FACULTY OF BUSINESS AND LAW
School of
ACCOUNTING, ECONOMICS AND FINANCE

School Working Papers – Series 2005

SWP 2005/18

ENDOGENOUS LIBERALIZATION AND WITHIN-COUNTRY INEQUALITY: A THEORETICAL AND EMPIRICAL ANALYSIS

Nejat Anbarci,
anbarcin@fiu.edu

Mehmet A. Ulubaşoğlu,
maulubas@deakin.edu.au

URL: http://www.deakin.edu.au/fac_buslaw/sch_aef/publications/default.htm

ENDOGENOUS LIBERALIZATION AND WITHIN-COUNTRY INEQUALITY:

A THEORETICAL AND EMPIRICAL ANALYSIS*

Nejat Anbarci[±] Mehmet Ali Ulubaşoğlu[§]

October 2005

Abstract:

We theoretically model and empirically investigate a society's liberalization decision and its impact on income inequality. The motivation is that a blanket conclusion that globalization increases inequality within countries can be misleading. In the paper, the decision of the society rests on the pre- and post-liberalization utilities of different segments, and, complying with stylized facts, the economy's structure follows Kuznets' predictions on industrialization and urbanization. Our findings support the line of research which emphasizes the importance of country-specific factors in prescribing policies. In particular, countries are more likely to open up when relative productivity of migrant ex-rural workers to those of initial urban workers in manufacturing, β, is high, and the society's tastes for the agricultural goods, α, are not particularly strong. Following liberalization, the income distribution too improves if α is low and β is high. Empirical results show that open economies, *ceteris paribus*, have 3- 4 higher Gini points than closed economies. In developing countries except Sub-saharan Africa, β can offset this stand-alone effect just after the switch if the switch is made with a minimum β value of 0.67 – 0.89, while in Sub-saharan Africa, this stand-alone effect can be offset in 10-15 years after the switch. Overall, however, the β effect cannot surpass the stand-alone effect in the whole sample, which implies that the median country has made a "wrong" switch.

Key words: Liberalization, Industrialization, Income Inequality, Political Economy.

JEL Classification: F15, J61, O12, O14, O18.

---

* We are indebted to Dani Rodrik for his invaluable comments and suggestions. We would also like to thank Noel Gaston, Bharat Hazari, Phillip Hone, Saqib Jafarey, Michael Kidd, Baldev Raj and Dimitrios Thomakos for useful discussions.

± Department of Economics, Florida International University, Miami, FL 33199, USA. E-mail: anbarcin@fiu.edu

§ School of Accounting, Economics and Finance, Deakin University, Melbourne, Australia. E-mail: maulubas@deakin.edu.au

... it is not whether you globalize that matters, it is how you globalize (Rodrik, 1998).

[Industrialization and urbanization] perforce bring about a decline in the relative position of one group after another - of farmers, of small scale producers, of landowners. ... The continuous disturbance of preexisting *relative* position of the several economic groups is pregnant with conflict - despite the rises in absolute income or product common to all groups (Kuznets, 1973).

1. INTRODUCTION

The belief that liberal and global policies have significantly contributed to the worsening of inequality within countries and in the world has become a conventional wisdom. The following quote from Human Development Report of the United Nations (1999) epitomizes this belief:

Driven by technocrats, the changes [in these countries' trade regimes toward more global policies] were supported by the IMF and the World Bank as part of comprehensive economic reform and liberalization packages. ... The new rules of globalization focus on integrating global markets, neglecting the needs of people that markets cannot meet. The process is concentrating power and marginalizing the poor, both countries and people.

Is it true that inequality within countries (and in the world) worsens as countries integrate more to global markets? Or, could there be cases as well where, as a country integrates to global markets more, all segments in the society improve their well-being in the absolute sense *and* the poorest segments improve their welfare in the relative sense?

Table I in Appendix A summarizes 91 countries' journey with income inequality over the period 1959 to 2003. The outlook is that while 36 countries have experienced a net rise in inequality over this period, 42 countries experienced a net fall, and 13 countries experienced no change. Sub-dividing the sample into developing, developed and Sub-saharan African country groups reveals that the cases of "net rise" are close in numbers to the cases of "net fall" for each group. The same comparison can also be made for 63 "open" economies, where the years of openness are given by Sachs and Warner (1995) and Wacziarg and Welch (2003). In this class of countries, 25 cases of "net rise" are accompanied by 30 cases of "net fall" and 8 cases of "no change". Group-wise divisions uncover similar results; indeed, the "net rise" and "net fall" cases stand both at 13 for developing countries. These comparisons are by all means rough, where the changes in inequality are not conditioned on any other variable. However, this very situation implies that the gait of inequality requires a deeper analysis. Given that an important portion of the world's population is considered still as closed, and that those countries will face pressures to open,[1] the impact of liberalization on inequality has to be investigated more rigorously.

We believe that without taking into account the countries' internal dynamics, a blanket conclusion on the effects of liberalization on inequality would be at least premature and biased, if not wrong. In reaching a conclusion, countries' human capital stock, social divisions, sectoral characteristics, cultural affinities and political and economic support systems need to be accounted for. In fact, there is a growing interest in the literature on the role of country-specific factors and *local knowledge* in designing institutions (see Rodrik, 2000). Thus, our aims in this paper are twofold. First, by defining liberalization as a switch from an import substitution (IS) to an export promotion (EP) regime, we aim to identify theoretically and empirically the circumstances under which different segments in a society would (or would not) support liberalization. Second, and at least equally importantly, we aim to identify theoretically and empirically the circumstances under which the within-country inequality would decrease (or increase) after a switch.

A prudent analysis of global economic integration and institutional switch should utilize a political economy framework, in which the society's decision whether or not to integrate to global economy is modelled endogenously. The ideal scenario would be that, if such integration is to take place, various segments in the society reach a unanimous decision. Full popular support and legitimacy of the switch are important, because many developing countries lack the social insurance that could cushion the possible blows of such a switch. Indeed, the backlash of masses in many countries against the distributional and social consequences of globalization has indicated that "global economic integration needs an infrastructure of popular support and legitimacy in order to survive" (Rodrik, 1998). "[E]ven in a dictatorship, distributional issues affecting the majority of the population will influence policy outcomes" (Alesina and Rodrik, 1994).

1 In the Sachs-Warner-Wacziarg-Welch context of openness, 35 countries are classified as closed as of 2003 (see Table I in Appendix A). Total population of these countries in 2000 was three billion, which is nearly half of the world's population. Of this amount, 2.3 billion is constituted by China and India, though there is a disagreement between Sachs-Warner and Wacziarg-Welch on India's openness. The rest 33 countries make up a population of 700 million.

Our deeper framework owes its genesis to Kuznets. The theoretical model disaggregates the society into four segments: entrepreneurs, workers, high-type farmers and low-type farmers.[2] In IS, entrepreneurs and workers produce a manufacturing good, and the farmers produce an agricultural good. In this regime the society makes the choice of whether or not to switch to EP, where each segment makes their decision by comparing their current utility in the IS regime to their potential utility in the EP regime. Thus, the society is assumed to be rational and forward-looking. Complying with the stylized facts, in EP, the agricultural good is imported and the manufacturing good is exported. This, in turn, induces higher productivity farmers to become new workers in EP. As suggested by Kuznets, these ex-farmers (i.e., the new immigrant workers), however, are assumed to be (at least initially) less productive than the initial workers. Therefore, in the model, β measures the relative productivity differences between rural and urban populations. Another relevant parameter is α, which is the share of agricultural goods in the consumption basket of the society (broadly, the countries' affinity to rural way of life).

Consequently, α and β turn out to be two crucial factors on the society's switching decision as well as on the pace of inequality after an IS-EP switch. The theoretical results suggest that low-type farmer never have incentives to switch. High-type farmers, however, have higher incentives to switch to EP as α decreases and β increases. Entrepreneurs and initial urban workers always obtain higher utility in EP, thus they support the switch regardless. Thus, if the society requires a unanimous decision and one segment opposes the switch, then clearly the country will remain in IS. The alternative is a majority rule: if the entrepreneurs and workers constitute the majority the country will switch to EP, but if the low-type farmers are the majority the country stays in IS. When these two groups do not have the majority, the high-type farmers will serve as the tie-breakers and their decision will depend on α and β. The same results follow if the median-voter decision rule is used. A very important result is that inequality, too, will depend on α and β; it will decrease following a switch if α is low and β is high and will increase otherwise.

It must be noted that α and β are two very crucial variables. α represents the societies' affinity to rural way of life and thus indicates their competition capability with international players. β, on the other hand, is an indicator of institutional and infrastructural solidarity

2 Further disaggregation of the societal segments is possible, but that would change our focus. We discuss the implications of this in Section 2.5.

within a country. Ulubasoglu and Cardak (2005) find that β is determined by labor and credit market institutions, legal system, physical infrastructure and other demographic and geographical characteristics of the countries.

Using the newest inequality data assembled by the World Institute for Development Economics Research (WIDER - dated June 2005), we next carry out an empirical test on these predictions. We see this empirical analysis as a complementary instrument for the model, which "fine tunes" the theoretical implications by taking into account the data. The predictions are tested for around 30 developing and 13 Sub-saharan African countries that had a switching experience in the past. The population of these countries at the time of their switch totals up to 1.2 billion (it is 2.2 billion if we include India). The short-term and broader term implications of the switch are also explored.[3]

The data speak up. We find that while the low-type farmers of the developing countries are not forward-looking in the short-term (providing positive support to the switch), the high-type farmers are always rational (their incentives increase in β and decrease in α). The low-type farmers in Sub-saharan Africa however, are always rational (providiving negative support to the switch). The high-type farmers in this continent are rational in terms of β in longer term, but irrational in terms of α. Moreover, urban workers provide a positive support to the switch in both groups of countries, but only in the short term.

The results on inequality are even more interesting. Higher β lowers inequality after the switch in both groups of countries. However, the impact in developing countries is realized mostly in the short term, while it is spread across time in Sub-saharan Africa. At median β and migration rate, β lowers Gini by 4 – 6 points in developing countries. Controlling for region-specific characteristics lowers this effect to 3 –5 points. In addition, higher α may lead to higher inequality in Sub-saharan Africa after the switch, with no effect observed in developing countries. The overall effect is moderated by region-specific characteristics.

Another important result is on the stand-alone inequality effect of the switch when other things are held constant. We find that EP regimes, on average, have worse inequality than

[3] Short-term implications refer to the implications around the switching period (i.e., a time period that is five years before the switch and five years after the switch). For longer term the time period is "zoomed out" (i.e., the last 20 years before the switch and the first 20 years after the switch).

the IS regimes in the long term (i.e., 15-20 years after the switch). Such an effect is insignificant when the attention is restricted to a short period after the switch. Specifically, the EP regimes have 5-7 higher Gini points than the IS regimes when region-specific characteristics are not accounted for. Controlling for these effects, the difference is realized as 3 - 4 points. These results hold for both developing and Sub-saharan African countries. All these imply that, in developing countries β can offset the stand-alone effect in the short term if the switch is made with a minimum β value of 0.67 – 0.89, given median migration rate. In Sub-saharan Africa, the stand-alone effect can be offset by the median β in 10-15 years after the switch. Overall, however, when the estimates are evaluated in the whole sample, the β effect cannot surpass the stand-alone effect. This implies that the median country has made a "wrong" switch.

In Section 2 we present our theoretical model. Econometric specification and methodology are described in Section 3. Section 4 explains the construction of certain variables. Section 5 presents the results. Section 6 includes a robustness analysis, and Section 7 concludes.

2. THE MODEL

As alluded to in Introduction, in our model entrepreneurs, workers, high-type farmers and low-type farmers constitute the segments in the society, with farmers producing the agricultural good and entrepreneurs and skilled workers producing the manufacturing good. 1-A fraction of agents consists of entrepreneurs and skilled workers; the remaining A fraction of agents consists of farmers. For convenience, we will assume that there are equal numbers of entrepreneurs and skilled workers (i.e., the entrepreneurs and workers will each constitute (1-A)/2 fraction of the society[4] - this specification also allows for multiple entrepreneurs as well as skilled workers per firm). On the other hand, in time some farmers will join them as unskilled workers.

Initially, the country's regime is IS where the agricultural good's domestic price is above that good's world price and the manufacturing good's domestic price is equal to that good's world price. If the country switches to EP, it will start exporting the manufacturing good,[5]

[4] Without this assumption, Gini comparisons between two regimes become completely unmanageable (as will be seen, the model entails many other crucial parameters).

[5] Manufactured exports as a percentage of total exports in many developing countries increased dramatically over time. In 1965, this ratio was 46% for Taiwan, 52% for S. Korea, 29% for Singapore and 5% for Brazil.

and will allow importing the agricultural good[6] at an international price which is lower than the domestic price. As a result, it will turn out that, ensuing the regime switch, some portion of the agricultural labor will find it in their interest to migrate to the manufacturing sector to become inexperienced workers (to be made precise later) in that sector.[7]

In order to find out whether a particular segment will be willing to support the IS-EP switch - and to facilitate income distribution comparisons between the two regimes- we need to first establish the income and utility levels of all agents in each regime.

2.1. Agriculture in IS

A farmer uses his labor[8], e. The production function he faces, $(e_a)^{1/2}$, exhibits diminishing marginal product of labor (hence, the amount of land used is suppressed, being normalized to one unit). A farmer's total income in IS is

$$Y_a^{IS} = p_a^d (e_a)^{1/2}.$$

where p_a^d is the domestic price of the agricultural good, which embodies all agricultural supports.[9] Due to such high agricultural prices, farmers are not willing to migrate in IS.

In 1990, the ratio has become 93% for Taiwan, 94% for S. Korea, 73% for Singapore and 53% for Brazil (see Table 12.2 in Todaro, 2000).

6 Developing countries' comparative disadvantage in agricultural goods deteriorated significantly in time. Todaro (2000, Ch. 10) reports that "[i]n 1960, ... agricultural labor productivity in developed countries was more than 13 times that in the less developed countries. By 1995, this productivity gap had widened to more than 50 to 1." (see Table 10.3 in Todaro, 2000).

7 As a result of this internal migration, the populations in 1975 and 1999 of some cities in developing countries are as follows (in millions):

	Lagos	Dhaka	Delhi	Jakarta
1975	3.3	2.2	4.4	3.8
1999	12.8	11.7	11.3	10.6

(See Table 6 in UN's *World Urbanization Prospects: The 1997 Revision*). In many developing countries, share of the urban population growth due to migration has been about 50% or more (see Table 8.4 in Todaro, 2000).

8 The farmer is a representation of a household farm. Behrman (1999, p. 2877) conveys Binswanger and Rosenzweig's (1986) claim: "[t]he dominance of the household farm in developing country agriculture is due, at least in part, to household enterprises being able to deal relatively well with incentives for efforts in difficult-to-monitor tasks." In addition, "In ... farming, [the] management skill is combined with the farm household's own labor power" (Timmer 1988, p. 294).

9 The international prices of agricultural goods have been vastly (i.e., about 50% - see Baffes and Meerman, 1997) less than those in the markets of developing countries that protected their domestic markets. In developing countries such price differentials persisted for a long time despite extensive subsidization of agricultural inputs, including fertilizer, irrigation, seeds, electricity, credit and insurance. Even in Turkey, which is about to start accession negotiations with the European Union, the subsidies and price supports in agriculture account for 4% of GDP. Given that the agricultural sector accounts for the 12% of GDP, one can see that overall one third of the agricultural prices received by the farmers is due to government support (see p. 82-83 in Dervis et al, 2004).

A farmer's utility function is

$$u_a(L,a,m) = L_a\, a_a^{\alpha}\, m_a^{1-\alpha} \text{ where } L_a = 1-e_a \text{ and } 0 < \alpha < A.$$

2.2. Manufacturing in IS

A manufacturing firm in IS too faces the same production function, ($e_m^{1/2}$), where e denotes a skilled worker's labor (thus, the amount of capital used is suppressed by normalizing to one unit.) A firm's profit π_m per entrepreneur in IS is

$$\pi_m^{IS} = p_m\, (e_m)^{1/2} - w_m\, e_m$$

where p_m is the price of the manufacturing sector's product and w_m is the manufacturing wage (recall that in our model there is one skilled worker per entrepreneur). Thus, although the marginal product of each worker is decreasing as in the agricultural sector, there will be constant returns to scale in production (which will be relevant in EP).[10]

We will use the normalization $p_m = 1$, which is also presumed to be equal to the world price of the manufacturing good. Hence, the domestic firm is able to supply its product at the world price.

An entrepreneur's utility function is given by

$$u_e(\underline{L},a,m) = \underline{L}\, a_e^{\alpha}\, m_e^{1-\alpha}.$$

Assuming, for simplicity, that each firm only uses workers' labor, entrepreneur's leisure, L, is equal to one (i.e., an entrepreneur does not provide labor).

Thus, an entrepreneur's income is

$$Y_e^{IS} = \pi_m^{IS.}$$

A (skilled) worker's utility function is

$$u_w(L,a,m) = L\, a^{\alpha}\, m^{1-\alpha} \text{ where } L = 1-e_{w.}$$

Thus, in the absence of entrepreneurs' labor, the entire manufacturing labor will consist of skilled workers' labor in IS (i.e., e_m will only entail e_w).

A skilled worker's income is

$$Y_m^{IS} = w_m\, e_w.$$

2.3. Equilibrium and Income Distribution in IS

In IS, domestic prices must clear the agricultural and manufacturing goods markets as well

---

10 Many studies (such as Burnside 1996, Harrigan 1999, Martin-Marcos and Suarez-Galvez 2000, Truett and Truett 1997) find robust evidence that a typical manufacturing industry displays constant returns to scale in various developed and developing countries.

as the labor market. Proposition 1 in Appendix B, using Walras' law, finds that $Y_e^{IS} = Y_w^{IS} > Y_a^{IS.}$ It also reveals that the absolute as well as relative income of a farmer increases in α/A.[11] Proposition 2 in that appendix establishes that $u_e^{IS} > u_w^{IS} > u_a^{IS}$.

The structure of the IS regime is straightforward. This allows us to obtain a very simple expression that measures the Gini coefficient in that regime (it will, however, not be the case in the EP regime). Proposition 3 in Appendix B finds that the Gini coefficient in IS is equal to A – α. As well-known, a higher Gini coefficient means a higher income inequality. Thus, the Gini coefficient (and the measure of inequality) decreases in α (i.e., in the share of the agricultural tastes in the society, which increases farmers' incomes) and increases in the fraction of the agricultural population A. Indeed, there is no inequality if α = A and the inequality approaches its highest possible level (i.e., a Gini coefficient of A) as α tends to 0.

