Is All FDI Created Equal?: An Empirical Analysis of the Effect of Foreign Direct Investment and its Sectoral Destination on Income Inequality in Developing Countries

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An Empirical Analysis of the Effects of

Foreign Direct Investment and its Sectoral Destination

on Income Inequality in Developing Countries

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Abstract

Income inequality is an issue of moral, ethical, and economic concern. Disparity in levels of wealth and income in developing countries prevents poor individuals from enjoying the same opportunities as their wealthier counterparts, and hinders the prospects for future development. FDI is one among several possible culprits responsible for increasing income inequality. As a representative of foreign control and influence in developing economies, some countries are wary of FDI. On the other hand, FDI brings the promise of jobs, technology spillovers, foreign exchange, and economic growth. Previous studies have explored the effects of FDI on income inequality in developing countries, but they have all relied on FDI data that does not distinguish between direct investment destined for the primary, secondary, and tertiary sectors. This study uses sectorally disaggregated FDI data for a sample of developing countries over the years 1990-2005 in an attempt to discern whether sector-specific features play a role in affecting domestic income inequality. While this study fails to find the FDI variables significant, it does find much support for other possible causes of income inequality, such as population growth rate and levels of urbanization within a country.

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Contents

I. Introduction

With the recent fall from favor of the outdated Cold War descriptor, "Third World," came a new adjective to describe the majority of states in the world system, whose economies cannot be characterized as fully developed. Calling a country "developing" is certainly a more sanguine manner of speaking, but it also risks making economic development sound like an inevitable and natural process. These countries are developing, yes, but how does one define development, and what exactly can be done to move along the process and make developing economies grow? While a truly conclusive answer remains elusive, economists continue to study the determinants of economic growth and the features that characterize economic and social development. The majority of economic growth models present investment as important—at least necessary, even if not sufficient for growth. An economy that does not invest in its future is presumably doomed to its current state of economic development. Yet for low resource countries especially, this presents a problem. With few resources to spare now, investment for the future hardly seems a viable option. At one time, commercial loans were the answer. As sovereign borrowers, some countries were able to borrow large sums of money for infrastructure and development projects. Those sources of funding disappeared with the debt crises of the late 1970s and 1980s, which forced countries to look elsewhere for funds.

This predicament led to theories such as the "financing-gap" hypothesis, which is based on Harrod-Domar growth models and claims that countries are prevented from achieving growth by an absence of local funds for saving and investment. "Although it died in the academic literature some time ago, the ghost of the financing gap lives on today in the IFIs [International Financial Institutions]. Over 90% of country desk economists at the World Bank, for example, use some variant of the financing gap model today to make growth and financing gap

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projections" [Easterly (1999), p.424]. Regardless of what William Easterly refers to as the academic "death" of the model, it remains popular with regard to calculating investment needs for developing economies. Where domestic savings appear to fall short, the natural next step is to look outward, to foreign sources of financing. And so the controversial role of foreign direct investment (FDI) enters the scene. Countries hoping to transition to industrialized economies often look to foreign investment as a way to stimulate growth in their economies and internal industry. The world share of FDI inflows to less developed countries has been increasing: "LDCs received 37 percent of world FDI inflows over the period of 1993-98, compared to an average of 31.2 percent from 1991-1992 and an average of 17.5 percent during the second half of the 1980s" [Blonigen and Wang (2005), p. 224]. FDI then, is an increasingly important issue for developed and developing countries alike. "Nowadays, one rarely hears high-level support for the once popular Korean model…which included a restrictive approach to FDI as a means of developing indigenous technological capability" [Athukorala and Hill (2002), p.169]. With the mention of the East Asian economies, it is also relevant to point out that foreign direct investment is attractive especially in light of the risks that accompany international capital flows in the form of portfolio investment. The easy movement of portfolio investments in the face of any economic uncertainty can wreak havoc on receiving economies, as illustrated by the East Asian Financial Crisis of 1997. Direct investment is a more permanent commitment, entailing the construction of factories or offices and the hiring of employees. These concrete efforts and decisions can not be unmade whenever a whiff of uncertainty appears. FDI, then, can provide a more stable and long standing alternative to foreign portfolio investments. "We now have firm evidence that, in much of East Asia (except in Indonesia where political unrest has scared investors away), FDI inflows have been much more resilient than other forms of private capital"

[Athukorala and Hill (2002), p.175]. While it may fill in the gaps where domestic investment falls short, it has other effects—good and bad—that domestic investment does not. Some laud FDI's promise of foreign exchange currency, technological advances, jobs, and economic growth, but others deplore it for its disruption of domestic industrial development, and promotion of the further exploitation of the periphery by the core.

The current research literature on the effects of FDI in developing economies is sizeable; previous studies have looked at the effect of FDI on economic growth rates, wage structure, and income inequality, to name a few. Inequality is particularly interesting because it contains economic, social, and moral aspects. Deplorable on ethical and moral grounds, it also has important functional effects on the development of a country's economy. "Extreme inequalities in opportunity and life chance have a direct bearing on what people can be and what they can do—that is, on human capabilities" [UNDP Human Development Report 2005, p.51]. This paper will explore one possible link in the complex relationship between FDI and development as it looks at the effect of FDI on income inequality in developing countries. Studies exploring the effect of economic openness and FDI on income inequality have produced varying results. In an attempt to gain more information about the picture of FDI in developing countries, I will perform regressions that explore the effect of FDI on income inequality in a sample of developing countries during the years 1990-2005, disaggregated by sectoral destination. This focus on sectoral disaggregation represents the greatest innovation of my study. To say that investment in the mining of mineral ore affects the same people, and through the same mechanisms, as investment in textile manufacturing or hotel services is misleading. While lumping foreign direct investment in primary, secondary, and tertiary sectors into one statistic has been the standard practice, it may mask more precise conclusions about how foreign investment affects an

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economy. This practice has been adopted in previous work likely due to the difficulty of obtaining data on FDI in general, and disaggregated data in particular, for developing economies. Due to data availability, the sample of countries in this study is admittedly limited, but it presents a preliminary look at the direction that future inquiry may take.

The remainder of the paper will provide background information for some of the complex challenges facing developing countries. This includes the broader challenge of economic growth, as well as issues that are more specifically related to inequality and FDI. Then, I will discuss the results of my regressions and how they relate to previous work in the field. In conclusion, possible avenues for future study and policy implications will also be addressed.

