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Quantifying industrial strategies (QuIS): measuring industrial policy expenditures

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Industrial policy is sparking renewed interest across OECD member countries and partner economies. However, amidst an increasing number of objectives for industrial policy, and despite the availability of information on countries' strategies and plans, it remains difficult to properly measure and compare resources spent on industrial policies and identify countries' strategic priorities. The lack of a cross-country comparable source of information on resources dedicated to industrial policy partly results from the absence of a common methodology to account for industrial policy expenditures.

This paper provides a new methodology for reporting industrial policy expenditure in a comparable way across countries.

It is the first deliverable of the "Quantifying Industrial Strategies" project, which aims at measuring industrial policy expenditures across OECD countries and will gather harmonised data on industrial policy expenditures, their composition, and their mode of delivery.

Keywords: benchmarking, industrial policy, industrial strategies.

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Executive summary

Industrial policy is sparking renewed interest across OECD member countries and partner economies. Ever since the global financial crisis, industrial policy has been called upon to help stimulate growth and productivity, promote resilience and capacity building, and address grand challenges. Industrial policy is gaining further traction as countries seek to ensure a green, digital, and inclusive recovery after the Covid-19 pandemic, and to reduce dependencies on critical inputs following the recent shortages and the Russian Federation's (hereafter 'Russia') large-scale aggression against Ukraine.

However, amidst an increasing number of objectives for industrial policy, and despite the availability of information on countries' strategies and plans, it remains difficult to properly measure and compare resources spent on industrial policies and identify countries' strategic priorities.

The lack of a cross-country comparable source of information on resources dedicated to industrial policy partly results from the absence of a common methodology to account for industrial policy expenditures. This report describes a first attempt to fill this gap and provides a new methodology for reporting industrial policy expenditure in a comparable way across countries.

The "Quantifying Industrial Strategies" project aims at measuring industrial policy expenditures across OECD countries. It will gather harmonised data on industrial policy expenditures, their composition, their mode of delivery, and the characteristics of their beneficiaries. It will allow participating countries to benchmark their industrial strategies against each other in terms of industrial policy expenditures, policy priorities, policy instruments and recipients. The first phase of the project consists in gathering quantitative data on industrial policy instruments (budget, instrument type, eligibility criteria and selection process, among others), mainly relying on publicly available information.

Building on the recent OECD framework for industrial policies, the report describes in detail the scope of industrial policy expenditures, defined as direct support extended by the public sector to businesses, aimed at promoting investment (including digitalisation and greener production), improving competitiveness, or supporting economic development. It also presents the methodological choices made to measure and categorise industrial policy expenditures.

This methodological report is the first important outcome of this project. Since determining which measures are deemed industrial policies and identifying related expenditures is far from obvious, a harmonised and consensual methodology is not only a significant milestone for this project but also, beyond this project, an important contribution to greater transparency on industrial policies across countries. The methodology has been discussed and agreed with the project's Advisory Group, composed of academics and experts from participating countries.

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1. Introduction

1.1. Quantifying Industrial Strategies

Industrial policy is sparking renewed interest across OECD member countries and partner economies. Ever since the global financial crisis, industrial policy has been called upon to help stimulate growth and productivity, promote resilience and capacity building, and address grand challenges. So-called horizontal policies, i.e. interventions available to all firms and which include business framework conditions such as taxes, product or labour market regulations, are increasingly questioned on both efficiency and sufficiency grounds (Franco-German Manifesto, 2019^[1]; Criscuolo et al., 2022^[2]; Criscuolo et al., 2022^[3]), in particular in countries that have pursued a strategy based on horizontal policies over the last decades and reached a satisfactory level of business framework conditions. At the same time, targeted industrial policies, i.e., interventions restricted to a subset of eligible firms, continue to be the subject of a lively debate about their efficiency.

Industrial policy is gaining further traction as countries seek to ensure a green, digital, and inclusive recovery after the Covid-19 pandemic, and to reduce dependencies on critical inputs following the recent shortages and Russia's large-scale aggression against Ukraine. In recent years, to meet these urgent needs, governments have announced new industrial strategies such as UK's "Industrial Strategy: building a Britain fit for the future" (2017), the European Green Deal (2019), the Next Generation EU fund (2020), the Korean New Deal (2020), or the American Rescue Plan Act of 2021 (2021).

Amidst this increasing number of industrial strategies, and despite the availability of information on countries' strategies and plans, it remains difficult to properly measure and compare the amounts spent on industrial policies and identify what countries' strategic priorities are. For instance, as more and more countries are committing to net-zero greenhouse gas emissions by mid-century, what is the budget committed to the green transition and what share of industrial policy expenditures does this amount represent? Are the recovery plans likely to change main strategic orientations of industrial policies?

Against this backdrop, the OECD Secretariat is starting the new project "Quantifying Industrial Strategies", which aims at measuring industrial policy expenditures across OECD countries, initially for the period 2019-2021. It will gather harmonised data on industrial policy expenditures, their composition, their mode of delivery, and the characteristics of their beneficiaries. It will allow participating countries to benchmark their industrial strategies against each other in terms of industrial policy expenditures, policy priorities, policy instruments and recipients. Measuring industrial policy expenditures is a first step towards evaluation, ensuring global transparency and cross-country comparability of industrial policies, as well as facilitating international coordination for the industrial dimension of missions related to global challenges.

The measurement of industrial policy expenditures is not completely new. Apart from national initiatives¹, a few cross-country comparisons are available. In 1998, a book entitled "Public Support to Industry" aimed "to improve international transparency and to compare, OECD-wide, the trends and patterns of public support to manufacturing industry" (OECD, 1998^[4]). More recently, initiatives such as the European Commission's State Aid Scoreboard (European Commission, 2021^[5]) or the Center for Strategic and International Studies (DiPippo, Mazzocco and Kennedy, 2022^[6]) provide cross-country comparisons, although with a different scope and country coverage. This project will build on recent

OECD work by relying on the new framework for industrial policy developed in Criscuolo et al. (2022^[2]) and other OECD projects (Box 1).

The first phase of this project will gather quantitative data on industrial policy instruments (budget, instrument type, eligibility criteria and selection process, among others), mainly relying on publicly available information. The second phase will explore the characteristics of the beneficiaries (e.g. firm size, sector), which may rely, in addition to publicly available information, on statistics provided by countries, such as expenditures on different groups of recipients or average amounts received, based on administrative data.

1.2. The need for a common methodology

This document details the methodology underlying the first phase of the project. It first defines industrial policy expenditures as “direct support extended by the public sector to businesses, aimed at promoting investment (including digitalisation and cleaner production), improving competitiveness, or supporting economic development.”

Even if the project starts with the consideration of a limited set of policy instruments compared to the wide range of tools used in industrial strategies, future phases could aim at enlarging the scope by progressively including policy instruments that are more challenging to measure (see section 4.).

Another challenge when measuring industrial policy expenditures in a cross-country setting is comparability. Indeed, as a result of national specificities and past choices, countries have different standards to include, report and measure industrial policy expenditures. By providing harmonised definitions and data, cross-country comparisons of industrial policy expenditures limit this caveat. Nevertheless, it remains to some extent vulnerable to potential substitution between instruments that are in the scope and those that are excluded. Because industrial policy expenditures only partly describe industrial policy, results of this project will be considered along with measures of framework instruments and conditions, for instance on product market regulations, tax rates or the importance of state-owned enterprises.

In addition, the methodology needs to strike a balance between accuracy and international comparability when trade-offs arise. This requires adopting pragmatic choices, which occur when, for instance, deciding to what extent to include labour and skills policies, or whether to account (or not) for administrative costs.

Finally, this methodology strives to be as objective as possible. In practice however, it requires some judgment and discretion. As the number of countries and instruments increase, the methodology might be adjusted in the future to take into account more specific cases.

Section 2. discusses the scope of this first phase of the project while section 3. explains the choices faced when collecting information on industrial policy expenditures. Section 4. lists some possibilities to expand the scope of the project in the future.

Box 1. Articulation with other OECD projects

This new project is complementary to pre-existing OECD initiatives.

STIP Compass is “a joint initiative of the European Commission and the OECD that aims to collect together in one place quantitative and qualitative data on national trends in science, technology and innovation (STI) policy” (EC-OECD, 2022^[7]). The STIP Compass database relies on a survey of policy instruments conducted every two years.

The objectives of the “Quantifying Industrial Strategies” (QuIS) project and STIP Compass differ. First, the former aims at comparing strategic choices as reflected by industrial policy expenditures, and thus focuses on relatively large instruments (those accounting for more than 0.002% of a country GDP, see Section 2.1.3) and their budgets. STIP Compass, conversely, targets exhaustive coverage of STI policies. Second, STIP Compass provides detailed descriptions of policy instruments’ design, but does not provide comparable information on expenditures, which is the aim of the QuIS project. The scopes of these two initiatives also differ, since industrial policy includes direct support to businesses unrelated to STI policies, but excludes instruments benefitting public research. STIP Compass will be used as one of the sources for this project.

The microBeRD+ project aims at measuring the structure, distribution and concentration of business R&D, sources of R&D funding and government support for innovation. Work on measuring the latter is currently being expanded. QuIS can be seen as complementary to microBERD+ as the former broadens the scope of policy instruments covered.

