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The impacts of liberalization and trade facilitation on economic performance, poverty and income inequality: An analytical study

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Article Info

Abstract

This study examines the impacts of import duty and trade transaction cost reductions on economic performance, poverty, and income distribution inequality, through the top-down computable general equilibrium approach. **Findings/Originality:** It reveals that reducing import duty in agricultural decreases urban poverty but increases the poverty incidence at the rural and national levels. Reducing import duty in agricultural industry lowers urban and national poverty without affecting rural poverty. Meanwhile, the reductions of both import duty and transaction costs bring down the poverty incidence at all levels – urban, rural, and national. The inequality in rural and national income distribution increased due to the cuttings of import duty in agricultural and agricultural industry. However, it declined due to the reduction of transaction costs, and the combined transaction cost with import duty in agricultural or agricultural industry.

Introduction

Since early 1980s, Indonesia has implemented internal measures to reform trade liberalization policies focusing on simplifying port and customs procedures, reducing import duty rates and other additional costs, simplifying import licenses and other non-tariff barriers, de-regulating import and distribution systems, de-regulating investment regimes, developing bonded zones and processing export shipments (Anas & Roesad, 2003; Erwidodo, 1999). The main objective of the measures was improving the international competitiveness of domestic commodities.

In supporting the outward-oriented economic policy strategy, the Indonesian government carried out some external measures, including participating actively in bilateral, regional and multilateral trade cooperation. Joining the cooperation schemes, Indonesia must comply with agreements emphasizing trade liberalization. The relationship between trade liberalization and economic in developing country has been an intensive controversial debate.

The integration of developing countries into the global economy has strengthened negative sentiments especially in the developing world that "the poor have become poorer and the rich have become richer." Many attributed this development to adverse effects of trade liberalization and globalization on the global economy in terms of increased poverty and income disparity. This negative sentiment was not totally baseless. Some empirical studies have supported it, suggesting negative effects of trade liberalization on the poor population based on partial balance analysis (Ravallion, Datt, & Walle, 1991) or general equilibrium analysis (Lofgren, 2003).

In contrast, the pro-view on trade liberalization emphasizes the importance of trade openness to improve economic growth. Most researchers in this camp and the multilateral

institutions, such as the World Bank, International Monetary Fund (IMF) and the World Trade Organization (WTO), believe that trade liberalization will accelerate growth and reduce poverty in developing countries.

So far, only few studies have examined the relationship between liberalization and trade facilitation on the one hand and economic performance, poverty, and income distribution, on the other, that employed the computable general equilibrium (CGE) with the transmission that runs from macro level to micro level, in the context of Indonesia. Therefore, this study aims at filling in this gap. In doing so this study utilizes a more comprehensive computable general equilibrium (CGE) framework with a top-down model and relies on Indonesian data.

Methods

The analysis in this study applied a computable general equilibrium approach with a top-down model, following the model developed in Decaluwe, Lemelin, Maisonnave, and Robichaud (2012). This model is a static model of a country where companies are assumed to operate in a perfectly competitive environment. Some changes were introduced to answer the research questions, including exogenizing trade transport costs, improved elasticity data from Indonesian case studies, and adjustment of closure in the model.

The top-down model was intended to relate macro data transmission (changes in prices of commodities and income of various household groups as a result of the CGE model simulation) to microdata (individual household expenditures based on SUSENAS data) to obtain new real expenditure data of individual households (Statistics Indonesia, 2008a). The poverty and income distribution inequality were measured based on both initial and new real expenditure data of individual households. Poverty was analyzed using the Foster-Greer-Thorbecke (FGT) approach, and income distribution was analyzed using the Gini coefficient.

Data Sources

The main data used in this study came from the 2008 Social Accounting Matrix (SAM) and the 2008 National Socio-Economic Survey (SUSENAS) (Statistics Indonesia, 2008a, 2008c). The supporting data included: Input-Output Table of 175 sectors in 2005, Input-Output Table of 66 sectors in 2008 and a survey on Special Savings and Household Investments (SKTIR) in 2008 obtained from the publication of the Indonesian Central Bureau of Statistics, as well as the parameter data of estimated equation system obtained from previous studies deemed relevant (Statistics Indonesia, 2008d, 2008b).