Economic Growth and Poverty

An important feature of the economic growth debate, in developing countries in particular, is the effect of economic growth on the poorest sectors of the population. Policies that focus on overall growth as the most important goal justify their approach with the idea that a rising tide floats all boats, big and small. Economic growth whose benefits accrue only to the highest classes may not be the most desirable, but it is growth nonetheless. Martin Ravallion and Shaohua Chen looked at poverty reduction as it related to economic growth in 65 developing countries over the years 1981 to 1999. "The answer was quite clear: fast growth went with fast poverty reduction, and overall economic contraction went with increased poverty" [Easterly (2001), p.13]. A study by David Dollar and Aart Kraay analyzed the effect of overall income increases in a country on the incomes of the poor and found similar results: "A 1 percent increase in average income of the society translates one for one into a 1 percent increase in the income of the poorest 20 percent of the population" [Easterly (2001), p.14]. It appears that it is not

unreasonable to focus on growth of overall GDP in the development process. A report from the Inter-American Development Bank (IADB) states, "Recent evidence shows that, on average countries can expect poverty to fall by between 1 and 2 percent for each 1 percent growth in per capita income…Any country which is able to develop a sustained growth trajectory will have implemented the most important element of the its antipoverty strategy" [Morley (1997), p.3]. Economic growth strategies certainly vary across countries, and so it is worth looking more closely at specific features of growth processes to determine their importance to overall economic development.

Poverty and Inequality

Economic growth is central to the development discussion, and this is with good reason. Without sustained growth, countries are unlikely to be able to rise from the ranks of the LDCs. It is possible, however, that not all growth is created equal. Increasing both the incomes of richer and poorer segments does not address the underlying issue of inequality. Ideally, growth in developing countries would increase the incomes of those most in need, and would lessen income inequality. Pro-poor growth promises a more targeted way of achieving the increases in human development that overall growth in GDP aims for. "The idea of diminishing returns to increased wealth provides a framework for understanding a simple idea; an extra dollar in the hands of a landless agricultural labourer in South Asia or an urban slum dweller in Latin America generates greater welfare than an equivalent amount in the hands of a millionaire" [UNDP Human Development Report (2005), p.53]. Working towards increases in GDP that accrue to lower income groups is a way of obtaining the most development impact from even limited increases in income.

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The question of development goes further than increasing the incomes of the poorest. Even if the poorest segment of the population may have enough to survive, full participation in society is rarely possible at that level, particularly in economies with high levels of income inequality. Those individuals in the poorest sections miss out on contributing fully to the economy and to society as a whole. "Inequality breeds violence and political instability. That discourages investment and reduces the growth rate of the economy. Inequality also reduces the amount of education that many families can afford to give their children simply because they are too poor" [Morley (1997), p.16]. The theoretical link between inequality and political violence has been proposed by thinkers as early as Aristotle, and it has been empirically tested many times as well. While the relationship between income inequality and political violence is not conclusive, it remains an important consideration. The 2005 Human Development Report states, "Deep disparities based on wealth, region, gender and ethnicity are bad for growth, bad for democracy and bad for social cohesion" (UNDP Human Development Report (2005), p.51]. A country with high income inequality may be more susceptible to civil unrest as marginalized and poor groups make attempts to assert themselves, or as powerful groups use sometimes violent means to maintain their position. According to liberal political theory, general prosperity, democracy, and social capital are the building blocks of a politically stable society. If inequality stands in the way of all of these things, it is of both moral and political importance to diminish it.

Full participation in society is also contingent on an individual's health. Developing countries continue to face the results that inequality can have on a population's health. A healthy workforce is an important factor for any developing economy because healthy employees and consumers can provide the building blocks of economic growth. Overall population health is also inexorably linked to population issues and the so called demographic transition that

developing countries experience as they increase their levels of development. The high birth rates that characterize most developing countries contribute to the dependency burden on the working-age portion of the population and the state's resources, but they are also a result of a social and economic environment that encourages them. If the health prospects for future children look grim, families will have larger families in order to hedge against the future loss of a child. For poorer populations with less access to health care, this is more likely. In the demographic transition, high birth and death rates give way to lower birth and death rates, via the intermediate stage of high birth rates and low death rates. Mortality rates must first go down before families feel confident that more, or even all, of their children will survive. As health improves, the incentives for having large families tend to dissipate and rates of population increase move to more sustainable levels.

Rates of natural population increase have been included in a number of income inequality models because of their possible role in exacerbating the level of income inequality in an economy. Poorer groups tend to move through the demographic transition at a slower rate than wealthier groups given a number of possible factors such as health and education differences, which translates to more members of the poorer groups in society. This then places further pressure on poor groups, sapping the effects of economic growth and aggravating pre-existing income inequality. Ahluwalia notes these links in his comprehensive exploration of inequality and development, and Francois Nielsen (1994) expands and retests them. "Different income groups grow at different rates, with the lower income groups typically experiencing a faster natural rate of increase in population" [Ahluwalia (1979), p.16]. A larger rate of population increase, then, generally means more people at the lower end of the income scale. "The glut may depress the relative wages of the unskilled, increasing the inequality even further" [Nielsen

(1994), p.662]. The natural rate of population increase, also (and fitting with the previous discussion of the demographic transition) can serve as a proxy for the sociocultural heterogeneity of an economy. On this trait Nielsen hypothesizes, "the natural rate of population …is itself the result of a gap between the early adoption of mortality-reducing technologies, on one hand, and the later adoption of modern reproductive motivations (as well as more effective birth control technology) leading to smaller families, on the other" [Nielsen (1994), p.664]. Nielsen finds the natural rate of population increase to be highly significant and positively related to income inequality.

Economic Growth and Inequality

Some studies looking at the effects of growth on inequality have argued that certain levels of inequality are to be expected as a country moves through the modernization process. Perhaps the most well-known example of this is Simon Kuznets' inverted U hypothesis, which presents the case for a process of development characterized by increasing income inequality as a country's income begins to rise, with falling inequality as the economy reaches higher levels of income. Kuznets' study analyzed a cross section of countries at varying levels of development, measured by GNP. Ahluwalia further explored the Kuznets hypothesis and found that in his study as well, "Income shares of all percentile groups except the top twenty percent first decline and then increase as per capita GNP rises. Income shares of the top twenty percent display a corresponding pattern" [Ahluwalia (1979), p.3]. This study, then, confirmed Kuznets' earlier work, but more recent studies have not found support for the Kuznets hypothesis.

The theory behind this relationship was originally argued by Kuznets to be related to the modernization process which "typically involves accelerated growth in the high income non-

agricultural sectors, which slowly absorb population from the low-income, relatively stagnant, agricultural sector" [Ahluwalia (1979), p.7]. The high income non-agricultural sector tends to cluster in urban areas, and so contributes to the process of urbanization. Ahluwalia tests this theory by controlling for share of agriculture in GDP and share of the urban population in the income share of different income groups. He finds that the size of the agricultural sector is positively related to the income shares of the middle groups, and negatively related to the top income group. Urban population share has a positive relationship with the income share of the poorest income group and is negatively related to the share of the highest income group [Ahluwalia (1979)]. Based on this, Ahluwalia states that while the shift away from agriculture does affect middle income rather than the lowest income groups, the continuing urbanization that follows has a positive effect on the lowest income groups' share.

