

Working Paper:

# Make What You Buy: A Targeting Algorithm for Procurement-Led Industrial Strategies

Toward a data-driven approach to industrial strategy design grounded in available procurement resources and productive capabilities

Santiago Vásquez<sup>1</sup>, Justus Schollmeyer<sup>2</sup>, Andrés Arauz<sup>1</sup>, and Isabel Estevez<sup>\*1</sup>

<sup>1</sup>i3T

<sup>2</sup>RubidiumData

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## Abstract

This working paper specifies a step-by-step algorithm for designing and implementing procurement-led industrial strategies using available procurement resources and existing productive capabilities. It targets two frequent challenges in industrial policy: (i) limited resources (financing and baseline productive capabilities); and (ii) the need to deliver measurable results quickly. We zone in on procurement as a policy lever because it converts routine public expenditures into strategic demand, enables the use of monopsony power to lower costs, and delivers quick results. The first iteration of the algorithm zones in on the procurement market for goods (services, construction, etc., will be incorporated in later iterations). It outlines a step-by-step process for prioritizing goods and identifying (current and potential) suppliers, product standards, and suitable procurement instruments. The algorithm draws on lessons and tools from both concrete procurement policy implementation experiences and research and development in the realm of value chain analysis and auto-research (see Productive Capabilities Data Lab at [valuechains.ai](https://valuechains.ai)). This working paper is a living document that is continually updated as we expand and improve different pieces of the algorithm.

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<sup>\*</sup>Corresponding: [iesteve@i3-t.org](mailto:iesteve@i3-t.org)

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# 1 Introduction

This working paper outlines a step-by-step algorithm for data-driven design and implementation of procurement-led industrial strategies. We primarily zoom in on the problem of industrial targeting in the context of the procurement market. In future iterations, we will also outline steps for identifying and implementing bespoke procurement instruments (Advance Market Commitments, pooled procurement agreements, set-asides, technology transfer, etc.) for different kinds of products and contexts.

The core purpose of this paper is to reduce the transaction costs of design and implementation of high-quality procurement policy to a minimum. Using this algorithm, policymakers can immediately begin to implement procurement-led industrial strategies and deliver concrete results—changes in the real economy—within very short time frames. Short-term policies can run in parallel with longer-term procurement policies that require more substantial stakeholder engagement and greater technological ambition. Moreover, procurement-led policies can (and should) be harmonized and coordinated with broader industrial, technological, education, macroeconomic, social, and environmental policies to build synergies and coherence (see Estevez et al. (2025a)).

## 2 Problem

Two of the greatest challenges policymakers face when designing industrial strategies are:

1. Availability of resources. Limited fiscal resources and the high cost of capital are frequently identified as key obstacles to meaningful investments in development. Similarly, low levels of baseline productive capabilities are often considered to limit the potential of policies geared at rapid expansion of domestic production in new industries.
2. Rapid delivery of results. It is widely recognized that delivering economic impacts quickly is critical to the momentum and durability of policies. Conversely, wasting immediate windows of opportunity can truncate industrial policies and development processes (see Estevez et al. (2025a); Estevez (2022)).

Procurement policy is often singled out as one of the most powerful and effective tools in the industrial policy toolbox because it is particularly well suited to managing both of these challenges. First, procurement offers the opportunity to “create” substantial resources for industrial strategy by transforming public expenditures into strategic investments and increasing fiscal space through the strategic use of monopsony power to reduce costs (see Estevez et al. (2025b)). Composing at least 12 percent of GDP (or \$11 trillion) globally (and in some cases much more at the national level) (Bosio and Djankov, 2020), procurement budgets have the potential to significantly alter economic dynamics. Second, because governments can quickly make changes to their purchasing behavior, procurement policy is an agile tool that offers the opportunity to deliver short-term impacts by optimizing the use of existing productive capabilities through immediate demand incentives. However, the ability of governments to quickly design and implement procurement-led industrial strategies is often hampered by a lack of implementable methodologies. Even governments that want to implement procurement-led industrial policies quickly are often unsure about what steps to follow to identify strategic industries, appropriate policy instruments, and concrete firms that could become partners in the development of new industrial capabilities.

