KOMMERSKOLLEGIUM
NATIONAL BOARD OF TRADE SWEDEN

Government Subsidies in Manufacturing Sectors

A roadmap

2023

Foreword

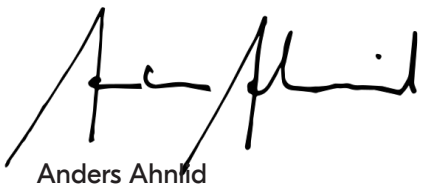
Today government subsidies play a pivotal role in shaping industrial location across countries. Governmental subsidies can, for example, be used to facilitate the green and digital transition and to alter international competitiveness and trade patterns. It becomes clear, therefore, that access to data on subsidies, their intended purpose and design is crucial for transparency and informed decision-making. In other words, the availability and transparency of data on government subsidies play a pivotal role in fostering and supporting an informed discourse on this increasingly debated matter.

Government subsidies come in various shapes and forms, ranging from tax incentives and grants to loans and direct financial assistance. These subsidies are often intended to support and incentivise firms' research and development (R&D), promote the green and digital transition, and enhance national competitiveness in specific sectors and firms. Without access to reliable and comprehensive data, assessing the effectiveness, fairness, and actual outcomes associated with these subsidies becomes a challenge.

This report reviews a series of publicly available databases on government subsidies and discusses their relative pros and cons. Unfortunately, the availability of data on government subsidies in the manufacturing sector remains a significant challenge in many parts of the world. In some cases, data may be inaccessible, incomplete, or lacking granularity, making it difficult to grasp the full picture of subsidy programs and their outcomes. This lack of transparency hampers accountability and impedes efforts to address potential market distortions or inefficiencies. Continued work aimed at increasing the availability and understanding of the various facets of government subsidies is therefore of outmost importance.

By providing insights into the benefits of data access, this publication intends to contribute to the dialogue on the need for improved data availability on government subsidies. The report was written by Hannes Jägerstedt and reviewed by Patrik Tingvall and Per Altenberg.

Stockholm, June 2023



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Summary

Government subsidies to industry have been a contentious policy issue for many years, with ongoing debates about the motivation behind these support programmes. Despite these debates, most economists agree that some subsidies can be economically justified, particularly where they address market failures or negative externalities. For example, subsidies for basic research and development (R&D) can help firms invest in projects with high social returns that may not be profitable from a private perspective. Similarly, subsidies for environmentally-friendly goods and services can improve social welfare, support the green transition and help preserve natural ecosystems. At the same time, it is recognised that subsidies can have a negative impact on resource allocation, distort international trade, harm competition, and divert funds from other sectors.

Of course, it is not always easy to determine the best way to implement a measure. In the real world, therefore, we see a mixture of beneficial and potentially harmful support measures being implemented.

Two reasons for the increased attention paid to subsidies is the rise of China in the global economy and the significant amount of money and resources that many countries devote to subsidies.

For a constructive debate on subsidies, reliable and internationally comparable information regarding what and how much each party spends on government subsidies is crucial. However, the lack of data on subsidies in the manufacturing sector has made it difficult to assess their impact on trade and competition. As a result, there is little empirical evidence on the relationship between subsidies and trade. However, there have been several calls in recent years for greater transparency and reporting standards on manufacturing subsidies, particularly as efforts to prevent climate change depend on the ability to measure and document global emissions.

In light of the above, the purpose of this report is to document the most important data sources available for the study of manufacturing subsidies. It highlights key differences between sources as well as advantages and shortcomings in relation to what is needed for statistical analysis.

Conclusions drawn in this report are the following:

- The user-friendliness of WTO notification data needs to be improved. This is the responsibility of all WTO members, and we do not expect a sudden change in members' attitudes towards notification. Today, the information is only available in pdf format.
- We recommend that data on government support to the industrial sectors compiled by the OECD data be made publicly available as soon as possible. The OECD subsidy data should also be linked to other statistical sources such as UN Comtrade.
- The Global Trade Alert (GTA) database is a valuable source of data on industrial subsidies. For the purposes discussed here, the GTA should ideally include a measurable economic value.
- With the exception of the GTA, international organisations have dominated efforts to map and estimate the impact of industrial subsidies. In our view, it would be very valuable if the research community could become more involved.

The only way to determine how best to spend taxpayers' money for these purposes is to base policy on evidence and sound theory. The WTO, OECD and GTA databases will help in this work, but international organisations will need support from the research community in this effort.

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1 Introduction

Government support to the manufacturing sector can take many forms, and the motivation behind many support programmes is currently one of the most debated policy areas. According to DiPippo et al., (2023), government support to the manufacturing sector in China totalled USD 407 billion in 2019 at PPP exchange rates. Comparable figures were USD 84 billion in the U.S., USD 18 billion in Germany, and USD 17 billion in France.

Most economists agree that government intervention may be needed when market forces fail to produce a (socially) acceptable outcome. Examples would be efforts to reduce our collective environmental impact, support the green transition and facilitate knowledge diffusion and positive spill overs from technological breakthroughs. At the same time, there is an abundance of empirical evidence to suggest that many of the support measures implemented are not always supported by economic theory. Instead, particular interest groups are a driving force. In the real world, therefore, we see a mix of beneficial and potentially harmful support measures being implemented. The National Board of Trade (2020) summarises the potential distortions associated with subsidies as follows:

- They distort international trade, preventing a global resource allocation that reflects endowments and comparative advantage.
- They distort competition between firms. The multilateral trading system partly reflects efforts to create a 'level playing field' for international trade and competition. While differences between countries are natural – even the source of gains from trade – fundamental confidence in the global economy is at stake if the playing field is not perceived to be even.
- They harm taxpayers by diverting funds that could be used for other purposes such as investment in education-, healthcare-, or infrastructure.
- Manufacturing subsidies further harm the environment, insofar as they target non-green technologies, possibly even 'brown' industries.

