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Tracing the Economic Impacts of the 2025 US Tariff Increases and Evaluating Possible Responses

An analysis for Papua New Guinea

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INTRODUCTION

Restrictions on global trade can contribute to adverse economic outcomes in developing countries. Perverse outcomes include reduced export opportunities and higher input costs for essential goods. Policymakers in Papua New Guinea (PNG), as in other developing countries across the world, have therefore been concerned about global trade uncertainty as geopolitical tensions and protectionist policies have escalated throughout 2025. In April 2025, the United States (US) implemented a new tariff policy that included a baseline 10% tariff on goods from all countries, including PNG, along with higher "reciprocal tariffs" on countries with large trade deficits. The PNG government confirmed it would not retaliate but would instead pivot trade toward Asia-Pacific partners such as China, Indonesia, and Japan. In July 2025 PNG's exports to the US were subjected to a 15% reciprocal tariff under an updated U.S. tariff schedule. In the ensuing months, some countries managed to finalize bilateral trade deals with US and reduced the tariff rates, while others are still under negotiations. According to the US trade policy 2025, the increment in reciprocal tariff on PNG is a result of the country's failure to take sufficient steps to align with the US (The White House, 2025)¹

In this note, we provide a rapid assessment of the potential impacts of US tariff hikes on PNG's economy, specifically on trade, GDP, and household income. We consider the two following scenarios:

- ▶ Scenario 1—only US imposes additional tariffs (10 percent, 15 percent, and 30 percent), and PNG does not reciprocate.
- ▶ Scenario 2—PNG reciprocates with equivalent tariffs on the commodity import from the US.

This note provides a rapid assessment of impact of US tariff policy on key macroeconomic indicators of PNG. This also helps derive quick policy insights into whether it would be advantageous for PNG to respond with higher tariffs or to accept the US's higher tariff. Though US has imposed a 15% tariff on PNG's export to US, due to uncertainty regarding the level of protectionism among the countries, this analysis also considers multiple tariff rates to understand the extent of economic losses in PNG due to relatively higher US tariff in the future.

TRADE PATTERNS BETWEEN PNG AND THE US

PNG has a trade surplus overall, but it is a net importer from the US. According to World Integrated Trade Solution (WITS) database (World Bank, 2025)², the US imported USD 85 million worth of goods from PNG and exported USD 94 million to PNG in the year 2024. The US accounts for 0.6 percent of PNG's merchandise exports, and 2 percent of PNG's merchandise imports. Table 1 shows that coffee and cocoa account for almost 54 percent and 23 percent of PNG's total export to the US., while machinery, motor vehicles, and equipment consist of 23 percent, 22 percent and 29 percent of PNG's import from US. The WITS data also shows that in 2024, PNG imposed 4 percent to 20 percent tariffs on clothing, metals, and chemical products imported from US. Meanwhile, it imposes almost no tariff on equipment, and energy imports from US (Table 1). In contrast, US imposed almost no tariff on the products imported from PNG in 2024. It is also important to note that PNG imposed an average 1.5 percent

¹ <https://www.whitehouse.gov/presidential-actions/2025/07/further-modifying-the-reciprocal-tariff-rates/>

² <https://wits.worldbank.org/CountryProfile/en/Country/USA/Year/2022/TradeFlow/EXPIMP/Partner/PNG/Product/All-Groups#> Last accessed 9th November 2025.

tariff on its imports from US as against the average 2.7 percent tariff from rest of the world (World bank, 2025).

