Foreign Investment, Democracy and Income Inequality: Empirical Evidence

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MAJOR PAPER PRESENTED TO THE DEPARTMENT OF ECONOMICS OF THE UNIVERSITY OF OTTAWA IN PARTIAL FULFILMENT OF THE REQUIREMENTS OF THE M.A. DEGRE

Under the Supervision of:

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University of Ottawa

April 10th, 2015

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Abstract

I empirically investigate the impact of Foreign Direct Investment (FDI) inflows and democracy on income inequality. Under the assumption that the effect of FDI inflows depends on the magnitude of the level of democracy in the host country, I also assess the interaction between the level of democracy and FDI inflows effect on inequality. Using a panel dataset of 153 developing and developed countries from 1995 to 2010, I use fixed effect method to fix for heterogeneity and the system Generalized Method of Moments by Arello and Bond (1998) to control for eventual endogeineity issues. This study concludes that FDI inflows and democracy level reduce income inequality. Moreover, robust and significant results are consistent on the assumption that FDI inflows alleviate income inequality in countries with higher level of democracy. Among the control variables used, consistent and robust results of the education attainment variable show that an increase in human capital reduces income inequality.

I. Introduction

The world is richer than ever before; this is characterized by rapid growth of average income per capita and significant improvements in measures of welfare (health, life expectancy and so on) worldwide. This rapid growth is often attributed to the international economic integration in the 1980s and 1990s, as more economies in developed, developing and post-soviet nations decided to reduce their protectionism policies and government's interventions that hindered international trade and investment. The shift towards greater integration of markets in goods, services and capital among countries was also facilitated by technological progress that reduced transportation and communications costs between countries. Globalization has also permitted developing countries to access global markets, which has resulted in their economies growing faster than those of developed countries. Furthermore, it has helped their levels of human development measures such as life expectancy, child mortality and literacy to converge to levels in developed countries; and this improvement in wellbeing has led to many of their citizens being lifted out of poverty. International institutions such as the World Trade Organization (WTO), the International Monetary Fund (IMF) and the World Bank are also used to enable economic liberalism and to facilitate trade between countries in the hopes of creating more global wealth and, at the same time, assisting developing countries to access the same quality of life as that of developed countries. Moreover, even though globalization has enhanced the welfare of so many, Stiglitz (2006) argued that globalization has not benefited as many people as it could or should have, especially in the poor and developing countries. The author has also heavily criticized the world financial system, notably the international financial

institutions (IMF, World Bank and so on) that govern it. Furthermore, the emergence of global serious issues such as climate changes and epidemic diseases (HIV-AIDS, Ebola and others), has rendered some developing countries more vulnerable. Ban Ki-Moon (2011), at the Security Council meeting, acknowledged that the combined stresses of crime, pandemics and climate change were pushing many poor and fragile countries close to the breaking point; that some of them had seen their life expectancy cut in half by HIV/AIDS. [1] This indicates that this accumulation of wealth has not been equitable worldwide. One recent issue that has emerged worldwide is the rising income inequality both within and between countries, which has raised concerns on whether the contemporary economic system is working.

[1] United Nations Security Council, *As Nature of New Threats Evolves, Security Council, Central to Keeping Peace, Must also Keep Pace, Secretary-General Says During Council Debate on New Challenges*. SC/10457, 23 November 2011, available at: http://www.un.org/press/en/2011/sc10457.doc.htm

In fact according to the World Economic Forum's Global Agenda Councils report, deepening inequality is the number one threat to the world in 2015.[2] The rising inequality is a crucial issue that can create tensions and instability if not addressed; it is also a constraint to growth, social mobility and access to education. Movements such as Occupy Wall Street that was triggered by a body of work of renowned economists on the unequal state of the world, and Thomas Piketty's recent book "*Capital in the Twenty-First Century (2014)"* that reached the bestseller list right after its release; are clear indications that the problem of income inequality is gaining momentum in the general public.

Globalization is generally cited as the main source or cause of the rising inequality, thus the importance to understand its intricacies in order to be able to assess its effect on inequality if indeed it exists or if it is just a myth. International trade, foreign direct investment (FDI)[3] and capital flows are the main components of globalization; each of

World FDI inflows by major region, 2013 (US$B and %)

	2013	share	growth
World	**1,461**	**100**	**10.9**
Developed	**576**	**39.4**	**11.6**
Europe	296	20.3	25.2
EU	286	19.6	37.7
North America	223	15.3	5.8
Other	57	3.9	-17.4
Developing	**759**	**52.0**	**6.2**
Africa	56	3.8	6.8
North Africa	14	1.0	-1.8
Other Africa	42	2.9	10.0
LAC	294	20.1	17.5
South America	134	9.2	-6.8
Central America	48	3.3	92.7
Caribbean	112	7.7	37.8
Developing Asia	406	27.8	-0.8
West Asia	38	2.6	-19.6
East Asia	219	15.0	1.1
South Asia	33	2.3	3.2
South-East Asia	116	7.9	2.4
Transition	**126**	**8.6**	**45.1**

Figure 1

[2] World Economic Forum. (2014). Global Risks 2014, Ninth Edition. Retrieved on February, 02, 2015 from: http://www3.weforum.org/docs/WEF_GlobalRisks_Report_2014.pdf

[3] Throughout this paper, I will use the acronyms FDI to designate Foreign Direct Investment

them presents different benefits and risks hence requiring different assessments and policy responses. Among those three components FDI inflows have played a big role in the global market, increasing by 10.9 percent in 2013 to US$1.46 trillion, up from a revised US$1.32 trillion in 2012 (see Figure 1). This increase was manifested in all the regions of the world, as it shown in Figure 1 (Canada's State of Trade: Trade and Investment Update 2014).

FDI flows have also played a big role in the economic growth of developing countries which had limited access to other types of financing. In fact, five-sixths of all capital flows to the less developed world now originate in the private sector, with FDI by far the largest component, climbing to $120 billion per year by the beginning of 1998, to represent nearly half of the total.[4] Nearly all countries have recognized the positive impact of FDI on their economies, and they have increasingly designed adequate policies and special treatments to attract as many as possible. However the research community has advanced a nuanced view on FDI by highlighting that the positive or negative effect of FDI depended on the type of FDI, firm characteristics, economic conditions and policies, and not on the quantity (te Velde 2006). Unlike other components of globalization, FDI inflows have a direct impact on the real economy of host countries, for example as a channel of resources and technology transfer. They tend also to be more stable as opposed to other type of investment; during most economic crises they have

[4] Moran, Theodore H. 1998. Foreign Direct Investment and Development: The New Policy Agenda for Developing Countries and Economies in Transition. Washington: Institute for International Economics.

proved to be resilient,[5] unlike other forms of private capital flows such as portfolio equity and debt flows (Loungani and Razin 2001).

