

International Trade in the Digital Age: Data Analysis and Policy Issues

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International trade in digital products, facilitated by the internet, represents the cutting edge of global engagement by US companies. Both information technology (IT) companies, and the far larger set of companies that are not IT companies but use the internet and networked information technology to deliver their products, are involved. This essay puts this international trade in digital products into a wider perspective, and organizes the topic, both for data analysis and to discuss policy challenges.

The first lens of analysis documents the expanding global market for digital IT products. The second lens addresses international trade in IT-enabled services, both digital IT services, as well as the much larger set of commercial services that can use the internet and networked information technology to facilitate cross-border delivery. The third lens considers how wide-spread use of information technology throughout an economy (particularly as made more available through foreign trade and investment), enhances productivity, trade, and macroeconomic performance.

Growing international trade and foreign investment in digital IT products highlights some policy concerns, including tax differentials, which have always been an issue. However, growing cross-border engagement in digital products and services exposes the diversity of consumer attitudes and government policies toward standards and data management, and challenges policy-maker jurisdiction. Resolving these jurisdictional matters is far more difficult than negotiating tariffs or quotas. In the end, globalization through digital products is far harder to ring-fence than globalization through trade in goods.

Overview of the data

Digital IT products are a rising share of global spending on all types of IT

Global spending on IT products includes spending on IT hardware, software, and IT services (such as internet services and data processing services). Digital IT products, (software and IT services) are a rising share of global spending on all IT products. Around the world, from 2000 to 2008, for each dollar spent on IT hardware, spending on digital IT products rose from \$1.50 to \$2.00. This makes sense given that software and IT services make the computer box useful for applications for businesses, consumers, and governments.

By way of comparison, and to give an idea of the geography of global spending in the future, in the United States the comparable figures are, in 2000, for each \$1.00 spent on IT hardware, US consumers, business, and government spent \$2.00 on digital IT products. By 2008, that ratio moved up to \$2.70 spent on software and IT services relative to IT hardware. (All updated from Mann, 2006.)

So, whereas the US remains the largest market for IT software and services (about 40% of global spending in 2008), foreign markets are already larger and growing more quickly. Foreign markets that are open for both international trade and foreign direct investment means that US producers of digital IT products can participate in this growth.

International trade in IT-enabled services is growing much faster than goods trade

Both the infrastructure of networked information technology and foreign direct investment support international trade in commercial services. These services range from IT services, such as data processing and computer and information services, to the much larger group of services such as tourism, education, accounting, consulting, and other business and professional services that can use the internet as a means of cross-border delivery.

Globally, international trade in IT services grew 150% between 2000 and 2009. Over the same time period, the much larger trade in *IT-enabled* commercial services grew 120%. International trade in goods didn't even double. This faster growth of IT services is consistent the research finding that international trade in IT service is income elastic— e.g. grows faster than the rate of growth of GDP (Mann, 2004). Of course trade in goods is still much larger: Commercial services are only about 25% of global trade, and digital IT products somewhat less than 50% of that. Nevertheless, the vanguard of international trade is in the digital arena, both trade in digital IT products and trade in IT-enabled services.

By way of comparison, for the United States over the 2000 to 2009 period, trade in IT services grew by 140%, trade in services (including education, finance, and business and professional services) grew by about the same amount whereas trade in goods grew by only 30%. (All updated from Mann, 2005)

The United States is a net exporter of IT-enabled business and professional services, but has, in recent years, become a net importer of digital IT services. Factors that may undermine US exports of digital IT products is the lack of networked IT infrastructure and prohibitions on foreign direct investment in the destination markets. Research indicates that international trade in business services, including digital IT services is positively correlated with both foreign direct investment and internet availability (Mann and Civril, 2008). Therefore, trade and investment negotiations should focus on promoting internet availability and allowing foreign presence.

