



DEWAN EKONOMI NASIONAL
REPUBLIK INDONESIA

DEN's Practical Utilization of the GTAP Model

11 December 2025



About DEN & GTAP

- Dewan Ekonomi Nasional (DEN) or National Economic Council (NEC), Republic of Indonesia is an advisory arm of the Government with the President as its client.
- The reciprocal tariff is the perfect use case for the GTAP model.
- Prof. Arief Anshory Yusuf and I (Imed Krisna) are no stranger to GTAP, GEMPACK, and some other CGE models.
- Some exercises we did:
 - Reciprocal tariff shock
 - Energy purchasing scenario
 - Potential impact of the IEU-CEPA



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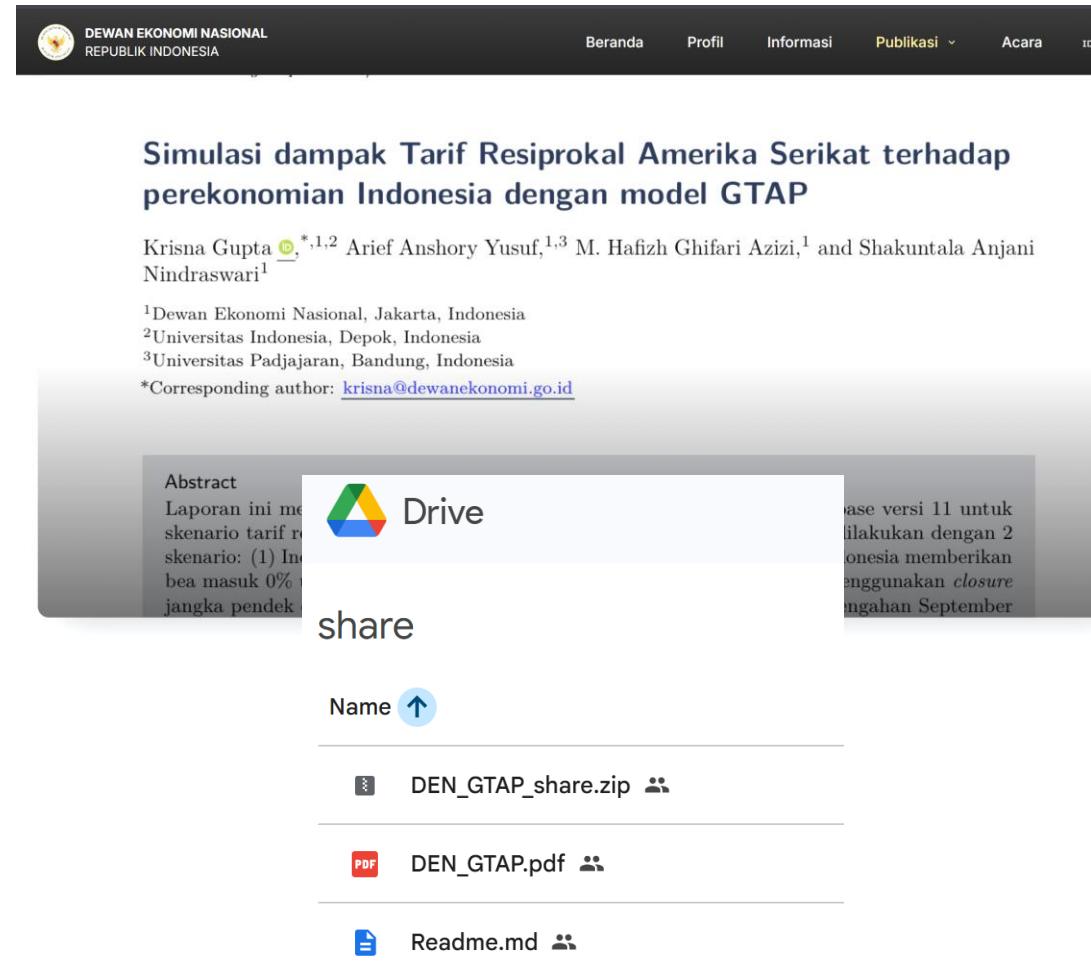
M. Firman H.
Member



S. Hario Seto
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The Reciprocal Tariff Exercise

- 31 Regions x 64 Sectors (oil & gas is aggregated) x 5 factors of production.
- Due to constant change in tariffs, we wrote two other programs:
 - A small program (consists of tablo and HAR database) to calculate the tariff shock.
 - A small program (sltoht & python) to quickly extract most important results to csv and png files.
- We have disseminated the early results to other government agencies as well as think-tanks
- All are zipped, written, and soon to be published at DEN website, currently with September tariffs.



The screenshot shows a research paper page from the Dewan Ekonomi Nasional website. The title is "Simulasi dampak Tarif Resiprokal Amerika Serikat terhadap perekonomian Indonesia dengan model GTAP". The authors are Krisna Gupta, Arief Anshory Yusuf, M. Hafizh Ghifari Azizi, and Shakuntala Anjani Nindraswari. It includes author affiliations, a corresponding author email, and a Google Drive sharing interface.

