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Federal Statistical Needs for a National Advanced Industry and Technology Strategy

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If the U.S. federal government is going to develop more effective policies to spur competitiveness, growth, and opportunity it will need to support better data collection, particularly on firms, industries, and technologies.

KEY TAKEAWAYS

- The federal government has never felt the need to develop strategic economic intelligence to fully understand the competitive position of its traded sectors or to help support overall economic productivity.
- Years of budget constraints have left U.S. statistical agencies with insufficient resources to effectively measure key elements of the economy.
- There are three key areas with major statistical gaps: subnational data, international data, and data to better understand firm behavior at the enterprise and establishment level.
- As part of a national infrastructure package, Congress should make a one-time appropriation to fully modernize and expand federal statistical agency IT systems. It should then increase annual funding on an ongoing basis.

INTRODUCTION

With the rise of China and other robust economic competitors, the United States needs a more coherent national advanced technology strategy.[1] Effectively crafting and implementing such a strategy requires the right kind of economic data. In part because of years of budget cuts to federal economic data agencies, coupled with a long-standing disregard of the need for sectoral and firm-level economic data to inform an industrial strategy, the federal government is severely lacking in the kinds of data needed.

Notwithstanding the hundreds of millions of dollars spent every year and the thousands of economists working for the federal government, the exact nature of the challenges to U.S. capabilities with regard to the competitiveness of America's traded sectors is only weakly understood. At least since after the Great Depression, the federal government has never felt the need to develop strategic economic intelligence in order to fully understand the competitive position of its traded sectors or to help support overall economic productivity.[2] Rather, most of the focus goes to understanding the ups and downs of the business cycle.

If the U.S. government is going to develop more effective policies to spur competitiveness, growth, and opportunity it will need to support better data collection.

As George Washington University scholar Andrew Reamer has noted, the opaqueness and limitations of our national statistical system for measuring innovation, sources of productivity growth, and competitiveness make achieving the needed insight daunting.[3] Established after WWII, the system was and is designed to help facilitate fiscal and monetary policy in order to avoid another Great Depression, and as such, measures things such as the number of houses built and cars manufactured. It has not been adequately modernized to measure the competitiveness of the electronics industry, auto industry, or any other number of important matters, including innovation (the assumption being that those things take care of themselves).[4]

If the U.S. government is going to develop more effective policies to spur competitiveness, growth, and opportunity it will need to support better data collection. It should be able to understand the U.S. competitive position vis-à-vis other nations on key technologies and industries, as well as key strengths and weaknesses and where specific policies are needed.

Better data can also identify weaknesses in U.S. competitiveness that policy can address. For example, in the 1980s, studies conducted as part of the Census of Manufactures (studies that have long been discontinued) found many smaller firms lagging behind badly in costs and quality for reasons including inefficient work organization and obsolete machinery and equipment. End-product manufacturers bought parts and components from many of these smaller enterprises at prices higher than those paid by foreign-based firms with more efficient suppliers, contributing to the cost and quality disadvantages of U.S.-based manufacturers. Legislators heeded the findings in crafting what is now called the Manufacturing Extension Partnership, a program that, if too small in scale to have a significant impact on U.S. manufacturing overall, continues to provide meaningful assistance to thousands of companies each year.[5]

Moreover, as the federal government institutes more technology and industry policies and programs—as exemplified in the Senate U.S. Innovation and Competition Act—better data will be important to evaluate their effectiveness.

Finally, data are a key 21st century infrastructure. In a decentralized economy, good outcomes are possible only if organizations make good decisions—and that requires data, which, because of its public goods nature, is a quintessential role of government.

As such, one of the most cost-effective investments Congress could make would be to significantly expand funding for federal economic and technology data collection. As part of a national infrastructure package, Congress should make a one-time appropriation to fully modernize and expand federal statistical agency IT systems. It should then increase annual funding on an ongoing basis.

CLOSING DATA GAPS

Years of budget constraints have meant that U.S. statistical agencies lack the resources needed to effectively measure key elements of the economy.[6] These can be listed in three main categories.

