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Trade Facilitation and Poverty in Developing Countries

Nickson J. Cabote / MPP-IP
Case Study: International Political Economy

Outline

A. Introduction

    1. Trade, Growth and Poverty

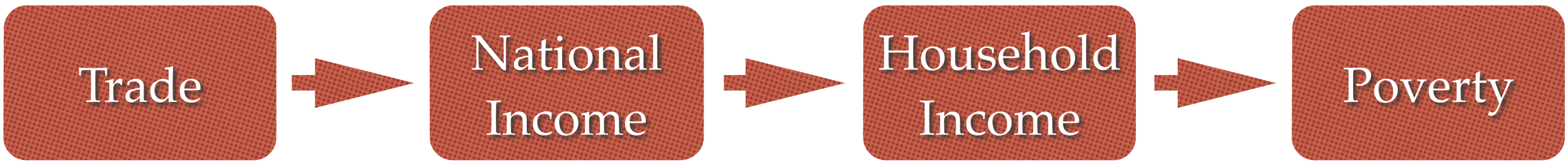
    2. Trade Facilitation

B. Data Analyses and Methodology

C. Results and Conclusion

D. Policy Recommendations

Basic Premise



- When an economy opens itself to the global community, in particular, world trade. It allows itself to reap the benefits of globalization.
- Trade is expected to increase the over-all national income.
- The increase in national income can then paved for the improvement of the citizen's welfare through augmented household incomes.
- Which then translate to poverty alleviation in some sectors of the economy.

Empirical Evidences on the Positive Relationship Between Trade and Growth in Developing Countries

Source and Country Coverage	Trade Orientation Index	Results
Michaely (1977)	Rate of growth and exports share	Positive (rank) correlation between export and growth
Balassa (1985)	Trade orientation index defined on the basis of difference between actual exports and predicted exports	Outward oriented countries tend to grow faster
World Bank (1987)	Countries classified in four groups: strongly inward oriented, moderately inward oriented, moderately outward oriented, strongly outward oriented.	Outward oriented countries tend to grow faster.
Dollar (1992)	Exchange rate distortions.	Average per capita growth in the least distorted quartile of (mostly Asian) countries was 2.9%; the next quartile had a growth rate of 0.9%, the third quartile - 0.2%, and the most distorted quartile - 1.3%. Reduction of the real exchange rate distortion to the Asian level would add 0.7 percentage points to Latin American growth and 1.8 percentage points to African growth.

As summarized in David, D.B; Nordstrom, H.; Winters, A. (2000) "Trade, Income Disparity and Poverty" WTO

Empirical Evidences on the Positive Relationship Between Trade and Growth in Developing Countries

Source and Country Coverage	Trade Orientation Index	Results
Harrison (1995)	Seven Index: Trade Liberalization (1960-84), (1978-88), Black Market Premium, Trade Shares, Real Exchange rate distortions, Movemens towards international prices. Bias against agriculture	All statistically significant indexes show a positive relation between a liberal trade regime and GDP growth. The causality between a liberal trade regime and growth runs both ways. Lagged values of growth are significant in explaining openness, and lagged values of openness are significant in explaining growth.
Matin (1993)	Focused on Sub-saharan africa Four indexes: Trade shares, Black market premium, Trade liberalization index, Real exchange rate distortion.	All indexes that are statistically significant point to a positive relation between a liberal (less distortive) trade regime and growth. The openness-growth performance link for Sub-Saharan Africa is as strong as in a control sample of other African countries.
Balasubramanyam, Salisu and Sapsford (1999)	World Bank Openness Indicator	Low trade barriers enhance the efficiency of FDI and indirectly growth

As summarized in David, D.B; Nordstrom, H.; Winters, A. (2000) "Trade, Income Disparity and Poverty" WTO

Trade and Poverty

- Dollar, D. and Kraay, A. (2002), ***"Trade, Growth, and Poverty"*.** The Economic Journal, 114: F22–F49
  - Level of growths and development has been significantly higher in "globalizer" developing economies as compared to the "non-globalizer".
  - They noted that trade openness contributed to the surge in national income, without exacerbating the level of inequality in the sampled countries.
  - The increase in growth rates from expanded trade on average translates into proportionate increases in income of the poor.
  - **Actual data actually pointed that Absolute poverty in the globalizing developing economies has fallen sharply in the past 20 years**. The evidence from individual cases and from cross-country analysis supports the view that open trade regimes lead to faster growth and poverty reduction in poor countries.