Since Foreign Investments have played a pivotal role in the rise of globalization over the last decades in both developing and developed countries, they can be a good instrument to investigate if globalization is really the source of the increasing inequality between and within countries. Some studies have already tackled this relationship; however with no clear conclusions, results vary depending on regions, methodology and available data.

For this study, I assess the impact of FDI inflows on a Gini measure using a panel dataset of 153 countries for the period of 1995 to 2010.

Another angle that this study will take in understanding the rising inequality is to simultaneously look at the impact of both the level of democracy and FDI inflows on inequality, first separately and then by creating an interaction term of level of democracy and FDI inflows. With globalization, the idea of democracy gained popularity worldwide. After the fall of the Berlin's wall in 1989, African, Asian and East European countries were open to embrace democratic regimes, though the level of democracy varies with country. In the present era, democracy has become

Democracy index, 2010, by regime type

	No. of countries	% of countries	% of world population
Full democracies	26	15.6	12.3
Flawed democracies	53	31.7	37.2
Hybrid regimes	33	19.8	14.0
Authoritarian regimes	55	32.9	36.5

Note. "World" population refers to the total population of the 167 countries covered by the index. Since this excludes only micro states, this is nearly equal to the entire actual estimated world population in 2010.

Figure 2

[5] Mexican crisis of 1994-95, the Latin American debt crisis of the 1980s and East Asian global financial crisis in 1997-1998)

the standard political regime (see Figure 2).[6] According to the Economist Intelligence Unit's report on Democracy Index 2010, by 2010 one-half of the world lived in some sort of democratic regime but a decline in democratization has been observed particularly since 2008 due the global financial crisis. Given that democracy is a predominant political system, it is important to assess its role in coping with pressures of global economic integration. I do believe that with increasing regional and intercontinental interconnectedness, the increasing inequality can be a threat to the sovereignty of the state in regulating international flows so that their profits can be more inclusive, particularly since political factors play a big role in creating good institutions at the domestic level that regulate how assets are distributed and how benefits of growth are allocated across an economy. There is consensus in recent empirical researches that a higher level of democracy fosters economic growth. Democracy is perceived to have an indirect impact on economic growth through "higher human capital, lower inflation, lower political instability, and higher levels of economic freedom."[7] However, when it comes to their relationship to income inequality, the results are ambiguous depending on studies or assumptions. This paper will try to tackle this relationship by looking at the effect of both FDI and level of democracy on inequality by running the Gini coefficient on an interaction variable of both determinants. The improvement of data in recent years, particularly on income

[6] Economist Intelligence Unit (2010), EIU Report Democracy *index 2010 - Democracy in retreat.* Retrieved on March 2015 from:http://www.eiu.com/Handlers/WhitepaperHandler.ashx?fi=Democracy_Index_2010_Web.pdf&mode=wp&campaignid=demo2010

[7] Helliwell J. K. (1994). *"Empirical Linkages between Democracy and Economic Growth."* British Journal of Political Science, Vol. 24, No. 2 (April, 1994) pp.225-248

inequality and level of democracy, will allow for a better reassessment on the effects of our main variables on income inequality.

The second section of this paper will cover the literature review by discussing the results and theories of studies that motivated this paper. The third section will describe the data and the methodology used for this study, section four will discuss the main results and the last section will be the conclusion.

II. Literature review

FDI and Inequality

Most studies that have dealt with the impact of FDI in host countries have concentrated on its impact on development. However in recent years, more studies have turned also to the impact of FDI on income inequality. In economic studies, different approaches are used to assess the effect of FDI on income inequality, ranging from positive, negative or null effect of FDI on inequality.

For a multinational corporation to move its production to a foreign country where the unfamiliar environment can represent inherent costs such as cultural differences, communications barriers, transportations costs and so on, it has to be driven by profits that outweigh these costs. Hymer (1976) argued that FDI is driven by market imperfections: Essentially MNCs[8] decide to relocate in a country where they have advantages over domestic

[8] MNC: Multinational Corporations

firms, to turn them into profits. The elitism paradigm states three necessary advantages that push FDI to settle in a foreign country. These are: "**O**wnership, **L**ocation, and **I**nternalization advantages which compose what is called OLI framework" (Markusen 1995). Ownership advantage refers to the competitive advantage of a multinational. It might hold a superior production process compared to local firms that offsets costs incurred in moving into the foreign country. It can also be the uniqueness of the multinational such as exclusivity in producing the goods in question given by patent or trademarks. Location advantage represents greater benefits that the multinational will acquire by producing abroad instead of producing at home. These include cheap factor prices or access to more customers. A multinational has an internalization advantage when instead of licensing a foreign firm to produce its products, or sell its blueprints to a foreign firm in order to avoid costs associated with setting up a facility abroad, it prefers to produce internally within the firm rather than at arm's length through markets (Markussen 1995).

The above determinants of FDI make it difficult to assess its impact on inequality; as te Velde (2003) noticed the link between inequality and FDI tend to be complex. Multinational firms have a tendency: "1) to increase skill-biased technological change, 2) to increase the bargaining power of skilled workers, 3) to locate in skill-intensive industries in the host country and 4) to change the supply of skills through firm-specific general training and through contributions to general education." With the rise of income inequality and FDI inflows in Latin America, te Velde (2003) conducted an empirical analysis to find out if the latter determinants of FDI have indeed contributed to increasing inequality. He found that although FDI has played a role in alleviating poverty in Latin America, its benefits have mostly enriched the skilled and

educated workers, hence the need for more government intervention to implement policies that make FDI more inclusive. Feenstra and Hanson's model (1996) demonstrates that the rise of income inequality in the world is due to the outsourcing of production from north to south, which is also responsible for increasing the relative income of skilled workers at the expense of unskilled workers. Since the relative factor endowments and specializations in the south and north are not the same, the return to capital and the return to ratio of skilled to unskilled labor are higher in the south. "According to the capital-market approach, the important reason for capital flows is related to interest rate differentials, which states that capital tends to flow the region where capital gets the highest return" (Jadhav 2012). When MNCs[9] exploit differences in factor cost between different geographical locations then it leads to Vertical FDI (Helpmen 1984). The outsourcing is done in a manner where: "the goods whose production location moves are the least skill intensive industries that were previously produced in North, which then become the most skill-intensive now produced in South" Brown et al. (2004). FDI inflows would be expected to increase inequality through skill premium in the world regardless of their economic status. Studies that have analysed the impact of FDI in host countries have mostly proved evidence of the existence of skilled premium by multinational enterprises with very few spillovers; the skill premium tends to be greater for very qualified workers.[10] Feenstra and Hanson (1997) demonstrated this for Mexico's maquiladoras[11] for the period of 1975-1988, where FDI concentration increased the labor share of skilled workers by over 50%. Evidence was also found by Lipsey and Sjoholm (2006) in the manufacturing sector in Indonesia where

[9] MNC: Multinational Corporations
[10] Aitken et al. (1996) for Mexico, Venezuela and USA; Taylor and Driffied (2005) for UK; Geishecker and Gorg (2004) for Germany; Bandick (2004) for Sweden. (van Klaveren et al. 2013)
[11] Maquiladoras: in-bond foreign assembly plants

FDI increased wages by 25% for less skilled workers and 58% for skilled workers. It is important to note the contrast of this theory with the Heckscher-Ohlin (HO) trade model that states that international trade between countries equalize factor prices.