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Subnational Data

One key kind of data needed for an effective national industrial and technology strategy is data that is disaggregated to reflect state and local differences. This is needed to inform not only federal policymakers (e.g., to be able to more accurately identify parts of the country leading in particular kinds of innovation), but also state and local officials, as all states and many localities have their own economic development programs. In addition, there is a paucity of data at the congressional district level, something that would help members better understand the economic competitiveness and innovation capabilities of their districts.[7] This would also help them better understand real regional economies, rather than artificial designations based on state boundaries. For example, Washington's economy goes beyond the District of Columbia, and the Kansas City metro economy straddles two states.

Some of these challenges do not require new surveys, but rather larger sample sizes or blending with comprehensive administrative data so statistical agencies can release more regionally fine-grained data and not violate firm confidentiality. There are a number of areas where larger datasets and more regional data coverage are needed:

- Capital expenditures by firms in machinery and equipment by state. Understanding whether firms in an area are investing more or less than the industry average in capital equipment is critical for understanding future competitiveness and productivity.
- State-level data on manufacturing property, plant, and equipment. Because of budget cuts, this data series ended in 2007.
- Business research and development (R&D) expenditures by major metropolitan area. The National Science Foundation releases data on business R&D expenditures only at the

national and state levels. Adding in the top 50 or so metropolitan areas would provide valuable insights into the spatial evolution of the innovation economy.

- Better information on the demographics of industry at the state and local level. Who owns firms? How old are the managers and owners? What is their gender, race, and educational level? What are the demographics of their workforce?
- Business dynamics data at the local level. The Bureau of Labor Statistics (BLS) has a valuable data set on business dynamics (e.g., new firm formation, business closures and contractions, etc.), but this data is only available at the national and state levels.
- Data on the movement of enterprises and establishments. Firms move locations, and often governments within the United States and those outside compete for these locations, but we know very little about this. Where are firms moving? Whom are they taking with them?
- More accurate data on trade, including imports and exports. Too often trade data, especially exports, is listed by the port of exit rather than the location of the firm doing the exporting.
- For all of this data, better information on racial and gender factors (e.g., business ownership, worker training, etc.) are needed.

International Statistics

Our statistical system was largely designed around collecting statistics on firms that were located in the United States. But as the economy has become increasingly global, we need much more fine-grained international statistics.

- A better input price index. It is difficult to accurately measure productivity in international traded sectors unless the government can accurately distinguish price (including exchange rate changes) from quality changes on imports. BLS has developed a prototype survey to measure this, but has not received the funding to implement it. Lack of this data distorts overall productivity and gross domestic product (GDP) measures.
- The Census Bureau needs to do a better job of measuring data on imports and exports in its Annual Survey of Manufacturers.
- The BLS International Labor Comparisons program used to produce timely, high-quality international comparisons of labor force, productivity, hourly compensation, and prices for many industrialized countries, but was terminated due to budget cuts. While the Conference Board has taken up production of these statistics, access requires a paid subscription.[9]
- BEA needs to improve its existing annual surveys and five-year benchmark surveys of companies with facilities overseas to identify the types of products manufactured abroad and the number of employees at those facilities.

- We need better data on U.S. multinationals. What is the location and extent of U.S. multinational overseas facilities? How much capital equipment do they operate? How much R&D is being done? How many employees do they have and what are the wage levels? Where do they sell this output (in other nations, or within the United States)?
- Export data is only for final goods exports. But what inputs are feeding into the exports and where are they produced? Having this data would not only better enable the mapping of supply chains that feed into exports, but it could also help increase political support for trade.
- The major statistical agencies should work to transition NAICS (the North American Industrial Classification System) to the International Standard Industrial Classification System so that U.S. industry data is comparable to most other nations.

National Statistics

There is a host of data we need to better understand the workings of the U.S. economy, much of it at the enterprise and establishment level.

- Better measures of enterprise and establishment information technology adoption. Information technology (IT) has become a key driver of innovation and productivity, but the government still, at best, uses 1990s indicators (e.g., whether a firm has a website). We need data on a wide array of technology measures, including use of cloud computing, robotics, artificial intelligence, enterprise wireless, Internet of Things, and others. Another critical need in an era of constant cyberattacks is to understand firms' cybersecurity investments and practices.
- We need better data on process technology and innovation (e.g., how a good is produced or service is performed).
- Better data on production capabilities of firms. For example, can a given firm make something other than ball bearings? This is critical to know if the federal government is to have a better handle on U.S. supply chain capabilities.
- Better understanding of firms' supply chains. Firms could, for instance, be asked to list their top ten customers and suppliers.
- As the clean energy industry expands, we need finer-grained data on the clean energy industry itself.
- Better information on how companies supply their labor needs. How much is through in-house means, and how much is contracted out? Where are the contracted workers located?
- What percentage of a firm's workforce is unionized? Do workers in firms have other means of having their voices heard?
- Increase training. We have very little authoritative information about employer training. The last time this was measured was in 1995. Yet, there is a wide consensus that employer-provided training is critical to giving workers opportunities and important to boosting productivity.

- Better information on R&D. How much are firms spending on external R&D and cooperative R&D partnerships? What share of R&D is on process innovation versus product innovation?
- Better occupation profile data. It can take a decade to update the Department of Labor's ONET (Occupational Information Network), and we need much better data on the difference between the skills people have and what firms are searching for.

OVERARCHING ISSUES

There are a number of overarching issues involved in improving the national economics statistical system.

Funding for New and Expanded Surveys

The most important issue is funding. Over the years, Congress has not kept funding in line with the growth in GDP, much less inflation. Congress should at least double funding devoted to economic statistics.

Speed of Publication

The timeliness of data publication matters. For example, the Census Bureau finally published its 2017 Economic Census data on industry concentration at the end of 2020. The National Science Foundation is similar when it comes to publishing business R&D data. Having a three-year lag between the actual activity and published data means analysis is always outdated. To fix this, statistical agencies would have more funding to test, design, and build better processes and algorithms.

Modernization, APIs, and Links to Other Datasets

In a pre-digital world, it made sense to rely solely on surveys. But now that a much larger share of data is already in digital form, government statistical agencies need to focus more on IT modernization and directly linking through application programming interfaces (APIs) to private databases. For example, all medium and large retailers could be automatically reporting their sales data weekly to the Census Bureau through such mechanisms, at extremely low costs.

Another way would be to standardize and link all unemployment insurance wage and claims records and add additional information to them. If Congress enabled this, it would allow BLS to curtail or eliminate two of its wage surveys and improve many of its products with respect to granularity, timeliness, and accuracy. New fields should be added to individuals' unemployment insurance (UI) wage records, including for work location, job title, hours, and demographic information (including worker educational level). Once an employer added this information for a worker once, they would not have to add it again.[10]

As an overarching project to move in this direction, key federal statistical agencies should work in partnership with corporations to ensure interoperable and consistent statistical record keeping.[11] When input data is more consistent, statistics based on it will be more accurate and useful for combining across statistical agencies and for business benchmarking. Ideally, this effort would be international, working with the International Standards Organization (ISO).

There should also be better access and linkage of federal government administrative records, including tax, UI, pollution, etc. for statistical purposes. Congress made this more difficult with

the Privacy Act of 1974, but such integration is critically needed now and can be done without violating the privacy of firms and individuals. The Foundations for Evidence-Based Policymaking Act of 2018 made legal changes to facilitate statistical use of federal administrative data, but more needs to be done.

MOVING FORWARD

No companies make strategic or tactical decisions without thorough data on revenues, costs, and their competitive landscapes. Yet, we expect policymakers to build economic, technology and competitiveness public on a shaky foundation of limited and often outdated data. Now is the time for Congress to make a major investment in upgrading, expanding, and modernizing our nation's economic statistical system. As part of a national infrastructure package, Congress should make a one-time appropriation to fully modernize and expand federal statistical agency IT systems. It should then increase annual funding on an ongoing basis. This will not only help policymakers better understand key issues including workforce, trade, and technology but also help businesses make better decisions.

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Robert D. Atkinson (@RobAtkinsonITIF) is the founder and president of ITIF. Atkinson's books include *Big Is Beautiful: Debunking the Myth of Small Business* (MIT, 2018), *Innovation Economics: The Race for Global Advantage* (Yale, 2012), *Supply-Side Follies: Why Conservative Economics Fails, Liberal Economics Falters, and Innovation Economics Is the Answer* (Rowman Littlefield, 2007), and *The Past and Future of America's Economy: Long Waves of Innovation That Power Cycles of Growth* (Edward Elgar, 2005). Atkinson holds a Ph.D. in city and regional planning from the University of North Carolina, Chapel Hill.

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ENDNOTES

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