Although some sectors and households were the focus of the research, they were not included in the SAM 105 in 2008 published by the Central Bureau of Statistics (BPS). The disaggregation was done for the production sectors, domestic commodities, and import commodities, respectively, from 24 sectors to 46 sectors. Households were disaggregated from 8 household groups to 20 groups. Disaggregation and modification of the 2008 SAM structure of 105 sectors into the SAM structure of 183 sectors suited to the 1-1 CGE PEP model, version 2.0 (see Appendix 1).

Poverty Analysis Method

The formula for calculating poverty, according to Foster-Greer-Thorbecke (FGT) is as follows:

$$P_\alpha = \frac{1}{n} \sum_{i=1}^{q} \left[\frac{z-y_i}{z} \right]^\alpha \tag{1}$$

where α = weighting the depth of household poverty (0, 1, 2); z = Poverty Line; y_i = the average monthly per capita expenditure of population below the poverty line (i = 1,2, ..., q), $y_i < z$; q =

Number of households below the poverty line; n = Number of all households. If $\alpha = 0$, the Head Count Index or incidence of poverty is obtained (P0). If $\alpha = 1$, the Poverty Gap Index (P1) is obtained. If $\alpha = 2$, the Poverty Severity Index (P2) is obtained.

Analysis Method of Income Distribution Inequality

The Gini coefficient is often used to measure the level of income inequality. Its formula is as follows:

$$GR = 1 - \sum_{i=1}^{n} fp_i * (Fc_i + Fc_{i-1}) \tag{2}$$

Where GR = Gini Ratio; fpi = frequency of population in the i-expenditure class; Fci = cumulative frequency of total expenditure in the i - expenditure class; Fci-1 = the cumulative frequency of total expenditure in the (i-1) expenditure class. The Gini index value ranges between 0 and 1. The higher the Gini index value, the greater the income inequality. A Gini index value of zero implies a perfect evenness in the income distribution, whereas a value of one signifies perfect income inequality.

Trade Policy Scenarios

The simulations of 5 (five) scenarios of trade liberalization and facilitation policies were conducted, as shown in Table 1.

Table 1. Alternative Policy Scenarios

Scenarios	Description
Scenario 1	Policy of reducing import duty (50%) in agricultural sector (SIM1)
Scenario 2	Policy of reducing import duty (50%) in agricultural industry sectors (SIM2)
Scenario 3	Policy of reducing trade transaction costs (25%) (SIM3)
Scenario 3	Policy of combining import duty reducing (50%) in agricultural sector and reduction of trade transaction costs (25%) (SIM4)
Scenario 5	Policy of reducing import duty (50%) in agricultural industry sectors and reducing trade transaction costs (25%) (SIM5)

The simulations in the agricultural sector in this study included the subsectors of soybeans, corn, vegetables, fruits, rubber, coconut, palm oil, coffee, cocoa, other crops, livestock and derived products, forestry and labor, shrimp and other fisheries. Meanwhile, the simulations in the agricultural industry sector included simulations in the oil and fat industry, rice milling industry, all types of flour industry, sugar industry, beverage industry, other food industry, leather and leather products industry, wood industry and wood products, and rubber goods industry.

Results and Discussion

The discussions on the results of the research simulations are grouped into three main topics: (1) Impacts of trade policies on economic performance; (2) Impacts of trade policies on poverty; and (3) Impacts of trade policies on income distribution.

The Impacts of Trade Policies on Economic Performance

Import duty reduction

Changes in economic performance as reflected in changes in macroeconomic variables due to the policy of reducing import duties on agricultural and agricultural industry sector are presented in Table 2.

Table 2. Indonesian Economic Performance due to the Import Duties Reduction

Economic Indicators	Initial	SIM1	SIM2
Real GDP	5279796	0.143	0.083
Consumption	3117567	0.033	0.095
Investment	1508831	0.743	0.176
Inflation (GDP Deflator)	1	-0.00018	-0.00001
Export	1487238	0.241	0.213
Import	1347756	0.193	0.201
Trade Balance	139482	0.699	0.33

Source: Author's Calculation (2018)

Table 2 reveals that reducing import duty by 50% in agricultural and the agricultural industry increased the real GDP by 0.143% and 0.083%, respectively. Cutting the import duty reduced the price of imported commodities, thereby increasing demands of imported commodities (raw-materials and end-products) in the domestic economy, led to a constantly high total supply of composite commodities in the domestic economy. This condition encouraged the creation of more activities in the domestic economy so that the real GDP continued to increase.