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Beranda Profil Informasi Publikasi Acara

Simulasi dampak Tarif Resiprokal Amerika Serikat terhadap perekonomian Indonesia dengan model GTAP

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Abstract
Laporan ini memberikan analisis mengenai dampak skenario tarif resiprokal Amerika Serikat terhadap perekonomian Indonesia menggunakan model GTAP. Skenario: (1) Indonesia menerapkan tarif bea masuk 0% pada sektor manufaktur selama jangka pendek dan (2) Indonesia menerapkan tarif bea masuk 0% pada sektor manufaktur selama jangka panjang. Analisis menunjukkan bahwa skenario (1) akan memberikan dampak yang lebih besar dibandingkan dengan skenario (2). Dalam skenario (1), terjadi penurunan produksi di sektor manufaktur sebesar 10%, sedangkan dalam skenario (2) penurunan produksi sebesar 5%. Selain itu, skenario (1) juga menyebabkan penurunan pendapatan negara sebesar 2%, sedangkan skenario (2) hanya sebesar 1%. Hasil analisis menunjukkan bahwa penerapan tarif resiprokal Amerika Serikat akan memberikan dampak negatif bagi perekonomian Indonesia, terutama pada sektor manufaktur.

Drive share

base versi 11 untuk dilakukan dengan 2 onsesia memberikan enggunaan closure angahan September

Name

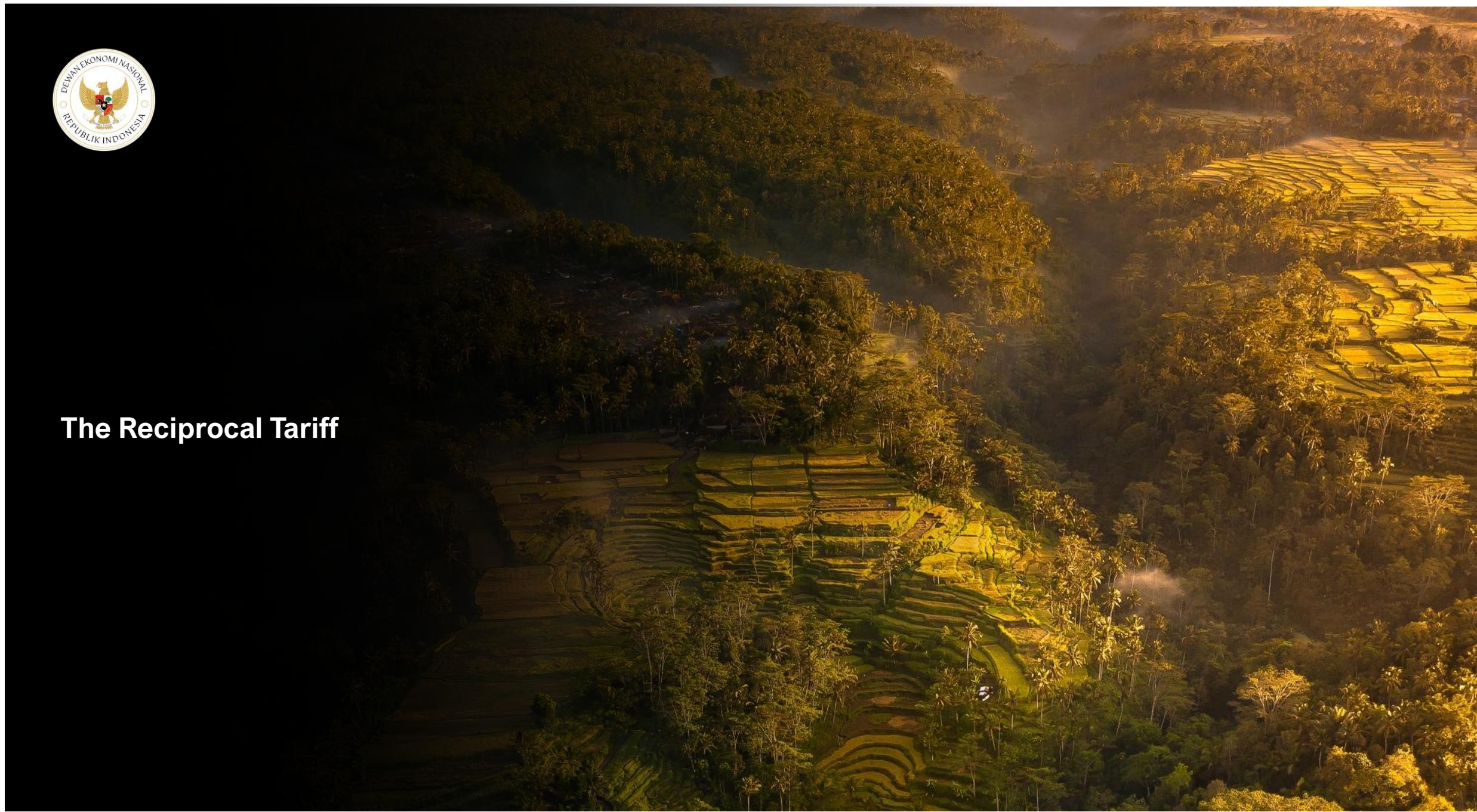
 DEN_GTAP_share.zip 

 DEN_GTAP.pdf 

 Readme.md 



The Reciprocal Tariff



Scenarios

Do Nothing



Tariff Indonesia: 32%

Tariff Vietnam: 20%

Make a Deal

VS



Tarif Indonesia: 19%

Cost: Tarif 0% for USA

The simulation

The standard **GTAP Model is a multiregion, multisector, computable general equilibrium model**, with perfect competition and constant returns to scale. Innovative aspects of this model include:

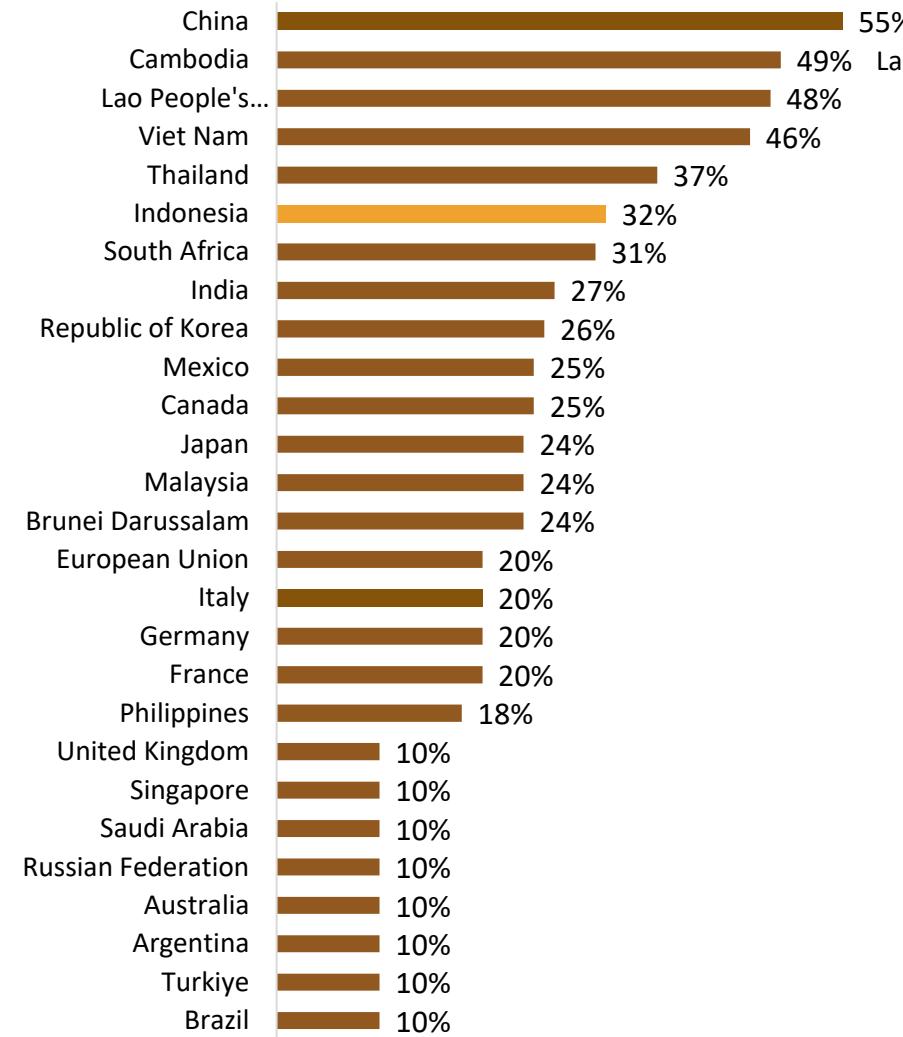
- The treatment of private household preferences using the non-homothetic CDE functional form.
- The explicit treatment of international trade and transport margins. Bilateral trade is handled via the Armington assumption.
- A global banking sector which intermediates between global savings and consumption.

- We run various **closure**, but ended up with Short run /unemployment closure:
 - Swapping qe with pefactreal for both labor.
 - We add no sectoral tariffs. Strictly only reciprocal.
 - No treatment for non-tariff measures