More recent studies of the effects of growth and increased national income on inequality have discredited the applicability of the Kuznets hypothesis. "What is really a relationship over time has, for lack of data, usually been tested using cross-country evidence. Researchers have used variations in per capita incomes across countries to represent increases in per capita income over time within a country" [Deininger and Squire (1997), p.40]. One of the major problems faced by those studying the economies of developing countries is that the ability to keep accurate statistics is neither a priority nor capability of many them. The cross-country analyses performed by Kuznets and Ahluwalia represent an attempt to work with the data that is available. Later studies, such as those done by Klaus Deininger and Lyn Squire use time series data within countries to test the Kuznets hypothesis and "find no evidence of it in almost 90 percent of cases" [Deininger and Squire (1997), p.40]. These studies offer a more realistic model for a test of the Kuznets hypothesis. The follow up work done by Deininger and Squire reached quite a

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different take on the place of inequality in the growth of economies. Rather than being a necessary consequence of the development process, Deininger and Squire find that inequality can adversely affect growth. Looking at data from 1960 to 1992, they find that initial income inequality has a negative impact on future growth. This relationship is weak, but a retesting that replaces asset (land) inequality for income inequality reveals a strong negative link between distribution and growth [Deininger and Squire (1997)]. This link is possibly a result of inequality of asset holdings leading to lack of access to credit for investment, and thus the means for bottom up business development and growth.

While the statistical proof of the Kuznets hypothesis is no longer accepted by all development economists, its theoretical grounding remains interesting for further study, especially with regard to the role of sector dualism in developing countries. Rather than consider only GDP or GNP, some studies have sought to control explicitly for dualism. The dual economy that characterizes many developing countries has been controlled for in varying ways in the literature. Nielsen (1994), and subsequent work by Nielsen and Alderson (1995, 1999), proxies for sector dualism by including a variable for the percent of the labor force employed in agriculture and finds it to be highly significant in determining income inequality. The theoretical link between sector dualism and inequality then, should not be discarded. Foreign investment may play a particularly significant role in urbanization because foreign firms generally concentrate themselves in urban centers. Their presence and the promise of better-paying jobs is a lure for rural emigrants, and becomes a pull factor fueling the engines of urbanization in developing countries.

FDI and Developing Economies

As mentioned above, FDI as a source of investment for growth is an important feature of the economy of many developing and transition economies. Proponents of FDI as an engine of growth and development point to a number of possible benefits. Such positive effects may include increased economic growth, an influx of much-needed foreign exchange currency, new and more efficient technology and business practices, education spillovers, jobs and higher wages, and a greater demand for domestically-supplied intermediate goods. Possible negative effects, however, are also numerous. Examples of these include the introduction of inappropriate technologies (generally capital-intensive into a labor-abundant economy), exploitative working conditions, and competition that inhibit the growth of domestic industry.

Its role as a purveyor of growth is one thing (which, it should be noted, is up for debate), but special features of FDI in comparison to domestic investment mean that it may play a special role in the levels of income inequality in a country. One possible channel through which FDI might affect inequality is the result of the benefits and wages offered to employees of foreign firms. "In middle-income developing countries local workers in foreign-owned plants earn 1.8 times the average manufacturing compensation; in lesser and least developed countries local workers in foreign-owned plants earn 2.0 times the average manufacturing compensation" [Moran, Graham, and Blomström (2005) p.392]. Certainly sweatshop working conditions persist in some locations, and this statistic should not be interpreted as a blanket benediction of all foreign manufacturing firms, but the incredible wage differential between foreign and domestic firms illustrates the special pull that the chance for employment with a foreign firm could provide. Foreign firms with external funding sources might also be seen as more stable places of

employment as opposed to domestic firms that have a smaller network of safeguards in the face of economic upsets.

The relative factor endowments model of international trade suggests that in an economy, the incomes of the abundant factor of production will benefit from increased openness. FDI in developing countries, then, should work to increase to the relative income of unskilled labor and decrease income inequality [Anderson (2005)]. The assumptions of the model are not necessarily borne out by the real experience of developing countries, however, because of the presence of other factors of production and the imperfect transfer of production technologies. The introduction of inappropriate technologies negates the predictions of the Stolper-Samuelson model, which "would predict that freer trade would be egalitarian for these countries, since it allows those abundant in unskilled labor to shift toward unskilled-labor-intensive production, raising unskilled wages relative to skilled wages" [Lindert and Williamson (2002), p.1047]. Higher technology modes of production require the employment of skilled labor over unskilled labor, and will thus decrease the relative wage position of unskilled labor, not improve it. Rather than being an equalizing force, such investment could increase inequality in an economy.

Dependency theorists are particularly wary of FDI as it represents for them a new colonialism and the continued unequal relationship between countries of the core and the periphery. As an external factor, FDI can have a great effect on the economy of a receiving country, not least of all on its levels of inequality. The main channel through which FDI may affect income inequality is its effect on the structure of the domestic economy. One theory focuses on the economic dualism that characterizes many developing countries. As economies industrialize, technology, education, and resources become concentrated in urban centers. Individuals living in urban centers become incorporated into the modernized economy while

those who work in agriculture and other traditional industries remain outside of the new economy. As FDI may introduce higher-paying, higher technology, and higher education requirements, it could exacerbate the problem of the dualistic economy. On the other hand, the practice on the part of some transnational firms to encourage education and provide training could be used as evidence that increased levels of FDI actually increase the amount of skilled labor and bring more individuals into the modern industrialized sector, speeding up the process towards improved levels of income inequality.

Other work, generally in the dependency theory discourse, focuses on transnational corporations' cooperation with local elites to create and maintain power structures. "There is broad consensus among critics that multinational corporations foster the development of groups…whose interests and activities are consonant with their own" [Biersteker (1978), p.17]. And, as transnational firms are subject to the investment controls put into place by a state's government, they have little to no incentive to "rock the boat" politically regarding political issues other than those directly related to a firm's economic interests. Once a firm has an influential role in a country's economy, it may have some bargaining power with regards to political choices, but in this case the firm will still be unlikely to argue for increased income equality or distribution that may decrease their own profitability. Local employees of multinational firms, too, have little incentive to exert pressure for change. "Employees also enjoy a privileged and increasingly dominant position within their own societies as a result of the wages paid to them by multinational corporations" [Biersteker (1978), p.17]. While opponents argue that multinational firms are participating in a race to the bottom with regard to wages, "Research by Harrison (1994) on wage-setting by MNCs in the United States, Mexico and Venezuela suggests that MNCs generally pay higher wages than domestic firms, leading to

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increases in overall wages in the host country" [Stone and Jomini (2002), p.235]. These employees benefit from the increased wages paid by multinational firms, but the relative income position of workers unable to obtain such employment declines, while their decreasing political and social positions also limit their ability to affect structural issues that may exacerbate income inequality. "In part because their capital-intensive techniques require the stabilization of semiskilled and high-level indigenous man-power, multinationals offer wage scales that widen the gap between their employees (and those indirectly benefited) and the rest of the country's labor force" [Biersteker (1978), p.21]. In this climate, local firms may find it in their interest to offer more attractive benefits and compensation packages to attract workers. If these firms can adjust to the new business climate, employees in both local and foreign firms will benefit, and eventually so will the income gap.

