

The Price of Digital Divorce



Getting a Handle on the Costs of ICT Sector Deglobalization: The Case of China



On September 1, 2016 the U.S. Chamber of Commerce released **“Preventing Deglobalization: An Economic and Security Argument for Free Trade and Investment in ICT.”** The report was prepared by the U.S. Chamber of Commerce, along with experts from Covington & Burling and Rhodium Group. This note summarizes Rhodium Group’s economic analysis from that report.

Authorities in many nations are talking about reducing, or even reversing, the globalization of information and communications technology (ICT) sectors responsible for a hefty share of world economic growth over the past three decades. Usually national security is given as the reason, though often economic nationalism appears to be a motive: proving which is predominant is generally impossible. Every country has a right to decide how much welfare to sacrifice in pursuit of national security. But policymakers considering ICT nativization strategies need a better concept of the cost.

China’s post-1978 economic reforms coincided almost exactly with the era of ICT globalization, and the nation benefitted as much as any from the production chain linkages and productivity gains made possible by dissemination of these technologies. In recent years, however, China has led the world in proposing to *deglobalize* its ICT landscape, by excluding firms and technologies that are not homegrown. ICT already plays a huge role in global GDP, and new innovation in goods and services such as Cloud storage and computing are critical sources of marginal growth. China is a test case for exploring the welfare costs of a digital divorce: regardless of the motivations or even the feasibility, policymakers and citizens in China and elsewhere would benefit from understanding the price tag.

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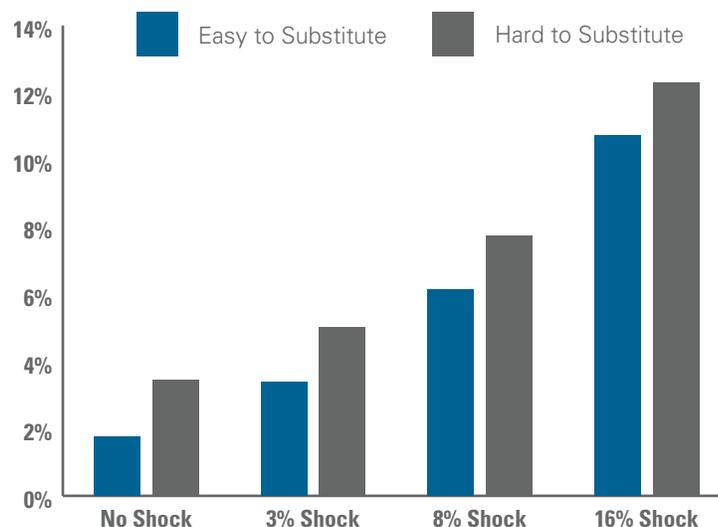
Big Numbers

To explore ICT deglobalization, we run the economic models used to estimate gains from globalization in reverse – adding barriers to trade and investment instead of taking them away.¹ It is uncertain whether the foreign ICTs China relies on today could be easily substituted by domestic producers (whether they are “trade elastic”), and also how expelling foreign ICTs from the current and future capital stock of the country would impact long-term productivity. In Figure 1 we present the range of impacts on Chinese GDP from thorough ICT deglobalization. Obviously, a digital divorce doesn’t happen overnight; these results don’t speak to the timing, but rather illuminate the direction and magnitude of impacts.

Figure 1. Potential Economic Shocks of ICT Deglobalization to China

Percent Reduction in GDP

Source: Rhodium Group



Even in the most conservative scenario, with no productivity shock and high substitutability of domestic output for foreign products, China faces a 1.77% loss in GDP. For comparison, Chinese economists estimate the negative effect from non-participation in TPP to be 2.2% over four years; and estimates of China’s biggest regional trade agreement to date (China-ASEAN) suggests output gains of just 0.5%. As policy shocks go, this is huge. Based on expected 2016 GDP, the hit is \$200 billion.

The numbers are more striking still when cumulated over a decade – since sending foreign firms packing is not a short-term matter. Assuming an optimistic GDP growth path to 2025 annual 1.77% erosion of output values would leave China’s economy almost \$3 trillion smaller than under business as usual without ICT

¹ A full description of our modelling, based on the GTAP model using 2011 data can be found in Preventing Deglobalization, and online at www.rhg.com.



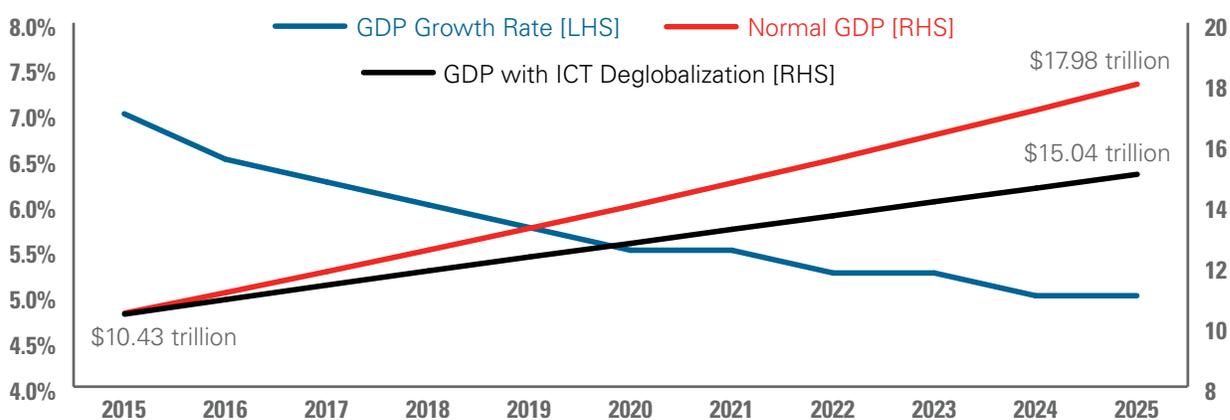
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deglobalization (See Figure 2).² Adding these annual sacrifices, from \$200 billion in year one to \$3 trillion after a decade, China pays a ten year price tag of \$14 trillion for whatever security benefit it achieves. Is that a reasonable price to pay? Only China can decide, but many Chinese would ask if there were a cheaper option. And of course, it may turn out that excluding foreign ICT products has no real value to national security in 2025, only a cost for consumers and workers with foregone job opportunities.

Figure 2. GDP Growth with and without Deglobalization Shock

Percent; USD trillion



Source: Rhodium Group. Note, this cumulation does not reflect changes in exchange rates or inflation differentials.

WHY SUCH A BIG IMPACT?

ICT deglobalization takes such a big bite out of Chinese GDP because embracing these technologies played a major role in driving China's reform era growth. ICTs are among China's biggest exports, but they include a large component of foreign ICT intermediates and services inputs. China is unlikely to return to an export processing zone model, where it can import foreign goods just for reexport and not for domestic consumption. And 50% or more of China's ICT exports are produced by the very foreign ICT firms whose presence would be disrupted by a deglobalization campaign. The economic model we employ captures the hit on output from severing ties with competitive intermediate inputs vendors. In July 2016 China was exporting more than \$33 billion a month in phones and computers alone, so an annual disruption of \$200 billion in output activity shouldn't surprise anyone.

² The GTAP model is static – it does not capture dynamic reductions in growth or other future adaptations over time. To approximate a 10 year effect, we increase China's GDP by an optimistic growth rate each year then reduce the result by 1.77% before applying the following year's growth rate. Dynamic models might arrive at a different result, depending in particular on the assumptions about productivity growth.



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PRODUCTIVITY CONSIDERATIONS

The negative productivity shock scenarios in Figure 1 are alarming, ranging from a 3.38% reduction of GDP with limited productivity damage from foreign exclusion and easy substitution of indigenous products for foreign-related ones, to greater than a 12% loss if Beijing lets loose a full broadside against the “foreign guardian warriors” of technology it has insinuated it wants to supplant. Of today’s 6.7% Chinese GDP growth, around 3% is coming not from growth in capital stock or the labor force, but from productivity improvement (what economists refer to as *total factor productivity*, or TFP).³ About two-thirds of that total is *ICT*-related productivity. The foreign-related share of *that*, in turn, is half: if all of it dried up, TFP would be reduced by 33%; if half the foreign ICT contribution evaporated, TFP would fall 17%; and if one-quarter were removed, an 8% TFP reduction could ensue. Therefore the 3-16% TFP declines we model are not unthinkable. With returns on capital investment in China dropping precipitously and the labor force now shrinking, the productivity component of growth is increasingly key. Now is not the time to escort foreign technologists to the door.