Trade and Poverty

- Bhagwati J. and Srinivasan T.(2002), *"Trade and Poverty in the Poor Countries,"* American Economic Review, American Economic Association, vol. 92(2), pages 180-183, May.
- Support the central argument which proceeds in two steps: trade promotes growth; and growth reduces poverty.
- In theory via Stolper-Samuelson : Freer trade help in the reduction of poverty when a developing country employs their comparative advantage to export labor-intensive goods.

Main Focus

However, the focus of this study is not about trade openness and tariff related distortions to trade…

The Study will look into the **Trade Facilitation** as the main variable that attempts to explain poverty in developing countries.

Trade Facilitation

- The main objective of trade facilitation is to reduce international trading's transaction cost through simplification of the customary and technical regulations (United Nations, 2002)

- It also mean to simplify and improve efficiency of international trade procedures (United Nations, 2002; Wilson et al., 2003, 2005; Engman, 2005; Iwanow and Kirkpatrick; 2007)

Engman, M. (2005), "The Economic Impact of Trade Facilitation", OECD Trade Policy Working Papers, No. 21, OECD Publishing.
Iwanow, Tomasz and Colin Kirkpatrick (2007), "Trade Facilitation, Regulatory Quality and Export Performance", Journal of International Development, 19, 735–753
United Nations (2002), Trade Facilitation Handbook: For the Greater Mekong Subregion, Economic and Social Commission For Asia and The Pacific, United Nations, New York
Wilson, J., C. Mann and T. Otsuki (2003), "Trade Facilitation and Economic Development: A New Approach to Quantifying the Impact", World Bank Economic Review, 17 (3): 367-389.

Trade Facilitation

- Trade facilitation includes improving the ports (point of entry and goods exchange) and lower the transactions by harmonization of procedures on international movements of goods and services (Wilson et al., 2003, 2005; Iwanow and Kirkpatrick; 2007)

- Trade facilitation has been put in the agenda of WTO since 1994, and the member governments of WTO have started negotiations on trade facilitation since 2004 (Duval, 2007)

Duval, Y. (2007), "Trade facilitation beyond the Doha Round of negotiations", Chapter I in ESCAP (2007), Trade facilitation beyond the multilateral trade negotiations: Regional practices, customs valuation and other emerging issues – A study by the Asia-Pacific Research and Training Network on Trade, (United Nations, New York).
Iwanow, Tomasz and Colin Kirkpatrick (2007), "Trade Facilitation, Regulatory Quality and Export Performance", Journal of International Development, 19, 735–753
Wilson, J., C. Mann and T. Otsuki (2005), "Assessing the Benefits of Trade Facilitation: A Global Perspective", World Bank Economic Review, 17 (3): 367-389.

Impact of Trade Facilitation

- The direct impact of trade facilitation is to **increase the international trade**. Improving port efficiency, customs and e-business have a positive effect on trade flows. Wilson et al. (2005)
- Reduction in inefficiencies in transport costs can result in an increase in bilateral trades of countries to the US, Clark et al. (2004).
- A10 percent improvement in trade facilitation can increase the export volume by around 5 percent, Iwanow and Kirkpatrick (2007).

- Heavy regulatory environments can harm the trade flows (Inefficient trade facilitation harms trade).
- Number of days to clear goods through customs has a negative effect on exports in developing countries, Dollar et al. (2006)

Clarke, RG. (2005), "Beyond tariff and quotas: why don't African manufacturing enterprises export more?" World Bank Policy Research Working Paper no. WPS3617.
Wilson, J., C. Mann and T. Otsuki (2005), "Assessing the Benefits of Trade Facilitation: A Global Perspective", World Bank Economic Review, 17 (3): 367-389.

