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Trade, Institution Quality and Income Inequality

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Summary. — We examine the effect of trade on income inequality in small developing countries. We use two well-accepted trade cost variables for identification: one is based on Baltic Dry Index and another is commodities' price index. Our main finding is that trade leads to a significant reduction (increase) in income inequality in autocracies (democracies). To explain such different effects, we provide supporting evidence that autocracies export more primary commodities and may follow the Stolper–Samuelson theorem in HO framework, while democracies active in manufacturing outsourcing may follow Feenstra and Hanson (1996) task model.

Key words — trade, income inequality, Baltic Dry Index, commodity price index, institution quality

1. INTRODUCTION

One of the core issues of trade is income distribution across factors. Until the 1990s, the leading framework for understanding the linkage between trade and income inequality, is the Stolper–Samuelson (SS) theorem in Heckscher–Ohlin (HO) model. One implication is that trade liberalization should decrease income inequality in developing countries since trade can increase the real return to the factor that is relatively abundant, for instance, low-skilled workers in these countries. However, the rise of income inequality has been observed robustly in the case of developing countries (e.g., Attanasio, Goldberg, & Pavcnik, 2004; Han, Liu, & Zhang, 2012; Harrison, McLaren, & McMillan, 2010; Lee & Wei, 2015; Menezes-Filho, Muendler, & Ramey, 2008).

This "puzzle" leads economists to rethink drivers of income inequality beyond simple SS prediction. The first argument is to extend the simple HO model for explanation, for instance, Xu (2003).[1] The second argument is the skill bias and technology channel and a very recent example is Rattso and Stokke (2013).[2] Thirdly and more importantly, with the increase of the trade in intermediate goods and the vertical specialization (Feenstra & Hanson, 1996; Grossman, Helpman, & Szeidl, 2006; Grossman & Rossi-Hansberg, 2008; Hummels, Ishii, & Yi, 2001; Yi, 2003) provide a model with a continuum of intermediate goods but still within HO framework, which predicts that international capital movements, e.g., FDI, by shifting the production of middle skill-intensive goods from the North to the South, can increase relative skill demand and wage inequality in the developing South. This is because the activities transferred is unskilled labor-intensive by the Northern standard, but skilled labor-intensive by the Southern standard.[3] Lastly, with the popularity of heterogeneous-firm model in trade, many recent studies have showed that the between-firm and within-firm wage differentials due to trade participation of firms can be another mechanism that trade affects overall wage (income) inequality (e.g., Egger & Kreickemeier, 2009; Helpman, Itskhoki, & Redding, 2010). Thus, there are different explanations to such trade-income inequality relationship in developing countries, see Anderson (2005) for a review.

In this paper, using country level data, our purpose is not to sort through each different channel but we attempt to investigate the effect of trade on income inequality in the developing world. We want to identify the channels, still from the HO aspect, and specifically from the point whether the trade pattern follows HO (final good) or Feenstra and Hanson (1996) (intermediate good) and their relations with institution quality. We empirically examine how trade affects income inequality and offer the explanations from the above-mentioned different trade patterns. We use panel data to do the investigation in a sample of 91 small developing countries (SDCs) during the period 1985–2012.[4] The results show that a 1% increase in trade is associated with around 0.1% increase (decrease) in the income inequality rate on average in democracies (autocracies). For the negative effect in autocracies, our results could be supported by previous literature, for example, Kenya is generally an autocratic country before 2002, and Bigsten and Durevall (2006) show that international market integration has reduced wage inequality in Kenya during the period 1964–2000.

Theoretically, the impact of trade on the inequality in developing countries could be different. Empirically, in the literature, the direction so far has been mixed too (Goldberg & Pavcnik, 2007), for instance, Wood (1997) concludes that trade openness is differently associated with wage inequality in the Asian Tiger economies and in Latin American countries; Green, Dickerson, and Arbache (2001) find that trade liberalization does not have any (positive or negative) significant effect on wage dispersion in Brazil; Meschi and Vivarelli (2009) show that trade liberalization impacts income distribution in developing countries differently depending on their income levels; Nissanke and Thorbecke (2010) illustrate that the impact of globalization on inequality is extremely context specific in Latin America. Similar with above studies, in this paper, we also find a mixed evidence of the relationship between trade and income inequality in developing countries but the different effects are related to institution quality of these SDCs. Therefore, our paper contributes to the debate of this line of literature on whether trade openness increases

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or decreases overall income inequality. In addition, our paper is also related to the literature studying trade and income distribution in other dimensions, e.g., different impacts in urban and rural areas (Castilho, Menendez, & Sztulman, 2012), gender inequality (Chen, Ge, Lai, & Wan, 2013).