Most popular conceptions of FDI seem to be linked with the operation of factories that exploit relatively inexpensive labor and relaxed standards. Beyond its effects on the secondary, or manufacturing, sector FDI may affect income inequality via changes in the size of the tertiary, or service, sector in receiving countries. The portion of FDI inflows to the service sector in developing countries increased from twenty-five percent in 1988 to forty-one percent of total FDI in 1997. This change reflects a decline in the relative amount of manufacturing-bound FDI, which fell from sixty-six percent of total FDI in 1988 to fifty percent in 1997 [Blonigen and Wang (2005)]. The increasing role of the service sector is certainly worth noting here. Robert Fiala (1983) regresses income shares in 1970 on percentage of workforce in the service sector in 1960, and concludes that his findings "suggest that countries with a large service sector tend to have a greater percentage of income distribution to the broad center of the income distribution, and less to the highest income groups" [Fiala (1983), p.425]. The growth of the service sector,

then, may assist in the softening of income inequalities. Transnational firms bring with them foreign nationals and create a class of higher paid executives within the country. This class increases demand for services from the tertiary sector, spurring that sector's growth. The tertiary sector includes industries as diverse as construction, financial intermediation, and education.[1] Those individuals who are able to find jobs in the newly expanding tertiary sector compose another class, earning higher wages than they would in traditional sector employment and bridging the income gap between traditional and modern sector employment. This changing face of FDI may make a difference in the effect of FDI in developing countries, and reflects one of the reasons that FDI data ought to be disaggregated in analyses of its effects.

II. Past Approaches

The analysis that I will undertake in this paper seeks to join the previous empirical work in both economics and sociology that explores the relationship between FDI and income inequality in developing countries. The models I employ draw from these previous studies, but also incorporate FDI data that has been further disaggregated. By disaggregating inward FDI statistics, I can more precisely specify the channels through which FDI affects inequality. The manner in which FDI is theorized to affect an economy is likely not experienced uniformly over all sectors. Investment in the primary sector may be capital-intensive, for example. Or, the secondary sector may attract investment that raises the wages for certain sets of workers, but not others. The internal dynamic of the industries grouped under each of these sectoral designations has much to say about how (or whether) FDI exerts influence over a receiving economy. FDI has the possibility for great impacts on a country's domestic economy. As a foreign factor

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[1] For a description of the division of industries between sectors, see United Nations International Standard Industrial Classification of All Economic Activities (ISIC), accessed from UNCTAD website.

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seeking entrance into a domestic economy, it is also an element over which a government can choose to exert considerable policy control, either through actions that discourage or encourage foreign investment.

In developing the models to be used in this study, I consider both social determinants of inequality as well as variables that describe more explicitly the economic structure of the economies under review. Inequality is both an economic and social issue, and it is therefore not surprising that its study has been taken up by economists and sociologists alike. Development itself touches both disciplines (among others). Some empirical analyses, such as those undertaken by Chase-Dunn (1975) and Changkyu Choi (2006) limit themselves to what might be considered financial economic variables, choosing not to include social measures that might influence levels of inequality. More comprehensive models include an array of social indicators. Pan-Long Tsai (1995) employs mainly financial economic variables as determinants of income inequality, but controls for human capital, approximated by measures of literacy rates and secondary school enrollment rates. He finds that FDI increases income inequality, but that geographic differences may play an important role. Milanovic (2002), on the other hand, does not find a significant relationship between FDI and income distribution. Choi (2006) finds that inward FDI increases inequality, but also finds a significant and positive relationship between outward FDI and income inequality. Nielsen (1994) includes social and financial variables in his study of the effect of sector dualism on inequality, as well as an index of democracy. Nielsen and Alderson (1995, 1999) and Milanovic (2002) also control for political variables, such as the presence of a Marxist-Leninist regime or a political democracy. The inclusion of the Marxist-Leninist regime variable controls for the possibility that communist regimes enact policies that result in a more equal distribution. Including a dummy variable for political democracy is a test

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of the median voter hypothesis, which predicts that in a democracy, policy decisions will tend towards the position of the median voter. In the case of economic policies, this would potentially result in greater income equality. Nielsen and Alderson find the coefficient on the Marxist-Leninist regime to be negative and significant, as theory would predict. Milanovic's study finds that democracy also generally contributes to income equality.

It is also common to control for the regional location of receiving countries; Tsai (1995), Alderson and Nielsen (1999), and Choi (2006) include regional considerations in their specifications in order to determine whether host country characteristics were able to account for inequality. Tsai finds that only in countries belonging to the East/Southeast Asian country group does FDI have a significant negative impact for a country's inequality, while Alderson and Nielsen find that the Latin America dummy variable has a positive and significant impact on inequality but the East/Southeast Asia dummy is not significant. Choi also finds that being part of Latin America has a positive and significant effect on income inequality.

Efforts to control for sectoral shifts due to FDI include introducing proxies for dualism in an economy, such as the percentage of the labor force in agriculture, used by Nielsen (1994) and a sector dualism measure used by Nielsen and Alderson (1995, 1999). Each of these studies concludes that the measure of dualism included is highly significant and has the effect of increasing income inequality. The Nielsen and Alderson study finds that FDI exerts an independent significant and positive effect on inequality when included in the model.

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Statistical Issues

There is some debate over the proper application of FDI statistics for use in regression models. Some economists favor FDI stock variables while others have argued that using stock variables without also controlling for FDI flow may lead to improper specification. Mistaken interpretations of ratio variables may also wrongly conflate relative negative effects with absolute negative effects, as argued by Firebaugh (1996). He argues that it is possible that rather than absolutely increasing inequality, FDI merely decreases it less than domestic investment. Later regressions by Alderson and Nielsen (1999), fail to find support for this position, concluding "that foreign capital appears to boost inequality as opposed to merely reducing inequality less than domestic investment does" [Alderson and Nielsen (1999), p.622].

The elephant in the room in FDI studies is the pooling of developed and developing country data in one group. "In fact, the vast majority of empirical FDI studies do not distinguish between LDCs and developed countries (DCs) in their analysis" [Blonigen and Wang (2005), p.221]. Blonigen and Wang find that, with regard to three popular areas of FDI research, the pooling of LDC and DC data produces results different from when LDC data is considered on its own. "While these empirical analyses are often based on theories that are purportedly comprehensive representations of the entire distribution of the world's economies, the data clearly tell us that FDI in LDCs and DCs follows very different processes" [Blonigen and Wang (2005), p.221]. The analysis presented in this paper limits itself to receiving countries designated as developing, which is taken to mean economies denoted Low, Lower Middle and Upper Middle Income, as defined by the World Bank.