Table 1: Major commodities traded between PNG and the United States

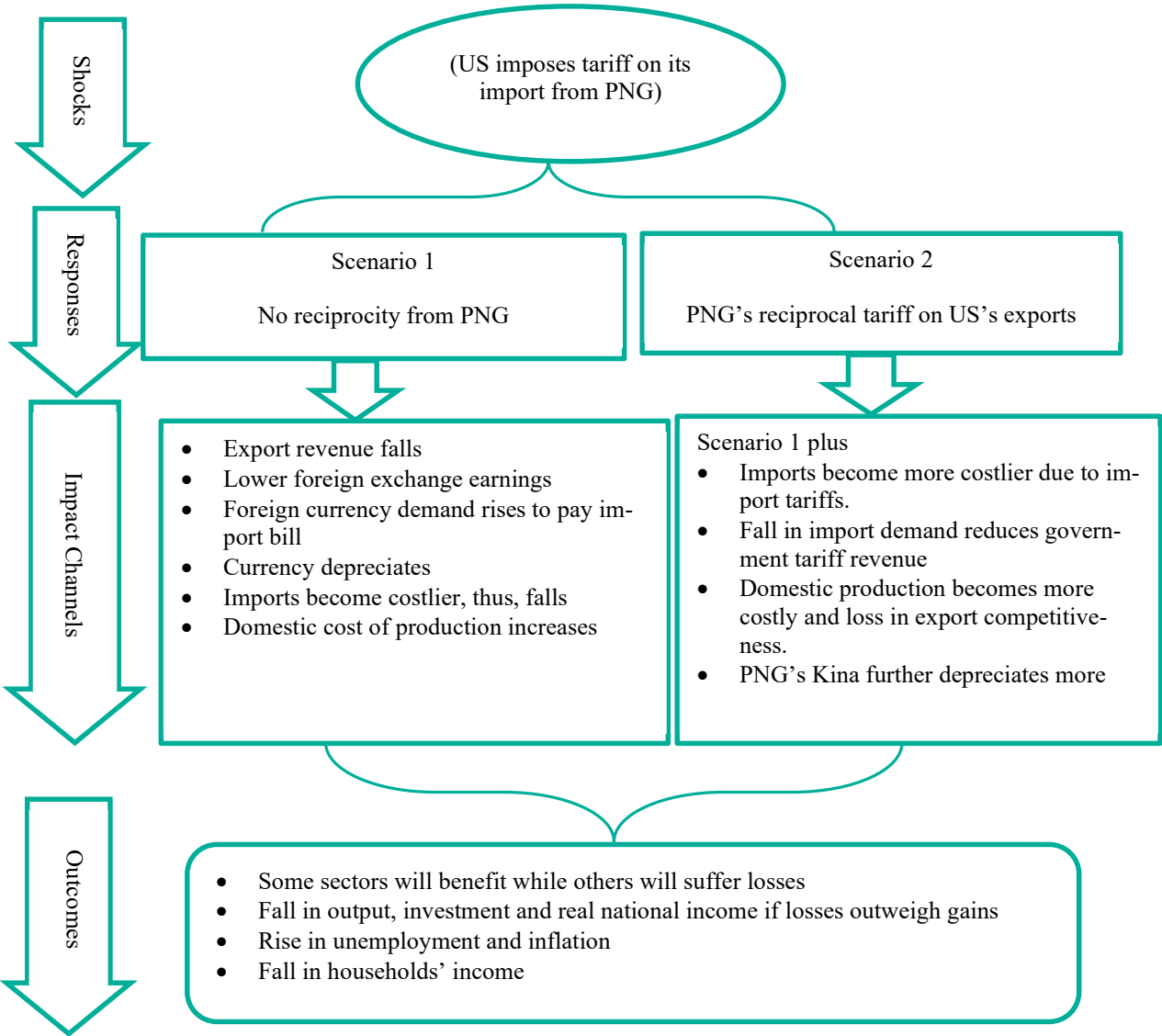
Commodities Ex-ported to US	% Share in Ex- port to US	US Tariff Rate on PNG (%)	Commodities imported from US	% Share in im- port from US	PNG Tariff Rate on US (%)
Coffee	53.5	0.0	Machinery and other equip- ment	22.7	0.0
Cocoa	22.7	0.0	Motor vehicles	21.5	0.0
Motor vehicles	8.6	0.0	Electrical equipment	19.4	0.0
Fruit and vegetable processing	7.0	0.0	Crude oil	11.2	0.0
Other manufacturing	1.6	0.0	Other chemicals	8.1	7.5
Machinery and other equipment	1.4	0.0	Basic metals	3.0	9.4
Capture fisheries	1.4	0.0	Metal products	1.9	6.6
Electrical equipment	0.8	0.0	Rubber and plastic products	1.8	4.2
Coffee processing	0.7	0.0	Fats and oils	1.5	0.0
Animal feed	0.7	0.0	Clothing	1.3	20.0
Top 10 Commodities	98.5		Top 10 Commodities	92.3	
Total Export to US (1000 US\$)	85,084		Total Import from US 1000 US\$)	94,105	
% share of total ex- port	0.6		% share of total import	2.0	
Total Export (1000 US\$)	1,40,63,126		Total Import (1000 US\$)	46,71,946	

Source: WITS database, <https://wits.worldbank.org/CountryProfile/en/Country/USA/Year/2022/TradeFlow/EXPIMP/Partner/PNG/Product/All-Groups#> Last accessed 9th November 2025.[World Bank, 2025]

POLICY IMPACT PATHWAYS

In a complex economic system multiple economic activities and institutions interact together to maximize their economic priorities. Therefore, any external shock in the economic system will affect these activities and institution through direct and indirect channels. In the following Figure 1 we describe most important channels through which bilateral tariff policy affects the economic outcome of the economy.