This finding was in line with that of Dollar and Kraay (2004), suggesting that trade openness increases economic performance. Trade openness had significant positive effects on economic growth in Tanzania (Hamad, Mtengwa, & Babiker, 2014); it also made significant positive effects on economic growth in Switzerland (Khobai & Chitauro, 2018). The growth was due to the efficiency gained through competition and productivity escalation.

The increase in the real GDP, as the result of import duty reduction policy in the agricultural sector, was significantly higher than that in the agricultural industry sector. Tariffs reduction in the agricultural sector decreased the price of imported agricultural commodities. This condition lowers the input costs for the agricultural industry, encouraging the output increment of the agricultural industry sector. This result means that both import outputs of agricultural and agricultural industry sector are expanding due to the tariff reduction policy in agricultural sector, consequently increasing the real GDP.

Table 2 exhibits that the import duty reduction policy in agricultural sector and the agricultural industry sector increased the consumption by 0.033% and 0.095%, respectively The increase in consumption was thought to be a consequence of three factors: (i) the decrease in composite commodity price; (ii) the income increase of households and corporates; and (iii) the increase availability of composite commodities in the domestic economy.

The consumption increment due to the import duty reduction policy in the agricultural sector was greater than that in the agricultural industry sector. This condition is presumed because Indonesia's agricultural commodities are primary commodities that do not have much product differentiation and can be substituted for imported agricultural commodities. Thus, the price decline of imported agricultural commodities did not significantly increase domestic consumption because consumers only changed their pattern from domestic agricultural commodities to cheaper imported agricultural commodities. In the meantime, agricultural industry commodities are relatively intensive commodities using capital with more product differentiation. Therefore, the price decline in agricultural industry commodities increases the imported commodity consumption. Meanwhile, domestic commodity consumption remains high, increasing total consumption.

Investments in the agricultural sector and the agricultural industry sector increased by 0.743% and 0.176%, respectively, due to the import duty reduction policy by 50%. The investment increment was driven by an increase in household income (by 0.082% in agricultural

sector and 0.127% in the agricultural industry sector) and the increase in corporate income (by 0.421% in the agricultural sector and 0.203% in the agricultural industry sector).

In terms of trade discrepancy, both export and import increased. However, the 0.687% export increase was smaller than the 0.717% import increase, reducing the trade balance surplus. This is in line with the increased foreign trade performance due to the import duty reduction, marked by the increase in imports, exports and the trade balance. The import performance in agricultural and the agricultural industry increased by 0.193% and 0.201%, due to import duty reduction by 50%. The import increase is allegedly due to the import duty reduction, causing imported commodities to be relatively cheaper than domestic commodities. Consequently, domestic demands for imported commodities increased.

The pattern changes in commodity demands encouraged domestic producers to reallocate resources to more efficient productive sectors, generally the primary and potential-export commodities, so that exports increased. The import duty reduction in agricultural and the agricultural industry increased exports by 0.241% and 0.213%. The increase in imported commodities availability, especially raw materials and auxiliary materials at lower prices in the domestic economy, provided incentives for domestic producers to produce more export commodities at lower costs with higher competitiveness. A higher increase in exports compared to the import would escalate the trade balance surplus. The trade balance surplus increase by 0.699% and 0.330%, due to the import duty reduction in both sectors.

Trade Transaction Cost Reduction

The economic performance due to trade transaction cost reduction is presented in Table 3.