2.4. Agriculture and Manufacturing in EP

As mentioned above, we assume that $p_m = 1$ is equal to the international manufacturing good price[12] and the international agricultural good price, p_a^i, is less than p_a^d. A la Kuznets, a central feature of our model is that, if the IS-EP switch takes place, the new inexperienced workers (i.e., farmers who migrate to the city) may not be as productive as the initial skilled workers. In particular, for simplicity we assume that in the agricultural sector that are two types of farmers: the low-type (i.e., less educated) ones and the high-type (i.e., more educated) ones.

The low-type farmers are assumed to have a manufacturing productivity which is ε fraction of that of an initial skilled worker, where $0 < \varepsilon < p_a^i$. The high-type farmers are assumed to have a manufacturing productivity which is β fraction of that of an initial skilled worker, p_a^i

[11] α is the share of agricultural goods in the consumption basket of the society and as such denotes the farmers' receipts. α/A then denotes the agricultural income per percentage unit of the population and the ability of the agricultural population to sustain based on the agricultural consumption in the society.

[12] Note that we model a period around a switch from IS to EP. By this time, heavy protection in manufacturing, which was the essential feature of early phases of the IS regimes, might have decreased and domestic prices might have approached to international prices due to the countries' need to export and eliminate foreign exchange bottlenecks and macroeconomic instabilities. In addition, this assumption is very much related to light manufactures such as textiles, footwear, furniture and some parts used in the production of other manufactures. Given relatively high transport costs of these items compared to their values, the producer countries can function as local export centers vis-a-vis their neighbors. Even when the domestic prices of these goods can be somewhat higher than their international prices, some subsidy from the government might help the domestic producers in exporting their products to their neighboring countries. The latter idea is in line with domestic prices of manufacturing goods being close to international prices.

$< \beta < 1$.[13] The high-type farmers constitute k fraction of all farmers (and, thus, kA fraction of the society) and thus the low-type farmers constitute the remaining 1-k fraction of farmers (and, thus, (1-k)A fraction of the society).

The farmers who do not migrate after the switch will continue producing agricultural good at p_a^i, rather than at p_a^d. Thus their income will be lower than their income in IS since $Y_e^{IS} = p_a^d e^{1/2} = p_a^d (1/2)^{1/2} > Y_e^{EP} = p_a^i e^{1/2} = p_a^i (1/2)^{1/2}$

The relative productivity coefficients ε and β of the migrant workers can be easily recognized by the entrepreneurs in the manufacturing sector and thus they will be reflected in these agents' manufacturing wages, if they indeed choose to migrate. That is, suppose a migrant worker with β relative productivity and a skilled worker work the same number of hours, e; then a migrant worker will earn (e β w) as a skilled worker will earn (e w). A brief review of Proposition 2 (and its proof) in Appendix B will reveal that due to the Cobb-Douglas form of the utility functions all workers choose to work the same number of hours regardless of their wage. Therefore, the low-type workers' income when they continue to be farmers in EP, $Y_e^{EP} = p_a^i e^{1/2} = p_a^i (1/2)^{1/2}$, will surely exceed the possible urban income of the low-type farmers, $Y_n^{EP}(\varepsilon) = e_n\, \varepsilon\, w_m = \varepsilon\, ½\, (½)^{1/2}$. In addition, when the skilled worker and each high-type migrant worker work e hours for an entrepreneur, the total productivity of all workers in that firm will be (1 + 2Aβk/(1-A)) times of the productivity of the skilled worker.[14] Thus, with the skilled worker and the high-type migrant workers, the profit function of the firm per entrepreneur will be

$$\pi_m^{EP} = (1 + 2A\beta k/(1-A))\, (e_m)^{1/2} - w_m\, (1 + 2A\beta k/(1-A))\, e_m$$

In EP, only the labor market needs to clear. In the product markets, the international prices prevail. Consequently, Proposition 4 in Appendix B finds that $Y_e^{EP} > Y_w^{EP} > Y_n^{EP}(\beta) > Y_a^{EP}(\varepsilon)$ and that $Y_n^{EP}(\beta) > Y_a^{EP}(\beta)$ and $Y_n^{EP}(\varepsilon) < Y_a^{EP}(\varepsilon)$, where n denotes the "new"

[13] In IS we assume that ε and β do not affect the agricultural output. The reason for this assumption is the low rates of private returns to schooling in rural areas. This pattern of lower returns to schooling has been frequently noted in the literature (see Schultz (1988) as well as the references therein). Schultz (1988), Ribe 1979 and Yap 1977 imply that in general the difference in the number of years of schooling of rural born and urban born remains to be the main reason for the productivity differences of them in urban areas.

[14] 1+2Aβk/(1-A) follows from the fact that there is one skilled worker per entrepreneur and kA/[(1-A)/2] migrant workers per entrepreneur (the latter follows from the fact that the high-type migrants constitute kA fraction of the society).

(i.e., high-type migrant) worker, and ε and β in the parentheses denote the type of the agents who were farmers in IS. It also finds that the absolute (as well as relative) income of each migrant worker increases in the relative productivity parameter, β, of the high-type migrant. Thus, the income inequality in urban areas will increase as a result of migration (however, migration will decrease the overall inequality in the society). Kuznets (1955) noted that "when industrialization and urbanization were proceeding apace and the urban population was being swelled, and fairly rapidly by immigrants... from the country's agricultural areas ... the urban population would run the full gamut from low-income positions of recent entrants to the economic peaks of the established top-income groups."

Proposition 5 in Appendix B (not surprisingly) reveals that in EP, $u_e^{EP} > u_w^{EP} > u_n^{EP}(\beta) > u_a^{EP}(\varepsilon)$, In addition, it finds that $u_n^{EP}(\beta) > u_a^{EP}(\beta)$ and $u_n^{EP}(\varepsilon) < u_a^{EP}(\varepsilon)$. That is, the high-type farmers will be better off migrating to the manufacturing sector rather than staying in the agricultural sector. For the low-type farmers, however, the opposite will hold because of their low relative urban productivity coefficient. The result below compares each agent's utility in IS and EP.

> THEOREM 1: *(1)* $u_e^{EP} > u_e^{IS}$, $u_w^{EP} > u_w^{IS}$, $u_a^{EP}(\varepsilon) < u_a^{IS}(\varepsilon)$.
> *(2)*$[u_n^{EP}(\beta) - u_a^{IS}(\beta)]$ *increases in β and decreases in α.*

This result follows directly from the proofs of Propositions 2 and 5 in Appendix B. Thus, the IS-EP switch benefits the entrepreneur and the skilled worker regardless of the parameters. The entrepreneur becomes better off for two reasons: in EP, he earns more and spends less for the agricultural good. The skilled worker becomes better off even though his income does not change in EP; he becomes better off because he now spends less on the now cheaper agricultural good under EP.[15] Note that $[u_n^{EP}(\beta) - u_a^{IS}(\beta)]$ represents the high-type farmer's propensity to support the switch and that it increases in β and decreases in α.

2.5. Political Economy of the Switch and Migration

Whether the high-type farmers support the switch or not, they will be better off migrating

[15]As is well known in the Economic History Literature, in England, "[a]t the end of the French Wars in 1815 the Corn Laws were introduced. They stated that no foreign corn could be imported into Britain until domestic corn cost 80s per quarter. The high price caused the cost of food to increase... The Corn Laws ... caused great distress among the working classes in the towns" (The Victorian Web, http://www.victorianweb.org/ history/cornlaws1.html).

to the manufacturing sector if the switch takes place, since after the switch they will earn less in agriculture than in the manufacture (as $p_a^i < \beta$). The low-type farmers, on the other hand, will end up being worse off in EP compared to how they fared in IS since $0 < \varepsilon < p_a^i$. Consequently, since migrating to the manufacturing sector will make them even worse, and they will choose not to migrate.

Combining the results of Proposition 5 in Appendix B and Theorem 1 above, we have the following result concerning the choices of different segments of the society as to whether or not to support the switch as well as the choices of the two-types of farmers as to whether or not to migrate.

COROLLARY 1: *(1) Regardless of the parameters, the entrepreneurs and workers will support the switch from IS to EP but the low-type farmers will not.*

(2) The high-type farmers will support the switch from IS to EP with a higher propensity as β increases and α decreases.

(3) As a result of the switch from IS to EP, the high-type farmers will choose to migrate but the low-type farmers will choose not to migrate.

A tie-break rule is implicit in Part 2 of the above corollary. The tie-break rules will be necessary below too. Part 1 of the above corollary implies that a unanimous decision by all segments of the society concerning the IS-EP switch is not possible unless $k = 1$: The low-type farmers will oppose this switch regardless. The high-type farmers too may oppose this switch under certain circumstances.

There is a variety of political decision-making processes that can be considered here. The two most prominent such processes used in the literature are the majority vote and median voter setups.[16] It would be desirable that the largest possible majority favors the decision, but it is also conceivable that the segments that stand to gain or lose more from such a switch may influence the political process more. The most extreme version of this influence would be in the form of a coup that can be staged with the support of these

[16] Cukierman and Spiegel (2003) investigated the circumstances under which these two setups' outcomes would coincide. Their findings imply that, in simple frameworks such as ours, these two setups lead to similar policy choices by the society.

segments.[17] A less extreme version of such an influence can be due to lobbying activities which these segments can afford. A much milder version of such an influence would be in the form of these segments' voting with higher probability than the segments with much less "at stake" from such a switching decision.[18] In other words, in the latter framework, it is not only the population fractions but also the relative gains and losses of various segments from the voting outcome that matters - whereas when the majority vote or median voter setup is used it is only the population fractions of various segments that matters.

Note that α and β do not affect any of the segments' population fractions. In addition, as α decreases, the propensity of each segment to support the switch increases; i.e., the gain from the switch increases or the loss from the switch decreases. Likewise, as β increases, the propensities of the entrepreneurs and high-type farmers to support the switch increase and those of the remaining two segments remain unaffected (see the corresponding segments' utility functions Propositions 2 and 5 in Appendix B). Thus, concerning a fairly large class of political decision-making processes, we obtain the following general result considering the effects of α and β on the society's switching decision:

THEOREM 2: *Consider any political decision-making process to be used in our framework such that its outcome relies only on all segments' population factions and/or propensities to support switching vs. not switching. Then, as β increases and α decreases, the society is more likely to switch.*

One can argue that the main cleavage in terms of society's support for the switch is between the entrepreneurs and workers on one side and the low-type farmers on the other side, and that entrepreneurs and workers may not always support the switch. Indeed, the real cleavage should be passing through a plane with infinitely many dimensions, because the manufacturing sector involves a continuum of entrepreneurs and workers that will gain from exporting in EP and those that will lose due to severe foreign competition. Likewise, not all agricultural goods need to be imported upon opening. The producers of the agricultural goods that will be exported in EP are expected to be pro-EP but the others may not be pro-EP. One can surely consider a much disaggregated model where all such sectors

[17] For instance, the switch to EP took place during the military regime following a coup in 1980 in Turkey.

[18] See Anbarci, Escaleras and Register (2005) for the details of such an "at stake theory of voting."

are explicitly incorporated and use a vast array of manufacturing and agricultural goods rather than composite goods, but such a detailed model will not be able to highlight the role and interactions of α and β. In addition, data for α and β at such disaggregation are not available for empirical analysis. Moreover, the fact that manufacturing exports by developing countries are booming (see Footnote 5) and that agricultural productivity (hence and exports) in developing countries is constantly regressing (see Footnote 6) provide the hints that overall entrepreneurs and skilled workers in manufacturing would be major beneficiaries of EP, while most farmers would tend to lose in EP.

2.6. Inequality Before and After the Switch

Let $Y^{IS} = (Y_e^{IS}, Y_w^{IS}, Y_a^{IS})$ be the income vector in IS and $Y^{EP} = (Y_e^{EP}, Y_w^{EP}, Y_n^{EP}(\beta), Y_a^{EP}(\varepsilon))$ be the income vector in EP. Let $G(Y^{IS})$ denote the Gini coefficient in IS and $G(Y^{EP})$ denote the Gini coefficient in EP. Inequality after the switch will decrease if $G(Y^{EP}) - G(Y^{IS}) < 0$. For the change in Gini, some parameters affect only $G(Y^{IS})$ and some others affect only $G(Y^{EP})$ whereas some parameters affect both. The Gini coefficient's numerator consists of pair-wise income differences of any two segments of the society, multiplied by these segments' relative population shares, while its denominator consists of the average income in the society.

THEOREM 3: *Consider a switch from IS and EP. Gini will increase in α and decrease in β, regardless of the other parameters.*

3. EMPIRICAL ANALYSIS

Empirical implications of our theoretical model are on α and β. Consequently, we take the following route in the set-up: We first test whether the switch takes place given the choice of the segments of the society: for a high-type farmer a high β is likely to facilitate the switch while a high α is likely to hinder it; for a low-type farmer the switch is always undesirable; and for an urban worker the switch is always desirable. We assume that the entrepreneurs can neither constitute the majority, nor can be the MV in the society, so we do not include them in the empirical analysis. Second, we test the migration behavior of both types of farmers once the switch occurs: high-type farmers are likely to migrate out of agriculture with the switch, while low-type farmers are likely to stay in agriculture. Third, we investigate which way inequality in the society changes after the switch: the society is more likely to end up with a lower inequality with higher β and lower α.

While the purpose of the empirical analysis is to cross-check the signs of the theoretical variables with data, equally importantly the empirics can indicate certain threshold values of β, at which Gini alters its direction after the switch. These values should be important for currently closed countries that are considering or are under pressure to open. It is also important to note that the theoretical model is a construct involving several assumptions. Therefore, unexpected signs are very well possible, primarily due to the complexity of the real world phenomena. In this sense, our empirical analysis also aims to "fine tune" the theoretical implications by taking into account the data. In case unexpected signs are found, what is of interest is to ponder upon the implications of these signs, which would deepen our understanding of the channel proposed as well as help suggest policies on that basis.

3.1. Econometric Specification

Given the predictions, we construct the following system of equations:

$$ISEP_{it} = \delta_0 + \delta_1\, FMV_{it} \times LT_{it} + \delta_2\, FMV_{it} \times HT_{it} \times \beta_{it}^{IS} + \delta_3\, FMV_{it} \times HT_{it} \times \alpha_{it} + \delta_4\, WMV_{it} + \sum_{j=5}^{J} \delta_j X_{it} + u_{it}$$

$$MIGRATION_{it} = \gamma_0 + \gamma_1\, LT_{it} + \gamma_2 ISEP_{it} \times LT + \gamma_3 HT + \gamma_4 ISEP_{it} \times HT + \sum_{k=5}^{K} \gamma_k Y_{it} + v_{it}$$

$$GINI_{it} = \phi_0 + \phi_1 ISEP_{it} + \phi_2 \alpha_{it} + \phi_3\, ISEP_{it} \times \alpha_{it} + \phi_4\, ISEP_{it} \times \beta_{it}^{EP} \times MIGRATION_{it} + \sum_{l=5}^{L} \phi_l Z_{it} + \upsilon_{it}$$

where i is a subscript for countries and t is for time, ISEP is a dummy variable that takes the value 0 under IS and 1 under EP, FMV is a dummy that shows if the MV or the majority is the farmers, HT and LT denote the high-type and low-type farmers, respectively, WMV is a dummy to show if the MV or the majority is the workers, α is the share of agricultural goods in the consumption basket of the society, β is the relative productivity of the migrant worker to that of the initial worker, *MIGRATION* is the rate of migration of the labor force out of agriculture, GINI is income Gini of each country, and **X**, **Y** and **Z** are the vector of control variables in the respective equations.

The year of institutional switch for ISEP is determined according to Sachs and Warner (1995), whose analysis is re-investigated by Wacziarg and Welch (2003). FMV takes the value 1 if agricultural labor force is greater than 50% of the total labor force and 0 otherwise. WMV takes 1 if the agricultural labor force is less than 50%. This takes care of both the MV and the majority voting cases. α is proxied by the share of agricultural value added in GDP plus the share agricultural imports in GDP and minus the share of agricultural exports in GDP. We measure β with the ratio of rural to urban years of schooling. The measurement of this variable has several adjustments in several cases (such as the one between β^{IS} and β^{EP}) and we explain these in Section 5 below. Our empirical measure for the low-type farmer (LT) is the share of rural population with no schooling. The high-type farmer (HT) can be measured with either the share of rural population with primary schooling or secondary schooling. We leave it to data to decide who the high-type farmer is. Migration is the rate of decline in the agricultural labor force, adjusted for population, and the construction follows Larson and Mundlak (1997).

In the first equation we model the endogenous choice of the MV or the majority in selecting the regime. We first divide the labor force into agricultural and non-agricultural (FMV vs WMV). If the MV or the majority is the farmers, then the political power lies with them, and vice versa. The first composite regressor in this equation tests the stance of the low-type farmers towards the switch, while the next two regressors capture the decision of the high type farmers. Note that the decision of the high-type farmers relies on α and β, and these variables are interacted with HT. It happens to be the case that mostly and robustly the share of rural population with secondary schooling provides the predicted signs in the regressions. So, investing some belief into the model, we conclude that it is the secondary schooling that draws the line between the low-type and the high-type farmers. Overall, we expect a negative sign for δ_1, a positive sign for δ_2, and a negative sign for δ_3. Because the urban workers favor the switch regardless, they enter the regression without any conditioning. We expect a positive sign for δ_4. In terms of control variables in this equation, macroeconomic instabilities and foreign reserve bottlenecks have intensified in the later periods of the closed regimes and in most cases fostered the switch. Most countries also experienced decreasing economic growth rates. We expect to capture these effects with the levels and lags of inflation rate, the change in the share of foreign reserves in GDP, and per capita income growth. In addition, the IS policies are less likely to work with small domestic markets (Krueger, 1978). Thus we also use the log of the population of the countries as a control.

In the second equation, we test whether the farmers migrate after the switch. We expect γ_2

to be negative and γ_4 to be positive. In terms of control variables, Larson and Mundlak (1997) argue that countries that are ethnically fractionalized and ones with larger surface area, less civil liberties and lower life expectancy are less likely to experience internal migration.

