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To cite this article: Hajer Kratou & Mohamed Goaid (2016) How Can Globalization Affect Income Distribution? Evidence from Developing Countries, *The International Trade Journal*, 30:2, 132-158, DOI: [10.1080/08853908.2016.1139480](https://doi.org/10.1080/08853908.2016.1139480)

To link to this article: <https://doi.org/10.1080/08853908.2016.1139480>



Published online: 06 Feb 2016.



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How Can Globalization Affect Income Distribution? Evidence from Developing Countries

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ABSTRACT

The standard Heckscher-Ohlin-Samuelson framework claimed that foreign trade benefits developing countries, but many empirical studies suggest otherwise. After analyzing data on income deciles from the World Income Distribution Database for 66 developing countries, we found that trade openness benefits underprivileged people in affluent countries but not in developing countries. Also, external financial flows and democracy in conjunction do not exert significant effects, suggesting that these variables might affect income distribution through different channels. Finally, we reinforce the Kuznets inverted-U hypothesis; namely, the presence of an economic development threshold beyond which low-income deciles would increase.

KEYWORDS

Foreign aid; income distribution; international factor movements

I. Introduction

This article focuses on the effect of trade openness and external financial flows on inequality in developing countries. According to Anderson (2005), we define trade openness by the ease of the exchange of goods and services and the movement of production factors, like human capital and technology transfer between countries. Under this definition, several developing countries have followed a liberalization trade policy since the early 1980s. The goals of participating countries are to integrate themselves with more developed countries and access foreign technology and innovation. These efforts have resulted in a spread of technology and an increase in mobility of capital and external flows (common signs of globalization), but repercussions have also arisen and have been discussed in both academic and political discourse.

A better understanding of the relationship between trade openness and inequality is crucial for three reasons. First, this relationship reflects the effect of globalization on inclusive growth. Second, a better understanding could result in the creation of appropriate policies for globalization. Third, it would enable us to predict the effect of openness on household welfare and individual well-being.

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To build an understanding, we examined the literature on this topic, and found it can be broken into three schools of thought. The first follows the standard Heckscher-Ohlin-Samuelson (HOS) trade model, which highlights the crucial role free exchange plays in reducing the income gap between skilled and unskilled workers. It also asserts that increased openness can stimulate the relative demand and increase the income of unskilled workers. The model has been supported by the theoretical concepts of Mundell (1957) and more recently by Reuveny and Li (2003) and Grossman and Rossi-Hansberg (2008). However, the restrictive assumptions of the HO model and the SS theorem fail to describe the real world and to produce the expected results. The second, pioneered by modern academic models such as Feenstra and Hanson (1997) and Wood (2002), focuses on the detrimental effects of liberalization on wealth distribution. They believe that trade openness is strongly related with income inequality among skilled and unskilled labor (Gourdon, Maystre, and De Melo 2008; Bergh and Nilsson 2014). They also assert that trade openness can cause some groups to be excluded, mainly the poor, from the benefits of globalization as a result of a lack of suitable policy and reform following globalization in developing countries; however, there is little support for this argument. The last school of thought argues that the relationship between trade openness and income distribution seems to be nonlinear. This thought is validated by using the Kuznets hypothesis in several empirical surveys, but some contradictions between surveys exist, mainly related to differences in country features, methodology, and data (Jesuit and Mahler 2010).

Therefore, a vast number of studies have tried to reconcile the ambiguous effects of globalization in the form of trade openness on income distribution. Our study aligns with the third school of thought and focuses particularly on financial liberalization as a mechanism of transmission. Our objective is to account for the effect of trade openness and external financial flows on within-country income inequality in 66 developing countries from 1988–2005. The article proceeds as follows. First, section 2 will discuss relevant empirical surveys on the link among globalization and income inequality. Section 3 will outline a set of channels through which openness affects income inequality, and section 4 will present the empirical methodology (data, techniques, instruments, and the issue of endogeneity). Lastly, we will discuss our results in section 5 and conclude with our main findings in section 6.

II. Empirical works

Exploring the relationship between globalization and income inequality is not a simple, solitary concept, but a long and complex matter. Early analysis focused on affluent countries such as the United States and Western Europe; however, recent empirical analysis is particularly interested in the developing world. For example, the potentially detrimental social effects of globalization

on developing countries have been gaining attention. Conveniently, a set of studies in the literature focus on the income inequality and globalization. Anderson (2005), Bourguignon, Levin, and Rosenblatt (2006), and Meschi and Vivarelli (2009), among others, put forth current theories and empirical surveys concerning the link between openness and income inequality, but these empirical studies have given mixed results at best on the effects of globalization on inequality and often give opposite, contradictory findings on the subject, such as the following: globalization provides potential for poverty reduction in developing countries (positive), but the spread of international inequality in recent decades is strongly associated with the effects of globalization (negative).

In light of the inconclusive results conducted by empirical surveys, we analyzed a number of recent cross-country studies on the effect of openness on inequality in developing countries, and three main hypotheses arose. The first is that greater openness increases the overall inequality of the studied sample of countries, an assumption developed from the theoretical models by Feenstra and Hanson (1997) and Wood (2002). A set of studies corroborate this idea, such as Lundberg and Squire (2003) and Barro (2000), using Gini coefficients to measure inequality, as well as trade to GDP ratios and adjusted trade to GDP ratios to measure openness, respectively. Similarly, Ravallion (2004) and Harrison and McMillan (2007) argue that globalization stimulates income inequality, and winners and losers result within the examined society.

The second hypothesis is that trade openness will amplify inequality in developed countries and attenuate overall inequality in developing countries. This hypothesis is drawn from the HO model, which claims that the wage of skilled (unskilled) labor increases in developed (developing) countries because that type of labor is abundant in those countries. However, a small number of studies that support this theory, such as Calderon and Chong (2001), use the Gini coefficient and the trade-to-GDP ratio to measure whole inequality and TO, respectively. Similarly, Sachs et al. (1995) sustained the income convergence effect by comparing trade openness in developing countries with the income level in wealthy countries.

The third hypothesis is that the repercussions of openness on inequality is not linear and is based on factor endowments of the country concerned. This hypothesis was developed from applying the HO model to many countries. The theory is that the higher the endowments of one factor (relative to labor), the more crucial the impact of an increase in openness will be on the return to this factor, and the share of the factor in national income will be greater. In their empirical survey, Spilimbergo, Londono, and Szekely (1999) support this third hypothesis by using Gini coefficients and quantiles as a measure of inequality. Similarly, Fischer (2003) supports that greater openness stimulates inequality as countries with endowment of human capital increase.

On the whole, deeper analysis seems to be required in order to overcome the inherent drawbacks of the current surveys, including the questionable quality of the used data, ambiguous correlation between openness and inequality, and the failure of most surveys to explain the mechanism of transmission between globalization and income inequality. In the next section, we will describe the channels through which openness may affect income inequality.