Nevertheless, there exist other theories that support the fact that FDI has played a role in diminishing income gap between skilled and unskilled workers, by employing low skilled workers in developing countries where they are abundant (Woods 1994). Jensen and Rosas (2007) presented two mechanisms where FDI has a positive impact on reducing inequality: "First, in a competitive market, the introduction of additional capital stock from MNCs in the host country decreases the total returns to capital for domestic workers while increasing returns to labor, this will therefore increase incomes of labor relative to incomes on capital hence diminishing inequality. Second, if we consider the case where MNCs pay a wage premium over domestic firms, if it is paid to skilled workers, wage differential between skilled and unskilled workers will increase however it will also decrease income disparity between skilled workers and owners of capital. If the premium is attributed to unskilled workers hired by MNCs, then FDI would decrease inequality by raising the incomes of the group of workers at the bottom of income distribution." [12]

Some authors build their analysis on modern theories that state that FDI's effect on inequality follows the inverted-U curve of Kuznets; Kuznets (1955) suggested that inequality is a prerequisite in the first stage of development when new technologies are introduced in the

[12] Nathan Jensen and Guillermo Rosas, (2007), "*Foreign Direct Investment and Income Inequality in Mexico, 1990 2000*", International Organization, Vol. 61, No. 3 (summer, 2007), pp. 467-487

economy and skilled labor demand increases. Afterwards there is a process of adjustment when the new innovation is absorbed in the economy, inequality decreases as more output is produced and more labor is transferred from the old or traditional technology to the new technology. This can also be interpreted as a spillover effect. Figini et al. (2011, 1999) used the endogenous growth model by Aghion and Howitt theory (1998) of social learning on economic growth and differences in skills levels on wages to assess the impact of FDI inflows on income inequality. The model follows an inverted-U curve by Kuznets (1955). In the early stages of innovation, the demand for skilled workers increases as they are apt to operate the new technologies. This raises income inequality. But the faster the learning process goes, the more workers acquire the skills to work with the new technologies which ends up decreasing inequality. Figini and Gorg (2011) based their study on the Aghion and Howitt theory (1998) as discussed above, to assess the impact of foreign investment flows on domestic wage inequality for more than 100 countries for the period of 1980-2002. First, they found that the impact varies between developing and developed countries. For developing countries, they found evidence of the inverted-U theory: Income inequality increases with FDI inward stock but this effect decreases with additional FDI. For developed countries, there is a negative link between FDI inward stock and income inequality, however they found no evidence that the effect is nonlinear. The presence of inverted-U theory was also found for the case of Ireland, where FDI inflows increased income inequality in the beginning to reach a maximum, but decreased afterwards ceteris paribus Figini Gorg (1999).

The dependency theory is another predominant approach when discussing the impact of FDI on income inequality. This theory states that the concentration of foreign multinationals is detrimental to the economy and income distribution of the host country in the long term, especially for the less developed countries (Bornschier and Chase-Dunn 1985).

Because of this complexity, the understanding of FDI's effect on inequality remains inconclusive. Hence, more studies are needed in this field in order to avoid misguided policy implications.

For cross-country studies, results usually vary from a negative, positive or an insignificant link between FDI inflows and income inequality. Tsai (1995) showed that the positive association between FDI and inequality that was found in earlier studies was due to geographical differences in inequality rather than FDI itself. He also found that economic development and the role of government were important determinants of income inequality. To do so, he restricted his study to least developing countries and found that only FDI flows had a positive effect on income inequality in East/Southeast Asian countries. Milanovic (2005) also failed to find a significant association between inward FDI and inequality for his cross-countries study that consisted of at least 88 countries, including developed and developing. Sylwester (2005) similarly found no evidence of an effect of FDI on income inequality for a sample of 29 least developing countries for the period of 1970-1980. Alderson and Nielsen (1999) reconsidered the studies of Tsai (1995) and (Bornschier and Chase-Dunn 1985), but reported a positive relationship between FDI stock and income inequality instead based on a sample of 80 countries for the period of 1967-1992. Basu and Guariglia (2007) and Choi (2006) independently

also found evidence of a positive association of FDI and income inequality for a group of 119 countries over the period of 1970-1999 for the former and over the period of 1993-2002 for the latter. Herzer and Nunnenkamp (2013) used cointegration techniques to investigate the impact of FDI inward on income inequality for eight European countries over the period of 1980-2000. They found that FDI inward stock reduced inequality in the long-term but not in the short term. However, the authors pointed out that the negative effect was not present for Spain which was the poorest of their sample countries. Herzer et al. (2014) used the same cointegration techniques for Latin American countries for the period of 1980-2008, and found that FDI inward increased income inequality in that region. The empirical results discussed in this section clearly demonstrate that firm conclusions cannot yet be drawn on this topic, hence the reason why more studies and approaches are needed.

Democracy and Inequality

It is important to investigate the relationship between democracy and income inequality for policy implications. Income inequality can be detrimental to the efficacy of democracy. As mentioned in the introduction, according to the Economist Intelligence Unit's report on Democracy Index 2010 a decline in democratization was recently observed. This decline can be an outcome of the present state of the world because the rising inequality can be a threat to democratization. In fact, the concentration of wealth in the hands of a few can undermine democratic institutions (Dahl 1971).