### 3 Solution: An Algorithm for Procurement-Led Industrial Strategy Design and Implementation

Drawing lessons and tools from both concrete procurement policy implementation experiences (see Estevez et al. (2025b) for illustrative examples) and research and development in the realm of value chain analysis and auto-research (see our Productive Capabilities Data Lab at [valuechains.ai](https://valuechains.ai)), our Algorithm for Procurement-Led Industrial Strategy Design and Implementation (APLIS) helps policymakers overcome these bottlenecks and expedite the implementation of impactful procurement policies.

This working paper is a living document that is continually updated as we expand and improve different pieces of the algorithm.

## 4 Algorithmic Steps

### 4.1 Select a Target Geography

Define the boundaries of analysis and implementation by selecting: A locality, a country, a region, multiple regions from one or more countries, multiple countries, etc. Procurement policies are frequently implemented at the national or sub-national level, but are also used at the regional level (for example, pooled procurement in the Caribbean), as well as through non-regional clubs of countries that share a common mission (Estevez et al. (2025b)).

### 4.2 Identify strategic objectives

Identify the strategic objectives of the stakeholders and rank them in the order of importance. This should include situating the strategic objectives of the procurement policy within broader policy objectives and ensuring coherence and synergies between them. Common procurement policy objectives include: development of new productive capabilities and innovation, maintenance of current productive capabilities, ecological transformation of industries, inclusion of new economic actors, supply chain resilience, targeted substitution of imports to improve balance of payments, create linkages and support job-creation and skills development, and fiscal savings (see Estevez et al. (2025a) for more detail on industrial targeting approaches and criteria).

### 4.3 Obtain and structure government procurement data

This can be either the publicly available data or –if accessible– data provided directly by relevant government institutions.

#### 4.3.1 Line Items

From the procurement data, extract the concrete line items that are being procured. The type of extraction process depends on the type of procurement data disclosure:

- Full disclosure with original contracts
  - Automated extraction of the concrete line items with price information (etc.) from PDF files.
  - This allows for the most detailed breakdown, including references to product standards and other granular information.

- Tabular data disclosure
  - Extraction of the line items from the contract description in the table.
  - The level of detail is limited to what is provided in tabular format.

### 4.3.2 Suppliers

Compile a list of existing suppliers and classify them based on whether they fall within the boundaries of the target geography. Note that even suppliers that are only distributors can often quickly set up production operations domestically given the right demand incentives.

### 4.3.3 Standards

**Standards from contracts** If the contracts are available, extract all relevant information about standards from the contracts.

**Create or augment classification system for standards** Source standards from international and regional classification systems (ISO, ASTM, GS1, NIST, and relevant local standard agencies) to inform the mapping to standards in later stages.

## 4.4 Assign items to broad procurement categories

Map each item to one of the predominant procurement categories:

- Goods
- Services
- Construction (including goods and services)
- Catalogs (i.e., e-commerce-type of purchases)
- Inter-administrative purchases
- Micro purchases

Targeting and policy within different procurement categories follow different logics. This algorithm aims to cover all categories, but the present version only covers goods —the most relevant category from the manufacturing perspective. Procurement policies focused on goods can also be embedded within procurement policies for construction.

## 4.5 Rank and pre-select goods within the procurement market based on the Current Demand Index

### 4.5.1 Classify goods

Classify goods in terms of one of the established product classification systems such as HS-6, CPC, or others.

### 4.5.2 Construct the Current Demand Index

Build a weighted index based on value and frequency of purchases as a proxy for “Current Demand” and calculate the index for each good.

### 4.5.3 Rank goods according to the Current Demand Index

Once ranked, you can select as many goods as you can feasibly analyze in the next step.