A main issue, often emphasized in the literature, is that trade is endogenous in the determination of income levels and thus of income inequality. Firstly, decisions on whether to trade, and how much to trade, are not randomly assigned. Secondly, the regression analysis may be confounded by the reverse causal effect going from income inequality to trade. To address this, we adopt an instrumental variable approach by using two well-accepted trade cost variables in the literature as instruments for trade: one is based on Baltic Dry Index (BDI) in primary goods (Lin & Sim, 2013) and another is based on more than 20 primary commodity price index following Arezki and Brückner (2012). [5]

In previous empirical research, especially cross-country studies, the endogeneity of trade has not been carefully addressed. Therefore, they cannot convincingly isolate the effects of trade from other contemporaneous changes in the economic environment that may influence income inequality. Hence, for identification perspective, our paper contributes to the line of research on identifying the causality of trade on income inequality by using the variation in trade cost as an estimation strategy. Our instruments are country-specific, thus, we can apply rigorous panel data estimation techniques that account for both unobservable cross-country heterogeneity and common year shocks to identify in our empirical analysis the effect of trade on income inequality from, exclusively, the within-country variation of the data. However, the cross-sectional regression design of some earlier works makes it virtually infeasible to do so.

In pursuing this topic, it is important to bear in mind that the trade impact on income inequality in developing countries is typically related to different trade patterns. Theoretically, there are several other possible channels that we can think of to explain trade-inequality relationship, and the purpose of the paper focuses on the above-mentioned two trade patterns, HO-final good or Feenstra and Hanson (1996)-intermediate good, which can be the potential candidates to help explain. Feenstra and Hanson (1996) task model is related to the trade in intermediate goods in the global vertical specialization. One feature of the Feenstra and Hanson (1996) model is the attraction of inward FDI in developing countries. Ekholm, Forslid, and Markusen (2007) and Ito (2013) show such export-platform foreign direct investment both theoretically and empirically.

Thus, considering the relations between institution and trade patterns through FDI or not, our paper is further related to the research that has shown the importance of institutions in directing FDI flows for developing countries, for instance, Bussea and Hefeker (2007), Benassy-Quere, Coupet, and Mayer (2007) and the recent book by Jensen *et al.* (2012). Specifically, Bussea and Hefeker (2007) show that the democratic accountability of government, and quality of bureaucracy are highly significant determinants of foreign investment inflows for a data sample of 83 developing countries covering 1984–2003. Benassy-Quere *et al.* (2007) target on emphasizing the importance of the role of the quality of institutions on FDI inflows in developing countries. In their influential book, Jensen *et al.* (2012) demonstrate convincingly that democracy, veto players, rule of law, property rights, and partisanship all shape global investment patterns.

Focusing on autocratic and democratic SDCs separately, and using the instrumental variable strategy based on the BDI and Commodity cost, we find that the relationship between trade and income inequality is statistically significant positive for democratic SDCs, where a 1% increase in trade is associated with around 0.06–0.112% increase in the income inequality rate on average. However, for autocracies, we find that trade has a negative effect on income inequality, where a 1% increase in trade is associated with a 0.094–0.112% decrease in the income inequality rate on average. This adverse effect of trade is robust to using other measures of income inequality such as income share held by highest 10% and lowest 10%, to different specifications of the first-stage regression of trade on the BDI-based and Commodity cost as instruments, and to including other control variables such as income level and income level square which may have a direct impact on income inequality, and different institution quality measures.

To reconcile the dichotomous effect of trade on income inequality in democratic and autocratic SDCs, we look at intermediate manufacturing trade and inward FDI from OECD countries as a possible channel. [6] As showed earlier, Bussea and Hefeker (2007), Benassy-Quere *et al.* (2007) and Jensen *et al.* (2012) conclude that institutions matter for inward FDI. Our paper is not inconsistent with this scenario as we find that democratic SDCs have more offshoring activity from the North in terms of FDI from OECD countries than that of autocratic SDCs. In addition, we find that democratic SDCs export more in manufactured goods while autocracies export more in primary goods. Pinto and Weymouth (2014) show that the US firms are more likely to source intermediate imports from democracies where the vertical affiliates are more probably located. Thus, attracting more FDI from OECD and trading more in manufactured goods lead to higher income inequality in democratic SDCs as suggested by Feenstra and Hanson (1996), while the increase of trade in autocratic SDCs that engage in HO-type trade patterns show a declining trend of income inequality, as suggested by Stolper–Samuelson theorem.

Besides the literature on trade and income inequality, our paper also contributes to the literature that examines the question how political institutions affect this relationship. As pointed by Reuveny and Li (2003), though scholars have widely studied the impact of economic openness and democracy on national income inequality separately, they have less been examined together. While in their paper, they show that democracy can reduce income inequality conditional on trade, foreign direct investments, and financial capital, however, the role of democracy in trade-inequality nexus still has not be explored.

The remainder of the paper is structured as follows. Section 2 introduces our two instrumental variables, the BDI cost and Commodity cost. The data and the methodology are presented in Section 3. Section 4 presents the results of our regression of trade on income inequality. Section 5 concludes the paper.

2. BDI COST AND COMMODITY COST

(a) *BDI cost*

The Baltic Exchange has a long history going back to 1744 when it was first established through casual conversations between merchants and ships' captains at the Virginia and Baltic Coffee House in Threadneedle Street in London. In 1985, the Baltic Exchange launched the Baltic Dry Index (BDI),