Still other economists such as Nunnenkamp and Spatz (2004) have proposed that the role of FDI in a country is not properly described through the use of the highly aggregated FDI data

that is usually employed. Using outward FDI data from the United States as a proxy for world FDI, their study highlights the importance of disaggregated FDI characteristics as they affect the FDI-growth relationship. They distinguish between resource-seeking FDI, efficiency-seeking, and market-seeking investment (roughly representing the primary, secondary, and tertiary sectors, respectively) as they explore the effects of FDI on the growth rates of receiving countries. In this study, sector specific (and even intra-sector industrial) differences make a difference as to whether FDI increases economic growth. The interaction between favorable host country attributes and favorable FDI characteristics also appears important to the effects of FDI. Their conclusion, that research analyzing FDI ought to consider disaggregated data in order to properly capture its effects, influences the methodology used in the present analysis [Nunnenkamp and Spatz (2004)].

III. The Model

The model employed in this work seeks to integrate the previous economic and sociological explorations of FDI and income inequality by controlling for social and human development variables, as well as structural and financial variables. The dependent variable used will be the Gini index of inequality due to its widespread acceptance and omnipresence in the literature. The Gini data is compiled from several sources in order to obtain the most observations possible for use in the regression. The Gini values available from the World Bank Povcal Network serve as the base, and missing values are filled in using OECD data and data from the Human Development Reports published by the United Nations Development Programme (UNDP). I will also use data on the income shares of the wealthiest and poorest

population quintiles, obtained from the World Development Indicators database, as dependent variables for some regressions.

The financial variables included are GDP per capita, PPP constant 2000 international dollars and stock of FDI as a percentage of nominal GDP in current US dollars. The inclusion of GDP per capita is a measure of development and a test of the relationship between economic development (narrowly defined) and inequality. I have also included a dummy variable for countries classified by the World Bank as Upper Middle Income. This is in order to test whether a country's location along the development path exerts a force on inequality. If a Kuznets-type modernization path is a reality, then this variable should have a significant and negative effect on the level of inequality, as these countries are theoretically closest to having overcome the peak of inequality and are on their way to decreasing levels.

The structure of the receiving economy is represented in my model by the percentage of the population living in urban areas, and regional dummy variables. Numerous empirical and theoretical works have suggested sector dualism as the culprit for income inequality. FDI is considered a purveyor of urbanization, and thus a catalyst for increased dualism in developing economies. The percentage of the population living in urban areas serves as a proxy measure of sector dualism. Including this variable controls for the possibility that urbanization of any kind independently affects levels of income inequality, not only as a result of FDI. A regional dummy variable for Latin America is included for some regressions in an effort to replicate earlier models such as that used in Tsai (1995) and Alderson and Nielsen (1999) which seek to capture regional historical or cultural features that could contribute to income inequality within countries.

The social and human development independent variables included are the percentage of secondary school enrollment among eligible students, and the rate of population growth, both accessed from the World Bank World Development Indicators database. The rate of population growth is included because it is a demographic change that, while increasing the demands on resources of the whole economy, tends to disproportionately affect the poor. It has been argued in the development literature that high rates of population growth can sap the benefits of economic growth. They are also representative of the overall demographic structure of a population and can provide information as to the makeup of the workforce, since increases to the population are likely to disproportionately add members to the lesser educated and poorer segments of the population. I also include a variable representing the percentage of enrollment in secondary schools. While an increase in generalized educational attainment would theoretically serve to decrease inequality because of the increased employment opportunities that higher education can provide, at low levels it could increase inequality due to larger wage differentials benefiting the more educated members of the workforce. The expected sign of this variable, then, is ambiguous. Including this variable will also help to determine whether education itself exerts an influence on inequality, whether or not it is encouraged by FDI.

FDI stock is disaggregated so that it is included according to the sector in which it is invested, for example, FDI stock in the service sector over nominal GDP. In preliminary regressions on the Gini index, aggregate FDI is not shown to exert a statistically significant effect on income inequality in the countries of my sample. These results can be seen in Table 1. Because this conclusion is a point of debate in the literature, it is further impetus to attempt to discern whether disaggregated FDI will prove significant. This disaggregation represents the main innovation of my work. The inclusion of sector specific FDI stock draws inspiration from

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a paper by Peter Nunnenkamp and Julius Spatz (2004), who include disaggregated FDI data in their study of the effect of FDI on economic growth. They argue that the highly aggregated data used in most FDI studies may disguise some important features of different kinds of FDI. My use of disaggregated FDI is different for two reasons. First and most obviously, I am considering the effects of FDI on inequality and not growth. Secondly, the Nunnenkamp and Spatz study uses US FDI as a proxy for overall FDI in the economies it considers. I am able to include industry-specific data from all investing countries, which is available for a number (albeit a small one) of developing economies. I have separated FDI into primary, secondary, and tertiary sectors based on UNCTAD classifications. FDI that is channeled into one sector or another would likely have sector-specific characteristics that would influence its effect on the receiving economy. There may be quite a difference, for example, between FDI that flows into primary extractive industries and FDI that flows into manufacturing or the service sector. As the availability of data from developing countries improves, future studies might further disaggregate data even within these broad sectoral divisions in an effort to more precisely pinpoint the industries through which FDI affects (or does not affect) receiving economies.

      The picture of FDI in the countries in my sample is worth noting. FDI destined for the primary sector is a sizable percentage of GDP in Armenia, Kazakhstan, and Mongolia, and is largely the result of investment in mining and quarrying activities, with Kazakhstan adding petroleum to the mix as well. Secondary sector FDI is a substantial percentage of GDP in Estonia, Kazakhstan, Mongolia, and South Africa. The specific industries accounting for the importance of the secondary sector in each of those countries varies from textiles and clothing to metal production to the manufacture of wood products, among other things. The presence of the tertiary sector in this sample is representative of its increasing prominence in FDI to all

developing countries. It represents a considerable percentage of GDP in nearly all the countries of the sample: Armenia, Brazil, Chile, Colombia, Egypt, Estonia, Kazakhstan, Lithuania, Mongolia, Peru, Poland, and South Africa. Of that group, the tertiary sector FDI in Estonia is of particular note, reaching a value equal to 43% of the country's GDP in 2001.

IV. Results

In the first model, which uses the Gini index as the dependent variable, I initially test a reduced form that includes only the FDI variables and GDP per capita. Estimation results for this model are shown in Table 2. As the variables representing population growth rate and urban population are added, they present themselves as highly significant to the determination of income inequality. In version 3 of this regression, annual population growth is significant at the 1 percent level, while urban population is significant at the 5 percent level. Version 4 includes secondary school enrollment as an independent variable, which proves insignificant. Despite its statistical insignificance, its addition increases the adjusted R-squared of the entire regression from .16 to .58. The results of Wald tests suggest that this could be due to the high joint significance between secondary enrollment and urban population, as well as between secondary enrollment and population growth in version 4. The data available for secondary school enrollment reduces the number of observations from 68 to just 35, which introduces a tradeoff between a version with more explanatory power and a version that benefits from the greater confidence conferred by more observations. In versions 5 and 6, I continue to include secondary enrollment, but choose to drop it for versions 7 and 8.