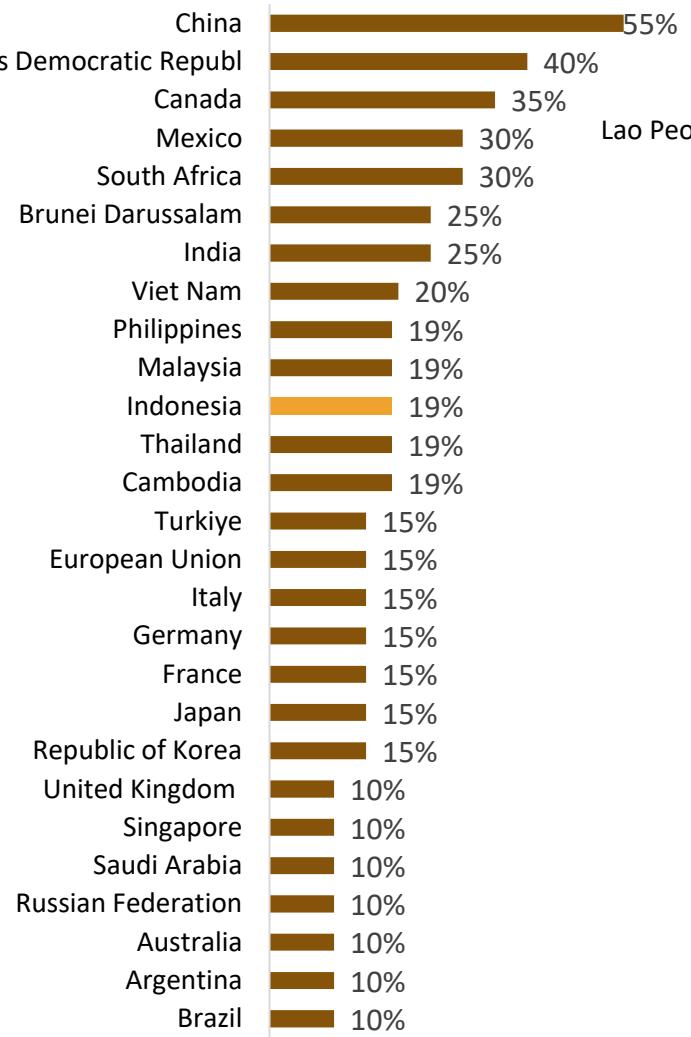


Tariff Reciprocal Development: differences are getting smaller

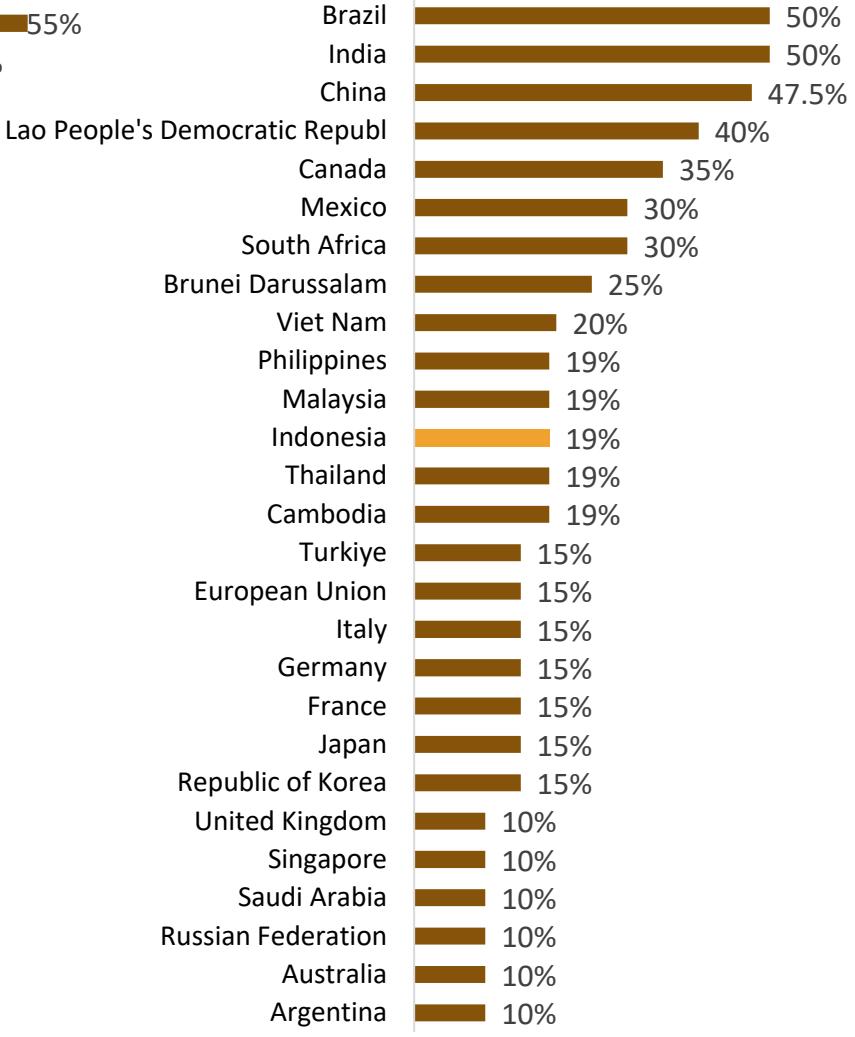
2 April
(%)



