

Measuring the Economic Value of Cross-Border Data Flows

UNCTAD/WTO/UPU Measuring E-Commerce Day

April 22, 2016



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Commerce initiatives to improve measurement of the digital economy

- Department of Commerce's Digital Economy Leadership Team Initiative to Identify Unmet Data Needs for Measuring Cross-Border Data Flows
- Collaboration of Bureau of Economic Analysis, National Telecommunications and Information Administration, and Office of the Chief Economist to estimate the size (\$) of digital economy



Initiative to identify unmet data needs for measuring cross-border data flows

- Motivation
- Approach
- Progress and next steps



Motivation

- Digital data flows have become integral to daily interactions
- Policies restricting cross-border flow of data are being considered or enacted by governments
- Policymakers and other decision-makers need reliable data on how businesses and consumers use digital flows and how the flow of data—or restrictions on flows—impact the economy
- Data currently available to measure these flows are relatively scarce



Approach

From November 2015-April 2016

- Identify data and analysis that currently exists
 - Review available literature and datasets
 - Meet with stakeholders (other U.S. government, private industry firms and associations, researchers, international groups)
 - Document findings
- Identify possible gaps
- Convene roundtable of stakeholders
- Summarize gaps to inform future research and data collection



Approach

We classified the available data and analysis in four major groups:

- Domestic (U.S.) macro-economy
- Domestic (U.S.) micro-economy
- Foreign economies
- Bits and bytes



Progress

- To date, we have met with over 30 stakeholder organizations
- First draft of white paper outlining available datasets, literature, and other considerations is close to complete. Includes sample statistics.
- Roundtable scheduled for May 9 in Washington, D.C.
- Drafted 2-pager to motivate discussion at roundtable



Relevant datasets for measuring impact of cross-border data flows for U.S.

Bureau of Economic Analysis (BEA)

- Direct investment and multinational enterprise (MNE) data. Available at: <http://www.bea.gov/international/index.htm#omc>.
- Input-output (I-O) accounts, annual and benchmark. Available at: <http://www.bea.gov/industry/index.htm#annual> and http://www.bea.gov/industry/index.htm#benchmark_io.
- International trade in services data. Available at <http://www.bea.gov/international/index.htm#services>.



Relevant datasets for measuring impact of cross-border data flows for U.S. (cont.)

U.S. Census Bureau

- Retail e-commerce report , quarterly. Available at: <https://www.census.gov/retail/index.html#ecommerce>. And electronic shopping and mail order houses sales available from the Monthly Retail Trade survey. Available at: <http://www.census.gov/retail/index.html#mrts>.
- U.S. Census Bureau. E-stats data, annual. Available at: <https://www.census.gov/econ/estats/>.

International Trade Administration (ITA)

- Collects limited information from firms that self-certify for Safe Harbor and also from certified firms that opt-in to a voluntary survey. ITA will continue this data collection for firms under the new Privacy Shield agreement once it goes into effect.



Sample statistics: U.S. macro-economy

- In 2014, the United States exported \$399.7 billion and imported \$240.8 billion in digitally-deliverable services, resulting in a trade surplus for digitally-deliverable services of \$158.9. (Noonan, 2015)
- Digitally deliverable services are also delivered through affiliates of U.S. companies located in Europe and affiliates of European companies in the U.S. In 2011, the supply of digitally deliverable services through U.S. affiliates in Europe was worth \$312 billion and Europe supplied \$215 billion worth of digitally deliverable services through U.S. affiliates. (Meltzer, 2014).
- Removing foreign barriers to digital trade in digitally intensive industries would likely result in an estimated \$16.7 billion to \$41.4 billion increase (a 0.1 percent to 0.3 percent increase) in U.S. GDP. U.S. real wages would likely be 0.7 percent to 1.4 percent higher, and the effect on U.S. total employment would range from no change to an increase of 0.4 million FTEs. (USITC, 2014)
- Revoking the Safe Harbor Framework enabling data flows between the EU and United States could reduce U.S. services exports to the EU by 0.2 percent to 0.5 percent. SMEs would be most affected by the policy change, as they would be least able to establish subsidiaries in the EU or to negotiate model contracts with business partners. (Bauer et al, 2013)



Sample statistics: U.S. macro (cont.)