As noted above, according to theory, government support is justified to correct market failures or negative externalities. The IMF, the WTO, World Bank and the OECD (2022c) list examples of where subsidies could be economically justified on such grounds:

- Firms tend to underinvest in research and development (R&D) because the private rate of return to R&D is less than the social return; this can justify subsidies to basic R&D (IMF, 2022).
- Environmentally-friendly goods and services have social welfare benefits beyond their private benefits, and subsidies that raise their consumption can improve social welfare. Similarly, well-designed programmes that pay farmers to set aside land may preserve natural ecosystems.
- Informational asymmetries can provide another argument for subsidies. If banks find it too costly to assess the creditworthiness of small borrowers (perhaps because of inadequate individual credit rating services), there may be a case to subsidise credit to small borrowers (or the provision of credit rating services).
- In some situations, subsidies can help exploit economies of scale, driving down unit costs. The latter is an example of how some subsidies with a domestic economic motivation may also be contentious internationally.
- Finally, subsidies can be an important part of social safety nets for the poor, income redistribution policies or broad-based (non-firm-specific) employment policies. Consumer subsidy schemes for widely-consumed goods such as bread, rice, sugar, heating oil, and gasoline fall into this category.

Based on these considerations, the IMF, the WTO, World Bank and the OECD (2022c) recommend that policy should strike the following balance:

> *"While governments should cooperate to discourage subsidies and subsidy designs that significantly distort trade or investment, they seek to maintain enough flexibility to address market failures and legitimate public policy objectives."*

In addition to striking such a balance, any evidence-based analysis should seek to assess whether different types of subsidies are effective in addressing identified market failures or negative externalities.

A trade-related discussion of government support to the manufacturing sector often focuses on China. This is natural, as China has an arguably less-principled approach to trade on market economy terms than other major economies. Another reason is the sheer size of the Chinese economy. The support estimates from DiPippo et al. (2023) suggest that government spending on manufacturing sectors in China is equivalent to 1.73 per cent of Chinese GDP. While this may seem like a negligible figure, it becomes very large when compared to the GDP of other economies: 8.7 per cent in Germany; 7.4 per cent in Japan; or 38 per cent in Nigeria. [1] In other words, the amount of funds that can be put into subsidising national firms varies considerably from country to country, adding an element of inequality to the issue of support for manufacturing. This is further exacerbated by the fact that the role of the state differs between countries.

Considering the significant amount of resources allocated to subsidies, there have been several calls in recent years for greater transparency and reporting standards regarding manufacturing subsidies.[2] The lack of data on manufacturing subsidies also contrasts sharply with measures reported in other sectors, such as agriculture, fisheries and fossil fuels. [3] But just as efforts to prevent climate change depend on the ability to measure and document global emissions, addressing the outstanding issues of international manufacturing competition requires data on the support measures provided to industry worldwide.

An important consequence of the lack of data is that it makes it difficult to estimate the effects of manufacturing subsidies on trade and competition. Consequently, little empirical evidence exists on the link between subsidies and trade. Three exceptions are Kalouptsidi (2018) and Barwick et al. (2019), who show the large distorting effects of Chinese subsidies

1 PPP-adjusted GDP figures from the IMF World Economic Outlook of October 2022
2 DiPippo et al (2022), Trilateral Statement of Japan, EU and the U.S. (2019), IMF et al. (2022).
3 OECD databases on fisheries, IEA on fossil fuels.

on international market shares in the shipping industry, and Kommerskollegium (2017), which estimates the effects of foreign subsidies on exports to third markets.

Empirical assessments of the effects of manufacturing subsidies are complicated by the nature of supply chains. A subsidy granted to one part of the industry may well affect the output of a completely different sector. As shown by an OECD study on the value chain in the aluminium industry, energy subsidies (e.g., on natural gas or coal) clearly shows a significant impact on the output prices (OECD, 2019). The effect of subsidies can also travel through supply chains in the opposite direction. Support provided to a manufacturing sector, say semiconductors, can increase demand for specialised equipment used in their production, thus benefitting an upstream sector. Lastly, the benefitting firms may not even operate within the same market or jurisdiction to which a subsidy is granted. This complicated network of effects is incredibly hard to account for in an econometric framework.

Another complicating factor is the prevalence of border controls, such as export taxes or incomplete VAT rebates for exported goods. These implicitly provide a subsidy to domestic downstream sectors, as the domestic market is flooded with inputs that would otherwise be destined for export markets.

In the light of the above considerations, the purpose of this report is to document the data sources available for the study of manufacturing subsidies. We also illustrate which types of support measures are most commonly used and in which sectors.

Finally, the report draws conclusions regarding how international work on a more comprehensive and useful mapping of government support for the manufacturing sector might proceed. The report is structured as follows: chapter 2 reviews available data sources, chapter 3 discusses what kind of data we might need, and chapter 4 concludes.

2 Data sources on government support in the manufacturing sector

In this chapter, we review the most used data sources on government support to the manufacturing sector. Some notable data sources we will discuss are the following:

- WTO notifications
- the EU state aid database
- the OECD
- the IMF
- the Global Trade Alert (GTA) database.

2.1 WTO notification under the agreement on subsidies and countervailing measures (ASCM)

The basic obligation to notify subsidies is contained in Article 25.2 of the Subsidies and Countervailing Measures (SCM) agreement and in Article XVI:1 of the General Agreement on Tariffs and Trade (GATT) 1994. For a subsidy to be covered by the SCM Agreement, it must constitute a financial contribution conferring a benefit by a government or any public body within the territory of a member. It must also be specific, in the sense that it is targeted at a particular enterprise or industry and not at others. Article 25.2 requires notification concerning any subsidy that meets these criteria. In addition, Article XVI:1 of the GATT requires notification concerning any subsidy (whether specific or not) that has a direct or indirect effect on trade.[4]

Notifications must be made to the Committee on Subsidies and Countervailing Measures every two years and follow the structure of a specific questionnaire. The following information should be provided:

- the administering country
- a brief description of the subsidy
- the period covered by the subsidy
- its purpose, background and authority
- the form of the subsidy (i.e., grant, loan, tax concession, etc.)
- the recipient
- the transfer mechanism (fixed or variable amount per unit)
- the unit amount of the subsidy or the total amount of the subsidy scheme
- the duration and other time limits
- information allowing the trade effects of the subsidy to be assessed.