III. Channels between globalization and income inequality

A clear understanding of the mechanism between trade openness and income inequality would allow policymakers to take advantage of globalization and implement redistributive policy. Regarding the complexity and dynamism of channels, the key effects can only be recognized on the basis of “context specific” empirical studies. For example, Nissanke and Thorbecke (2006) state that “the net effects of the different globalization-poverty channels depends on their combined individual effects.” The following is a list of channels and their individual effects:

Technological differential

As argued in Vernon’s (1979) product cycle model, the technological gap between original and imitator countries provides a channel between globalization and income inequality. When greater integration into the world is accompanied by the use of new technology, this evolves substitutability between capital and unskilled labor and complementarity between capital and skilled labor. In this regard, the increased demand for skilled labor at the expense of marginalized, unskilled labor stimulates differential wages.

International trade

Similarly, international trade spreads technology in developing countries through import, export, and intermediate goods channels:

- (1) The import channel provides a robust mechanism. Import goods may, in fact, conduct an international transfer of technology by supplying domestic firms in developing countries with access to recent international technology. As a result, foreign knowledge explored in local production has a positive impact on domestic production, and it gives local producers the opportunity to acquire knowledge and practices. However, the import channel as a means of technological transfer requires a rise in the demand for skilled labor great enough to

appropriately utilize the external innovation. Therefore, this increases the income dispersion in developing countries.

- (2) Access to international markets gives domestic firms in developing countries the opportunity to gain knowledge of international performances. Foreign clients contribute by providing their suppliers with the technical assistance necessary to make imported products that are well-designed and conform to international quality standards. As a result, the knowledge transferred from developed countries and adopted by developing countries raises the aggregate demand for skilled labor and wages.
- (3) Trade liberalization encourages transferring the production of *intermediate goods* from developed to developing countries. In developed countries, intermediate goods are produced by unskilled labor but, in the developing world, generating intermediate good requires intensive skilled labor. Therefore, globalization widens income inequality in developing countries by raising the demand for skilled labor and, hence, skilled wages.

Endowments of factors of production

International trade affects the distribution of wealth by generating profit for the owners of the factors of production that exist in abundance. According to the HO model, openness increases demand for the abundant factor in developing countries. Since, in these countries, unskilled labor is abundant relative to skilled labor, a wage differential in favor of unskilled labor would occur. However, there are inconsistencies between some HO results, and the real world shows that only skilled labor gains from globalization because there is complementarity between skilled labor and the capital.

Volatility and vulnerability

Openness stimulates income inequality through potential exposure to volatility and economic shocks. This may have detrimental effects on vulnerable, low-income households, therefore further widening income inequality. A strong dependence on private capital flows could also potentially increase the volatility of developing countries while stimulating a massive outflow of short-run flows and making the economy vulnerable to shocks.

Institutions

Institutions can intensify or impede the relationship between globalization and poverty because the institutional environment can predict whether the benefits

of trade openness are dispersed amongst the whole population. Globalization is expected to be advantageous in countries with good institutional quality. In the presence of suitable governance (like political participation, management of social conflicts, and new reforms), the poor profit from financial globalization, and secure workers benefit from international competition.

Financial liberalization

Two opposite repercussions may arise from the channel of financial liberalization. From a positive side, external flows alleviate poverty by boosting economic growth, providing access to capital and new technology (through the FDI), improving human capital, and providing more domestic credit (through remittances). However, this is not necessarily related to poverty; it could be related to consumption instability as well. The high volatility of short-run flows may expose the recipient economy to external shocks.

Spatial inequality

As the field of economic geography develops, trade openness seems to affect disparities in income between regions differently. Some researchers have found that globalization increases income inequality. For example, FDI encourages multinational companies to be located in coastal regions to reduce transport cost and utilize good infrastructure. Others argue that globalization reduces income inequality. Some of these proponents assert that if a country follows import substitution policy, production of goods would be located closer to the distribution process in the aim to reduce transportation costs. They argue that, given this example, other producers would follow, creating a concentration of economic activity and population in a particular region. This would raise the gap of real income of immobile factors of production across regions. As trade liberalization spreads, local products can explore the sources of demand and intermediate inputs abroad. If foreign markets are accessible for all regions, this gives firms less incentive to be located in a core region, to notice the economic activity between their core and periphery region, and to reduce the income gap.

Gender inequality

The mechanism between trade openness and income inequality can arise in the form of gender inequality. As described in the *Economics of Discrimination* by Becker (1971), this form of inequality refers to the wage gap between men and women, despite performing the same job. One explanation for this type of gender inequality could be a gendered skill gap. If a society assumes that men are more skilled than women, trade openness will raise the wage gap between

men and women by widening the wage gap between skilled and unskilled workers. Another possibility is that globalization may reduce the wage gap between genders by reducing discrimination and boosting the demand for women's work. In particular, some industrial firms (such as clothing, footwear, etc.) encourage the participation of women more than men. By increasing competition in international markets, increased openness to trade tends to lessen the income gap between men and women based on discrimination (Becker 1971).

IV. The nexus globalization—income inequality created by financial liberalization channels: The empirical strategy

In this section, we investigate the empirical methodology, the data, the used techniques and instruments, and the issue of endogeneity.

Data

This sub-section presents the variables explored in our analysis and their sources. Table A1 defines the variables used, including the source and some summary statistics (mean and standard deviation).

For dependent variables, we used information on income shares, classified relatively to the increasing level of the population that receives 10% of the whole income. This study uses the methodology of Milanovic (2005) to formulate y_{ijt} : the absolute income level of the i^{th} decile in country j at time t , which depends on the inequality index (I_{jt}) and the mean income of the country (m_{jt}).

$$y_{ijt} = f(I_{jt}, m_{jt}) \quad (1)$$

The relative income of the i^{th} decile is calculated as follows:

$$\frac{y_{ijt}}{m_{jt}} = g(I_{jt}) \quad (2)$$

The dependent variable is related to the income shares of national population. The top (bottom) income share is computed by dividing the absolute top (bottom) income by the mean income of the country. The information needed for these calculations was compiled from the database of the World Bank (World Income Distribution (WYD)). The income allocation is based on annual income data per capita (PPP \$), and each decile includes 10% of individuals (not households) as the unit of measurement. The World Income Distribution (WYD) dataset is rich on information and covers 95 countries in 1988, 113 countries in 1993 and 1998, and 123 countries in 2002 and 2005.

Overall, WYD covers over 95% of the world income and 90% of the world population.

