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JAPAN'S REACTION TO THE EU'S CARBON PRICING POLICY

AN ECONOMIC-ENVIRONMENTAL ANALYSIS



INTRODUCTION

In the past few years the EU has announced ambitious new plans to become climate neutral by 2050 and to reduce greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. Can these plans inspire other regions to 'turn green, incentivised by the European way'?

The European Commission's proposal for a Carbon Border Adjustment Mechanism (CBAM) to strengthen the existing Emissions Trading System (ETS) is one of those new initiatives with the potential to impact carbon emissions outside of the EU. The question is whether CBAM does indeed provide an incentive to third countries to change their production technology or even to strengthen their domestic carbon pricing policy. We develop a theoretical framework and numerical simulation to investigate exactly this question.

Japan's ambiguous stance with regards to carbon pricing policy makes the country the perfect candidate for an analysis of the knock-on effects of CBAM on third countries. Which response to the EU's CBAM will be most beneficial for Japan? Does Japan stand to gain most from:

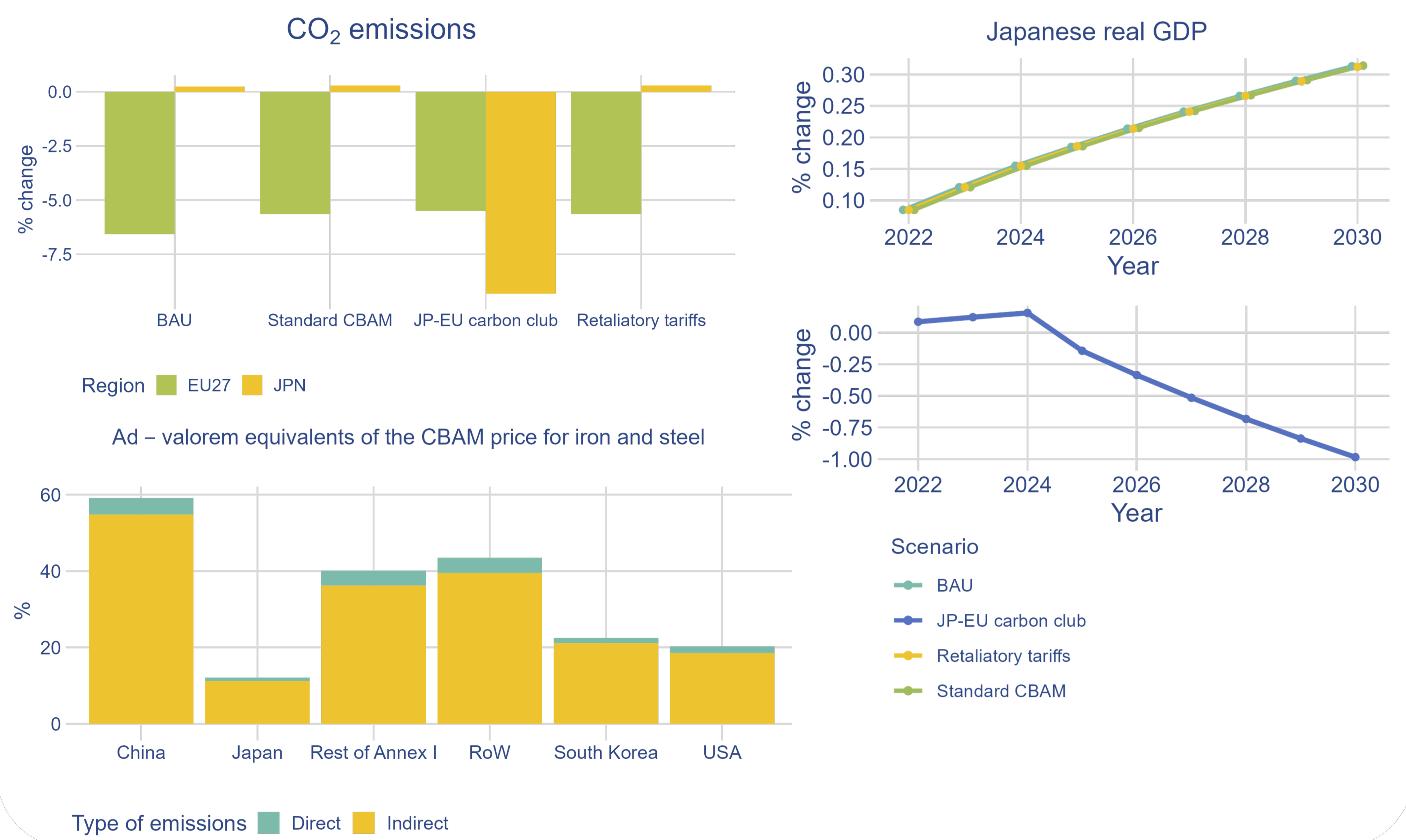
- 1) Cooperating with the EU and introducing its own ETS,
- 2) Staying neutral with no policy response to CBAM,
- 3) Contesting CBAM and introducing 'retaliatory tariffs' on certain European imports?