- In the fourth quarter of 2015, retail e-commerce sales totaled \$89.1 billion, up 2.1 percent from the third quarter, and accounted for 7.5 percent of all retail sales. Retail e-commerce sales are important for growth in the retail sales sector; e-commerce sales increased 14.7 percent from the fourth quarter of 2014 to the fourth quarter of 2015 while total retail sales increased only 1.3 percent in the same period. (Census Bureau Quarterly Retail E-Commerce Sales report, February 17, 2016)
- In 2012, online purchases of products and services by digitally intensive firms totaled \$471.4 billion. Just \$49.3 billion (10.5 percent) of the purchases were delivered online. An estimated \$422.2 billion (89.5 percent) of these purchases were of products and services delivered physically or in person.
 - Finance and insurance and selected other service firms purchased the most products and services delivered over the Internet, with \$11.6 billion and \$12.2 billion, respectively.
 - Firms in the manufacturing sector purchased more products and services over the Internet that were delivered physically than any other sector, with \$157.4 billion purchased. (USITC, 2014)
- Global flows, moving goods, services, finance, and people, increased GDP by at least 10 percent, or \$7.8 trillion in 2014. Of this amount, data flows accounted for \$2.8 trillion. (McKinsey, 2016)



Sample statistics: U.S. micro-economy

- Most firms in digitally intensive industries use the Internet to communicate internally, to order physical products and services, and to conduct business-to-business communication. Firms also use the Internet for supply chain management and market research, but this is much more common in large companies than in SMEs. (USITC, 2014)
- In 2013, majority-owned foreign affiliates of U.S. companies supplied \$1.3 billion of services to foreign persons. In that same year, all foreign affiliates of U.S. companies employed 14.3 million persons overseas. (BEA MNE data)
- “Sectors that use data most intensively are precisely those sectors which are also the producers of data services as part of their output production. ... In other words, those who produce data are also the ones that use data. On average, this amounts to a data input usage of almost 14 percent. However, a more surprising result ... is that many of these data services actually appear to be used for management purposes inside companies.” (van der Marel, 2015)
- “The Internet is also giving SMEs access to business services that can increase their productivity and global competitiveness. Such access includes functions like Google search, which helps businesses develop market intelligence on competitors and learn about foreign laws and regulations. The cloud provides access to low-cost software on demand and data flows allow for regular updates and security patches. One report estimates that software has accounted for over 15 percent of all U.S. labor productivity gains since 2004.” (Meltzer, 2014)



Sample statistics: U.S. micro (cont.)

- In the U.S., 59% of eBay enabled SMEs (>\$10,000 in annual sales) reached 10 or more foreign markets; the average number of markets reached was 18; 64% of SMEs exported to four or more continents. (eBay, 2016)
- Medical centers in the United States might access digital health data on U.S. patients that originates in other parts of the world. Sweden-based Hermes Medical Solutions manufactures software applications that monitor various organ functions on patients. The applications are cloud-based and data, stored in Sweden, is sent across borders and analyzed by medical centers in 30 different countries, including the United States. In fact, 95 percent of the services provided by Hermes are outside of Sweden. (Castro & McQuinn, 2015)
- Since the EU first limited the transfer of personal data out of the region in 2000 until June 2015, over 5,000 companies have self-certified under the U.S. Safe Harbor program, pledging that they will maintain privacy of the data they are transmitting. These firms come from industries throughout the economy, including computer software, computer services, and information services, but also from industries unrelated to IT such as education, health, financial, legal services, and manufacturing industries, to name a few. This highlights the importance of cross-border data transfers across the economy. (Data from International Trade Administration as reported in OECD, November 2015)



References and other literature

Bauer, M. & Lee-Makiyama, H. European Center for International Political Economy. (2015, May). The Bundes Cloud: Germany on the Edge to Discriminate Against Foreign Suppliers of Digital Services. ECIPE Bulletin No. 5/2015. Retrieved from <http://ecipe.org/publications/the-bundes-cloud-germany-on-the-edge-to-discriminate-against-foreign-suppliers-of-digital-services/>.

Bauer, M., Lee-Makiyama, H., & van der Marel, E. European Center for International Political Economy. (2015, June). Data Localisation in Russia: A Self-Imposed Sanction. ECIPE Policy Brief No. 6/2015. Retrieved from <http://ecipe.org/publications/data-localisation-russia-self-imposed-sanction/>.

Bauer, M., Lee-Makiyama, H., van der Marel, E., & Verschelde, B. European Center for International Political Economy. (2014, December). The Costs of Data Localisation: Friendly Fire on Economic Recovery. ECIPE Occasional Paper No. 3/2014. Retrieved from http://www.ecipe.org/app/uploads/2014/12/OCC32014_1.pdf.

Bauer, M., Erixon, F., Krol, M., Lee-Makiyama, H., & Verschelde, B. European Center for International Political Economy for the U.S. Chamber of Commerce. (2013, March). The Economic Importance of Getting Data Protection Right. Retrieved from https://www.uschamber.com/sites/default/files/documents/files/020508_EconomicImportance_Final_Reviewed_lr.pdf

Borga, M. & Koncz-Bruner, J. Bureau of Economic Analysis. (2012). Trends in Digitally-Enabled Trade in Services. Retrieved from http://www.bea.gov/international/pdf/trends_in_digitally_enabled_services.pdf.

Branstetter, L. Peterson Institute for International Economics. (2016, March). Assessing the Trans-Pacific Partnership, Volume 2: Innovations in Trading Rules. PIIE Briefing 16-4. Chapter 6: TPP and Digital Trade. Retrieved from <http://www.iie.com/publications/interstitial.cfm?ResearchID=2934>.

References and other literature (cont.)