As the rich get richer, they also become more powerful and persuasive to impose on the government their needs that do not necessarily benefit the overall population. Stiglitz J. has been adamant on rent-seeking behavior that is threatening democracy in alleviating income inequality. Rent-seeking behavior consists of lobbying activities by powerful people or companies to government for special treatment to boost their activities. This behavior does not have any added value and can only worsen income inequality by increasing wealth concentration to a very small elite group. However, Caldéron and Chong (2007) conducted an empirical study on the relationship between rent-seeking behavior and democracy for the case of Uruguay, and they reported that the presence and duration of democracy had a negative effect on rent-seeking. Mohtadi and Roe (2001) also found evidence, which suggest that economic rents rise in younger democracies but decrease in mature democracies. The concentration of wealth can also discourage the most vulnerable in the society to trust their elected leaders. Solt (2008) analyzed the effect that higher income inequality within a country can have on political engagement of its citizens. Using data from cross-national surveys of advanced countries, he demonstrated that income inequality had the ability to diminish "political interest, discussions of politics and participation in election for all but the most affluent in the society." Since rising inequality is a trend observed worldwide, its threat on democracy can reduce the sovereignty of the state in this era of globalization

Studies have been done on the link between democracy and inequality but with no conclusive implications as the case of FDI effect on inequality. A democratic regime entails rule of people, a government of the people by the people and for the people. It is also defined as a national political regime based "on free elections and broad political representation" (Reuveny

and Li (2003). However, there seems to be no consensus on a precise definition of democracy. Nevertheless, there are key conceptions that everyone agrees on. These are: "electoral, liberal, majoritarian, participatory, deliberative, and egalitarian." [13] It is appealing to assume that a more equal distribution of power would lead to a more equal society (Milanovic and Gradstein 2004). On one hand, democracy increases chances for the less fortunate to claim more equitable redistribution (such as progressive taxation). According to Aristotle (1962): "In democracies the poor have more sovereign power than the men of property; for they are more numerous and the decisions of the majority prevail."[14] Thus with the democratic election process, the poorer in the society are able to choose representatives that will improve their well-being; Lipset (1959) described the democratic election process as an expression of democratic class struggle.

With globalization that many have defined more like "Westernization", many countries have adopted democratic regimes. This has led to the expansion of franchise that has consequently increased political competition. One would assume that since political parties are re-election oriented, they are more inclined to appeal to the middle-class and the population at the bottom of the social ladder that consists the majority. Theories on the expansion of franchise have been developed in regard to its effect on inequality. Notably, Meltzer and Richard (1981) reported that the increase of the size of the government in elected governments since the middle of the 20th century was determined by the majority rule. The authors

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[13] Coppedge M. et al. (2011). "*Conceptualizing and Measuring Democracy: A New Approach*", Perspectives on Politics / Volume 9 / Issue 02 / June 2011, pp 247-267

[14] Aristotle (1962). "*The Politics. Translated by T.A Sinclair,*" Baltimore: Penguin

presented a model where under the majority rule, the median voter is the decisive voter in setting up redistributive terms through fiscal policy (Roberts 1977). In their model, the median voter chooses the tax rate, which is a lump sum proportional to income that maximizes his/her utility. The voters with income below the income of the median voter choose candidates who favor higher taxes and more redistribution;

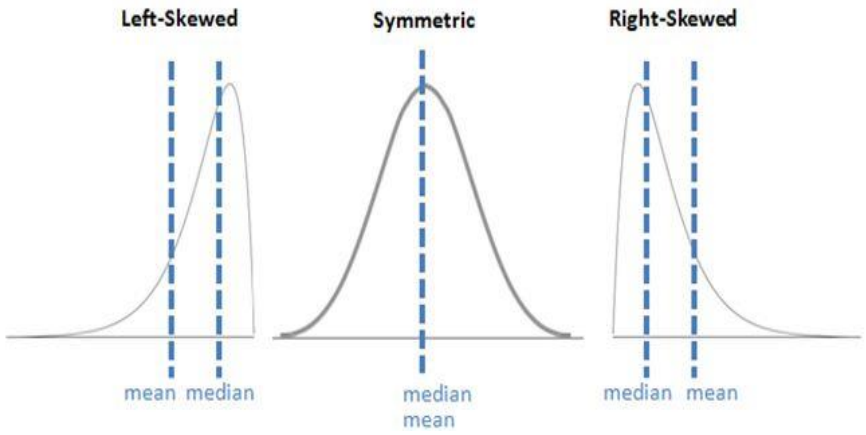

Figure 3

voters with income above the decisive voter opt for lower taxes and less redistribution. Depending on where the median voter is situated relative to the average income, he will determine the tax share: If his income is on the left-skewed, taxes will rise and if he is on the right-skewed, taxes will decrease (see Figure 3)[15]. Therefore, the equilibrium tax rate is a decreasing function of the ratio between the median voter and the average voter (Milanovic and Gradstein 2004). Some studies have used the expansion of franchise as a proxy of democracy, to assess its impact on government's redistributive spending. Lindert (1994), Justman and Gradstein (1999), Thomas Husted and Lawrence Kenny (1997), Abrams and Settle (1999) have all found an association between the expansion of franchise, particularly woman

[15] Maassmedia – E-Marketing Analytics. Abbe Lefkowitz (2015). "*Three Statistical Concepts All Marketing Professionals Should Know and Use*," retrieved on March 3, 2015 from: http://www.maassmedia.com/blog/three-statistical-concepts-all-marketing-professionals-should-know-and-use/

suffrage, and the increase of redistributive programs in some countries. [16] However, studies that have used political indices of democracy as proxies have found different results. Bollen and Jackman (1985) used a dataset of 60 developed and developing countries in the sixties, and failed to find any linkage between democracy and income inequality. They provided different reasons to explain their outcome. For example they assumed that there exists a spurious effect between the two due to their common dependence on socio-economic development. Another point that they raised is the fact that in most democracies even the advanced ones, the majoritarian conception under which democracy rests is rare. The political competition usually lies only between two major parties that differ on a left-right dimension. Therefore, coalition governments are predominant and they reduce the power of the elected party to completely fulfill its mandate, thus failing to respond to voter's needs that mostly consist of redistributive reforms. Nonetheless, the authors remain open on the idea that future studies might find a link between inequality and democracy with better-quality measures, larger sample or alternative methodologies. The study of Muller (1988) tried to fix some weaknesses of prior studies by using a larger sample of countries. He found that the level of democracy, and especially years since democracy was instituted, have a reduction effect on income inequality independent of level of economic development. Furthermore, he argued that extreme high levels of inequality could be a threat to democratic institutions that could result in a switch to autocratic regime. Another study, by Reuveny and Li (2003) looked at the impact of both the economic openness and democracy on income inequality for a sample of 69 countries over the period of 1960-1996.

[16] Gradstein M. & Milanovic B., 2004. "*Does Libertè = Egalité? A Survey of the Empirical Links between Democracy and Inequality with Some Evidence on the Transition Economies*," Journal of Economic Surveys, Wiley Blackwell, vol. 18(4), pages 515-537, 09.

The authors' results showed that the level of democracy was negatively correlated with income inequality, whereas foreign direct investments were positively correlated with income inequality.