The third equation tests the inequality effects of the switch. The coefficient φ_1 would show the pure change in Gini that arises from the policy switch, without depending on any other variable in the model. The next two regressors test the impact of agricultural tastes on inequality. Given that α is interacted with ISEP, the coefficient φ_2 would capture the impact of α on Gini in the closed period, and φ_3 would capture the same effect in the open period. Our model, as well as Anbarci and Ulubasoglu (2005a), predicts that α has an equilibrating effect in closed economies. So we expect φ_2 to be negative. The model also predicts that α does not affect Gini after the switch, so φ_3 should be insignificantly estimated.[19] How does α increase inequality after the switch then? Theoretically, it is the *gap* between α itself and the international agricultural prices that determines the extent of the increase in inequality after the switch. That is, the more agricultural the society is before the switch (as shown by higher α), the higher is the inequality after the switch due to switching to a more "distant" regime (i.e., to much lower agricultural prices). International agricultural prices apply uniformly to every "open" economy, so the stand-alone ISEP variable can capture this effect in the estimation, among other effects. If the coefficient φ_1 is estimated to be positive, some of this effect should belong to the international agricultural prices. The next composite regressor in the model tests the effects of relative productivity on inequality. To recognize the fact that relative productivity of the migrant worker to that of the initial worker can impact the 'national' Gini at the extent of the rate of migration out of agriculture, we interact this composite term with migration rate. As per control variables in this equation, we first use various dummies to control for the construction of the Gini data (see Section 4.4). Additionally, Schultz (1998) argues that regional dummies can explain important variations in the levels of Gini. Furthermore, Li et al. (1998) argue that financial development (as measured by M2/GDP), civil liberties, land Gini and initial education level are relevant political economy and credit constraints factors that can affect inequality. We utilize the first two in the analysis, while education is already taken into account with

[19] We model the level of Gini, not the change in Gini, for several reasons. First, there is a voting case here on a closed or an open regime, and in an integrated setup, we need to utilize both regimes explicitly. Secondly, modeling the change in Gini eliminates the level effect in Gini, for which our theoretical predictions may be relevant. After all, with the level of Gini, too, can we test our predictions.

the ratio of rural to urban schooling, which Ulubasoglu and Cardak (2005) show is related to the overall education level in the society. We use land Gini in the robustness analysis as it might be correlated with both α and β. Indeed, Ulubasoglu and Cardak show that land Gini is a significant determinant of rural years of schooling.

Several versions of these equations are estimated with different composition of the control variables to check the sensitivity of the results.

3.2. Short-term vs Long-term Implications of the Switch

Following common practice, we structure our data set in five-year intervals, such as 1960-64, 1965-69, etc. This is to minimize the guess work and the measurement errors in the data. Thus, if, for instance, a country opened in the period 1970-1974, the post-switch effects are analyzed for the period 1975-1979 and onwards. Specifically, we investigate the relationships by focusing on 10-year, 20-year, 30-year and 40-year periods around the switch. When the focus is on 10-year, we look at the last five-year period before the switch and the first five-year period after the switch. This is important because in this way we can investigate which threshold values of α and β would result in higher or lower inequality just after the switch and start a particular tendency in Gini. Likewise, when the focus is on a 30-year period, we look at the last three five-year periods before the switch and the first three five-year periods after the switch, and so on.[20] This is useful to observe the sustainability of the regimes over time, migration behavior of the farmers as well as the changes in the income distribution in the long-run. Where necessary, we also focus on what happens in each period (esp., on the impact of β on inequality).

3.3. Estimation Methodology

We first estimate the ISEP equation with maximum likelihood probit,[21] and the migration and inequality equations with Ordinary Least Squares (OLS). These simple methodologies

---

[20] All the countries provide data for the 10-year focus. Not all countries have data for the 20-year or 30-year focus, etc. In the 20-year case for instance, we include all countries with 10-year focus as well as those which provide data up to 20 years (some imbalance in the panel may occur, because while a country may provide data for only one period before the switch, it may provide for two of the periods after the switch).

21 Sachs and Warner (1995) set five criteria for a country to be considered as open: i) average tariff rates 40% or less, ii) non-tariff barriers covering 40% or less of trade, iii) black market premium on the exchange rate less than 20%, iv) no state monopoly on major exports, and v) not being a socialist system. Thus, the 'true' level of openness $y^* = X\psi + \upsilon$ is determined by an index function, Xψ, and a country is considered as open (y=1) if it exceeds an 'arbitrarily' set threshold (i.e., statistical arbitrariness), or closed (y =0) otherwise.

are useful in understanding the model behavior and getting a sense of the data.

Note, however, that the system specified above is a triangular system, which may require a more involved estimation methodology. In a triangular system, the first dependent variable is determined by exogenous factors; the second dependent variable is determined by the first dependent variable and the exogenous factors; and so on. The estimation of this system requires an instrumental variable (IV) estimation if there is any contemporaneous correlation among the residuals of the each equation. Otherwise, each equation can be estimated singly with OLS, which would provide consistent coefficient estimates. To check if there are any cross-equation residual correlations, we conduct a Breusch-Pagan (1980) test. As per this test, the OLS residuals of each equation are regressed onto each other first (i.e., the residuals from the first equation are regressed on the residuals from the second and the third equations). Then the number of observations times R-squared from this estimation is used as a Chi-squared statistic with degrees of freedom equal to the number of restrictions (in this case, three). In our case none of the various system combinations indicate such correlation, so ML probit and OLS can be used for consistent estimations.[22]

Nevertheless, the data on the proportion of rural population with no schooling and secondary schooling are available as one data point for almost every country. So for the panel estimations, we have no chance but assume that each country has the same data for each period. To address possible measurement error problem, we use Rivers and Vuong's (1998) two-stage conditional maximum likelihood (2CML) method for the estimation of the ISEP equation. 2CML is a convenient method in that it also provides an exogeneity test *en route*. In this method, rural no schooling and secondary schooling are first regressed on a set of instruments (see below), and then the residuals from these auxiliary regressions are plugged back to the ISEP equation. If the residuals are estimated significantly in the second stage, then there is an endogeneity problem to address. In all of our cases, however, these residuals are estimated to be individually and jointly insignificant. Thus the use of simple probit is justifiable. The same problem is handled in the migration equation by using a Generalized Method of Moments (GMM) estimation. GMM is robust to heteroskedasticity of unknown form that might be in the measurement error. The GMM estimations provide somewhat better results than the OLS results, possibly because the instruments used in

[22] The results are available upon request.

addressing the problem provide some variation in the regression. In this sense, we cannot make strict conclusions on the measurement error problem, but in this way a caution is taken at least. As instruments, we use variables suggested by Ulubasoglu and Cardak (2005), who model the determinants of rural educational attainment. They find that asset inequality (measured by land Gini), financial development (measured by M2/GDP), ethnic fractionalization, life expectancy, political freedom, colonization and surface area, among others, are significant determinants of cross-country differences in rural schooling. We also add regional dummies to this list as well as the interaction terms of all these variables. All these variables can be expected to be unrelated to the error terms. A relatively small and consistent number of instruments used for both ISEP and migration equations.

Country-specific effects may also require an attention in a panel context. We feel relatively better off on this problem, because we decompose the sample into relatively homogenous group of countries (see Section 4.1 below). In addition, we account for region-specific effects by using Latin American, South African and East Asian-Pacific dummies as well as examining all the effects separately for Sub-saharan Africa. Countries within each region can be reasonably assumed to have similar characteristics.[23]

There is an important point about the ISEP equation. Estimation of this equation in a panel context assumes that there is voting every period on a choice to remain closed or open. This assumption is quite plausible due to the probability of countries' reverting back to their old regimes (due to various reasons such as public pressure, military interference and economic failure). In fact, a number of countries switched back and forth in the 1950s and 1960s (e.g., Costa Rica, Ecuador, Morocco, Turkey) as shown in the Sachs-Warner-Wacziarg-Welch context. While due to the unavailability of the relevant data we cannot include many of the back-and-forth cases in our data set, one country in our sample (Sri Lanka) has indeed two switches. Thus the coefficients from a probit estimation of the ISEP equation would indicate the probabilistic support for the switch.

Note that although we estimate each equation singly, we make the 'same' data points

[23] The matter can be dealt with econometrically in several ways: i) a dummy variable for each country can be used, but this would result in enormous loss of degrees of freedom; ii) the model can be estimated in a differenced form, but this would eliminate any long-run effects in the estimations, which should be a very significant source of information in our context.

available to each equation (in terms of countries and time periods) so that the results can be compared coherently across equations, without being affected by non-conforming data points.[24]

4. DATA

A detailed description of the data and their sources are provided in Appendix C. However some important issues are explained in this section.

4.1. Issues about Sample Selection

To carry out the empirical analysis, we need all the data for both closed and open periods (i.e., necessarily around the switch period; the more, the better). However, the underlying framework in our model is an economic dualism where migration upon opening, which is fostered by regional income gaps, results in changing inequality within countries. In this sense, the best testing environment for our theory would be developing economies that had (or have) dualistic nature, and experienced both closed and open periods. Though the sort of dualism and its implications on inequality that exist in our model are not like the Bourguignon and Morrisson (1998) type, the sample of countries that they use can be our starting point for the empirical analysis. Ideally, we would like to use all countries they use; but our samples do not match one-to-one due to our having to have data for both closed and open periods. We are able to find 27 such developing countries. These developing countries are well-known with their import-substitution and export-promotion experiences, and nearly all of them exhibited a tendency of internal migration after opening.

Additionally, 13 Sub-saharan African countries have the desired data and thus can be used to explore various important implications. Moreover, the dualism experienced by today's developed countries were in distant past.[25] However since data were readily available for three countries, we also used them to see how the model performs with developed country data. But only three countries do not change the results.

---

[24] A perfect correspondence of the data points is of course impossible, due to the lack of other data.

[25] Industrialization and rural-urban income differential periods in US, UK, France, Germany, Norway are explained in Lindert (2005) and Morrisson (2005). In these countries even opening within the context of Sachs - Warner (1995) and Wacziarg - Welch (2003) during 1950s and 1960s did not result in incentives for mass migration due to little or non-existent regional income gaps and thus a change in inequality.

4.2. Issues about ISEP

The switching year for each country is of utmost importance. Sachs and Warner classify the trade regimes of nearly every country in the world as closed or open with respect to certain criteria. Wacziarg and Welch further investigate this variable.[26] Further, Rodriguez and Rodrik (2000) closely and excellently examined this variable by partitioning it into its original components. They note that most of the variation in this variable is captured by black market premium, which is an indicator of poor domestic policies in closed regimes. Hence, they conclude that "the Sachs and Warner indicator serves as a proxy for a wide range of policy and institutional differences", a qualification desirable for our analysis.[27, 28]

4.3 Issues about Inequality Data

We use the latest available data on inequality, which is provided by the WIDER project of the United Nations University (dated June 2005). This is a compilation of various inequality estimates, mainly from i) an updated version of Deininger and Squire (1996), provided by the World Bank, ii) Luxembourg Income Study, and iii) Transmonee of UNICEF/ICDC. The compilation is fully documented and the unit definitions are as precise as possible in line with various earlier criticisms. For this newest compilation, some estimates from earlier compilations have been deleted, some have been replaced with new estimates, and some new estimates have been made available through an apparently tedious work. UNU/WIDER also provides quality indicators for each estimate depending on the reliability of the original source. Most data points have either income deciles or quintiles. In particular, two Gini values are made available: i) the Gini value reported by the original source, ii) UNU/WIDER’s calculation from income deciles/quintiles. While we use the latter in our estimations, the correlation between both measures in our sample is 0.99.

Using this data set, our purpose is to create a consistent inequality series (over 5-year intervals) for each country to obtain comparable values over time. At the very least, the

---

[26] While both studies agree on the openness years for many countries, there is a disagreement on India. Sachs-Warner classify India as open as of 1994, while Wacziarg-Welch consider it still closed as of 2003. We experiment with both cases.

[27] For a few countries the opening year is the last year of a five-year period (e.g.., 1989), thus these countries are assumed to have opened in the next period.

28 If the opening year is the last year of a 5-year period, then the country is assumed to have opened in the next 5-year period.

within-5-year observations should be consistent (i.e., no averaging should be made over different constructions). Where Gini values of different constructions need to be used across time periods, we control for these differences through dummies (see Barro 2000, who does the same). These dummies are Consumption/Expenditure, Earnings, Monetary Income, Net Income, Person, and Gini Quality (a value between 1 through 4, where 1 shows the best quality). Econometrically speaking, though, because Gini is a dependent variable, any measurement error will be captured by the error term. Construction of this series is explained in detail in Appendix D.

4.4. Issues about β

β is the relative productivity of migrant workers to that of initial workers in manufacturing. For our purposes the ratio of rural to urban average years of schooling (henceforth, RATIO) serves as a plausible proxy for β. Ulubasoglu and Cardak (2005) provide an unbalanced panel data set for 57 countries on the rural and urban average years of schooling. Because no detailed information (such as the breakdown of age groups, rates of birth and mortality etc. into rural and urban) was available to obtain a time series, most countries have one data point. Luckily, however, most data were available for the countries around their respective opening years.

31 of our 43 countries have their own RATIO data. For the remaining 12 countries we made approximations from altogether 57 countries of Ulubasoglu and Cardak (2005). Our approximations are mostly based on Bourguignon and Morrisson (2002), who approximated the income distribution data of 33 countries for the whole world based on the countries' geographical proximity and similar and/or common histories and cultures. These approximations are provided in Appendix E.[29]

The relative productivity variable in the ISEP equation, which is relevant for the high-type farmer *at every period of voting* (β^{IS}), is found in the following way: For 37 of 43 countries, the RATIO data are available either at the switching period or before. For countries whose data are available before opening, we assume that RATIO increases (i.e., rural-urban education gap closes) by 2% every five years (e.g., from 0.50 to 0.52) up to the switching

[29] For most countries, educational attainment data were available for people over 25 years of age, which is consistent with voting and migration decisions.

period (i.e., in the closed economy). For the remaining six countries (of which three are developed), RATIO is available after opening, so we assume that RATIO increased by 3% every five years after having opened.[30] Thus we backcast the data accordingly. These values are implied by Ulubasoglu and Cardak's modeling of the RATIO variable.

It is very important to note, however, that in a panel context the *evolution of migrant workers' productivity in manufacturing after opening* will be different than β^{IS}. The relevant relative productivity variable is β^{EP}. Once we obtain the RATIO data at the switch period (through the procedure above), for panel analysis we proceed with calculating β^{EP}. We construct various β^{EP}s by assuming different rates of increase in the relative productivity after the switch. In doing so, we also acknowledge the fact that in the initial period just after the switch, the productivity increase may be lower than future periods due to the adaptation difficulties that ex-farmers may experience in the city, etc. In particular, in terms of the combination of "the first five-year period just after the switch" and "each of the later five-year periods", we try combinations of 2%-5%, 5%-8%, 6%-10%, 7%-12%, 8%-15%, 10%-20%, 15%-25%, and 20%-30%. In another exericise, we construct another β with sub-saharan African countries having 5%-8% and both developing and developed countries having 7%-12%. In another β construction, we use 2%-5% for the countries with real output per capita up to $1,500 in the switch period, 7%-12% for countries with $1,501-$4,000, and 8%-15% for countries with $4,001 and above.

Using various such combinations is a robustness check on this variable. Also, if we invest some belief in the trueness of the theory, β constructions that are estimated to be significant in the regressions would indicate the true productivity changes after the switch. It turns out that while the combination 5%-8% used for all countries provides the most significant results, the combinations through 5%-8% to 10%-20% provide statistically significant estimates in the regressions. This would imply that migrant workers in general experience a 5% to 10% productivity increase in the first five years just after the switch and an 8% to 20% increase in each of the later five-year periods.

There is also the issue of the productivity of different migrant stocks that exist in the city. To illustrate, take the case of the first 15 years after the switch. In the third five-year period

[30] We also experiment with 3% increase before opening and 4% and 5% increase after opening. The results are mostly similar.

after the switch, there would be three different β values in the urban area (one for those who migrated in the first period after the switch, one for those who migrated in the second period after the switch, etc.). Assume that the ratio of rural to urban schooling at the time of the switch is 0.50. Thus the first batch of migrants migrates to the city with a 0.50 productivity, and realizing, say, an 8% increase in the relative productivity by working in the manufacturing in the first period, they finish off the first period with a beta value of 0.58. From the second period onwards, they start increasing the relative productivity by, say, 15%, i.e., finish the second period with a β of 0.73, and the third period with 0.88, and so on. Regarding the second batch of migrants who move to the city in the second period after the switch, we first assume that the ratio of rural to urban schooling increases (i.e. rural-urban educational gap closes) by 3% every five years under an open economy. Thus the second batch of migrants move to the city with a relative productivity of 0.53. They finish off *their* first period in the city (i.e., the second period after the switch) with a beta of 0.61 (where, at the time, the first batch finishes the same period with 0.73). From this period onwards, the second batch starts increasing their β by 15%. Likewise, the third batch migrates with 0.56 initially, and finishes their first period with 0.64 (the third period of the switch), and so on.

Note that when the migration rate is different in each period after the switch, the change in the relative productivity of the each batch of migrants can affect the 'national' Gini at the extent of the migration rate specific to that period. Thus, we weight each batch with their specific migration rate in affecting the 'national' Gini.

5. EMPIRICAL RESULTS

Tables 1a through 1d in Appendix F report the results for the ISEP equation, Tables 2 presents the results for the migration equation, and Tables 3a through 3c focus on the inequality equation. Each equation is estimated with the all countries sample first (i.e., with Sample 1). In general this sample provides insignificant results. Thus, all Sample 1 can tell is that countries should not be treated equally in their role in the data generating process. We do not report these results to save space. Next we proceed with Sample 2, which includes all countries but Sub-saharan (SS) African effects are separated with SS Africa dummies. In many ways, this sample provides the most interesting results. Note that in separating the SS African effects, the variables that are not interacted with SS Africa dummies capture the effects for the developing and the three developed countries, while the terms interacted with the SS Africa dummies capture the *differences* between the group of developing and developed countries and that of the SS African countries.[31] While we also exercise with only the developing-countries sample (i.e., Sample 3), these results mimic the first part of the estimations with Sample 2 (i.e., terms that are not interacted with SS Africa dummies), so we do not present them either.[32] Because the results with Sample 2 are the most telling, we report and discuss these results below. We report the results with the 10-year, 20-year, 30-year and 40-year focuses. This would facilitate the comparison of the short-term and long-term implications of the switch. The reported results are based the β combination of 5%-8% (see section 4.4.)