Impact of Trade Facilitation

- An additional day that a product is delayed can decrease the international trade volume by around one percent, Djankov et al. (2010).

- Trade facilitation improvement can **promote export diversification in developing countries**. A 10 percent reduction in the export cost can lead to a three percent increase in export diversification, Recently, Dennis and Shepherd (2011).

Djankov S, Freund C, and Pham CS (2010), "Trading on time", Review of Economics and Statistics 92: 166-173
Dennis, A. and B. Shepherd. 2011. "Trade Facilitation and Export Diversification." World Economy, vol. 34, no. 1, pp. 101-122.

Trade Facilitation and Poverty

- **Improved trade leads to employment generation** and tends to increase overtime. Expansion of export-oriented sectors can create employment for low skilled workers, ***Hoekman and Winters (2005)***.

- There is **positive association between trade facilitation and employment** ***(Dennis, 2006; ESCAP, 2009; Zaki, C., 2011)***

- **Trade facilitation contributes to growth in GDP and economic welfare (increase income)** ***(e.g., APEC 1999; Kinnman and Decreux and Fontagné, 2006; Hertel and Keeney, 2006; Lodefalk, 2007).***

- There is **positive association between the trade facilitation level and government revenue and foreign direct investment**. ***Engman (2005)***

Decreux, Yvan and Lionel Fontagné (2006), "A Quantitative Assessment of the Outcome of the Doha Development Agenda", CEPII Working Paper No. 2006-10.
Dennis, A. (2006), "The Impact of Regional Trade Agreements and Trade Facilitation in the Middle East North Africa Region", World Bank Policy Research Working Paper 3837,The World Bank, DC. Washington.
Hoekman, Bernard, and L. Alan Winters. 2005. "Trade and Employment: Stylized Facts and Research Findings." World Bank Policy Research Working Paper no. 3676. Washington, D.C.: World Bank.
Kinnman, Susanna and Magnus Lodefalk (2007), "What is at Stake in the Doha Round?", World Economy, 30(8), 1305-1325.