Another issue in specifying the proper version of the model is related to the inclusion of per capita GDP. The initial choice to include this variable was an attempt to control for the level

of development of the countries in the sample. The variable, however, does not prove statistically significant in any of the equations. The inclusion of the Upper Middle Income dummy variable (equal to one if the country is classified by the World Bank as "Upper Middle Income"), on the other hand, proves highly significant. The two variables are highly correlated, and so are not included in the same versions. Rather, I include the Upper Middle Income dummy as a substitute measure of the level of development of the countries in the sample. The Upper Middle Income countries of the sample are Argentina, Chile, Estonia, Croatia, Lithuania, Poland, Slovak Republic, Venezuela, and South Africa. Versions 6, 7, and 8 use this method. The coefficient on the Upper Middle Income variable is negative and significant in versions 6 and 7 of the equation. These results support a Kuznets type interpretation of development, as countries in the Upper Middle Income bracket are farthest along the development path and are thus on their way to decreasing inequality. The versions of the regression that include the Upper Middle Income dummy as opposed to GDP per capita have larger adjusted R-squared values, and so are interpreted as being better specifications of the model. Another indicator of the level of development, the population growth rate, is considered next.

According to the theory of the demographic transition, higher rates of population growth are an indicator of lower levels of development. Theory predicts that the mechanism through which increased population growth is detrimental to the income share of poorer groups is twofold. First, population growth functions as a proxy for the process of the demographic transition, reflecting the place of a society along a path of development. Within a country, poorer groups are the last groups to have access to and adopt the practices that first lower death rates and then birth rates. Ironically, they are the least able to support additional dependents, who strain family budgets. The second piece of the mechanism is due to the skill levels of

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individuals in the poorest income groups.   Because additions to the population are likely to accumulate in poorer segments of the population, which tend to provide unskilled labor, population growth creates both more poor individuals and more competition for scarce jobs requiring unskilled labor.   This competition could result in a depression of wages and greater unemployment, both detrimental to the relative income position of poorer groups.   The expected sign of this coefficient is positive with regard to the Gini index.   In the versions in which it is included, population growth rate takes on the expected sign and proves to be highly significant. Its addition to version 2 in the Gini regressions garners significance at the 5 percent level, and in later versions its significance reaches the 1 percent level or better.   These results, which remain generally robust to the addition and removal of other variables, provide strong support for the theoretical link between population growth rate and income inequality in an economy.

Controlling for the percentage of the population living in urban areas is a way to sort out the effects of urbanization from the effects of FDI, which, along with domestic industry, may be providing one of the pull factors for the urbanization process.   When the variable for urban population share is included in the regressions, it is highly significant (beyond the 1-percent level in some cases) and positively associated with inequality.   It appears that the rural-urban split in developing economies plays a very important role in determining the level of income inequality. Increased urbanization is the result of both push and pull economic factors that make city life appear more attractive than rural alternatives.   As individuals congregate in urban areas, their incomes increase relative to those living in rural areas, and inequality increases.   A greater proportion of the population living in urban areas is associated with an increased Gini index, validating the sector dualism model that explains the process of the incorporation of individuals from rural areas into the modern, urban economy.   These individuals can earn an income not

attainable for their rural counterparts. Until a certain tipping point with regard to the incorporation of more individuals into the modern sector occurs, income inequality will not improve, bearing out the predictions of those who emphasize the role of sector dualism in developing economies.

While the percentage of the population living in urban areas is highly significant for several versions of the model, it loses all significance and its coefficient changes sign in versions 5 and 8, which introduce the dummy variable connoting whether a country in the sample is located in Latin America. This variable proves significant at or beyond the 1 percent level. It appears that a country's location in Latin America has a strong effect on increased levels of inequality. This validates the findings of Tsai (1995) which observed a strong regional component to inequality, though it goes against later work by Alderson and Nielsen (1999), which concludes that regional differences do not exert a strong effect on inequality. The urban population variable is strongly jointly significant with the Latin American dummy variable. This suggests that its significance in earlier versions was actually the result of its connection to a country's regional location. A simple correlation test reveals that urban population is highly correlated to a country's location in Latin America. These results suggest a different interpretation than the usual explanation of the "Latin American Effect." The relationship between location in Latin America and increased inequality is usually attributed to historical colonial and post-colonial unobservable factors that have entrenched unequal land ownership and resource access in Latin American countries. Rather, it appears that the Latin American countries in this sample may be experiencing higher levels of sector dualism that translate into income inequality.

In no version of the regressions do any of the FDI variables achieve statistical significance. It is perhaps most within reach in version 7, where the significance level associated with primary sector FDI is 16 percent. The coefficient is negative, suggesting that increased FDI stock directed towards the primary sector has the effect of decreasing inequality. This relationship should be interpreted with caution given its low statistical significance. If the relationship holds, it may be because of the primary sector's ability to incorporate unskilled labor into the workforce. Mining and quarrying activities often take place in rural areas, which might not have previously enjoyed much economic activity or development beyond traditional farming. Foreign development of these resources, then, could provide increased income-earning potential to individuals living in areas that otherwise did not benefit from industrialization and access to higher wages.

While the Gini index is widely accepted for use in empirical studies of inequality, the use of quintile income shares can also shed light on the effect of the same variables on more specific income groups, as shown in Tables 2 and 3. In this model, I regress the income share of the highest and lowest twenty percent of the population on the same variables used in the Gini equations, and some different relationships appear.

In line with the results of the Gini model, population growth rate and urban population are highly significant in regressions on the income share of the poorest quintile. The coefficients on both variables take on the expected negative sign, denoting a loss of income share for the poorest members of an economy as population growth rates or urbanization increase. As far as the result of population growth on the income share of the wealthiest quintile, is statistically significant, though only at the 10 percent level, in version 3a of this model. The estimated

coefficient is positive, suggesting that wealthier groups benefit from higher rates of population growth, which agrees with the predictions of the effects on the lowest income group.

With regard to the FDI variables, this model does uncover some significance. Primary sector FDI is significant in versions 1 and 2 of both income share regressions. The signs on the predicted coefficients, however, are not the same as were suggested by the Gini regressions. Rather, increases to the stock of FDI directed at the primary sector are linked to increases in the income share of the wealthiest quintile and reductions in the income share of the poorest quintile. Primary sector FDI includes investment in mining, quarrying, petroleum, and other extractive industries. These industries are typically capital-intensive, one reason foreign and not domestic firms are often the ones to develop these resources. The capital-intensive nature of these industries also has much to say with regards to the way that they affect income inequality in an economy. The poorer segments of the population may be employed in these industries, but as extraction becomes more technologically advanced, those employed will increasingly be skilled as opposed to unskilled laborers. The members of the lowest income quintile are less likely to be educated, and so also less likely to benefit from these investments because they are less likely to be employed in the resulting enterprises. Their loss of income share would be made up by the positive relationship between primary sector FDI and the income share of the highest quintile.