5.1. ISEP Equation

In Tables 1a through 1d, we observe that there is evidence, when appropriate control variables are used, for a positive support of the low-type farmers to the switch in the developing countries. Note that while the significance of the positive signs are the strongest in the 10-year focus, the significance becomes weaker when the horizons expands. This positive sign in the 10-year focus, i.e., the willingness of the low-type farmer to switch to the open regime, may then imply that the low-type farmers in the developing countries are not all that rational (in the sense of our theory) in the short-term, while this willingness becomes insignificant over time.[33] The latter may be explained by strong kinship ties in these countries. The low-type farmers may expect remittances from their high-type relatives who will migrate to urban areas after the switch; the low-type farmers too might migrate later if they expect their more successful high-type relatives to hire them at some service sector jobs in which trust relationships may be more important than education or aptitude. Importantly, however, there is a significant evidence for the SS African low-type farmers providing significantly lower support to the switch. This may be interpreted as the SS African low-type farmer being more rational in the short-run.

---

[31] Regressions with lagged variables can only include New Zealand as a developed country (i.e., the ISEP equation), because the lagged data are missing for Australia and Japan, which opened in the 1960s. Dropping New Zealand and other countries does not change the results. Thus for the ease of explanation, we will refer to the developing and developed countries group as “developing countries” only.

[32] The results are available upon request.

[33] Strict verification of the theoretical (and the forward-looking) behavior of the low-type farmer requires a negative sign; however, in reality an insignificant effect is also plausible.

The high-type farmers of the developing countries, on the other hand, behave in exactly the same way that our theory predicts. They support the switch when β is high and α is low. While the evidence is valid for all time periods, it is particularly strong for the later periods. The behavior of the SS African high-type farmers, on the other hand, depends on controls. When inflation and growth are controlled for, they provide a more positive support on the basis of β (predicted) in the 10-year focus. There is also evidence for their positive support to the switch on the basis of α (contrary to the model) in the 30- and 40-year focuses.[34] In these counties, farmers either produce grains for their self use or engage in poducing of cash crops. Thus, high-type farmers may be tempted to migrate to urban areas because of the pull of the better manufacturing job opportunities but not necessarily because of the push of cheaper grain imports.

There is also some evidence for the predicted positive support of the urban workers in the developing countries in the short-run (see Table 1a), but this depends on the control variables, in particular, the contemporanous value of the change in the foreign exchange reserves (FX/GDP). This support is not observed in the later time periods. Recall that in our theoretical model the main reason the workers support EP is the lower agricultural prices under EP. In reality, this effect may be small and consequently their support may be small too. Also, in time, increasing competition from migrant low-skilled workers may cause this weak support to erode. The behavior of the SS African urban workers is observed to be similar, although under one specification (where inflation and growth are controlled), the support is significantly more positive.

There are various other effects that can affect the regime switch. Control variables, in this sense, are observed to strengthen the significance of the state (theoretical) variables. In terms of contemporanous values of the macro variables, lower inflation, higher FX reserves (although weakly) and higher economic growth are more likely lead to the switch. On the other hand, high inflation of one-period lag and lower growth of two period lag foster the switch. These results imply that, while failures in the past may accelarate the switch, countries in general switch in the period that is macroeconomically more stable. The effect of larger domestic markets is estimated to be insignificant in this particular approach.

[34] Only one SS African country (i.e., Ghana) provides data for the 30-year focus, while no SS African country provides data for the 40-year focus. In this case, this result with 30- and 40-year focuses is due to the SS African effects from earlier periods, in addition to some more variation provided by developing countries in the 30- and 40-year periods.

5.2. Migration Equation

Table 2 reports the results for the migration equation. Next to each general OLS model for a particular time period is the GMM estimation of that model. The 10-year estimations (i.e., the first five year period after the switch) do not provide any significant results. This might be due to the lack of variation in rural no-schooling and secondary schooling on the right-hand side.[35] However, we do obtain significant estimates for later periods, possibly because the instruments used in addressing the measurement error in rural schooling provide some variation in the estimation. The stand-alone terms of rural no-schooling and secondary schooling capture the effects in developing countries before the switch, while the interaction terms of ISEP and rural no-schooling and secondary schooling capture the effects after the switch. The results for the Sub-saharan African farmers are mixed, and depend on the estimation methodology and the instruments selection in the GMM estimation. Therefore we do not discuss these results.[36] Focusing on developing countries, we obtain positive and significant signs for secondary schooling. Thus the prediction that the high-type farmers would migrate to city if the switch takes place is verified for the period of 5-20 years after the switch. For the low-type farmers, there is no significant evidence for any behavior after the switch. This insignificance can indicate at least that they are not significantly favourable to migrating to the city after the switch.[37]

Note that there is also consistent evidence that the high-type farmers opt for staying in agriculture in the closed economy period, as shown by negative and significant coefficient estimates of secondary schooling. This implies that, as long as the actual regime is closed, there is little incentive for an educated farmer to migrate to the city in the long-run. A similar tendency is observed for the low-type farmers, but this effect does not survive the inclusion of control variables.

Some control variables also provide insightful signs. We find that countries with higher life expectancy and that are less ethnically fractionalized experience higher internal migration.

---

[35] Possibly due to this lack of variation, the econometric implementation of the GMM estimation for the 10-year focus does not converge. Thus the results with 10-year focus should be interpreted cautiously.

[36] The results for the developing countries farmers arerobust with respect to the instruments selection.

[37] Recall that although the low-type farmers provide positive support to the switch in voting, this effect is only realized in the short-term (the 10-year focus, i.e., the first five-year period after the switch); in the longer term the support becomes insignificant.

5.3. Inequality Equation

The results for the inequality equation are full of implications. Let us first discuss the results on developing countries. A very important finding is that EP regimes, on average - and when other factors are controlled -, have higher inequality in the long-run. The coefficient estimate of the stand-alone ISEP variable tends to be positive but weakly significant for the first five-year period after the switch, but the significance increases over the second, third and fourth five-year periods. This may be due to the relatively higher wages offered initially to almost all new-workers because of the expansion in the export (manufacturing) sector. In time, the highly skilled may differentiate themselves from the rest and may start earning much more. However, this long-run effect becomes weaker with the inclusion of regional dummies in the regression; this implies that region-specific effects are effective in mitigating (stand-alone) inequality effects of liberalization.

In terms of our state variables, α is estimated to have a significant inequality decreasing effect before the switch. As shown in the first three columns of Tables 3a-3c, throughout all periods, α is estimated to have the expected negative sign. Again as expected, the interaction term of α with ISEP is estimated to be insignificant, implying that α does not affect inequality after the switch. When coupled with the positive coefficient of ISEP, these results suggest that a country with too high α would experience higher inequality after the switch. When we account for Latin American and South Asian effects, the equilibriating effect of α in the closed economies becomes insignificant, but making the post-switch effect positive (significant in some cases). This, too, increases the inequality.

One of the most important results is related to the impact of β on inequality. In the first five-year period after the switch, β has a robust, negative and significant effect on inequality. To illustrate the impact, let us use the first column in Table 3c, where all the effects are visible. The estimated coefficient is -0.735. At the median migration rate for the first five-year period after the switch (12.59%), a β that is equal to 1 decreases inequality by 9.25 Gini points ($-0.735 \times 12.59 \times 1$) over the Gini value of the last period of the closed economies. This effect can on its own surpass the stand-alone switch effect, which is estimated to be 6.24 higher Gini points. Thus, for this particular specification, a minimum β value of 0.67 would result in decreasing inequality after the switch. As it turns out, evaluated at the median migration rates, β values between 0.67 - 0.89 may be taken as minimum thresholds, after which liberalization would result in lower inequality in the first period after the switch, holding other factors constant. Region-specific effects lower, although cannot terminate, the effectiveness of β on inequality in the first period.

The βs of other periods capture the marginal impact of β on inequality over the previous period.[38] There is an interesting cyclical behavior observed in the impact of β in the second and third five-year periods after the switch, although this behavior is weakly significant. In the second five-year period after the switch, β is estimated to increase inequality to some extent, where Gini still remains under the pre-switch level. Accounting for regional effects strengthens this inequality-increasing effect. In the third five-year period after the switch, this increase in counter-acted, although weakly, in similar magnitudes, but this counter-action is further weakened by regional effects.

In terms of control variables, both financial development and political freedom have significant inequality decreasing effects without accounting for regional effects. Of interest, the inequality difference between the most dictatorial and the most democratic regimes (i.e., a political freedom score of 0% to 100%) is between 6 - 9 Gini points, other things being equal. Both financial development and political freedom effects, however, become insignificant when Latin America and South Asia effects are controlled for.[39]

It turns out that region-specific effects have important influence on the working of both state and control variables on inequality. Importantly, while these effects decrease the stand-alone inequality effect of the switch, they clearly slow down the inequality decreasing effect of β. The realm of these effects would be an important topic of research for future studies.

Let us now discuss the results on Sub-saharan Africa. The stand-alone effect of the switch is no different than that in developing countries (i.e., still positive). However, α is estimated to have a robust, significant and inequality-increasing effect in the closed period. The post-switch effect is also different than developing countries under some circumstances. There is significant and inequality-decreasing effect of α after the switch, when the region-specific

---

[38] This is because the dummies ISEP5, ISEP10, ISEP15 and ISEP20 are designed to capture the evolution in relative productivity of *each* batch of migrants, where ISEP5 has four 1s in the 40-year focus for each country, ISEP10 has three 1s, and so on.

[39] Benhabib and Spiegel (2000) arrive at the same conclusion for the financial development and growth link.

effects are fully controlled for. This implies that higher α may decrease inequality in SS Africa after the switch!

The results on β are even more interesting. The impact of β on inequality in the first five-year period after the switch is no different than developing economies (i.e., the inequality decreasing effect in this period still holds). However, in the second and third five-year periods after the switch, β has even more stronger inequality decreasing effect than is observed in developing countries.[40] This effect is strongest when the region-specific effects are fully controlled for. To illustrate, let us focus on the fifth column in Table 3c. The effect in the first five-year period after the switch is no different than developing economies, so at the median β (0.42) and the median migration rate (4.21%), Gini decreases by 0.81 points ($-0.459\times4.21\times0.42$). In the second five-year period, median β is 0.37 and the median migration rate is 3.58%; thus Gini further decreases by 2.28 points. In the third five-year period (which is only observable for Ghana), β is 0.24 and the migration rate is 6.28%. Thus Gini decreases by 5.52 ($-3.665\times6.28\times0.24$). Thus the overall conclusion on SS Africa is that the impact of β on inequality is spread across time, and this effect offsets the stand-alone effect between 10-15 years, holding other factors constant. This may be due to lack of good instant education and training opportunities in Sub-saharan Africa, where only slow learning-by-doing effects may be present. Another interesting result is that higher political freedom worsens income distribution in SS Africa, other things being equal.

Other important implications of our inequality estimation are regarding Gini constructions. In particular, Gini constructions that are based on expenditure or consumption are on average 14 points lower than income-based constructions. Person-based Ginis (vis-a-vis household-based Ginis) provide higher inequality (around 3.5 to 5 points) when the regional effects are controlled for. This is expected, because household-based Ginis do not take into account within-household inequality. Also, net income-based constructions (as opposed to gross income-based constructions) provide lower inequality outcomes (i.e., around 2 to 4 points). This is also expected because, taxation schemes are generally progressive. Moreover, Ginis based on monetary income (as opposed to overall income)

[40] There are five SS African countries in our data set whose second period effect we can observe, while there is only one SS African country to observe the third period effects. Note that for all countries, we can observe the previous periods' effects.

provide lower inequality (around 3.5 to 5.5 points), while earnings based-constructions are not statistically different. Finally, Ginis with lower quality may indicate higher inequality, although this effect is generally insignificant.

6. FURTHER SENSITIVITY ANALYSIS

We conduct further sensitivity analyses using the 10-year and 40-year focus estimations. The first is on India. The reported results include India as a country which experienced openness in the 1995-99 period (as per Sachs and Warner). Following Wacziarg and Welch (2003), we now consider India as a closed economy and remove it from the sample. This does not change any of the results in the inequality equation. In the ISEP equation, only the significance of the high-type farmers worsens in the 40-year focus, although remaining at acceptable levels. Other variables in both 10-year and 40-year focus remain similar, like those in the migration equation.

Next we check whether using different time periods for each country results in any time-wise parametric shift in the models. The circumstances leading to and surrounding the switch may be different in each time period. Such effects can be captured by using time dummies for the 1970s, 80s, 90s and for 2000s in the regressions. The ISEP equation is perhaps the most relevant for such effects, in terms of reflecting the over-time tendency across the world in switching the regimes. As compared to the base period of the 1970s,[41] the effect is insignificant in the 1980s, but significant and increasingly positive in the 1990s and the 2000s. The inclusion of these dummies worsens the significance of the high-type farmers' coefficients, but they still remain at acceptable levels. In the inequality regressions, the dummies are insignificant when the region-specific effects are controlled for. This implies that region-specific effects eliminate inequality, and this effect is time-persistent. When the regional effects are not accounted for, the dummies of 1990 and 2000 are positive and significant. However, in all cases do our theoretical variables remain significant with the original signs. The same dummies are estimated to be insignificant in the migration equations.

One can also argue that the contemporanous values of the macro variables may be endogenous to the regimes. Note that when we refer to macroeconomic instabilities, we

[41] The 1960s are eliminated from the sample due to lagged variables.

refer to a bundle of complex and interrelated fiscal and monetary factors. While such factors may lead to a change in the regime, the reverse causation from the regime to the macro factors is tied to many parameters. For instance, while a country may experience high inflation in the IS regime due to monetizing its budget deficit, in the EP regime it may experience high inflation due to high economic growth. Also important is the dynamic relationships among the macro variables. Most macro variables, such as inflation, are characterized with inertia as well as having lead and lag associations with others. Thus, we believe that the extent of endogeneity bias, if exists, would be low in our case due to the use of lagged macro variables and other macro controls. Nevertheless, a formal testing procedure is also undertaken using Hausman (1978) tests, and expectedly, such tests do not indicate endogeneity in our estimations.

7. CONCLUDING REMARKS

The belief that globalization increases income inequality is commonly stated. Given that a significant proportion of world's population has been introduced the "liberal blueprint" in the past two decades and that a number of other countries face pressures to liberalize, such claims make necessary profound and disaggregate analyses of the liberalization-inequality relationship. This study carries out such an investigation with theoretical and empirical setups. Of course, the issue involves infinitely many dimensions and a single study can but illuminate certain aspects. Nevertheless, we believe that we treat the issue rigorously by modelling the society's decision-making process on liberalization and its ensuing impact on inequality. We also undertake an empirical test of the theoretical predictions by making use of a newly assembled inequality data set and other interesting variables. Both theoretical and empirical results, which complement each other, are indicative of what past "liberalizers" have experienced in terms of societal decision-making and income inequality, from, of course, the angle that the paper takes. Our findings imply that global policies should not be prescribed uniformly across countries, and the prescriptions should take into account what Rodrik (2000) calls *local knowledge*, i.e., country-specific factors.

In our theoretical model we disaggregate the society into four segments: entrepreneurs, workers, high-type farmers and low-type farmers. In the import-substitution (IS) regime the society considers whether or not to switch to export-promotion (EP). As elaborated in our analysis, α and β turn out to be two crucial factors on the society's switching decision as well as on the pace of inequality after an IS-EP switch. The theoretical results suggest that low-type farmers never have incentives to switch. The empirical findings imply that the Sub-saharan African low-type farmer behaves in the manner that the theory predicts, while the non-Sub-saharan African low-type farmer does the opposite. In addition, theoretically high-type farmers have higher incentives to switch to EP as α decreases and β increases. The empirical analysis finds support for this prediction in non-Sub-saharan African developing countries, while the Sub-saharan African high-type farmer behaves in a mixed manner. Continuing with the theory, entrepreneurs and initial urban workers always support the switch. The empirical results show that urban workers provide such a support only in the short-run. We explain why such discrepancies can occur in the theoretical and empirical results, and therefore deepen our understanding of the proposed framework.

Theoretically, inequality too depends on α and β; it decreases following a switch if α is low and β is high and increases otherwise. Empirically, we find that higher β lowers inequality after the switch in all countries, whereas the impact of α differs across country groups. We also find that EP regimes, on average, have worse inequality than the IS regimes in the long term (i.e., 15-20 years after the switch). Such an effect is insignificant when the attention is restricted to a short period after the switch. In developing countries β can offset the stand-alone effect in the short term if the switch is made with a minimum β value of 0.67 – 0.89, given median migration rate. In Sub-saharan Africa, the stand-alone effect can be offset by the median β in 10-15 years after the switch. Overall, however, when the estimates are evaluated in the whole sample, the β effect cannot surpass the stand-alone effect, which implies that the median country has made a “wrong” switch.

REFERENCES

Alesina, A. and D. Rodrik (1994), "Distributive Politics and Economic Growth," *Quarterly Journal of Economics*, 109, 465-90.

Alesina, A., A. Devleeschauwer, W. Easterly, S. Kurlat, R. Wacziarg, (2003), "Fractionalization", *Journal of Economic Growth* 8, 155-94.

Anbarci, N., M. Escaleras and C. Register (2005), "Earthquake Fatalities: The Interaction of Nature and Political Economy," *Journal of Public Economics*, 89, 1907-1933.

Anbarci, N. and M.A. Ulubasoglu (2005a), "Intersectoral Size Differences and Migration: Kuznets Revisited", mimeo, Florida International University and Deakin University.

Baffes, J. and J. Meerman (1997), "From Prices to Incomes: Agricultural Subsidization without Protection," mimeo, the World Bank.

Barro, R. (2000), "Inequality and Growth in a Panel of Countries", *Journal of Economic Growth*, 5, 5-32.

Behrman, J. R. (1999), "Labor Markets in Developing Countries," (p. 2859-2939) in *Handbook of Labor Economics*, eds. O. Ashenfelter and D. Card (Elsevier: Amsterdam).

Benhabib, J. and M. Spiegel (2000), "The Role of Financial Development in Growth and Investment", *Journal of Economic Growth*, 5: 341-80.

Binswanger, H.P. and M.R. Rosenzweig (1986), "Behavioral and Material Determinants of Production Relations in Agriculture," *Journal of Development Studies*, 22, 503-539.

Bollen, K. (1990), "Political Democracy: Conceptual and Measurement Traps", *Studies in Comparative International Development* 25:7-24.

Bourguignon, F. and C. Morrisson (1998), "Inequality and Development: The Role of Dualism", *Journal of Development Economics*, 57(2): 233-57.

Bourguignon, F. and C. Morrisson (2002), "Inequality among World Citizens", *American Economic Review*, September, 92 (4), 727-744.

Breusch, T.S. and A.R. Pagan (1980), "Lagrange Multiplier Test and its Application to Model Specification in Econometrics", *Review of Economic Studies*, 47, 239-53.

Burnside, C. (1996), "Production Function Regression, Returns to Scales and Externalities," *Journal of Monetary Economics*, 37, 177-201.