The Kuznets curve hypothesis is another theory that is applied in the literature of the linkage between democracy and income inequality. It states that the distribution of income is unequal in early stages of reforms, since they can be costly to some groups in the society, but moves upwards to greater equality as reforms continue. Acemoglu and Robinson (2002) argued that: "capitalist industrialization tends to increase inequality, but this inequality contains the seeds of its own destruction, because it induces a change in political regime toward a more redistributive system."[17] However, they reported that the Kuznets curve generally holds for western countries such as France and United Kingdom, where the expansion of franchise increased inequality at first, but was followed by unusual social conflicts for more equality, which consequently led to more redistributive programs such as progressive taxation, social security and education. Subsequently, more citizens have more access to education with economic development and they begin to participate more into politics, thus minimizing the power of the elites in political decisions. However, it has been observed that in some cases, democratization has not had a noticeable impact on inequality as in the case of some western countries. To explain why post-communist countries have experienced higher levels of inequality since they transited to democracy or how some East Asian countries have sustained the same levels of inequality as before democratization (Milanovic and Gradstein 2002),

[17] Acemoglu, D. and Robinson, J. A. (2002). "*The Political Economy of the Kuznets Curve*", Review of Development Economics Volume 6, Issue 2, pages 183–203, June 2002

Acemoglu and Robinson (2002) argued that the political Kuznets curve does not apply to poor countries with initial high inequality (Autocratic Disaster) regardless of improvements of their institutions and for rich countries with initial low inequality (East-Asian Miracle). Several studies have tested the Kuznets curve hypothesis. Deninger and Squire (1998) found no evidence of Kuznets hypothesis, whereas Simpson (1990) found evidence of an inverted-U relationship between political measures of democracy and income inequality.

For the most part, the findings and the theories in the literature imply that democracy somewhat alleviate economic inequality though some studies have found insignificant link between inequality and democracy.

III. Empirical Analysis

Data and Variables

Compared to previous studies, this study has the advantage of having a larger coverage of countries and a more recent time period. In order to get a greater coverage, I relied on new and improved datasets that will be discussed in this section.

The variables were drawn from reliable sources and extracted in STATA from a panel dataset. A balanced panel is used for the 153 countries with yearly data for the period of 1995 to 2010. Panel data increase the degree of freedom and are able to capture country and time effects. The selection of countries was based partly on the availability of data, and also to ensure that countries are representative of the whole world. My sample is composed of 79.08 percent

developing countries, being non-members of OECD, and 20.92 percent of developed, that are part of OECD. A complete list of all countries used in the study can be found in Appendix 1 A for developing countries and Appendix 1 B for developed countries.

Dependent variable:

The dependent variable in all our regressions is the Gini index of net income inequality obtained from the Standardized World Income Inequality Database (SWIID) Version 4.0 developed by Solt (2009). The Gini Index equals the Gini coefficient multiplied by 100. The Gini coefficient ranges from 0 to 1, it takes 0 for perfect equality and 1 for perfect inequality where one person holds all the income.

As discussed, research on inequality has been hindered by the availability and comparability of data; the SWIID dataset tried to fix these limitations by maximizing comparability of income inequality for the largest possible sample of countries and years (Solt 2009). For this reason, I was able to construct a balanced panel for the period of 1995 to 2010 for all the countries in the study.

The SWIID combines data from multiple reliable sources such as: “the United Nations University’s World Income Inequality Database, the OECD Income Distribution Database, the Socio-Economic Database for Latin America and the Caribbean generated by CEDLAS and the World Bank, Eurostat, the World Bank’s PovcalNet, the UN Economic Commission for Latin America and the Caribbean, the World Top Incomes Database, the University of Texas

Inequality Project, national statistical offices around the world, and academic studies while the data collected by the Luxembourg Income Study is employed as the standard.[18]"

Main Independent variables:

For this analysis, the main independent variables are foreign direct investment inflows and level of democracy.

As a proxy for foreign direct investment inflows, I use net inflows of FDI as a percentage of GDP within a country. This variable was obtained from the World Development Indicators computed by the World Bank, and has been used by many studies that have dealt with the topic of inequality and FDI inflow (Basu et al 2004; Sylwester 2006; Tsai 1995).

Data for political institutions were obtained from the 2013 edition of polity IV project database by Jaggers and Gurr (1995) and Marshall and Jaggers (2002). It combines different measures of political systems of countries. For this research, only democracy score *"democracy"*[19], polity score *"polity"*[20] and indicator of polity durability *"polity durability"*[21] will be used. I use the democracy score to investigate the main topic of this study. The polity score and polity durability are used for sensitivity analysis. Given that many governments are never fully democratized, the polity variable is best fitted to use because it encompasses the difference

[18] The Standardized World Income Inequality Database", http://hdl.handle.net/1902.1/11992 Frederick Solt [Distributor] V14 [Version]

[19] Range = 0-10 (0 = low; 10 = high): general openness of political institutions

[20] Range = -10 to 10 (-10 = high autocracy; 10 = high democracy): Calculated by subtracting autocracy from democracy

[21] Indicator of polity durability based on the number of years since the last regime transition or since 1900

between the autocracy and democracy index. As for the polity durability, it captures the political stability.

To capture the impact of both FDI and level of democracy, I create an interaction variable that will be referred to this analysis as "Foreign direct investment*Democracy". It is constructed by the independent variable of FDI inflows times the democracy score variable "*democracy"*.

Control Variables:

To control for various variables that determine the level of inequality in a country, the following independent variables are used, they represent the essential control variables in income inequality literature:

- The variable "GDP per Capita" represents the level of development captured by the log of GDP per capita in current U.S. dollars, which is a good indicator of the level of development within a country. It was obtained from World Development Indicators of the World Bank.
- The variable "Education" represents the level of education, estimated by the ratio of students enrolled in secondary school as a percentage of the total population. These data come from the World development indicators.
- The variable "Openness" indicates the log of the level of openness to international trade; it is computed as the sum of merchandise exports and imports divided by the value of GDP, all in current U.S. dollars.[22] This value comes from World Development Indicators.

[22] World bank website

The descriptive statistics of the data that will be used in this paper are presented in Appendix 2. It is noteworthy to mention the important disparities in income inequality levels between developed and developing countries. In Appendix 2, the mean of the Gini coefficient of all the samples is 38.47. However when the sample is split into developed and developing countries, as Appendix 1 A and Appendix 1 B show respectively, for developing countries the average of Gini index, at the bottom of the list, is 41.13 while it is 30.54 for developed countries over the period investigated (1995-2010). Based on these numbers from SWIID, income inequality levels in developing countries are above average. With globalization, most developing countries are emerging, which might explain higher income inequality based on Kuznets theory.