The notification data is presented in the form of a searchable online library of notification documents. These documents, available as pdf, word or html files, have not been merged into a database at the WTO, so the analyst would have to do this manually prior to any statistical analysis. This work is further complicated by a range of factors, such as different reporting formats across countries. As the authors of this report understand it, work is currently on the way at the WTO to combine available notification documents into an Excel database.

4 WTO (2021b) Technical Cooperation Handbook on Notification Requirements – Agreement on Subsidies and Countervailing Duties.

Unfortunately, according to the WTO (2021a) report of the Committee on Subsidies and Countervailing Measures, the state of notification under the SCM Agreement is bleak (Figure 1). Many WTO members neglect notification altogether, and those that do notify their measures do so with considerable delay. Moreover, the notifications are often incomplete with regard to the instructions given in the questionnaire. This is unfortunate, as the information – if provided – would be invaluable for empirical assessments of government support to the manufacturing sector.

Table 1. WTO noficiations — state of play

New and full subsidy notification	Per cent share of total												
	1995	1998	2001	2003	2005	2007	2009	2011	2013	2015	2017	2019	2021
Members that notified subsidies	50	39	44	45	47	48	48	47	49	48	46	46	40
Members that made a "nil" notification	26	17	15	14	13	12	18	21	19	19	15	9	7
Subtotal notifying members	76	56	59	59	60	60	65	68	68	66	61	54	46
Members that did not make any notification	24	44	41	41	40	40	35	32	32	34	39	46	54

Source: WTO (2023)

2.2 EU state aid data

EU state aid rules apply to both goods and services and are set out in Article 107 of the Treaty on the Functioning of the European Union (TFEU). For an aid measure to fall within the scope of EU state aid rules, it must:

- favour certain undertakings (e.g., companies) or the production of certain goods
- be granted through state resources
- distort or threaten to distort competition
- possibly affect trade between member states.

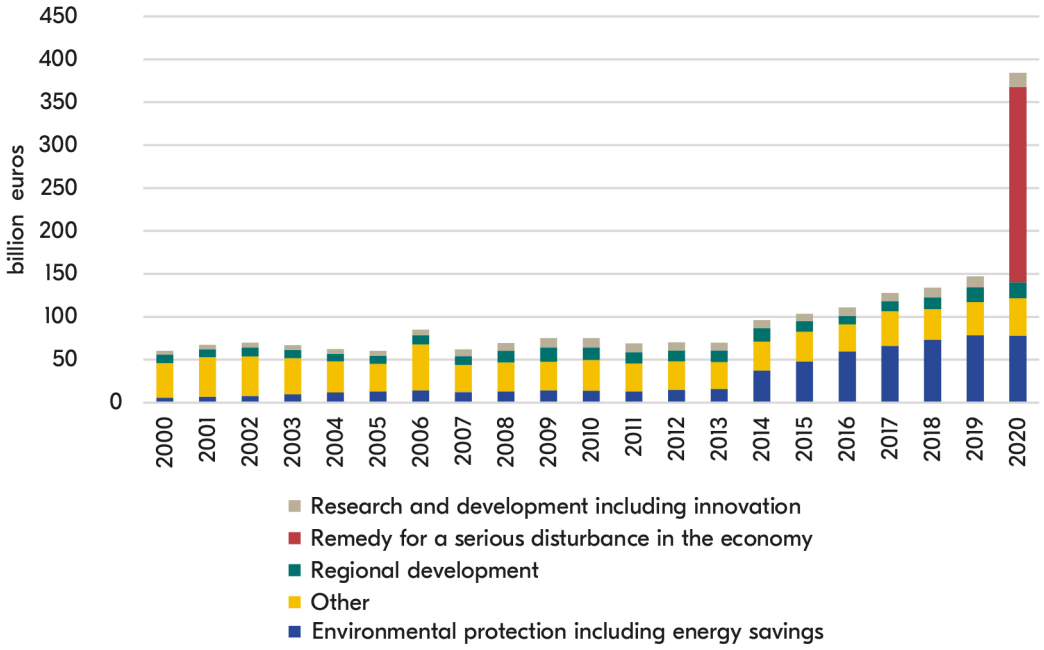
Measures that meet these criteria are generally prohibited and must be approved by the European Commission before they can be implemented. However, the rules contain exemptions that allow certain companies to operate without the explicit approval of the European Commission. There are three exemptions, listed below.

- The de minimis rule, which exempts aid of less than EUR 200 000 per company over a three-year period.
- Aid granted under an approved state aid scheme that has already been approved by the Commission; and the General Block Exemption Regulation (GBER), which exempts aid for environmental protection, research and development, SMEs, regional aid, employment and training, infrastructure, culture and heritage conservation, and natural disaster relief.
- Two sectoral block exemptions for aid to the fisheries (FIBER) and agriculture (ABER) sectors. Although they do not require Commission approval, block exempted measures are notified and recorded in a public database. Aid granted under the de minimis rule is not reported.

Information on support granted under the State aid regime can be accessed in two ways. First, individual data provided by member states are available in a searchable online database (State Aid Transparency Public Search), similar to the SCM notifications. Secondly, the European Commission publishes annual State aid scoreboards based on the expenditure reports provided by member states.[5] These scoreboards are available through Eurostat's dissemination tool for statistics and can be downloaded in various formats, such as .csv or .xlsx. The online tool allows the data to be broken down by dimensions such as main policy objective, aid instrument, exemption rule and type of case. Longer time series of Scoreboard data are also available through Eurostat.

Scoreboard data include information on the name of the beneficiary, the value ('aid element'), the location, the sector and the objective of the aid measure.

Figure 1. EU state aid by objective, all EU member states



5 State Aid Overiview (europa.eu)

2.3 OECD support data[6]

Through its long-standing work on subsidies, the OECD has compiled several useful data sources. The most comprehensive data collected are on fisheries support[7] , agricultural support[8] and fossil fuel support[9] (in collaboration with the IEA).

For manufacturing subsidies, the report series *Measuring distortions in international markets* has shed unprecedented light on support provided to certain sectors of the economy (see next section). All results of the work by the OECD are accessible online through the OECD Government support and Subsidies Portal.

