A POLICYMAKER'S GUIDE TO SPURRING ICT ADOPTION

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Overview

Policymakers around the world have been asking for years how to create "the next Silicon Valley." This is understandable: in the digital economy, they see leadership in information and communications technologies (ICT) as the key to boosting competitiveness, spurring growth, and creating jobs. But while policymakers' general instinct is right, their specific question is based on the wrong premise. Since the turn of the millennium, using ICT has created much more growth than producing ICT.

This is because ICT products and services are essential production tools for all industries in today's digital economy. When organizations and consumers purchase mobile phones, servers, software, broadband Internet access, and the like, they become significantly more productive than they were before, and the ripple effects of that increased productivity contribute much more to overall economic and job growth than do the technology companies that make those products. This is good news for policymakers, because it is much easier to expand ICT use than it is to build the next Silicon Valley.

DON'T ENVY: Instead of trying to recreate Silicon Valley, policymakers should spur ICT adoption.

ICT products and services are essential production tools for all industries in today's digital economy.

THINK BROADLY: Every sector benefits from ICT use.

Policymakers and the broader public often overlook the impact of using IT over making it, in large part due to the highly visible success of large ICT companies, particularly those from the United States. The intuitive reaction of policymakers is to say, "Google and Apple are successful U.S. companies, so if we want to be as rich as the United States, then we need our own Google and Apple."

This view misses the fact that the ICT industry is only a small part of the broader economy—approximately 6 percent in the United States, for example. Instead of focusing on that small sliver, it would be much easier for policymakers to drive growth by helping the other 94 percent—including high-tech and low, both goods and services—become robust ICT adopters.

Scholarly research from around the world shows clearly that increasing the use of ICT, particularly by business, is a key driving force of productivity growth in most nations, developed and developing, and will likely continue to be so in the future. Yet many of the policies that countries have implemented to grow their own Googles and Apples have had the unintended effect of reducing ICT use by businesses and consumers because these policies often raise the prices of ICT goods and services or limit local availability of the world's best products and services. As this guide shows, there are three key steps to boosting ICT adoption and hence growth: keeping ICT prices low, keeping ICT demand high, and supporting enabling factors, such as broadband deployment and e-government.

POLICY CHECKLIST

1. Keep ICT Prices Low

- ✓ Eliminate Tariffs and Discriminatory Taxes
- ✓ Ensure Users Can Buy Best-in-Class Technology From Anywhere in the World

2. Keep Demand High

- ✓ Limit Regulation to Keep Markets Dynamic
- ✓ Reduce Small Businesses Preferences
- ✓ Help Small- and Medium-Sized Enterprises Adopt ICT
- ✓ Provide Tax Incentives for ICT Investment

3. Support Key Enabling Conditions

- ✓ Benchmark ICT Use
- ✓ Support Broadband Deployment and Adoption
- ✓ Support Digital Literacy
- ✓ Use ICT Solutions to Transform Government
- ✓ Encourage Digital Transformation in Key Sectors
- ✓ Encourage Data Use

Why is ICT Adoption Important?

Increasing productivity is the single best way to drive economic growth and improve standards of living. Productivity increases stem from a variety of factors, but the principal one is producers and consumers using more and better tools in their work and daily lives. And, in today's economy, the tools that are most effective in raising productivity are ICT-based, including computer hardware, software, high-speed data networks, and tools that incorporate all three of those components, such as computer-aided manufacturing systems and self-service kiosks.

Businesses, nonprofit organizations, and governments use these tools to improve their internal operations and to conduct transactions with other organizations. This is happening in every sector in every economy, from farming to manufacturing to services to government.

Because ICT is today's only "general-purpose technology," as steam engines were in the 18th century, ICT adoption boosts productivity in a variety of ways. ICT increases organizations' and individuals' access to information. Whether that is information to help citizens improve their health care, students learn, farmers find market information, small start-up businesses find investors, or shippers optimize their routes, more information enables better decisions.

ICT also helps organizations increase efficiency. ICT can help businesses better understand and control their production processes, which eliminates waste and improves coordination. Manufacturers can use ICT to automatically reorder parts, perform rapid prototyping, or improve any number of other processes. ICT also reduces transaction costs, with processes like "one-click shopping" and automated bill payment. ICT enables companies to find more customers, and it allows consumers to find better prices and more choices.