Since the only available years are 1988, 1993, 1998, and 2002, we calculated the dependent variable as a five-year average. Data for 2005 were determined from an average of four years, based on the methodology by Milanovic (2005), which states that (1) data are provided for particular years as reference years. However, surveys examining households may reflect information on income shares provided before or after the reference year. Additionally, part of our methodology included calculating the average of each right variable, depending on the year of reference observed in the dependent variable. The sample included 66 developing countries over five regions: Africa, MENA, Asia (South, East and Pacific), East of Europe/Central Asia, and Latin America. Table A2 in the Appendix presents the countries included in our sample. The examined period stretches from 1984 to 2005. Our econometric methodology followed this equation:

$$\begin{aligned}
 y_{ijt}/m_{jt} = & \beta_{10t} + \beta_{11t}TO_{jt} + \beta_{12t}GDP_{jt}/Capita + \beta_{13t}(GDP/Capita)_{jt}^2 \\
 & + \beta_{14t}FDI_{jt} + \beta_{15t}REM_{jt} + \beta_{16t}AID_{jt} \\
 & + \sum_k \beta_{ik}X_k + Dummy_Consumption/income + \mu_{ij}
 \end{aligned} \tag{3}$$

Income inequality depends on a set of variables that determine the income distribution. These variables are represented by the β coefficient in the formula, which would change across deciles. Globalization in the form of trade openness (TO) is the main variable of interest on the right-hand side. A set of variables has been used in empirical surveys in the aim to proxy openness. For example, Jalil (2012, 311) uses a range of policy variables to proxy openness, including average tariff rate, effective tariff rate, and economic globalization. In this study, we follow the methodology of Cassette, Fleury, and Petit (2012), Daumal (2013), and Majeed (2015), who compare the sum of exports and imports to GDP from World Bank (2010). According to the H-O-S model, openness would be expected to have a positive effect on low-income shares because the demand of low skilled (bottom income shares) would rise. However, increasing international exports involves increased quality of production and requires skilled labor. Likewise, trade openness in imports is accompanied by a transfer of technology, which is complementary of skilled workers. Therefore, the expected sign of TO is negative on bottom-income deciles and positive on top-income deciles. While trade openness is among the major variables of interest, it is not the only determinant of income distribution. We control some other variables, such as the level of income per capita and its square term, which are included in order to check the Kuznets (1955) relationship. Data are from PWT7.1. If the assumption is true, a set of policy implications arise for

developing countries (Eusufzai 1997). The main idea of the inverted U-curve is that the income inequality first widens and later declines as the economy develops. In theory, this assumption, developed by Robinson (1976), highlights the transfer effect of workers from agriculture to industry. At this time, the agriculture and rural sectors include the bulk of the economy, with a low level of per capita income and less income inequality than the industrial and urban sector. Economic development requires a transfer of resources in favor of the industrial sector. Workers in industry gain increased per capita income and, to this end, contribute to a rise in the overall inequality gap. As a result, the initial effect is dominated by a positive link between inequality and early stages of development. The rise of inequality is the price a country pays during the initial stage of development (Meschi and Vivarelli 2009). Once the industrial sector expands at the expense of the agricultural one, the low-income agricultural workers join the wealthy industrial sector. These forces reduce income inequality, and the link between inequality and the level of per capita product moves to be negative.

In our formula, the expected sign of β_2 is negative on low-income deciles and positive on high-income deciles. β_3 is supposed to be positive on bottom-income shares. Along with openness, a set of external flows variables were included in the model as signs of globalization, including a raise in production that exceeds the nation-state, an increase in international trade, movement of capital flows, and development of ITC (information technology communication). We used foreign direct investment (FDI) from IMF (2012) as a flow variable proxy of openness. While FDI, in the form of green field investment, evolves managerial transfer and requires skilled workers, FDI is also an engine growth and is expected to reduce the inequality gap. β_4 could be either positive or negative.

We controlled for remittance (REM) from IMF (2012), as well as for foreign aid for development assistance (AID) from OECD (2010). The massive migration from developing to developed countries seems to accompany globalization because of the increased access to information about the host countries. Foreign aid given by donor countries (developed) and international organizations to developing countries is also seen as a determinant of globalization. Since both variables are relevant signs of globalization, their coefficients should be positive. Remittances provide an alternative source of income for poor people in developing countries and foreign aid might alleviate poverty.

The WYD database specifies whether the income distribution data come from surveys of consumption/expenditure or income/earnings. We therefore included a dummy variable in our formula to reflect whether the data on deciles are related to data based on consumption [1] or income [0]. We also included an indicator of democracy (a scale of 0 to 10 points), by utilizing the Polity IV project database. Polity IV allows us to perform

sensitivity analysis related to the conditional assumption of the key role of institutional quality on the relationship between external flows and income distribution. In particular, the main purpose of including democracy in our study is to estimate potential nonlinearity in the data. We predicted that the related coefficient of the interaction term would be positive on bottom-income deciles, and that democratic and transition countries would distribute wealth equally. We also included dummy variables to control for regional effects, with the MENA region as a reference group. On the one side, one of the major contributions to the literature on inequality are those that highlight regional disparities in income distribution. For example, Latin America and sub-Saharan African countries are thought to have greater inequality than European countries (Lee, Nielson, and Alderson 2007). The MENA region, east and south Asia, the Pacific and eastern regions of Europe, and central Asia tend to have more equal income distribution than the former regions. On the other hand, globalization seems to affect the decomposition of external financial flows by recipient regions differently. In particular, Latin America, the Caribbean, East and South Asia, and the MENA region are heavily dependent on migrant transfers (Figure 1).¹ While Africa is strictly dependent on foreign aid in order to alleviate poverty, remittances show less magnitude toward the region. This is an example of high-level brain drain because African migrants are particularly skilled, and skilled migrants have less incentive to transfer money to their families as they are from wealthy families. They are also less motivated to send money for future investment opportunities, as they are not planning to return to their country of origin (Abdih et al. 2012). Figure 2 focuses on the evolution of trade openness as well as a measure of capital markets openness (FDI). There is an increase of both variables; while TO accounts for about 82% of the GDP in 2005, FDI also shows an upward trend of around 4.5% of the GDP in 2005.

Techniques

In our analysis, we ran 10 pooled regressions, one for each income decile. We used the same explanatory variables across all countries. Furthermore, Equation (3) can be estimated separately or simultaneously. In this regard, three techniques have been explored. First, we used the ordinary least square (OLS); however, the persistence of endogeneity and heteroscedasticity may result in biased instruments related to OLS. Second, we used the seemingly unrelated regressions (SUR) model, which is a single model with a number of linear equations. It is relevant for studying income shares (deciles, quartiles, and percentiles). For our study, SUR was consistent with the provided data,

¹The figure is focused on 66 developing countries over 1995–2010.



Figure 1. Disaggregated capital flows.