Figure 1: Policy impact pathways corresponding to different scenarios



METHODOLOGY

In this study, we have calibrated International Food Policy Research Institute’s (IFPRI) standard computable general equilibrium (CGE) model to a recent economywide database of PNG. The CGE model is written as a set of simultaneous equations to define behavior of different economic actors. Part of this behavior follows simple rules captured by fixed coefficients (for example, ad valorem tax rates). In the case of production and consumption decisions, behavior is captured by non-linear, first-order optimality conditions. The equations also include a set of constraints that must be satisfied by the system, but which are not necessarily considered by any individual actor. These constraints cover markets (for factors and commodities) and macroeconomic aggregates (balances for savings-investment, the government budget, and the current-account of the rest of the world) (Lofgren et. al. 2002). The price system in the model determines the equilibrium domestic price of commodities through market clearance. The world

price of exports and imports are assumed to be exogenously fixed and any changes in the world prices due to any external factor will change the domestic market price of the commodities. This means, if world price of a commodity increases, exporters earn more revenue from exporting that commodity and vice versa. In contrast, rise in world price makes imported commodities costly in the domestic market and vice versa. Apart from world price increase, tariff on imports will make imported commodity costly to the domestic market. Since this study is based on the IFPRI's standard CGE model, a detailed description of this model is available in Lofgren et. al. (2002), and Thurlow (2008). However, a brief description of the adjustments that we have made for this study purpose is given in the following box 1.

Box 1: Key equations adjusted to simulate the tariff policy

Equation 1 and 2 describe relationship between world price and domestic price of imports and exports.

Equation 1: Domestic Price of Imports

$$PM_c = pwm_c \cdot (1 + tm_c) \cdot EXR + \sum_{c'} PQ_c \cdot icm_{c',c} \tag{1}$$

Equation 2: Domestic Price of Exports

$$PE_c = pwe_c \cdot (1 - te_c) \cdot EXR - \sum_{c'} PQ_c \cdot ice_{c',c} \tag{2}$$

pwm_c world price of import of commodity “c” which is assumed as exogenous in this model.

pwe_c world price export commodity “c” which is assumed as exogenous in this model.

EXR local currency exchange rate per unit of foreign currency.

$icm_{c',c}$ cost of trade and transport inputs (c') per unit of import.

$ice_{c',c}$ cost of trade and transport inputs (c') per unit of export.

tm_c tariff per unit of import.

te_c export tax net of subsidies per unit of export.

PE_c domestic price of exports

PM_c domestic price of imports

The domestic price of imported commodities (PM_c) in equation 1 indicates the price per unit of imported commodities paid by the consumer of importing country in local currency. Again, the domestic price of exports (PE_c) is the exporters' revenue per unit of export of a commodity to the rest of the world (See Box 1). Since this study adopts a single country model, any tariff changes in the foreign country are captured through the changes in world export price. This implies, if the US imposes additional tariff on its imports from PNG, its products will become costly in the US market, and US consumers will purchase less product from PNG. As a result, the revenue of PNG's exporters will fall. Therefore, we have adjusted world price of export to simulate tariff shock imposed by the U.S. government on PNG's export. The details are given in the following equation 3.

$$pwe_{c,sim} = pwe_c \cdot (1 \pm \Delta ustarif_{sim} \cdot expshr_c^{US}) \tag{3}$$

$pwe_{c,sim}$ world export price after U.S. imposed additional tariff on PNG's export to US
 $\Delta ustarif_{sim}$ proposed change in import tariff by U.S. government on PNG' products
 $expshr_c^{US}$ share of US on PNG's total export.

