variable to their model and interacting it with the Polity variable.

Mosley and Singer's specification:

(P/E ratio) = β1Stock Market capitalization + β2 Capital Account Openness + β3 Dividend Yield+β4 Income/Capita +β5 Inflation + β6Polity + β7 Growth Volatility + β8Vote Share + β9Fiscal Debt + β10Political Constraint + β11British Common Law

My extension:

(P/E ratio) = β1Stock Market capitalization + β2 Capital Account Openness + β3Dividend Yield +β4 Income/Capita +β5 Inflation + β6Polity + β7 Growth Volatility + β8Vote Share + β9Fiscal Debt + β10Political Constraints + β11British Common Law + β12Stock Market Participation + β13 (Stock Market Participation X Polity)

Note that in the first equation, I have dropped the political constraints variable mentioned earlier and use only Polity. Mosley and Singer (2008, 419) find that the Polity variable and the Political Constraints variable are highly correlated (0.70), and have determined that it is high enough to leave it out of the models. This is a judgment call on behalf of the authors and will not be argued here, yet it can be pointed out that this high correlation does not violate the assumption of perfect multicollinearity. I have confirmed their findings with a statistical correlation between the two of .77, which is a high enough correlation that including both of the Polity and Political Constraint variables in the same model may cause my estimators' coefficients to have large standard errors (Gujarati and Porter 2008, 323). This is a logical finding, for one could assume

that the constraints would be less in a democracy than in an autocracy, therefore as the polity variable increases the political constraints variable would increase also. Because the two variables are highly correlated, I used them separately in the models reported in the next section.

CHAPTER 5

RESULTS

My replication of Mosley and Singer's (2008) models, produced similar results, but there were some notable differences. There are some independent variables that are statistically significant in both outputs, but at different significance levels. There is also some variation in the variables that are statistically significant and those that are not statistically significant between the original paper and my replication. Along with these variations between the two estimations are the differences in the direction and value in the coefficients, which are close on some independent variables, yet quite distant on others.

In Mosley and Singer's (2008) original estimations, the coefficients which were significant and correctly signed in at least two of their three models were: Stock Market Capitalization, Capital Account Openness, Polity, Inflation, and Voting Rights. As can be observed in Table 1, in my replication, Stock Market Capitalization and Inflation were not significant in any of the replications. Polity was significant in one of the two replications, although it was at a different significance level. On the other hand, Fiscal Debt and Dividend yield were significant in two of the three models of my replication that were not in Mosley and Singer's (2008) original estimation. The coefficient direction on the Growth Volatility variable in Mosley and Singer's (2008) original estimation was positive and it was negative in my replication.

The Impact of Stock Market Participation

Once the Stock Market Participation variable is added and interacted with the Polity variable in the model, as may be observed in Table 3, there are only two variables that are

Table 1. Mosley and Singer Replication

Standard errors in parentheses

	Model 1	Model 2	Model 3
Fiscal Debt	0.0019** (0.0008)	0.0028*** (0.0007)	0.0019** (0.0009)
Stock Market Capitalization	0.20 (2.23)	-0.16 (2.20)	-0.050 (2.67)
Capital Account Openness	2.57** (1.10)	2.20** (1.06)	2.52** (1.17)
Dividend	-2.10* (1.07)	-1.74* (1.02)	-2.15** (1.06)
Income Per Capita	-2.41** (1.09)	-1.72* (0.99)	-2.35 *(1.17)
Inflation	0.057 (0.075)	0.025 (0068)	0.058 (0.076)
Polity	0.66* (0.36)		0.64 (0.40)
Political Const.		8.65 (8.49)	
Growth Volatility	-0.55 (0.68)	-0.95 (0.78)	-0.61 (0.82)
Vote Rights	10.6* (5.44)	9.72* (5.10)	10.7* (5.61)
Common Law			0.43 (1.82)
N	34	34	34
adj. R^2	0.481	0.420	0.460

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

statistically significant, Dividend and Voting Rights. Dividends is negative and significant, which suggests that as higher dividends are paid out there will be a decrease in the valuation of that equity market. It specifically suggests that for every percentage increase in dividends paid out, on average, while holding all other variables constant, there will be approximately a 2 point decrease in the valuation of an equity market. This does not support my hypothesis that higher dividends will increase market valuation. Mosley and Singer (2008) suggests that this may be caused by investors concerned about corporations in the market giving higher dividends out

when under financial duress causing investors to be more cautious. While it may be this phenomenon at work, I would suggest further research in this area to investigate whether this finding is being influenced by the specific countries that are in this study. With many new and emerging markets in the world today it would be interesting to evaluate the new markets with the ones in this analysis that are more established markets.