Methodology and Model Specification

This study's intent is to investigate primarily the effect of FDI inflows and level of democracy respectively on income inequality, and secondly, the effect of both FDI inflows and level of democracy by means of an interaction term on inequality. As discussed in the literature review, when it comes to the effect of FDI or democracy, results vary according to many factors, such as the methodology, the dataset, the regions or time investigated and so forth.

Given that there exist considerable differences between countries in our sample, whether it is in their political institutions, level of development and macroeconomic policies (and other characteristics), these can affect differences in the sensitivity of inequality to FDI or to the level of democracy (Lin and al 2014). Many problems arise when dealing with panel data regressions in cross-country analyses such as heterogeneity and cross correlations among the errors in the regressions of different countries. To fix the latter, the fixed effect model is used

to control for the presence of unobserved heterogeneity across entities. Additionally, a set of period dummies is created to control for time-invariant causes of the dependent variable, nonetheless they will not be reported in the results' tables that will be presented throughout this section.

Different fixed effect regressions will be used accordingly, to capture the intended effect of FDI and level of democracy on income inequality. First, I run the following regression that includes all the countries in the study:

$$Giniswiid_{it} = b_0 + b_1 FDI + b_2 PolityIV + b_3 \boldsymbol{X} + u_i + \tau_t + e_{it} \quad (1)$$

Where Giniswiid is a measure of income inequality of country *i* at time *t*, FDI measures FDI inflows as a percentage of GDP in the country and Polity IV represents the three variables of political institutions, which are level of democracy, polity and polity durability. The equation will be run three times by including separately each one of the polity IV variables.

Under the assumption that the partial effect of income inequality with respect to FDI inflows depends on the magnitude of the level of democracy in the host country, I include the interaction variable of FDI and level of democracy in equation (1). However, I drop the other polity IV variables of polity score and polity durability except the democracy score used for the interactive effect. It generates the following regression:

$$Giniswiid_{it} = b_0 + b_1 FDI + b_2 FDI * Democ + b_3 Democ + b_4 \boldsymbol{X} + u_i + \tau_t + e_{it} \quad (2)$$

Equation (2) captures the marginal effect of FDI inflows on income inequality with the addition of the interaction term with democracy. The calculation of the marginal effect is obtained by

deriving the partial derivative of Equation (2) with respect to FDI inflows variable. It is represented by the following formula:

$$\frac{\partial Giniswiid_{it}}{\partial (FDI)_{i,t}} = b_1 + b_2 Democ_{i,t}$$

The equation above implies that the assessed effect of FDI inflows on income inequality is equal to the estimated coefficient of FDI (b_1) and the product of the coefficient of the interaction variable between FDI and democracy (b_2), and the level of democracy. If the effect of FDI inflows depends on the level of democracy within the host country, the coefficients (b_1) and (b_2) must be of the opposite signs.

Thus far, the regressions are under the assumption that the variables of interest are exogenous to income inequality. Endogeneity's issue usually occurs in regressions when the explanatory variable is correlated with the error term: $E(X_j u) \neq 0$, for some j=1… k. It is usually caused by issues such as omitted variables, measurement error or simultaneity. In this study, these issues can be present with some of the explanatory variables. Simultaneity and reverse causation can occur on one hand between FDI and income inequality, and on the other hand between democracy and income inequality. Endogeneity can also be triggered by some of the control variables in the regressions such as trade openness or education.

To fix for potential endogeneity, I resort to using the System Generalized Method of Moments (System-GMM) developed by Blundell and Bond (1998). This technique consists of a regression equation that is estimated in both differences and levels, each one with its specific set of

instrumental variables (Caldéron and Chong 2001). The validity of instruments is validated by a Sargan test.

Empirical Results

Before discussing this study's results, Figure 4 shows that there is a downward-sloping relationship between level of democracy and the Gini indexes used in my sample for the period investigated. This relationship seems to go in accordance with theories that argue that the level of democracy reduces income inequality. Although some researchers have found an insignificant relationship.

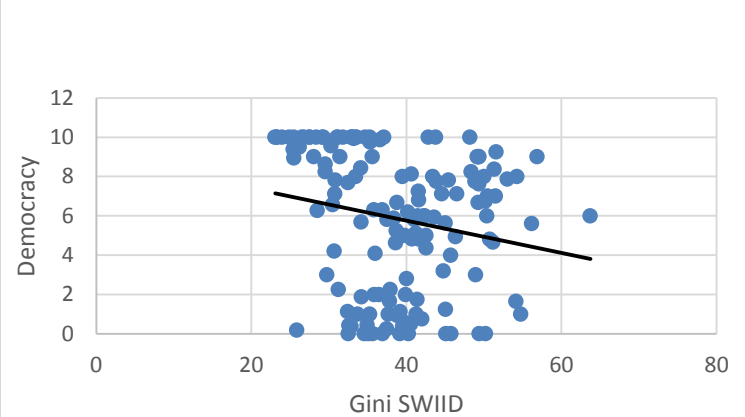

Figure 4. Link between level of Democracy and Inequality: 1995-2010

When the same graph is done for FDI variable and the Gini indexes, the slope is not very clear to interpret, hence the reason it is not included in the paper.

The empirical results are presented in Tables 2-4 that appear in the Appendix 3 and they are reached using the fixed effect model and the two-step GMM model.

Table 2 contains the results of Equation (1) presented above. I run a regression with all the explanatory variables in Equation (1), and 871 observations are reported. Columns (1), (2) and

(3) respectively include different indices of level of democracy: *(1) polity, (2) polity durability, and (3) democracy.* The dependent variable is the Gini coefficient from the SWIID[23] and it will be the only dependent variable for this study.

In Table 2, the results of the three regressions indicate that none of the coefficients of the FDI inflows variable are statistically significant. However, they exhibit a negative sign for a negative relationship between FDI and income inequality.

Table 2 also shows that the level of democracy and level of polity are significant at the 10 percent level. They are negatively correlated with income inequality, which implies that an increase in level of democracy or level of polity leads to less income inequality within a country. I notice that polity durability is not significant and indicates a positive sign. These results are in line with the theories discussed of the expansion of franchise or of the median voter. They state that in unequal societies, democratization allows the poorest in the society to claim more redistributive policies.[24] These results are also consistent with other studies that have used political indices of democracy as proxies, notably Muller (1988) that found that the level of democracy has a reduction effect on income inequality independent of the level of economic development. Moreover, the downward-sloping relationship between level of democracy and the Gini indexes displayed in Figure 4 also confirms the negative sign of the variables of level of democracy and polity.

For the control variables used in the model, GDP per Capita and trade openness are not significant. Their coefficients are negative for trade openness and positive for GDP per capita.