Cukierman, A. and Y. Spiegel (2003), "When is the Median Voter Paradigm a Reasonable Guide for Policy Choices in a Representative Democracy," *Economics and Politics*, 15, 247-284.

Deininger, K. and L. Squire (1996), "A New Data Set Measuring Income Inequality", *World Bank Economic Review* 10(3): 565-91.

Dervis, K., M. Emerson, D. Gros, and S. Ulgen (2004), *The European Transformation of Modern Turkey.* CEPS, Brussels, Belgium.

Freedom House, www.freedomhouse.org.

Harrigan, J. (1999), "Estimation of Cross-Country Differences in Industry Production Functions," *Journal of International Economics*, 47, 267-293.

Krueger, A.O. (1978), *Liberalization Attempts and Consequences*, Ballinger Publishing Company, Cambridge and Massachusetts.

Kuznets, S. (1955), "Economic Growth and Income Inequality," *American Economic Review*, 45, 1-28.

Kuznets, S. (1973), "Modern Economic Growth: Findings and Reflections," *American Economic Review*, 63, 247-258.

Larson, D. and Y. Mundlak (1997), "On the Intersectoral Migration of Agricultural Labor", *Economic Development and Cultural Change*, 45, 295-319.

Li, H., L. Squire and H. Zou (1998), "Explaining International and Intemporal Variations in Income Inequality", *Economic Journal*, 108(446): 26-43.

Lindert, P. (2005), "Three centuries of inequality in Britain and America", *Handbook of Income Distribution*, ed(s). A. Atkinson and F. Bourguignon, North Holland.

Martin-Marcos, A. and C. Suarez-Galvez (2000), "Tehcnical Efficiency of Spanish Manufacturing Firms," *Applied Economics*, 32, 1249-1258.

Morrisson, C. (2005), "Historical perspectives on income distribution: The case of Europe", *Handbook of Income Distribution*, ed(s). A. Atkinson and F. Bourguignon, North Holland.

Ribe, H. (1979), "Income of Migrants Relative to Nonmigrants in Colombia," unpublished dissertation, Yale University (cited in Schultz (1988)).

Rivers, D. And Q. Vuong (1988), "Limited Information Estimators and Exogeneity Testing for Simultaneous Probit Models", *Journal of Econometrics*, 39, 347-366.

Rodriguez, F. and D. Rodrik (2000), "Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence", NBER Macroeconomics Annual, 15, 261-325.

Rodrik, D. (1998), "Globalization, Social Conflict and Economic Growth," *The World Economy*, 21, 143-158.

Rodrik, D. (2000), "Institutions for High-Quality Growth: What They are How to Acquire

Them," *Studies in International Comparative Development*, Fall 2000. vol. 35:3.

Sachs, J. and A. Warner (1995), "Economic Reform and the Process of Global Integration", *Brookings Papers on Economic Activity*, 0(1): 1-95

Schultz, T. P. (1988), "Education Investments and Returns," (p. 543-630) in *Handbook of Development Economics*, eds. H. Chenery and T. N. Srinivasan (North Holland: Amsterdam).

Schultz, T. P. (1998), "Inequality in the Distribution of Personal Income in the World: How It Is Changing and Why", *Journal of Population Economics*, 11, 307-44.

Timmer, C. P. (1988), "The Agricultural Transformation," (p. 275-331) in *Handbook of Development Economics*, eds. H. Chenery and T. N. Srinivasan (North Holland: Amsterdam).

Todaro, M. (2000), *Economic Development*. Addison-Wesley: Reading, MA.

Truett L.J. and D.B. Truett (1997), "The Korean Metals Industry and Economic Development," *Journal of Asian Economics*, 8, 333-347.

Ulubasoglu, M.A. and B.A. Cardak (2005), "International Comparisons of Rural-Urban Educational Attainment: Data and Determinants", mimeo, Deakin University and La Trobe University.

The Victorian Web, http://www.victorianweb.org/ history/cornlaws1.html.

United Nations, Food and Agricultural Organization, www.fao.org.

United Nations, Human Development Report, 1999.

United Nations, UNESCO Educational Yearbooks (various issues).

Wacziarg, R. and K.H. Welch (2003), "Trade Liberalization and Growth: New Evidence", NBER Working Paper No. 10152.

World Bank, World Development Indicators, CD-ROM (1999, 2003).

World Income Inequality Database V 2.0a (2005), United Nations University.

Yap, L. (1976), "Rural-Urban Migration and Urban Underemployment in Brazil," *Journal ofDevelopment Economics*, 4, 239-264.

APPENDIX

A. INEQUALITY COMPARISONS

Table I. Unconditional Changes in Inequality (number of countries)

Country Group	INEQUALITY						OPENNESS	
	Net Rise 1959-2003	Net Fall 1959-2003	No Change 1959-2003	Net Rise in the Open Period	Net Fall in the Open Period	No Change in the Open Period	Opened in 1959-2003	Closed as of 2003
Developing	19	21	8	13	13	5	61	25
Developed	8	10	3	8	10	3	18	2
SS Africa	9	11	2	4	7	0	18	8
Total	36	42	13	25	30	8	97	35

Notes:

1. UNU/WIDER Gini observations with Quality 1-4 are used. For each country the highest possible quality data bundle has been utilized. Because the analysis is raw, we stick to only one type of, and consistent, Gini construction (see Section 4.3.) for a particular country that provided the longest time span.
2. "Net" refers to the difference in Gini points between the earliest and the latest year available for a country (where data are available for different years). If the difference is greater 1 Gini point, then the conclusion is a "net rise", and vice versa. No change means that this difference is between -1 and 1.
3. Opening years are taken from Wacziarg and Welch (2003).
4. The analysis is raw and relies on data availability (i.e., on an unbalanced panel). Thus, the measures are rough measures of the changes in Ginis.

B. THEORETICAL PROOFS

PROPOSITION 1: *In IS:*

(1) The entrepreneur's income is $Y_e^{IS} = B_m^{IS} = (½)^{3/2}$.

A worker's income is $Y_w^{IS} = e_m\, w_m = (½)^{3/2}$.

(2) A farmer's income is $Y_a^{IS} = ½\, ((1\text{-}A)/A)\, (\forall/(1\text{-}\forall))\, (½)^{1/2}$.

(3) $Y_e^{IS} = Y_w^{IS} > Y_a^{IS}$.

Proof of Proposition 1: (1) A skilled worker's utility maximization problem can be rewritten as

$u_w = L_w\, c_w$, where $c_w = a^{\forall}\, m^{1\text{-}\forall}$ stands for the composite consumption good,

such that $c_w = w_m\, (1\text{-}L_w)$.

First order conditions from this problem yield $w_m L_w = c_w$. Plugging c_w into the constraint we get

$L_w^* = ½$, and thus $e^s_w = ½$. (1.1)

By assumption, $L_e = 1$, $e^s_e = 0$.

First-order conditions of B_m yield ½ $(e_m)^{-1/2}$ - w_m = 0. Thus, demand for labor per entrepreneur is $e^d_m = (1/2w_m)^2$. But e^s_w = ½ (and e^s_e = 0). Thus, equating e^d_m and e^s_w, the equilibrium manufacturing wage becomes

$w_m = (½)^{1/2}$. (1.2)

Thus, by using (1.1) and (1.2), we get $B_m^{IS} = (½)^{1/2} - ½ (½)^{1/2} = ½ (½)^{1/2}$. (1.3)

Hence, again by using (1.1) and (1.2) we get, $e_w\, w_m = ½ (½)^{1/2}$. (1.4)

(2) Let B_a^{IS} denote the farmer's profit and w_a denote the farmer's wage. Observe that

$Y_a^{IS} = B_a^{IS} + w_a\, e_a = p_a^d\, e^{1/2}$ (1.5)

where $B_a^{IS} = p_a^d\, e^{1/2} - w_a\, e_a$.

A farmer's utility maximization problem can be rewritten as

$u_a = L_a\, c_a$, where $c_a = a^{\forall}\, m^{1-\forall}$ stands for the composite consumption good,

such that $c_a = w_a\, (1-L_a)$.

First order conditions from this problem yield $w_a\, L_a = c_a$. Plugging c_a into the constraint we get

$L_a^* = ½$, and thus $e^s_a = ½$. (1.6)

Thus, $a^s = (½)^{1/2}$. (1.7)

First order conditions from any agent i's utility maximization problem yield

$a_i = \forall\, Y_i^{IS}/p_a^d$. (1.8)

Since there are two sectors, it follows from Walras' law that, if one of the markets is in equilibrium, then so is the other one.

Using (1.5) and (1.8), the farmers' total demand for the agricultural good becomes

$A \forall\, Y_a^{IS}/p_a^d = A \forall\, (½)^{1/2}$. (1.9)

Using (1.4) and (1.8), the workers' total demand for the agricultural good becomes

$[(1-A)/2] \forall\, Y_w^{IS}/p_a^d = [(1-A)/2] \forall\, ½ (½)^{1/2}/p_a^d$. (1.10)

Using, (1.3) and (1.8), the entrepreneurs' demand for the agricultural good becomes

$$[(1\text{-}A)/2] \forall\ Y_e^{IS}/p_a^d = [(1\text{-}A)/2] \forall\ ½\ (½)^{1/2}/p_a^d. \quad (1.11)$$

Then, by using (1.9), (1.10) and (1.11), total demand for the agricultural good becomes

$$A \forall\ (½)^{1/2} + (1\text{-}A) \forall\ ½\ (½)^{1/2}/p_a^d \quad (1.12)$$

Using (1.6), the total supply of the agricultural good becomes

$$A\ (½)^{1/2}. \quad (1.13)$$

Then, using (1.12) and (1.13) (i.e., equating the total demand and supply of the agricultural good) yields

$$(1\text{-}A) \forall\ ½\ (½)^{1/2}/p_a^d = A\ (1\text{-}\forall)\ (½)^{1/2}.$$

By simplifying it, we get

$$p_a^d = ½\ ((1\text{-}A)/A)\ \forall/(1\text{-}\forall). \quad (1.14)$$

Then, by using (1.7) and (1.14)

$$Y_a^{IS} = ½\ ((1\text{-}A)/A)\ [\forall/(1\text{-}\forall)]\ (½)^{1/2}. \quad (1.15)$$

(3) This part follows directly from Parts 1 and 2 of this proposition. This completes proof of Proposition 1.

PROPOSITION 2: *In IS,* $u_e^{IS} = 2u_w^{IS}$ *and* $u_w^{IS}/u_a^{IS} = [A(1\text{-}\forall)/(1\text{-}A)\forall]$*; thus,* $u_e^{IS}/u_a^{IS} = 2\ [A(1\text{-}\forall)/(1\text{-}A)\forall]$*. Thus,* $u_e^{IS} > u_w^{IS} > u_a^{IS}$.

Proof of Proposition 2: First order conditions from any agent i's utility maximization problem yield his/her demand for the manufacturing good:

$$m^d_i = \forall\ Y_i^{IS}. \quad (2.1)$$

Recall from the proof of Proposition 1 that

by (1.8) $a_i = \forall\ Y_i^{IS}/p_a^d$,

by (1.1), $L_w* = ½$, and thus $e^s_w = ½$, by assumption, $L_e = 1$, $e^s_e = 0$, by (1.5) $L_a* = ½$, and thus $e^s_a = ½$,

by (1.3) $Y_e^{IS} = ½\ (½)^{1/2}$, by (1.4) $Y_w^{IS} = ½\ (½)^{1/2}$, by (1.15) $Y_a^{IS} = ½\ ((1\text{-}A)/A)\ [\forall/(1\text{-}\forall)]\ (½)^{1/2}$,

Thus, a farmer's indirect utility is $u_a^{IS} = (½)\ \forall^{\forall}(1\text{-}\forall)^{1\text{-}\forall}\ (1/p_a)^{\forall}\ ½((1\text{-}A)/A)\ [\forall/(1\text{-}\forall)]\ (½)^{1/2}$ (3.1)

Thus, the worker's indirect utility is $u_w^{IS} = (½)\ \forall^{\forall}\ (1-\forall)^{1-\forall}\ (1/p_a)^{\forall}\ ½\ (½)^{1/2}$. (3.2)

Thus, the entrepreneur's indirect utility is $u_e^{IS} = \forall^{\forall}\ (1-\forall)^{1-\forall}\ (1/p_a)^{\forall}\ ½\ (½)^{1/2}$. (3.3)

Then, simple comparisons of (3.1), (3.2) and (3.3) conclude our result. This completes proof of Proposition 2.

PROPOSITION 3: *In IS, the Gini coefficient is $G(Y^{IS}) = A - \forall$.*

Proof of Proposition 3: By Part 3 of Proposition 1, $Y_w^{IS} = Y_e^{IS} > Y_a^{IS}$ (as long as $\forall < A$). Let $\underline{Y}^{IS}$ be the average income in IS. By Proposition 1, $Y_e^{IS} = (½)^{3/2}$, $Y_w = (½)^{3/2}$, and $Y_a^{IS} = ½\ ((1-A)/A)\ (\forall/(1-\forall))\ (½)^{½}$. Let $C = (½)^{3/2}$. Thus, $\underline{Y}^{IS} = C[(1-A)/2 + (1-A)/2 + A\ ((1-A)/A)\ (\forall/(1-\forall))] = C[(1-A) + (1-A)\ (\forall/(1-\forall))] = C[(1-A)/(1-\forall)]$. Let s_i denote segment i's population share. Thus, $s_e = (1-A)/2 = s_w$ and $s_a = A$. Let $t_i = Y_i/\underline{Y}^{IS}$. Thus, $t_e = (1-\forall)/(1-A) = t_w$ and $t_a = \forall/A$. Given these definitions, Gini can be calculated as follows (see equation (5) on p. 888 of Mookherjee and Shorrocks (1988): $G(Y^{IS}) = ½\ [E_h\ E_k\ s_h\ s_k\ |t_h - t_k|\ ]$. Thus, $½\ [(A(1-A)/2)\,|(1-\forall)/(1-A) - \forall/A|\,4] = (A(1-A)\,|(1-\forall)/(1-A) - \forall/A| = A(1-\forall) - \forall(1-A) = A - \forall$. This completes proof of Proposition 3.

PROPOSITION 4: *In EP,*

(1) $Y_e^{EP} = B_m^{EP} = (1+2kA\exists/(1-A))\ ½\ (½)^{1/2}$.

(2) $Y_w^{EP} = e_m\ w_m = ½\ (½)^{½}$.

(3) $Y_n^{EP}(\exists) = e_m\ \exists\ w_m = ½\ \exists\ (½)^{½}$.

(4) $Y_a^{EP}(,) = p_a^i\ (e_a)^{1/2} = p_a^i\ (½)^{½}$.

(5) $Y_a^{EP}(\exists) = p_a^i\ (e_a)^{1/2} = p_a^i\ (½)^{½}$.

(6) $Y_n^{EP}(,) = e_m\ ,\ w_m = ½\ ,\ (½)^{½}$.

(7) $Y_e^{EP} > Y_w^{EP} > Y_n^{EP}(\exists) > Y_a^{EP}(,)$; in addition, $Y_n^{EP}(\exists) > Y_a^{EP}(\exists)$ and $Y_n^{EP}(,) < Y_a^{EP}(,)$.

Proof of Proposition 4: (1) First-order conditions of B_m' yield $½\ (e_m')^{-1/2} - w_m' = 0$. There is one skilled worker per entrepreneur and 2A/(1-A) unskilled (migrant) workers per entrepreneur. Thus, the total demand for labor is

$$(1+2A\exists/(1-A))\ e^d_m = (1+2A\exists(1-A))\ (1/2w_m)^2. \qquad (4.1)$$

By (1.1) in the proof of Proposition 1,

$$L_w^* = ½\text{, and thus } e^s_w = ½. \quad (4.2)$$

$$\text{Thus, } w_m = (½)^{1/2}. \quad (4.3)$$

Then, using (4.2) and (4.3),

$$Y_e^{EP} = B_m^{EP} = (1+2A\exists/(1-A))\,(½)^{1/2} - (1+2A\exists/(1-A))\,½\,(½)^{1/2} =$$

$$(1+2A\exists(1-A))\,½\,(½)^{1/2} \quad . \quad (4.4)$$

(2) Using (4.2) and (4.3)

$$Y_w^{EP} = e_w\, w_m = ½\,(½)^{1/2} \quad . \quad (4.5)$$

(3) Using (4.2) and (4.3)

$$Y_n^{EP}(\exists) = e_n\, \exists\, w_m = \exists\, ½\,(½)^{1/2} \quad . \quad (4.6)$$

(4) As specified in the main text,

$$Y_a^{EP}(,) = p_a^i\, e^{1/2}. \quad (4.7)$$

(5) As specified in the main text,

$$Y_a^{EP}(\exists) = p_a^i\, e^{1/2}. \quad (4.8)$$

(6) Using (4.2) and (4.3)

$$Y_n^{EP}(,) = e_n\, ,\, w_m = ,\, ½\,(½)^{1/2} \quad . \quad (4.9)$$

(7) The first part follows from (4.4) - (4.7). The second part follows (4.6) - (4.9) and our assumptions that $, < p_a^i$ and $p_a^i < \exists < 1$. This completes proof of Proposition 4.

PROPOSITION 5: *In EP, $u_e^{EP} > u_w^{EP} > u_n^{EP}(\exists) > u_a^{EP}(,)$; in addition, $u_n^{EP}(\exists) > u_a^{EP}(\exists)$ and $u_n^{EP}(,) < u_a^{EP}(,)$.*

Proof of Proposition 5: Mimic the proof of Proposition 2 using Y_i^{EP} to find the indirect utilities of each agent.

$$u_e^{EP} = \forall^{\forall}(1-\forall)^{1-\forall}(1/p_a^i)^{\forall}(1+2kA\exists/(1-A))\,½\,(½)^{1/2}. \quad (5.1)$$

$$u_w^{EP} = (½)\,\forall^{\forall}\,(1-\forall)^{1-\forall}\,(1/p_a^i)^{\forall}\,½\,(½)^{1/2}. \quad (5.2)$$

$$u_n^{EP}(\exists) = (½)\,\forall^{\forall}\,(1-\forall)^{1-\forall}\,(1/p_a^i)^{\forall}\,½\,\exists\,(½)^{1/2}. \quad (5.3)$$

$u_a^{EP}(,) = (½)\ ∀^∀\ (1-∀)^{1-∀}\ (1/p_a^i)^∀\ p_a^i\ (½)^{1/2}.$ (5.4)

$u_a^{EP}(∃) = (½)\ ∀^∀\ (1-∀)^{1-∀}\ (1/p_a^i)^∀\ p_a^i\ (½)^{1/2}.$ (5.5)

$u_n^{EP}(,) = (½)\ ∀^∀\ (1-∀)^{1-∀}\ (1/p_a^i)^∀\ ½\ ,\ (½)^{1/2}.$ (5.6)

Then, simple comparisons of (5.1) - (5.6) yield our result. This completes proof of Proposition 5.