Table 3. Indonesia's Economic Performance due to the Trade Transaction Cost Reduction

Economic Indicators	INITIAL	SIM3
Real GDP	5279796	0.701
Consumption	3117567	0.670
Investment	1508831	0.289
Inflation (GDP Deflator)	1	-0.00142
Export	1487238	0.072
Import	1347756	0.041
Trade Balance	139482	0.378

Source: Author's Calculation (2018)

The trade transaction costs reduction by 25% increased the real GDP by 0.701%. This finding is in line with Sakyi, Villaverde, Maza, and Bonuedi (2017) reporting that trade facilitation serves as an important channel through which trade affects economic growth. The real GDP increase was driven by the increase in consumption, investment, and trade balance surplus. The results indicate that trade transaction costs reduction increased the efficiency and productivity of domestic economic activities; thereby increasing the total availability of composite commodities at lower prices (indicated by deflation of 0.00142%).

The increase in real GDP due to the slashing of trade transaction costs is far greater than that attributable to the import duty reduction (around 5 to 8.5 times). This is presumably because reducing trade transaction costs has lowered the costs of domestic commodity trade transactions, which are greater than the decrease of imported commodity trade transaction costs. Thus, prices of domestic commodities at consumers' level become cheaper than imported commodities. This increases domestic commodity demands, while imported commodity demands also continue increasing. The increase of both commodity demands raise supplies of composite commodities in

the domestic economy, thereby encouraging the creation of new economic activities which then grow domestic economy.

The decrease in trade transaction costs also has increased domestic consumption by 0.67% (higher than the decreasing import duty). The consumption increase might be caused by: (i) the income increase (households, government, and companies); (ii) the decline in composite commodity prices; (iii) the increase in total commodity availability in the domestic economy. The increasing income and falling prices strengthen the purchasing power and consumption; while product availability raises the consumers' choices of commodity consumption.

Investment has increased by 0.289% due to the slashing of trade transaction costs. This condition was caused by increased income (households, government, and companies) to grow savings and increase investment. Meanwhile, inflation decreased by 0.00142% due to the reduction in trade transaction costs. This action created multiplier effects on the prices decline of raw and auxiliary materials as production inputs, further lowering the composite commodities' prices.

In terms of foreign trade, exports, imports, and the trade balance have increased by 0.072%, 0.041%, and 0.378%, respectively, due to a decrease in trade transaction costs by 25%. The declining trade transaction costs reduced the prices of composite commodities at consumer level; then, the composite commodity demands increased. The increase of exports due to trade transaction cost reduction was low because import duty rates decreased. This may be caused of trade transaction cost reduction in the domestic economy, causing the domestic trade transaction costs to be relatively cheaper than the export trade transaction costs. Thus, it provided incentives for domestic producers to increase supply in the domestic economy which was relatively larger compared to export supply (marked by increased production outputs).

The increase in imports due to trade transaction costs reduction was smaller than the import duty reduction. Domestic commodities more accepted trade transaction cost reduction in the domestic economy than imported commodities. Consequently, domestic commodities became cheaper than imported commodities. This condition increased domestic commodity demands, which were larger than imported commodity demands. Conversely, the import duty reduction was only accepted by the import commodities, causing the imported commodity prices was cheaper than the domestic commodities and leading to high import increments.

Combined policies of reducing import duty and trade transaction costs

The simulation results of the combined policies between import duty reduction in agricultural or the agricultural industry and the trade transaction costs reduction on economic performance are presented in Table 4.

Table 4. Indonesia's Economic Performance due to the Reductions of Import Duty and Trade Transaction Costs

Economic Indicators	INITIAL	SIM4	SIM5
Real GDP	5279796	0.850	0.786
Consumption	3117567	0.705	0.765
Investment	1508831	1.051	0.472
Inflation (GDP Deflator)	1	-0.00122	-0.00139
Export	1487238	0.314	0.286
Import	1347756	0.236	0.243
Trade Balance	139482	1.069	0.702

Source: Author's Calculation (2018)

The real GDP increased by 0.850% due to reducing import duty in agricultural and trade transaction costs; and 0.786% due to reducing import duty on agricultural industry and trade

transaction costs. This was driven by an increase in investment, consumption, and trade balance surplus. These improvements were the result of improved efficiency in domestic economy through expanding competition and maximizing productivity.

The consumption increased by 0.705% due to reducing import duty on agricultural and trade transaction costs, and 0.765% due to reducing import duty on agricultural industry and trade transaction costs. The increase was caused by: (i) price decline, (ii) increased income, and (iii) an increase in the availability of composite commodities in the domestic economy. Both the decreasing prices and the increasing household income increased real income and household purchasing power.