Trade Facilitation and Poverty

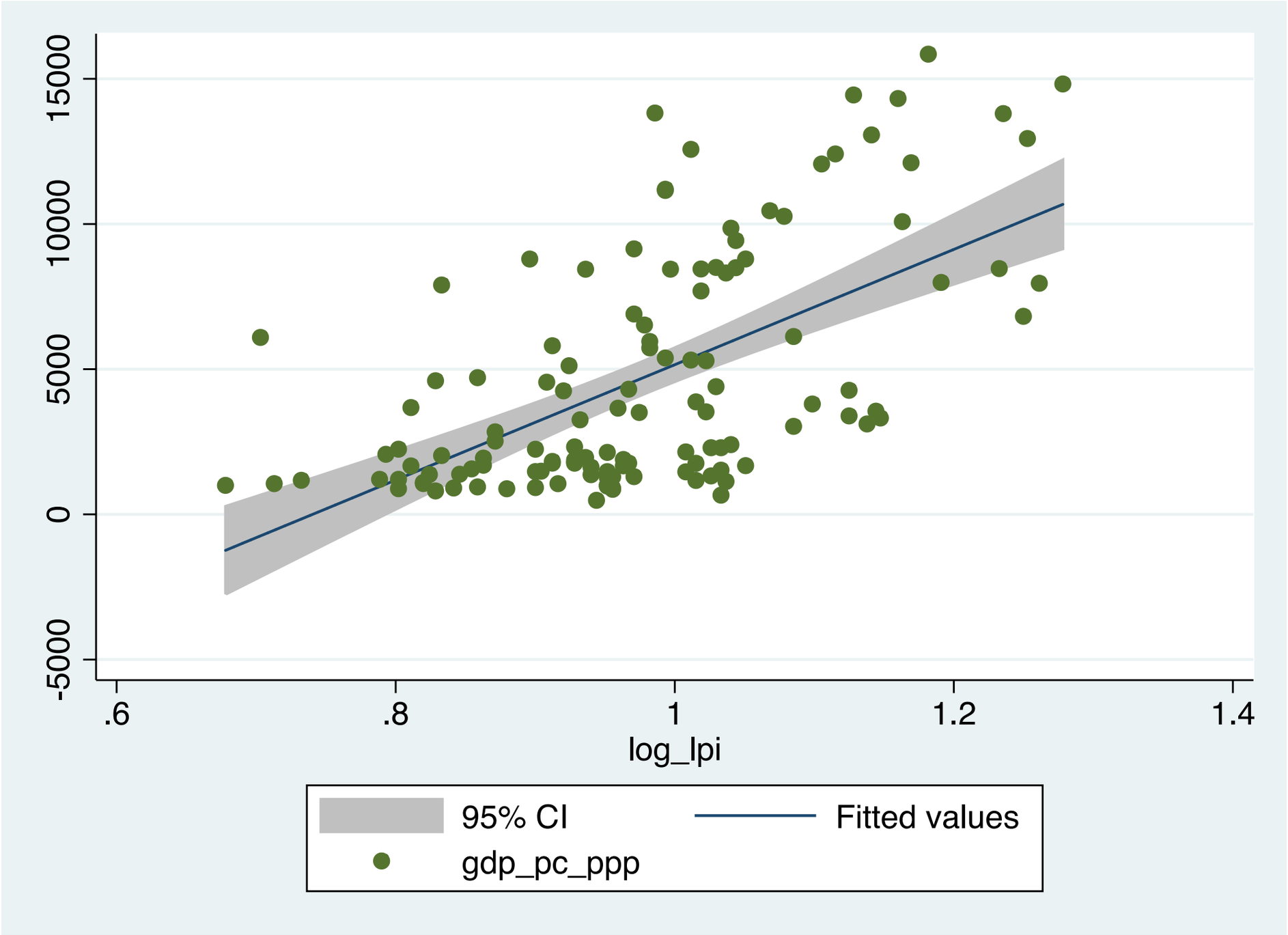
- **Trade facilitation can affect per capita GDP, poverty and inequality.** More specifically, deterioration in trade facilitation which is measured by an increase in the number of documents and days for exports and import can reduce per capita GDP. ***Nguyen (2013)***

- Countries with a larger number of documents and more time for imports and exports tend to have higher poverty (measured by the headcount and poverty gap index) and higher inequality (measured by the Gini index) than other countries.