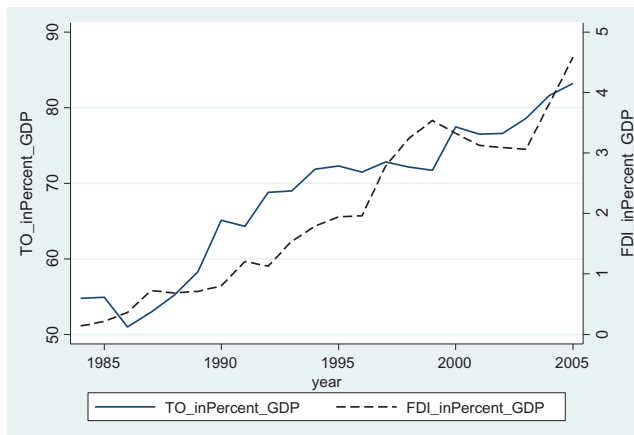


Figure 2. Trade to GDP and FDI to GDP. The figure is focused on 66 developing countries over 1988–2005.

since the empirical analysis joins a set of income decile equations. According to Milanovic (2005), it is important to run an SUR regression with constraints in order to make sure that the increase of some shares is offset by the decrease of other deciles. The main assumption is that any increasing effect by the explanatory variables on bottom-income shares is assumed to be reduced to the same extent on top deciles. However, the SUR model doesn't seem to be relevant to our case because the right-side variables are supposed to be exogenous to income shares. The issue of endogeneity persists and may plague both trade openness and flows. Endogeneity can also regard the omitted variables: the variables on the right side may not take into account

all appropriate variables that influence income deciles. Furthermore, causality is also a source of endogeneity. Unequal countries may receive more foreign assistance and workers remittances than equal countries. To partially resolve the endogeneity, we calculated the dependent and right-side variables on a five-year average. This is crucial because openness and FDI do not influence income distribution immediately. We can absolutely address endogeneity using the third technique, the instrumental variable (IV) tool. The IV seems more suitable for the purpose of our study and overcomes the inconsistencies of the other techniques. In the following sub-sections, we discuss in more detail the endogeneity issue and instruments related to flows variables.

Endogeneity

The empirical discussion on the potential problem of endogeneity is crucial in order to avoid biased results. Three main factors cause endogeneity. The first is reverse causality between income distribution and external financial flows variables. The second is omitted variables (influencing both the internal distribution of wealth and the volume of flows). Lastly, measurement error can also result in endogeneity. In the following are descriptions of specific types of endogeneity that can occur.

- Endogeneity pertaining to remittances has been discussed in the empirical literature (Ebeke and Le Goff 2010), arguing that the recorded worldwide remittances only reflect the formal channels and ignore the informal channels (highly explored because money transfer operators are expensive). Also, reverse causality exists between the volume of remittances and inequality; unequal countries attract more remittances inflows in order to reduce the income gap. Lastly, omitted variables may affect both remittances and income shares, such as exogenous shocks (natural disasters and oil price fluctuations).
- Endogeneity of aid arises in several analyses and are due to a causal relationship between aid and inequality, since unequal countries receive more foreign aid (Chong, Gradstein, and Calderon 2009). While donors give more aid to countries that achieve poverty reduction, they also target unequal countries in order to reduce poverty. Similarly, government and policy may affect both income inequality and aid.
- Endogeneity of FDI arises in response to the strong correlation between the level of dependence on foreign investments and the income inequality (Lee, Nielson, and Alderson 2007). FDI is negatively related to income inequality in recipient countries (Tsai 1995).

Instruments

Finding good instruments is essential in overcoming endogeneity. As discussed by Bjørnskov (2010): “instruments are often very difficult to find, in particular when working with panel data where variables also need to capture within-country variation. Two major characteristics define the choice of one instrument: it must be correlated with the interest variable, and its effects on income distribution must act only through its effects on the endogenous variable.” Empirical surveys endeavor to look for good instruments of external financial flows variables (i.e., uncorrelated variables with perturbations but correlated with the interest variables). Tsai (1995) did so for FDI, Freund and Spatafora (2008) and Chami et al. (2008) for remittances, and Tavares (2003) and Dreher and Gaston (2008) for aid. A set of instrumental variables has been explored for workers remittances, such as the distance between country-corridors and the growth rate of host countries, among others. While the main appeal of these instruments is their correlation with remittance, the major drawback is their lack of temporal variability.

Empirical surveys suggest a range of instrumental variables, from aid to income distribution. For example, one such survey might utilize a dummy variable on whether or not a country is a member of a continental development bank. Although these instruments are strongly correlated to the endogenous variables, they do not vary across time. To avoid this pitfall, we propose, in this analysis, a set of instruments that overcome the inefficiency of the instruments noted earlier. Two instruments on workers' remittances discussed by Chami et al. (2008) are suitable for our analysis. The first reflects the evolution of international remittances. We applied it by finding the sum of remittances toward the 66 countries of our sample, except the country considered. The instrument is correlated with remittances and not related to the macroeconomic conditions of the recipient country. By leaving out remittances to the considered country, the variable is free of domestic macroeconomic variables and is safe from any country features. In addition, the instrument may vary over time.

For the second, we refer to Freund and Spatafora (2008), who calculate the income gap between the host and the origin country of the migrant based on OECD statistics about migrants host countries. Then, we compute the difference in income per capita between each “country corridor.” This instrument is positively correlated with remittances and safe from the level of inequality.

We also used instruments from Tavares (2003) and Tsai (1995). Modeling our methodology after Tavares, we selected the top five aid recipients in the sample of countries (OECD-DAC). Second, for each pair of countries (donor-recipient) we determined three variables that capture their geographical proximity (the inverse of the bilateral distance) and cultural proximity (common border and common language). Third, we multiplied the three variables (of the second step)

by the total amount of aid granted by each donor country. Then, we determined the annual sum of aid of the top five donors as determined in the previous step. Indeed, these instruments are free of a direct causal relationship with the recipient economy; they evolve according to the trend of the donor countries and are not related to income distribution of the recipient country. The instruments did vary across time because the five main donors changed during the studied period. With reference to the methodology of Tsai (1995), we used FDI lagged values as instruments of FDI.

V. Results

At first glance, the highest income shares earned by the tenth decile are found in Madagascar (70%) and Colombia (48%) in 2005. Because these countries follow different levels of trade openness and show different economic development levels, it seems difficult to draw a clear conclusion from the raw data. Table 1 reports the results for the baseline specifications. We shed light on the effect of trade openness and external financial flows on income shares of the poor (assumed from decile 1 to decile 4). We also display results of the conditional hypothesis. However, Tables 2, 3, and 4 focus on the relationship between trade openness and external flows on within-country income inequality.

The repercussions of TO and external flows on the poor

Turning to our formal analysis of Table 1, our estimation illustrates more plausible results than the descriptive analysis. From Table 1 (column 1), the

Table 1. How TO and external financial flows affect poor deciles: SUR estimation technique.

		Effects on income shares of the poor (from Decile 1 to Decile 4)		
Equation (3)		[1]	[2]	[3]
Basic equation	GDP/Capita (log)	-	n.s	n.s
	(GDP/Capita (log)) ²	+	n.s	n.s
	Trade Openness (TO)	n.s	-	-
	FDI	n.s	n.s	+
	Workers' remittances (REM)	n.s	n.s	n.s
	Aid	-	-	n.s
	Consumption-based	+	+	+
Role of economic development	TO* GDP/capita (log)		+	+
	FDI* GDP/Capita (log)		n.s	
	REM* GDP/Capita (log)		n.s	
	Aid* GDP/Capita (log)		+	
Role of institutional quality	FDI*Democracy			-
	REM*Democracy			n.s
	Aid*Democracy			n.s

Notes: n.s: not_significant. The estimation technique is the SUR technique.