The tariff rate, presented in equation 1, is the average tariff rate imposed on total merchandise imports. Therefore, to simulate PNG's reciprocal tariff on imports from the US we have adjusted import tariff in the following equation 4.

$$tm_{c,sim} = tm_c * (1 + \Delta mtarif_{sim} * usshr_c) \quad (4)$$

$tm_{c,sim}$ revised tariff rate after government of PNG imposes additional tariff/concession on U.S. products
 $\Delta mtarif_{sim}$ proposed increase in tariff rate on imports from U.S.
 $usshr_c$ share of united states on PNG's import

The basis of our CGE model is Social Accounting Matrix (SAM) for PNG for the year 2023. Initially IFPRI published a SAM for PNG for the base year 2019, which is later updated with the national accounts data for the year 2023 (IFPRI, 2022)³. This SAM is an economywide database of PNG that considers monetary transactions between producers, consumers, households, government and rest of the world. IFPRI (2022) discusses the data and procedure to develop this SAM which accounts for 73 activities and commodities, out of which 30 are in agriculture, 28 in industry, and 15 in the service sector. Households are disaggregated into per capita expenditure quintiles, and each quintile is classified into two broad categories – rural farm households, and urban households.

To solve this model for PNG, we assume there is unemployment in the low skilled workers and high skilled workers are fully employed but all the workers freely mobile across activities. The capital supply is assumed to be non-convertible and hence fully employed across activities. We also assume that government savings and foreign exchange rates are flexible. Therefore, if foreign savings fall due to external shocks, a depreciation of the real exchange rate will correct the balance of payment of the domestic economy. Finally, we have assumed fixed savings rates for all non-government institutions including households and the quantity of each commodity in the investment bundle is multiplied by a flexible scalar to ensure that the investment cost equals the savings value.

RESULTS AND DISCUSSIONS

Table 2 presents macroeconomic results derived from the CGE model. Here, we have analyzed four key macroeconomic indicators (i.e. Export, Import, GDP, and households' income) under various tariff policy scenarios. Since the US has already imposed 15 percent tariff on its imports from PNG's, most of our analysis presented in this section surrounds 15 percent tariff. However, the purpose of presenting results corresponding to 10 percent, and 30 percent tariff rates is to provide some policy insights amidst frequent revision in the tariff policy by the US in 2025.

It is observed from Table 2 that, due to 15 percent tariff, the GDP of PNG will fall by 0.02 percent provided PNG does not retaliate with reciprocal tariff (Scenario 1). If PNG reciprocates with 15 percent

³ The 2019 SAM is available in the like: <https://cgspace.cgiar.org/items/90f939be-625f-46fa-898f-3a5ab1f2bb34>. The 2023 SAM for PNG is forthcoming.

tariff on its imports from US, GDP will fall by 0.03 percent (Scenario 2). Further, if US imposes 30 percent tariff, the GDP of PNG will fall by 0.04 percent in scenario 1 and 0.07 percent in scenario 2.

Table 2 indicates that due to a 15 percent additional US tariffs, PNG’s total exports fall by 0.01% and this may fall further by 0.03% if the tariff rate increases to 30 percent. Given the US tariff, if PNG retaliates with reciprocal tariff on its imports from the US, PNG’s total export will fall by 0.03 percent, 0.05 percent, and 0.10 percent respectively corresponding to 10 percent, 15 percent and 30 percent reciprocal tariff rates. The fall in total exports results in the fall in foreign currency reserve and depreciation of local currency and it is observed from the rise in exchange rates (foreign currency/local currency) under scenario 1 in Table 2. Imports become costly due to local currency depreciation. In Scenario 1, the import demand in PNG will fall at the rate of 0.05 percent, 0.08 percent, and 0.15 percent, corresponding to different tariff rates under Scenario 1. Again, the reciprocal tariff by PNG will make imports from US costly and as a result the fall in imports is higher under scenario 2 as compared to Scenario 1 (Table 2). Although the depreciation of local currency has favorable impact on exports, the costly imports of intermediate input increases cost of production in the domestic market and become less competitive in the world market. As a result, we observe fall in exports more under Scenario 2 than scenario 1 (Table 2).