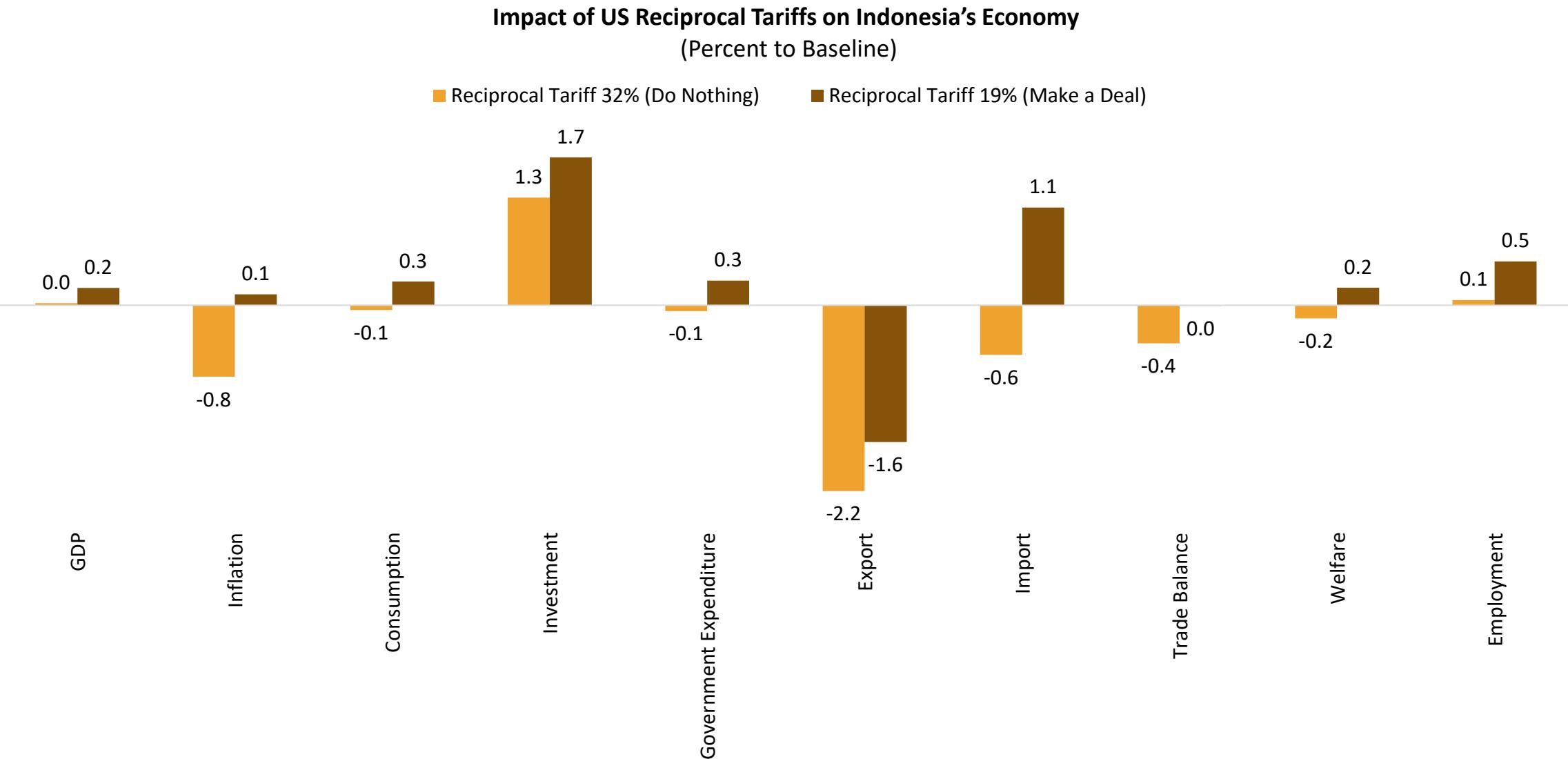
16 Juli
(%)