OECD sectoral analyses are also complementary to this project. Compilation and analysis of subsidies and other support measures, such as preferential lending credit guarantees or state-owned enterprises, are available for the shipbuilding sector (Gourdon, 2019^[8]) and the steel sector (Mattera and Silva, 2018^[9]; Giua and Mercier, forthcoming^[10]). The OECD also analysed the effects of below-market finance on 306 large firms in 13 sectors: aerospace and defence; aluminium; automobiles; cement; chemicals; glass and ceramics; rolling stock; semiconductors; shipbuilding; solar photovoltaic panels; steel; telecom network equipment; and wind turbines (OECD, 2019^[11]; OECD, 2019^[12]; OECD, 2021^[13]). These papers rely on firm-level information, which allows identifying direct support, but also estimating implicit support through below-market finance.

2. Setting the scope: Definition of industrial policy expenditures

After describing the general principles used to scope this project in the first subsection, the second subsection provides concrete rules to determine which policy instruments should be included.

2.1. Boundaries of the project

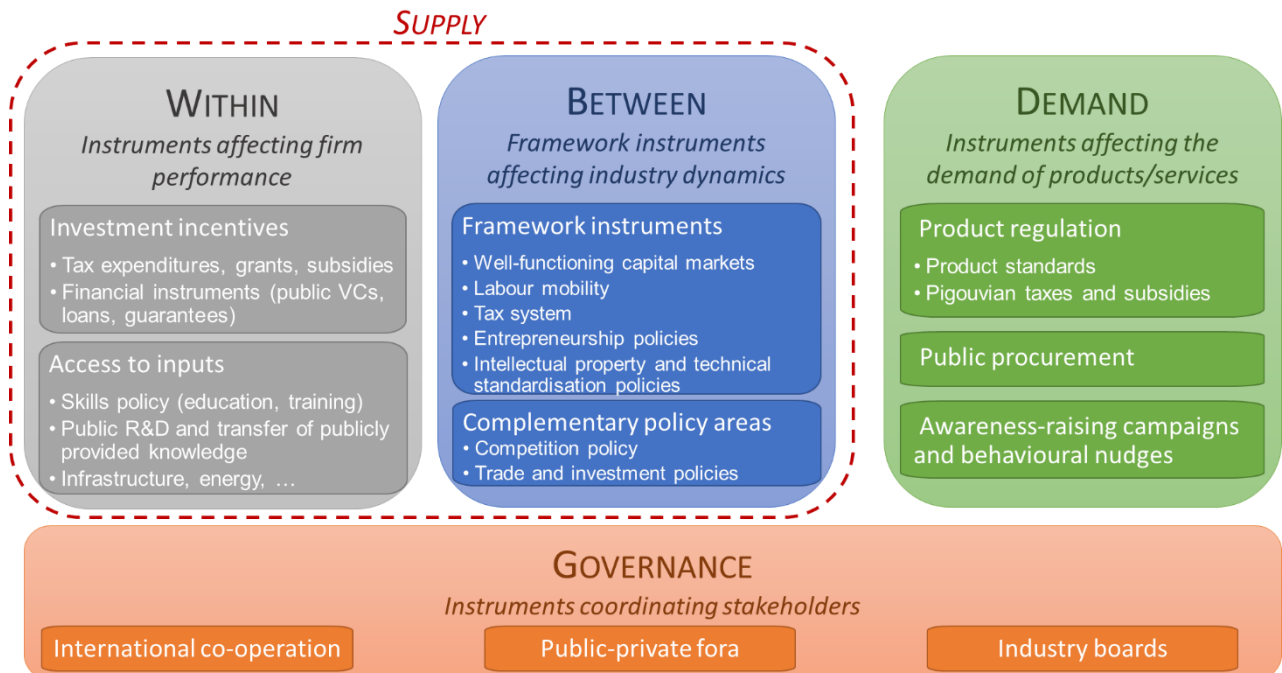
2.1.1. A taxonomy of industrial policy instruments

In previous work (Criscuolo et al., 2022^[2]), industrial policy is defined as **interventions intended to improve structurally the performance of the business sector**. Industrial policies cover the business sector, beyond manufacturing, and comprise a vast set of instruments, ranging from the design of intellectual property systems to public procurement, R&D incentives, or public provision of skills. Criscuolo et al. (2022^[2]) also underlines the multidimensional nature of industrial performance, thereby acknowledging that objectives of industrial policy can go beyond productivity growth and innovation to include, e.g., sustainability, resilience, or strategic autonomy.

For pragmatic reasons, this project will only focus on expenditures for a subset of industrial policy instruments defined in the taxonomy laid out in Criscuolo et al. (2022^[2]) (Figure 1).

In this first phase, instruments affecting firms' performance via investment incentives are included in the scope, while most of the other measures ('access to input', between- and most of the demand-side instruments) are excluded. First, for between instruments, measuring expenditures is difficult, or almost impossible. Second, identifying the relevant demand-side instruments can also prove complex, as some of them may pursue several goals and do not primarily follow industrial policy objectives. Third, among 'access to input' instruments, this project only considers those consisting in direct support to firms (e.g. subsidies to on-the-job training or grants directed to skills needed for renewable energy production, among others).

Figure 1. Taxonomy of industrial policy instruments



Note: Examples based on the main channel through which policy instruments work. The taxonomy follows the neo-Schumpeterian growth literature in distinguishing between demand-pull instruments and two types of supply-push instruments: those that improve firm performance (“within” instruments) and those that affect industry dynamics (“between” or framework instruments).

Source: Criscuolo et al. (2022_[2]).

2.1.2. Industrial policy expenditures

For this project, industrial policy expenditures are defined as direct support extended by the public sector to businesses, aimed at promoting investment (including digitalisation and cleaner production), improving competitiveness, or supporting economic development. In addition, this project focuses on industrial policy expenditures with annual expenditures higher than 0.002% of GDP (see Section 2.1.3).

This project focuses on industrial policy instruments fulfilling these three conditions (direct support, industrial policy objectives, and annual expenditure threshold). The rest of Section 2. details these conditions.

In particular, the following instruments will be included in the scope:

- Supply side instruments, and in particular investment incentives (e.g. tax expenditures, grants and subsidies, venture capital, loans and guarantees, see Figure 1).
- Instruments following industrial policy objectives: investment, competitiveness or economic development. Regarding investment, it can target several purposes, as listed in Criscuolo et al. (2022_[2]): innovation, technology adoption, inclusive growth, green transition, attainment of the sustainable development goals (SDGs), resilience, strategic autonomy and human capital formation, among others. In addition, it covers support provided to domestic incumbent firms, new firms and foreign-owned firms settling (or already settled) in the country.

- The scope is *not* restricted to the manufacturing sector, and covers both horizontal and targeted policies (Criscuolo et al., 2022^[2]), as long as policy instruments fulfil the three conditions laid out above.

The first phase of this project would mainly exclude²:

- Smaller programs (annual expenditures below a threshold of 0.002% of GDP, see Section 2.1.3).
- Support indirectly provided through consumers (e.g. car scrappage schemes) or the provision of public goods (access to infrastructure, public research).
- Implicit support like price regulation, public procurement, support to state-owned enterprises (SOEs), implicit guarantees and other implicit below-market financing mechanisms. Nevertheless, results obtained from this project can be interpreted along with information available from recent and ongoing work on these issues by other teams in the OECD (Box 1).

The proposed scope is mainly the result of pragmatic choices, given the difficulties in measuring expenditures for some categories of policy instruments. However, an extant literature shows that framework conditions (including the tax system, regulation, access to skills and knowledge, competition policy) and trade policy are major determinants of economic performance and of the success of industrial strategies (Criscuolo et al., 2022^[3]). Hence, results of this project will be considered along with other OECD work aiming at the cross-country comparison of framework conditions (e.g. Product Market Regulation Index), tax systems, below-market finance, public procurement for innovation and complementary work on competition, trade and science and technology policies (see Box 1). For instance, regarding tax systems, the project will rely on the Corporate Tax Statistics (OECD, 2021^[14]), Tax Policy Reforms reports (OECD, 2021^[15]) and the forward-looking effective tax rates (Hanappi, 2018^[16]).

Despite extensive efforts to provide harmonised definitions and data, cross-country comparisons of industrial policy expenditures remain subject to a number of caveats, which are detailed in Box 2. The most important one is the potential substitution between instruments that are in the scope and those that are excluded. This substitution may arise from different instrument choices by countries or from changes in a given country over time. Because industrial policy expenditures only partly describe industrial strategies, results of this project will be considered along with measures of framework instruments and conditions, such as product market regulations, tax rates or the importance of state-owned enterprises as well as with analyses focusing on the design feature of different policy measures in countries' industrial strategies.

Box 2. Caveats of cross-country comparisons

Substitution between instruments that are in the scope and those that are excluded. Industrial policy also relies on instruments outside the scope of this project. If countries use the latter to a different extent, this will have a differential impact on industrial policy expenditures. For instance, some countries may support more their firms through subsidies (in the scope), whereas others may rather use public procurement (out of scope in this version). This issue is also relevant for tax expenditures, since the same objectives achieved with a specific tax expenditure in one country could be achieved with a pro-business baseline tax in another country. In addition, countries can change their instrument mix over time.

Public sources can provide information on policy instruments using different accounting and accountability standards and different levels of granularity. This project will compare industrial policy expenditures in a harmonised manner, by reducing as much as possible these differences between countries (see for instance section 3.4.1 on tax expenditures).

Supranational policies. In European Union member states, industrial policy also relies on EU-level instruments (e.g. subsidies to the agricultural sector, structural and investment funds, NextGenerationEU), which are included in the scope of this project.

Subnational policies. In some OECD countries (e.g. Australia, Belgium, Canada, Germany, Spain, the United States), regional/state-level policy measures can significantly contribute to industrial policy expenditures (e.g. state level R&D tax credits in the United States). Subnational policy instruments will be included as soon as they fulfil the three conditions laid out in section 2.1.2 (direct support, industrial policy objectives and annual expenditure threshold).

2.1.3. The annual expenditure threshold

To collect information on industrial policy expenditures, the first phase of the project will follow two principles.

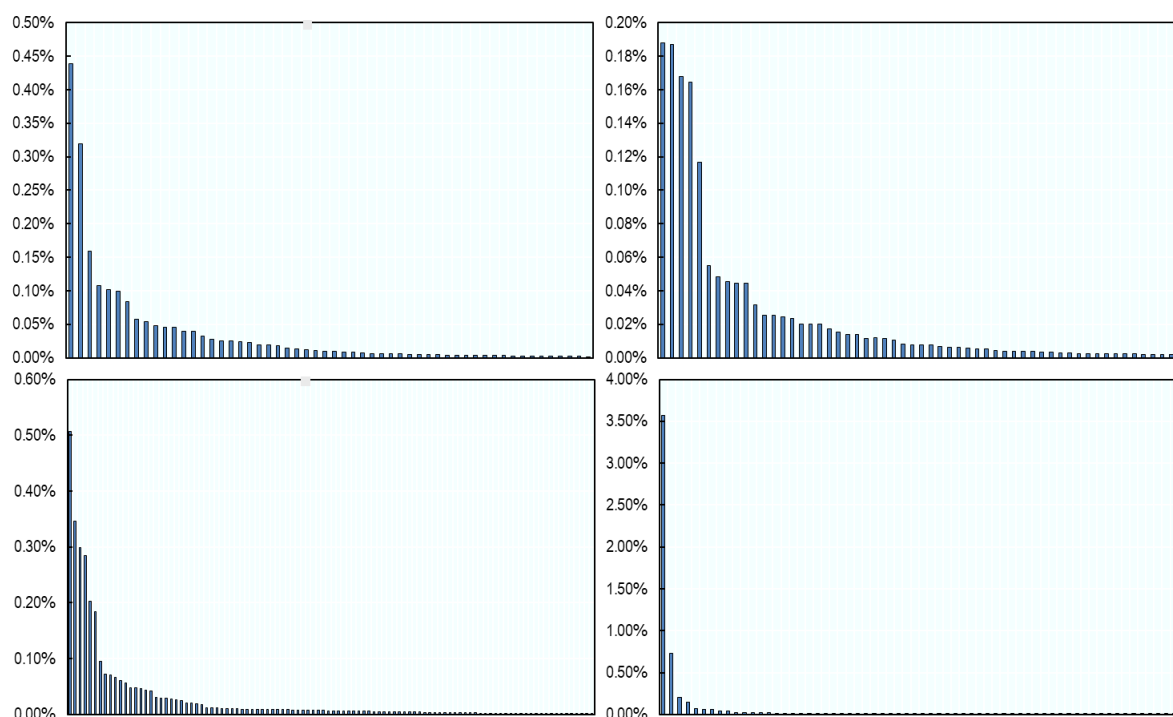
- **Principle 1: Relying on the accountability of governments towards citizens and Parliaments**
 - It mainly relies on publicly-available information (budgetary documents, national strategies, etc.) and OECD databases (microBeRD, STIP Compass, etc.).
 - For European countries, results can also be compared with information available in the European Commission's State Aid Scoreboard (see Box 3).
- **Principle 2: Relying on the Pareto principle**
 - There is a trade-off between completeness and practicality, which this project addresses by leaving aside the smallest policy instruments. This project aims to compare industrial strategies and main industrial policy orientations across countries, rather than to build an exhaustive compendium of policy instruments.
 - Policy instruments are included in the scope of this project only if their annual budget exceeds a threshold of 0.002% of GDP (the threshold for each participating country is available in Annex A). The use of a relative measure

allows adapting this threshold to the size, and the level of economic development of the country.

The threshold allows the project to capture a significant share of total industrial policy expenditures, while limiting the number of policy instruments studied (Figure 2, around 40 to 50 instruments covered per country).

To put the threshold into context, based on preliminary results on a subset of four countries, an instrument close to the threshold represents only between 0.1% and 0.25% of the identified industrial policy expenditures, depending on the country. Hence, to increase industrial policy expenditures by 5%, 20 to 50 additional instruments close to the threshold would be needed, which would mean almost doubling the number of instruments covered.

Figure 2. Annual expenditures by policy instruments (in percentage of nominal GDP) in descending order, for four countries participating in the project (latest available year)



Note: The names of the four countries are not given for anonymity reasons.

Source: Official documents with publicly available data on policy expenditures.

Box 3. The European Commission State Aid Scoreboard

Which information is available in the State Aid Scoreboard?

The Scoreboard is the European Commission’s benchmarking instrument for state aid. State aid is defined in Article 107 of the Treaty on the Functioning of the European Union as “any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods [...], in so far as it affects trade between Member States”. Further clarification on the notion of state aid is provided in European Commission (2016_[17]).

The Scoreboard comprises aid expenditure, based on annual reports by the Member States. Data accuracy remains the responsibility of Member States, even if the European Commission performs some checks. Support to railways and financial sector bailouts are dealt with separately.

The Scoreboard makes publicly available yearly amounts of support, e.g. by country and policy objective (14 modalities) or by country and policy instrument (11 modalities).

What are the key differences with this project?

Beyond geographical coverage, several differences exist between this project and the Scoreboard.

The objectives differ. First, this project aims to allow countries to benchmark their industrial strategies, as defined in Criscuolo et al. (2022_[2]), in terms of their composition, their mode of delivery and the characteristics of their beneficiaries, serving as a building block for future policy evaluation of industrial policy. On the other hand, the main objective of the Scoreboard is to “provide a transparent and publicly accessible source of information on the overall State aid situation in the Member States and on the Commission's State aid control activities” (European Commission, 2021_[5]).

Whereas the main target of this project is international comparability, the Scoreboard data and methodologies remain the responsibility of Member States and depend on their implementation of the EU’s notion of state aid (European Commission, 2016_[17]). For instance, the Scoreboard relies on an equivalent-subsidy method to evaluate expenditures related to financial instruments (see section 3.4.3 – paragraphs on “Loans and the measurement of expenditures”). However, the results depend on how countries apply the EU guidelines (see for instance European Commission (2008_[18]) on guarantees).

The instruments covered also differ. First, some instruments included in this project are not covered by the Scoreboard:

- Some horizontal measures are not reported in the Scoreboard, as the latter focuses on ‘selective’ measures. Even if the definition of selectivity is broad (European Commission, 2016_[17]), some large horizontal instruments (in particular tax expenditures) included in this project are not covered by the Scoreboard.

- The Scoreboard does not include financial instruments granted under market conditions, as it assumes that the advantage attached to these instruments is supposed to be null.
- The Scoreboard does not include support granted under the *de minimis* rule. For instruments covered by this rule, total payments to each individual firm cannot exceed EUR 200 000 over a 3-year period. These instruments are deemed to have no impact on competition and trade in the internal market of the European Union (European Union, 2013^[19]).

On the contrary, some instruments included in the Scoreboard are not covered in this project. Industrial policy is a subset of the policy objectives included in the Scoreboard. For instance, ‘culture’, ‘heritage conservation’, ‘compensation of damages caused by natural disasters’ are not a priori industrial policies since, in general, they do not follow industrial policy objectives.

Source: https://ec.europa.eu/competition-policy/state-aid/scoreboard_en and European Commission (2021^[5]).

2.1.4. Time period and COVID-19 emergency support measures

The period covered by the first version of the analysis will cover the years 2019-2021 and, in the future, could be updated and or extended to earlier years.

As the project focuses on structural industrial policies, COVID-19 emergency support measures will be included but recorded separately. Countries will therefore be able to benchmark their COVID-19 related industrial policy expenditures, as well as more structural interventions.

Emergency support measures are temporary and aim at reducing costs or avoiding mass layoffs of workers and bankruptcy of firms whose activity has been affected by the pandemic or the restrictions enacted to limit the spread of the virus (e.g. lockdowns, administrative shutdowns). Structural support implemented under the COVID-19 recovery plans is not considered as emergency measures and will be recorded with other structural industrial policy expenditures.

Even policies that are not specific to COVID-19 may be affected by the crisis. If countries are hit differently by the pandemic or have different industry structures, this may in turn affect the international comparability for the years 2020 and 2021. But this will not affect data for 2019.

2.2. Which instruments are included, which are not?

This subsection provides the details of the proposed methodology by discussing supply-side instruments (in 2.1.1) and demand-side policies (2.1.2), defining the basic unit of analysis (i.e. the policy instrument), the budget threshold, and how it is applied at the instrument level (in 2.1.3) and detailing the sectoral scope (2.1.4).

2.2.1. Supply-side instruments

Government investment in enterprises, with the notable exception of public venture capital (see Section 3.4.4), will not be included in the scope of this project. Despite often related to industrial policy objectives, investment in state-owned enterprises (SOEs) is difficult to compare on a cross-country basis, especially since support to SOEs can be channelled through indirect support (including below-market financing and implicit state guarantees),

which would be challenging to measure. This could also be the case for firms in which governments own a minority stake (e.g. government investment in companies like Volkswagen³ in Germany).

Labour market policies (including skills and training policies, and labour cost reduction policies) are included as soon as they fulfil the three conditions laid out in section 2.1.2 (direct support, industrial policy objectives and annual expenditure threshold). Labour cost reduction policies fostering competitiveness and skills, and training policies favouring investment in human capital, are of particular interest for this project. Policies such as horizontal or targeted reductions in employers' social security contributions, horizontal or targeted tax credits, such as the Competitiveness and Employment Tax Credit (Crédit d'Impôt Compétitivité et Emploi - CICE) in France (Box 4) and the Industry 4.0 Training Tax Credit⁴ (Credito d'imposta formazione 4.0) in Italy, will be included whereas indirect support will not be considered (e.g. support to apprentices' living conditions). Support to the uptake of non-mandatory insurance⁵ will not be taken into account, since such instruments follow social and health goals rather than industrial policy objectives.

Results obtained from this part of the project can be interpreted along with information available in the OECD database on Labour Market Programmes, which includes expenditures by country and by category of labour market policy⁶.

Box 4. The Competitiveness and Employment Tax Credit and social contribution breaks - France

The Competitiveness and Employment Tax Credit (CICE)

The CICE was a refundable tax credit benefiting companies with employees paid below 2.5 times the minimum wage in France. CICE takes the form of a tax credit on corporate (and sometimes personal) income tax, amounting to a percentage of the eligible payroll (6% in 2018).

The CICE was enacted in 2013, following the Gallois report (Gallois, 2012_[20]) on the competitiveness of the French manufacturing sector. The aim of the CICE was to give companies more leeway in order to invest, prospect for new markets, innovate, promote research and innovation, recruit, restore their working capital or support the ecological and energy transition by lowering labour costs.

This tax expenditure reached EUR 20 Bn in 2018.

CICE has been replaced by reductions in employers' social contributions

From 2019 onwards, CICE has been replaced by a 6-percentage point reduction in employers' health insurance contributions for remunerations below 2.5 times the minimum wage. Remunerations below 1.6 times the minimum wage benefit from an additional reduction in employers' social contributions (4.05 percentage points for workers at the minimum wage).

These new reductions in employer's social contributions come on top of the existing reductions, such as the 'Fillon reductions'.

Overall, in 2019, the cost to the government of general employers' social security exemptions amounted to EUR 58 Bn (excluding exemptions for the self-employed, farmers and special schemes):

- EUR 28 Bn for the general reduction, concerning wages between 1 and 1.6 times the minimum wage;

- EUR 22 Bn for the 6-percentage point exemption from health insurance contributions replacing the CICE;
- EUR 8 Bn for the 1.8 percentage point exemption from family contributions, created as part of the Responsibility Pact.

Source: <https://www.economie.gouv.fr/le-cice-cest-quoi>; Commission des Comptes de la Sécurité Sociale (2021^[21]) Draft Budget Law for Social Security for 2022 – Annex V.

Support to the private sector granted through the intermediary of public agencies (e.g. innovation agencies or development banks) or local authorities is included in the scope of the project, as soon as this intermediary provides direct support to firms. This is for instance the case of venture capital loans provided by development banks (see Section 3.4.4). For promotion (e.g. of export, investment or tourism) agencies, a differential treatment is proposed: direct support to firms (e.g. subsidies or loans) provided by these agencies will be considered; while indirect support⁷ (e.g. advertising campaigns) will be excluded, as beneficiaries and expenditures cannot be easily identified.

Relevant tax expenditures are not only those related to corporate income tax. Reductions of property taxes, energy taxes or social contributions are included as soon as they fulfil the three conditions laid out in section 2.1.2. Examples include R&D tax credits and other tax expenditures such as tax exemption for fuels in the shipping sector (Denmark) or the French ‘Young Innovative Enterprises’ social contribution break (JEI – *Jeunes Entreprises Innovantes*).

Value-added, energy and excise tax expenditures deserve a special discussion. In general, reduced tax rates applying to certain products will not be included. They are considered demand-side instruments (see next subsection), as the reduction depends on the consumption of products, rather than their production. However, tax expenditures granted to some categories of firms (e.g. SMEs or firms in a particular sector), such as the Small Business Scheme – *Kleine ondernemersregeling* – in the Netherlands or reduced tax rates on fuel for shipping companies, are in the scope. These instruments can be considered as supply-side policies, as the tax expenditure depends on the characteristics of the company. Reduced energy or excise tax on goods that are mostly used as an intermediate input (e.g. ‘marked fuel’ in Canada) are also considered in the scope.

Reduced rates of excise duty tax are included as long as they are explicitly targeted at businesses or concern goods that are overwhelmingly used by firms as inputs (e.g. the ‘Mineral Oil Tax Rebate for Commercial Sea Navigation’ and the ‘Diesel Rebate Scheme’ to road transport operators, both implemented in Ireland).

Consistently with the [microBeRD project](#), the standard 100% deduction of R&D expenditures is not considered as a tax expenditure. This baseline tax deduction, applicable to R&D and non R&D expenditures alike, is available in most OECD countries and is not considered by the Frascati manual as a tax expenditure supporting R&D (OECD, 2015^[22]).

Among supply side policies, public research expenditures will not be considered as they support firms only indirectly.

However, support to public-private research consortia will be included as it often entails direct support to firms. Some examples are “Innovation Superclusters Initiative” (Canada), and “Go-Cluster program” (Germany). As an exception to the general rule laid out in section 2.2.3 (paragraph on “Mixed beneficiaries”), total expenditures would be included. Indeed, it is often difficult to identify the share going directly to firms.

Some countries might also support private R&D and technology-related technical development through specialised private intermediaries. For example, Denmark subsidises seven Approved Technological Service Institutes (*Godkendte Teknologiske Serviceinstitutter* - GTS), which are private non-profit institutions aiming to build technological competences and services for Danish firms (see also the *Centres Techniques Industriels* – Industrial Technical Centres – in France). Support to these centres is included in the scope as soon as the intermediaries are private entities and are not state-owned.

Policies aimed at attracting foreign direct investment fall within the scope of the project as soon as they are investment incentives directly provided to firms (e.g. grants or tax expenditures to attract new foreign direct investment).

The project does not measure expenditures related to “between instruments / framework conditions” (Figure 1) since these policies are not direct government support to firms. Measuring those in a cross-country setting would prove very challenging.

2.2.2. Demand-side instruments

Demand-side instruments will not, in general, be included since the project focuses on direct support to the private sector. First, most of those instruments are conceptually different from other industrial policy measures included in the scope, as they do not directly target firms. Second, the impact of these policies on domestic firms is indirect and heavily depends on the share of domestic and imported goods. As they are indirect support and therefore do not fulfil the three conditions laid out in section 2.1.2, demand side policies channelled through households, like car scrappage schemes and support to the replacement of home gas and oil boilers, are excluded.

However, some demand-side instruments directly supporting firms, such as electricity purchase tariffs, will be included. These policies have characteristics similar to grants and subsidies, except that they are conditioned on the provision of certain goods or services. In addition, they represent a significant and growing share of support to some sectors (in particular renewable electricity) and their exclusion would result in an important blind spot. Public procurement, which also directly targets firms, but for which the degree of support and the availability of data remains an open question, would remain out of scope.

Therefore, in order to be included, demand-side policies should fulfil, in addition to the three conditions laid out in section 2.1.2, the following cumulative conditions: 1) beneficiaries and expenditures can be clearly identified; and 2) goods and services purchased are not for government consumption.

The first condition ensures that the characteristics of these policies are indeed close to the ones of other instruments included in this project. The second condition excludes public procurement and ensures that expenditures can be compared with subsidies and do not contain expenses related to the purchase of goods and services.

In many cases, electricity purchase tariffs would fulfil these criteria (e.g. purchase contract in France – *contrat d’achat* – representing EUR 5.7 Bn of public expenditures in 2017). Public procurement however rarely meets these conditions, in particular the last one. The Working Party of National Experts on Science and Technology Indicators (NESTI) is conducting a parallel exercise quantifying public procurement expenditure and this project will rely on their findings to complement the analysis.

2.2.3. Definition of policy instruments and application of the threshold

Definition of policy instruments. A policy instrument is defined as a tool of a particular type (see Section 3.4), and with well-identified eligibility criteria (see Section 3.5). If a

policy contains several policy instruments (e.g. grants and government venture capital), or can be divided into sub-policies with different eligibility criteria (e.g. part of the budget is reserved for SMEs), this policy should be split, for the purpose of this project, into several policy instruments.

Definition of the threshold. The project would only consider instruments whose expenditures are higher than 0.002% of the lowest level of nominal GDP since 2017. The threshold is kept constant over the period. This threshold allows collecting data on a significant number of policies, which represent most of the industrial policy expenditures.

Applying the threshold.

- The threshold is calculated considering national GDP, even for sub-national policies. Applying a lower threshold to sub-national policies would artificially increase federal states' expenditures in comparison with centralised states, thereby affecting international comparability.
- For instruments that are co-funded by several ministries, agencies or local authorities, the threshold is applied to total annual expenditures, regardless of the origin of funds. Funding provided by supra-national institutions (e.g. the European Union) is recorded separately.
- If a country is interested in the inclusion of some policy instruments whose expenditures are below the threshold, those can be considered in the national landscape of industrial policies, but they will not be taken into account for cross-country analyses, as they may alter comparability.
- The aggregation into a single instrument of instruments of the same type, with similar objectives and eligibility criteria, will be considered on a case-by-case basis. For international comparability reasons, aggregation of instruments should be made with caution and only under specific conditions. Specifically, these instruments should be of the same type (e.g. subsidies, tax expenditures, etc) and share the same eligibility criteria (e.g. green, digital, R&D, etc). For instance, an example could be the aggregation of similar regional or sub-national subsidy programmes (e.g. the Regional Economic Growth through Innovation programme in Canada, Box 5) or of similar call for projects⁸.
- A special rule could be applied to smooth time variations due to the entry and exit of instruments whose budget fluctuates around the threshold. Instead of removing them as soon as their expenditures fall below the threshold, instruments below the threshold in year t will be kept in the scope if (and only if) (1) they remain close to the threshold (max 20% lower) and (2) they surpass the threshold at least once between $t-2$ and $t+2$.

Box 5. Regional Economic Growth through Innovation programme - Canada

Canada's Regional Economic Growth through Innovation (REGI) program is a regional programme offered by the Canadian regional development agencies (RDAs) and it aims at delivering the Innovation and Skills Plan in the regions. It consists of the "Business scale-up and productivity" and the "Regional innovation ecosystems" initiatives. The former supports businesses through interest free loans to scale up SMEs and the latter through subsidies directed to business accelerators and cluster formation.

This programme is funded at the federal level but administered separately in six different Canadian regions: Atlantic Canada, Quebec, the Northern provinces, Southern Ontario, Northern Ontario, the Prairies and the Western provinces. The allocation of the federal budget among the different RDAs is decided by the federal government and approved by the Parliament. In the fiscal year 2021/2022, Quebec, Southern Ontario, Atlantic Canada and the Western provinces received CAD 199, 153, 139 and 127 million respectively.

Source: [Regional Economic Growth through Innovation - Canada.ca](https://www150.commerce.gc.ca/innovation); Department of Innovation, Science and Economic Development of Canada.

Mixed beneficiaries. Some instruments are directed to both private and public entities (e.g. local authorities, public enterprises). If the share of expenditures going to private businesses is unknown, the instrument is included unless countries provide information showing that the private sector is likely to represent less than half of the instrument budget (see section 2.2.1 about the case of research consortia).

2.2.4. Sectoral scope

In line with previous OECD work (Warwick, 2013^[23]; Criscuolo et al., 2022^[2]), this project considers that industrial policy can be applied to a wide range of sectors, not only to manufacturing. Non-manufacturing sectors represent a large share of value added⁹, employment, innovation, etc. Moreover, relevant inputs and technologies for the manufacturing sector are developed outside manufacturing, such as raw materials, business services, logistics, energy and advanced ICTs¹⁰. In addition, some instruments target a set of interlinked sectors or an 'industrial ecosystem' (e.g. agriculture and the food processing sector), which include both manufacturing and non-manufacturing activities.

For instance, industrial policies directed to sectors such as agriculture, tourism and defence are included in the scope as long as they fulfil the three conditions laid out in section 2.1.2. Regarding tourism, international marketing and branding services provided by public tourism agencies are excluded since they correspond to framework conditions that benefit firms only indirectly. The defence sector is particularly relevant due to its high R&D intensity and its technological spillovers. However, public procurement, which represents an important part of public spending on defence, would not be included. Support to non-merchant cultural activities is less likely to follow industrial policy objectives, and is therefore rarely included. In contrast, support to merchant cultural activities such as media and film production is included (see Box 6).

Box 6. Film or Video Production Tax Credit in Canada

The Film or Video Production Services Tax Credit in Canada is a 25% refundable tax credit in respect to wages and salaries of an eligible Canadian film or video production. The labour cost qualifying for this tax credit amounts to a maximum of 60% of total cost of a film or video production.

The objective of this scheme is to encourage the development of an active domestic independent production sector while enhancing Canadian programming skills at the same time. It amounted to CAD 265 million in 2021.

Source: [taxexp-depfisc-21-eng.pdf\(canada.ca\)](https://taxexp-depfisc-21-eng.pdf(canada.ca)); Department of Finance.

The OECD acknowledges the particular relevance of the manufacturing sector as a driver of economic growth given its spillovers and positive externalities. Hence, total support to manufacturing can be calculated and assessed if countries are interested in benchmarking it, based on sectoral breakdowns of industrial policy expenditures whenever available.

3. Information collected on industrial policy expenditures

3.1. General principles

This project aims to collect the following information on each policy instrument: yearly budget, type of instruments, eligibility criteria and selectiveness (Table 1).

The first phase of the project relies on close collaboration between the Secretariat and participating countries. The latter support the Secretariat in gathering relevant information, for instance by sharing relevant budgetary documents, national strategies or landscaping of industrial policies and by verifying the Secretariat's results.

Table 1. Information to be collected on policy instruments - Summary

Variables	Categories	Description of the categories
3.2 Yearly expenditures		
3.3 Scope	Horizontal policies	Interventions available to all firms, irrespective of their activity, technology and location.
	Targeted policies	Interventions restricted to a subset of eligible firms based on their activity, technology or location.
3.4 Instrument type	3.4.1 Tax expenditures	Provisions of tax law, regulation or practices that reduce or postpone tax revenue for a comparatively narrow population of taxpayers relative to a benchmark tax. These exceptions are often viewed as alternatives to other policy instruments, such as spending or regulatory programs. Tax expenditures consist of allowances, exemptions, rate relief and credits. See OECD (2010 ^[24]) and the U.S. Department of the Treasury (2021 ^[25]). Relevant tax expenditures are not only those related to corporate income tax but also include those associated to e.g. property tax, energy tax or social contributions.
	3.4.2 R&D Grants or Subsidies	Transfer of funds to the private sector supporting R&D investment projects resulting in direct budgetary expenditure without expected repayment or any rights attached.
	Other Grants or Subsidies	Same as above but directed to any other kind of activity or investment.
	3.4.3 Loans or Loan Guarantees	Provision of loans by the public sector, either by the government or through intermediaries (e.g. public or development banks). Loan guarantees are schemes through which the government covers (part of) the risk of default associated with a private loan. Loans and guarantees can be provided on preferential or commercial terms.
	3.4.4 Venture Capital	Government equity investments in private companies, often with risky business models. Including public investment through funds of funds.
3.5 Eligibility Criteria (categories are not mutually exclusive)	3.5.1 Digital	Instruments whose main focus is to support the adoption or development of digital technologies, to promote investment in digital inputs, digital services or data.
	3.5.2 Green	Instruments whose main focus is to support the adoption or development of environment-friendly technologies, to promote investment in environmentally sustainable inputs, and more generally to accompany firms' ecological transition.
	3.5.3 Sectoral/Ecosystems	Instruments which are geared towards a small number of economic activities. Instruments targeting industrial ecosystems (e.g. interrelated sectors in terms of input-output, knowledge or financial flows) are also considered sectoral. Instruments geared towards a technology that can be applied in a wide range of sectors (see next row) cannot be considered as sectoral.
	3.5.4 Technology-focused	Instruments geared towards the adoption or development of a particular technology (e.g. support for artificial intelligence or carbon capture and storage), or a small number of technologies.
	3.5.5 Size/age contingent	Instruments that are dedicated to firms below a certain size or age. The size threshold can be based on employment, assets, turnover or a combination of these variables. The threshold need not correspond to any official definition of SMEs or start-ups.
	3.5.6 R&D	Instruments supporting R&D expenditures or projects.
	3.5.7 Labour costs/skills policies	Instruments geared towards enhancing competitiveness, investment or economic development by providing direct support to firms, linked to their wage bill, employment, hiring or training expenditures.
3.6 Selectiveness of the process	3.6.1 Non-discretionary	Support is automatically granted as soon as the applicant meets the eligibility criteria.
	3.6.2 Selective	Support is not automatically granted. Applicants are selected based on the relative quality of their project compared to other applicants.
	3.6.3 1st come 1st served	Support is not automatically granted. Applicants are supported until the budget is exhausted or a preset number of beneficiaries is reached.

Note: Numbers refer to the sections where more information on the concepts can be found.

3.2. Measuring annual expenditures

Observed expenditures. Results are based on observed data, when available, rather than estimated, projected, or announced expenditures.

Accrual basis. Most governments report expenditures on an accrual basis¹¹, rather than on a cash basis. From an economic perspective, both for firms and for public expenditures, accrual accounting is the most relevant approach, and will be retained for this project.

Period of reference. Some countries present their expenditures on a fiscal year basis, with a definition of fiscal year that does not correspond to the calendar year. In this case, this project will follow the national definition of fiscal year.

Multi-year budgets. For some instruments, budget is only available for a multi-year period. Absent further information, the total amount will be divided by the number of years in order to obtain yearly expenditures.

Administrative costs. Expenditures are often calculated net of administrative costs, since most governments do not include these in their reporting. However, this is not necessarily the case for instruments administered by public intermediaries, as the costs reported in national budgets may correspond to the funding of the agency, rather than the amount transferred to firms. In the first phase, the project will focus on expenditures net of administrative costs. For the instruments administered by public agencies, alternative sources, such as annual reports of the relevant agencies, will be used to identify transfer to firms.

3.3. Scope – Horizontal vs targeted policies

There is a standard distinction between horizontal and targeted (or “vertical”) industrial policies. Horizontal policies are support measures available to all firms, irrespective of their activity, technology or location (Criscuolo et al., 2022^[2]). On the contrary, targeted policies are restricted to a subset of eligible firms based on their activity (e.g. tax deferrals for investment activities in the automotive sector), technology (e.g. government loans to firms adopting certain green technologies) or location (e.g. cluster policies leveraging the characteristics of the local industrial ecosystem).

Policies enacted by regional governments are not automatically considered as targeted policies. Even if often restricted to firms operating in the region, they can have broad industrial policy objectives, and similar policies can be found in several regions of the same country.

This project uses an ‘ex-ante’ definition of horizontality. Even if eligibility to horizontal policies is not restricted to specific sectors or technologies, these policies might disproportionately benefit a small number of sectors or firms. For instance, R&D tax credits mostly concern R&D-intensive sectors and larger firms (OECD, 2020^[26]).

According to the definition adopted in Criscuolo et al. (2022^[2]), size- and age-contingent policies are also considered horizontal measures (see also section 3.5.5). Although size- and age-dependent by definition, these policies are horizontal in essence, as they aim at improving the entire business environment for any entrepreneur to innovate, grow and create value added. Moreover, SMEs are the predominant form of business and employment across OECD economies, so that SME policies affect the overwhelming majority of firms.

3.4. Instrument types

3.4.1. Tax expenditures

Regarding tax expenditures, this project builds on the definitions of OECD (2010^[24]) and U.S Department of the Treasury (2021^[25]). According to these definitions, tax expenditures are provisions of tax law, regulation or practices that reduce or postpone taxation for a comparatively narrow population of taxpayers relative to a benchmark tax. In the spirit of Celani, Dressler and Wermelinger (2022^[27]), this project defines tax expenditures in relative terms (e.g. preferential tax treatment relative to the standard treatment in a country) rather than in absolute terms (e.g. preferential treatment compared to a benchmark country).

Tax expenditures consist of allowances, exemptions, rate reliefs and credits (refundable or not). Industrial policy tax expenditures include special provisions in corporate income tax, energy tax, property tax and social contributions, among others.

Governments often measure tax expenditures with the “revenue forgone method”, which calculates the tax that “would have been payable if the tax concession were removed, and economic behaviour remained unchanged” (Whitehouse, 1999^[28]). Countries can use different methodologies to calculate this benchmark tax (OECD, 2010^[24]). For instance, France uses simulations based on samples of tax returns, whereas Canada uses tax returns complemented with survey data. These methodological differences could limit the international comparability of tax expenditures, but are likely to remain small in practice. Importantly, the revenue forgone method does not take into account potential behavioural effects linked to the tax expenditure (or its removal).

More importantly, definitions of what constitutes a tax expenditure versus a part of the baseline tax system differ across countries, which can affect international comparison¹². Therefore, several adjustments are implemented to maximise the comparability across countries:

- Reduced corporate income tax rates for smaller firms are not viewed as a tax expenditure, but rather as part of the tax schedule itself. As only some countries provide estimates of the associated cost, considering these reduced rates as a tax expenditure would have limited cross-country comparability.
- For the same reason, loss carry-over provisions are not considered as tax expenditures.
- Differences between the treatment of business income and other types of income within the personal income tax are not considered as tax expenditures for this project. In contrast, provisions affecting only certain categories of business income qualify as tax expenditures in QuIS (e.g. measures for young farmers in France).
- To take into account differential energy tax rates across fuels, for those included in the scope (see section 2.2.1 above), this project uses data from the OECD Inventory of Support Measures for Fossil Fuels (OECD, 2015^[29])¹³ to complement national sources and ensure a homogeneous definition of tax expenditures across countries.

Tax deferrals deserve a special discussion, as they can be considered as a loan granted by the tax administration to the beneficiaries. The amount of deferred taxes cannot be compared with other tax expenditures or subsidies and will therefore be recorded together with loans (see discussion in section 3.4.3 – paragraphs on “Loans and the measurement of expenditures”, as well as in Box 8).

3.4.2. Grants or Subsidies

In this project, we focus on grants/subsidies to firms (Almus and Czarnitzki, 2003^[30]; Bergström, 2000^[31]), defined as the transfer of funds to the private sector resulting in direct budgetary expenditure without expected repayment or any rights attached.

‘R&D grants/subsidies’ are distinguished from ‘Other Grants and Subsidies’. The former are specifically targeted to reduce the costs of R&D expenditures in order to stimulate investment in innovation (see also section 3.5.6).

“Other Grants and Subsidies” include instruments such as capital subsidies for renewable energy production, export or investment subsidies and sectoral subsidies for rural development.

3.4.3. Loans or loan guarantees

Loans are provided either by the government or through public intermediaries (e.g. public or development banks). Examples include government loans for SMEs (e.g. Federal business loans in the United States), green loans given by public banks (e.g. BPI France ‘green loans’) and investment loans provided by development banks (e.g. Business Development Bank of Canada). This category also includes repayable advances and public investment in debt funds (e.g. Dutch Alternative Credit Instrument – DACI). Tax deferrals are also considered as loans.

Loan guarantees (or counter-guarantees) are schemes through which the government covers (part of) the risk of default associated with loans provided by private financial companies to private businesses (e.g. the SME Credit Guarantee scheme (BMKB) in the Netherlands, see Box 7).

Box 7. SME Credit Guarantee (BMKB) – The Netherlands

The BMKB is a government loan guarantee offered to SMEs with the aim of facilitating their access to finance. In practice, the government guarantees part of the loan, 50 to 75 % depending on firm size. The guarantee covers a maximum of EUR 1.5 million per company and provided 1 962 guarantees for a total amount of EUR 389 million in 2020.

A separate section of BMKB (BMKB-C) was created in response to the COVID crisis, providing 4 126 guarantees for a total amount of EUR 228 million in 2020 and 230 guarantees for a total amount of EUR 35 million in 2021.

Sources: [Guarantee SME Loans \(BMKB\) | Policy instrument | Business policy in the picture \(bedrijvenbeleid.nl\)](#) and [Credit guarantee for SMEs - BMKB | RVO.nl](#); Ministry of Economic Affairs and Climate of the Netherlands.

Loans and the measurement of expenditures. Various methods exist to measure public expenditures associated with loans. Countries commonly use the so-called notional amount method, which measures expenditures as the amount of financing provided by public entities. This method is chosen given the number of participants using it and the difficulties related to other methods (see Box 8).

However, the amounts obtained with this method are not directly comparable with grants, subsidies and tax expenditures. Hence, they will be recorded separately in the outcomes of the project. Section 4. envisages the implementation of the equivalent subsidy method as a potential future extension of this project.

Box 8. Other common methods to measure expenditures related to financial instruments

Equivalent subsidy method

It is the most accurate method to measure public expenditures related to financial instruments. It consists in calculating the advantage granted to beneficiaries by measuring the difference between the cost of public financing and its cost if the financial instrument were provided under market conditions. The main advantage of this method is to provide a measure of expenditures that can be directly compared to subsidies. The main difficulty is to accurately measure market conditions and how the public loan deviates from these conditions.

Furthermore, market conditions are often heterogeneous across beneficiaries, depending for instance on their creditworthiness. Finally, governments consider a large number of loan programmes as providing funding under market conditions. If this project were to follow the equivalent subsidy method, expenditures associated to these instruments would be null and the instruments would not appear in industrial policy expenditures. However, it can be problematic to consider that these programmes do not provide any kind of support to beneficiaries. If this were the case, they would not be implemented by governments, nor taken out by firms.

Losses on defaulted loans

This method measures the costs of operating the schemes (Westlund, 2004^[32]). But this information is only available with a considerable delay, and real time estimations rely on crucial but unharmonised assumptions (probability of default, loss given default, etc).

Source: [Measuring Industrial Subsidies : Some Conceptual Issues | OECD Economics Department Working Papers | OECD iLibrary \(oecd-ilibrary.org\)](#); OECD.

Leverage of intermediaries. When loans are not directly provided by the government, public intermediaries can leverage the funds received from the government (e.g. 100) to provide firms with a higher amount of loans (e.g. 500 by borrowing 400 from third parties)¹⁴. For the purpose of quantifying support to businesses, the amount of public funding received by firms matters. Hence, the project will use a “public contingent liability approach”, retaining only the leverage from public institutions but not from private ones (Figure 3). Indeed, it would be artificial to distinguish between government funding and funding from public agencies, as they often benefit from the same financing conditions (public agencies being most of the time covered by an explicit or implicit state guarantee) and follow the same policy objectives. On the contrary, public institutions are in general not liable for private leverage and private institutions may face different opportunity costs and objectives.

Figure 3. Accounting for the leverage of public and private intermediaries – An example



Source: OECD.

Guarantee and the measurement of expenditures. For the case of loan guarantees, expenditures would ideally be measured as the losses incurred by the guarantee fund, net of its revenue (close to the ‘equivalent subsidy’ method for loans). However, it could be the case that some countries just report the total size of the guarantee fund. Most importantly, losses are only available with a considerable delay given the maturity of the loans. Alternatively, expenditures related to guarantees could be proxied by the size of the guarantee fund, or the amounts covered by the guarantee. The latter option is retained, as it is consistent with the notional amount approach suggested for loans. As for loans, these expenditures will be recorded separately since they are not comparable with subsidies.