The fall in total imports of PNG reduces tariff revenue. As a result, we observe fall in government expenditure in both the scenarios (Table 2). Again, though the fall in imports is higher in scenario 2, due to higher reciprocal tariff is fall in government expenditure is less in scenario 2 than in scenario 1. Again, under scenario 1, the private consumption falls by 0.03 percent, 0.05 percent, and 0.09 percent depending on the tariff rates imposed by US. In case PNG retaliates with reciprocal tariff (scenario 2), private consumption will fall more than that observed in scenario 1 (Table 2). The fall in export demand and costly imports reduce domestic production which further reduces demand for labor and capital input. All these leads to fall in income of the households which in turn reduces private consumption expenditure and finally the GDP in PNG under both the scenarios.

Table 2: Impact on macro indicators

Macro Indicators	Scenario 1: US Tariff rates			Scenario 2: PNG’s reciprocate tariff rates		
	USA 30%	USA 15%	USA 10%	PNG 30%	PNG 15%	PNG 10%
Private Consumption	-0.09	-0.05	-0.03	-0.15	-0.07	-0.05
Investment	-0.01	-0.01	-0.01	-0.03	-0.02	-0.01
Government Expenditure	-0.06	-0.03	-0.02	-0.04	-0.02	-0.01
Export	-0.03	-0.01	-0.01	-0.10	-0.05	-0.03
Import	-0.15	-0.08	-0.05	-0.26	-0.13	-0.09
Gross Domestic Product	-0.04	-0.02	-0.02	-0.07	-0.03	-0.02
Exchange Rate	0.07	0.04	0.03	-0.01	0.00	0.00

The bilateral tariff policies between US and PNG have a differential effect across different sectors. In Table 3, we have listed key sectors in PNG whose GDP has fallen relatively higher rate corresponding to different rates of tariff. Since US tariff policy in 2025 targets only merchandise trade, the agriculture and

manufacturing sectors in PNG are affected more than the service sector due to this policy. As observed from Table 3, due to 15 percent US tariff under scenario 1, the manufacturing sector's GDP falls by 0.17 percent followed by 0.10 percent fall in agricultural GDP and 0.03 percent fall in service sector GDP. Among the manufacturing sectors food processing (like fruits & vegetables, coffee & tea processing, and other food processing), machinery and equipment sectors are worse affected, and their level of impact depends on the rate of tariff US imposed on these commodities (Table 3). Again, as the food processing sectors are dependent on primary input supply from agriculture sector, higher decline in GDP is observed for tea leaf, cocoa, spices and other crops sectors within the agriculture sector. Further, if PNG retaliates with reciprocal tariff (i.e. scenario 2) the GDP decline in manufacturing sector will be less than the decline observed under only US tariff scenario (i.e. scenario 1). For example, under scenario 1, 15 percent US tariff rate will cause 0.17 percent fall in the manufacturing sector GDP, while this decline will be 0.14 percent if PNG retaliates with 15 percent tariff (Scenario 2). In scenario 2, the food processing sector will observe more decline in its GDP, whereas the machinery and equipment sectors will observe less fall in their GDP as compared to scenario 1. However, total GDP of PNG will decline more under scenario 2 than scenario 1. Therefore, one can argue that US tariff will cause decline in GDP of PNG, but this loss will be more if PNG retaliates with reciprocal tariff.

Table 3: Impact of bilateral tariff rates on sector of PNG's economy

Sectors	Scenario 1: US Tariff			Scenario 2: PNG's Reciprocal Tariff on US		
	USA 30%	USA 15%	USA 10%	PNG 30%	PNG 15%	PNG 10%
Total	-0.04	-0.02	-0.02	-0.07	-0.03	-0.02
Agriculture	-0.19	-0.10	-0.07	-0.23	-0.11	-0.07
Tea leaf	-2.53	-1.30	-0.88	-2.60	-1.34	-0.90
Cocoa	-6.16	-3.15	-2.12	-6.29	-3.21	-2.16
Other crops (Spices etc.)	-0.61	-0.30	-0.20	-0.72	-0.35	-0.22
Manufacturing	-0.33	-0.17	-0.11	-0.27	-0.14	-0.09
Fruit & vegetable processing	-5.24	-2.70	-1.82	-5.36	-2.76	-1.85
Coffee processing	-2.52	-1.34	-0.91	-2.53	-1.34	-0.91
Tea processing	-2.60	-1.34	-0.90	-2.67	-1.37	-0.92
Other foods	-1.42	-0.74	-0.50	-1.51	-0.79	-0.54
Metals, machinery & equipment	-1.27	-0.65	-0.44	-0.87	-0.45	-0.30
Electrical equipment	-1.20	-0.60	-0.40	-0.61	-0.30	-0.20
Vehicles & transport equipment	-4.89	-2.51	-1.69	-4.55	-2.34	-1.57
Services	-0.03	-0.02	-0.01	-0.05	-0.02	-0.02