The other variable that is statistically significant is the Voting Rights variable, which did have the directional affect that was hypothesized. As may be observed in Table 3, Voting Rights were positively significant. The existence of a nation with the one share one vote rule would, on average, while holding all other variables constant, would increase the P/E ratio of that market by (13.5) points. This is quite a substantial change in the valuation of a market. In Table 2, which shows the summary statistics for the P/E ratio, we may observe that this effect is quite substantial. The presence of the one share one vote rule could move a market valuation from the low of (11.05385) to (24.55385), which is substantially above the mean of (16.55801). These results suggest that the one share one vote rule may play a substantial role in equity market valuations.

Table 2. Price to Earnings Ratio Summary

Variable	Obs	Mean	Std. Dev.	Min	Max
PE_ratio	34	16.55801	5.492569	11.05385	44.17308

The Stock Market Participation variable is not statistically significant in either model 4 or model 5. In Table 3 we may also observe that the coefficient was in the negative direction. This would suggest that a percentage increase in Stock Market Participation would, on average, while holding all other variables constant, result in a decrease of P/E ratio of an equity market. This

result does not support the hypothesis that stock market participation would increase the valuation of a market. While not supported by the analysis on the direct effect, there is the interaction of stock market participation and polity that still needs to be discussed.

Table 3. Stock Market Participation

	Model 4	Model 5
Fiscal Debt	0.0027** (0.0012)	0.0021 (0.0013)
Stock Market Capitalization	-2.58 (2.80)	-2.43 (2.92)
Capital Account Openness	3.87 (2.52)	4.81 (3.29)
Dividend	-2.97** (1.21)	-2.21* (1.15)
Income Per Capita	-1.88 (1.18)	-3.06 (2.24)
Inflation	0.20 (0.14)	0.15 (0.10)
Polity	0.72 (0.81)	0.66 (0.77)
Growth Volatility	0.75 (1.15)	1.86 (2.34)
Vote Rights	13.5* (7.08)	13.8* (6.32)
Common Law		-4.44 (5.98)
Stock Market Participation	-38.9 (34.0)	-59.6 (39.3)
Polity X Stock Market Participation	4.87 (3.62)	7.73 (5.06)
N	25	25
adj. R^2	0.538	0.535

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The marginal effects of Stock Market Participation and Polity are the main concern in this thesis. Following (Berry, Golder and Milton, 2012) there are five predictions that are made from the interaction of Stock Market Participation and Polity:

1. Prediction one: The marginal effects of Stock Market Participation on P\E ratio is positive when Polity is at its lowest.
2. Prediction two: The marginal effects of Stock Market Participation on P\E ratio is positive when Polity is at its highest.

3. Prediction three: The marginal effects of Stock Market Participation and Polity are positively related to each other.
4. Prediction four: The marginal effects of Polity on P\E ratio is positive when Stock Market Participation is at its lowest.
5. Prediction five: The marginal effects of Polity on P\E ratio is positive when Stock Market Participation is at its highest.

To evaluate these five predictions we will look at the marginal effects plots with their confidence intervals. From the marginal effects plots we will be able to evaluate each of the predictions.

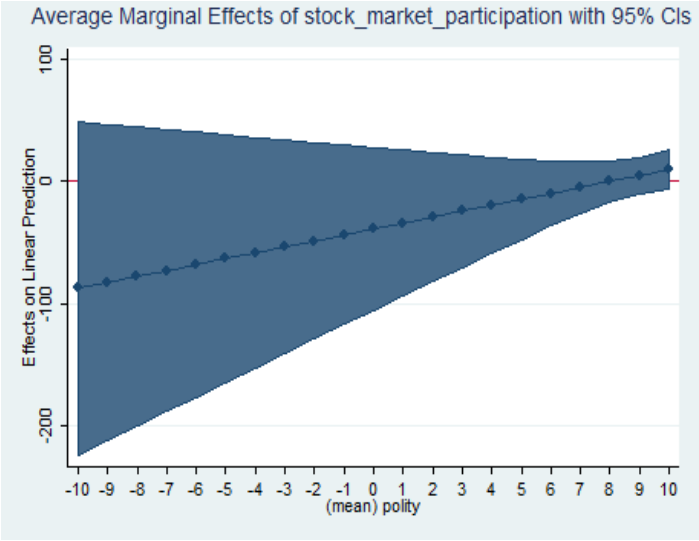

Figure 3. Marginal Effects of Stock Market Participation

In Figure 4 we observe that the marginal effects of polity on P/E ratio are in the predicted direction, however they are not statistically significant at the .05 level. The marginal effects of polity on P\E ratio are positive when stock market participation is both at its lowest and highest levels. It may also be observed, in Table 3, that the coefficient on the interaction term is positive in both models.