Proof of Theorem 3: By Part 7 of Proposition 4, $Y_e^{EP} > Y_w^{EP} > Y_n^{EP}(∃) > Y_a^{EP}(,)$. Let $\underline{Y}^{EP}$ be the average income in EP. By Proposition 4, $Y_e^{EP} = B_m^{EP} = (1+2kA∃/(1-A))\ ½\ (½)^{½}$, $Y_w^{EP} = e_m w_m = ½\ (½)^{½}$, $Y_n^{EP}(∃) = e_m\ ∃\ w_m = ½\ ∃\ (½)^{½}$, and $Y_a^{EP}(,) = p_a^i\ (e_a)^{1/2} = p_a^i\ (½)^{½}$. Let $E = (½)^{½}$. Thus, $\underline{Y}^{EP} = E(1-A+2kA∃+(1-k)Ap)$. Let s_i denote segment i's population share. Thus, $s_e = (1-A)/2 = s_w$, $s_n = kA$ and $s_a = (1-k)A$. Given these definitions, Gini can be reformulated from the one provided by Mookherjee and Shorrocks (1988): $G(Y^{EP}) = ½\ [E_h\ E_k\ s_h\ s_k\ |Y_h^{EP} - Y_k^{EP}|\ ]/\underline{Y}^{EP}$. Lengthy and tedious calculations yield

$$G(Y^{EP}) = [A(1-A) + 2kA^2∃ - k^2A^2∃ - kA∃(1-A)/2 - (1-k)Ap + (1-k)^2A^2p]/(1-A +2kA∃ + (1-k)Ap). \quad (T2.1)$$

Thus, $)G = G(Y^{EP}) - G(Y^{IS})$

$$= [A(1-A) + 2kA^2∃ - k^2A^2∃ - kA∃(1-A)/2 - (1-k)Ap + (1-k)^2A^2p]/(1-A +2kA∃ +(1-k)Ap) - (A-∀). \quad (T2.2)$$

The derivatives are long and cumbersome. We will omit the derivations of them. The reader can verify them through Mathematica.

(1) $∂()G)/∂∀ = 1.$

$∂()G)/∂∃ = - (Ak)^2/(1-A + kA∃ + (1-k)Ap) < 0.$

(2) Even the simplified expressions of $∂()G)/∂A$ and $∂()G)/∂k$ are several lines. We omit them here. (We can provide them upon request.)

$∂()G)^2/∂∃∂k = - 2A^2k/(1-A + kA∃ + (1-k)Ap) - A^3k^2p/(1-A + kA∃ + (1-k)Ap)^2 < 0.$

$∂()G)^2/∂∃∂A = - 2Ak^2/(1-A + kA∃ + (1-k)Ap) - A^2k^2/(1-A + kA∃ + (1-k)Ap)^2 < 0.$

$∂()G)^3/∂∃∂k∂A = -2Ak[A/(1-A + kA∃ + (1-k)Ap)^2 + 2/(1-A + kA∃ + (1-k)Ap) + A^2pk/(1-A + kA∃$

+ (1-k)Ap)^3 + Apk/(1-A + kA∃ + (1-k)Ap)^2] < 0. This completes the proof of Theorem 2.

C. DATA DEFINITIONS AND SOURCES

Income Gini: Income Gini index; 0-100 scale; obtained from UNU/WIDER (2005)

IS-EP: dummy variable; obtained from Sachs and Warner (1995) and Wacziarg and Welch (2003).

Migration rate: rate of decline in agricultural labor force, adjusted for population growth in the country; 0%-100% scale; calculated following Larson and Mundlak (1997).

Agricultural labor force: obtained from FAO web site (www.fao.org) and World Development Indicators (WDI) CD-ROOM (1999, 2003).

Rural Schooling: Share of rural population with no schooling, primary schooling and secondary schooling; 0%-100% scale; obtained from UNESCO Educational Yearbooks (various issues).

FX/GDP: Percentage change in the share of foreign exchange reserves, including gold, in GDP; obtained from WDI CD-ROM (2003).

Political Freedom: political rights and civil liberties index; 0-100 scale; political freedom index for the years 1960 and 1965 is obtained from Bollen (1990) in a 0-1 scale, from 1972 onwards, the average of political rights and civil liberties index of Gastil index (www.freedomhouse.org) is used. Both indices are transformed in to the 0-100 scale, where 100 denotes the most democratic regimes.

Population growth rate: obtained from WDI CD-ROM (2003).

Agricultural GDP: obtained from WDI CD-ROM (2003).

Agricultural imports and exports: obtained from FAO Trade Yearbook (various issues).

Rural and urban years of educational attainment: obtained from Ulubasoglu and Cardak (2005).

Inflation: rate of change in GDP deflator; 0%-100% scale; obtained from WDI CD-ROM (2003).

Population: obtained from WDI CD-ROM (2003).

Ethnic Fractionalization: 0-100 scale; obtained from Alesina et al. (2003).

Life Expectancy: obtained from WDI CD-ROM (2003).

Area: Geographical surface area in square kilometers; obtained from WDI CD-ROM (2003).

M2/GDP: in 0%-100% scale; obtained from WDI CD-ROM (2003).

D. INEQUALITY DATA FOR ESTIMATIONS

Using the UNU/WIDER's (2005) compilation of inequality data, we build a consistent inequality series for each country over 5-year intervals. First, population coverage "All" is preferred over the other coverages. Then, a higher quality construction is preferred over the others. Next, for a given quality, gross income is taken as benchmark (gross income is preferred over monetary income, earnings, if multiple constructions exit for a country for a specific year). Household is usually the appropriate unit of analysis for inequality studies (Kuznets, 1973), and thus is stuck to. But if person-based Ginis would provide a consistent series, then they are preferred. Expenditure and consumption are taken as same, while a distinction is made between income, monetary income and earnings (note that a further distinction is made between net and gross). Finally, different constructions are corrected with dummies (expenditure/consumption, net income, monetary income, earnings, person, and Gini quality).

E. APPROXIMATION OF THE β DATA

Countries	Beta data matched	Countries	Beta data matched
Australia	**New Zealand 1981 (*)**	Kenya	Kenya 1969
Bangladesh	Bangladesh 1981	Korea, Rep.	Korea, Rep. 1970
Bolivia	Bolivia 1992	**Madagascar**	**Cameroon 1976**
Brazil	Brazil 1980	Malaysia	Malaysia 1970
Burkina Faso	**Mali 1975**	Mali	Mali 1975
Cameroon	Cameroon 1976	**Mauritania**	**Mali 1976**
Chile	Chile 1970	**Mexico**	**Brazil 1980 (*)**
Colombia	Colombia 1973	**Morocco**	**Tunisia 1984 (*)**
Costa Rica	Costa Rica 1973	Nepal	Nepal 1981
Cote d'Ivoire	**Mali 1975**	New Zealand	New Zealand 1981
Dominican Republic	Dominican Republic, 1970	Panama	Panama 1980
Ecuador	Ecuador 1970	**Peru**	**Ecuador 1970**
Egypt, Arab Rep.	Egypt 1986	Philippines	Phillippines 1995
El Salvador	El Salvador 1971	South Africa	South Africa 1970
Ethiopia	Ethiopia 1994	Sri Lanka	Sri Lanka 1981
Ghana	**Mali 1975**	**Tanzania**	**Kenya 1969 (*)**
Guatemala	Guatemala 1973	Tunisia	Tunisia 1984
Honduras	Honduras 1974	Turkey	Turkey 1993
India	India 1991	**Uganda**	**Kenya 1969**
Indonesia	Indonesia 1980	Venezuela	Venezuela 1990
Jamaica	**Canada 1991**	Zambia	Zambia 1980
Japan	Japan 1970		

Notes:
1. Those in **bolds** are approximated. (*): Approximation by way of Bourguignon and Morrisson (2002).
2. The variety of countries available to us for approximation (57 countries available for 12) is greater than Bourguignon and Morrisson (33 countries for the whole world), so we do not use all of their approximations.
3. Years next to the countries denote the year of availability of the β data.

F. ESTIMATION RESULTS

Table 0. Summary Statistics (10-Year Focus)

	Variable	Mean	Median	Max.	Min.	Std. Dev.	Obs. ‡
Developing Countries	Gini+	46.97	47.00	61.00	30.00	8.36	55
	β	0.51	0.49	0.93	0.13	0.16	56
	α (%)	17.95	16.79	51.50	3.75	10.88	56
	Migr. Rate (%)	12.23	12.28	26.04	0	6.02	56
	RurNoSch. (%)	49.99	45.90	98.70	0.90	25.16	54
	RurSecSch. (%)	6.19	3.50	29.70	0.50	7.78	50
	FMV	0.36	0	1	0	0.48	56
	WMV	0.64	1	1	0	0.48	56
Developed Countries	Gini+	33.71	33.88	41.60	27.80	5.38	6
	β	0.93	0.92	1	0.87	0.06	6
	α (%)	7.87	8.15	14.45	2.18	4.69	6
	Migr. Rate (%)	16.98	18.01	28.22	6.53	8.66	6
	RurNoSch. (%)	1	1	1	1	0	6
	RurSecSch. (%)	26.70	30.10	30.10	19.90	5.27	6
	FMV	0	0	0	0	0	6
	WMV	1	1	1	1	1	6
SS African Countries	Gini+	50.07	48.35	77.30	36.15	11.99	26
	β	0.33	0.39	0.62	0.06	0.16	26
	α (%)	31.65	31.04	54.31	4.37	14.66	26
	Migr. Rate (%)	4.92	3.31	19.92	0	5.96	26
	RurNoSch. (%)	84.14	79.50	97.50	59.90	12.64	26
	RurSecSch. (%)	1.30	0.63	5.60	0.20	1.63	20
	FMV	0,92	1	1	0	0.27	26
	WMV	0.08	0	1	0	0.27	26

Note. + : uncorrected for construction differences. ‡: Sri Lanka is counted twice to the number of countries.

Table 1a. ISEP Equation - All Countries (SS African Effects Separated) - 10 Year Focus

	Dependent Variable: ISEP						
FMV*RurNoSch.	0.004	0.021	0.010	0.003	0.014	0.023	0.024
	(0.47)	(1.81)*	(0.86)	(0.30)	(1.16)	(1.76)*	(1.78)*
FMV*Alpha*RurSecSch.	-0.004	-0.008	-0.005	-0.005	-0.008	-0.008	-0.008
	(1.02)	(1.49)*	(1.06)	(0.96)	(1.54)*	(1.64)*	(1.64)*
FMV*Beta(IS)*RurSecSch.	0.123	0.263	0.162	0.132	0.239	0.289	0.290
	(1.02)	(1.71)*	(1.11)	(0.93)	(1.62)*	(1.79)*	(1.81)*
WMV	-0.016	0.876	0.390	0.113	0.719	0.911	0.914
	(0.03)	(1.73)*	(0.54)	(0.17)	(1.05)	(1.54)*	(1.54)*
Afr.*FMV*RurNoSch.	-0.004	-0.007	-0.006	-0.003	-0.014	-0.010	-0.018
	(0.74)	(1.02)	(0.89)	(0.52)	(1.75)*	(1.22)	(0.32)
Afr.*FMV*Alpha*RurSecSch.	0.002	0.008	0.007	0.005	0.020	0.011	0.006
	(0.26)	(0.86)	(0.73)	(0.52)	(1.16)	(1.10)	(0.22)
Afr.*FMV*Beta(IS)*RurSecSch.	-0.049	0.235	-0.121	-0.055	1.533	0.167	0.137
	(0.16)	(0.38)	(0.23)	(0.20)	(2.45)**	(0.25)	(0.18)
Afr.*WMV	0.000	0.114	0.046	0.129	0.463	0.029	-0.608
	(0.000)	(0.32)	(0.11)	(0.41)	(2.12)**	(0.07)	(0.15)
FXRes/GDP		0.730				0.545	0.547
		(2.09)**				(1.55)*	(1.52)*
FXRes/GDP(-1)		0.553				0.626	0.627
		(1.35)				(1.40)*	(1.40)*
FXRes/GDP(-2)		-0.939				-1.111	-1.110
		(1.55)*				(1.33)	(1.32)
Afr.*FXRes/GDP		-1.090				-0.888	-0.927
		(2.45)**				(1.94)*	(1.81)*
Afr.*FXRes/GDP(-1)		-0.287				-0.271	-0.312
		(0.61)				(0.52)	(0.55)
Afr.*FXRes/GDP(-2)		0.435				0.406	0.339
		(0.46)				(0.35)	(0.29)
Infl.			-0.001		-0.002	-0.001	-0.001
			(1.55)*		(1.38)	(1.00)	(0.96)
Infl.(-1)			0.008		0.019	0.011	0.011
			(1.82)*		(1.69)*	(1.20)	(1.16)
Infl.(-2)			-0.010		-0.024	-0.012	-0.012
			(0.90)		(1.34)	(0.74)	(0.74)
Afr.*Infl.			-0.019		0.004	-0.014	-0.014
			(1.32)		(0.56)	(1.05)	(1.03)
Afr.*Infl.(-1)			0.008		-0.142	-0.001	-0.002
			(0.39)		(2.56)***	(0.06)	(0.08)
Afr.*Infl.(-2)			0.010		0.149	0.025	0.025
			(0.44)		(2.49)**	(0.89)	(0.92)
Growth				0.098	0.139		
				(1.94)*	(2.26)**		
Growth(-1)				0.048	0.095		
				(1.33)	(2.41)**		
Growth(-2)				-0.100	-0.132		
				(2.44)**	(2.39)**		
Afr.*Growth				0.022	0.421		
				(0.28)	(1.82)*		
Afr.*Growth(-1)				-0.197	-0.511		
				(2.86)***	(3.77)***		
Afr.*Growth(-2)				0.122	0.163		
				(1.86)*	(2.12)**		
Ln(Pop.)							0.003
							(0.05)
Afr.*Ln(Pop.)							0.053
							(0.15)
Observations	74	68	68	70	68	66	66
Pseudo R-sq.	0.01	0.17	0.12	0.24	0.41	0.25	0.25

Marginal effects reported. Absolute value of the robust z statistics in parentheses. * significant if z statistic is greater than 1.4; ** significant if greater than 2; *** significant if greater than 2.5.

Table 1b. ISEP Equation - All Countries (SS African Effects Separated) - 20 Year Focus

	Dependent Variable: ISEP						
FMV*RurNoSch.	0.005	0.007	0.007	0.004	0.004	0.010	0.011
	(0.68)	(0.79)	(1.14)	(0.45)	(1.04)	(1.65)*	(1.67)*
FMV*Alpha*RurSecSch.	-0.006	-0.006	-0.005	-0.008	-0.004	-0.005	-0.006
	(1.84)*	(1.58)*	(2.07)**	(1.98)*	(2.22)**	(2.04)**	(2.03)**
FMV*Beta(IS)*RurSecSch.	0.162	0.181	0.150	0.210	0.109	0.175	0.181
	(1.92)*	(1.69)*	(2.24)**	(1.99)*	(2.31)**	(2.29)**	(2.28)**
WMV	0.093	0.259	0.260	0.108	0.229	0.532	0.561
	(0.18)	(0.42)	(0.54)	(0.19)	(0.64)	(1.15)	(1.18)
Afr.*FMV*RurNoSch.	-0.005	-0.003	-0.005	-0.004	-0.003	-0.005	-0.009
	(1.15)	(0.55)	(1.62)	(0.99)	(1.57)*	(1.38)	(0.37)
Afr.*FMV*Alpha*RurSecSch.	0.009	0.011	0.010	0.012	0.007	0.012	0.010
	(1.20)	(1.15)	(1.80)*	(1.48)*	(2.64)***	(1.87)*	(0.61)
Afr.*FMV*Beta(IS)*RurSecSch.	-0.255	0.086	-0.171	-0.264	0.238	-0.027	-0.013
	(0.93)	(0.16)	(0.59)	(0.93)	(0.93)	(0.07)	(0.03)
Afr.*WMV	-0.048	0.175	0.033	-0.108	0.080	0.079	-0.529
	(0.19)	(0.72)	(0.20)	(0.38)	(0.74)	(0.47)	(0.14)
FXRes/GDP		0.659				0.317	0.325
		(2.49)**				(1.63)*	(1.63)*
FXRes/GDP(-1)		0.589				0.202	0.208
		(2.38)**				(1.00)	(1.02)
FXRes/GDP(-2)		-0.184				-0.391	-0.400
		(1.11)				(1.77)*	(1.77)*
Afr.*FXRes/GDP		-0.950				-0.535	-0.580
		(2.67)***				(2.01)**	(1.80)*
Afr.*FXRes/GDP(-1)		-0.341				0.076	0.049
		(1.08)				(0.30)	(0.16)
Afr.*FXRes/GDP(-2)		-0.396				-0.119	-0.181
		(0.76)				(0.28)	(0.35)
Infl.			-0.001		-0.000	-0.000	-0.000
			(1.37)		(1.27)	(0.91)	(0.86)
Infl.(-1)			0.004		0.004	0.003	0.003
			(1.42)		(1.57)*	(1.09)	(1.05)
Infl.(-2)			0.002		0.000	0.004	0.004
			(1.77)*		(0.53)	(1.97)*	(1.96)*
Afr.*Infl.			-0.011		-0.012	-0.014	-0.014
			(1.38)		(0.89)	(1.21)	(1.19)
Afr.*Infl.(-1)			0.000		-0.015	0.001	0.001
			(0.00)		(1.14)	(0.06)	(0.05)
Afr.*Infl.(-2)			0.007		0.019	0.011	0.010
			(0.95)		(1.57)*	(0.93)	(0.82)
Growth				0.098	0.038		
				(2.93)***	(2.78)***		
Growth(-1)				0.047	0.030		
				(1.57)*	(2.33)**		
Growth(-2)				-0.115	-0.050		
				(3.60)***	(3.44)***		
Afr.*Growth				0.007	0.054		
				(0.10)	(1.44)*		
Afr.*Growth(-1)				-0.082	-0.062		
				(1.84)*	(2.48)**		
Afr.*Growth(-2)				0.097	0.037		
				(2.15)**	(1.35)		
Ln(Pop.)							0.006
							(0.17)
Afr.*Ln(Pop.)							0.029
							(0.17)
Observations	125	116	114	118	114	112	112
Pseudo R-sq.	0.02	0.13	0.15	0.24	0.35	0.22	0.22

Marginal effects reported. Absolute value of the robust z statistics in parentheses. * significant if z statistic is greater than 1.4; ** significant if greater than 2; *** significant if greater than 2.5.