[23] Standardized World Income Inequality Database

[24] Lipset (1959) described the democratic elections process as an expression of democratic class struggle.

Furthermore, it is notable that the level of education is negatively associated with income inequality in all the columns in Table 2, and the coefficients are all significant at 1% level. Education in this study is measured as secondary school enrollment ratio, which has been found in different studies to have a negative impact on inequality (Alderson and Nielsen, 2002; Barro 2000). The negative sign was expected due to the fact that an increase in the human capital within the population will increase the supply of skilled workers, hence reducing income disparity between skilled and unskilled workers

Table 3 presents the estimates of Equation (2) when the interaction term between the level of democracy and FDI inflows is introduced. The coefficient of FDI inflows variable in the sample becomes positive and significant compared to the results obtained in Table 2 without the interaction term. Furthermore, the coefficient of democracy keeps the negative sign but loses its significance. The interactive term between FDI and democracy variable in column (1) displays a negative sign and is significant at the 1 percent level. These signs help confirm the assumption made that the redistributive effect of FDI depends on the level of democracy in the host country. The positive sign of FDI inflows coefficient and the negative sign of the interaction term entail that the inequality-increasing effects generated by FDI inflows can be lessened in a country with high level of democracy or exacerbated in a country with low level of democracy.

All the results of the GMM systems estimator to control for endogeneity are reported in Table 4, and the Hansen test p-value supports the use of lagged explanatory variables as instruments. In Column (1), the estimates for all countries without the interactive term are presented. The

GMM model improves the coefficient of FDI inflows, it remains negative as in Table 2 but significant this time around. The level of democracy stays negatively correlated with income inequality and the coefficient is significant at 1% level. The coefficient of education also remains significant and negatively associated to income inequality.

Column (2) displays the results of the regression with the addition of the interaction term between FDI and democracy. The results are in line with what was found in Table 3 in terms of the signs associated with the coefficients of FDI and democracy, however they are no longer significant. Nevertheless, the interaction term remains negative and significant at 10% level. This reinforces the fact that FDI redistributive effect depends on the characteristics of political institutions in the host country.

Based on these results, GMM application improves the coefficient of FDI inflows and confirm that FDI, measured as net inflows of FDI as a percentage of GDP, improves inequality. Consistent, with different theories that were covered in this paper, our empirical analysis indicates that an increase in level of democracy decreases income inequality. The inclusion of the interaction between FDI and democracy seem important in this topic's analysis based on the consistent results in all the estimations techniques.

IV. Conclusion

In the wake of the recent economic crises, the rising income inequality worldwide has been at the center of many political and public debates. It is important to assess how predominant features of globalization such as FDI affect income inequality, and the role of democracy in

addressing inequality, faced with growing pressures of the global economic integration. This study's main objective is to evaluate the effect of both FDI, measured as net inflows of FDI as a percentage of GDP, and democracy level on income inequality, defined as Gini coefficient. In order to achieve this, I used a panel dataset of 153 developed and developing countries from1995 to 2010. In addition, this study attempts to assess the impact that democracy level in a country with influx of FDI can have on income inequality.

Theories on the impact of FDI inflows are complex to understand because FDI can increase or decrease income inequality. Theories on democracy often advance that the main principles under which democracy rests foster income equality. Nonetheless, empirical studies on the relationship of FDI inflows and level of democracy with income inequality have yielded ambiguous results depending on empirical approach, data availability and regions investigated. I conclude from the fixed effect and GMM results of the empirical research that FDI inflows decrease income inequality worldwide. These results contradict the Feenstra and Hanson model (1996) that demonstrates that the rise of income inequality in the world is due to the outsourcing of production from North to south. However, they are in line with studies that argue that FDI inflows foster growth through the diffusion of technology and capital, as well as improvements in corporate governance and management practices (Reuveny and Li 2003). According to Dollar and Kraay (2000), "the economic growth generated by FDI raises the income of the poor more than that of the rich, making FDI a useful tool in reducing poverty (Stiglitz, 1998)".[25]

[25] Reuveny, R. and Li, Q. (2003). *"Economic Openness, Democracy, and Income Inequality: An Empirical Analysis*", Comparative Political Studies *June 2003 vol. 36 no. 5 575-601*

Another noteworthy result is that democracy levels captured by the democracy score and the polity score from the Polity IV dataset are negatively associated with income inequality. These results are consistent with democracy theories discussed in this study, notably Meltzer and Richard (1981) and Acemoglu and Robinson (2002).

Once the interaction term between FDI inflows and democracy is accounted for, I found robust results that suggest that FDI inflows would further promote income equality in host countries with a high level of democracy and the opposite effect would occur in those with a low level of democracy. Among the control variables in this paper's regressions, the two models used reinforce the importance of human capital in alleviating income inequality within countries.

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Appendix 1A: List of Developing Countries and Gini Coefficient Average (1995-2011)

Developing Countries							
country	Gini SWIID	country	Gini SWIID	country	Gini SWIID	country	Gini SWIID
Albania	30.80	Ecuador	49.27	Madagascar	41.60	Suriname	50.38
Algeria	34.21	Egypt, Arab Rep,	32.89	Malawi	43.60	Swaziland	49.39
Angola	54.15	El Salvador	44.59	Malaysia	42.54	Syrian Arab Republic	35.66
Argentina	43.86	Equatorial Guinea		Mali	38.80	Tajikistan	32.43
Armenia	38.61	Ethiopia	31.22	Mauritania	37.48	Tanzania	35.85
Azerbaijan	32.53	Fiji	30.69	Mauritius	48.20	Thailand	41.58
Bangladesh	38.73	Gabon	40.57	Moldova	39.49	Timor-Leste	35.24
Belarus	25.89	Gambia, The	45.75	Mongolia	33.21	Togo	35.29
Benin	35.81	Georgia	40.20	Montenegro	31.43	Trinidad and Tobago	36.61
Bhutan	39.90	Ghana	37.52	Morocco	39.17	Tunisia	37.69
Bolivia	51.33	Guatemala	48.85	Mozambique	42.56	Turkey	40.66
Bosnia and Herz.	33.39	Guinea	39.19	Namibia	63.75	Turkmenistan	40.26
Botswana	53.03	Guinea-Bissau	39.79	Nepal	40.99	Uganda	39.53
Brazil	50.02	Guyana	41.47	Nicaragua	48.38	Ukraine	30.49
Bulgaria	29.55	Haiti	51.18	Niger	41.72	United Arab Emirates	
Burkina Faso	45.07	Honduras	50.20	Nigeria	44.78	Uruguay	42.86
Burundi	36.00	India	49.25	Pakistan	29.77	Uzbekistan	35.11
Cabo Verde	51.61	Indonesia	34.18	Panama	49.38	Venezuela, RB	41.01
Cambodia	40.04	Iran, Islamic Rep,	41.38	Papua New Guinea	45.72	Vietnam	36.93
Cameroon	41.27	Iraq	34.97	Paraguay	49.35	Yemen, Rep,	33.70
Central African Rep.	48.96	Jamaica	49.38	Peru	51.52	Zambia	50.78
Chad	38.83	Jordan	36.49	Philippines	43.40	Zimbabwe	54.77
China, Mainland	50.23	Kazakhstan	32.58	Romania	29.55	Group Average	41.13
Colombia	50.48	Kenya	46.36	Russian Federation	41.23		
Comoros	56.17	Kyrgyz Republic	37.83	Rwanda	45.11		
Congo, Dem, Rep,	42.03	Lao PDR	34.59	Saudi Arabia			
Congo, Rep,	42.38	Latvia	33.47	Senegal	38.36		
Costa Rica	43.78	Lebanon	42.26	Serbia	35.62		
Cote d'Ivoire	42.31	Lesotho	54.26	Sierra Leone	45.01		
Croatia	28.50	Liberia	40.73	Singapore	39.89		
Cyprus	27.50	Libya		Solomon Islands			
Djibouti	37.94	Lithuania	33.07	South Africa	56.87		
Dominican Rep.	45.45	Macedonia, FYR	32.50	Sri Lanka	36.91		