In the context of its multi-year project *Measuring distortions in international markets*, the OECD has mapped government subsidies in the aluminium, semiconductor and rolling stock sector, as well as on below-market finance across 13 manufacturing sectors. Their work is summarised in a recent synthesis report.[10]

A unique feature of this work is that it uses firm-level data that was collected from the financial statements of individual firms (a 'bottom up' approach). The main rationale for this unusual approach is the "persistent lack of transparency" surrounding manufacturing subsidies. [11]

Collecting information on individual firms from many different sources and harmonising them is a time-consuming task. This means that far from all firms operating within a sector can be studied. The main challenge associated with this bottom-up approach is therefore to achieve representativeness when sampling firms. As explained by the OECD (2023), this problem is reasonably small since the studied sectors are characterised by a high degree of market concentration. About two-thirds of global sales or production capacity is accounted for by only 20–30 large firms.

There are three main benefits of using firm-level data.

- First, incentives to report comprehensive and correct information are strong due to legal penalties otherwise facing companies.
- Second, firm-level data gets around the issue that support can be administered at different levels of government or even through state enterprises. Such information is rarely published in official budgetary documents.
- Finally, data collected at the level of individual companies can be used to measure statistical correlations with other firm-level characteristics such as size, productivity or degree of participation in export markets.

2.3.1 The OECD support matrix

Building on, and consistent with, UNCTAD's 2017 Multi-Agency Support Team (MAST) on classification of non-tariff measures, the OECD has developed a 'support matrix' that classifies different measures along two main dimensions: transfer mechanism and statutory incidence (who and what activity receives the support). The matrix is reproduced in Table 2.

6 Based on Annex E of joint work by the IMF, OECD, World Bank and WTO (2022)
7 Fisheries Support Estimate (oecd.org)
8 Agricultural Support
9 OECD Environment Statistics | OECD iLibrary (oecd-ilibrary.org)
10 Government support in industrial sectors: A synthesis report
11 OECD (2023) Government support in industrial sectors — a synthesis report

Table 1. OECD Matrix of support measures

		Statutory or formal incidence (to whom and what a transfer is first given)							
		Production							Consumption
					Costs of value-adding factors				
		A. Output returns	**B. Enterprise income**	**C. Cost of inter-mediate inputs**	**D. Labour**	**E. Land and natural resources**	**F. Capital**	**G. Knowledge**	**H. Unit cost of consumption**
Transfer mecha-nism (how a transfer is created)	**1. Direct-transfer of funds**	Output bounty or deficiency payment	Operating grant	Input-price subsidy	Wage subsidy	Capital grant linked to acquisition of land	Grant tied to the acquisition of assets, including foreing ones	Government R&D	Unit subsidy
	2. Tax revenue foregone	Production tax credit	Reduced rate of income tax	Reduction in excise tax on input	Reduction in social charges (payroll taxes)	Property-tax reduction or exemption	Investment tax credit	Tax credit for private R&D	VAT or excise-tax concession
	3. Other govern-ment revenue foregone		Waiving of administra-tive fees or charges	Under-pricing of a government good or service		Under-pricing of access to government land or natural resources	Debt forgiveness or restructur-ing	Government transfer of intellectual property rights	Under-pricing of access to a natural resource harvested by final consumer
	4. Transfer of risk to govern-ment	Government buffer stock	Third-party liability limit for producers		Assumption of occupa-tional health and accident liabilities	Credit guarantee linked to acquisition of land	Loan guarantee; non-mar-ket-based debt-equity swap and equity injection		Price-triggered subsidy
	5. Induced transfers	Import tariff or export subsidy; local-content require-ments; discrimina-tory government procure-ment	Monopoly concession	Monopsony concession; export restriction; dual pricing	Wage control	Land-use control	Credit control (sector-specific)	Deviatios from standard IPR rules	Regulated price; cross subsidy
	Including advan-tages conferred through state enterprises			Provision of below-cost electricity by a state-owned utility			Below-market loan by a state-owned bank		

Note: This matrix is a work in progress and may be refined in the future. Some measures may fall under a number of categories (e.g. debt-equity conversions may involve elements of both risk transfers and revernyue foregone). GP= Government procurement.

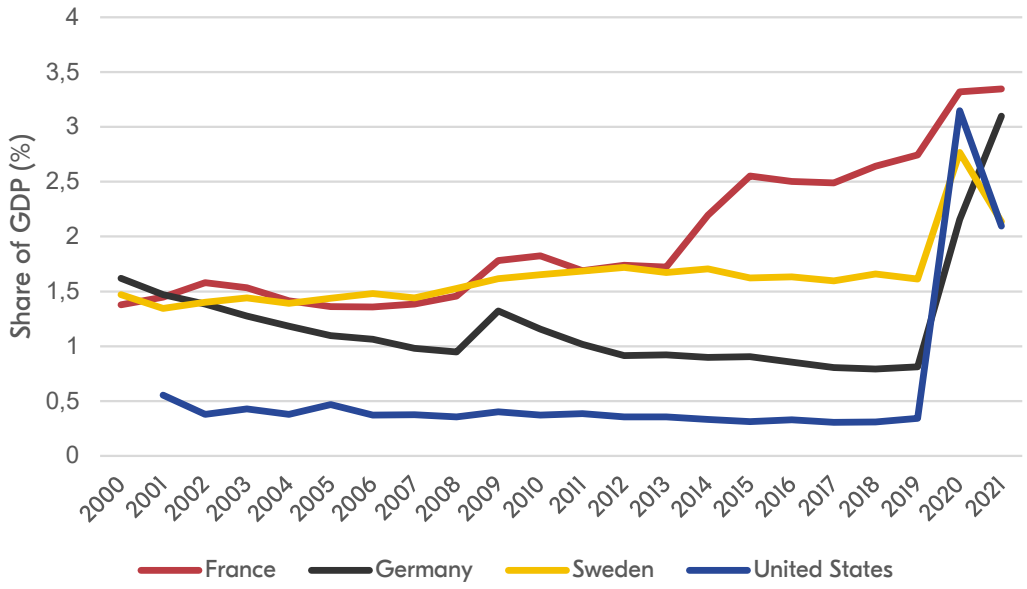
Source: OECD (2021) report on below-market finance.