24 November
(%)



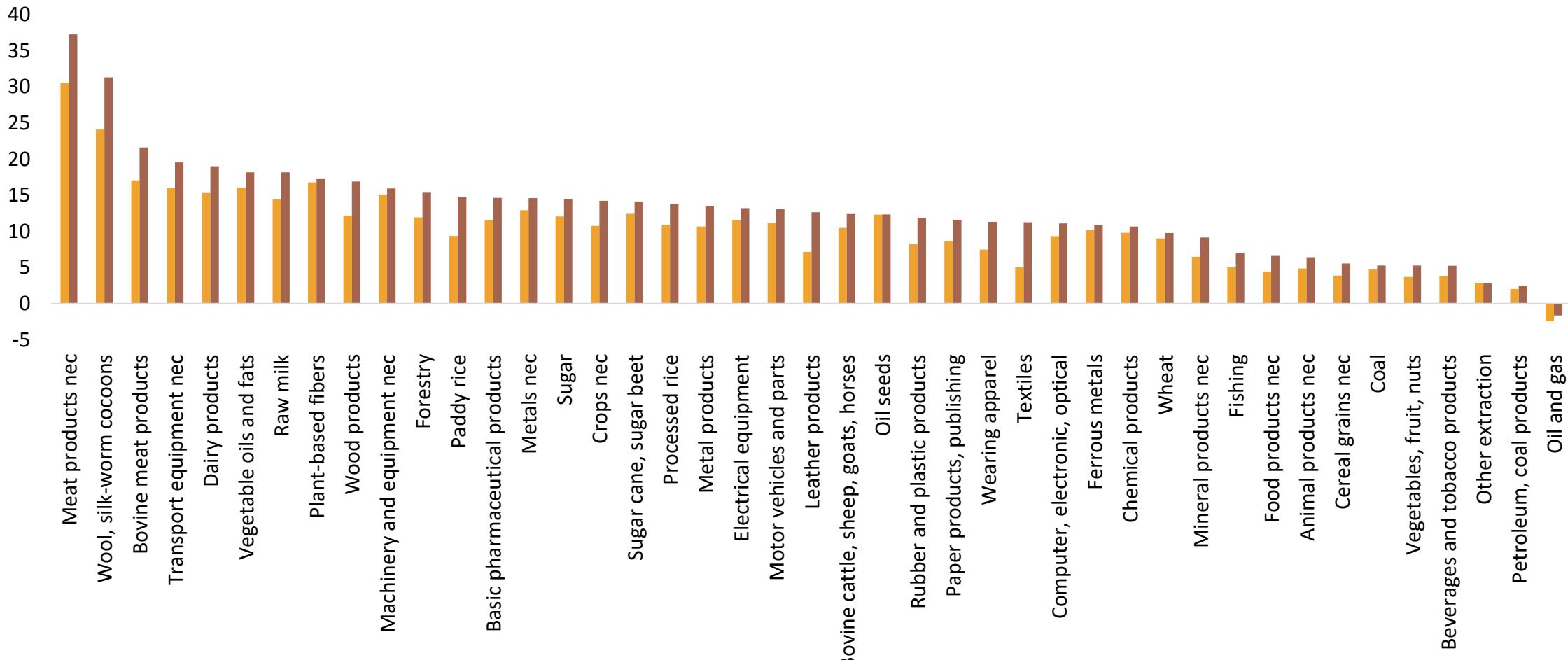
Macroeconomic results



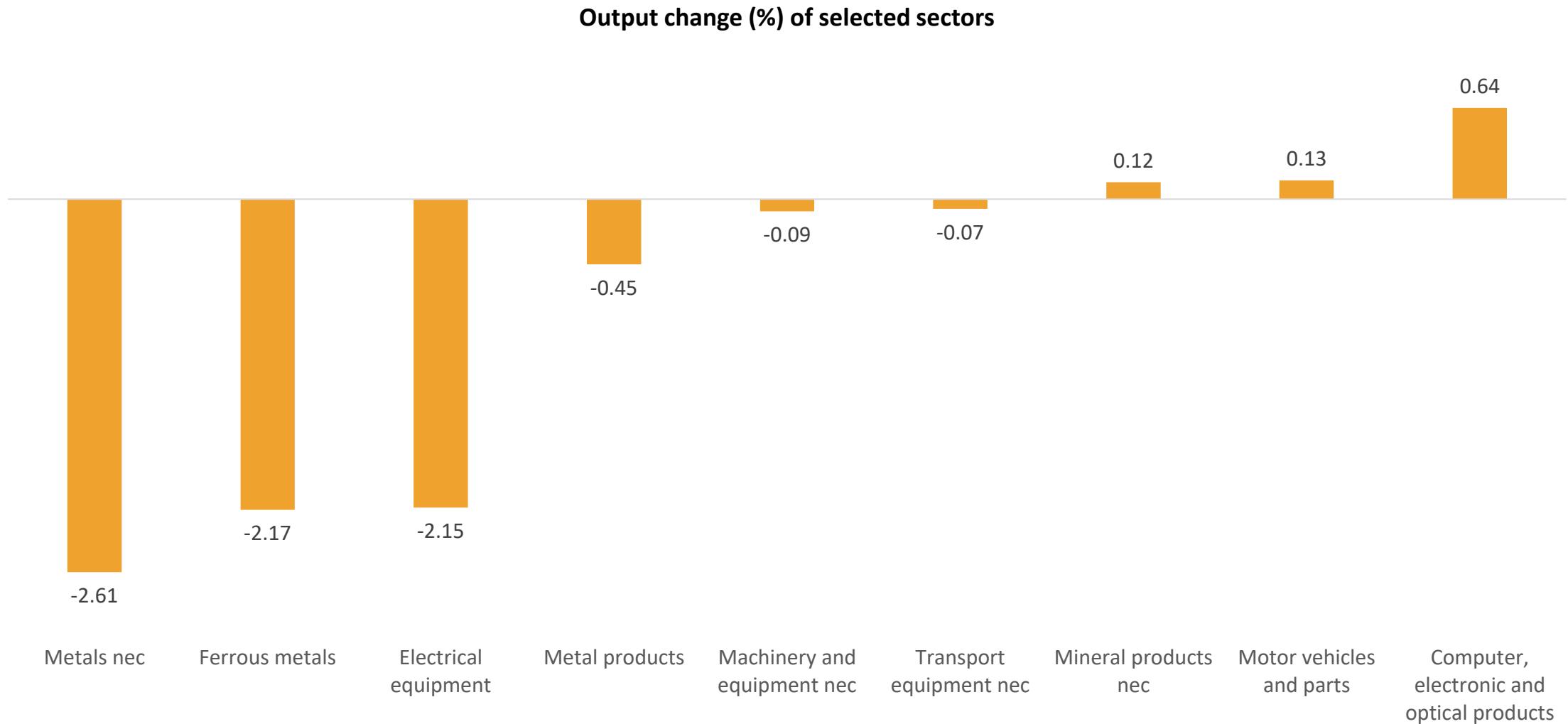
Increased import from China

Change in import from china, qxs(comm,"chn","idn")
(%)