We evaluate these three scenarios using a two-country stylized model of Japan and the EU as well as a numerical simulation. This numerical simulation employs the GTAP-E-RD CGE model (Corong and Strutt, 2020), where we introduce a sophisticated carbon pricing structure to accurately mimic the EU's ETS and the proposed CBAM (at a price of 88 EUR/tCO₂). We carefully analyse the effects on welfare and CO₂ emissions to investigate how each response affects Japan and the EU.



RESULTS

Below are the results of the numerical simulations. The figure in the top-left illustrates percent changes in CO₂ emissions in Japan and the EU, depending on how Japan reacts to CBAM. The top-right figure displays Japanese percent changes in GDP in the different scenarios. The bottom-left figure contains the ad-valorem equivalents of the CBAM prices for European importers to buy imported iron and steel from different regions.



CONCLUSIONS

How should Japan respond to the EU's CBAM based on the economic theory of international trade?

We evaluate CBAM using the Heckscher-Ohlin-Samuelson model of international trade. The intuition from this stylised model confirms that CBAM may reduce the world supply of CBAM products and their relative prices due to the EU's global market power. A decrease in the relative price of CBAM products may worsen Japan's terms of trade given that Japan is the world's second largest exporter of iron and steel. According to trade theory, Japan, as a large open economy, may preserve its terms of trade by placing retaliatory tariffs on European imports of CBAM products.

What can we learn from a numerical simulation with a CGE model that endogenously determines the average CBAM price per region?

1) The numerical simulation confirms the intuition from the stylised model that CBAM may decrease the world supply of CBAM products.
2) Due to Japan's relatively low carbon intensity for the production of CBAM products, European importers may shift away from imports from other regions and start importing more from Japan. This rise in Japanese exports leads to an increase in Japanese GDP relative to the baseline in all scenarios except for the one where Japan forms a 'carbon club' with the EU.
3) Japan may indeed improve its terms of trade by placing retaliatory tariffs on EU imports, but this response would have negative knock-on effects on consumer welfare compared to a scenario without retaliatory tariffs.

What are the key takeaways for Japanese and European policy makers?

1) For countries such as Japan, where the production of CBAM goods is relatively less carbon-intensive, CBAM is not something to fear. From a purely economic perspective, Japan may even stand to gain from increased CBAM exports to the EU. However, from an environmental perspective there may be negative consequences due to increased CO₂ emissions.
2) Japanese policy makers may be hesitant to raise domestic carbon prices due to the potential effects on GDP. However, if we look at the simulation results for the EU, a 'carbon club' with Japan may help ease the economic effects of higher carbon prices. The same likely holds for Japan: the country will undoubtedly have to increase its domestic carbon prices to reach its emission reduction targets. Once Japan does so, the EU's CBAM can help ease the impact of this stricter carbon pricing policy.



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