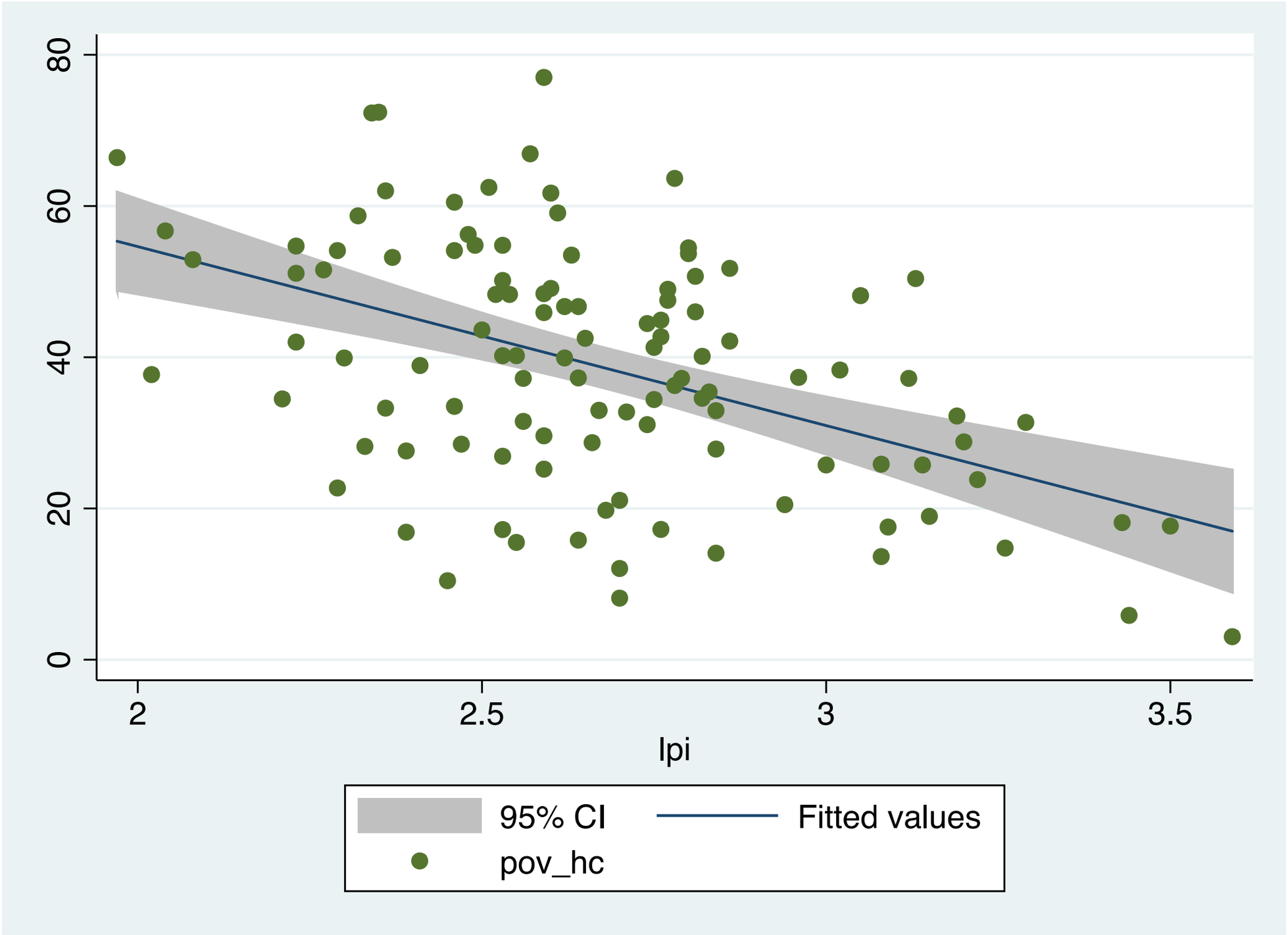
- In the same study, he also noted that the Logistics Performance Index can be used.

Nguyen, Coung (2013). "Poverty, Inequality and Trade Facilitation in Low and Middle Income Countries". MPRA Paper No. 50312, posted 1. October 2013 12:30 UTC

Better Trade Facilitation: Higher Income



Better Trade Facilitation: Lower Poverty Incidence



Hypothesis of the Study

- Trade Facilitation when improved aids in dispersing the gains from trade through the rest of the population, hence contributes to poverty alleviation in countries.
- Comparing the policy of improving a country's trade facilitation compares to other social policies, such as increased education spending, in alleviating poverty in the developing world.