3.4.4. Government Venture Capital

Government Venture Capital (VC) programmes are characterised by the use of public funds to facilitate venture capital investment in private companies with risky business models involving in many cases new technology-based firms (NTBFs). These schemes are usually provided by public banks (e.g. BPI in France) or development banks (e.g. KfW (Kreditanstalt für Wiederaufbau) in Germany or the Korea Development Bank), but also through indirect channels such as public investment in private venture capital firms, which themselves invest in NTBFs (fund of funds, see next paragraph), or matching funds that augment private capital commitments. In some cases, targeted firms may have to fulfil certain eligibility criteria (e.g. sectoral, green or digital).

Governments make increasing use of this tool to support innovative start-ups and the CIIE has collected information on Government Venture Capital initiatives across 36 OECD member countries in a companion project (Dechezleprêtre and Fadic, forthcoming^[33]).

Government funds of funds correspond to public investments in private VC firms, with the objective of developing the VC ecosystem while diversifying and minimising the risk for

public finances. The reported expenditure is usually the public investment in the first-level fund. An example of these policies is the Dutch Venture Initiative (Box 9).

Box 9. Dutch Venture Initiative – The Netherlands

The Dutch Venture Initiative (DVI) is a venture capital program funded by contributions from the public development agency Brabantse Ontwikkelings Maatschappij (BOM), the European Investment Fund (EIF) and the Ministry of Economic Affairs and Climate.

DVI aims to give fast-growing, innovative companies better access to investment capital while attracting other private investors at the same time. It consists of two funds-of-funds, one of them targeting business angels. In practice, DVI invests in funds that re-invest in innovative fast-growing SMEs with a need for venture capital. Private co-financing is estimated to be between 50 and 90 percent.

National public funding¹⁵ provided to DVI fund amounts to EUR 235 million over several years.

Source: [Dutch Venture Initiative | Policy instrument | Business policy in the picture \(bedrijvenbeleidinbeeld.nl\)](#); Ministry of Economic Affairs and Climate of The Netherlands.

Leverage of intermediaries. Similarly as for loans, the project would use the ‘public contingent liability’ approach and takes into account the leverage of public intermediaries, but not the one of private intermediaries.

3.5. Eligibility criteria

Eligibility criteria are grouped into seven categories, which are not mutually exclusive: Digital, Green, Sectoral/Ecosystems, Technology-oriented, Size/age contingent, R&D and Labour/skills policies. The alternative option of identifying only one main criterion has not been retained since it would have failed to account for the diversity of industrial policy instruments. For example, policies fulfilling both the green and R&D eligibility criteria are relatively common given the innovative and experimental essence of green technologies¹⁶.

Some horizontal policy instruments are not assigned to any of the aforementioned criteria.

3.5.1. Digital

Digital industrial policies are defined as instruments whose main focus is to support the adoption or development of digital technologies, by promoting investment in digital services, digital inputs or data. Digital technologies are defined as electronic devices, systems and resources intended to generate, store or process data (OECD, 2019^[34]). Some examples are business hardware (e.g. first wave of digitalisation), digital platforms of e-commerce (e.g. second wave of digitalisation), internet of things and artificial intelligence (e.g. third wave of digitalisation). Digital technologies also include industrial robots, which are at the core of the current industry 4.0 transformation.

Policy examples include immediate amortisation of computer software, venture capital policies targeting the digital sector, and subsidies oriented to the adoption of cloud computing or industrial robots, among others.

3.5.2. *Green*

Green industrial policies are policies whose main focus is to support the adoption or development of environmentally friendly technologies, to promote investment in environmentally sustainable inputs, and more generally to accompany firms' ecological transition (OECD, 2012_[35]).¹⁷ Green industrial policies can also involve R&D support given the innovative nature of green technologies. These policies could also be directed to SMEs since the latter often have weaker innovation capabilities and more difficulties to access finance..

3.5.3. *Sectoral/Ecosystems*

A policy instrument is considered sectoral if its eligibility is explicitly conditioned on the economic activity of beneficiaries. These beneficiaries must belong to a small number of economic activities defined according to an industry classification (e.g. ISIC rev 4.). Sectoral policies shall target:

- at most one industry defined at the section level of the ISIC rev 4. Manual (e.g. 'Manufacturing' – Section C, 'Construction' – Section F, 'Agriculture, forestry and fishing' – Section A, etc)
- or at most five industries defined at the 2-digit level (or more granular).

Depending on the targeted sector (or sectors), the project will identify the relevant ISIC code either at the section or 2-digit level.

Some traditional industrial policies such as subsidies to the automotive and aviation sectors belong to this category. Sectoral exemptions from energy tax (e.g. for farming) or sectoral government venture capital (e.g. targeting biotechnologies), among others, are also considered as sectoral policies. It is worth noting that sectoral policies can also be R&D policies (e.g. subsidies for R&D in the food sector), digital policies (e.g. subsidies to the semiconductor industry) and SME policies.

Some policies included in this category are intended to support industrial ecosystems, which are a set of interlinked sectors facing similar challenges and linked in terms of input-output, knowledge, or financial flows. An example of these policies is the Green Development and Demonstration Program (GUDP) in Denmark, which provides R&D subsidies to firms and research institutions developing environmentally-friendly projects in the food industry's value chain (Agriculture, fishing/aquaculture, and manufacture of food products). This instrument aims to create sustainable business-oriented innovations that strengthen the green transition of the whole agri-food ecosystem.

3.5.4. *Technology-focused*

Instruments are considered as technology-focused if they are geared towards the adoption or development of a particular technology (e.g. support for artificial intelligence, carbon capture and storage, green hydrogen, etc.), or a small number of technologies (less than five). Technology-focused policies are a key component of new industrial strategies (Criscuolo et al. (2022_[2]), see Box 10 for an example).

It is worth noting that some technology-focused policies can also be green or digital policies but not all green or digital policies are technology-focused. Regarding green policies, some of them could incentivise the reduction of greenhouse gas emissions rather than a particular technology (e.g. tax expenditures for renewable energy sources). In addition, several green and digital policies are designed to incentivise the adoption of green and digital

technologies as a whole, without focusing on particular technologies (and thus, without limiting to the threshold of five technologies).

Box 10. The Carbon Capture and Storage Initiative – Alberta (Canada)

The Carbon Capture and Storage Initiative is a subsidy program composed of two commercial-scale carbon capture and storage projects: the Quest Carbon and Storage project and Alberta Carbon Trunk Line project. The goal of these projects is to reduce CO₂ emissions coming from oil sands and fertilisers sectors and to diminish annual greenhouse gas emissions by 2.76 million tonnes.

The technology adopted consists in separating and collecting CO₂ produced by industrial activity and subsequently, compressing and transporting it to a storage site underground, where the gas is carefully and securely saved.

Source: [Carbon capture, utilization and storage – Overview | Alberta.ca](#); Government of Alberta.

3.5.5. Size- and age-contingent measures

Size- and age-contingent industrial policies are instruments dedicated to firms below a certain size and/or age. The size threshold can be based on employment, assets, turnover, or a combination of these variables. The threshold need not correspond to any official definition of SMEs or start-ups. Policy instruments are therefore classified as ‘size/age contingent’ if eligibility to the support is conditioned to firm size or age. Some examples of these policies include reduction in employers' social security contributions, innovation and venture capital policies for start-ups, extended VAT credit periods for SMEs, cluster policies towards start-ups among others.

3.5.6. R&D

Research and development (R&D) policies consist in business support instruments towards R&D expenditures or projects according to the Frascati Manual, where R&D is defined as “creative and systematic work undertaken in order to increase the stock of knowledge and to devise new applications of available knowledge” (OECD, 2015^[22]).

These policies can be horizontal or targeted and interlinked with other eligibility criteria such as green, sectoral/ecosystems or size- and age-contingent measures.

Horizontal R&D policies often consist of tax expenditures (OECD, 2020^[26]; González Cabral, Appelt and Hanappi, 2021^[36]), while targeted R&D policies are mainly subsidies intended to address precisely defined sectoral (e.g. automotive or electronics) or technological (e.g. green or digital) opportunities by increasing the rate as well as the direction of innovations (OECD, 2012^[35]). Some examples of targeted R&D policies are subsidies for R&D expenditure in the agricultural sector in Canada and in the food sector in Denmark.

3.5.7. Labour costs/skills policies

Industrial policies are categorised as labour/skills policy if they are geared towards enhancing competitiveness, investment, or economic development by providing direct support to firms, linked to their wage bill, employment, hiring, or training expenditures.

Labour/skills policies might overlap with other eligibility criteria, such as digital, green or sectoral. For example, there might be skills policies provided through subsidies to on-the-

job training related to ICT skills (OECD, 2012^[37]); or grants directed to skills needed for renewable energy production (e.g. The Green Jobs Act in the US (Martinez-Fernandez, Hinojosa and Miranda, 2010^[38])).

3.6. Selectiveness of the process

3.6.1. *Non-discretionary*

Support is automatically granted as soon as the applicant meets the eligibility criteria. It is usually the case for tax expenditures.

3.6.2. *Selective*

Support is not automatically granted. Applicants are selected based on the relative quality of their project compared to other applicants.

3.6.3. *1st come 1st served*

Support is not automatically granted. Applicants are supported until the budget is exhausted or a preset number of beneficiaries is reached.

4. Potential future extensions

This project aims to start with a limited scope of industrial policies, to maximise comparability across countries, and provide results in a reasonable timeframe. Conscious of this limitation, future phases would aim at enlarging the scope by progressively including policy instruments that are more challenging to measure. Three possibilities are mentioned in this section. In addition, interested countries can engage in the second phase of the project, which will explore the characteristics of beneficiaries (e.g. firm size, age, ownership and sector).

