

Economic Complexity: Using Data to Identify Puerto Rico's Opportunities

A Decade After PROMESA: From Stabilization to Transformation

Nearly ten years after the Financial Oversight and Management Board was tasked with managing Puerto Rico's fiscal affairs, the island stands at a crossroads. Debt restructuring stopped the bleeding, and the fiscal situation has stabilized, but growth remains elusive. The question now is: how can Puerto Rico thrive?

At the Center for a New Economy, we have long argued that the answers lie in the evidence before us. We build upon what we know. We grow where opportunity lies. What Puerto Rico needs is a modern industrial policy: a forward-looking strategy grounded in data that channels local capabilities, forges stronger links between global and local firms, and turns today's challenges into a generational opportunity for long-term growth.

We propose using **Economic Complexity** analysis as a tool to do just that: help identify what Puerto Rico *really knows how to do* and where it can *realistically grow next*. This framework can inform Puerto Rico's future growth areas by characterizing the knowledge embedded in the manufacturing sector and illuminating areas of potential growth. This knowledge would form the foundation for a modern industrial policy and give policymakers an empirical basis for decision-making when deciding where to invest limited resources.

Why Economic Complexity Matters

Traditional indicators like GDP tell us *how much* an economy produces. Economic Complexity analysis tells us *what* it produces and *how sophisticated* that production is. Think of an economy as a network of skills, institutions, and industries, supported by capital, labor, and technology, and which, all together, define its “productive knowledge”. This approach, pioneered at Harvard and MIT, has been adopted by governments and development agencies around the world, from Mexico and the European Commission to the World Bank. It rests on three simple but powerful ideas:

1. **Knowledge is the real wealth:** Economies grow when they expand the collective know-how of people, firms, and institutions, not just when they add more factories or capital.
2. **Development is a learning process:** Countries grow by learning to make more complex products over time, building on what they already know and produce.
3. **Learning follows a path:** It's easier to move into industries that require similar skills and infrastructure. You can't leap from growing sugarcane to making semiconductors overnight, but you can move step by step toward more sophisticated sectors.

Knowing what we produce today helps identify what we could successfully produce in the future.

How Economic Complexity Is Measured

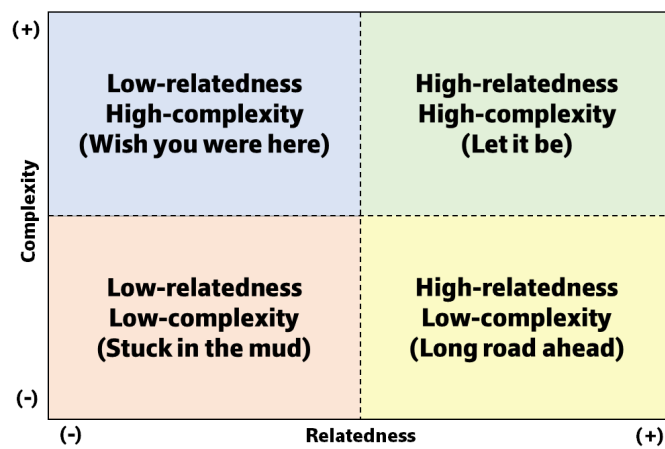
Researchers use global trade data to map out which countries export competitively. With that data, they calculate:

- **An Economic Complexity Index (ECI):** How sophisticated a country's overall economy is in terms of production capacity.
- **A Product Complexity Index (PCI):** How much specialized knowledge a specific product requires.
- **A Measure of Product Relatedness:** How close a new product is to what the economy already knows how to make.
- **An Economy's Revealed Comparative Advantage (RCA):** Where the country already competes successfully in global markets.

With these metrics we can create a network representation called the **Product Space**, a kind of economic map that shows how products are related to each other in terms of (1) the knowledge needed to produce them and (2) where they are typically exported from.