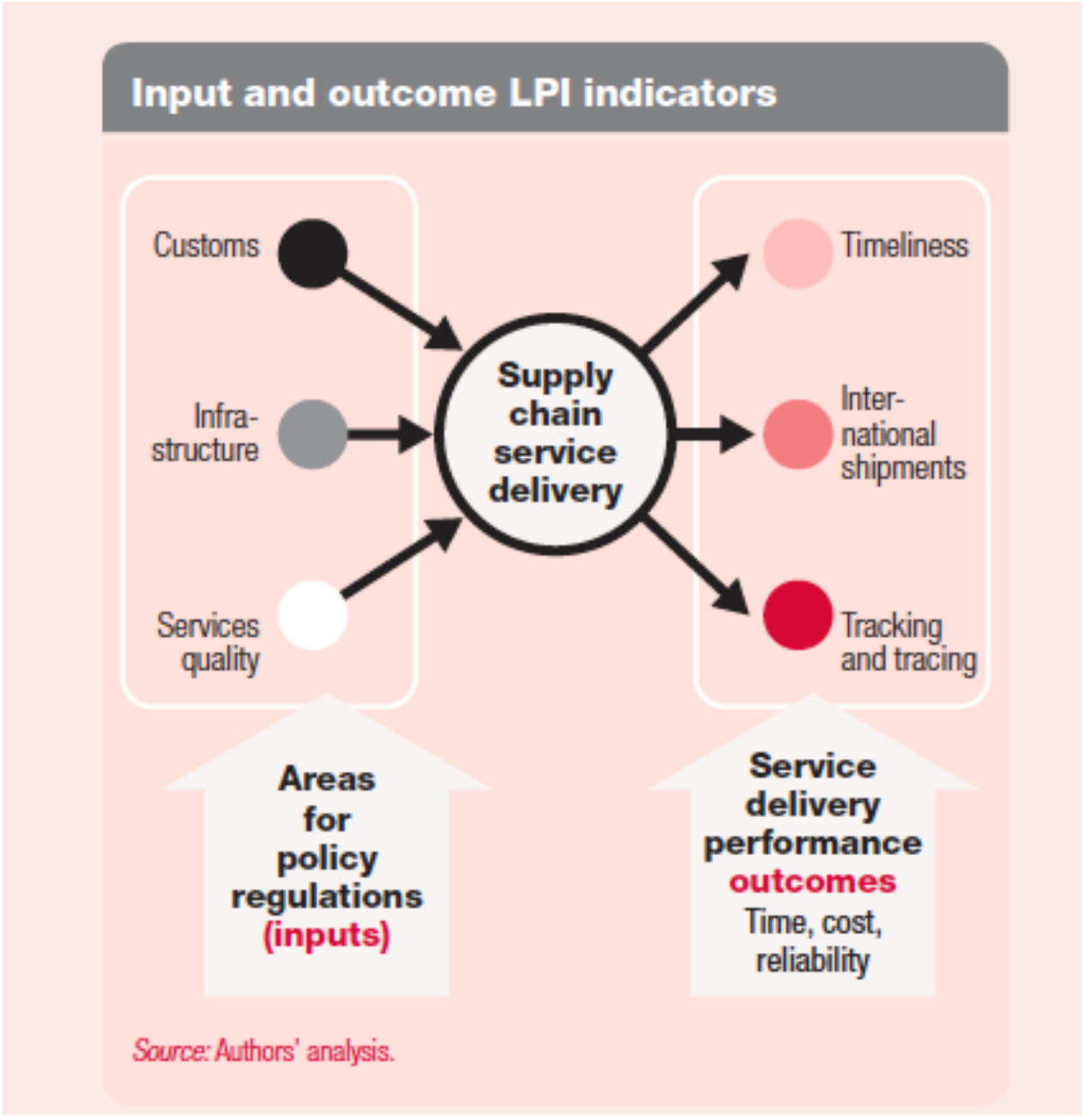
Logistics Performance Index, why is it a good indicator?

- Following the recommendations of Rodrik in his critique on the Dollar and Kraay Paper. It is important to find a suitable variable that is correlated to poverty but is not independently related to income.
- From the previous graph, LPI is actually positively correlated with income. However, it is consists of six components, and there is reason to believe that among these components, there is at least one that can serve as a suitable instrument that would help us trace the relationship of trade facilitation performance and poverty

What we know …

1. The LPI is composed of six indicators:
A. Policy regulation variables, indicating main inputs to the supply chain (customs, infrastructure, and quality of logistics services).
B. Service delivery performance outcomes variables (timeliness, international shipments, and tracking and tracing).

At a glance, its easy to see that faster movement of goods and the ability to track and trace shipments are not directly related to income and/or poverty. (To be confirmed via OLS)



Source: World Bank

Logistics Performance Index

Logistics Performance Index reflects the efficiency of customs clearance process, quality of trade- and transport-related infrastructure, ease of arranging competitively priced shipments, quality of logistics services, ability to track and trace consignments, and frequency with which shipments reach the consignee within the scheduled time.