Table 2. Trade openness and external financial flows on income shares for 1988, 1993, 1998, 2002, and 2005 (OLS estimation).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	First Decile	Second Decile	Third Decile	Fourth Decile	Fifth Decile	Sixth Decile	Seventh Decile	Eighth Decile	Tenth Decile
FDI	0.006*** (2.855)	0.008*** (2.974)	0.009*** (3.038)	0.009*** (2.775)	0.007** (2.541)	0.005** (2.085)	0.002 (0.954)	-0.014** (-2.434)	-0.041*** (-2.665)
REMITTANCES	0.001 (1.170)	0.001 (0.917)	0.001 (1.009)	0.001 (1.060)	0.000 (1.010)	0.000 (0.728)	0.000 (0.555)	-0.001 (-1.164)	-0.003 (-0.671)
Aid	0.004 (0.615)	0.000 (0.0985)	-0.005 (-0.513)	-0.010 (-0.989)	-0.013 (-1.230)	-0.016 (-1.417)	-0.020* (-1.808)	-0.026** (-2.554)	0.113 (1.372)
Consumption-based	0.0544*** (4.970)	0.0460*** (3.609)	0.0435*** (3.581)	0.0351*** (2.598)	0.0357*** (3.171)	0.0281*** (2.654)	0.0157 (1.567)	-0.0580*** (-2.834)	-0.186** (-2.466)
Trade openness	-0.403*** (-2.979)	-0.506*** (-3.708)	-0.550*** (-3.559)	-0.570*** (-3.514)	-0.496*** (-3.120)	-0.381** (-2.446)	-0.224 (-1.585)	0.668*** (3.463)	2.399** (2.454)
GDP /Capita (log)	-0.160 (-1.145)	-0.201 (-1.260)	-0.227 (-1.547)	-0.277** (-2.104)	-0.337*** (-2.702)	-0.344*** (-2.862)	-0.323*** (-2.823)	-0.0597 (-0.372)	2.194** (2.539)
(GDP/Capita (log)) ²	0.007 (0.852)	0.009 (0.985)	0.010 (1.213)	0.013* (1.677)	0.017** (2.292)	0.018** (2.525)	0.018*** (2.622)	0.006 (0.647)	-0.118** (-2.230)
Democracy	0.001 (0.576)	0.001 (0.826)	0.001 (0.818)	0.001 (0.615)	0.001 (0.502)	0.000 (0.126)	-0.001 (-0.585)	-0.009** (-2.338)	-8.91e-06 (-0.000579)
TO*GDP/Capita	0.0450*** (2.764)	0.0567*** (3.474)	0.0612*** (3.318)	0.0639*** (3.311)	0.0553*** (2.933)	0.0421** (2.280)	0.0244 (1.441)	-0.0781*** (-3.188)	-0.266** (-2.250)
Aid*GDP/Capita	-0.000 (-0.814)	-0.000 (-0.279)	0.000 (0.362)	0.001 (0.799)	0.001 (1.061)	0.001 (2.590)	0.002* (1.672)	0.003** (2.549)	-0.013 (-1.186)
FDI* Democracy	-0.001** (-2.510)	-0.001** (-2.325)	-0.001** (-2.315)	-0.001** (-2.161)	-0.001* (-1.936)	-0.000 (-1.574)	-0.000 (-0.734)	0.002** (2.390)	0.006* (1.743)
Dummy Africa	-0.098*** (-4.559)	-0.107*** (-4.514)	-0.111*** (-4.591)	-0.117*** (-4.760)	-0.113*** (-4.733)	-0.105*** (-4.394)	-0.085*** (-3.447)	0.020 (0.582)	0.778*** (4.365)
Dummy Asia	0.026	0.009	-0.004	-0.024	-0.029	-0.036**	-0.039**	-0.021	0.220*

(Continued)

Table 2. (Continued).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
	First Decile	Second Decile	Third Decile	Fourth Decile	Fifth Decile	Sixth Decile	Seventh Decile	Eighth Decile	Tenth Decile	
Dummy E.E.	(1.482) 0.071*** (5.039)	(0.470) 0.085*** (4.731)	(-0.233) 0.099*** (6.804)	(-1.198) 0.090*** (5.692)	(-1.649) 0.089*** (6.757)	(-2.097) 0.077*** (6.210)	(-2.268) 0.057*** (4.868)	(-0.655) -0.056*** (-2.738)	(-0.655) -0.056*** (-2.738)	(1.941) -0.530*** (-6.198)
Dummy LA	(-0.113***) (-7.784)	-0.129*** (-8.009)	-0.127*** (-7.858)	-0.134*** (-6.799)	-0.119*** (-7.443)	-0.111*** (-6.843)	-0.095*** (-5.776)	0.049* (1.815)	0.049* (1.815)	0.852*** (7.356)
Constant	1.054* (1.822)	1.379** (2.073)	1.604*** (2.652)	1.935*** (3.638)	2.252*** (4.472)	2.369*** (4.873)	2.393*** (5.109)	1.708** (2.597)	1.708** (2.597)	-7.024*** (-1.981)
Observations	253	253	253	253	252	252	252	252	252	252
R ²	0.688	0.643	0.683	0.665	0.650	0.593	0.476	0.259	0.259	0.609

Notes: Z-statistic in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. MENA is the reference region.