Puerto Rico's Economy: Sophisticated Production Capacity

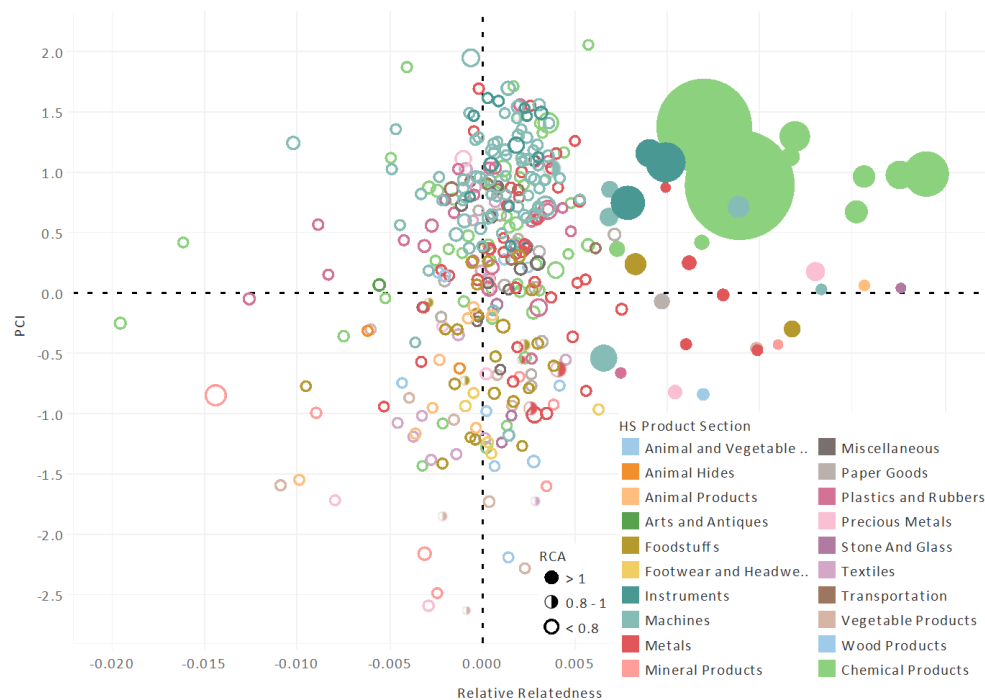
To complement the Product Space and see the opportunities for a specific country we use the **Diversification Frontier**, which maps products along two dimensions: their complexity (vertical axis) and their relatedness to a country's existing capabilities (horizontal axis). The resulting chart can be divided into four quadrants, each with distinct strategic implications.



Diversification Frontier Quadrants

Puerto Rico has an abundance of products that are *high in complexity* for a country of its size and development trajectory. Even more interesting are those products which are *high-complexity low-relatedness*, because even if they are not highly related to what is already produced at present, Puerto Rico's larger-than-typical presence here suggests unique capabilities that could enable potential "strategic jumps" to complex new sectors despite lower relatedness.

In other words, this means Puerto Rico has hidden capabilities that can branch into new, high-value industries, if the right policies and partnerships align.



Puerto Rico Diversification Frontier for 2022

In general, Puerto Rico's economy has strong potential.

- In 2022, Puerto Rico ranked 10th among states and territories in the U.S. in terms of its economic complexity.¹
- Its biggest strength lies in pharmaceutical and chemical manufacturing, which accounts for over 80% of exports.
- The island already has impressive shares of global exports in some products. Puerto Rico is responsible for approximately 20% of global insulin exports, 90% of total U.S. sulfonamides exports and about 10% of bulk hormones exported globally.

Yet this narrow focus comes with risk. Exports are too concentrated in a handful of products.

¹ Ranking of U.S. states and territories by 2022 ECI calculated at the HS4 product level using HS Rev 22.

A shock to the pharmaceutical sector, like the one after Hurricane Maria, can disrupt not only global supply chains but can majorly impact the entire island's economy.

Products like chemical analysis instruments, electric vehicle components, and specialized machinery show potential as promising areas for diversification that can take advantage of Puerto Rico's existing knowledge. Growing exports from sectors like these and others where Puerto Rico already makes certain products with a low relatedness to other products it also manufactures, is critical to mitigate the risks of concentration.

Recommendations: From Ad Hoc Policy to Data-Driven Strategy

Our proposal is a call for institutional transformation and public-private collaboration to embed the Economic Complexity methodology into Puerto Rico's policymaking process and business strategy decisions.

The recommendations are pragmatic and affordable:

1. **Measure and publish Economic Complexity metrics** regularly, through agencies like the Puerto Rico Planning Board and the Department of Economic Development and Commerce. This provides an objective, data-driven picture of Puerto Rico's capabilities and how they evolve over time.
2. **Train government agencies** to use these tools for smarter investment and development decisions to build institutional memory and resilience beyond political cycles.
3. **Engage the private sector.** Host regular forums where business leaders and policymakers review findings together. Use data, not politics, to identify and support high-potential sectors. Again, it is necessary to think of industrial policy as an interactive process of strategic cooperation between the private sector and government, which on the one hand, serves to elicit information on business opportunities and constraints and, on the other hand, generates policy initiatives in response. The challenge is to find a middle ground for government bureaucrats between full autonomy and full embeddedness in the private sector.
4. **Align incentives with complexity goals.** Reward investment in industries that add sophisticated capabilities or expand related sectors rather than offering blanket tax breaks.

Why This Matters for Entrepreneurs, Business and Investors:

Economic Complexity is a treasure map of where opportunities lie. It can reveal:

- Which sectors are poised for growth, not because of hype but because Puerto Rico already has the underlying skills to succeed.
- Which partnerships, between local firms and global leaders, make strategic sense.
- How to align private investment with emerging industrial policy grounded in real data.