Using information technology enhances business performance and macroeconomic growth

The third lens through which to engage the topic of ‘international trade in the digital age’ is through the users of information technology. Substantial research from the industrial countries shows that using information technology increases business productivity, and raises the macroeconomic rate of growth. Factors that enhance the use of information technology, including international trade that lowers the prices of these products, further supports these positive economic outcomes. (Mann, 2006)

Research is increasingly focused on the role for digital IT and business performance in international trade. For a large sample of emerging market countries, firms that have web-sites and use e-mail are more likely to be exporters, and to export more. (Ferro, 2010) Countries that have quality internet infrastructures trade more, both exports and imports. In fact improved internet infrastructure is associated with a greater increase in trade than reduced tariffs. (Wilson, Mann, Otsuki, 2003, 2005) Therefore, allowing local businesses to have access to internet and to digital IT services raises trade, business productivity, and macroeconomic performance.

Policy Issues

These three lenses for considering international trade in the digital age offer a range of policy considerations, including: Do we have sufficient and the right scope of data on international transactions in digital IT products and IT-enabled trade to support policy design? How should our understanding of international trade in the digital age affect our trade negotiations? How do national jurisdictional issues such as tax rates, standards, and data management issues, including privacy, and censorship rules affect the competitiveness of US firms in the international marketplace?

Digital trade presents problems of coverage, concept, and funding of statistics and measurement

With regard to quantification of international trade in digital products, there are problems of coverage, concept, and funding. Although digital products cross borders, they do not cross customs. The notion of counting ‘packets’ that cross international telecommunications gateways is unworkable. Business records often do not classify transactions based on national boundaries, thus challenging the survey approach to obtaining data.

There is some ‘elasticity’ in the definition of digital products, which some foreign statistical agencies may be exploiting to bolster evidence of their international trade in these products. (Feenstra et al. 2010)

Further, the prices of these products, which are important in the aggregating-up to macroeconomic statistics such as GDP, are almost non-existent in current data systems, and present difficult statistical challenges (Mann, 2009a, Mann 2009b)

Funding to US statistical agencies to address these statistical issues has eroded, and should be replaced so that US leadership in international statistical bodies can be maintained.

Rapid evolution of digital products challenges the structure of trade agreements and raises the profile of international standard-setting bodies

With regard to international trade negotiations, the rapid evolution of digital products presents challenges to current trade negotiating structures. International trade and foreign investment in digital products were first recognized in the General Agreement on Trade in Services (GATS), negotiated as part of the Uruguay Round of multilateral trade negotiations. However, unlike trade in goods, where the presumption is that trade is free unless a derogation is negotiated, the GATS opens trade on a case-by-case, country-by-country basis according to a ‘schedule’.

Because digital products evolve rapidly, the negotiated ‘schedule’ is out-of-date with the products that can be traded, thus tending to be trade-restrictive rather than trade-enhancing (Mann, 2003). Even in the case of the Information Technology Agreement, (a separate sub-multinational agreement which purported to follow the ‘trade-in-goods’ model) there is now disagreement among the signatories as to whether they did agree to allow free trade in information technology products as their functionality evolved. (Mann and Liu, 2009).

One seemingly unlikely battleground for trade negotiations in digital products is the international standard-setting bodies. Because digital products are the classic example of network externalities (the value of each product is exponentially enhanced when others also use the product, so-called Metcalfe’s Law) these standard setting bodies play a particularly important role. Standards are negotiated, and products that adhere to these standards have a first-mover advantage and can gain the network advantages. At both the country-level (Luchnikava, 2008) and at the firm level (Ferro, 2010), adherence to standards enhances trade in digital products.

US negotiators need to stand fast and find allies on the issue of coverage of evolving functionality in the ITA as a slender thread on which to support the concept of openness as the norm, rather than as a separate negotiation for each new IT product. Attention to and active participation in international standard-setting bodies as part of the rules-based international trading system is needed.

Intersection of national jurisdiction and digital products presents the most difficult challenges

The most challenging set of policy issues involve norms, as codified in national laws, with regard to data management, including issues of digital rights, data privacy, and censorship. Put simply, globalization through digital products intersects the national jurisdictional space to a much greater degree than trade in goods because digital products, (spear-heading the globalization of services more generally) are a larger and an increasing share of GDP around the world. Globalization through digital products is far harder to ring-fence than globalization through trade in goods. While these issues have been present for some time, as trade in digital products increases, these issues have

become more salient. (Mann, Eckert, Knight, 2000; Mann and Orejas, 2003, Mann 2003, 2002, 2001).