From Figure 3 we have the marginal effects plot of stock market participation on P/E ratio over the values of polity from model 4. As may be observed, the marginal effects are not as expected based on prediction one. The marginal effect of stock market participation is not positive when polity is at its lowest value, however it is positive at its highest level, as expected in prediction 2, although it is not statistically significant.

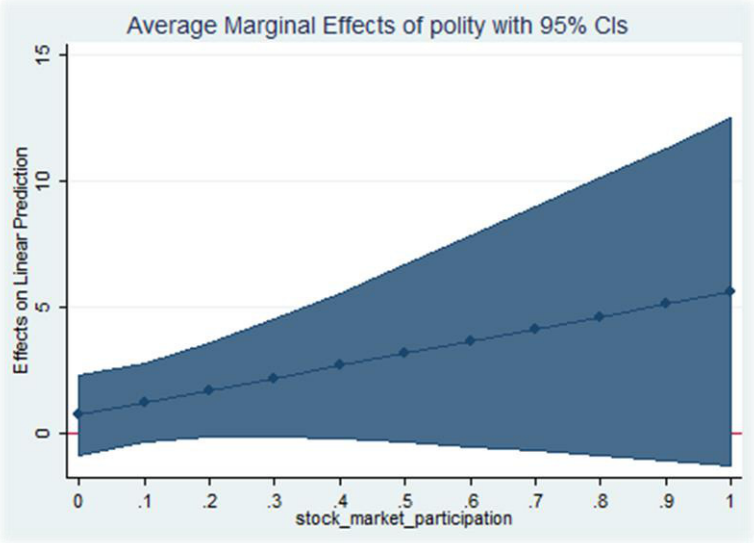

Figure 4. Average Marginal Effects of Polity

The addition and interaction of Stock Market Participation did not produce the results that were predicted in the hypothesis. However there are some things that need to be considered when evaluating this analysis. One is the lack of data that is available, which limits the degrees of freedom, increases standard errors and makes statistically significant results, using standard levels of significance, much harder to come by.

Since there are a plethora of independent variables in the model and a low number of observations, I decided to analyze two smaller models to gain degrees of freedom and decrease my standard errors. The scaled back models are:

Model 6: (P/E ratio) = β1Polity + β2Stock Market Participation

Model 7: (P/E ratio) = β1Polity + β2Stock Market Participation + β3 (Stock Market Participation X Polity)

As may be observed in Table 4, the scaled back models did not ameliorate the standard error problems that were in models 4 and 5. This would suggest that there may be other problems that are causing the high standard errors. In the next section, I will run robustness checks to see if the model has any statistical errors that may be affecting the results.

Table 4. Scaled Back Models

	Model 6	Model 7
Polity	-.1472 (.4651)	-.5314 (.8547)
Stock Market Participation	11.56 (12.35)	-16.23822 (53.04)
Polity X Stock Market Participation		3.048 (5.650)
N	25	25
adj. R^2	-0.0482	-0.0831

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

CHAPTER 6

ROBUSTNESS CHECKS

I ran diagnostics on both models to check for violations of the assumptions of the multivariate regression model. I ran the same diagnostic test on both model 4 and model 5, which suggested that the violations were the same for both models, therefore I will discuss the results only for model 4 in this section.

The assumption of homoscedasticity was checked by plotting the residuals against the expected and running White's test. Both tests showed signs of heteroscedasticity in the model. Therefore the assumption of constant variance in the error term was violated. There were also violations in the assumption of linearity, since the graphs all showed that the dependent variable was not linearly correlated with the independent variables. I also ran a test to check for multicollinearity and found that the models had a multicollinearity issues with the Polity and Stock Market Participation variables, but the assumption of perfect multicollinearity was not violated. There is also evidence of model specification error. While there are clearly some violations of OLS, many of these should be addressed with future research.

CHAPTER 7

CONCLUSION

Stock markets are very important to the people and the leaders of a country. Much analysis has been done in various sorts of literature to describe how different mechanisms affect economic growth. Little has been done on the stock market, per se, but many propositions have been imported from other types of investment into the unique realm of stock markets. This thesis explored a mechanism that might help explain why some countries national stock markets perform better with specific institutions and political and economic characteristics. While the analysis here did not support the hypothesis that stock market participation influences stock market performance, it does point to some aspects of how stock market participation may matter.

Although the analysis has some concerns, it does shine a light on some interesting characteristics and shortcomings. One is that the number of observations is too low and may be causing some of the problems with the statistical analysis. I would argue that one way to improve the data would be to include state and employee funded stock market participation into the participation variable. This would boost the participation level and capture the amount of participation more accurately. I would argue that there would be a greater variance in the participation levels also, for countries have large variation in their retirement funds.