Castro, D. & McQuinn, A. Information Technology and Innovation Foundation. (2015, February). Cross-Border Data Flows Enable Growth in All Industries. Retrieved from http://www2.itif.org/2015-cross-border-data-flows.pdf?_ga=1.64526831.1959464330.1454009762.

Christensen, L., Colciago, A., Etro, F., & Rafert, G. (2013, February). The Impact of Data Regulation Policies in the EU. JEL classification: L1, J6, O3. Retrieved from http://www.analysisgroup.com/uploadedfiles/content/insights/publishing/2013_data_protection_reg_in_eu_christensen_rafert_etal.pdf.

eBay (2016, January). Small Online Business Growth Report: Towards an Inclusive Global Economy. White Paper. Retrieved from http://www.ebaymainstreet.com/sites/default/files/ebay_global-report_vf_no-countries_0.pdf.

Erixson, F., Hindley, B. & Lee-Makiyama, H. European Center for Political Economy. (2009, December). Protectionism Online: Internet Censorship and International Trade Law. ECIPE Working Paper No 12/2009. Retrieved from <http://ecipe.org/publications/protectionism-online-internet-censorship-and-international-trade-law/>.

Forman, C., Goldfarb, A., & Greenstein, S. National Bureau of Economic Research. (2014). Information Technology and the Distribution of Inventive Activity. NBER Working Paper 20036. Retrieved from <http://www.nber.org/papers/w20036.pdf>.

Ghemawat, P. & Altman, S. (2014) DHL Global Connectedness Index 2014: Analyzing global flows and their power to increase prosperity. Retrieved from http://www.dhl.com/content/dam/Campaigns/gci2014/downloads/dhl_gci_2014_study_high.pdf.

References and other literature (cont.)

Google. (2010). Enabling Trade in the Era of Information Technologies: Breaking Down Barriers to the Free Flow of Information. White paper. Retrieved from <http://googlepublicpolicy.blogspot.com/2011/11/advancing-free-flow-of-information.html>.

Gresser, E. Progressive Economy. (2014, January 31). 21st Century Trade Policy: The Internet and the Next Generation's Global Economy. Retrieved from <http://www.progressive-economy.org/papers/21st-century-trade-policy-the-internet-and-the-next-generations-global-economy/>.

Gresser, E. Progressive Economy. (2012, May 8). Lines of Light: Data Flows as a Trade Policy Concept. Retrieved from <http://www.progressive-economy.org/papers/lines-of-light-data-flows-as-a-trade-policy-concept/>.

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Hofheinz, P. & Mandel, M. The Lisbon Council & The Progressive Policy Institute. (2014). Bridging the Data Gap: How Digital Innovation Can Drive Growth and Create Jobs. Retrieved from http://www.progressivepolicy.org/wp-content/uploads/2014/04/LISBON_COUNCIL_PPI_Bridging_the_Data_Gap2.pdf.

International Federation of the Phonographic Industry. (2015). IFPI Digital Music Report 2015: Charting the Path to Sustainable Growth. Retrieved from <http://www.ifpi.org/downloads/Digital-Music-Report-2015.pdf>.

International Telecommunications Union. (2015). Measuring the Information Society Report. Available at <http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2015.aspx>. Historical annual reports available.

References and other literature (cont.)

Kaplan, J. M. & Rowshankish, K. CIGI and Chatham House (2015, May) Assessing the Impact of Data Location Regulation in Financial Services. Global Commission on Internet Governance, Paper Series: No. 14. Retrieved from https://ourinternet-files.s3.amazonaws.com/publications/no14_web.pdf.

Leviathan Security Group. (2015). Quantifying the Cost of Forced Localization. Retrieved from <http://static1.squarespace.com/static/556340ece4b0869396f21099/t/559dad76e4b0899d97726a8b/1436396918881/Quantifying+the+Cost+of+Forced+Localization.pdf>.

Mandel, M. Progressive Policy Institute. (2014, April). Data, Trade, and Growth. Policy Memo. Retrieved from http://www.progressivepolicy.org/wp-content/uploads/2014/04/2014.04-Mandel_Data-Trade-and-Growth.pdf.

Mandel, M. Progressive Policy Institute. (2015). Measuring Globalization: Better Trade Statistics for Better Policy. Houseman and Mandel. Volume 2. Chapter 9: Data, Trade, and Growth.

Mandel, M. Progressive Policy Institute. (2012, October). Beyond Goods and Services: The (Unmeasured) Rise of the Data-Driven Economy. Policy Memo. Retrieved from http://www.progressivepolicy.org/wp-content/uploads/2014/04/2014.04-Mandel_Data-Trade-and-Growth.pdf.

McKinsey Global Institute. McKinsey & Company. (2015, December). Digital America: A Tale of the Have and Have-Mores. Retrieved from <http://www.mckinsey.com/industries/high-tech/our-insights/digital-america-a-tale-of-the-haves-and-have-mores>.

McKinsey Global Institute (MGI). McKinsey & Company. (2014, March). