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Chapter 1

Introduction

Development is one of the most important concerns in economic policy debates. The benefits of development is reflected in the general well being of the members of a country. An indication of the importance of economic development is the large number of studies that investigates the determinants of economic development. This thesis is a combination of two essays in development economics that explores the implication of income inequality and capital liberalization on economic development.

The first essay — Income Inequality, Rent-seeking and Economic Growth in Resource Abundant Countries, revisits the debate on the relationship between income inequality and economic growth. Prevailing research on the inequality-growth nexus suggests that inequality has a negative impact on economic growth of a country. In addition to the relationship between inequality and economic growth, this essay reviews studies that aim to ascertain the reasons behind the observation that countries who have abundant natural resources do not outperform resource-scarce countries – the so called resource curse hypothesis. Following the literatures, we hypothesize that inequality is more detrimental to economic performance in resource-abundant countries. Using the system generalized method of moments (GMM) dynamic panel estimation method and data set for the period 1988-2012, we compare the relationship between inequality and economic growth in resource and non-resource abundant countries. Our results confirm that the negative impact of income inequality on economic growth is amplified for countries that are endowed with abundant natural resources.

In the second essay — Greasing The Revolving Door: Foreign Aid, Governance and Private Capital Flows, we revisit the debate on the importance of capital liberalization on economic performance. Using Three-Stage Least Squares (3SLS) estimation technique that is proposed in Zellner and Theil (1962), we synthesize studies on the determinants of governance and capital flows. We find evidence of a revolving door relationship. Foreign aid has a negative impact on governance and, thereby, reduces capital inflows since poor governance hinders capital inflows. The need to fill the gap that is created by private capital outflows encourages inflow of foreign aid, which in turn harms governance. Our empirical result has a clear policy implication. Capital liberalization could grease a revolving door and handicap economic development in the aid receiving countries.

Chapter 2

Income Inequality, Rent-seeking and Economic Growth in Resource Abundant Countries

Keywords: *Inequality; Rent-seeking; Economic growth*

2.1. INTRODUCTION

In an interview, after a governorship re-run in Osun, a state in Nigeria, a former Minister of Aviation showed his dissatisfaction for the outcome of the election. He asserted that the All Progressives Congress (APC) party openly bribed voters with 100,000 Naira each (Odunsi, 2018). In Venezuela, it is claimed that the election process that led to the re-election of President Nicolás Maduro was characterized by widespread vote buying; an alleged vote-buying in return for food and other gifts has been reported by some commentators (Rathbone and Yuk, 2018). In Pakistan, a politician who agonized that he did not win an election because of his opponent had bought votes from the poor families spoke to Sarwar Bari, an author at The Express Tribune, on how he was negotiating vote rates in seven poor localities in his constituency (Bari, 2018). The observations in Nigeria, Venezuela and Pakistan are but a few examples of vote buying.

With the observations above, other implications of inequality and poverty come to mind. Aside from the possibilities that inequality creates for vote buying, it is believed that income inequality could pose a threat to countries' economic growth plans, especially in the presence of financial underdevelopment. Yet there is scepticism surrounding

economic equality. Some of the most famous, comprehensive and compelling criticisms are demonstrated in Okun (1975) — EQUALITY AND EFFICIENCY: The Big Tradeoff. Okun sees the income distribution that emanates from market as rewards (to the energetic) and penalties (to the lazy) that are intended to encourage effort and channel it into socially productive society, or rather as divine revelation of the justice of a competitive economy, cautioning that any insistence to carve the pie into equal sizes could shrink the size of the pie. To summarize Okun's essay: There is a tradeoff between equality and efficiency; the inefficiencies of redistribution include the adverse effects on economic incentives of the rich and the poor, and the administrative cost of tax collection and transfer programs.

In principle, the resource-rich countries should have better economic performance than the (otherwise identical) resource-poor countries. Natural resource, for example, could be used to finance investment, such as physical capital or human capital. Paradoxically, a lot of evidence exist to show that many resource-rich countries have not performed better than resource-poor countries. In some cases, these countries have even recorded lower economic performances than their resource-poor counterpart. Many solutions have been proposed to boost economic performance in the resource abundant countries. For example, Mehlum, Moene and Torvik(2006) argued that improvement in institution could reduce the negative impact of resource abundance. For Manzano and Rigobon (2001), the negative relationship between resource abundance and economic performance could be due to debt overhang in the resource abundant countries.

A combination of the literature on inequality-growth nexus and the literature on resource curse suggest that inequality could have a more negative impact on economic growth in countries that have natural resources in abundance. We provide empirical analyses that suggest that this is the case. Methodologically, this paper uses the system generalized method of moments (GMM) dynamic panel estimator and a sample of 64 countries for the period 1988 to 2012. From the point of policy implication, our analyses complement the suggestions that would enable for optimal growth in resource abundant countries. We propose that reducing income inequality could help reduce the potentially negative impact of resource abundance on economic growth.

The next section discusses the related literatures. Section 2.3 presents the empirical framework. Section 2.4 discusses the data used for the study. In Section 2.5 we present and discuss the empirical results. Section 2.6 concludes.

2.2. LITERATURE REVIEW

Our study builds on two strands of literatures, namely the resource curse literature and the inequality-growth nexus literature. In this section we will discuss the theoretical and empirical studies in these literatures and highlight a potential outcome from the combination of these studies.

THEORETICAL LITERATURE

Numerous studies demonstrate the relationship that inequality and redistribution have with economic growth. First, from the point of view that profit is an incentive for firms to be in business, and that large demand for firms' products is required in order for firms who use increasing returns to scale technology to be successful, Murphy et al. (1989) hypothesized that equality is beneficial for industrialization. Specifically, following Murphy et al. (1989), when the utility function is non-homothetic, a large middle class is necessarily required for industrialization since concentration of income among the very wealthy means that demand will likely be insufficient to give manufacturers the required profit-incentive to embark on manufacturing.

Galor and Zeira (1993) developed a small open economy model that is characterized by a lending rate that is below the borrowing rate due to imperfect credit market where dynasties can be monitored at a cost. In their economy, a high enforcement cost makes it certain for initial income distribution to persist, and dynasties who start with a high income above a threshold invest in human capital and converge to a high wealth level while dynasties who inherit a wealth below this threshold perform contrariwise. In this setup, therefore, when a large fraction of the

population start with a high enough wealth the average wealth in the economy is high. Further, as Galor and Zeira (1993) noted, if the productivity for the unskilled labour, skilled wage and required human capital expenditure grows at a constant rate, with the latter two higher than the former, then inequality affects economic growth as well.

Inequality can have negative impact on economic growth if it increases the average number of children per family. One of the conclusions in Galor and Zang (1997) is that countries that have larger families, but are otherwise similar to other countries, have lower proportion of skilled labour force and lower per-capita output. This seems intuitive, resources are spaced over a large number when a family has a large family size. Morand (1999) demonstrated that parents with human capital levels below some threshold give birth to more children and invest less in the quality of their children. Since countries that have high proportion of unskilled parents will likely be the countries that have less human capital, and since human capital plays a positive role in economic growth, economic growth is possibly lower in the countries that have high level of inequality.

Following Alesina and Perotti (1996), income inequality increases social discontent which fuels social unrests; social unrest increases the probability of coups, revolutions and mass violence which are linked to uncertainty and disruption of productive activities, thus, respectively, inducing investors to postpone projects and leading to fall in the productivity of labour and capital. The fall in the productivities of labour and capital imply a fall in economic growth. Additionally, since domestic

investment is an important determinant of a country's economic growth¹, by reducing investment income inequality reduces economic growth. In addition to the role of inequality in deterring investment, the time spent by the poor on non productive activities represents a direct waste of resources because the time and energy used in these activities imply a loss in the productive efforts of an economy (Barro, 2000, p.7).

According to Glaeser, Scheinkman and Shleifer (2003) since income inequality means that institutions or courts are likely to favour the unjust, income inequality by leading to subversion of institutions could increase private expropriation and reduce investment. As Jung-Jong-Sung and Khagram (2005) concluded, societies with greater levels of inequality are social structurally conducive to corruption, defined as abuse of office or power: In high inequality societies, the large members of poor are more likely to be deprived of basic public services such as education and health than in low-income inequality economies. Thus, they are more likely to rely on petty corruption (Jong-Sung and Khagram, 2005).

Income redistribution is the common opinion among poor members of countries that have income inequality. Some studies argue that redistribution has positive impact on economic growth while some others argue otherwise. First, redistribution can increase economic growth through an opportunity-enhancing effect; in the presence of credit market imperfections it is difficult for everyone who wishes to invest to borrow, despite having a high productivity level. And because of diminishing

¹ Levine and Renelt (1992) identified a robust correlation between economic growth and share of investment in GDP

returns to productivity, it might be worth considering that capital is spaced among many people since it will imply higher a aggregate level of productivity and a higher economic growth rate in the economy (Aghion, Caroli and Garcia-Peñalosa,1999). Also, redistribution might lead to higher level of incentive to work if majority of the capital used in production are owned by the entrepreneur (worker). This is because a worker would exert less effort in production when he has to share the revenue with a lender than when he has all the revenue to himself (Aghion et al., 1999).

In a non-overlapping generation framework where each generation lives for two periods and human capital is a combination of inherited human capital and public education that is financed with taxation, redistribution can increase economic growth since it funds public education (see Saint-Paul and Verdier,1993). According to Saint-Paul and Verdier (1993), however, it is important that the tax that will be used to finance public education is non-distortionary. Notable studies that emphasize the distortion created by redistribution include Alesina and Rodrik (1994) and Persson and Tabellini (1994). In these studies, the presence of high inequality leads to redistribution which reduces the return that can be appropriated from investment.

While higher taxation and redistribution are generally perceived as the outcomes of the presence of median voter who has a small amount of wealth when compared to the average income in an economy, in a model where the government expenditure generates only consumption services, Li and Zou (1998) showed that income tax rate is higher the more equal

the income distribution in an economy becomes when the intertemporal elasticity of substitution is less than one. In Li and Zou (1998), higher income of the median voter leads to a vote for higher taxation since individuals do not provide government services to themselves, so that when the median voter's income increases the need to get the best possible utility level from consumption of government services and the consumption of the goods which he can directly purchase leads to higher taxation since taxation is the only source of government revenue. Because taxation reduces capital accumulation which has a positive impact on economic growth, Li and Zou (1998) concluded that inequality (redistribution) increases (reduces) economic growth.

Moreover, inequality and redistribution could have impacts in developing countries that are different from the impact they may have in advanced countries. Following Galor and Tsiddon (1996), a relatively poor economy that values equity as well as prosperity may confront a difficult tradeoff between equality in the short run and prosperity in the long run. Dynasties whose ancestors are initially skilled, in the sense that they had high human capital, converge to a higher and a stable steady state level of human capital, resulting to high income inequality between the initially unskilled and the skilled dynasties. Since human capital of the unskilled remains intact, there is a high average level of human capital in the economy. At some point, the resultant increase in average human capital increases the technology of the economy so that both the initially-unskilled and the skilled converge to the same high level of human capital that is accompanied by economic growth. If the economy implements redistribution of income prematurely, the economy may be trapped at a

low equilibrium level of income.² It therefore follows that the typical poor economy could benefit from high inequality. In a similar line of reasoning, Barro (2000) noted that when investments require high setup cost before it can be useful, redistribution might be harmful when the median income is much lower than the setup cost. Barro (2000) cites two cases: First, education, might be useful when carried out beyond primary school which implies that it might be reasonable to allow the very rich who can go beyond this level to invest in education. Second, businesses may be productive at a level beyond some threshold. As for Matsuyama (2011, p. 344), a more equal distribution is growth-enhancing among developed countries because they are so rich that an average household would face no borrowing constraint to finance any profitable project.

One of the famous paradoxes in economics is that the economic performance of the economies that have abundant natural resources fall behind the economic performance of the natural-resource-scarce economies. This observation is known as the resource curse or the paradox of plenty. Studies that demonstrate the reasons behind this issue are broadly classified into Dutch disease and Rent-seeking. Important studies under Dutch disease include Corden and Neary (1982), Matsuyama (1991) and Sachs and Warner (1995). Corden and Neary (1982) explored de-industrializing pressures that could arise because of a booming extractive sector. Their three goods – two traded (energy and manufactures) and one non-traded (services)– small open economy model, with each sector using a single specific factor and a factor of production that is perfectly mobile between sectors, underscored that a

² Also see the remark in Galor and Zang (1997,p.207)

boom in energy sector leads to resource movement effect and spending effect. The implication of the resource movement effect and spending effect is the reallocation of resources from manufacturing other sector, thus de-industrialization, with the direct de-industrialization amplified by appreciation in the real exchange (defined as the relative price of non-traded to traded goods).

In Matsuyama (1991), under the assumptions of an endogenous productivity in manufacturing due to the level of experience that is acquired through production, an exogenous productivity in agriculture, free mobility of labour between agricultural sector and manufacturing within a country and a non homothetic preference, a higher agricultural productivity releases labour and, thereby, accelerates economic growth, if the economy is a closed economy. When the economy is open, such that international trade is permitted, labour is immobile across countries and learning by doing effects do not spill over across economies, the model predicts that manufacturing productivity and economic growth would reduce in a country if the country has an initial comparative advantage in agriculture. As Sachs and Warner (1995) pointed out, the framework in Matsuyama (1991) may only be useful for studying labour-intensive production but less relevant for natural resources sectors like oil production since oil production uses very little labour. Sachs and Warner (1995) built an overlapping generations economy with three sectors, namely a tradable natural resource sector, a tradable (non-resource) manufacturing sector and a non-traded sector. In addition to the assumption of learning by doing in Matsuyama (1991), where learning by doing is generated in the manufacturing sector and benefits only

manufacturing sector, Sachs and Warner (1995) assumed that non traded sector benefits from the human capital generated from manufacturing. According to their model, economies that experience a temporary resource boom will have a lower rate of growth for several periods than the economies that are otherwise similar. The reason is that a boom which increases demand for non traded goods would increase prices of non traded goods and shift labour away from the manufacturing sector, and a reduction in labour in the manufacturing sector implies that the economy will lose the benefits of human capital that is generated only in the manufacturing sector.

Notable studies that demonstrate resource curse from a rent-seeking perspective include Torvik (2002), Mehlum, Moene and Torvik (2006) and Robinson, Torvik and Verdier (2014). Torvik (2002) built a model where an increase in natural resources creates an incentive for entrepreneurs to choose rent seeking over production leading to reduction in output and income. In Mehlum et al. (2006), the presence of grabber friendly institutions give an advantage to rent-seeking activities. In Robinson et al. (2014), an incumbent politician who desires to be re-elected so as to benefit from natural resource engages in clientelism, and offers to employ voters in the public sector in exchange for their votes. A proposition that emerges from their model states the following: (a) A permanent resource boom increases public sector employment and decreases private sector employment; (b) A temporary resource boom decreases public sector employment and increases private sector employment, and (3) An anticipated future resource boom increases public sector employment and decreases private sector employment. In

another proposition, Robinson et al. (2014), suggest, similar to Mehlum et al. (2006), that a resource boom increases (decreases) total income if institutions are sufficiently strong (weak).

EMPIRICAL LITERATURE

INEQUALITY AND ECONOMIC GROWTH

With ordinary least squares (OLS) and a historical sample of nine developed countries³, Persson and Tabellini (1994) showed that an increase of 0.07 (one standard deviation in the sample) in the income share of the top 20% lowers the average annual growth by just below half a percentage point, at least. Correspondingly, for the period 1960-1985, with OLS and a sample of 56 developing and developed countries, Persson and Tabellini (1994) found that a one standard deviation (3.099 in the sample) increase in equality increases growth by about half a percentage point⁴. Alesina and Rodrik (1994) presented cross-country evidence of the impact of land inequality and income inequality, using OLS and 2SLS, that show that an inverse relationship exists between economic growth and wealth inequality and economic growth and income equality. However, while Persson and Tabellini (1994) found that

³ Austria, Denmark, Finland, Germany, the Netherlands, Norway, Sweden, the United Kingdom and the United States

⁴ The general conclusion obtained are reinforced in their two stage least square (2SLS) estimation of structural implications of their theoretical model; inequality reduces investment and as investment has positive impact on economic growth, inequality reduces economic growth. Also, inequality affects redistribution and redistribution is found to have negative impact on economic growth.

inequality has negative impact in only democratic countries, Alesina and Rodrik (1994) found that the relationship between inequality and growth do not depend on whether a country is democratic or non-democratic.

Using 2SLS and a cross-section of countries, for the period 1960-1985, Alesina and Perotti (1995) estimated a two-equation model in which the dependent variables are investment and socio-political instability. Results from the socio political equation show that an increase in the share of the middle class decreases the index of political instability. And the results from the investment equation suggest that political instability has an adverse effect on investment. Following these results, Alesina and Perotti (1995) concluded that since investment is an important engine of economic growth, by reducing investment, income inequality has a negative impact on economic growth. Empirical results in Perotti (1996), also, show support for the positive association between income equality and economic growth. Estimates from their reduced form regressions range from 0.047 to 1.78, and also suggest that the impact of equality on economic growth does not generally depend on the presence or absence of democracy. On the channels through which equality has a positive impact on economic growth, their study suggests that income equality increases economic growth by reducing sociopolitical instability, by reducing fertility rates and by increasing human capital investment. Following a replication and an extension of the study by Persson and Tabellini (1994), Knack and Keefer (1997) concluded that income inequality harms economic growth and that there exist no differential impact of income inequality on economic growth in democracies and in non democracies. Easterly (2007) instrumented

inequality with the ratio of the share of arable land suitable for wheat to the share of arable land suitable for sugarcane and concluded that inequality has negative impact on output, productivity, schooling and institutions.

In Sub-Saharan African, Nel (2003) found that inequality has a negative impact on economic growth over the medium term, but that the impact is neither robust nor strong. Additionally, Nel (2003), contrary to Alesina and Perotti (1995), finds that high levels of inequality do not affect political stability, implying that the impact of inequality on economic growth could be as a result on other factors but political instability. Result from their study suggest that inequality affect the risk perception of potential investors and could affect economic growth through this channel.

Knowles (2005) found that inequality has negative impact on economic growth. Moreover, when different measures of inequality are used, they found that inequality of expenditure when consistently measured has negative impact on economic growth while consistently measured gross income inequality, that is using only gross individual income distribution, has no significant impact. This result led Knowles to suggest that empirical studies that combines income-expenditure classifications has to be interpreted with caution

Bagchi and Svejnar (2015) developed a measure of wealth inequality using the Forbes billionaires list. Additionally, they developed measures for politically connected and politically unconnected wealth

inequality. Following the results from their analyses, they concluded that while politically connected wealth inequality affects economic growth, politically unconnected inequality has no significant impact on economic growth.

In contrast to the above evidence that suggest the possibility of a negative relationship between inequality and economic growth, empirical analyses in Li and Zou (1998) suggest ,as they hypothesized, that income inequality has a positive impact on economic growth. Similarly, using Arellano-Bond (difference GMM) estimator, Forbes (2000) challenged the belief that income inequality has negative impact on economic growth. They concluded that an increase in the country's income inequality has a significant positive correlation with subsequent economic growth, both in the short and medium term.

Barro (2000) used three-stage least squares estimator (3SLS) to investigate the impact of inequality on economic growth. For the total sample, they found that inequality has no impact on subsequent economic growth. When Barro (2000) omits fertility rate the coefficient of inequality becomes significantly negative. This result suggests that inequality has negative impact on economic growth only through the fertility rate channel as in Galor and Zang (1997) and Morand (1999) where inequality leads to more quantity of children while at the same time reducing the quality of children. Results from their interaction of inequality and level of economic development suggests that income inequality necessarily has negative impact on economic growth for poor countries and could have a positive impact on economic growth in

developed economies. Barro (2000) linked this to financial underdevelopment. According to Barro (2000), in the poor countries where there is severe credit market problems inequality has negative impact, whereas in the rich countries, where financial underdevelopment is not severe, the positive impact of inequality could dominate. Although in the theoretical literature the impact of inequality on economic growth could occur indirectly by reducing domestic investment or human capital, Barro(2000) concluded that the impact of inequality lack explanatory power for investment ratio and male school attainment at the secondary and higher levels.

RESOURCE ABUNDANCE AND ECONOMIC PERFORMANCE

Sachs and Warner (1995) seems to be the first empirical result on the resource curse. Since their findings that resource abundant countries have less economic growth than non-resource abundant countries, many studies have investigated this phenomenon. For example, for the three measures of education used by Gylfason (2001), namely public expenditure on education, expected years of schooling for females and gross secondary-school enrolment, Gylfason (2001) found a negative relationship between share of natural capital in national wealth and education. Based on this, Gylfason (2001) concluded that resource abundance crowds out human capital and thereby slow down the pace of economic development.

Following Manzano and Rigobon (2001), poor economic growth performance in natural resource abundant countries could be due to debt

overhang⁵ in the resource abundant countries and not resource abundance per se. In Manzano and Rigobon (2001), the coefficient that measures resource curse became insignificant after debt was controlled for in a cross section economic growth regression.

Using cross-country growth regressions for the period 1980 to 1995, Atkinson and Hamilton (2003) offered evidence that resource curse may be due to the inability of government to manage large resource revenues prudently. Specifically, results from their analyses suggest that it is the interaction of government consumption and resource abundance that provides an explanation of the curse and that once this interaction is controlled for, the impact of resource abundance on economic growth becomes at insignificant or positive. Further, evidence of resource curse exist for resource abundant countries with negative genuine savings (measured by gross savings minus depletion of resources) whereas resource abundant countries that avoided zero or negative genuine savings do not seem to have resource curse. Using genuine income where depreciation is subtracted from GDP as, Neumayer (2004) reinforces resource curse results.

Following the result in Mehlum et al. (2006) which suggest that countries benefit from natural resources when the quality of institutions are high, Boschini, Pettersson and Roine (2007) use four measures of

⁵ In the 1970s, commodity prices were high and the resource abundant countries obtained a huge debt. When the commodity prices collapsed in the 1980s the resource abundant countries were left with low flow of foreign resources to pay back the huge debts (Manzano and Rigobon, 2001).

resource abundance, ranked in terms of their technical appropriability and demonstrated that the effect of resources is determined by the type of resources a country possesses and the quality of its institutions. Specifically, they found that the more technically appropriable a country's resources is, the more important it is for the country to have good institutions.

Van der ploeg and Poelhekke (2009) concluded that the effect of resource on economic growth is swamped by indirect negative effect through volatility of output per capita that results from high volatility of world prices of natural resource. Cross-section empirical analyses by Sala-i-Martin and Subramanian (2013) suggest that resource abundance has a negative impact on economic growth, through reduction on quality of institutions, and that once institution is controlled for natural resources can have a positive effect on economic growth.

On the contrary, using actual data on fuel and mineral reserves, criticizing the primary export measure used by Sachs and Warner(1995), Stijns (2005) concluded that natural resource abundance has not been a significant structural determinant of economic growth between 1970 and 1989. Also, contrary to Gylfason (2001), Stijns (2006) investigated if natural resource-abundant countries accumulate more or less human capital than resource poor countries and concluded that subsoil wealth and resource rents per capita are correlated with improved indicators of human capital.

From the empirical studies that we have reviewed , we conclude as follows. Although the empirical literature on the relationship between income inequality and economic growth is rather divided, in the sense that some studies show that inequality has a negative impact on economic growth, some show that inequality has a positive impact and some others show a rather mixed result, preponderance of the evidence suggest that inequality has a negative impact on economic growth. The evidence on the relationship between resource abundance and economic performance seems to suggest that, at least, countries that have resources in abundance have not performed better than countries that do not have abundant resources.

To our knowledge, the inequality-growth literature has not considered that inequality could have a more pronounced impact in resource-abundant economies, making redistribution more important in these economies. The resource curse literature suggests that one of the reasons why resource abundance could impact negatively on economic growth is because of rent seeking tendency where entrepreneurs abandon production and go into say politics. When there is income inequality, it means there are few potential entrepreneurs in the first place. In the presence of resource abundance these entrepreneurs who could engage their entrepreneurial skills or financial capabilities in productive activities may find it more profitable to go into rent seeking. The potential entrepreneurs compare the net benefits of going to non-productive activities with the net benefits of going into rent seeking. Inequality could promote rent seeking because the potential entrepreneurs face few competition as well as a lot of poor people that are less educated and

struggle to afford the basic requirements for human survival and ,thus, vote by their stomach, selling their votes at an insignificant amount (see Stokes, 2005). The implication of having few competitors and poor masses is an insignificant amount of campaign costs. Therefore, we expect that manufacturing activities will less in resource-abundant countries, in the presence of inequality. Since the modern firms are the engine of innovation, productivity and economic growth, we hypothesize that inequality is more detrimental to economic growth in natural resource rich countries.

2.3 . EMPIRICAL FRAMEWORK

To investigate if natural resource abundance play a role in the inequality-growth nexus, as conjectured above, we will estimate the following three-way linear interaction⁶ economic growth equation:

$$G = \beta_1[\text{initial GDP per capita}] + \beta_2 \text{FU} \times \text{IN} + \beta_3 \text{FU} \times \text{IN} \times \text{RA} + \gamma' \mathbf{X} + u \quad (1)$$

G is economic growth. initial GDP per capita is logarithm of the GDP per capita in the some given previous period, and it is included to allow for the possibility of convergence in per capita income. IN is inequality. FU is financial underdevelopment measure. RA is a dummy variable which takes one if a country is resource abundant and zero otherwise. u is an error term that captures unobserved effects that could impact on economic growth but are not included. \mathbf{X} contains the control variables.

Equation (1) investigates the impact that income inequality will have on economic growth in resource abundant countries when compared to the impact that inequality will have in the non-resource abundant countries in the presence of underdeveloped financial system. Specifically we are interested in the sign of coefficient β_3 in the following equation:

⁶ Our specification is borrowed from Nili and Rastad (2007). Nili and Rastad (2007) compared the impact of financial development on economic growth in oil and non-oil economies.

$$\partial G / \partial IN = \beta_2 FU + \beta_3 FU \times RA = (\beta_2 + \beta_3 RA)FU \quad (2)$$

A negative β_3 suggests that, in the presence of financial underdevelopment, income inequality has more detrimental impact on economic growth in resource abundant countries than in non-resource abundant countries.

An important concern in empirical studies is whether an explanatory variable of interest is endogenous, in the sense that it is correlated with the error term. A target-explanatory variable can be correlated with the error term due to the presence of omitted variables that are jointly correlated with the explanatory variable and the dependent variable, measurement error⁷ and simultaneity (see Wooldridge, 2010, pp.54-44). To avoid omitted variable bias, we include variables that have received some support either in empirical or theoretical literatures, namely inflation, population, trade openness, foreign direct investment, domestic investment, government consumption and real effective exchange rate⁸.

⁷ Variables suggested by theory and variable that can be obtained are often at conflict: it is difficult to have measures that accurately fit variables of interest. Our study would use measures that have been employed in previous studies. Thus, we would ignore the issue of measurement error while taking into consideration that our result could be driven by bias due to measurement error.

⁸ Domestic investment, government consumption, real effective exchange rate and external debt are used for sensitivity purpose and the rationale behind their usage will be explained in the result section.

Following the Stolper–Samuelson theorem (see Wood 1997), trade openness should increase the relative wage of the unskilled labour in developing countries and should reduce the relative wage of the unskilled labour in developed countries since the developing and developed countries respectively have abundance of unskilled and skilled labour and export goods that uses respectively unskilled and skilled labour. However, trade openness could widen inequality in a developing country if labour-intensive non-traded goods that are produced by the developing country are close substitutes for a more skilled-intensive traded good, such that greater openness reduces the price of the more skill-intensive traded good, inducing consumers to buy more of it and less of the non-traded good, resulting to a fall in demand for unskilled labour if the fall in the demand for unskilled labour in the non-traded good is not offset by a rise in the unskilled labour in traded good. Nevertheless, if a country has a comparative advantage in an infrastructure-intensive good that is complementary to skilled labour, trade openness can increase the demand for (and wages of) skilled relative to unskilled workers.

In a theoretical analysis of the impact of foreign direct investment on inequality by Feenstra and Hanson (1997), capital flow from North to South reduces the return to capital in South, causing the number of intermediate inputs that are in need of skilled labour and are produced in the South to increase, increasing the relative demand for skilled labour and relative wage of skilled labour. In line with their theory, their empirical analysis suggests that rising wage inequality in Mexico during the 1980s is connected with foreign direct investment, accounting for over 50% of the increase in the skilled labour wage share in the late 1980s.

Using an instrumental variables estimation method, Barro (1995) found that an increase by 10 percentage points in the annual inflation rate is associated with a decline by 0.2-0.3 percentage points in the annual growth rate of real per capita GDP. In line with Easterly and Fischer (2001), inflation could widen income inequality because the poor normally have income that are not fully indexed to inflation and are less able to protect themselves against inflation. Using both a probit and least squares estimation methods, Easterly and Fischer (2001) showed that (1) inflation is much of a concern to the poor and the less educated than it is to the rich and those with higher education, and (2) inflation has negative impact on income inequality. It is possible that higher population could mean that a large proportion of the people are poor since few can get better education or obtain the level of finance that is needed to break the poverty trap. Thus, we will control for population to make sure that the impact of inequality we will obtain will not be as a result of population, per se.

There are variables that could be correlated with economic growth as well as the explanatory variable(s) of interest, yet we might not have their data and, therefore, we cannot control for them. A panel data structure, however, permits us to handle this, including fixed-country effects. Thus, we will estimate the following economic growth equation:

$$G_{it} = [\text{GDP per capita}]_{it-1} + \beta_2 \text{FU}_{it} \times \text{IN}_{it} + \beta_3 \text{FU}_{it} \times \text{IN}_{it} \times \text{RA} + \gamma' \mathbf{X}_{it} + u_{it} \quad (3)$$

At least, since Nickell (1981), it has become important to consider that when a lagged dependent variable is included as an explanatory variable, care should be taken to purge the results of bias due to correlation between the fixed effects and the lagged dependent variable. The popular estimation techniques that are used in this regard are difference GMM and system GMM. Our description of the methods follows Bond (2002) and Cavallo and Cavallo (2010).⁹

First, let the growth equation be represented by the following equation:

$$(y_{i,t} - y_{i,t-1}) = (\alpha - 1)y_{i,t-1} + \gamma' \mathbf{X}_{i,t} + u_{it} \quad (4)$$

where $y_{i,t} - y_{i,t-1}$ is the growth in real per capita GDP, u_{it} is a composite error term and \mathbf{X} is a set of explanatory variables, except the lag of the logarithm of real per capita GDP. Equation (11) can be written as follows:

$$y_{i,t} = \alpha y_{i,t-1} + \gamma' \mathbf{X}_{i,t} + u_{it} \quad (5)$$

To eliminate the country-specific effects, we can take the first difference of equation (5) :

$$(y_{i,t} - y_{i,t-1}) = \alpha(y_{i,t-1} - y_{i,t-2}) + \gamma' (\mathbf{X}_{i,t} - \mathbf{X}_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad (6)$$

⁹ Bond (2002) is a review of these econometric methods, and Cavallo and Cavallo (2010) applied the methods to investigate how political institutions affect the impact of financial crisis on long-term growth.

Differencing eliminates the unobserved country-specific effects, but by construction the new error term $\varepsilon_{i,t} - \varepsilon_{i,t-1}$ is correlated with the lagged dependent variable $y_{i,t-1} - y_{i,t-2}$. Moreover, the control variables above may be affected by economic growth so that some or all of the variables \mathbf{X} are endogenous. As for inequality, the model by Galor and Zeira (1993) suggests that a developed economy with high unskilled labour wage could attain an egalitarian long run equilibrium while a developing economy with low unskilled wage could imply an increase in the equilibrium inequality. Also, research “work suggests that growth may free resources which can be used for investment in human capital, therefore raising education level” (Forbes, 2000, p. 876). Further, as Easterly (2007) noted, causal impact of redistribution on economic growth could be the reverse since rich countries may afford redistribution. This implies $\mathbf{X}_{i,t} - \mathbf{X}_{i,t-1}$ is necessarily correlated with $\varepsilon_{i,t} - \varepsilon_{i,t-1}$.

The difference GMM estimator uses $y_{i,t-2}$, $\mathbf{X}_{i,t-2}$, and their respective higher order lags as instruments¹⁰, under the assumption that the error term is not serially correlated. Specifically, the following moment conditions are used by the difference GMM.

$$E[y_{i,t-s}(\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \text{ for } s \geq 2; t = 3, \dots, T, \quad (7)$$

$$E[\mathbf{X}_{i,t-s}(\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \text{ for } s \geq 2; t = 3, \dots, T. \quad (8)$$

¹⁰ This is commonly referred to as internal instruments

A shortcoming of the difference GMM is that the instruments available for the equations in first-differences are likely to be weak when the individual series have near unit root properties. As noted in Castelló-Climent (2010)¹¹, also, traditional first difference GMM estimator may not be appropriate since the explanatory power of the time dummies when inequality is the dependent variable is 1% such that by taking differences much of the variability which comes from variability across countries disappear. Therefore, we will employ the system GMM. Under additional assumptions, the system GMM which estimates simultaneously the equations in their levels and first differences is able to circumvent this problem. First, the system GMM assumes that the first differences ΔX_{it} are uncorrelated with the country-specific effects α_i . Second given the autoregressive structure of the model and the mild assumption $E[\Delta \varepsilon_{i,t} \alpha_i] = 0$, a stationarity assumption about the initial condition, $E\left[\left(y_{i,1} - (\alpha_i/1 - \alpha)\right) \alpha_i\right] = 0$ for $i = 1, \dots, N$, must be valid so that Δy_{it-1} may also be valid instruments for the levels equation (5). The system GMM combines moment conditions (7) and (8) with the following moment conditions.

$$E[\Delta y_{it-s}(\varepsilon_{it} + \alpha_i)] = 0 \text{ for } s = 1; t = 3, \dots, T, \quad (9)$$

$$E[\Delta \mathbf{X}_{it-s}(\varepsilon_{it} + \alpha_i)] = 0 \text{ for } s = 1; t = 3, \dots, T. \quad (10)$$

¹¹ Solt (2016) also pointed out that contemporary levels of inequality are generally similar to the levels observed in the preceding year. In fact as stressed by Solt, dramatic differences in the estimates of inequality for a given year and those preceding and following it likely reflect persisting errors in measurement.

Consistency of the results from depends on the assumption of no serial correlation and validity of the moment conditions stated above. Like in many other studies that employ these methods, we will employ the Hansen test of identification restrictions, which test the validity of the instruments, and a test for no second-order serial correlation in the first-differenced residuals. We test for the second-order serial correlation since by construction the first-difference residuals will probably be first order serially correlated even if the original error term is not.

2.4. DATA

Income inequality¹² is from version 6.2 of the Standardized World Income Inequality Database (SWIID). Comparability and coverage are two issues that bedevil research on the relationship between inequality and economic growth. Researchers have relied on either the dataset that is very comparable but yields less observations or increased coverage by making adjustments to account for differences between statistics that are based on different calculations, which do not satisfactorily deal with incomparability of inequality statistics as it results in either overestimation or underestimation. The SWIID boasts of maximizing comparability and, at the same time, maintaining a broad coverage. It is calculated, using a source data that that draws on different data sources, based on different combinations of welfare definition and income scale.

Economic Growth, real per capita GDP and Population are from the version 9.0 of the Penn World Table. Trade Openness, Inflation, Financial Underdevelopment¹³, Foreign Direct Investment, Domestic Investment and Government consumption are from The World Bank. Real effective exchange rate is from the database constructed by Darvas (2012). Economic growth is computed as year to year difference in logarithms of real per capita GDP. Real per capita GDP is the real gross domestic product, at purchasing power parity, divided by population. Trade openness is the sum of merchandise exports and imports divided by the value of GDP, all in current U.S. dollars. Inflation is measured by the consumer price index and it reflects the annual percentage change in the

¹² Our reference for income inequality measure is Solt (2016).

¹³ This is measured as 1 divided by financial development.

cost to the average consumer of acquiring a basket of goods and services . Our preferred measure of financial development is domestic credit to private sector. Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of no equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. We believe that domestic credit to the private sector is in agreement with the financial constraints models, like Galor and Zeira (1993)¹⁴. Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments, and it is divided by GDP. We proxy the ratio of domestic investment to GDP by the ratio of gross capital formation to GDP. Gross capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Government consumption is General government final consumption expenditure and includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military. Real effective exchange rate (REER) is the nominal effective exchange rate (NEER) multiplied by the consumer price index(CPI) of the country

¹⁴ The Stock market measures of financial development might not reduce inequality since in fact only the wealthy can issue shares, at least, in many countries. See King and Levine (1993), Levine and Zervos (1998) and Levine et al. (2000) for some other measures of financial development.

under study and divided by the geometrically weighted average of trading partners CPI.

The data set consists of 64 countries. Out of the 64 countries, 16 are natural resource abundant countries and 48 non-natural resource abundant countries, for the period 1988-2012. The data are averaged over 5 year intervals¹⁵. The first period covers the years 1988-1992; the second period covers 1993-1997; the third period covers 1998-2002; the fourth period covers 2003-2007, and the last period covers the years 2008-2012. So, there are five observations per country and the subscript t in our empirical framework above designates one of these averages. It is a popular practice in panel data research to take averages: taking averages reduces the short-run fluctuations and enables us focus on to focus on longer-run relationship that is likely in agreement with the literature and our theoretical framework. Take for examples, the impact of inequality on economic growth and investment through political instability, that inequality increases fertility and reduces human capital which will reduce economic growth and the impact of inequality on investment in human capital in the presence of imperfect capital markets. The differences in economic performances for countries with different income equality is likely to be in the long-run (Knowles, 2005). The sample size is determined by the availability of data in our variables. The summary statistics for the variables are displayed in table 1 below. Variables in each country are averaged over the period 1988-2012, so that each

¹⁵ In few cases less than five observations are observed for a period, and averages are over the number of observations we have in each of the periods.

observation corresponds to a country. The countries in the sample are listed in the appendix.

Table 2.1. Summary statistics (1988-2012).

VARIABLES	N	Mean	Std. Dev	Minimum	Maximum
IN	64	45.88	6.065	31.89	66.15
FU	64	0.0551	0.0582	0.00547	0.309
Inflation	64	28.13	83.24	0.459	487.2
Trade	64	68.40	47.68	21.65	360.6
Population	64	73420000	204100000	269,749	1259000000
real GDP per capita	64	10,787	12,113	714.7	50,055
growth	64	0.0307	0.0206	-0.0176	0.0823
FDI	64	2.603	2.060	0.117	14.56
Domestic Investment	64	22.52	6.163	10.26	40.24
REER	64	107.4	19.82	80.62	225.1
Government Consumption	64	13.82	4.152	4.873	25.09
Debt/GDP	64	61.21	28.03	15.73	141.0

2.5. RESULTS

Table 2.2. system GMM estimation

	(1)	(2)	(3)	(4)	(5)	(6)
Log[real GDP per capita] _{t-1}	0.425** (0.199)	0.409** (0.189)	0.389** (0.188)	0.416** (0.207)	0.422** (0.201)	0.387** (0.186)
FU×IN	-0.0358*** (0.00595)	-0.0351*** (0.00546)	-0.0398*** (0.00503)	-0.0339*** (0.00483)	-0.0348*** (0.00519)	-0.0319*** (0.00404)
FU×IN×RA		-0.182** (0.0842)	-0.116* (0.0702)	-0.109* (0.0628)	-0.146* (0.0802)	-0.177* (0.0933)
Inflation	0.00176 (0.00202)	0.00320 (0.00359)	0.00365 (0.00382)	0.00183 (0.00230)	0.00321 (0.00360)	0.00242 (0.00277)
Log (Population)	0.178* (0.0928)	0.194** (0.0938)	0.0651 (0.0687)	0.185** (0.0769)	0.180** (0.0910)	0.0859 (0.0804)
Trade	0.00751* (0.00396)	0.00991** (0.00481)	0.0104* (0.00584)	0.00952** (0.00480)	0.0102** (0.00466)	0.00868** (0.00389)
FDI	-0.0323 (0.0281)	-0.0694* (0.0407)	-0.0859 (0.0527)	-0.0601 (0.0391)	-0.0648 (0.0398)	-0.0706* (0.0398)
Domestic Investment			0.0345*** (0.0106)			
Government Consumption				0.0396 (0.0415)		
REER					-0.00183 (0.00324)	
Debt/GDP						-0.00783** (0.00351)

Table 2.2. system GMM estimation (continued)

	(1)	(2)	(3)	(4)	(5)	(6)
AR(2) p-value	0.177	0.906	0.536	0.062	0.998	0.0536
Hansen p-value	0.159	0.297	0.740	0.775	0.618	0.587
Observations	256	256	255	255	256	255

Dependent variable is Log[real GDP per capita]. Standard errors are in parentheses .***, **, * are respectively $p < 0.01$, $p < 0.05$, $p < 0.1$

BASIC MODEL

The results are in table 2. Specification 1 is a test of the impact of income inequality in the presence of financial underdevelopment on economic growth. Specification investigates our hypothesis. It checks if countries that have abundant resources suffer more reduction in economic growth when they are faced with high income inequality. $FU_{it} \times IN_{it}$ in regression 1 is significant and has a negative coefficient, thus confirming that when there is financial under development income inequality is detrimental to economic growth.

Inflation does not have a significant impact on economic growth in all the specifications table 3. Population is significant in regression 1 and 2 and becomes insignificant when domestic investment is included. FDI has a negative impact on economic growth. While this seem puzzling, it could be mirroring the idea in the literature that FDI has positive impact only when some initial conditions are satisfied. Trade has a positive and significant impact on economic growth in all the specifications of table 3. $FU_{it} \times IN_{it}$ is still negative and significant in specification 2 when a triple interaction $FU \times IN \times RA$ is included. The triple interaction term $FU \times IN \times RA$ enters significantly and has negative sign as we hypothesized. This suggests that the negative impact of inequality on economic growth is amplified for countries that are endowed with abundant natural resources.

ROBUSTNESS

Domestic Investment: Specification 3 controls for domestic investment to check whether the finding that inequality is more damaging in resource abundant countries is linked to the investment. Following the sensitivity analyses by Levine and Renelt (1992), at least, there is a robust correlation between economic growth and share of investment in GDP. Our finding could be due to different levels of investment in different countries. If the countries who have abundant resources have less domestic investment compared to those who have less resources, our result could be an implication of low investment. Following our argument, countries who have the same physical investment could have different economic growth path if potential entrepreneurs have different incentives. In specification 3, domestic investment enters significantly and with a positive sign. The double and triple interaction still have negative coefficients and are both significant. This confirms that our result is robust to the inclusion of domestic investment.

Government Consumption: There is a widely held belief that government consumption affects economic growth. Some studies argue that the impact of government consumption is positive while others argue that government consumption has a negative impact on economic growth. Grier and Tullock (1989) found a negative (positive) correlation between growth of government consumption and GDP growth in Africa and Americas (Asia). Nevertheless, government consumption could be low or high depending on how much natural resources a country has. If government consumption has a negative impact, resource abundant countries could have less growth when compared to non resource

abundance countries since government consumption in these countries is apparently bigger. In specification 4 we controlled for government consumption to check if the result we have obtained in specification 2 is due to omission of government consumption. $FU \times IN \times RA$ is still negative and significant coefficient which implies that our finding is not due to government consumption.

Real Effective Exchange Rate: In the resource curse literature, the Dutch disease argument has its own share when the negative impact of resource abundance is the issue. Following the resource movement argument in Corden and Neary (1982). It can be that the result we have obtained is due to the reallocation of labour from manufacturing to other sectors due to changes in real exchange rate. Specification 5 controls for real effective exchange rate. Still, the coefficient on $FU \times IN \times RA$ is significant. While this does not refute the Dutch disease argument, it shows that the rent seeking argument that we have is an important determinant of poor economic performance.

External Debt: There is a possibility that countries who have natural resource in abundance accumulate high external debt, and could face heavy debt burden. In his article —The External Debt Problem of Sub-Saharan Africa, Greene (1989) linked oil price boom to the debt distress faced by some Sub Saharan African countries. A potential implication of debt burden is that it reduces economic growth. Debt burden could make it difficult for countries to focus on growth enhancing expenditures since a significant proportion of government revenue would be directed to meeting debt obligations. One empirical investigation of the relationship

between eternal debt and economic growth is Fosu (1999). Using a sample of 35 Sub Saharan Africa countries for the period 1980-1990, Fosu (1999) provided empirical result which suggest that external debt has a negative impact on economic growth. Following the logic that the resource curse could be indicating debt overhang, as in Manzano and Rigobon (2002), we will control for the ratio of debt to GDP¹⁶. Our findings still remains. The coefficient on FU×IN×RA is negative and significant.

The results in table 2 also show the presence of conditional convergence. To see this, first note that we are estimating equation (5) so that that the effect on growth for $\text{Log}[\text{real GDP per capita}]_{t-1}$ has to be calculated by subtracting by 1. It is then obvious that specifications suggest the presence of convergence.

The six specifications includes time dummies to control for time specific effects. The regression satisfy the specifications tests. There is no evidence of second order serial correlation and all the regressions passed the Hansen specification test.

Table 2 uses the whole instrument possible in estimation, that is lag two up to lag 4 are used as instruments. Criticism¹⁷ exist on the

¹⁶ The argument is often made with external debt., but availability of external debt data is limited. We instead used the historical public debt database compiled by Abbas, Belhocine, El-Ganainy and Horton (2011), taking into consideration that public debt is a combination of external and domestic debt.

¹⁷ See Roodman (2009)

implication of instrument proliferation, especially on the P-value of the Hansen statistics. One way to address it is to reduce the number of instruments. In the appendix we provide result used second lag and the third lags are used as instruments. Our result did not change. Specifically, the coefficient on $FU \times IN \times RA$ is negative and significant in all the specification where it is included. The p-value from AR(2) and Hansen over identification tests show that the model is over identified and that there is no second order serial correlation.

2.6. CONCLUSION

This paper makes a case for a strong association between natural resource abundance and the inequality-growth nexus. First equality might not reduce economic growth in resource abundant countries from Okun's point of view since countries where natural resources form a large proportion of exports have no incentive to lose, after all. Moreover, given two otherwise similar countries, the country where productive members move to non-productive sectors of the economy will likely have lower economic growth performance. Because income inequality implies that political competition is not strong enough to deter entrepreneur from competing for a political post and since it is less expensive to buy votes (or even the conscience) of the masses who would vote with their stomach, we expect entrepreneurs to be more willing move to rent seeking in the presence of income inequality. In other words, given income inequality, the countries who have resources in abundance, all else equal, should experience more detrimental impact of income inequality in the presence of financial underdevelopment. And, countries' resource curse could be worse when countries have income inequality.

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Chapter 3

Greasing The Revolving Door: Foreign Aid, Governance and Private Capital Flows

Keywords: *Capital flow; Governance; Foreign aid*

3.1. INTRODUCTION

The debate concerning the impact of capital liberalization on economic growth is an old one, and had yielded many reason why capital liberalization should encourage economic growth. One notable reason is rooted in the small open economy neoclassical economic growth model. Our discussion of this argument follows Henry (2007). Consider a neoclassical production function with marginal product of capital that is equal to interest rate plus the rate of depreciation. When unrestricted, capital go from capital-abundant countries where returns is low to capital-scarce countries where return to capital is high. Thus, from an initial steady state level of capital, capital liberalization triggers capital inflow from the developed to the developing countries, thereby, increasing economic growth, temporarily, before the new steady state is reached. Furthermore, as argued in Henry (2007), most studies have failed to obtain a positive relationship between capital liberalization and economic growth because they do not test the supposed short-run growth effects or the permanent effect on per capita income as suggested by the neoclassical growth model.

However, it is possible that liberalization do not lead to capital inflow to the capital-scarce countries. Lucas (1990) is the first to show

that the observed capital flows fall short of the capital flows that the neoclassical model predicts. Following the neoclassical theory, Lucas (1990) arrived at marginal product of capital in India that is 58 times the marginal product of capital in the United States. This suggest that capital should flow rapidly from the United States and other wealthy countries to India and other capital-poor economies. Lucas(1990) considered, broadly, three factors that could play some role in the determinants of capital flows, namely differences in human capital, capital market imperfection (what he referred to as political risk) and monopoly control over capital.

A notable study which empirically investigates the explanations for the Lucas paradox is Alfaro, Kalemli-Ozcan and Volosovych (2008). And, they empirically showed that low institutional quality is the leading explanation for the Lucas puzzle. To buttress the role of institution in attracting capital, Alfaro et al. (2008) used some examples. First is Intel's decision to locate in Costa Rica instead of Mexico in 1996. Both countries had similar levels of adult literacy but Mexico had more population. Given the overall size of Intel's and the need for large number of engineers Mexico should be preferred. But, Intel decided to invest in Costa Rica since Costa Rica showed a great willingness to improve the overall country's institution. Second, around October 2005 when Turkey started negotiations into European Union, a move which would force turkey to become like the EU countries in terms of laws, regulations and policies. The institutional reform in Turkey led to investment in Turkey by Multinational companies.

Matsuyama (2005) addressed the capital flows implication for a developing country who has the same features with a developed country, except that the level of financial development and balance sheet condition of firms in the two countries are different. Specifically, the developed country is more financially developed. The implication of financial underdevelopment in the developing country is an outflow of capital from the developing to the developed country. The model by Matsuyama (2005) seems to provide an indirect channel through which institution could have an impact on capital flow. One study linking institution to financial development is Weil (2011). Weil (2011) investigated the impact of corruption on bank lending in Russia. Corruption discourages banks from engaging in lending since it adds to the uncertainty of the judicial decisions for banks as the banks cannot count on the courts to enforce damages recoveries for losses or deficiency judgment against defaulting debtors. Using regional data on corruption and bank level data for the period 2002, Weil (2011) found that corruption has negative and significant impact on customer loans.

Blackburn and Forgues-Puccio (2010) explored the effect of international financial integration on economic development due to bureaucratic corruption. According to their model, there is a positive relationship between the incidence of corruption and financial openness. In their model, this is because openness reduces the probability that corrupt bureaucrats would be caught. Related to Blackburn and Forgues-Puccio (2010) is the revolving door argument in Boyce (1992) and Ndikumana and Boyce (2011). First, these studies observed that private citizens of a number of third world countries accumulated substantial

external assets at the same time their governments incurred large external debts. Some reasons are proposed, thereafter. Two among their classification of the hypothetical linkages between capital flight and debt are noteworthy, namely debt-fuelled capital flight and flight-driven external debt. In flight-driven external debt, drain of domestic resources through capital flight generates demand for replacement of funds on the part of the government and the private sector. In debt-fuelled capital flight (which is related to the incentive of corrupt governments to siphon debt), the same individual (or bureaucrat) who borrows the money invest it in his or her private account abroad, and the money is never used for the purpose it is meant for. On this basis, these studies concluded that there is a scope for political and legal challenges to the legitimacy of a substantial fraction of the developing countries' external debt. Specifically, the studies recommended that odious debt should be repudiated.

Cerra, Rishi and Saxena (2008) is one paper that is related to Boyce (1992) and Ndikumana and Boyce (2011). Cerra et al. (2008) posited and estimated two relationships, namely (a) capital flight is partially determined by institutional quality and (b) debt accumulation or other forms of foreign financing is partially determined by capital flight. Results from their analyses suggest that countries with weak institution are more likely to accumulate debt since they are more exposed to capital flight. The finding in Cerra et al. (2008) that countries with weak institutions have the propensity to accumulate debt because weak institution instigate capital flight seems to support the flight-derive debt hypothetical linkage. The only difference is that in Cerra et al. (2008) capital flight is in large part due to poor institution.

While foreign debt occupies an important position in economic research, foreign aid has an important position as well. In their paper, *Ending Africa's Poverty Trap*, Sachs et al. (2004) advocated giving aid to African countries. In fact their understanding is that governance is not enough. According to Sachs et al. (2004), "Africa's extreme poverty leads to low national savings rates. Low domestic saving is not offset by large capital inflows of private foreign capital...Africa's poor infrastructure and weak human capital discourage such flows...well governed African countries should be offered a substantial increase in official development assistance (ODA)."

Put aside that capital flight undermines the effectiveness of aid, a considerable amount of studies exist to show that aid could have a negative impact on governance. If aid poses damage to the governance of a country, it could actually do more harm than good. If governance is poor, it means that capital could flow out of the country. A notable study that stresses that aid could harm governance is Knack (2001). As discussed in Knack (2001), some of the reasons why aid can hinder good governance are as follows. Aid can relieve the pressure on recipient governments to establish efficient policies and institutions that are necessary for attracting private capital, since aid provides an alternative source of revenues for governments. Secondly, by siphoning away scarce talent from the civil service and by implementing projects that local governments would have undertaken foreign aid can reduce the bureaucratic quality in the recipient countries. And, aid can at times be used to sustain large government subsidies to state owned enterprises and

parastatals. If public firms displace private investments, a weakened private sector cannot put a sufficient amount of pressure on government to establish accountable and transparent procedures and institutions. Indeed, using Ordinary Least Squares (OLS) and Two-Stage Least Squares (2SLS), Knack (2001) showed that aid has a negative impact on governance. Also, Rajan and Subramanian (2007) investigated the nature of growth of value added for industries that depend on governance. The idea in their study is that governance should have a positive relationship with growth of industries. If industries that are sensitive to governance grow less after obtaining aid it could be that aid reduced governance. Result from Rajan and Subramanian (2007) suggest that in countries that receive aid, the industrial sectors that are more governance sensitive have lower growth.

Going back to Cerra et al. (2008), we could add a third door. Following Cerra et al. (2008) we know that Capital flight encourages inflow of foreign aid and poor institution triggers capital flight. From the foregoing we add that aid harms governance to the revolving door literature. Furthermore, while the institution in Cerra et al. (2008) is the constraint on executive power which makes it more difficult for the bureaucrats to siphon money, our studies is based on governance measures like corruption, law and order and bureaucratic quality. Methodologically, we employ Three-Stage Least Squares (3SLS) estimation technique to investigate the revolving door.

Our synthesis is related to the literature on institution and development. There is already a consensus that institution plays an

important role in economic development. Important examples are Mauro (1995) and Rodrik, Subramanian and Trebbi (2004). Mauro(1995) demonstrated that bureaucratic inefficiency and corruption have negative impact on economic growth and investment. And, that a considerable portion of the impact of corruption on economic growth works through its effect on the amount investment. A more forceful conclusion on the role of institution on economic performance is Rodrik et al. (2004). Rodrik et al. (2004) investigated the impact of institution, vis-à-vis international trade and geography, on economic development. using 2SLS estimation technique, the found that institution plays a more important role than geography and international trade. Once institution are controlled for, geography has, at best, a weak direct effect on income, while integration has no direct effect on income. In the words of Rodrik et al.(2004), “institutions trump geography and openness.” As capital inflows impact on economic growth and institutions impact on capital flows, our synthesis provides an indirect avenue, through capital outflows, by which institutions can have an impact on economic performance. To the best of our knowledge, we are the first to empirically investigate such synthesis.

The remainder of this paper is organized as follows. Section 3.2 discusses the empirical technique that will be employed by the synthesis. Section 3.3 discusses the data. Section 3.4 provides empirical results. Section 3.5 concludes.

3.2. EMPIRICAL FRAMEWORK

The above discussion implies the following panel 3 equations:

$$\begin{aligned} \text{Private_Inflow}_{it} = & \alpha_0 + \alpha_1 \text{Governance}_{it} + \alpha_2 \text{Inflation}_{it} \\ & + \alpha_3 \text{Democracy}_{it} + u_{1it} \end{aligned} \quad (1)$$

$$\begin{aligned} \text{Aid} = & \beta_0 + \beta_1 \text{Private_Inflow}_{it} + \beta_2 \log(\text{GNI_per capita})_{it} \\ & + \beta_3 \text{Democracy}_{it} + u_{2it} \end{aligned} \quad (2)$$

$$\begin{aligned} \text{Governance}_{it} = & \gamma_0 + \gamma_1 \log(\text{Human_capital})_{it} + \gamma_2 \text{Aid}_{it} \\ & + \gamma_3 \text{Democracy}_{it} + u_{3it} \end{aligned} \quad (3)$$

Equation (1) is the relationship between governance and capital inflows. We expect that the governance coefficient will be positive so that a higher quality of governance corresponds to an increase in private capital inflow. Equation (2) is the relationship between foreign aid and private inflow. We expect the coefficient on private inflow to be negative such that an increase in private inflow means there would be less need for foreign aid. Inversely, an increase in capital outflow would imply an increase in foreign aid. Equation (3) is the relationship between governance and foreign aid. We expect the coefficient on foreign aid to be negative so that an increase in foreign aid would imply a decrease in the quality of governance.

In addition to the main variables that our analysis focuses on, we have included two additional variables that we believe have an impact on the dependent variables in each of the 3 equations. First, for equation (1), we believe macro economic instability can pose a considerable amount of risk and would make investors reluctant to invest in a country.

We proxy macroeconomic instability and uncertainty with inflation. Democracy provides checks and balances on elected officials which in turn reduces arbitrary government intervention, lowers the risk of policy reversal and strengthens property right protection. Asiedu and Lien (2011) found that the impact of democracy on foreign direct investment depends on how much natural resources the host country has. For countries with abundant natural resources FDI is negatively related to democracy, while democracy facilitates FDI in countries where the share of natural resources in total exports is low. Thus, why we include democracy in equation (1), we do not make any a priori expectation on the sign of its coefficient.

In equation (2), it seem very likely that countries that have bad economic performance are the countries who need aid. And, income per capita has received a considerable support in empirical research as a variable that explain the decision of donors. We also add democracy in equation (2) because donors might demand that countries who wish to receive aid become democratic in nature. Some determinants of foreign aid can be found in (Strum, Berger and Han, 2005 and Barro and Lee, 2005). We expect that higher democracy should lead to more aid while higher GNI per capita should lead to low aid.

For the governance equation, equation (3), we add human capital since we believe that more educated persons are more willing to realize that there is a gap in governance, the implication of the gap in governance and can be more equipped to push for better governance more than the less educated persons. We also include democracy, and the

reason is that since democracies allow population to peacefully and regularly oust corrupt administrations (Riverra-Batiz,2002), it should have positive impact on governance.

We will employ the Three-Stage Least Squares (3SLS) estimation method proposed by Zellner and Theil (1962).This estimation technique involves estimating the 3 equations simultaneously. Zellner and Theil (1962) showed that when the error terms are correlated or when the equations are over identified, in the sense that the exogenous variables in the system are greater in number than the variables on the right hand side of each equation of the system, the 3SLS is more efficient than the 2SLS .In our case, we have four pre determined variables and 3 equations on the right hand side of each of the system. As a way to check for robustness, and to make sure our results are not driven by omitted unobserved country effects and time effects, we will also control for fixed effects.

3.3. DATA

This chapter discusses the measures and sources of the variables used in the analysis and, as well, provides a summary statistics for the variables. The data consist of 41 countries in the DAC list of ODA recipient for the period 1995-2013. The list of countries is in the appendix. The variables in the analysis are governance, inflation, democracy, private capital inflow, per capita GNI, foreign aid and human capital.

The quality of governance is measured by subjective indices from the International Country Risk Guide (ICRG). ICRG is a commercial source on country risk that provides information on political risk to overseas investors and lenders. Like in Knack (2001), we sum the corruption in government, quality of bureaucracy and law and order indices. Each of the indices is a 0-6 point scale where 6 is the highest level and shows good quality of a given index. Summation of the three variables implies an index with maximum point of 18 points and a lowest point of 0.

Inflation, GNI per capita, and Aid are from The World Bank. Inflation is measured by the annual growth rate of GDP implicit deflator, and it shows the rate of price change in the economy as a whole. The GDP deflator is the ratio of GDP in current local currency to GDP in constant local currency. GNI per capita is the per capita gross national income converted to international dollars using purchasing power parity rates. Aid is the net official development assistance and consists of disbursement of loans made on concession terms (net of repayment of principals) and grants by official agencies of the members of the

development assistance commission (DAC), by multilateral institution, and non DAC countries to promote economic development in countries in the DAC list of ODA recipient.

Our capital flow measure is the net private inflow constructed by Alfaro, Kalemli-Ozcan and Volosovych (2014). Alfaro decomposed the current account data into purely private flows and purely sovereign flows. Using the international financial statistics (IFS) from the IMF and the World Bank's global development finance(GDF) database.