Investments have increased by 1.051% due to reducing import duty in agricultural and trade transaction costs; 0.472% due to reducing import duty in agricultural industry and trade transaction costs. This was caused by the increased incomes, escalated savings and subsequently increased total investment. The escalated domestic savings is driven by the increase in current trade surplus gap of 1.069% and 0.702%. The national saving increase by 1.015% was due to reducing import duty in the agricultural and trade transaction costs, and 0.697% was due to reducing import duty in agricultural industry and trade transaction costs; increasing the total investment by 1.051% and 0.472%.

On the trade side, the export, import, and trade balance increased significantly due to the combined policy. Exports increased more than imports. This result increased the trade balance surplus by 1.069% due to import duty reduction in agricultural and trade transaction costs reduction; and 0.702% due to both reducing import duty in agricultural industry and reducing trade transaction costs. The trade performance increased, caused of domestic economic efficiency resulted from declining distortion at the border (import duty reduction) and intra-region in the domestic economy (decreasing trade transaction costs).

The Impacts of Trade Policies on the Poverty Incidence

Changes in poverty were approached with poverty incidence indicators. The poverty incidence calculation due to the policies are presented in Table 5.

Import duty reduction

Table 5 exhibits that reducing import duty by 50% in the agricultural and agricultural industry reduced the poverty incidence in urban areas by 0.05%. However, poverty incidence increased by 0.12%. The import duty reduction by 50% in the agricultural industry reduced the poverty incidence in urban areas by 0.05% while in rural area remained unaffected. This indicates that the percentage of poor people in urban areas decreased due to the import duty reduction in agricultural or the agricultural industry, but the percentage of poor people in rural areas increased.

The poverty incidence at the national level increased by 0.04% due to the import duty reduction in agricultural but decreased by 0.02% due to the import duty reduction in the agricultural industry sectors. This means that the import duty reduction in agricultural increased the percentage of poor people at the national level, while the import duty reduction in agricultural industry reduced the percentage of poor people at the national level. It can be seen that urban households received benefits, but rural households relatively suffered losses due to the import duty reduction in the agricultural or agricultural industry sectors. This indicates a tradeoff between economic growth and poverty due to the import duty reduction in the agricultural sectors. The economic growth increased along with poverty incidence.

Therefore, implementing import duty reduction in both must be accompanied by complementary compensation policies for poor households and groups above the poverty line to prevent the poverty incidence in rural areas worsening.

Table 5. Poverty Incidence Profile before and after the Policies of Import Duty Reduction, Trade Transaction Cost Reduction, and the Combined Policies of both Reductions on Import Duty and Trade Transaction Costs.

Simulations	P_0		
	Urban+Rural	Urban	Rural
INITIAL	15.42	11.65	18.93
SIM1	15.46	11.60	19.05
SIM2	15.40	11.60	18.93
SIM3	15.10	11.50	18.46
SIM4	15.20	11.46	18.70
SIM5	15.08	11.45	18.48

Source: Author's Calculation (2018)

Rural households depending on the agricultural increased poverty in rural areas. The import duty reduction in the agricultural caused domestic commodity prices higher than imported commodities. This condition transferred household demands from domestic agricultural commodities to imported commodities; so that demands of domestic commodities declined and caused a contraction in agricultural sectors. This situation forced producers to re-allocate their production to more efficient sectors, especially in export promotion sectors. Unfortunately, less-skilled labor in the agricultural cannot easily move to experiencing expansion (generally the import promotion sectors). Therefore, the labor production factor in the agricultural based in rural areas would suffer losses due to the import duty reduction.

This finding was in line with the study by Davis and Mishra (2007), suggesting that the theory of Stolper-Samuelson was not always consistent with the empirical reality. The theory says that abundant production factors in a country will increase real income when a country opens their trade. If less-skilled labor is the abundant factor in developing countries, the labor will receive the most pro-poor benefits. According to them, (i) labor production factor is not easily moved as assumed in the Heckscher-Ohlin (HO) trade model; even though the comparative advantages will increase the income of unskilled labor if they can move from contracted to expanding sectors; (ii) in developing countries, high level protection (usually agriculture) generally use less-skilled labor. Trade liberalization might reduce protection for un-skilled workers, making them poorer. Meanwhile, according to Harrison (2006), globalization produces winners and losers among poor households. In the same region, liberalization may reduce income of rural agricultural producers and increase the consumers' real income in rural or urban areas for the same commodity.