A multitude of studies confirm these positive impacts. In fact, from the mid-1990s through 2014, nearly all scholarly studies on the subject have found that ICT has significant, positive effects on productivity. These benefits accrue to large and small firms, goods- and services-producing industries, and developed and developing nations alike. Firm-level studies also show that firms with high levels of ICT use are more likely to grow and less likely to go out of business than other firms. In the last decade, national studies have found that, in most nations where data is available, productivity gains from ICT use have been much higher than productivity gains from ICT production. And there is a strong positive correlation between the proportion of businesses that use the Internet and a country's labor productivity growth.

Policies to Drive ICT Adoption

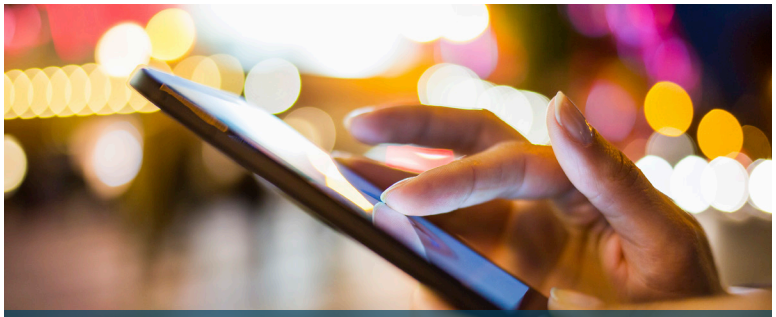
Since boosting ICT adoption by all parts of an economy is a key to driving growth, policymakers should take the following three steps to advance that goal.

Step One: Keep ICT Prices Low

As any Economics 101 textbook shows, rising prices generally lead to falling demand. And numerous scholarly studies have found this is no less true for ICT. Therefore, a key way countries can encourage ICT use is to ensure that their policies do not raise the costs of ICT goods and services. Yet, in their desire to grow their own Silicon Valleys, many nations have set policies that result in less ICT adoption, not more.

Eliminate Tariffs and Discriminatory Taxes

At least 31 countries impose combined ICT tax and tariff rates greater than 5 percent of product or service costs, and several of them add more than 20 percent to costs. Another 40 countries impose ICT taxes and tariffs of between 1 percent and 5 percent above the tax rates levied on other products. Nations should follow the lead of Colombia, which recently reduced taxes on ICT and signed on to the Information Technology Agreement to eliminate ICT tariffs.



REMOVE BARRIERS: High taxes and tariffs on ICT devices and services are self-defeating.

Ensure Users Can Buy Best-in-Class Technology From Anywhere in the World

An array of barriers raises the costs of ICT goods and services, including local content requirements, limits on foreign direct investment, restrictive certification and licensing requirements, and government procurement preferences for domestic ICT production. These measures also reduce quality, since, by definition, competitively priced, high-quality, domestically produced products would not need protections.

The same is true of data center localization requirements, barriers for cloud computing services, and limits on cross-border data flows. Regardless of the justification, these policies prevent domestic companies from using lower-cost or better-quality cloud services from foreign providers. Moreover, with virtually all industries generating and analyzing data, cross-border data restrictions hurt not just IT industries, but traditional industries as well.

Step Two: Keep Demand High

It's not enough to keep ICT prices low; policies also should spur ICT demand.

Limit Regulation to Keep Markets Dynamic

If firms cannot capture the full benefits of using ICT, then they will invest less. In many nations, labor market and product regulations serve as a key deterrent to adoption, because they lower the productivity impact of ICT. Labor market regulations often reduce managers' flexibility, preventing them from using ICT to realize production efficiencies. Product market regulations, either at the economy-wide level (e.g., competition policy) or at the sectoral level (e.g., industry-specific economic regulations), too often protect firms from competition, which limits the incentive to invest in ICT. Overly restrictive privacy rules also reduce revenues and ICT use and limit many of the benefits to a society from digital information. If there is regulation, it should be "light touch"—deliberately designed to have as little impact on the market as possible.

Reduce Small Businesses Preferences

Many nations subsidize or otherwise favor small- and medium-sized enterprises (SMEs), which lowers ICT adoption by shifting the structure of the economy away from mid- and larger-sized firms. This is because larger firms invest more in ICT, on average, because they can gain greater economies of scale. Both factors help explain why they are usually more productive and pay higher wages. Therefore, nations should work toward regulatory, fiscal, and tax parity between large and small firms.