2.4 IMF Government Finance Statistics

The IMF Government Finance Statistics (GFS) contains information on several macro-economic variables with the aim of supporting fiscal analysis. Subsidies are included, since they are a part of government expenditure.[12] The IMF GFS data is also available at the World Bank Open Data, where it can be correlated with a rich set of country-level data.[13]

Since the primary focus of these data is fiscal analysis, there is no detailed breakdown of subsidies. The headline numbers can, however, be used for cross-country comparisons. Unfortunately, information on some key economies, most notably China, is missing.

Figure 2. Government expenditure on subsidies according to the IMF



12 IMF Access to Macroeconomic and Financial Data
13 World Bank Open Data | Data

2.5 The Global Trade Alert database

The Global Trade Alert (GTA) database began as a research project to track government intervention in the wake of the global financial crisis and now covers 14 years of policy measures from 126 countries.

The GTA team uses the following criteria to include a measure.[14]

- **Unilateral measures** – only unilateral measures are included.
- **Relative Treatment Test** – the measure must discriminate against foreign firms in favour of at least one competitor operating in the implementing jurisdiction. This limits attention to measures that are sector or activity-specific.
- **Significant change** – the financial amount of a subsidy must exceed USD 10 million. For loans, this threshold applies to the value of the loan.
- **Credible action** – government legislation must be implemented or future implementation must be enacted. Declarations of intent are not sufficient for inclusion.
- **Absence of an 'undisputed higher motive'** – measures that fall under WTO TBT or SPS rules, UN Security Council (UNSC) sanctions, or the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) are currently excluded from the database. In addition, the GTA team includes stated motives such as national security or environmental protection in its reporting.

The main source of information is official government announcements and documents. Although web scraping techniques are used to collect the data, each entry is manually checked before being added to the database to ensure that the inclusion criteria are met. The following information is included in the database:

- implementing authority
- type of intervention (production subsidy, capital injection and equity participation, loan guarantee, government loan, financial grant, tax or social security relief, interest subsidy, trade finance, grant in kind, import incentive, tax-based export incentive, export subsidy, price stabilisation and other government aid)
- title of the government act
- GTA rating (red, green or yellow)
- announcement date, implementation date, removal date
- MAST Chapter[15]
- affected products (HS) and sectors (CPC)
- an estimate of affected countries based on international trade statistics.

The data can be accessed via an interactive web application on the GTA website or downloaded in Excel format.

Table 2 ranks all government support measures by the EU, China and the United States that are included in the GTA data according to the type of measure most frequently used. Financial grants are by far the most popular type, accounting for 41 per cent of all government support measures. State loans (23 per cent) and trade finance (21 per cent) come in second and third. Those most likely to affect international trade – export subsidies and import incentives – are at the bottom of the table with less than 0.1 per cent each.

14 For more information, see the GTA handbook, available at Data & methodology (globaltradealert.org).
15 MAST is a nomenclature for the international classification of NTMs, established by UNCTAD in 2006.

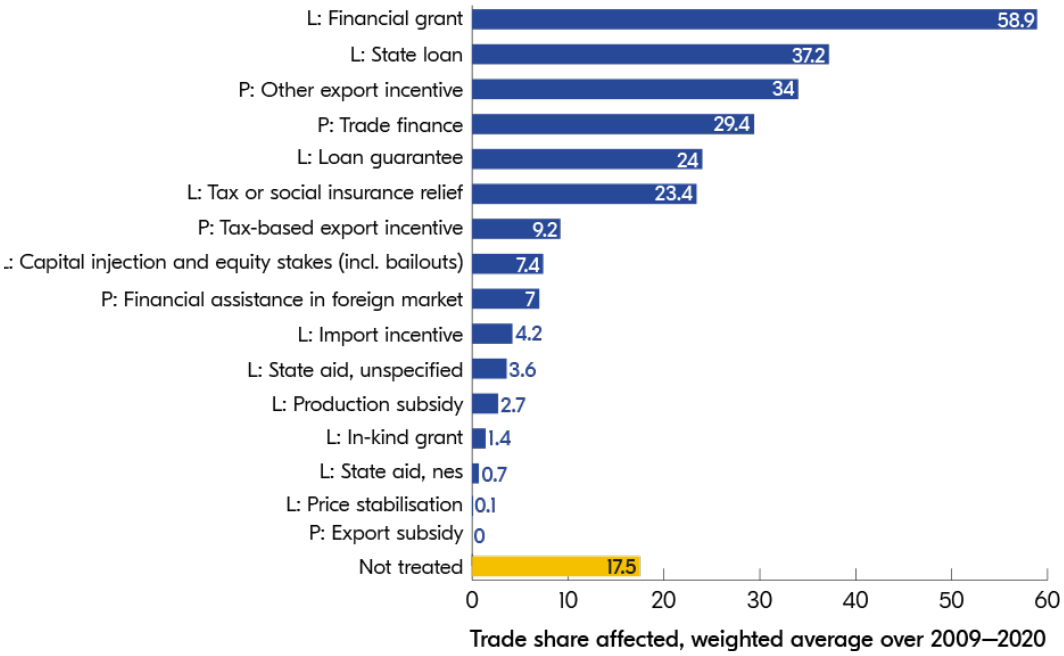
Table 2. Dispersion of support types (EU, China and the US across all dates)

Intervention type	No. of entries	Share of entries (%)
Financial grant	7 606	40,9
State loan	4 161	22,4
Trade finance	3 752	20,2
Loan guarantee	1 106	5,9
Tax or social insurance relief	666	3,6
Capital injection and equity stakes (including bailouts)	348	1,9
Production subsidy	276	1,5
Price stabilisation	269	1,4
Financial assistance in foreign market	125	0,7
State aid, unspecified	94	0,5
Interest payment subsidy	50	0,3
Tax-based export incentive	40	0,2
In-kind grant	30	0,2
Other export incentive	26	0,1
State aid, nes	23	0,1
Export subsidy	21	0,1
Import incentive	20	0,1

Source: Author's calculations based on the GTA database. Data accessed at 30 February 2022.