FDI into the secondary and tertiary sector appears significant for explaining the income share of the poorest quintile in version 2b of this model. The estimated coefficients suggest that FDI destined for the secondary sector increases the income share of the poorest quintile, while FDI destined for the tertiary sector diminishes it. Increased investment in the secondary sector could provide more job opportunities to those in the poorest quintile, who may have otherwise had few job prospects. The increased wages paid by foreign firms would allow even unskilled

workers to improve their position. This relative improvement could also be accounted for by a decreased income share of wealthier groups. (Although the regressions do not show that secondary sector FDI is significant for explaining the income share of the wealthiest quintile, its estimated coefficient is negative.) In support of these results, the question of firm ownership and intra-firm hiring is most relevant. As argued by those skeptical of FDI and the operations of MNCs, it is probably true that foreign firms are likely to bring with them their own executives, at least upon initial establishment in the host country. The wealthiest groups in a host economy are those that would occupy ownership or executive positions. The entrance of FDI, then, introduces some higher paying opportunities for lower skill levels, but fewer opportunities for members of the local industrial elite. The significance of FDI in the tertiary sector is only at the 10 percent level, which is not very assuring given the very small number of observations. In addition, these results disappear when urban population is also controlled for. The joint significance between each of the FDI variables and the urban population variable may be causing this loss of significance. Due to the highly significant results for urban population in the Gini model, however, it is more prudent to consider urban population significant and the effects of the FDI variables uncertain.

By using both the Gini index and quintile income shares, I hoped to produce a more complete view of the effects of various independent variables on income inequality. Where the results of both sets of equations line up, conclusions can be drawn with greater conviction. Such relationships include the strong roles of the population growth rate and urban population. As the theory of the demographic transition suggests, population growth appears to exacerbate income inequality and improve the position of the wealthiest quintile relative to all other income groups. There are, however, also areas where the two sets of regressions appear at odds with one another.

In some cases, one set of regressions produces a significant relationship while the other set produces no significance. Here, the problem of economists studying developing economies once again rears its ugly head: there is an unfortunate lack of reliable data. For the regressions on the Gini Index, 68 observations are available. These include observations from twenty two countries: Argentina, Armenia, Brazil, Chile, Colombia, Croatia, Egypt, Estonia, Hungary, Kazakhstan, Lithuania, Mongolia, Peru, Poland, Paraguay, the Russian Federation, El Salvador, Slovak Republic, Swaziland, Uganda, Venezuela, and South Africa. Data constraints reduce the number of observations for the income share equations to just 12. The countries represented include: Argentina, Armenia, Chile, Colombia, Estonia, Lithuania, Mongolia, Peru, Uganda, Venezuela, and South Africa. The small number of observations raises serious questions about the validity of these regressions, and results must be interpreted with caution. Both the Gini regressions and the income share regressions draw from a varied sample of developing countries. Yet due to the availability of more Gini statistics than income share statistics, the regressions that use the Gini Index as the dependent variable can draw from a base of more observations, lending more credibility to their results. When both sets of regressions produce significant and convergent results, this should be interpreted as the income share results reinforcing the results of the Gini regressions. For the cases in which the two sets of regressions produce different results, there are two appropriate ways to proceed. In those cases where the income share regressions produce significant variables where the Gini regressions did not, the results should be tentatively accepted as impetus for further study rather than conclusions. When the Gini regressions produce radically divergent results from the income share regressions, the more appropriate path is to cautiously accept the results of the Gini regressions, until more data becomes available for analysis.

V. Conclusions

Foreign direct investment has been the topic of much debate in the development discourse. It is in some ways an easy target—an invading economic force that is easily equated with exploitation and the other ills of colonialism. Yet, the possible benefits of FDI paint a decidedly less dire picture. Higher wages, access to capital, and the possibility for technological knowledge spillover are just a few of FDI's promises to developing countries. As with domestic investment, there are several ways that FDI can affect a receiving economy. This study has focused on the way that FDI may affect income inequality. Previous studies that have concerned themselves with the effect of FDI on income inequality have included FDI stock as a unified variable, and have generally suggested that increases in FDI are detrimental to income equality, although other factors such as regional variables may play an important role. A recent study by Changkyu Choi (2006) uses updated World Bank Gini data and finds support for the conclusion that FDI increases income inequality. What the body of literature regarding FDI and income inequality has been missing, however, is a deeper consideration of the kind of FDI entering an economy. In the most basic economic equilibrium equations taught to students, investment is presented as a unitary concept. Yet most economists would not suggest that all domestic investment is created equal. And so it is with foreign investment. Separating foreign direct investment from foreign portfolio investment is a start, but a deeper understanding of the concept requires us to go further. This analysis seeks to add to the current knowledge on FDI in developing countries by controlling for FDI as a percentage of GDP, disaggregated by sector. The effects of investment directed towards petroleum extraction should not be assumed to be the same as the effects of investment directed toward textile manufacturing or construction services. The present analysis shows that the relationship between inequality and FDI is not conclusive,

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but that sectoral destination may play a role. The results of the regressions discussed in this paper highlight the importance of sector-specific contributions to the development process and their effect on an economy receiving FDI. The differences in sign between the estimated coefficients of the three FDI sector variables, despite their lack of significance, suggests that previous work may have missed some of the more precise channels through which FDI affects income inequality.

Of course, any statistical analysis is only as good as the data it has to analyze. The recent availability of sectorally disaggregated data has made the present analysis possible, but at this point there remain a paucity of data with which to work. The time period over which this data is available, from 1990 to 2004, is admittedly not very long. It is possible that the presence of FDI stock in developing countries takes longer than the sample period to produce the predicted effects. The conclusions drawn here should be considered only a starting point for further study as more data become available. They do, however, present interesting policy implications that are worth discussing. Some countries have actively undertaken policies trying to attract foreign investment for development. These policies may be directed at all investors, or may be more targeted towards industries likely to bring a certain kind of job or technology to the host economy. With further research into the effects of sectorally disaggregated FDI, governments may be able to better target their efforts toward investment by firms that can help them improve the income gaps that ultimately prove detrimental to both human and economic development. Future research could further disaggregate FDI data from sector to specific industries in order to develop an even more complete understanding of its role in a host economy. Larger sample sizes may allow for more studies that could take into account the regional or even country-level differences among developing countries. Perhaps most importantly, the results of this analysis

show that FDI is less assuredly connected to inequality than are other social factors such as the population growth rate and the percentage of the population living in urban areas. The effect on inequality of FDI is ambiguous, but the impact of factors such as population growth and health care is not. Governments of developing countries would do well to consider this in their future policy choices.