Import duty reduction by 50% in the agricultural industry at the national levels, in urban and rural areas, declined the poverty due to the increased households' purchasing power as a result of falling prices of composite commodities in the domestic economy and rising incomes.

Trade transaction cost reduction

Reducing trade transaction costs by 25% dropped the poverty incidence in urban areas, rural areas, and at the national level by 0.15%, 0.47%, and 0.36 %. This indicates that the reduction of trade transaction costs decreased the percentage of poor people at all level - urban, rural, and national. The decline was caused by the price decrease of composite commodities and the increased income in each household group. Decreasing trade transaction costs reduced prices and increased the availability of composite commodities (domestic and imported) in the domestic economy. This outcome supported the creation of more economic activities which then escalated the households' income; thereby reducing the poverty incidence.

Rural households received greater benefits than urban households, marked by the decline in poverty incidence in rural areas. This might be due to the higher trade transaction costs in rural

areas than those in the urban areas due to low infrastructure. Therefore, the price decline and the increase of composite commodities availability in rural areas were greater than those in urban areas, causing households in rural areas be more profitable. Trade transaction cost reduction significantly decreased the rural commodity prices. Consequently, commodities from rural areas were cheaper than commodities from urban areas. It increased the rural commodity demands and expanded the sector. This aspect increased the labor income in the sector and declined poverty in rural areas.

Combined policies of import duty reduction and trade transaction cost reduction

Reducing both import duty and trade transaction costs overcame the negative impacts of poverty incidence. Poverty incidence in urban areas, rural areas, and at the national level decreased by 0.19%, 0.23%, and 0.22%, as a result of reducing import duty in agricultural and trade transaction costs; and decreased by 0.20%, 0.45%, and 0.34%, due to reducing import duty in agricultural industry and trade transaction costs. The percentage of poor people at all level - urban, rural, and national decreased due to the combined policies.

The poverty decline was caused by the price reduction in composite commodities and the increase of each household's income. The combined policies lowered prices and raised the availability of composite commodities; encouraging more economic activities that could increase the households' income and then declined the poverty incidence.

The poverty decline due to the combined policies of reducing trade transaction costs and import duty in agricultural industry was bigger than that in agricultural sectors. This is because the import duty reduction in the agricultural contracted in the and expanded the agricultural industry sectors. The labor production factor in the agricultural industry was generally skilled labor, which easily moved to expanding sectors, increasing income, and decreasing poverty.

Meanwhile, the import duty reduction in the agricultural contracted the agricultural; the income of less-skilled labor production factor in the sectors declined since the less-skilled labor did not easily move to expanding sectors. Thus, the total decline in poverty incidence was relatively small.

Rural households received bigger benefits than urban households due to both reduction policies. Low infrastructure made trade transaction costs in rural areas high. Reducing trade transaction costs of rural areas' commodities would expand rural-based sectors and increase the labor-production income. Besides, it will further decline poverty in rural areas.

The Impacts of Trade Policy on Income Distribution Inequality

Gini Ratio were applied to measure income distribution inequality as a measure of relative poverty. The calculation results are presented in Table 6.

Table 6. Income Distribution Inequality before and after the Policies of Import Duty Reduction, Trade Transaction Cost Reduction, and both Reductions.

Simulations	Gini Ratio		
	Urban+Rural	Urban	Rural
INITIAL	0.3680	0.3670	0.3000
SIM1	0.3695	0.3672	0.3015
SIM2	0.3683	0.3670	0.3003
SIM3	0.3665	0.3670	0.2985
SIM4	0.3680	0.3672	0.3000
SIM5	0.3668	0.3671	0.2988

Source: Author's Calculation (2018)

Import duty reduction

Reducing import duty by 50% in the agricultural increased income distribution inequality as indicated by Gini ratio at the national level, urban and rural areas with 0.0015%, 0,0002%, and 0.0015%. The increase of income distribution inequality was caused by a greater income decline in lower-income households in rural areas than in high-income group, further increasing the income gap between the two income-households. In urban areas, the decile-one household group experienced the smallest income increase, while the greatest income increase was experienced by the larger income group.