Table 3. Trade openness and external financial flows on income shares for 1988, 1993, 1998, 2002, and 2005 (SUR estimation).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	First Decile	Second Decile	Third Decile	Fourth Decile	Fifth Decile	Sixth Decile	Seventh Decile	Eighth Decile	Tenth Decile
Consumption-based	0.054*** (4.817)	0.045*** (3.413)	0.045*** (3.641)	0.042*** (3.398)	0.0357*** (2.873)	0.028** (2.243)	0.015 (1.218)	-0.058*** (-2.672)	-0.186** (-2.102)
Trade Openness	-0.402*** (-4.035)	-0.507*** (-4.316)	-0.544*** (-4.972)	-0.550*** (-5.073)	-0.496*** (-4.576)	-0.381*** (-3.485)	-0.224** (-2.001)	0.668*** (3.523)	2.399*** (3.108)
FDI	0.006** (2.351)	0.008*** (2.608)	0.009*** (3.046)	0.009*** (2.924)	0.007** (2.485)	0.005* (1.765)	0.002 (0.681)	-0.014** (-2.550)	-0.041* (-1.829)
REMITTANCES	0.001* (1.719)	0.001 (1.197)	0.001 (1.384)	0.001 (1.393)	0.000 (1.187)	0.000 (0.758)	0.000 (0.462)	-0.001 (-0.906)	-0.003 (-0.679)
Aid	0.004 (0.730)	0.000 (0.116)	-0.005 (-0.763)	-0.011 (-1.554)	-0.013* (-1.891)	-0.016** (-2.188)	-0.020*** (-2.653)	-0.026** (-2.080)	0.113** (2.172)
Democracy	0.001 (0.553)	0.001 (0.793)	0.001 (0.882)	0.001 (0.737)	0.001 (0.571)	0.000 (0.143)	-0.001 (-0.663)	-0.009*** (-2.713)	-8.91e-06 (-0.000626)
GDP/CAPITA (log)	-0.161 (-1.553)	-0.201 (-1.641)	-0.234** (-2.051)	-0.300*** (-2.657)	-0.337*** (-2.978)	-0.344*** (-3.017)	-0.323*** (-2.764)	-0.0597 (-2.302)	2.194*** (2.726)
(GDP/Capita (log)) ²	0.00732 (1.139)	0.00946 (1.248)	0.0113 (1.602)	0.0153** (2.188)	0.0177** (2.532)	0.0188*** (2.665)	0.0184** (2.547)	0.00641 (0.524)	-0.118** (-2.364)
TO*GDP/Capita	0.044*** (3.761)	0.056*** (4.036)	0.060*** (4.611)	0.061*** (4.718)	0.055*** (4.253)	0.042*** (3.212)	0.024* (1.814)	-0.078*** (-3.442)	-0.266*** (-2.873)
Aid*GDP/Capita	-0.000 (-0.961)	-0.000 (-0.323)	0.000 (0.559)	0.001 (1.313)	0.001 (1.632)	0.001* (1.926)	0.002** (2.424)	0.003* (1.929)	-0.013* (-1.863)
FDI* Democracy	-0.001** (-2.267)	-0.001** (-2.314)	-0.001*** (-2.584)	-0.001** (-2.501)	-0.001** (-2.195)	-0.000* (-1.648)	-0.000 (-0.678)	0.002** (2.406)	0.006 (1.643)
Dummy Africa	-0.098*** (-4.461)	-0.107*** (-4.140)	-0.109*** (-4.503)	-0.111*** (-4.637)	-0.113*** (-4.725)	-0.105*** (-4.348)	-0.085*** (-3.456)	0.020 (0.490)	0.778*** (4.565)
Dummy Asia	0.027 (1.574)	0.008 (0.431)	-0.001 (-0.0946)	-0.015 (-0.817)	-0.029 (-1.562)	-0.036* (-1.887)	-0.039** (-1.976)	-0.021 (-0.645)	0.220 (1.621)

(Continued)

Table 3. (Continued).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	First Decile	Second Decile	Third Decile	Fourth Decile	Fifth Decile	Sixth Decile	Seventh Decile	Eighth Decile	Tenth Decile
Dummy E.E.	0.072*** (4.970)	0.085*** (5.010)	0.102*** (6.388)	0.099*** (6.283)	0.089*** (5.629)	0.077*** (4.836)	0.057*** (3.490)	-0.056*** (-2.052)	-0.530*** (-4.714)
Dummy LA	-0.112*** (-6.642)	-0.129*** (-6.472)	-0.124*** (-6.664)	-0.122*** (-6.616)	-0.119*** (-6.471)	-0.111*** (-5.967)	-0.095*** (-4.981)	0.049 (1.547)	0.852*** (6.488)
Constant	1.058** (2.515)	1.378*** (2.776)	1.623*** (3.513)	2.001*** (4.370)	2.252*** (4.911)	2.369*** (5.126)	2.393*** (5.046)	1.708** (2.133)	-7.024** (-2.153)
Observations	252	252	252	252	252	252	252	252	252
R ²	0.688	0.643	0.684	0.679	0.650	0.593	0.476	0.259	0.609

Notes: Z-statistic in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. MENA is the reference region. The constraint is that the coefficient of the omitted income share is supposed to be equal to the (negative) sum of coefficients on all other income shares.



Table 4. Trade openness and external financial flows on income shares for 1988, 1993, 1998, 2002, and 2005 (IV estimation).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	First Decile	Second Decile	Third Decile	Fourth Decile	Fifth Decile	Sixth Decile	Seventh Decile	Eighth Decile	Ninth Decile	Tenth Decile
Remittances	0.006** (2.253)	0.007** (2.110)	0.007* (1.899)	0.006* (1.692)	0.005 (1.571)	0.005 (0.885)	0.003 (1.130)	-0.002 (-0.941)	-0.003 (-1.141)	-0.031 (-1.337)
Aid	0.133 (1.491)	0.174 (1.617)	0.180 (1.592)	0.191 (1.583)	0.147 (1.349)	0.127 (1.061)	0.133 (1.284)	-0.0190 (-0.341)	-0.0622 (-0.694)	-0.864 (-1.155)
FDI	0.015 (0.937)	0.013 (0.691)	0.014 (0.671)	0.016 (0.714)	0.006 (0.306)	0.004 (0.193)	0.005 (0.263)	0.003 (-0.332)	0.002 (0.158)	-0.084 (-0.567)
Consumption-based	0.109*** (2.830)	0.122*** (2.643)	0.117*** (2.426)	0.104** (2.020)	0.092* (1.939)	0.074 (1.470)	0.060 (1.305)	-0.019 (-1.010)	-0.068* (-1.899)	-0.450 (-1.409)
TO	-0.599*** (-3.644)	-0.536** (-2.545)	-0.520** (-2.219)	-0.538** (-2.044)	-0.387 (-1.564)	-0.304 (-1.106)	-0.249 (-0.941)	0.0806 (0.374)	0.511** (2.572)	2.862 (1.602)
GDP/Capita (log)	0.870 (1.176)	1.134 (1.290)	1.148 (1.260)	1.181 (1.233)	0.802 (0.926)	0.667 (0.703)	0.819 (1.018)	-0.168 (-0.434)	-0.595 (-0.897)	-4.840 (-0.830)
(GDP/Capita (log)) ²	-0.053 (-1.229)	-0.068 (-1.315)	-0.068 (-1.284)	-0.071 (-1.261)	-0.048 (-0.941)	-0.039 (-0.707)	-0.049 (-1.040)	0.010 (0.444)	0.037 (0.972)	0.292 (0.854)
Democracy	-0.000 (-0.0165)	-0.002 (-0.281)	-0.002 (-0.270)	-0.002 (-0.206)	-0.004 (-0.533)	-0.005 (-0.495)	-0.003 (-0.347)	-0.005 (-1.103)	-0.000 (-0.0779)	0.003 (0.0514)
TO*GDP/Capita	0.066*** (3.341)	0.057** (2.290)	0.056** (2.007)	0.059* (1.883)	0.041 (1.418)	0.032 (0.993)	0.027 (0.864)	-0.009 (-0.369)	-0.056** (-2.202)	-0.308 (-1.429)
Aid*GDP/Capita	-0.018 (-1.512)	-0.024 (-1.642)	-0.025 (-1.619)	-0.026 (-1.615)	-0.020 (-1.377)	-0.018 (-1.085)	-0.018 (-1.309)	0.002 (0.309)	0.008 (0.684)	0.121 (1.175)
FDI* Democracy	-0.001 (-0.699)	-0.001 (-0.446)	-0.001 (-0.437)	-0.001 (-0.460)	-0.000 (-0.0941)	0.000 (0.0380)	9.25e-05 (0.0311)	0.000 (0.564)	0.000 (0.0718)	0.006 (0.320)
Dummy Africa	-0.111** (-2.236)	-0.110* (-1.787)	-0.121* (-1.869)	-0.140** (-1.977)	-0.113* (-1.782)	-0.091 (-1.155)	-0.085 (-1.352)	-0.030 (-0.692)	0.002 (0.0447)	0.799* (1.759)
Dummy Asia	0.002 (0.0555)	-0.004 (-0.0982)	-0.020 (-0.448)	-0.047 (-0.931)	-0.035 (-0.788)	-0.035 (-0.612)	-0.047 (-1.097)	-0.035 (-1.391)	-0.005 (-0.163)	0.292 (0.975)
Dummy E.E.	0.100*** (3.244)	0.129*** (3.371)	0.126*** (3.160)	0.106** (2.406)	0.115*** (2.930)	0.099** (2.237)	0.067* (1.834)	0.020 (0.975)	-0.093*** (-3.896)	-0.737*** (-2.839)
Dummy LA	-0.126*** (-3.647)	-0.127*** (-2.981)	-0.128*** (-2.889)	-0.142*** (-2.880)	-0.115** (-2.567)	-0.105** (-2.037)	-0.094** (-2.260)	-0.059*** (-2.739)	0.053 (1.420)	0.922*** (3.162)