Appendix 1B: List of Developed Countries and Gini Coefficient Average (1995-2011)

Developed countries	
Countries	Gini SWIID
Australia	31.81
Austria	26.77
Belgium	26.19
Canada	31.06
Chile	49.14
Czech Republic	25.42
Denmark	23.29
Estonia	34.12
Finland	24.90
France	28.06
Germany	27.58
Greece	33.46
Hungary	28.40
Ireland	31.17
Israel	35.33
Italy	33.60
Japan	29.18
Korea, Rep,	30.82
Luxembourg	26.55
Mexico	46.53
Netherlands	25.48
New Zealand	32.89
Norway	23.98
Poland	30.30
Portugal	35.27
Slovak Republic	25.52
Slovenia	23.09
Spain	32.98
Sweden	23.33
Switzerland	29.30
United Kingdom	34.71
United States	37.11
Group Average	30.54

Appendix 2: Descriptive Statistics

Variables	Description	Observations	Mean	Standard Deviation	Min	Max
Dependent Variable						
Gini SWIID	Gini Index of inequality	2037	38.47	8.756	20.67	65.46
Independent Variables						
Foreign Direct Investment	Net inflows of FDI as a percentage of GDP	2383	6.131	27.84	82.81	564.9
Openness	Openness to international trade as the sum of merchandise exports and imports divided by the value of GDP, all in current U.S. dollars	2406	66.94	44.67	7.803	986.6
Education	Education level as the ratio of students enrolled in secondary school as a percentage of total population	980	66.55	27.16	2.701	100
GDP per capita	GDP per capita in current U.S. dollars	2424	8037	13517	64.81	112029
Democracy	Level of democracy index	2378	2.953	15.37	-88	10
Polity	Level of polity index	2378	1.312	15.82	-88	10
Polity Durability	Years since the last regime transition or since 1900	2378	24.12	31.29	0	201

SWIID: Standardized World Income Inequality Database

Appendix 3: Results Tables

Table 2

Fixed Effect Regressions – All countries

Variables	Fixed Effect (1)	Fixed Effect (2)	Fixed Effects (3)
Dependent Variable: Gini Coefficient			
Foreign Direct Investment	-0.000333	-0.000137	-0.000324
	(0.00379)	(0.00387)	(0.00380)
GDP per Capita	0.0633	0.0636	0.0629
	(0.961)	(0.960)	(0.962)
Trade Openness	-0.262	-0.396	-0.271
	(0.838)	(0.834)	(0.838)
Education	-0.116***	-0.118***	-0.116***
	(0.0340)	(0.0338)	(0.0340)
Polity	-0.0233*		
	(0.0128)		
Polity durability		0.0368	
		(0.0256)	
Democracy level			-0.0232*
			(0.0129)
Constant	44.93***	44.56***	45.03***
	(9.853)	(9.858)	(9.862)
Observations	871	871	871
R-squared	0.131	0.125	0.131
Number of country1	106	106	106
Country Fixed Effect	YES	YES	YES
Year FE Fixed Effect	YES	YES	YES

Notes:

1. Robust standard errors in parentheses.
2. Coefficients are significant at *** 1 per cent, ** at 5 per cent, * at 10 per cent.
3. Regressions include a full set of time dummies
4. Three variables of polity IV database are analyzed individually: Polity (col 1), Polity Durability (col 2) and Democracy (col 3)
5. Education is measured as secondary school enrollment ratio/openness is measured as sum of merchandise exports and imports divided by the value of GDP

Appendix 3 (continued): Results Tables

Table 3

Fixed Effect Regressions – Interaction term of FDI and Democracy

VARIABLES	FE All countries (1)
Foreign Direct Investment	0.0164** (0.00703)
Democracy	-0.00935 (0.0109)
FDI*Level of Democracy	-0.00173*** (0.000527)
GDP per Capita	0.120 (0.931)
Trade Openness	-0.264 (0.831)
Education	-0.115*** (0.0336)
Constant	43.98*** (9.473)
Observations	876
R-squared	0.137
Number of country1	107
Country FE	YES
Year FE	YES

Notes:

1. Robust standard errors in parentheses,
2. Coefficients are significant at *** 1 per cent, **at 5 per cent, * at 10 per cent.
3. Regressions include a full set of time dummies

Appendix 3 (continued): Results Tables

Table 4

	SYS-GMM All countries	SYS-GMM All countries
VARIABLE	**(1)**	**(2)**
Foreign Direct Investment	-0.0131**	0.0183
	(0.00650)	(0.0219)
Democracy	-0.102***	-0.0467
	(0.0376)	(0.0446)
FDI*Level of Democracy		-0.00353*
		(0.00201)
GDP per Capita	-0.604	-0.343
	(0.763)	(0.747)
Trade Openness	-2.603	-1.891
	(1.781)	(1.724)
Education	-0.172***	-0.179***
	(0.0467)	(0.0431)
Constant	64.15***	59.07***
	(9.763)	(9.831)
Observations	876	876
Number of country1	107	107
Number of instruments	184	212
Hansen Test	1	1

Notes:
1)Robust standard errors in parentheses
2)Coefficients are significant at *** 1 per cent, **at 5 per cent, * at 10 per cent
3) FDI: foreign direct investment
4)Regressions include a full set of time dummies