The index ranges from 1 to 5, with a higher score representing better performance. Data are from Logistics Performance Index surveys conducted by the World Bank in partnership with academic and international institutions and private companies and individuals engaged in international logistics.

Scores for the six areas are averaged across all respondents and aggregated to a single score using principal components analysis

World Bank. Accessed from http://data.worldbank.org/indicator/LP.LPI.OVRL.XQ

DATA STRUCTURE

- The study involves 66 developing countries from Asia, Africa, South America and Europe.
- The data was constructed by taking the mid-term average of each variables: Period 1 —2005-2009 and Period 2 — 2010-2014. This is done to correct for the missing data.
- Total number of observation: **131 data points**

DATA

Dependent Variable:

Poverty - [log of] Poverty headcount ratio at national poverty line (% of population)

Explanatory Variable:

Trade Facilitation Performance - World Bank's Logistics Performance Index

Control Variables:

Income Share of the Poorest - Income Share held by the Bottom 10% of population (World Bank)

Income - GDP per Capita

Average Tariff Rates - Generated with the use of simple averaging of tariff rates imposed on agricultural and non-agricultural products (World Bank)

Data - Logistics Performance Index

1. Infrastructure Score (*INSCORE)* indicates the countries' infrastructure score; this is the rating of the quality of trade and transport infrastructure (e.g. ports, railroads, information technology)

2. Customs Score (*CSCORE)* indicates the customs score of countries, which is based on the efficiency of customs and border management clearance

3. Shipments Score (*SHSCORE)* signify the capacity of countries to easily arrange shipments, this involves the ease and affordability associated with shipping products to or from the stated country

Data- Logistics performance index

4. Logistics Competence (*LSCORE)*—this comprises the evaluation of the level of competence of the logistics industry (e.g. transport operators, customs brokers)

5. Track and Trace Score (*SCORE)* signifies the ability to track and trace your consignments when shipping to or from a certain country

6. Timeliness (*TISCORE)* pertains to the frequency with which shipments reach consignees within scheduled or expected delivery times

Methodology

- Estimate the partial effects of trade facilitation to poverty using Ordinary Least Squares

$$\log(POV) = \beta_0 + \beta_1 \log(LPISCORE) + \beta_2 \log(TAVE) + \beta_3 \log(GDP) + \beta_4 B10INSHARE + \beta \quad (1)$$

Methodology

- To check the first model and to know if the previous model suffers from endogeniety we estimate a new equation using a Two-Stage Least Squares.

- Firstly, we look at which component of the LPI does not explain poverty and income

$$\log(POV) = a_0 + a_1 \log(LPIComponent_i) + a_2 \log(GDP) + a \quad (2)$$

2 Stage Least Squares

The 2SLS regression is specified as:

(Equation 3)

$$\log(\text{POV}) = \Upsilon_0 + \Upsilon_1 \log(\text{LPISCORE}) + \Upsilon_2 \log(\text{TAVE}) + \Upsilon_3 \log(\text{GDP}) + \Upsilon_3 \log(\text{B10INSHARE}) + v$$

(Equation 4)

$$\log(\text{LPISCORE}) = P_0 + P_1 \log(\text{TTSCORE}) + P_2 \log(\text{TICORE}) + u$$

Results

Dependent: Poverty	Model I	Model II	Model III	Model IV	Model V	Model VI	Model VII
log Infrastructure	-0.800** (0.332)						-1.21* (0.057)
log Customs		-0.610* (0.344)					0.30 (0.057)
log Shipping			-0.795* (0.350)				-0.87** (0.438)
log Logistics Competence				-0.765* (0.364)			-0.18 (0.754)
log Tracing and Tracking					-0.547 (0.341)		-0.39 (0.582)
log Timeliness						-0.271 (0.376)	0.29 (0.527)
log GDP	-0.231*** (0.057)	-0.272*** (0.052)	-0.263*** (0.051)	-0.245*** (0.056)	-0.274*** (0.052)	-0.292*** (0.055)	
R^2	0.234	0.3155	0.3280	0.3233	0.3118	0.2984	0.3513