## 4.6 Value Chain Decomposition

Decompose the N highest-ranked goods into all their types, and each type into its inputs (components, materials, and their respective types) including HS-6 mapping for each of the types. This style of recursive decomposition is repeated up to the level of raw material inputs. See our Productive Capabilities Data Lab ([valuechains.ai](https://valuechains.ai)) and the corresponding decomposition methodology (Schollmeyer et al. (2025)) for detail. We aim to open source more value chains to facilitate analysis for industrial strategies as resources become available.

Schollmeyer et al. (2025) illustrate how value shares within a value chain can be estimated based on the relative prevalence of technology types (for example, the prevalence of grid-tied solar PV systems compared to off-grid or hybrid systems) and the cost shares of their material inputs relative to one another, as well as to labor, machinery, and other input costs. Building on this approach, the procurement-led method uses national or regional procurement data to estimate prevalence and cost share weights for each item in the value chain within the procurement market and only from the perspective of the procurement body as the final consumer (not producer). This yields country- or region-specific value shares, offering a complementary aggregation of value chain flows that helps contrast the local structure of the value chain viewed from the procurement body’s perspective with the global estimate.

## 4.7 Mapping of Suppliers

### 4.7.1 List of Potential Regional Suppliers through Web Search (“Supplier Yellow Pages”)

For each component or material in the value chains, identify suppliers in the selected region through extensive web search. Source their contact information to facilitate automated interviews at scale and other forms of stakeholder engagement to gauge current and potential productive capabilities.

### 4.7.2 Procurement Supplier List

Cross reference this list of potential suppliers with procurement data to determine whether they are already supplying the government(s) using the list of existing suppliers.

### 4.7.3 Construction of Potential Supplier Index

Construct a Potential Supplier Index from the potential regional suppliers list for each of the goods and their inputs. This index reflects both: the regionalization potential of the supplier’s supply chain, and the estimated ability of the supplier to provide the goods in keeping with set standards.

## 4.8 Mapping of goods to standards (global, regional, etc.)

Using the standard classification database, map each good to the applicable standards.

## 4.9 Select additional criteria to filter value chains

### 4.9.1 Choose additional criteria such as Strategic Priority and Technological Intensity to refine the list of goods and value chains

Map each good to the strategic priorities obtained in [Step 2](#) (including “other” if not mappable to any of the priorities) and –if desired– add goods from the priority list to the list of goods prioritized

on the basis of the Current Demand Index if they are currently not included For a fuller discussion of targeting criteria see Estevez et al. (2025a).

#### 4.9.2 Potential Production Index

Combining the Current Demand Index and the additional dimensions from the previous step, construct the Potential Production Index. This index helps to prioritize goods in the selected geography that have high potential to be produced within the geography.

#### 4.10 Mapping to Procurement Instruments

Based on a repository of procurement instruments and their best practices, the regional objectives, the nature of the product, and the Potential Supplier Index, map each good to the most suitable procurement instrument (e.g., Advance Market Commitments). More detail on this process forthcoming.

## 5 Conclusion

This working paper outlines a practical algorithm for procurement-led industrial strategies. The approach relies on readily available procurement data and ongoing research and development in the realm of value chain analysis to rank and target products, decompose value chains, map suppliers, link goods to standards, and match selected products to suitable procurement policy instruments. This first version of the algorithm zooms in on goods procurement, but also identifies other prominent procurement categories to be considered in procurement-led industrial strategy design. The next steps in the development of this living document are: (i) further specify and develop each step of the targeting algorithm for goods procurement; (ii) extend coverage beyond goods to other procurement categories, in particular services and construction; (iii) add detailed steps for selecting and implementing bespoke policy instruments (e.g., AMCs, pooled procurement, set-asides, technology transfer mechanisms) for different products and contexts; (iv) open-source additional value chains to facilitate rapid analysis. We will update each component as these pieces are developed.

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