Combining the GTA data with export figures from UN Comtrade reveals that a significant share of exports is targeted by government measures in China, USA and the EU (figure 3). Only 17.5 per cent of exports are 'unscathed' by any type of support. Financial grants alone target close to 60 per cent of exported value.

Figure 3. Share of exported value targeted by different government support measures in USA, China and EU



Note: Only measures implemented by China, USA or the European Union included.

Source: Subsidy data from Global Trade Alert (GTA) database, trade data from UN Comtrade, and authors' calculations. GTA and UN Comtrade data was linked via product codes (HS6). Trade shares were computed by dividing the collective export value of supported product codes by the value of total exports. Data was retrieved on 30 February 2022.

2.5.1 The relationship between the OECD and GTA taxonomy

An effort has been made by the GTA team to map their taxonomy with that of the OECD matrix discussed above. Table 3 shows the correspondence between the OECD Support Matrix and entries in the GTA database. Several of the GTA intervention types correspond with the same transfer mechanism in the OECD matrix.[16] This means that some information is lost when GTA data is translated into the OECD taxonomy. For instance, the OECD taxonomy does not distinguish between export subsidies and state loans or between trade finance and other types of loan guarantees. The linkage is nevertheless useful for tying subsidies recorded in the GTA database to a policy discussion based on the support matrix.

Table 3. Correspondence table: OECD Support Matrix and GTA data

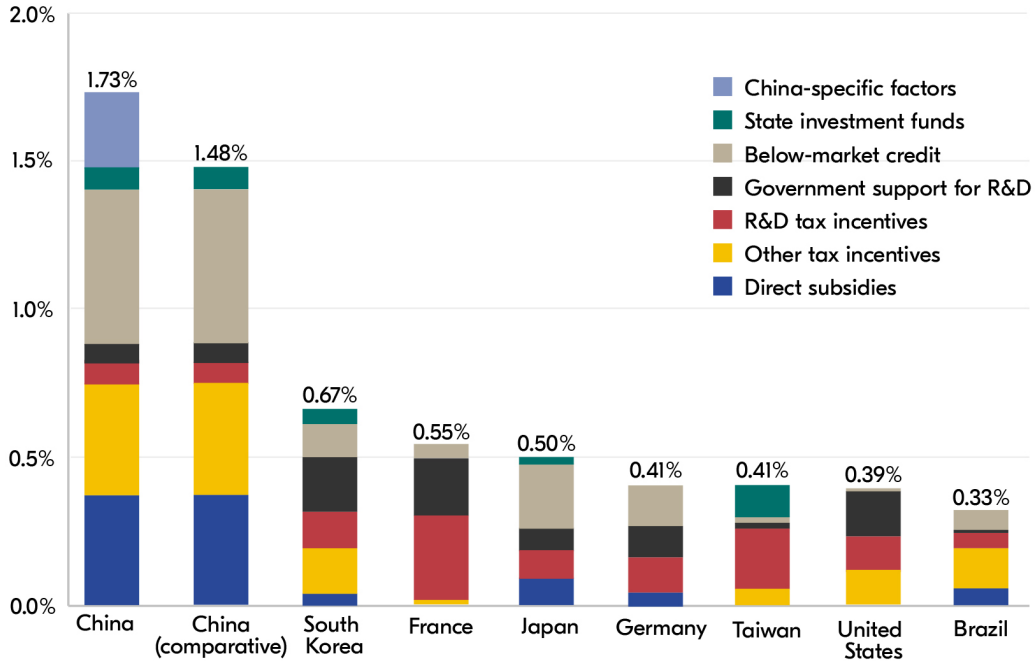
OECD taxonomy	GTA taxonomy
Direct transfer of funds	Capital injection and equity stakes (incl. bailouts)
Direct transfer of funds	Financial grant
Direct transfer of funds	Production subsidy
Direct transfer of funds	State aid, nes
Direct transfer of funds	In-kind grant
Direct transfer of funds	Financial assistance in foreign market
Direct transfer of funds	State aid, unspecified
Other government revenue foregone	Other export incentive
Other government revenue foregone	Price stabilisation
Tax revenue foregone	Tax or social insurance relief
Tax revenue foregone	Import incentive
Tax revenue foregone	Tax-based export incentive
Tax revenue foregone	Export subsidy
Transfer of risk to government	Loan guarantee
Transfer of risk to government	State loan
Transfer of risk to government	Trade finance
Transfer of risk to government	Interest payment subsidy

Source: GTA database

16 Also note the absence of the category 'Other revenue forgone'. The mapping was provided by researchers at the GTA.

Finally, there are other research projects available with data on government support for manufacturing sectors. The most ambitious as far as we can tell is DiPippo et al. (2022), who use a host of firm-level and government sources together with assumptions to measure aggregate industrial support in a number of key economies for a single year, 2019. They arrive at the estimates shown in Figure 4. The categories of support used in the report can all be linked to the OECD matrix but they are not directly comparable to the categorisation used by the GTA team.

Figure 4. Industrial policy spending in key economies 2019 (share of GDP)



Note: Estimates shown only includes support types that the authors deem estimable and comparable across countries. They therefore understate the total amount of support provided in each economy.

Source: DiPippo et al. (2022).

Table 4, on the following page, summarises the information presented in this chapter.