4.1. Indirect support to businesses

As the scope focuses on direct support to businesses, next phases could consider measuring indirect support. Indirect support can be channelled through:

- The provision of public goods, which can in turn take several forms, e.g.:
 - Provision of knowledge, like for instance public research;
 - Provision of skills, both initial education and lifelong learning.
 - Development of local industrial ecosystems, for instance in-kind services provided by local development agencies, export agencies, etc.

Some direct support measures already cover part of these policy areas (e.g. support to public-private research consortia, training subsidies directly benefiting firms).

- Public procurement. Innovation-oriented public procurement can be defined as the ‘purchase of technologies and innovative products and services’ by the public sector with the primary objective of meeting public sector needs and the secondary objective of fostering innovation (Aschhoff and Sofka, 2009^[39]). Public procurement can also be used to pursue other industrial policy objectives (e.g. green public procurement, procurement favouring the economic inclusion of some disadvantaged parts of the population, procurement for strategic autonomy through the domestic development of key technologies)¹⁸, some of them being related to innovation. The use of innovation-oriented public procurement is widespread in OECD countries (Appelt and Galindo-Rueda, 2016^[40]; OECD, 2017^[41]). As public procurement represents a large share of GDP,¹⁹ this channel is likely to represent a powerful way to induce innovation. This extension could be developed in collaboration with the Mabis project.²⁰
- Support to households related to industrial policy strategies (e.g. ‘green’ cash-for-clunkers programs, behavioural incentives and taxes). The inclusion of these instruments requires assumptions regarding their incidence. For instance, green incentives can result in an increased demand for green goods served by imports, with little impact on domestic industrial production.

4.2. Equivalent subsidy methodology

As explained in section 3.4, the most accurate method to measure expenditures related to financial instruments (loan, loan guarantees and equity investments) is probably the “equivalent subsidy” method, which calculates the advantage granted to beneficiaries by measuring the difference between the cost of the public loan and its cost if it were provided

under market conditions. It provides a measure of expenditures that can be directly compared to subsidies, but requires to accurately measure market conditions and how public financial instruments deviate from these conditions.

This extension could survey extant methodologies to measure market conditions, devise a methodology to measure equivalent-subsidy expenditures of financial instruments in a cross-country setting, and provide an alternative measure of industrial policy expenditures by applying this methodology to financial instruments.

4.3. Policies below the threshold

Most countries also rely on many smaller instruments, below the threshold. Even if the inclusion of these instruments is not expected to have a major impact on the overall assessment of industrial strategies, these policies may be of interest for benchmarking purposes. This extension could imply lowering the threshold (0.002 % of GDP) in order to increase the number of policies covered.

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Endnotes

¹ See for instance France Stratégie (2020_[47]).

² Based on the insights of the Advisory Group.

³ The German state of Lower Saxony owns 11.8% of Volkswagen.

⁴ It aims at supporting firms' technological and digital transformations by creating or consolidating the skills necessary to achieve the Industry 4.0 paradigm, which consists in the industrial use of big data, data analytics, advanced robotics and internet of things, among others. The following expenses are eligible for the tax credit, as soon as they are directly related to the training project: staff expenses related to trainers; operating costs relating to trainers and training participants; costs of consultancy services; and staff costs related to training participants. The training needs to be provided on areas like big data, data analytics, advanced robotics and internet of things, among others. Source: [Credito d'imposta formazione 4.0 \(mise.gov.it\)](https://www.mise.gov.it/credito-dimposta-formazione-4.0).

⁵ For instance, the deduction for self-employed persons' expenses for sickness and occupational injury insurance in Denmark (Fradrag for selvstændiges udgifter til syge- og arbejdsskadeforsikringer).

⁶ The categories that are the most likely to include direct support to firms with industrial policy objectives are 'Employment incentives', 'Direct job creation', 'Start-up incentives' and the sub-category of 'Workplace training'. The other categories/subcategories are: 'Public employment services and administration', 'Institutional training', 'Integrated training', 'Special support for apprenticeship', 'Sheltered and supported employment and rehabilitation', 'Out-of-work income maintenance' and 'Early retirement'. Source of data: [Public expenditure and participant stocks on LMP \(oecd.org\)](https://www.oecd.org/lmp/public-expenditure-and-participant-stocks-on-lmp)

⁷ See Volpe Martincus and Carballo (2010_[44]) and Carballo, Marra de Artiñano and Volpe Martincus (2020_[43]).

⁸ For instance, some actions of the Invest for the Future Programme (France – Programme d'Investissements d'Avenir) consist of various call for projects sharing the same objectives and eligibility criteria (e.g. the "Sectoral support and transformation" action – Accompagnement et transformation des filières). Such actions could therefore be considered as a single policy instrument.

⁹ The service, construction, energy and agriculture sectors represent, on average, 71.6%, 6%, 4.5% and 2.5% of total value added generated in OECD countries in 2020 respectively (OECD, 2021_[42]).

¹⁰ Including Artificial Intelligence (AI), green technologies, ecommerce solutions and business services.

¹¹ Accounting method in which revenue is recorded when it is earned and expenses are recorded when they are incurred, regardless of when payment is received (Gnanarajah, 2014_[46]).

¹² For instance, in some countries reduced energy tax rates for specific fuels are defined as tax expenditures (e.g. France, Belgium) and would feature in the country's tax expenditure report, while other countries may consider these different rates as part of the tax schedule itself.

¹³ The OECD Inventory of Support Measures for Fossil Fuels defines support as policies that can induce changes in the relative prices of fossil fuels. This definition is broader than the one used in

this project. however, several tax expenditures collected in the Inventory qualify as industrial policy under this project.

¹⁴ This principle has for instance been used for the European Fund for Strategic Investments (EFSI, also known as the Juncker plan).

¹⁵ Excluding funding provided by the EIF.

¹⁶ This means that expenditures may appear in more than one category and that the sum of expenditures in the different categories is not equal to total industrial policy expenditures.

¹⁷ See also Eltokhy et al. (2021_[45]) for alternative but close definitions.

¹⁸ The development of Covid-19 vaccines could enter into this category (e.g. Operation Warp Speed in the United States).

¹⁹ 12% on average in the OECD countries (OECD, 2017_[41]).

²⁰ The OECD project “Measurement and Analysis of Business Innovation government Support policies” (Mabis) aims to: 1) Ensure the continued collection and dissemination, in a more efficient and user-oriented fashion, of information and statistical indicators on the design and cost of tax incentives for R&D inputs across the entire OECD and EU membership, also incorporating key partner economies; 2) Extend the statistical measurement of government support for innovation to a more comprehensive set of policy instruments, outside the scope or insufficiently captured by available data and statistics, pursuing greater integration of country-level data with the STIP Compass infrastructure; 3) Extend the distributed microdata analysis approach to encompass the impact analysis of a more comprehensive set of potential outcomes of R&D tax incentives and other innovation policies; 4) Foster knowledge sharing on the use, design, implementation and analysis of impact of a broader range of R&D and innovation support policies; 5) Support the coherent delivery of business R&D support policies and R&D statistics within and across countries by promoting the efficient use of common and state of the art definitions and standards. Source: <https://cordis.europa.eu/project/id/101004099/reporting>.

Annex A. Appendix

Table A.1. Nominal GDP and industrial policy threshold of countries that confirmed participation on the project, millions of national currency, current prices

Country	Canada	Denmark	France	Netherlands	Sweden	Ireland	Israel	Italy	United Kingdom
GDP (Lowest value since 2017)	CAD 2 140 641	DKK 2 192 960	EUR 2 297 242	EUR 738 146	SEK 4 625 094	EUR 296 925	ILS 1 278 840	EUR 1 653 577	GBP 2 097 143
Threshold (0.002% of GDP)	CAD 43	DKK 44	EUR 46	EUR 15	SEK 93	EUR 6	ILS 26	EUR 33	GBP 42

Note: The lowest value since 2017 is reported. This corresponds to the year 2020 for Italy, and 2017 for Canada, Denmark, France, the Netherlands, Sweden, Ireland, Israel, and the United Kingdom.

Source: OECD National Accounts Database.

Table A.2. Composition of the Advisory Group

Country	First name	Last name	Position
	Carolyn	Fischer	Professor, VU Amsterdam
	Susan	Helper	Senior Economist, White House Council of Economic Advisers
	Hiroshi	Ohashi	Professor, University of Tokyo
Canada	Dany	Brouillette	Senior Director, Economic Research and Analysis Unit, Strategy, Research and Results Branch, Innovation, Science and Economic Development
Denmark	Lone	Ank	Business Economics Director at the Ministry of Business
France	Alexis	Loublier	Project Director – Economic and Sectoral Studies, Directorate-General for Enterprise
Ireland	Rory	Mulholland	Assistant Principal, Data and Evaluation Unit, Department of Enterprise, Trade and Employment
Israel	Gilad	Be'ery	Director, Strategic Analysis at Ministry of Economy and Industry
Italy	Maria-Benedetta	Francesconi	Manager, Directorate for Industrial Policy, Ministry of Economic Development
Netherlands	Henry	Van der Wiel	Economic advisor at Netherlands Ministry of Economic Affairs
Sweden	Andreas	Halvarsson	Ministry of Economic Affairs, Analysis Unit
United Kingdom	Nick	Blayney	Economic Adviser at Department for Business, Energy and Industrial Strategy (BEIS)