The import duty reduction in the agricultural industry increased the inequality of household income distribution at the national and rural levels (indicated by an increase of Gini ratio of 0.0003%); but in urban areas remained unchanged. The increase of income distribution inequality in rural areas was caused by the decreased income of low-income households (deciles 1 and 2) and the increased income of higher-income households. This condition widened the gap between the low-income households and the high-income households.

Trade transaction cost reduction

Reducing trade transaction costs by 25% lowered the Gini Ratio at the national and rural levels by 0.0015%. Gini ratio for urban areas did not change; it means cutting trade transaction costs reduced the income distribution inequality at the national and rural levels, but not in urban areas. Thus, rural households benefited more than urban households.

The decline of income distribution inequality in rural areas was because the costs in rural areas became cheaper than the trade transaction costs in urban areas. Then, rural-based sectors became more efficient and then expanded. The expansion led to the income increase in labor production factors; the increased income of low household groups reduced the income distribution inequality nationally.

Simulations	Gini Ratio		
	Urban+Rural	Urban	Rural
INITIAL	0.3680	0.3670	0.3000
SIM1	0.3695	0.3672	0.3015
SIM2	0.3683	0.3670	0.3003
SIM3	0.3665	0.3670	0.2985
SIM4 pert &TC	0.3680	0.3672	0.3000
SIM5 ind pert & TC	0.3668	0.3671	0.2988

Combined policies of reducing import duty and trade transaction costs

Reducing both import duty and trade transaction costs unchanged the Gini ratio at the national and rural levels, but increased in urban areas (due to reducing import duty in agricultural and trade transaction costs, and reducing import duty in the agricultural industry and trade transaction costs). Reducing both import duty and trade transaction costs lowered the Gini ratio at the national and rural levels, but increased in urban areas. It shows that the income distribution inequality in rural areas was better than that in urban areas, because less-skilled labor in rural areas earned better income due to the expansion of rural agricultural sectors.

Conclusion

The import duty reduction in agricultural improved economic performance (increase the real GDP, consumption, investment, and trade balance surplus). Poverty incidence declined in urban areas but increased in rural areas, and at the national level. The income distribution inequality

increased at all level - urban, rural, and national. The high-income households benefited, but the low-income households suffered an income loss.

The import duty reduction in agricultural industry also improved economic performance. The poverty incidence declined at the national level and in urban areas but was neutral in rural areas. The income distribution inequality increased in rural areas, at the national level, but was neutral in urban areas. Poor urban households gained increased income, but those in rural areas got no benefit from the liberalization in the agricultural sectors. The high-income households experienced greater income increase than the lower-income households.

The trade transaction cost reduction escalated the Indonesian economic performance. Poverty incidence declined at all levels. The income distribution inequality lowered in rural areas and at the national level but was neutral in urban areas.

The combined policies of reducing import duty in agricultural and trade transaction costs increased the economic performance. The poverty incidence decreased at all level - urban, rural, and national. The income distribution inequality hiked in urban areas but was neutral in rural areas and at the national level. Meanwhile, the combined policies in the agricultural industry increased the economic performance. The combined policies lowered the poverty incidence at all levels. The income distribution inequality increased in urban areas but decreased in rural areas, and at the national level. Reducing trade transaction costs is better than trade liberalization. However, applying both policies eliminated negative impacts and increased the positive impacts of each policy.

Thus, the study recommends: (1) implement trade liberalization policies in sectors that have positive impacts, including the agricultural and the agricultural industry sectors. However, the implementation should protect poor households and groups above the poverty line in rural areas; (2) support trade transaction cost reduction by improving transportation infrastructure and simplifying trade bureaucracy along the products' distribution chain from producers to consumers. This improves economic performance, declines the poverty incidence and reduces the income distribution inequality; (3) combine trade liberalization with both import duty reduction and trade transaction cost reduction to minimize negative impacts and increase the positive impacts.

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Attachment 1. The Structure of SAM Model CGE PEP 1-1 *version 2.0*