The fall in agriculture and food processing sectors GDP results fall in rural households' consumption more than the fall in urban households' consumption expenditure (See Figure 2a) under both scenarios. In scenario 1, the rural households will experience a 0.09 percent reduction in consumption expenditure corresponding to a 15 percent tariff rate and if tariff rate go up to 30 percent the fall in consumption

expenditure would be 0.17 percent. In contrast, the consumption expenditure of urban households will fall by 0.03 percent even if 30 percent tariff is imposed (Figure 2). Moreover, poor households are affected most under both the tariff scenarios presented in this study. As observed from the figure 2b that under scenario 1 bottom 20% households' consumption expenditure will fall by 0.07 percent corresponding to US 15 percent tariff, whereas the top 20 percent households will observe 0.04 percent fall in consumption expenditure under same scenario. Again, if PNG retaliates with reciprocal tariffs, households' expenditure will fall more in all other tariff rates expect 30 percent tariff rate. For example, if US imposes 30 percent tariff and PNG does not retaliate (Scenario 1), the bottom 20 percent households will observe 0.14 percent fall in consumption expenditure as compared to 0.07 percent fall in consumption expenditure corresponding to PNG's 30 percent tariff retaliation scenario (scenario 2) (See Figure 3).

Figure 2: Impact on households' consumptions across regions

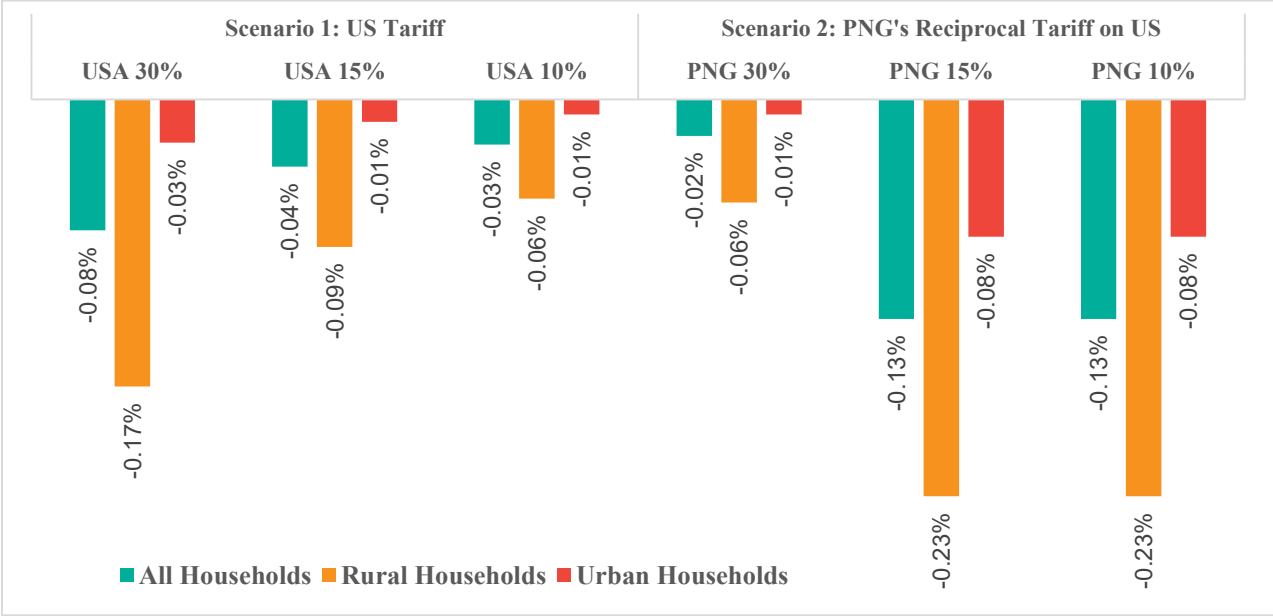
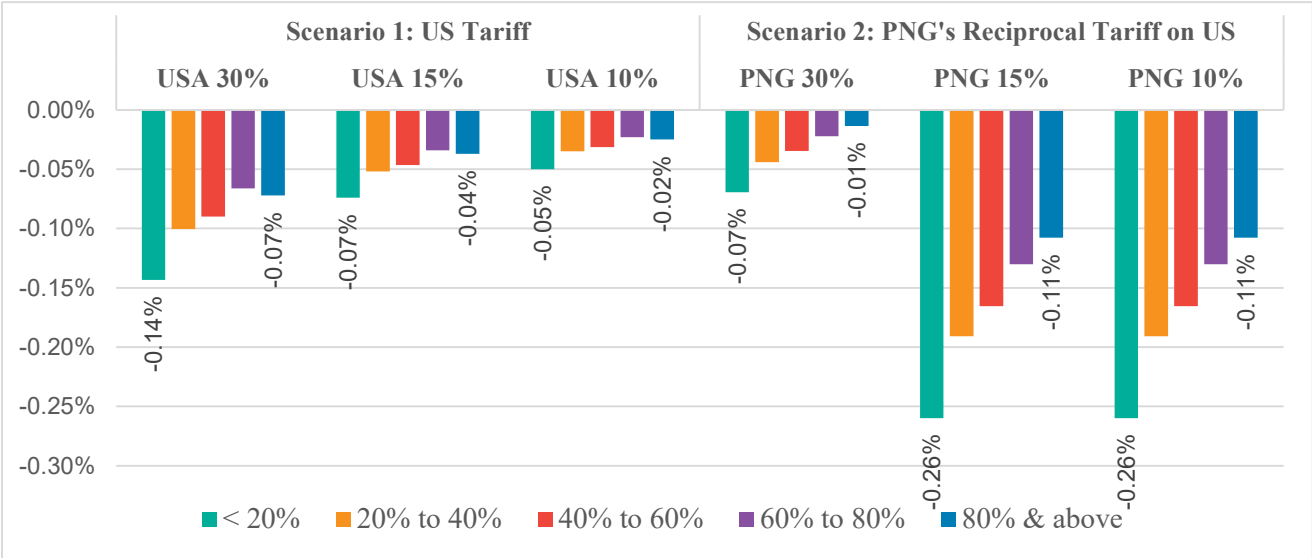