Table 1– Gini Index

	1	2	3
Total FDI as a proportion of GDP	0.239 (0.723)	0.342 (0.653)	-0.423 (0.769)
Gross Domestic Product per capita, PPP	-0.000358 (0.000448)	--	--
Upper Middle Income	--	-5.326** (2.350)	-9.019*** (2.506)
Population Growth, annual percentage	5.236*** (1.002)	4.725*** (0.964)	0.544*** (0.159)
Urban population, percentage of total	0.402*** (0.103)	0.421*** (0.0832)	0.367*** (0.0867)
Secondary Enrollment, net percentage	0.0500 (0.0514)	0.00853 (0.0425)	--
R-squared	0.6614	0.7060	0.3361
Adjusted R-squared	0.6030	0.6553	0.2940
Observations	35	35	68

Notes: The dependent variable is the Gini Index of Inequality, compiled from World Bank Povcal, Word Bank World Development Indicators database, OECD data, and UNDP Human Development Reports. FDI data is from UNCTAD country fact sheets. Upper Middle Income is a dummy variable representing World Bank designation of income level. Standard errors are in parentheses.
* Significant at the 10-percent level
** Significant at the 5-percent level
*** Significant at or beyond the 1-percent level

Table 2– Gini Index Regressions

	1	2	3	4	5	6	7	8
Primary Sector FDI as a proportion of GDP	-22.894 (18.747)	-19.988 (18.314)	-14.226 (17.247)	1.950 (12.454)	-4.822 (10.587)	-7.127 (12.023)	-22.400 (15.764)	-5.617 (11.891)
Secondary Sector FDI as a proportion of GDP	-0.957 (16.287)	-0.372 (15.868)	7.29 (15.059)	3.481 (10.621)	4.347 (8.885)	7.954 (9.947)	14.419 (13.779)	12.067 (10.197)
Tertiary Sector FDI as a proportion of GDP	-0.999 (4.774)	-1.127 (4.651)	-2.727 (4.385)	-0.714 (3.168)	-0.283 (2.652)	-1.767 (2.937)	-4.305 (4.008)	-2.779 (2.972)
Gross Domestic Product per capita, PPP	0.00036 (0.000422)	0.000145 (0.000414)	-0.000640 (0.000462)	-0.000365 (0.000464)	-0.000495 (0.000390)	--	--	--
Upper Middle Income	--	--	--	--	--	-6.217** (2.582)	-9.927*** (2.547)	-1.471 (2.222)
Population Growth, annual percentage	--	0.386** (0.184)	0.435** (0.173)	5.286*** (1.050)	-1.359 (2.066)	4.634*** (1.005)	0.540*** (0.159)	0.397*** (0.119)
Urban population, percentage of total	--	--	0.332*** (0.107)	0.404*** (0.0485)	-0.0643 (0.160)	0.422*** (0.0849)	0.375*** (0.0871)	-0.158 (0.0983)
Secondary Enrollment, net percentage	--	--	--	0.0485 (0.0536)	0.0163 (0.0457)	0.00637 (0.0437)	--	--
Latin America	--	--	--	--	23.290*** (6.558)	--	--	19.408*** (2.704)
R-squared	0.0486	0.1115	0.2337	0.6627	0.7729	0.7160	0.3672	0.6595
Adjusted R-squared	-0.0118	0.0399	0.1583	0.5753	0.7030	0.6424	0.3050	0.6198
Observations	68	68	68	35	35	35	68	68

Notes: The dependent variable is the Gini Index of Inequality, compiled from World Bank Povcal, Word Bank World Development Indicators database, OECD data, and UNDP Human Development Reports. FDI data is from UNCTAD country fact sheets. Upper Middle Income is a dummy variable representing World Bank designation of income level. Standard errors are in parentheses.
* Significant at the 10-percent level
** Significant at the 5-percent level
*** Significant at or beyond the 1-percent level

Table 3 – Income Share of Highest Quintile

	1a	2a	3a
Primary Sector FDI as a proportion of GDP	221.805**	167.082*	90.354
	(82.464)	(78.427)	(103.895)
Secondary Sector FDI as a proportion of GDP	-50.817	-157.934	-33.126
	(125.619)	(125.334)	(167.375)
Tertiary Sector FDI as a proportion of GDP	9.345	40.932	7.744
	(34.44)	(34.981)	(45.716)
Upper Middle Income	-3.987	-0.943	-4.383
	(4.836)	(4.563)	(5.464)
Population Growth, annual percentage	--	3.832	4.447*
		(2.158)	(2.193)
Urban population, percentage of total	--	--	0.192
			(0.174)
R-squared	0.5565	.7093	.7660
Adjusted R-squared	0.3031	.4670	.4853
Observations	12	12	12

Notes: Dependent variable is the income share of the wealthiest quintile, from the World Bank World Development Indicators Database. FDI data is from UNCTAD country fact sheets. Standard errors are in parentheses
* Significant at the 10-percent level
** Significant at the 5-percent level
*** Significant at or beyond the 1-percent level

Table 4 – Income Share of Lowest Quintile

	1b	2b	3b
Primary Sector FDI as a proportion of GDP	-59.896***	-45.296**	-17.813
	(18.306)	(15.242)	(13.66)
Secondary Sector FDI as a proportion of GDP	30.470	59.049**	14.345
	(27.886)	(24.359)	(21.049)
Tertiary Sector FDI as a proportion of GDP	-7.315	-15.742*	-3.855
	(7.645)	(4.467)	(5.749)
Upper Middle Income	0.809	-0.00313	1.229
	(1.073)	(0.887)	(0.687)
Population Growth, annual percentage	--	-1.022**	-1.243***
		(0.419)	(0.276)
Urban population, percentage of total	--	--	-0.0686**
			(0.0219)
R-squared	.6174	.8078	.9352
Adjusted R-squared	.3988	.6476	.8575
Observations	12	12	12

Notes: Dependent variable is income share of poorest quintile, from the World Bank World Development Indicators Database. FDI data is from UNCTAD country fact sheets. Standard errors are in parentheses
* Significant at the 10-percent level
** Significant at the 5-percent level
***Significant at or beyond the 1-percent level

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Data Sources:

Data on Population Growth Rate, Urban Population, and Secondary Enrollment are from the World Bank's WDI database.

FDI data by sector accessed from United Nations Conference on Trade and Development (UNCTAD) website.

FDI variables entered regressions as FDI in US$ over GDP in current US$, from World Bank's World Development Indicators (WDI) database.

The Gini index used was compiled from World Bank PovcalNet website, United Nations Development Programme (UNDP) Human Development Reports, information from the Organization for Economic Cooperation and Development (OECD). Povcal data was used as a base, filling in OECD and HDR data where Povcal data was not available.
Upper Middle Income distinction is based on World Bank classification.