It is not realistic to believe that national norms on some of these issues will converge to a single global standard, as, for example, towards data management, privacy, and censorship. Consumer preferences toward treatment of their personal data vary, business desire to protect proprietary information, and governments will not converge to one global attitude toward censorship. Therefore, the strategy needs to focus on ensuring the widest application of common norms, and, when those norms vary, that they are as porous as possible.

For example, with regard to data privacy, rather than disallowing the collection of personal data (which undermines the creation of value), the approach should focus on opt-in, opt-out strategies so that consumers and businesses that want to take advantage of the international trade opportunities can do so. This does imply a non-monolithic application of national jurisdiction and law. Global application of these principles means that some US laws (for example, gambling) would also be undermined.

Forced local presence (the requirement that a server be located within a country so as to bring the transmissions under local jurisdiction) is another issue. This analogous to compulsory licensing, required technology transfer or local sourcing of inputs. Business profitability of activities will be compromised (by having to set up multiple servers) but the nature of digital products acts to compromise governmental efforts to force local presence. The solution may well be to promote technological advances to reduce network costs and improve strategies for transmitting information.

Tax differentials are a final arena for international arbitrage. Again, not a new issue. However, digital products are easier to move from one jurisdiction to another. Moreover, an important aspect of digital products is intellectual property (IP), consider software or industrial processes for example. The location of tax accounting for IP has implications not only for tax revenues, but also for statistical accounting for international flows of receipts and payments (exports and imports). For example, suppose a patented industrial process designed in the U.S. is transferred to Ireland for tax-advantaged accounting. All receipts associated with the use of that IP are Irish exports. If that program is licensed and used by U.S. firms, payments of license fees show-up as US imports. Tax harmonization is not a realistic global strategy. But, re-assessing the U.S. approach to international taxation of corporate assets and activities is warranted.

Summary and Conclusion

Digital IT products (software, IT services) are a rising share of global spending on all types of information technology. Whereas the U.S. remains the largest market for IT software and services (about 40% of global spending in 2008), foreign markets are already larger and growing more quickly. Therefore, open foreign markets, for both international trade and foreign direct investment, enables U.S. producers of digital IT to participate in this growth.

International trade in IT-enabled services, a broader set of services than just digital IT, is growing much faster than goods trade. The United States is a net exporter of IT-enabled business and professional services, but has, in recent years, become a net importer of digital IT products. Factors that may undermine U.S. exports of digital IT products is the lack of networked IT infrastructure and prohibitions on foreign direct investment in the destination markets. Therefore, trade and investment negotiations should focus on promoting internet availability and allowing U.S. firms' presence.

Using information technology enhances business performance and macroeconomic growth, regardless of the level of development of a country. International trade in IT and digital IT products reduces their costs, and thus increases their use throughout an economy. The United States has allies around the world to promote wider global access to the internet and digital products.

Digital trade presents problems of coverage, concept, and funding of statistics and measurement. Funding to US statistical agencies to address these statistical issues has eroded, and should be replaced.

Rapid evolution of digital products challenges the static structure of trade agreements, particularly GATS, and raises the profile of international standard-setting bodies. Products that adhere to negotiated standards have gain network advantages. Greater attention to and active participation in bilateral, regional, and multilateral trade negotiating and standard-setting bodies as part of the rules-based international trading system is needed.

The intersection of national jurisdiction and digital products presents the most difficult challenges, ranging from taxes to censorship. It is not realistic to believe that national norms on some of these issues will converge to a single global standard. Therefore, the strategy needs to focus on ensuring the widest application of common norms, and, when those norms vary, that they are porous. Considering how best to ensure adherence to local laws then becomes first a domestic issue with an overlay of international trade law. In the end, globalization through digital products is far harder to ring-fence than globalization through trade in goods.

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