(Continued)

Table 4. (Continued).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	First Decile	Second Decile	Third Decile	Fourth Decile	Fifth Decile	Sixth Decile	Seventh Decile	Eighth Decile	Ninth Decile	Tenth Decile
Constant	-3.290 (-1.048)	-4.339 (-1.161)	-4.290 (-1.107)	-4.296 (-1.054)	-2.650 (-0.718)	-1.984 (-0.493)	-2.433 (-0.707)	1.924 (1.182)	3.887 (1.372)	23.10 (0.925)
Observations	131	131	131	131	130	130	130	171	135	135
R ²	0.551	0.416	0.339	0.206	0.267	0.195	-0.087	0.137	0.252	0.243
Hansen-J Test		0.77	0.79	0.81	0.76	0.75	0.71	0.44	0.38	0.87
R ² Shea1		0.56	0.56	0.56	0.57	0.16	0.57	0.42	0.50	0.50
R ² Shea2		0.05	0.05	0.05	0.05	0.04	0.05	0.04	0.04	0.04
R ² Shea3		0.13	0.13	0.13	0.13	0.12	0.13	0.16	0.12	0.12

Notes: Z-statistic in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. MENA is the reference region. The interaction variables among each endogenous variable and a conditional variable are instrumented by the multiplication of each instrument and the conditional variables. The Hansen-J test informs about the correlation between the instruments and the error term. R² Shea1, 2, and 3 inform about the validity of the instruments associated with remittances; aid and FDI, respectively.

statistical significance of squared per capita GDP confirms the assumption that income inequality increases monotonically with the level of development. This supports the idea that rich countries raise the income share of bottom decile more than poor countries. We checked Kuznet's hypothesis and found that inequality rises with the initial level of development and falls when a threshold level of development is reached. The turning point is calculated at around 3,600 US\$. We corroborated the surveys that support the Kuznets curve, like Milanovic (2005), Chauvet and Soms (2007), and Bjørnskov (2010). A low level of economic development does not improve the income level of low-income share population. This explains the negative sign of the coefficient of GDP/capita on low-income shares. Furthermore, the early phase of development makes skilled labor complementary to technology and capital, so the income of skilled laborers (top-income shares) rises more than unskilled workers (poor; low-income shares). The increase of the level of wealth within a country stimulates a primarily egalitarian distribution effect, which explains the positive sign of the quadratic value of GDP/capita on low-income shares. As a catch-up effect arises, the income gap would be attenuated due to a rise in education (more skilled labor supply).

The basic equation shows that trade openness has no repercussions on the low-income population (in other words, TO is never significant on bottom-income deciles). This corroborates the argument of Meschi and Vivarelli (2009) that a robust and significant link cannot be found between trade and within-country income inequality. Looking at the results concerning FDI, it seems that openness in the form of FDI flows does not help us recognize the mechanism of transmission between globalization and income shares of the poor. First, the unclear results are likely to confirm the results of Jalil (2012) that the insignificant relationship between openness and inequality may be more linked to the measure of openness using flow variables like FDI than to policy variables, like tariff rates. Second, our findings show no significant coefficient of FDI on the income shares of the poor, which confirms the possibility of nil effect of FDI on poor countries. While FDI is accompanied with the transfer of managerial and technology and an increase in the demand of skilled labor and the wages of those laborers, its effect is offset over time as a rise in domestic productivity. As an engine of growth, FDI contributes to attenuate income inequality in the long run by providing employment for poor. While remittances show an unexpected, insignificant effect on low-wage populations, aid is related to a counter-intuitive sign and contradicts the poverty alleviation effect of foreign assistance.

On the whole, the nexus between trade openness, external financial flows, and the income shares of the poor is not linear and may be affected by conditional factors. When developing countries open to trade, they are exposed to international competition with high-quality product. They face a serious challenge; they must absorb the external innovation and allocate efficiently external flows to the

domestic economy. The analysis of Meschi and Vivarelli (2009) shows that the same level of trade flows towards developing countries may exert different distributional effects on each country. In our analysis, taking into account the conditional effect of recipient countries' features, the level of economic development and democracy may enable us to apprehend the real effect of openness and external flows on the income shares of the poor. We suspect that the level of economic development and the order of democracy may, in fact, have a key role in the link between trade openness and income shares of the poor. Indeed, the ability to absorb technology and external flows should be greater in rich, democratic countries.

In order to gauge the real effect of openness and external flows on the income shares of the poor, we used multiplicative interaction models (as recommended by Friedrich (1982) and Brambor, Clark, and Golder (2006)) between each conditional factor and external flows. Since the first models (linear additive approaches) fail to address the economic phenomena, we needed to look for more sophisticated quantitative tools, like multiplicative interaction models. Multiplicative interaction models were created in social science research to pay particular attention to institutional contexts in economics (Kam and Franzese (2003) and Brambor, Clark, and Golder (2006)). Columns 2 and 3 of Table 1 show the results of the conditional factors. While our results do not sustain the standard H-O-S model because TO is not helpful for the poor (negative coefficients related to TO), only low-income citizens living in rich countries could benefit from trade openness. These theories conform to the ideas of Milanovic (2005) that openness is detrimental for low- and middle-income groups in impoverished countries. While aid seems to support the poor in affluent countries, remittances do not; however, we believe this requires more specific analysis. The potential effects of remittances on income deciles of the poor seem to depend on other factors, such as the social origin of the migrant (Ebeke and Le Goff 2010). The case of FDI is more complicated. While economic development doesn't seem to be crucial, democracy is detrimental for the poor.