Our measure of democracy is from the Freedom in the World survey provided by the Freedom House. The Freedom in the World survey provides an annual evaluation of the state of the global freedom as experience by individuals. The survey is grouped into two broad categories, namely political rights and civil liberties. The category we use is political rights. Political rights enable people to participate freely in political process, including the right to vote freely for distinct alternatives in legitimate elections, compete for public office, join political parties and organizations, elect representatives who have decisive impact on public policies and are accountable to the electorate. The survey includes both analytical reports and numerical ratings for countries. In terms of numerical ratings, each country is assigned a numerical on the scale of 1 to 7. A rating of 1 indicates the highest degree of freedom and 7 is the lowest level of freedom.

Human capital measure is from the Penn World Table (PWT) version 9.0. It is an index based on years of schooling and returns to education.

The summary statistics for the for the variables is in table 1 below.

Table 3.1. Summary Statistics (1995-2013)

VARIABLES	N	Mean	Std. Dev	Minimum	Maximum
Private_Inflow	41	3.896	2.263	0.167	10.29
Governance	41	7.299	1.449	4.357	10.26
Democracy	41	3.612	1.475	1	7
Inflation	41	8.961	7.390	1.370	36.17
Human_Capital	41	2.107	0.473	1.137	2.849
GNI_per capita	41	5,942	4,069	623.2	15,589
Aid	41	3.922	5.033	0.0306	22.11

There are 41 countries in the sample. For the descriptive analysis, the variables in each country are averaged over the period 1995-2013, so that each observation corresponds to a country.

3.4. RESULTS

The result is in table 2 below. In equation (1), higher quality of governance increases the net private inflow. A one standard deviation increase in governance (1.449 in the summary statistics presented in table 1) leads to 1.182 percentage increase in Private_Inflow .

Table 1. 2. 3SLS estimation

VARIABLES	(1) Private_Inflow	(2) Aid	(3) Governance
Governance	0.816** (0.385)		
Inflation	-0.00770 (0.00905)		
Democracy	-0.414*** (0.113)	-1.149*** (0.389)	-0.0363 (0.0392)
Private_Inflow		-1.827** (0.801)	
log (GNI_ per capita)		-4.011*** (0.389)	
Aid			-0.0807*** (0.0247)
Human_Capital			0.643 (0.413)
Constant	-0.495 (2.909)	48.71*** (3.643)	7.287*** (0.445)
Observations	779	779	779

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

Equation (2) shows that the inflow of private capital reduces the need for foreign aid. This implies that an outflow of foreign capital

should increase the need for foreign aid. Equation (3) suggests that aid hinders good governance. Taken together, the result in table (2) suggests that aid could hinder governance and ,thereby, reduce private inflow since private inflow depends on good governance. When Private capital flows out, there is need for aid to feel the gap created by capital outflow. Moreover, the inflow of capital and outflow of capital will not be possible in the absence of capital liberalization. Thus, capital liberalization could grease a revolving door and handicap economic development in the aid receiving countries. The result is robust to the inclusion of fixed effects (see table 3 in appendix).

3.5. CONCLUSION

Capital liberalization is one of the policies that is widely suggested for developing countries. The general idea is that capital liberalization could lead capital to flow into the capital scarce developing economies and boosts economic development in these countries. Debt relief sometimes are suggested for the highly indebted countries, or in some cases commentators suggest that the developing countries should be given foreign aid since these countries are handicapped by geographical factors that inhibits growth beyond a poverty level. While aid can be important jump-starting the growth process of income trapped economies, most of the developing countries experience private capital outflows, as well. Moreover, it is possible that aid could harm development as well. Aid could hinder development indirectly by weakening governance in the recipient countries. If aid hinders governance, it could discourage capital inflow from the capital-abundant developed countries to the developing countries who have little capital, in fact ,it could trigger capital reversal such that capital flows out of country the aid recipient countries. Further, the need to fill the gap created by private capital outflows encourages more foreign aid, which in turn leads to capital outflow.

Using Three-Stage Least Squares (3SLS) estimation technique that is proposed in Zellner and Theil (1962), we explore the relationship between foreign aid, governance and capital flows. We find evidence of a revolving door relationship. Foreign aid has a negative impact on governance and ,thereby, reduces capital inflows since bad governance hinders capital inflows. The need to fill the gap that is created by private capital outflows encourages inflow of foreign aid ,which in turn harms

governance. Our empirical result has a clear policy implication. Capital liberalization could grease a revolving door and handicap economic development in the aid receiving countries. One policy implication, therefore, could be that capital outflow should be restricted in these aid recipient countries by use of capital controls.

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APPENDIX A

Table 2.3.

List of Countries		
Non-Resources		Resources
Argentina	Malaysia	Algeria
Australia	Mauritius	Bolivia
Bangladesh	Morocco	Botswana
Barbados	Nepal	Chile
Brazil	New Zealand	Côte d'Ivoire
Burundi	Pakistan	Ecuador
Canada	Panama	Indonesia
Cameroon	Paraguay	Iran
Columbia	Philippines	Lao
Costa Rica	Rwanda	Mexico
Egypt	Senegal	Niger
El Salvador	Sierra Leone	Nigeria
Fiji	Singapore	Norway
Gambia	South Africa	Peru
Ghana	Sri Lanka	Venezuela
Guatemala	Switzerland	Yemen
Honduras	Tanzania	
India	Thailand	
Israel	Tunisia	
Japan	Turkey	
Jordan	Uganda	
Korea	United Kingdom	
Madagascar	United States	
Malawi	Uruguay	

Table 2.4: system GMM estimation (reduced instruments)

	(1)	(2)	(3)	(4)	(5)	(6)
Log[real GDP per capita] _{t-1}	0.419** (0.205)	0.396** (0.177)	0.382** (0.168)	0.377** (0.186)	0.394** (0.187)	0.375** (0.182)
FU×IN	-0.0369*** (0.00604)	-0.0359*** (0.00548)	-0.0415*** (0.00536)	-0.0353*** (0.00517)	-0.0358*** (0.00510)	-0.0334*** (0.00413)
FU×IN×RA		-0.204** (0.0929)	-0.134* (0.0783)	-0.160** (0.0719)	-0.186* (0.102)	-0.186* (0.101)
Inflation	0.00170 (0.00210)	0.00328 (0.00376)	0.00357 (0.00376)	0.00219 (0.00288)	0.00320 (0.00373)	0.00278 (0.00319)
Log (Population)	0.204** (0.0950)	0.206** (0.0999)	0.0902 (0.0812)	0.202** (0.0966)	0.206** (0.0927)	0.127 (0.0840)
Trade	0.00818* (0.00485)	0.0107** (0.00516)	0.0110* (0.00584)	0.0101** (0.00490)	0.0117** (0.00518)	0.0105** (0.00461)
FDI	-0.0289 (0.0311)	-0.0679* (0.0402)	-0.0836* (0.0461)	-0.0593 (0.0393)	-0.0669* (0.0394)	-0.0708* (0.0424)
Government Consumption				0.0530 (0.0441)		
Domestic Investment			0.0377*** (0.0105)			
REER					-0.000731 (0.00300)	
Debt/GDP						-0.00664* (0.00343)

Table 2.4: system GMM estimation (reduced instruments) (continued)

	(1)	(2)	(3)	(4)	(5)	(6)
AR(2) p-value	0.228	0.602	0.485	0.717	0.557	0.771
Hansen-Pvalue	0.147	0.166	0.380	0.334	0.315	0.413
Observations	256	256	255	255	256	255

Dependent variable is Log[real GDP per capita]. Standard errors are in parentheses .***, **, * are respectively $p < 0.01$, $p < 0.05$, $p < 0.1$

APPENDIX B

Table 3.3.

List of Countries

Bangladesh	Côte d'Ivoire	Jordan	Paraguay
Indonesia	Egypt	Albania	Peru
Kenya	El Salvador	Argentina	Thailand
Mali	Ghana	Botswana	Turkey
Mozambique	Honduras	Brazil	Venezuela
Niger	India	China	
Senegal	Morocco	Colombia	
Tanzania	Nicaragua	Malaysia	
Togo	Pakistan	Costa Rica	
Uganda	Sri Lanka	Jamaica	
Bolivia	Tunisia	Mexico	
Cameroon	Philippines	Panama	

Table 3.4. 3SLS with fixed effects

VARIABLES	(1) Private_Inflow	(2) Aid	(3) Governance
Governance	3.747*** (1.238)		
Inflation	-0.00136 (0.00507)		
Democracy	1.213*** (0.406)	-0.114 (0.133)	-0.424*** (0.0984)
Private_Inflow		-0.724*** (0.217)	
log (GNI_ per capita)		1.387 (1.352)	
Aid			-0.604** (0.249)
Human_Capital			2.266 (2.954)
Constant	-34.70*** (10.93)	-6.280 (9.920)	10.73*** (1.117)
Observations	779	779	779

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

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