Table 1c. ISEP Equation - All Countries (SS African Effects Separated) - 30 Year Focus

	Dependent Variable: ISEP						
FMV*RurNoSch.	0.004	0.004	0.003	0.000	0.003	0.002	0.002
	(0.59)	(0.56)	(1.08)	(0.04)	(1.03)	(1.05)	(1.08)
FMV*Alpha*RurSecSch.	-0.007	-0.007	-0.004	-0.009	-0.004	-0.002	-0.003
	(2.16)**	(2.05)**	(2.12)**	(2.20)**	(2.31)**	(2.23)**	(2.19)**
FMV*Beta(IS)*RurSecSch.	0.185	0.209	0.103	0.231	0.104	0.069	0.076
	(2.25)**	(2.16)**	(2.28)**	(2.20)**	(2.46)**	(2.37)**	(2.31)**
WMV	-0.009	-0.034	0.064	-0.312	0.058	0.024	0.037
	(0.02)	(0.06)	(0.24)	(0.57)	(0.23)	(0.14)	(0.20)
Afr.*FMV*RurNoSch.	-0.005	-0.004	-0.003	-0.005	-0.004	-0.002	-0.002
	(1.35)	(0.95)	(1.75)*	(1.31)	(2.19)**	(1.62)	(0.18)
Afr.*FMV*Alpha*RurSecSch.	0.009	0.012	0.007	0.011	0.007	0.005	0.006
	(1.23)	(1.33)	(1.95)*	(1.46)*	(2.71)***	(2.11)**	(0.96)
Afr.*FMV*Beta(IS)*RurSecSch.	-0.250	-0.101	-0.172	-0.256	0.176	-0.064	-0.063
	(0.96)	(0.19)	(0.87)	(0.96)	(0.75)	(0.41)	(0.37)
Afr.*WMV	-0.155	0.014	-0.002	-0.134	0.062	0.017	0.049
	(0.67)	(0.06)	(0.02)	(0.53)	(0.71)	(0.26)	(0.08)
FXRes/GDP		0.360				0.051	0.055
		(1.65)*				(0.74)	(0.74)
FXRes/GDP(-1)		0.240				0.012	0.013
		(1.49)*				(0.19)	(0.18)
FXRes/GDP(-2)		-0.029				-0.101	-0.110
		(0.20)				(1.41)*	(1.42)*
Afr.*FXRes/GDP		-0.677				-0.135	-0.145
		(2.20)**				(1.46)*	(1.38)
Afr.*FXRes/GDP(-1)		-0.062				0.096	0.106
		(0.24)				(0.99)	(0.84)
Afr.*FXRes/GDP(-2)		-0.543				-0.108	-0.113
		(1.13)				(0.69)	(0.65)
Infl.			-0.000		-0.000	-0.000	-0.000
			(1.34)		(1.46)*	(1.09)	(1.05)
Infl.(-1)			0.003		0.003	0.002	0.002
			(1.36)		(1.58)*	(1.15)	(1.12)
Infl.(-2)			0.003		0.002	0.003	0.003
			(1.70)*		(1.24)	(1.81)*	(1.76)*
Afr.*Infl.			-0.008		-0.008	-0.007	-0.008
			(1.35)		(1.21)	(1.36)	(1.28)
Afr.*Infl.(-1)			0.000		-0.018	-0.001	-0.001
			(0.02)		(2.13)**	(0.20)	(0.19)
Afr.*Infl.(-2)			0.005		0.021	0.007	0.007
			(0.83)		(2.41)**	(1.00)	(0.86)
Growth				0.064	0.022		
				(2.34)**	(2.18)**		
Growth(-1)				-0.000	0.004		
				(0.02)	(0.42)		
Growth(-2)				-0.073	-0.025		
				(3.25)***	(2.72)***		
Afr.*Growth				0.060	0.074		
				(0.95)	(2.45)**		
Afr.*Growth(-1)				-0.038	-0.034		
				(0.93)	(1.56)*		
Afr.*Growth(-2)				0.058	0.021		
				(1.46)*	(1.17)		
Ln(Pop.)							0.003
							(0.21)
Afr.*Ln(Pop.)							-0.004
							(0.07)
Observations	160	150	148	153	148	145	145
Pseudo R-sq.	0.03	0.07	0.18	0.16	0.29	0.21	0.21

Marginal effects reported. Absolute value of the robust z statistics in parentheses. * significant if z statistic is greater than 1.4; ** significant if greater than 2; *** significant if greater than 2.5.

Table 1d. ISEP Equation - All Countries (SS African Effects Separated) - 40 Year Focus

	Dependent Variable: ISEP						
FMV*RurNoSch.	0.003	0.002	0.004	-0.001	0.003	0.003	0.004
	(0.52)	(0.29)	(0.90)	(0.16)	(0.61)	(0.91)	(0.96)
FMV*Alpha*RurSecSch.	-0.007	-0.008	-0.006	-0.009	-0.006	-0.004	-0.005
	(2.47)**	(2.46)**	(2.22)**	(2.38)**	(2.30)**	(2.51)***	(2.44)**
FMV*Beta(IS)*RurSecSch.	0.207	0.222	0.157	0.245	0.173	0.124	0.136
	(2.54)***	(2.49)**	(2.32)**	(2.35)**	(2.36)**	(2.59)***	(2.51)***
WMV	-0.118	-0.262	-0.030	-0.465	-0.102	-0.041	-0.021
	(0.25)	(0.48)	(0.10)	(0.90)	(0.31)	(0.17)	(0.08)
Afr.*FMV*RurNoSch.	-0.005	-0.005	-0.005	-0.006	-0.006	-0.004	-0.003
	(1.61)*	(1.20)	(1.91)*	(1.64)*	(2.19)**	(1.86)*	(0.19)
Afr.*FMV*Alpha*RurSecSch.	0.011	0.013	0.011	0.012	0.014	0.009	0.011
	(1.55)*	(1.44)*	(2.41)**	(1.59)*	(2.90)***	(2.22)**	(1.04)
Afr.*FMV*Beta(IS)*RurSecSch.	-0.374	-0.149	-0.438	-0.390	-0.388	-0.127	-0.121
	(1.45)*	(0.27)	(2.44)**	(1.48)*	(2.14)**	(0.46)	(0.41)
Afr.*WMV	-0.199	-0.060	-0.068	-0.233	-0.046	-0.006	0.093
	(0.95)	(0.25)	(0.44)	(1.04)	(0.24)	(0.05)	(0.08)
FXRes/GDP		0.131				-0.009	-0.010
		(0.65)				(0.08)	(0.08)
FXRes/GDP(-1)		0.167				-0.045	-0.052
		(1.17)				(0.43)	(0.46)
FXRes/GDP(-2)		0.007				-0.097	-0.107
		(0.05)				(0.87)	(0.90)
Afr.*FXRes/GDP		-0.510				-0.148	-0.155
		(1.69)*				(0.94)	(0.87)
Afr.*FXRes/GDP(-1)		0.016				0.237	0.260
		(0.06)				(1.46)*	(1.25)
Afr.*FXRes/GDP(-2)		-0.647				-0.292	-0.304
		(1.33)				(1.10)	(1.04)
Infl.			-0.001		-0.001	-0.001	-0.001
			(1.53)*		(1.80)*	(1.55)*	(1.48)*
Infl.(-1)			0.004		0.006	0.004	0.004
			(1.55)*		(1.93)*	(1.56)*	(1.49)*
Infl.(-2)			0.003		0.002	0.003	0.003
			(1.37)		(1.04)	(1.40)*	(1.37)
Afr.*Infl.			-0.013		-0.016	-0.014	-0.015
			(1.58)*		(1.74)*	(1.44)*	(1.38)
Afr.*Infl.(-1)			0.001		-0.014	-0.003	-0.003
			(0.14)		(1.97)*	(0.34)	(0.32)
Afr.*Infl.(-2)			0.010		0.029	0.015	0.016
			(1.05)		(2.26)**	(1.33)	(1.15)
Growth				0.037	0.016		
				(1.56)*	(1.10)		
Growth(-1)				0.011	0.012		
				(0.49)	(0.86)		
Growth(-2)				-0.074	-0.039		
				(3.55)***	(2.89)***		
Afr.*Growth				0.062	0.073		
				(1.11)	(1.80)*		
Afr.*Growth(-1)				-0.079	-0.053		
				(1.91)*	(1.67)*		
Afr.*Growth(-2)				0.039	0.022		
				(0.94)	(0.84)		
Ln(Pop.)							0.007
							(0.33)
Afr.*Ln(Pop.)							-0.010
							(0.09)
Observations	183	167	166	172	166	161	161
Pseudo R-sq.	0.04	0.07	0.18	0.15	0.26	0.20	0.20

Marginal effects reported. Absolute value of the robust z statistics in parentheses. * significant if z statistic is greater than 1.4; ** significant if greater than 2; *** significant if greater than 2.5.

Table 2. Migration Equation - All Countries (SS African Effects Separated)

	Dep. Var.: Migr. Rate -10 Year			Dep. Var.: Migration Rate -20 Year				Dep. Var.: Migration Rate -30 Year				Dep. Var.: Migration Rate -40 Year			
ISEP	3.342	3.492	3.555	0.616	1.234	1.704	-3.716	-3.003	-2.487	-2.201	-2.392	-4.506	-4.502	-4.435	-3.004
	(0.59)	(0.71)	(0.82)	(0.16)	(0.36)	(0.53)	(0.42)	(0.86)	(0.80)	(0.73)	(0.39)	(1.40)	(1.57)	(1.56)	(0.64)
RurNoSch.	-0.057	0.017	0.010	-0.065	0.004	0.010	-0.343	-0.081	-0.007	0.003	0.012	-0.087	-0.014	-0.008	0.018
	(0.82)	(0.31)	(0.19)	(1.31)	(0.10)	(0.27)	(3.130)***	(1.99)**	(0.23)	(0.08)	(0.15)	(2.49)**	(0.50)	(0.28)	(0.33)
ISEP*RurNoSch.	-0.025	-0.045	-0.047	0.029	-0.008	-0.016	-0.107	0.077	0.037	0.029	-0.082	0.106	0.068	0.060	-0.073
	(0.26)	(0.58)	(0.69)	(0.44)	(0.14)	(0.30)	(0.66)	(1.36)	(0.77)	(0.63)	(0.97)	(1.96)*	(1.47)	(1.34)	(1.01)
RurSecSch.	-0.212	-0.193	-0.193	-0.245	-0.207	-0.182	-1.979	-0.338	-0.288	-0.260	-0.667	-0.339	-0.298	-0.280	-0.706
	(1.25)	(1.18)	(1.37)	(2.02)**	(1.73)*	(1.60)	(5.87)***	(3.19)***	(2.79)***	(2.57)**	(2.39)**	(3.64)***	(3.28)***	(3.12)***	(3.23)***
ISEP*RurSecSch.	-0.107	-0.127	-0.129	-0.030	-0.079	-0.104	1.141	0.148	0.087	0.061	0.475	0.219	0.171	0.152	0.518
	(0.46)	(0.55)	(0.63)	(0.19)	(0.49)	(0.69)	(3.01)***	(1.03)	(0.61)	(0.44)	(1.50)*	(1.59)	(1.27)	(1.13)	(2.13)**
SS Afr.*ISEP	37.439	1.168	16.041	48.002	26.874	31.942	-239.233	48.615	18.454	6.605	-221.21	50.114	13.424	2.189	-240.703
	(1.55)	(0.03)	(0.50)	(3.53)***	(1.10)	(1.57)	(0.58)	(3.64)***	(0.73)	(0.28)	(0.87)	(3.77)***	(0.55)	(0.11)	(0.99)
Afr.*RurNoSch.	-0.071	-0.106	-0.100	-0.054	-0.089	-0.199	-9.183	-0.059	-0.156	-0.346	-5.221	-0.047	-0.188	-0.374	-6.783
	(1.70)*	(0.77)	(0.58)	(1.63)	(0.74)	(1.70)*	(1.36)	(2.06)**	(1.26)	(2.38)**	(0.99)	(1.87)*	(1.65)	(3.12)***	(1.61)*
Afr.*ISEP*RurNoSch.	-0.383	0.013	-0.123	-0.540	-0.294	-0.329	2.538	-0.551	-0.214	-0.073	2.521	-0.587	-0.177	-0.041	2.708
	(1.43)	(0.03)	(0.37)	(3.44)***	(1.11)	(1.53)	(0.63)	(3.65)***	(0.79)	(0.29)	(1.01)	(3.90)***	(0.67)	(0.19)	(1.12)
Afr*RurSecSch.	-0.559	-0.675	-0.053	-0.355	-0.483	-1.083	-168.830	0.230	-0.588	-2.308	-89.450	-0.310	-1.277	-2.949	-118.25
	(0.95)	(0.54)	(0.04)	(0.45)	(0.49)	(1.45)	(1.34)	(0.19)	(0.56)	(2.00)**	(0.94)	(0.42)	(1.46)	(3.28)***	(1.56)*
Afr*ISEP*RurSecSch.	-2.931	0.625	-1.067	-3.751	-1.162	-1.893	65.544	-4.390	-0.508	0.381	20.485	-3.920	0.333	1.049	37.235
	(1.68)*	(0.23)	(0.43)	(2.89)***	(0.63)	(0.93)	(0.70)	(2.76)***	(0.26)	(0.18)	(0.31)	(3.05)***	(0.18)	(0.62)	(0.65)
Eth. Frac.		-0.002	-0.048		-0.016	-0.048	-0.017		-0.022	-0.045	0.013		-0.038	-0.053	-0.003
		(0.06)	(1.23)		(0.58)	(1.75)*	(3.76)***		(0.86)	(1.72)*	(0.314)		(1.46)	(1.80)*	(0.07)
LifeExp.		0.484	0.517		0.395	0.432	0.774		0.406	0.466	0.635		0.421	0.496	0.601
		(4.57)***	(4.64)***		(5.10)***	(5.20)***	(9.65)***		(5.43)***	(5.77)***	(8.04)***		(6.36)***	(6.72)***	(7.46)***
Afr.*Eth. Frac.		0.077	0.343		0.015	0.174	6.844		0.013	0.082	3.225		0.054	0.095	4.500
		(0.38)	(1.12)		(0.08)	(0.72)	(1.43)*		(0.07)	(0.41)	(0.80)		(0.32)	(0.49)	(1.48)*
Afr.*LifeExp.		0.020	-0.110		0.096	-0.088	-4.674		0.219	-0.013	-0.667		0.250	-0.051	-1.852
		(0.07)	(0.47)		(0.48)	(0.44)	(1.12)		(1.07)	(0.08)	(0.18)		(1.33)	(0.33)	(0.70)
Ln(Area)			1.213			0.852	0.325			0.642	-0.006			0.486	0.053
			(1.94)*			(2.03)**	(0.47)			(1.77)*	(0.01)			(1.43)	(0.105)
Pol. Freedom			0.006			0.013	-0.212			0.006	-0.030			-0.009	-0.022
			(0.14)			(0.48)	(4.93)***			(0.20)	(0.79)			(0.38)	(0.65)
Afr.*Ln(Area)			-0.523			0.945	49.578			2.087	22.624			2.389	32.273
			(0.39)			(0.97)	(1.25)			(1.91)*	(0.70)			(2.75)***	(1.29)
Afr.*PolFreedom			-0.165			-0.108	-0.741			-0.055	0.010			-0.028	-0.358
			(1.59)			(1.29)	(0.71)			(0.78)	(0.01)			(0.45)	(0.60)
Constant	16.243	-18.283	-33.896	16.759	-11.119	-24.325	9.163	18.544	-9.997	-22.040	-20.696	18.548	-9.937	-20.030	-20.001
	(4.03)***	(2.07)**	(2.97)***	(5.97)***	(1.83)*	(2.89)***	(1.00)	(7.25)***	(1.76)*	(2.85)***	(2.08)**	(8.38)***	(2.02)**	(2.86)***	(2.21)**
Estimation Method.	OLS	OLS	OLS	OLS	OLS	OLS	GMM	OLS	OLS	OLS	GMM	OLS	OLS	OLS	GMM
Observations	73	73	73	125	125	125	99	161	161	161	131	185	185	185	152
Adjusted R-squared	0.21	0.33	0.38	0.26	0.36	0.39	-	0.22	0.34	0.36	-	0.20	0.33	0.36	-

Absolute value of the robust t statistics in parentheses. * significant if t statistic is greater than 1.4; ** significant if greater than 2; *** significant if greater than 2.5. GMM estimation delivers negative adjusted R-squared.

