

Industrial subsidies affecting the economy: the case of trade between China and the EU

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Industrial subsidies have emerged as one of the main sources of market distortions, influencing the economies of countries worldwide. The aim of this paper is to assess in what measure industrial subsidies applied in one country affect a specific partner's economy and trade, focusing in particular on Chinese subsidies and their impact on third countries. Considering the sizeable share of China in the global GDP and world trade, and its role in the global value chain, any change in China's subsidy policy will affect all other economies.

We use a computable general equilibrium (CGE) model, the standard GTAP version,¹ to assess the impact of subsidy cuts in China on the EU, USA, Canada, Japan and other relevant countries/regions. The model uses the GTAP 10 database (base year 2014) and works with a long run closure, which allows capital accumulation and the possibility for each country to adjust its own real exchange rate. As the focus of this analysis on capital intensive manufacturing sectors, this feature is of relevance. In addition, the model version we use allows substitutability between intermediates and we include an additional module that allows us to examine what happens to the value added (VA) content in trade.

The modelling exercise consisted in two steps. First we incorporated the subsidies into China's industrial production function and then we estimated the impact of withdrawing them.

Simulations are performed for a group of 20 countries and 23 sectors, although much of our attention is put on the impact for the EU economy (table 1).

Table 1 – Model aggregation

Countries/regions	Sectors
China	Primary
EU27	Forestry
UK	Fishing
USA	Mining Extraction
Japan	Processed food
Canada	Textiles, wearing apparel and leather
EFTA	Manufacture of wood
Russia	Paper & Paper Products
Mexico	Petroleum & Coke
Mercosur	Chemicals
Latin America	Pharmaceuticals
Oceania	Rubber and plastics products
ASEAN	Non-metallic mineral products
Korea	Iron & Steel
India	Non-Ferrous Metals
Rest of Asia	Fabricated metal products
Africa	Motor vehicles
Gulf Cooperation Council (GCC)	Other transport equipment
Middle East and North Africa (MENA)	Electrical equipment
Rest of World	Computers, electronic & optical products
	Machinery and equipment
	Other manufacturing
	Services

¹ <https://www.gtap.agecon.purdue.edu/models/current.asp>

As there is no complete and reliable official statistics on subsidies to Chinese firms, China's subsidies are not included in the GTAP database. We perform an estimation of these subsidies.

Estimating Chinese industrial subsidies poses the enormous challenge of finding information. There are no complete and reliable official statistics on subsidies to Chinese firms; implicit subsidies seem to have huge relevance (Kalouptsid, 2018) and completeness of China's 2018 notification to the WTO (WTO, 2018) has been challenged (USTR, 2018).

We opted to put together a set of estimates of Chinese subsidies applying a methodology suggested by Haley U. and Haley G. (2013) using the data reported in anti-subsidy investigations. Information about these trade defence inquiries is publicly available, both from governments' websites and from published legislation. As Australia, Canada, European Union and USA have performed most anti-subsidy investigations, we compiled data from anti-subsidy investigations performed by these countries *vis à vis* China during the last 10 years.

In addition, the WTO provides the basic legal framework on subsidy and countervailing measures thus the approach is similar across countries. Investigations comprise — aside from product definition and injury determination — a detailed assessment of the financial contribution (subsidies) and the benefit conferred (to company, industry, and sector). This countervailing measure — usually in the form of an ad-valorem duty² — is applied to counteract the injurious effects of subsidised imports and restore fair competition. For our purposes, we consider ad-valorem countervailing duties as a good proxy of subsidies³.

These subsidies estimates need to be converted into GTAP products in order to be used in the model, and attributed to the various sectors based on their weight on exports. We use the Global Trade Alert (GTA) subsidy inventory⁴ to attribute subsidies to the different sectors. The GTA is an up to date unique source of information on subsidies, including the percentage of Chinese exports per sector experiencing subsidy interventions (Evenett and Fritz, 2021).

We are aware of the high degree of uncertainty related to Chinese subsidies, the limitations of the data sources and the imperfect assumptions we made to generate a first set of computational estimates. For these reasons, we have run several scenarios, each based on different assumptions regarding the size and extension of subsidies.

In order not to overburden the reader with information, we in this paper we will present the results of 2 main scenarios. For each scenario we simulate the withdrawal of subsidies in 15

² Countervailing measures can also assume the form of specific duties, calculated on a parameter other than the value, e.g. on weight (15€ per tonne).

³ In a previous work, we have collected information on 67 anti-subsidy investigations performed up to 2019 in Australia, Canada, EU, USA. All in all these investigations resulted in ad-valorem countervailing duties applied on a total 439 tariff lines (at 6-digit level across 15 GTAP sectors). We intend to update this information up to 2021 and expand our base information.

⁴ https://www.globaltradealert.org/data_extraction

GTAP industrial sectors. As the subsidy levels vary, so does the size of the cuts. Given the model design, each subsidy cut affects output values and firms' input (capital).

Subsidies in each of the two scenarios have been estimated as follows:

- **Scenario 1** ("low level subsidy" scenario): Subsidies are calculated excluding firms whose countervailing duties are higher than a threshold of 70%⁵. Sectoral subsidies are calculated as averages, weighted by the share of sector exports receiving subsidies.
- **Scenario 2** ("all exporting SOEs" scenario): Subsidies are calculated excluding firms whose countervailing duties are higher than a threshold of 100%. Sectoral subsidies are calculated as averages, weighted by the share of sector exports receiving subsidies.

We expect that the impact of the two scenarios would reflect the different original levels of subsidies (generally lower in scenario 1 compared with scenario 2). In addition, the withdrawal of subsidies could result in a net loss of China's competitiveness, and a reduction in its total exports. Given the magnitude of China in global trade, adjustments are observed in many other countries' exports, whose export are expected to expand.

Behind the described mechanisms determining impacts on the economy and trade, two main drivers affect results: competitiveness loss due to shrinking capital stock through less capital accumulation and reallocation of resources towards lower VA sectors due to not homogeneous subsidy cuts.

References

Evenett S. and Fritz J. (2021), *The 28th Global Trade Alert Report*, Subsidies and Market Access- Towards an inventory of Corporate subsidies in China, the European Union and the United States, CEPR Press.

Haley U. and Haley G. (2013), "Subsidies to Chinese Industry. State Capitalism, Business Strategy, and Trade Policy", Oxford University Press, New York, 2013

Kalouptsid (2018), *Detection and Impact of Industrial Subsidies: The Case of Chinese Shipbuilding*, "The Review of Economic Studies", August 2018.

WTO (2018), China "New and Full Notification Pursuant to Article XVI:1 of the GATT 1994 and Article 25 of The Agreement on Subsidies and Countervailing Measures" (G/SCM/N/315/CHN)

⁵ This to take into account the different assessment principles ("facts otherwise available" vs "adverse facts available" and "adverse inference") applied by the US, Australia and Canada compared to the EU, when estimating CVDs of non-cooperating firms. We excluded firms with countervailing duties higher than 70%

United State Trade Commission (2018), Report to Congress on China's WTO compliance. Final, in <https://ustr.gov/sites/default/files/2018-USTR-Report-to-Congress-on-China%27s-WTO-Compliance.pdf>

Wamsley T., "Long run simulations with GTAP: illustrative results from PEC" (1998), Centre of Policy Studies (COPS), Monash University, Working Paper No. IP-70, 1998

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