Table 4. Data on government support available, by source

Source	Information collected	Means of collecting	Approach/ definition/ inclusion criteria	Notes
WTO notifications	Policy objective/and or purpose, granting authority, form (grant, loan, tax concession, etc.), mechanism of transfer, recipient, unit subsidy or total amount, duration, statistical data permitting an analysis of trade effects.	Self-reporting by member state to the SCM Committee. New and full notifications should be submitted every two years (odd years), by 30 June.	All subsidies for goods that are specific and/or affect trade.	Information stored in individual files in a searchable online database. No coherent database exists. Many members fail to meet their reporting obligations and information is often lacking.
EU State Aid Scoreboard data	Beneficiary, aid element (i.e., nominal amount or value of benefit), location, sector and objective of the support measure.	Reporting by member state to the European Commission.	All support measures possibly affecting trade between member states. Support below de-minimis level excluded.	
Global Trade Alert	Intervention type, whether firm specific, affected products (HS) and/or sectors (CPC), duration, level of government. Constructed variables: affected jurisdiction, ('harmful' or 'liberalising), correspondence with UN MAST chapter and OECD Taxonomy.	Machine-based web scraping techniques and manual collection by analysts. More than 95 per cent of entries are sourced from official government sources.	Unilateral action, relative treatment test, meaningful change, credible action, absence of uncontested higher motive, announced after 1 Jan 2008.	All entries must meet the criteria set out in the GTA handbook. Not even notifications made to the WTO are automatically included.
OECD work on manufacturing subsidies and the level playing field	Firm-level data on received subsidies in selected sectors (aluminium, semiconductor and rolling-stock) or support types (below-market finance).	Information collected from firms' statements such as annual reports and press releases.	Depends on context.	Data is not publicly available.
OECD Inventory of support measures for fossil fuels	Fossil-fuel support per sector (production, transportation, residential, electricity generation, other sectors), fuel type (coal, natural gas, end-use electricity, petroleum), and beneficiary (consumers, producers, general services). G20 and EaP countries.	Bottom-up approach. Information gathered from official government budgetary entries, i.e., transfers and tax concessions.	Tax expenditure estimates could increase either because of greater concessions (relative to benchmark) or because of a raise in the benchmark itself. International comparisons are thus made difficult.	
IMF Government Finance Statistics (GFS)	Budgetary expenditure 'subsidies', institutional sector of recipient (public corporations, private enterprises or other sectors), nominal amounts (domestic currency or per cent of GDP).	Reports in accordance with the GFSM 2014, a framework for fiscal analysis.	See pp. 131–134 of the GFSM 2014 Manual, available here: Government Finance Statistics - Documents - IMF Data	Country coverage appears varied

3 What kind of data are needed?

In order to maintain international competition on market terms and avoid a global misallocation of resources, a comprehensive mapping of subsidies to manufacturing sectors is needed. The patchwork of data sources summarised in this roadmap is a good start. They all contribute to the transparency needed to curb the growing 'beggar thy neighbour' dynamic.

In order to avoid the Herculean task of mapping state support to all firms in the world, it is important to limit the number of economies that have the capacity to distort trade or undermine competition between firms on market terms. The G20, excluding Russia but including the whole of the EU (hereafter the G19), is the most appropriate set of countries for such a comprehensive coverage. Moreover, it is questionable whether countries have the fiscal resources to provide subsidies on a scale that could distort trade and competition between firms more than marginally.

To map and estimate the effects of government support in manufacturing sectors, transparent, reliable and comprehensive knowledge along three broad lines is needed:

1. Data on the amount (value), purpose and nature of G19 trade distorting subsidies to manufacturing sectors, preferably classified according to the OECD's matrix of support measures (table 2)
2. Data that make it possible to link information on government support to trade and production data, for instance, UN COMTRADE, the sector or good that benefits directly from the support
3. Estimates of the effects of G19 trade distorting subsidies, i.e., how and how much they distort trade or affect competitive conditions in international or domestic markets.

If/when these three building blocks are available to G19 policymakers, there will be a solid foundation to negotiate rules that limit subsidies that distort trade or undermine competition between firms on market economy terms, either at the WTO or in another format.

Much valuable work has been done by the OECD that contributes to this foundation. The OECD's firm-level, bottom-up approach is ideal for several reasons.

- It already has broad legitimacy, at least among OECD economies.
- Incentives for firms to report accurately are strong due to legal penalties that the companies face if they do not comply.
- It allows crucial data to be collected, most notably the amount of support that each firm receives.
- It gets around the issue that support can be administered at all levels of government or through state enterprises.
- It creates a natural downward demarcation in firm size.[17]

We therefore recommend that the OECD continue its current work in the context of the new Manufacturing Giant Corporations (MAGIC) database to track industrial subsidies consistently and comprehensively. Ideally, the database should also be made public as soon as possible.

In addition, the research community should engage with the policy community to provide ways to estimate the *effects* of G19 subsidies in terms of, for instance, how distortionary they are and whether they contribute to stated policy objectives. This presupposes that OECD data are made available to researchers.

Ultimately, work to create the knowledge foundation we envision cannot be the work of one institution or international organisation. It is most likely to proceed quickly if many actors are involved, but only by using the same taxonomy as the OECD as well as criteria for measures that distort trade and competition.

Finally, an important problem with the current data sources is that most of them lack a time perspective. Constructing data sets on industrial subsidies that cover longer time periods is a labour-intensive task but would be very valuable for the task of mapping industrial subsidies and estimating their effects. For agricultural support and fossil fuels such time-series data already exist.

17 A vast majority of international trade takes place via large firms. Therefore, it is not necessary to map government support provided for each 'mom-and-pop' store in the G20 economies.

4 Conclusions and policy recommendations

There have been many calls for greater transparency in government subsidies to industrial sectors. An important question concerns what this transparency should include. What kind of data are needed to provide a solid basis for negotiations to limit subsidies that distort trade and competition beyond what is necessary to achieve legitimate policy objectives? As argued in the previous section, data are needed along three broad lines to provide the kind of reliable knowledge on which successful negotiations can be based:

- Data on the amount (value), purpose and nature of potentially trade-distorting subsidies to G19 manufacturing sectors, preferably classified according to the OECD's matrix of support measures
- Data that allow information on government support to be linked to trade and production data, such as UN COMTRADE data
- Estimates of the impact of G19 trade-distorting subsidies, i.e., how and to what extent they distort trade and competition in the market.

Ultimately, the knowledge base we envision would need to involve many different actors working towards the same goal, using the same or a similar taxonomy. We have suggested that the OECD's matrix of support measures should be used for data collection and analysis for this purpose. It is evidence based and well established beyond the OECD, not least because it is derived from UNCTAD's MAST project.

We draw the following conclusions from the research conducted for this report.