Results

Dependent Variable: Poverty					
	Model 1 (OLS)	**Model 1.1 (OLS)**	**Model 2 (OLS)**	**Model 3 (IV Reg)**	**Model 4 (IV Reg)**
log LPI Score	-2.15*** (0.39)		-2.25*** (0.397)	-2.11*** (0.397)	-2.039*** (0.422)
log GDP per capita	-0.08* (0.05)		-0.042 (0.053)	-0.048 (.052)	-0.043 (0.0525)
log Average Tarrif		0.15* (0.080)	0.094 (0.080)		0.105 (0.079)
log Income Share Bottom 10 percent			-0.285*** (0.080)	-0.248*** (0.077)	-0.281*** (0.079)
				Instruments:	Instruments:
				Tracking and Tracing Quality	Tracking and Tracing Quality
				Timeliness of Shipment	Timeliness of Shipment
R^2	0.24	0.026	0.330	0.320	0.330
Adjusted R^2			0.302		
Sargan Test of overidentifying restrictions				ok	ok
Wu-Hausman Tests of endogeneity				ok	ok

Test Results

- Sargan Test (Over-identification): We fail to reject Ho — hence the instruments used are valid.
- Wu- Hausman Test (Endogeneity): We cannot reject the Ho, contending that the regression is exogenous — suggesting that the OLS is already sufficient. **But given economic intuition and the p-value of the test, the probability that endogeniety exists is not zero.**
- Nonetheless, the results based from the OLS and the 2SLS are not to different. Suggesting consistency of the coefficients.

Beta Coefficient Analyses of Comparative Policies

Dependent: Poverty (log)	Coefficient	P-value	Beta values
Explanatory variables			
Logistics Performance (log)	-2.25	0.000	-0.494
Education (log)	-0.212	0.204	-0.148
Health (log)	-0.069	0.537	-0.069
Human Development Index (log)	-1.37	0.000	-0.699

Conclusion

- The study confirms the negative correlation between LPI score and poverty incidence, that is, a competitive logistics system reflects lower poverty incidence.
- Moreover, by means of a Two-Staged Least Squares Estimation, the factors of Trade Facilitation that directly impacts economic growth was netted out before employing trade facilitation as an explanatory variable for poverty.
- The results points that trade facilitation significantly explain poverty across countries, controlling income levels and the income share of the bottom quintile and that of average tariff rates.
- Moreover, from the beta coefficient analyses, poverty is more reactive to the improvement of trade facilitation as compared to the increase in education spending or health spending, at least in the medium-term.

Policy Recommendation

The government alongside their private sector partners can improve trade facilitation quality. Given the results of the study there is considerable reason to direct public policy towards the **improvement of internal transportation and communication infrastructure and pushing for an efficient customs procedure**.

The government can also craft **policies that will encourage competition in the logistics industry** to facilitate the reduction in the cost of services imposed by private carriers and port operators while encouraging them to beef up the quality of their services to remain competitive.

With the improvements in Trade Facilitation it can provide synergistic effects on the reduction of poverty.

Appendix

Argentina	Central African Republic	Gambia, The	Kyrgyz Republic	Nepal	Sri Lanka	Vietnam
Armenia	Chad	Ghana	Lao PDR	Nicaragua	Tajikistan	Zambia
Azerbaijan	Chile	Guatemala	Lesotho	Nigeria	Tanzania	Zimbabwe
Bangladesh	China	Guinea	Malawi	Pakistan	Thailand	
Benin	Colombia	Haiti	Malaysia	Panama	Togo	
Bolivia	Costa Rica	Honduras	Mali	Paraguay	Tunisia	
Brazil	Cote d'Ivoire	India	Mauritania	Peru	Turkey	
Burkina Faso	Dominican Republic	Indonesia	Mexico	Philippines	Turkmenistan	
Burundi	Ecuador	Jamaica	Mongolia	Rwanda	Uganda	
Cambodia	El Salvador	Kazakhstan	Mozambique	Senegal	Uruguay	
Cameroon	Ethiopia	Kenya	Namibia	Sierra Leone	Uzbekistan	