APPENDIX A

DESCRIPTIVE STATISTICS FOR VARIABLES

Variables	Observations	Mean	Std. Dev.	Min	Max
Income Per Capita	34	9.089493	1.211262	5.813964	10.37843
Stock Market Capitalization	34	.5602346	.3927108	.118195	1.452761
Polity	34	7.661765	3.732489	-4	10
Vote Rights	34	.1764706	.386953	0	1
Common Law	34	.2941176	.4624973	0	1
Dividend Yield	34	2.771691	.9453836	.9376923	4.711765
Capital Account Openness	34	1.063235	1.320444	-1.451234	2.623262
Inflation	34	10.14807	13.77714	1.391783	58.93277
Growth Volatility	34	3.33342	1.605344	1.600095	6.905891
Fiscal Debt	34	91.15075	198.8129	9.210281	1203.638
P/E Ratio	34	16.55801	5.492569	11.05385	44.17308
Stock Market Participation	25	.17236	.1047823	.012	.404

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BIOGRAPHICAL SKETCH

M a t t h e w D. F o r b e s

ACADEMIC PROFILE

Graduate Assistant, Political Science

Florida State University – Fall 2014 to present

Bachelor of Science, Political Science, Suma Cum Lauda

Central Michigan University – 2014

Ronald E. McNair Scholar

Relevant coursework: Research design, Fundamentals of political research, International relations core, Introduction to methods.

RESEARCH INTERESTS

- Network analysis models.
- Dynamics of international trade and what determines who trades with whom and when.
- International political economy and the ambiguous outcomes of the differing policies that have been implemented by nations throughout the world.
- Comparative political economy and the institutional effects on the development or underdevelopment of economies.

RESEARCH

Peer-Reviewed Conference Presentations

Michigan Academy of Science Arts & Letters, Hope College (March 22, 2013)

- Presentation, "Globalization and the Effects on the Working Class in Isabella County, Michigan."

Michigan Political Science Association, Alma College (October 18, 2013)

- Presentation, "Globalization and the Effects on the Working Class in Michigan."

Other Research Presentations

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- Presentation, "Globalization and the Effects on the Working Class in Michigan."

TEACHING

Instructor, United States Marine Corp (1992 – 1993)

- Provided classroom instruction. Gave commands and controlled live firing exercises while on the firing range. Created lesson plans and helped develop the Standard Operating Procedures for the Crew Chief Course.

OTHER PROFESSIONAL EXPERIENCE

Graduate Assistant, Florida State University, Dr. Dale Smith, (Fall 2014 – Spring 2015)

- Worked as a TA in the Fall 2014 semester and attended classes. Participated in analyzing survey data.

Supplemental Instructor, (BIO 101) Mid-Michigan Community College (2012)

- Developed quizzes and acronyms for biological process to help the students familiarize themselves with the material. Facilitated group study sessions and assisted with lab projects.

Welder, Morbark Inc. (June 2004 – December 2012)

- Assembled wood chippers and stump grinders per prints. Welded parts and accessories for wood chippers and stump grinders per prints.

Construction worker, Forbes Construction (1998-2004)

- Was part of a construction crew. Supervised others and assisted in the construction of commercial housing and remodels. Proficient in plumbing, electrical, concrete, framing, finishing, drywall, Styrofoam basements, roofing, and hardwood flooring.

Rig Hand, Weltech Inc. (1996 – 1998)

- Ran the floor on a work over rig. Responsible for taking care of the equipment and maintaining a safe work environment. Acquired a commercial driver's license and was responsible for driving the rig from location to location.

AFFILIATIONS

Ronald E. McNair Scholars Program

Honors Program

Senator: Central Michigan University Student Government Association

Vice Chairperson: Academic Affairs Committee

Phi Sigma Alpha

Quality Initiative Committee of Central Michigan University

Student Veteran's Association

HONORS & AWARDS

Navy Achievement Medal, (July 1992 – 1993)

- For duties above and beyond rank and performing duties in a professional manner. Helping to develop and implement the crew chief course at Camp Lejeune, North Carolina.

Phi Theta Kappa, (October 2011)

- Member of the honor society.

High Honors List, (Fall 2011 and Winter 2012)

- Maintained a 4.0 at Mid-Michigan Community College

Associate of Arts Degree, (May 4, 2012)

- Graduated from Mid-Michigan Community College with high honors.

Presidents List, (Fall 2012)

- 4.0 grade point average for the semester at Central Michigan University

Honors List, (Winter 2012)

- 3.92 grade point average for the semester at Central Michigan University

Honors List, (Fall 2013)

- 3.96 grade point average for the semester at Central Michigan University

Honors List, (Winter 2013)

- 3.94 grade point average for the semester at Central Michigan University

Honors Program Graduate, 2014

- Accomplished the honors obligation of classes, diversity and community service

Phi Sigma Alpha, 2013

 Member of the Political Science Honors Society