WTO data

It is clear that WTO notification needs to be improved. This is the responsibility of all WTO members, and we do not expect a sudden change in members' attitudes towards notification. What the WTO Secretariat could do in the short term, however, is to make notified data available in modern data formats that can be downloaded and used for quantitative purposes. From what the authors of this report understand, ongoing work at the WTO is aiming to do just that. This is a welcome effort and the National Board of Trade is looking forward to the publication of the new Excel database.

OECD data

We strongly support the OECD's continued work in the context of the MAnufacturing Groups and Industrial Corporations (MAGIC) database to track subsidies to industrial sectors in a consistent and comprehensive manner. We recommend that OECD data be made publicly available as soon as possible. OECD subsidy data should preferably also be linked to other statistical sources, such as UN Comtrade. As part of this work, the OECD and/or the WTO should organise regular events to highlight the latest trends.

The Global Trade Alert

The Global Trade Alert database is a very valuable source of data on industrial subsidies. For the purposes we are discussing here (comprehensive mapping of industrial subsidies in the G19 + the ability to estimate their impact), the GTA should ideally include a measurable economic value of implemented subsidies. Apart from the challenge of assigning a value to the subsidies covered by the GTA, we recognise that this would require some reorganisation of at least important subsets of the GTA database. Ideally, the information would also be compiled in a searchable form with a common structure.

The need for support from the research community

With the exception of the GTA, international organisations have dominated efforts to map and estimate the impact of industrial subsidies. In our view, it would be very valuable if the research community could become more involved in the future. The risk of a beggar-thy-neighbour dynamic for industrial subsidies is high, and it is hard to see how the current trend would be a cost-effective way to develop the best climate-friendly technologies or prevent climate change. The only way to determine how taxpayers' money is best spent for these purposes is to base policy on evidence, by revisiting sound theory and estimating the empirical effects of different types of subsidies. WTO, OECD and GTA databases will help in this work, but the international organisations will need support from the research community in this effort. The independency of research bodies, along with the peer-review process, help provide well-needed legitimacy to a politically sensitive topic.

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Sammanfattning

Summary in Swedish

Statliga subventioner till näringslivet är en sedan länge omtvistad fråga bland politiker såväl som inom akademin. Åsiktsskillnader till trots är de flesta ekonomer överens om att vissa subventioner kan vara ekonomiskt motiverade, särskilt när de är avsedda att åtgärda marknadsmisslyckanden eller negativa externa effekter. Subventioner för grundläggande forskning och utveckling (FoU) kan stötta företag att investera i projekt med hög social avkastning men som kanske inte är lönsamma ur ett privat perspektiv. På samma sätt kan subventioner riktade mot miljövänliga varor och tjänster stödja den gröna omställningen och bidra till bevarandet av naturliga ekosystem. Samtidigt är det väl känt att subventioner kan ha en negativ inverkan på resursfördelningen inom och mellan länder, snedvrida den internationella handeln, skada konkurrensen och leda bort medel från andra sektorer.

Det är naturligtvis inte alltid lätt att avgöra vilket som är det bästa sättet att genomföra en åtgärd. I verkligheten ser vi därför en blandning av fördelaktiga och potentiellt skadliga stödåtgärder genomföras.

En anledning till den ökade uppmärksamheten på subventioner är Kinas ekonomiska framväxt i kombination med den betydande mängd pengar och resurser som många länder ägnar åt subventioner.

För en konstruktiv debatt om subventioner är tillförlitlig och internationellt jämförbar information om vad, och hur mycket, varje part spenderar på statliga subventioner avgörande. Bristen på uppgifter om subventioner gör det svårt att bedöma deras inverkan på handel och konkurrens. Därför finns det få analyser av hur olika typer av subventioner påverka internationell handel. Det har dock under de senaste åren framförts krav på större öppenhet och gemensamma rapporteringsnormer för subventioner riktade till tillverkningsindustrin, särskilt eftersom insatser för att förhindra klimatförändringar är beroende av förmågan att mäta och dokumentera globala utsläpp.

I denna rapport dokumenterar vi de viktigaste datakällorna som finns tillgängliga för att studera subventioner till tillverkningsindustrin. Vi visar också vilka typer av subventioner som är vanligast och inom vilka sektorer.

Några slutsatser som dras i denna rapport är följande:

- Uppgifterna om WTO:s anmälningar behöver göras mer användarvänliga i syfte att enklare kunna studeras. I dag finns informationen endast tillgänglig i separata dokument.
- Vi rekommenderar att OECD:s data om industrisubventioner görs tillgängliga för analytiker och forskarsamhället. OECD:s uppgifter om subventioner bör också kopplas till andra statistiska källor, t.ex. UN Comtrade.
- Databasen Global Trade Alert (GTA) är en värdefull källa till uppgifter om industri-subventioner. För de syften som diskuteras här bör GTA helst innehålla ett mätbart ekonomiskt värde.
- Med undantag för GTA-databasen har internationella organisationer dominerat arbetet med att kartlägga och uppskatta industrisubventionernas effekter. Vi anser att det skulle vara mycket värdefullt om forskarsamhället kunde engagera sig mer för att generera oberoende och granskade analyser på ett politiskt känsligt område.

Det förmodligen bästa sättet att avgöra hur eventuella subventioner ska designas är att basera politiken och åtgärderna på empirisk evidens och sund teori och de internationella organisationerna kommer att behöva stöd från forskarsamhället i detta arbete.

The National Board of Trade Sweden is the government agency for international trade, the EU internal market and trade policy. Our mission is to facilitate free and open trade with transparent rules as well as free movement in the EU internal market.

Our goal is a well-functioning internal market, an external EU trade policy based on free trade and an open and strong multilateral trading system.

We provide the Swedish Government with analyses, reports and policy recommendations. We also participate in international meetings and negotiations.

The National Board of Trade, via SOLVIT, helps businesses and citizens encountering obstacles to free movement. We also host several networks with business organisations and authorities which aim to facilitate trade.

As an expert agency in trade policy issues, we also provide assistance to developing countries through trade-related development cooperation. One example is Open Trade Gate Sweden, a one-stop information centre assisting exporters from developing countries in their trade with Sweden and the EU.

Our analyses and reports aim to increase the knowledge on the importance of trade for the international economy and for global sustainable development. Publications issued by the National Board of Trade only reflect the views of the Board.

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