Help Small- and Medium-Sized Enterprises Adopt ICT

There's a difference between subsidizing or protecting SMEs and helping them gain the capabilities to be more innovative or productive. SMEs often do not have the resources to determine the most effective ways to integrate ICT into their businesses. Technical assistance programs can help SMEs determine how to incorporate ICT, help them acquire those technologies through supportive financing, and show them how to use them.

Provide Tax Incentives for ICT Investment

Business invests less in ICT than what is optimal for economic growth because the benefits from ICT investments spill over to suppliers, competitors, and customers. So a growing number of nations provide tax incentives for ICT investment. Nations should provide incentives such as accelerated depreciation for ICT investments in order to raise the after-tax rate of return of these investments. They also should ensure that ICT, including software, qualifies for any tax incentives designed for machinery purchases, and that these incentives are available to firms of all sizes.

Step Three: Support Key Enabling Conditions

Government can also help ICT adoption by creating supportive conditions and factors for adoption.

Benchmark ICT Use

Nations cannot manage what they do not measure. That is why they should measure ICT adoption among businesses, including such indicators as the number of companies with a website and the quantity of ICT capital investment; and among consumers, including factors such as the share of households online, the amount of e-commerce purchases, the use of online banking services, and the like.

DRIVE BROADBAND: The right policies can speed deployment and use of 21st century networks.

Support Broadband Deployment and Adoption

Achieving the full benefits of ICT requires advanced communication networks, so nations need policies to support the deployment of robust wireline and wireless broadband networks. Policymakers should craft national broadband plans; ensure that tax policies allow providers to depreciate network investments more quickly; subsidize build-out to high-cost areas; ensure adequate spectrum availability while using spectrum auctions as a way to allocate a scarce resource, rather than as a way to raise revenues; and provide flexible pole attachment and tower citing policies, all the while ensuring that broadband regulations neither limit nor artificially spur competition. Among other steps, nations also should facilitate broadband adoption by providing subsidies for computers in schools and low-income households.

Support Digital Literacy

Taking full advantage of ICT requires workers and consumers to have digital skills. From basic digital literacy to software engineering, ICT skills exist on a spectrum from simple to advanced. Nations should ensure that schools teach digital literacy, high schools and technical institutes provide training for more advanced ICT skills, and colleges support computer science programs.

Use ICT Solutions to Transform Government

To lead by example, government officials at all levels should leverage their own ICT efforts to achieve more effective and productive public sector administration. Among other things, this means government should not only actively develop e-government solutions, but should also consider how ICT can be used to solve a wide array of pressing public challenges, from protecting the environment to enhancing public safety to improving transportation mobility. In addition, governments should encourage businesses and consumers to use ICT to interact with public agencies.

Encourage Digital Transformation in Key Sectors

The private sector will drive much of the process of digital transformation, but government can and should play a supportive role. Smart polices can spur ICT adoption in an array of industries, including transportation, energy, and education, and in ICT areas including mobile commerce, Internet of Things, digital authentication, smart meters, and intelligent transportation. For example, governments can provide incentives for utilities to invest in smart meters; they can be lead users of mobile commerce; and they can require construction companies doing business with government agencies to use building information modeling systems (BIM).