Table 3a. Inequality Equation - All Countries (SS African Effects Separated) - 10 Year Focus

	Dependent Variable: Wider Gini -10 Year					
ISEP	6.565	3.577	5.807	2.158	4.957	3.378
	(1.09)	(0.52)	(0.81)	(0.38)	(0.82)	(0.54)
Alpha	-0.373	-0.419	-0.344	-0.138	-0.063	-0.320
	(2.90)***	(2.87)***	(2.16)**	(0.72)	(0.30)	(1.96)*
ISEP*Alpha	0.144	0.203	0.096	0.301	0.168	0.199
	(0.66)	(0.86)	(0.37)	(1.35)	(0.74)	(0.85)
ISEP5*Beta(EP)*Migr5	-0.922	-0.689	-0.693	-0.593	-0.666	-0.511
	(2.79)***	(1.68)*	(1.63)*	(1.65)*	(1.73)*	(1.41)*
Expend.	-13.925	-13.463	-14.002	-14.000	-14.208	-13.432
	(5.53)***	(4.88)***	(5.16)***	(5.01)***	(5.32)***	(4.85)***
Person	4.282	3.792	2.454	1.160	-0.487	0.225
	(1.49)*	(1.22)	(0.78)	(0.34)	(0.15)	(0.07)
Net	-3.257	-4.067	-4.563	-3.249	-4.078	-3.487
	(1.38)	(1.53)	(1.59)*	(1.20)	(1.36)	(1.21)
Earnings	-1.736	-0.528	1.224	-2.494	0.063	0.425
	(0.42)	(0.13)	(0.31)	(0.61)	(0.01)	(0.10)
Monetary Inc.	-4.694	-2.693	-0.110	-2.498	-0.167	1.220
	(0.94)	(0.56)	(0.02)	(0.66)	(0.04)	(0.29)
Gini Qual.	2.200	1.951	2.363	1.357	1.438	2.652
	(1.54)*	(1.45)*	(1.80)*	(1.08)	(1.18)	(2.05)**
M2/GDP		-0.124	-0.101	-0.069	-0.009	-0.075
		(1.88)*	(1.47)*	(0.99)	(0.14)	(1.14)
Pol. Freedom		-0.055	-0.114	0.017	-0.083	-0.082
		(0.97)	(1.77)*	(0.29)	(0.98)	(1.40)*
SS Afr.*ISEP	4.843	3.665	-7.731	9.465	0.559	-4.671
	(0.31)	(0.22)	(0.48)	(0.60)	(0.04)	(0.31)
SS Afr.*Alpha	0.394	0.342	0.125	0.198	0.013	0.149
	(3.09)***	(2.44)**	(0.72)	(1.28)	(0.07)	(0.87)
SS Afr.*ISEP*Alpha	-0.403	-0.360	-0.053	-0.580	-0.309	-0.178
	(1.12)	(0.93)	(0.13)	(1.61)*	(0.88)	(0.48)
Afr.*ISEP5*Beta(EP)*Migr5	0.515	0.715	0.877	0.559	0.373	0.769
	(0.26)	(0.34)	(0.42)	(0.29)	(0.20)	(0.39)
Afr.*M2/GDP			-0.033		0.034	-0.039
			(0.19)		(0.20)	(0.23)
Afr.*PolFreedom			0.234		0.262	0.223
			(3.35)***		(2.92)***	(3.40)***
Latin Amer.				0.372	6.436	
				(0.11)	(1.92)*	
South Asia				-10.270	-5.115	
				(2.19)**	(1.03)	
East Asia & Pac.				-11.295	-5.448	-7.365
				(2.83)***	(1.48)*	(2.30)**
Constant	48.435	57.350	58.364	52.913	51.649	56.367
	(10.84)***	(8.31)***	(8.53)***	(7.45)***	(7.51)***	(8.28)***
Observations	87	86	86	86	86	86
Adjusted R-squared	0.27	0.28	0.33	0.37	0.43	0.37

Absolute value of the robust t statistics in parentheses. * significant if t statistic is greater than 1.4; ** significant if greater than 2; *** significant if greater than 2.5.

Table 3b. Inequality Equation - All Countries (SS African Effects Separated) – 30 Year Focus

	Dependent Variable: Wider Gini – 30 Year					
ISEP	6.221	5.512	6.809	2.303	4.107	4.207
	(1.65)*	(1.42)*	(1.65)*	(0.76)	(1.31)	(1.21)
Alpha	-0.230	-0.257	-0.241	0.028	0.069	-0.210
	(2.17)**	(2.22)**	(1.90)*	(0.26)	(0.57)	(1.86)*
ISEP*Alpha	0.028	0.019	-0.042	0.197	0.113	0.105
	(0.17)	(0.11)	(0.23)	(1.53)*	(0.86)	(0.67)
ISEP5*Beta(EP)*Migr5	-0.764	-0.631	-0.640	-0.440	-0.465	-0.463
	(3.76)***	(2.91)***	(2.88)***	(2.49)**	(2.55)***	(2.33)**
ISEP10*Beta(EP)*Migr10	0.258	0.251	0.235	0.260	0.232	0.260
	(1.31)	(1.26)	(1.15)	(1.68)*	(1.47)*	(1.43)*
ISEP15*Beta(EP)*Migr15	-0.190	-0.191	-0.202	-0.094	-0.103	-0.138
	(1.15)	(1.13)	(1.14)	(0.67)	(0.70)	(0.87)
Expend.	-14.949	-14.644	-14.843	-15.134	-14.685	-14.693
	(8.74)***	(8.12)***	(8.26)***	(8.67)***	(8.90)***	(8.39)***
Person	5.418	4.411	3.767	2.687	1.690	2.099
	(3.28)***	(2.52)***	(2.13)**	(1.59)*	(1.00)	(1.20)
Net	-3.915	-4.132	-3.748	-4.523	-4.386	-3.063
	(2.78)***	(2.87)***	(2.50)**	(3.27)***	(2.96)***	(2.13)**
Earnings	0.065	1.112	1.318	-1.136	-0.130	0.136
	(0.03)	(0.47)	(0.56)	(0.50)	(0.06)	(0.06)
Monetary Inc.	-4.938	-3.210	-2.710	-3.195	-2.600	-2.148
	(1.94)*	(1.40)*	(1.22)	(1.70)*	(1.39)	(1.12)
Gini Qual.	0.849	0.460	0.945	-0.297	0.074	1.196
	(0.96)	(0.54)	(1.12)	(0.38)	(0.09)	(1.42)*
M2/GDP		-0.097	-0.069	-0.043	-0.007	-0.033
		(2.65)***	(1.78)*	(1.08)	(0.19)	(0.92)
Pol. Freedom		-0.065	-0.100	0.002	-0.044	-0.069
		(2.07)**	(2.94)***	(0.08)	(1.26)	(2.38)**
SS Afr.*ISEP	5.354	4.030	-6.480	11.342	2.008	-3.192
	(0.44)	(0.32)	(0.51)	(0.97)	(0.18)	(0.27)
SS Afr.*Alpha	0.309	0.255	0.152	0.099	-0.019	0.169
	(3.12)***	(2.51)**	(1.22)	(1.01)	(0.16)	(1.49)*
SS Afr.*ISEP*Alpha	-0.366	-0.295	-0.048	-0.589	-0.351	-0.218
	(1.27)	(0.98)	(0.15)	(2.18)**	(1.31)	(0.74)
Afr.*ISEP5*Beta(EP)*Migr5	0.696	0.841	1.449	0.493	0.756	1.306
	(0.44)	(0.51)	(0.89)	(0.32)	(0.49)	(0.84)
Afr.*ISEP10*Beta(EP)*Migr10	-0.798	-0.526	-1.647	-0.829	-1.749	-1.797
	(1.05)	(0.65)	(2.10)**	(1.03)	(2.17)**	(2.40)**
Afr.*ISEP15*Beta(EP)*Migr15	-1.649	-1.008	-3.344	-1.457	-3.566	-3.605
	(1.12)	(0.66)	(2.30)**	(1.02)	(2.49)**	(2.56)***
Afr.*M2/GDP			-0.147		-0.057	-0.152
			(1.74)*		(0.62)	(1.84)*
Afr.*PolFreedom			0.225		0.226	0.218
			(4.28)***		(3.55)***	(4.32)***
Latin Amer.				0.377	3.574	
				(0.19)	(1.86)*	
South Asia				-11.648	-8.930	
				(4.43)***	(3.23)***	
East Asia & Pac.				-11.657	-8.822	-8.458
				(5.38)***	(4.26)***	(4.60)***
Constant	49.503	58.194	58.095	54.142	51.883	55.715
	(16.53)***	(14.15)***	(14.15)***	(13.45)***	(12.92)***	(13.53)***
β^*	0.65	0.69	0.85		0.70	0.72
Observations	183	182	182	182	182	182
Adjusted R-squared	0.31	0.34	0.38	0.49	0.52	0.45

Absolute value of the robust t statistics in parentheses. * significant if t statistic is greater than 1.4; ** significant if greater than 2; *** significant if greater than 2.5. β^* is the minimum level of β, evaluated at the median migration rate, to counter-act the stand-alone inequality effect of the switch, holding other factors constant.

Table 3c. Inequality Equation - All Countries (SS African Effects Separated) – 40 Year Focus

	Dependent Variable: Wider Gini – 40 Year					
ISEP	6.237	5.595	6.728	2.081	3.861	4.025
	(1.78)*	(1.52)*	(1.72)*	(0.77)	(1.37)	(1.27)
Alpha	-0.239	-0.266	-0.257	0.004	0.054	-0.235
	(2.61)***	(2.65)***	(2.29)**	(0.05)	(0.51)	(2.36)**
ISEP*Alpha	-0.001	-0.012	-0.067	0.206	0.121	0.111
	(0.01)	(0.07)	(0.38)	(1.78)*	(1.00)	(0.77)
ISEP5*Beta(EP)*Migr5	-0.735	-0.595	-0.601	-0.444	-0.459	-0.452
	(3.72)***	(2.94)***	(2.89)***	(2.81)***	(2.84)***	(2.53)**
ISEP10*Beta(EP)*Migr10	0.240	0.226	0.207	0.250	0.222	0.256
	(1.22)	(1.15)	(1.03)	(1.69)*	(1.48)*	(1.47)*
ISEP15*Beta(EP)*Migr15	-0.214	-0.205	-0.216	-0.087	-0.094	-0.132
	(1.27)	(1.23)	(1.25)	(0.63)	(0.66)	(0.86)
ISEP20*Beta(EP)*Migr20	-0.071	-0.053	-0.042	0.001	0.009	0.012
	(0.34)	(0.23)	(0.17)	(0.00)	(0.05)	(0.06)
Expend.	-14.434	-14.176	-14.235	-14.533	-14.037	-13.887
	(7.93)***	(7.62)***	(7.69)***	(8.10)***	(8.10)***	(7.77)***
Person	4.745	3.961	3.430	2.000	1.207	1.458
	(3.00)***	(2.40)**	(2.05)**	(1.30)	(0.78)	(0.92)
Net	-3.276	-3.138	-2.671	-3.836	-3.586	-1.979
	(2.45)**	(2.26)**	(1.86)*	(2.93)***	(2.61)***	(1.46)*
Earnings	-0.621	-0.034	-0.029	-1.809	-1.123	-1.048
	(0.27)	(0.01)	(0.01)	(0.87)	(0.51)	(0.44)
Monetary Inc.	-5.475	-4.206	-3.960	-3.881	-3.525	-3.396
	(2.31)**	(1.92)*	(1.86)*	(2.42)**	(2.24)**	(2.00)**
Gini Qual.	0.728	0.387	0.818	-0.356	-0.016	1.056
	(0.93)	(0.51)	(1.09)	(0.55)	(0.02)	(1.49)*
M2/GDP		-0.091	-0.063	-0.031	0.001	-0.024
		(2.58)***	(1.67)*	(0.85)	(0.03)	(0.71)
Pol. Freedom		-0.061	-0.090	0.001	-0.035	-0.058
		(2.15)**	(3.04)***	(0.05)	(1.19)	(2.35)**
SS Afr.*ISEP	4.894	3.742	-5.667	11.539	2.788	-2.288
	(0.40)	(0.29)	(0.44)	(1.00)	(0.25)	(0.19)
SS Afr.*Alpha	0.313	0.270	0.193	0.135	0.023	0.220
	(3.84)***	(3.01)***	(1.74)*	(1.54)*	(0.21)	(2.15)**
SS Afr.*ISEP*Alpha	-0.336	-0.272	-0.055	-0.615	-0.389	-0.256
	(1.18)	(0.90)	(0.17)	(2.32)**	(1.45)*	(0.87)
Afr.*ISEP5*Beta(EP)*Migr5	0.662	0.782	1.453	0.459	0.772	1.346
	(0.42)	(0.48)	(0.88)	(0.30)	(0.51)	(0.87)
Afr.*ISEP10*Beta(EP)*Migr10	-0.753	-0.495	-1.592	-0.775	-1.721	-1.756
	(1.01)	(0.63)	(2.04)**	(0.99)	(2.17)**	(2.38)**
Afr.*ISEP15*Beta(EP)*Migr15	-1.648	-1.073	-3.393	-1.479	-3.665	-3.684
	(1.13)	(0.71)	(2.33)**	(1.05)	(2.57)***	(2.62)***
Afr.*M2/GDP			-0.175		-0.077	-0.183
			(2.33)**		(0.93)	(2.50)***
Afr.*PolFreedom			0.214		0.218	0.204
			(4.24)***		(3.52)***	(4.19)***
Latin Amer.				1.172	3.931	
				(0.65)	(2.18)**	
South Asia				-11.528	-9.378	
				(4.84)***	(3.73)***	
East Asia & Pac.				-11.729	-9.317	-9.510
				(6.17)***	(4.94)***	(5.91)***

Constant	50.596	58.432	58.230	54.424	51.816	56.027
	(18.46)***	(15.88)***	(15.82)***	(15.57)***	(14.56)***	(15.86)***
β^*	0.67	0.75	0.89	-	0.67	0.71
Observations	211	209	209	209	209	209
Adjusted R-squared	0.31	0.34	0.36	0.51	0.54	0.46

Absolute value of the robust t statistics in parentheses. * significant if t statistic is greater than 1.4; ** significant if greater than 2; *** significant if greater than 2.5. β^* is the minimum level of β, evaluated at the median migration rate, to counter-act the stand-alone inequality effect of the switch, holding other factors constant.

Table 4a. The Impact of β on Gini – Developing Countries – 5 Years After the Switch

	Country	Migr. Rate	β	Impact on Gini (no reg.)†	Stand-alone (no reg.)	Overall Change in Gini (no reg.)	Impact on Gini (region) ††	Stand-alone (region)	Overall Change in Gini (region)
Max. β	Jamaica	11.53%	0.93	-6.44	6.73	+0.29	-4.95	3.86	-1.09
Med. β	South Korea	19.62%	0.50	-5.90	6.73	+0.83	-4.50	3.86	-0.64
Min. β	Guatemala	5.73%	0.17	-0.59	6.73	+6.14	-0.45	3.86	+3.41
Max. Migr.	Dom. Rep.	24.83%	0.57	-8.50	6.73	-1.77	-6.50	3.86	-2.64
Med. Migr.	Chile	12.37%	0.55	-4.09	6.73	+2.64	-3.12	3.86	+0.74
Min.Migr.	Nepal	0%	0.29	0	6.73	+6.73	0	3.86	+3.86
Median	Sample	12.37%	0.50	-3.71 (1.28)	6.73 (3.91)	+3.02***	-2.84 (1.00)	3.86 (2.82)	+1.03***

Notes: †: the coefficient used is -0.601 from the third column of Table 3c. ††: the coefficient used is -0.459 from the fifth column of Table 3c.

Table 4b. The Impact of β on Gini – Developing Countries – 10 Years After the Switch

	Country	Migr. Rate	β^{avg}	Impact on Gini (no reg.)†	Stand-alone (no reg.)	Overall Change in Gini (no reg.)	Impact on Gini (region) ††	Stand-alone (region)	Overall Change in Gini (region)
Max. β	Jamaica	10.61%	0.97				-2.44	3.86	-3.53#
Med. β	South Korea	21.61%	0.54	-	-	-	-2.77	3.86	-3.41#
Min. β	Guatemala	7.96%	0.22				-0.42	3.86	+2.99#
Max. Migr.	Dom. Rep.	23.23%	0.61				-3.36	3.86	-6.00#
Med. Migr.	Bangladesh	13.88%	0.54	-	-	-	-1.78	3.86	+2.08
Min.Migr.	Sri Lanka	3.22%	0.76				-0.58	3.86	+3.28
Median	Sample	13.88%	0.54	-	-	-	-1.78	3.86	-0.76#

Notes: β^{avg}: the weighted average β of the first batch of migrants and the second batch of migrants in the society, where the weights are respective migration rates. †: no calculation is made due to the insignificance of the coefficient (0.207) in the third column of Table 3c. ††: the coefficient used is -0.237 (-0.459+0.222) from the fifth column of Table 3c. #: accumulated effect from the first and second period (otherwise, period-specific effect).

Table 5a. The Impact of β on Gini – Sub-saharan African Countries – 5 Years After the Switch

	Country	Migr. Rate	β	Impact on Gini (no reg.) †	Stand-alone (no reg.)	Overall Change in Gini (no reg.)	Impact on Gini (region) ††	Stand-alone (region)	Overall Change in Gini (region)
Max. β	Zambia	5.27%	0.62	-1.93	6.73	+4.80	-1.50	3.86	+2.36
Med. β	Uganda	1.04%	0.44	-0.28	6.73	+6.45	-0.21	3.86	+3.65
Min. β	Ethiopia	0%	0.11	0	6.73	+6.73	0	3.86	+3.86
Max. Migr.	South Afr.	19.93%	0.45	-5.39	6.73	+1.34	-4.12	3.86	-0.26
Med. Migr.	Tanzania	4.21%	0.46	-1.16	6.73	+5.57	-0.89	3.86	+2.97
Min.Migr.	Ethiopia, Burkina Faso	0%, 0%	0.11 0.22	0	6.73	+6.73	0	3.86	+3.86
Median	Sample	4.21%	0.44	-1.11	6.73	+5.62	-0.85	3.86	+3.01

Notes: †: the coefficient used is -0.601 from the third column of Table 3c. ††: the coefficient used is -0.459 from the fifth column of Table 3c.

Table 5b. The Impact of β on Gini – Sub-saharan African Countries – 10 Years After the Switch

	Country	Migr. Rate	β^{avg}	Impact on Gini (no reg.)‡	Stand-alone (no reg.)	Overall Change in Gini (no reg.)	Impact on Gini (region) ‡‡	Stand-alone (region)	Overall Change in Gini (region)
Max. β	Madagascar	2.15%	0.58	-2.73	6.73	+4	-2.72	3.86	-1.14
Med. β	South Afr.	19.03%	0.52	-21.67	6.73	-20.33#	-21.57	3.86	-21.83#
Min. β	Ethiopia	0.4%	0.18	-0.16	6.73	+6.57	-0.16	3.86	+3.70
Max. Migr.	South Afr.	19.03%	0.52	-21.67	6.73	-14.94	-21.57	3.86	-17.71
Med. Migr.	Madagascar	2.15%	0.58	-2.73	6.73	+4	-2.72	3.86	-1.14
Min.Migr.	Mauritania	0%	0.29	0	6.73	+6.73	0	3.86	+3.86
Median	Sample	2.15%	0.52	-2.50	6.73	+3.12#	-2.44	3.86	+0.57#

Notes: β^{avg}: the weighted average β of the first batch of migrants and the second batch of migrants in the society, where the weights are respective migration rates. ‡: the coefficient used is -2.19 (-0.601-1.592) from the third column of Table 3c. ‡‡: the coefficient used is 2.18 (-0.459-1.721) from the fifth column of Table 3c. #: accumulated effect from the first and second period (otherwise, period-specific effect).

Also note that only Ghana can be used in finding the impact of β on Gini for 15 years after the switch. Using the coefficients from the third and fifth columns (i.e., -3.393 and -3.665) of Table 3c the analysis above can be replicated for the next five-year period. The migration rate in Ghana in the third five-year period after the switch is 6.28% and weighted β is 0.31.