ANYTHING YOU CAN DO, I CAN DO BETTER

The impacts from trade shocks, such as cutting off foreign ICT vendors, depend on how hard or easy it is for domestic players to make up for excluded imports. This is a key factor in all trade models. In some segments such as telecom routers, computer monitors or computer servers, China is likely to be able to substitute for foreign offerings without huge difficulty; in others, such as advanced semiconductor manufacturing, the surge in outbound acquisitions is evidence that China has not indigenized many capabilities yet and has some distance to go. Precise prediction of the balance is beyond the scope of our assessment, and to a great extent impossible. So we offer a range of scenarios for trade elasticity in the results above. Our conservative projection of a -1.77% hit to GDP, used in Figure 2, is likely too optimistic about China’s ability to substitute, but readers can draw their own conclusions.

The ability to replace foreign participation is not just about today’s goods and services, but very much about the new innovations which will create growth and opportunity tomorrow. Technology researchers have observed for years that copious Chinese investment in indigenous innovation has not produced the expected level of new invention. The best known Chinese new economy players have generally borrowed business models that had already proved themselves abroad. This is not to say that Chinese firms could not fill the vacuum

³ Staff Report for the 2015 Article IV Consultation (2015). People’s Republic of China. International Monetary Fund, p. 39. Available at: <https://www.imf.org/external/pubs/ft/scr/2015/cr15234.pdf>



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left behind if foreign innovators were shown the door, just that easy domestic substitution for the role foreign innovators have played is a hope, not a given.

CAVEATS AND CONCLUSIONS

Our research methodology has limitations and shortcomings. As noted, static general equilibrium models do not provide a nuanced sense of adjustment to changes. Our scenarios build from a stark deglobalization of China's ICT sector, not a partial picture where rules for foreigners are tightened in the most sensitive areas and left unchanged in others, or a case where some qualified foreign firms or foreign nations are permitted to stay in the Chinese marketplace while only selected ones are blacklisted. There are many scenarios that might play out, but our task here is to put a floor value on the extreme case. Regardless of choices of countries and products, economic models remain very poor at quantifying the effects on services trade and output from policy shocks, and services are some of the most important elements of global growth going forward. In some regards our modeling choices might underestimate China's ability to adjust, while in other areas we are likely leaving out negative impacts.

Despite these shortcomings, the basic direction (negative) and magnitude of impact (losses in the trillions over a decade) are reasonable, and should be taken into account. Policymakers not just in China have considered some degree of deglobalization in ICT, just as many talk cavalierly about withdrawing from trade agreements and economic areas, building walls against their neighbors, and otherwise turning their backs on globalization and the drivers of development which have propelled so much poverty alleviation in recent decades. People are entitled to pay the price for security they deem justified, but they should consider how much they are paying before deciding what is sensible.

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ABOUT RHODIUM GROUP AND THE STUDY

Rhodium Group (RHG) conducted this economic analysis as part of the larger U.S. Chamber of Commerce study *Preventing Deglobalization*, published September 1, 2016. The Chamber report, a collaboration with Rhodium and law firm Covington & Burling, provides a comprehensive review of policy moves to nativize ICT sector activity in a wide range of nations, as well as more extensive review of the relationship among globalization, ICTs, China's development and the welfare implications of policy intentions signaled by Beijing in recent years.

RHG is a specialized, private research firm analyzing disruptive global trends including China's economic development and its interaction with the world economy. Rhodium is known for highly relevant, quantitatively rigorous analysis of China's market dynamics, reform plans, investment flows and interactions with the United States and other advanced economies. Rhodium strives for balance and to be constructive in its assessments, and contributes both to public policy debate and to the private sector.



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