Encourage Data Use

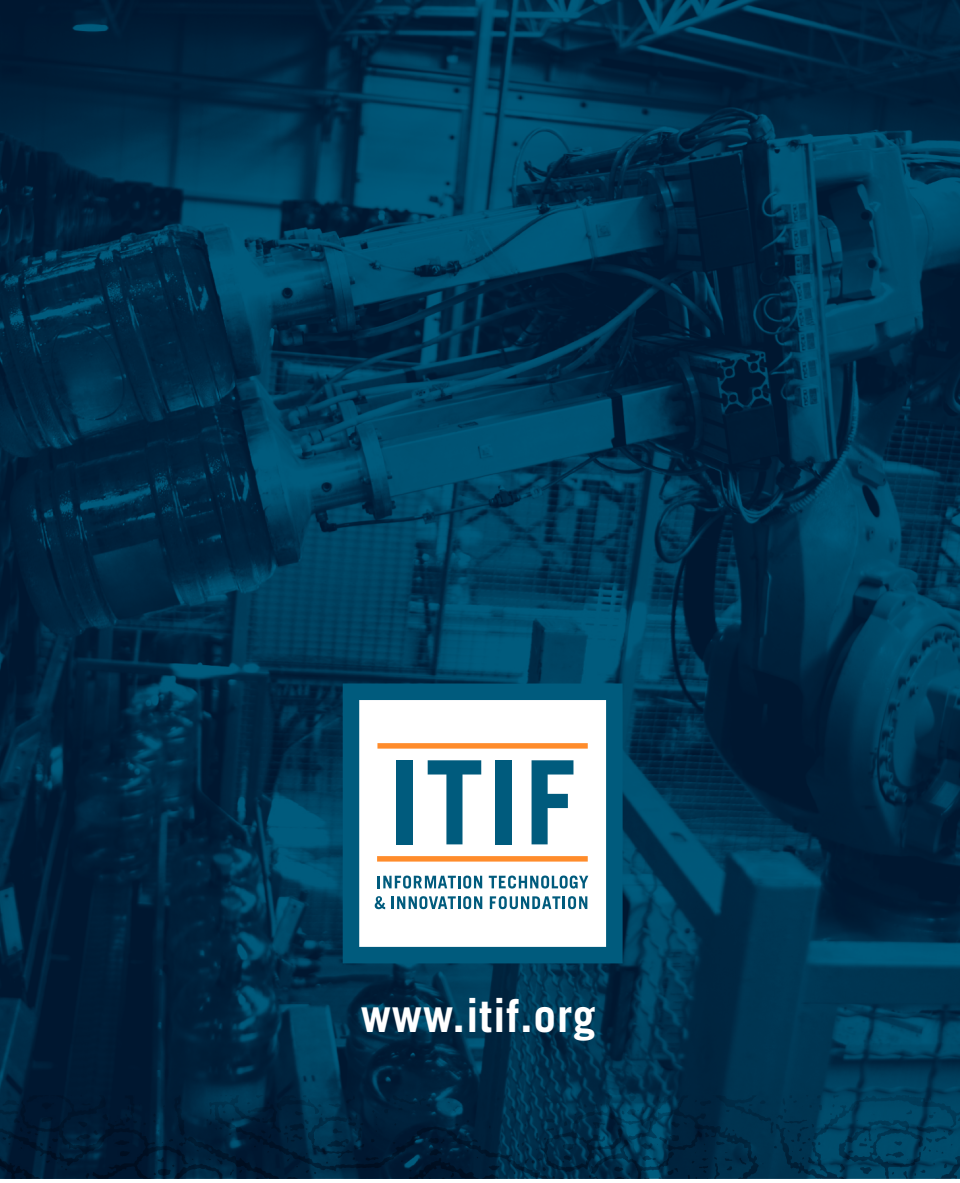
Data is an increasingly important driver of productivity and innovation. In particular, publically provided data has been put to a wide variety of commercial uses around the world and continues to provide valuable benefits, including improving the quality of health care providers, reducing energy use and improving transportation mobility. Governments should adopt open data policies that encourage businesses to use this data to create value.

Conclusion

Driving growth through supporting ICT adoption is a strategy that is available to virtually every nation. Still, policymakers might worry that if their enterprises use ICT to become more efficient that they will not create needed jobs. Luckily, policymakers can rest easy. The scholarly evidence from both developed and developing economies shows clearly that higher productivity leads to more, not fewer, jobs. For example, in a study of the relationship between productivity and employment in developing economies, the United Nations Industrial Development Organization found that "productivity is the key to employment growth," while a World Bank survey of over 20,000 businesses in about 50 low-middle income countries found that firms using ICT have higher productivity but also greater sales and employment growth.

In summary, nations have an array of tools at their disposal to spur ICT adoption among all sectors of their economy—agriculture, manufacturing, and services—and all players (business, government, and nonprofit). The key is to keep ICT prices low and demand high, all the while supporting enabling conditions and factors. Following this path will lead to more and better jobs, higher incomes, and more sustained growth.

BUILD THE FUTURE: Scholarly evidence shows productivity leads to more jobs, not fewer.



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