The impact of TO and external flows on income inequality

Outcomes on Table 1 do not reveal clear results and require deep regressions. The estimates reveal that the effect of trade openness is highly correlated with the level of economic development (TO become significant when we control the conditional effect of country GDP/capita), whereas the same level of TO and flows towards developing countries may have detrimental effects on income distribution or have the opposite impact. Because of these findings, we took into account the regional disparity and examined the possible inequality-/equality-enhancing effect of trade across regions. We also

maintained the statistically significant interaction variables from Table 1. Tables 2, 3, and 4 shed light on the effects of TO and external flows on whole income deciles across five regions. We interpret the results of instrumental variables (IV) strategy since it takes into account the endogeneity issue. This may, in turn, conduct more plausible results. These results, related to the coefficients of R^2 , show that the capability of our models is suitable. The Hansen-J test does not reject the null hypothesis that the instrument is valid (i.e., uncorrelated with the error term and correctly excluded from the equation). The strength of the instruments is checked by R^2 -Shea from first-stage estimations, confirming that the instruments are suitable.

Results from Table 4 confirm the rising-inequality effect of TO in developing countries, supported by previous findings (Roine, Vlachos, and Waldenström 2009; Milanovic 2005). The turning point at which trade openness raises the income shares of the poor is around US\$ 5,200. Globalized countries that reach a level of income per capita equal or above the calculated threshold (Colombia) are more equal on income distribution than sub-Saharan Africa, which seems to prolong inequality and poverty. The economic development factor does not appear to be significant in terms of the relationship between aid and income distribution, but this too requires deeper analysis. Results show that remittances improve the well-being of recipient's families; however, this evidence is not robust.

The negative sign of the interaction variable between FDI and democracy may be related to the failure of democratic policy and institutional reforms accompanying globalization (Bjørnskov 2010), which, in turn, cuts the informal sector (a main income source for low-income populations). However, these results are insignificant (Table 4) and may be a sign that democracy is not a key factor in the above relationship.

The distribution data based on consumption show quite larger income shares held by the low-income population and considerably reduced shares held by the top deciles, relative to data based on income surveys and supports (Deininger and Squire 1997).

Concerning regional disparity, Africa and Latin America seem to do less to support their low-income populations than our reference region (the MENA countries). Both dummy variables are related to negative and statistically significant signs; however, Eastern Europe and central Asia seem to do more to improve the economic situation of the poor (positive dummy variable). In general, our findings support those of Milanovic (2005). In the case of Southeast Asia and Pacific, the sign appears to be close to the reference group. The income distribution in both regions follows the same trend.

VI. Conclusion

There are numerous channels reflecting the mechanism of transmission between openness and income inequality. Most of the existing empirical

surveys focus on the potential consequences of openness on the relative demand and wage of skilled labor compared to unskilled labor. However, there is less attention on the channel of financial liberalization. Given the lack of attention to this channel, this article extended the discussion on the potential effect of globalization on income inequality and addressed the consequences of the channel in a sample of 66 developing countries.

On one side, our results confirm the empirical frameworks that do not support the standard HOS model. The empirical results do not reject the developed assumption that, as a pair, trade openness and the level of economic development improve the economic standing of the poor. The upper class benefits from globalization in developing countries more than the lower class. Income shares of the poor decrease in open-market countries, relative to the poor in closed countries.

On the other side, the absence of significant effects of external financial flows require a deeper analysis on the distribution consequences of aid and FDI on income inequality. While results show that remittances improve the well-being of recipients' families, the relationship is not robust and seems to depend on specific factors, such as the social origin of the migrant. This requires a deeper, separate analysis of each external flow.

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Appendix

Table A1. Data sources and summary statistics.

Variable	Variable Definition	Source	Mean	Std. Dev.
First decile	Income share of the bottom decile of the entire income distribution	WYD	0.23	0.12
Second decile	Income share of second decile	WYD	0.36	0.13
Third decile	Income share of third decile	WYD	0.46	0.13
Fourth decile	Income share of fourth decile	WYD	0.56	0.12
Fifth decile	Income share of fifth decile	WYD	0.66	0.12
Sixth decile	Income share of sixth decile	WYD	0.79	0.11
Seventh decile	Income share of seventh decile	WYD	0.95	0.09
Eighth decile	Income share of eighth decile	WYD	1.17	0.08
Ninth decile	Income share of ninth decile	WYD	1.56	0.13
Tenth decile	Income share of top decile of the entire income distribution	WYD	3.22	0.81
Openness	Trade openness: Imports plus exports divided by GDP	World Bank (2010)	71.32	38.01
GDP per capita	Gross Domestic Product per capita (in current \$) (log)	PWT 7.1	8.11	0.98
FDI	Foreign Direct Investment is the net inflows of investment to buy more than 10% of voting stock (in % GDP)	IMF (2012)	2.51	3.34
Remittances	Workers' remittances and compensation of employees include current transfers by migrant workers and wages of nonresident workers	IMF (2012)	3.03	6.51
Foreign aid	Aid disbursement by official agencies (in % GDP)	OECD (2010)	4.81	6.81
Consumption-based	Dummy variable whether the data is based on consumption/expenditure survey or on income/earning	WYD	0.53	0.49
Democracy	A measure of the level of democracy on a scale of 0 to 10	Polity IV	4.70	3.71

Table A2. List of countries by region.

Africa	Latin America (LA)	MENA	East Europe and Central Asia (E.E)	Asia (East, South and Pacific)
Burkina Faso; Ivory Coast; Ethiopia; Ghana; Lesotho; Madagascar; Malawi; Mauritania; Niger; Nigeria; Senegal; Tanzania; Uganda; Zambia	Argentina; Bolivia; Brazil; Chili; Colombia; Costa Rica; Dominican Rep.; Ecuador; El Salvador; Guatemala; Honduras; Jamaica; Mexico; Panama; Peru; Venezuela;	Algeria; Djibouti; Egypt; Iran; Israel; Jordan; Morocco; Syria; Tunisia; Turkey; Yemen	Armenia; Belarus; Bulgaria; Croatia; Czech Rep.; Estonia; Georgia; Kazakhstan; Kirghizstan; Lithuania; Moldova; Poland; Russia; Romania; Slovenia; Ukraine;	Bangladesh; China; India; Indonesia; Malaysia; Pakistan; Philippines; Thailand; Vietnam