Figure 3: Impact on households's consumption across expenditure quintiles



[Note: Legends indicates households' quintiles. "<20%" - Quintile 1 (bottom 20% households), "20%-40%" - Quintile 2

households' group "40%-60%" Quintile 3 households' group, "60% - 80%" - Quintile 4 households' group, "80% & above" - Quintile 5 households]

CONCLUSION

The above analysis provides following policy insights:

- ▶ Since the US is not a significant trade partner of PNG, a 15 percent US tariff causes a meagre decline in GDP even if PNG retaliates with a 15 percent tariff on its import from the US. Moreover, if US imposes a 30 percent tariff on PNG, the fall in PNG's GDP will still be less than half a percent.
- ▶ Given a 15 percent US tariff, PNG's retaliation with reciprocal tariff will have a more adverse impact on the poorest households than on wealthier households. However, if US increases its tariff further up to 30 percent, tariff retaliation by PNG will have less impact on its households than the retaliation with 15 percent and 10 percent reciprocal tariff by PNG.
- ▶ Though tariff retaliation compensates for loss in GDP for some manufacturing sectors, it will be worse for the agriculture and food processing sectors.

Therefore, we can argue that the current 15 percent US tariff on PNG's exports to US will have insignificant impact on its overall macroeconomic performance and tariff retaliation will make it worse for the PNG economy. Therefore, a strategy for PNG would be to accommodate the 15 percent US tariff on PNG exports and find potential trade partners to compensate for the anticipated loss due to fall in exports to US.

While the study provides a rapid assessment of US tariff policy on key macroeconomic indicators and households income of PNG, conclusion of this study is qualified by several caveats. Firstly, we have utilized a country-level CGE model rather than a global-level model to assess the impact of tariffs on GDP, and income at the household level in PNG. A single country-CGE model is weak to capture the issue of trade diversification across countries and the behavioral change in demand in the foreign country. Therefore, we have adjusted world export price to simulate tariff shock imposed by the US on PNG's export. Secondly, we have used the average collective rate as the measure of effectively applied tariff rates. Lastly, it is crucial to mention that our model is designed for short-term analysis and does not provide insights into the long run bilateral trade relationship between the United States and PNG.

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