■ Tarif Resiprokal 32% ■ Tarif Resiprokal 19%

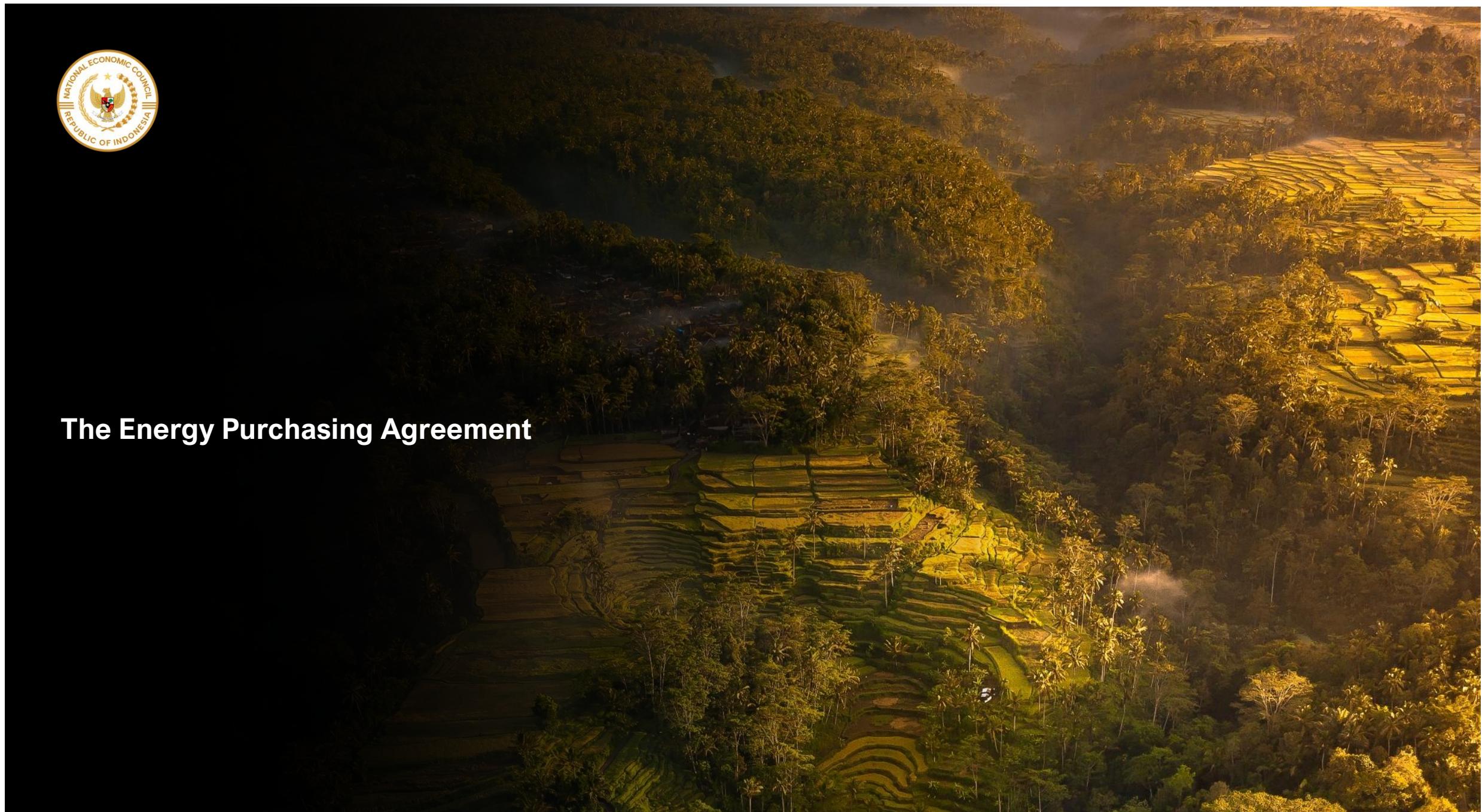


Some sectoral impacts





The Energy Purchasing Agreement





The Oil & Gas Purchase

MP

The WHITE HOUSE

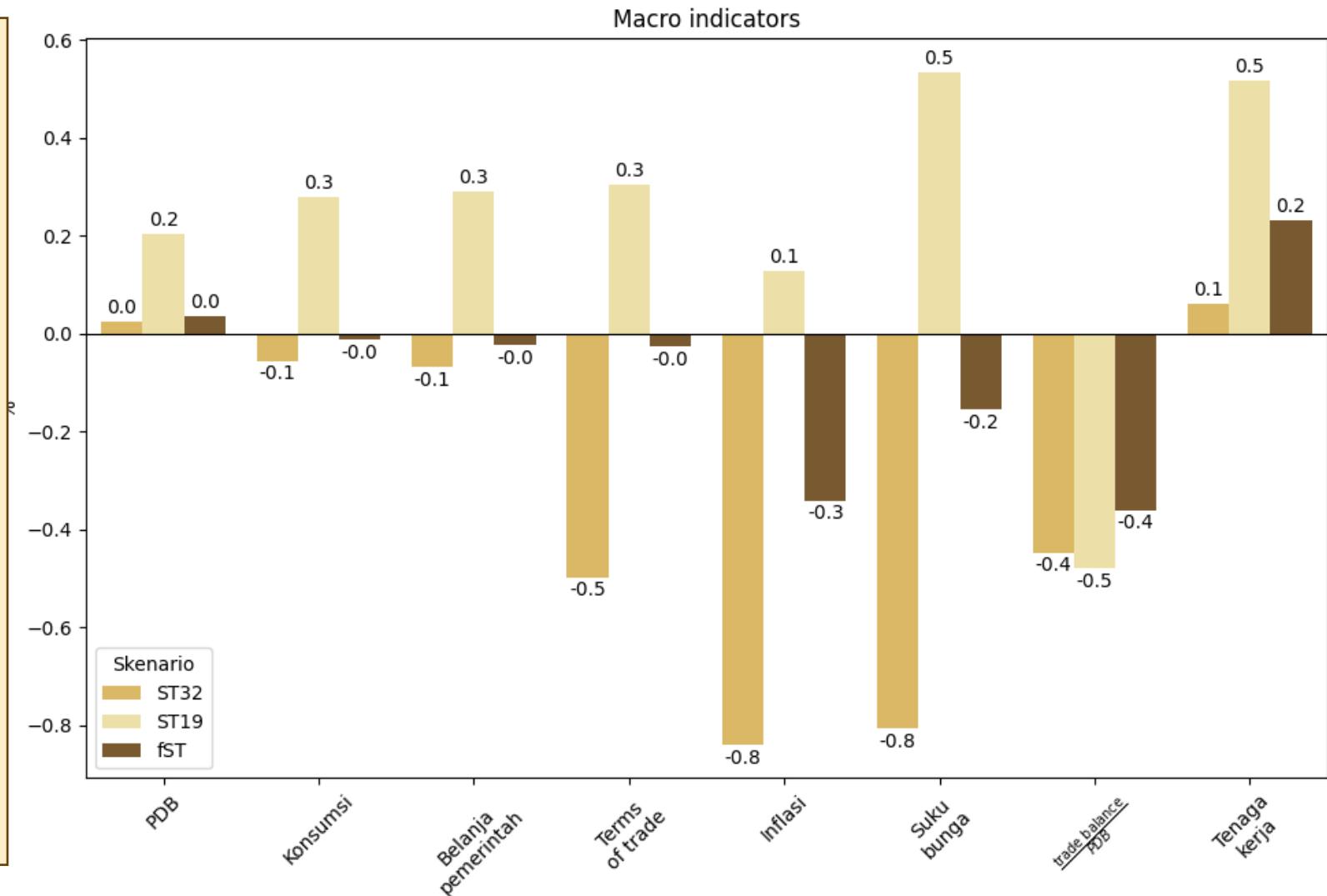
and through cooperation on export controls, investment security, and combatting duty evasion.

- In addition, the United States and Indonesia take note of the following forthcoming commercial deals between U.S. and Indonesian companies:
 - Procurement of aircraft currently valued at 3.2 billion USD.
 - Purchase of agriculture products, including soybeans, soybeans meal, wheat, and cotton with an estimated total value of 4.5 billion USD.
 - Purchases of energy products, including liquefied petroleum gas, crude oil, and gasoline, with an estimated value of 15 billion USD.

15 Billion USD = 500% increase of current (2024) import. If total Indonesian import of oilgas is the same, then import from other countries must reduce by around 6%.

Closure & Results

- We add one more scenario:
 - Negotiate (e.g., get 19% + 0% for US) + energy purchasing agreement.
- We add an exogenous variable $ftms(c,s,d)$ to the $pmds(c,s,d)$ variable.
- We swap the $ftms(oilgas,reg,"idn")$ with qxs , then shock the qxs accordingly
- $pmds$ changes dramatically:
 - US down 33% while others up 14%



Caveats

- Real data seems to suggests increase in export of heavy industries to US. Frontloading or permanent supply chain restructuring?
- Ceteris Paribus, i.e., assuming no additional intervention from any government.
- No monetary module means we don't know how to model the financial side of trade (e.g., US budget deficit & AI stock bubble, Chinese external investment).
- No sectoral tariffs, which can be very important.
- No NTM liberalization yet.
- Setting for energy purchasing may need improvements.



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THANK YOU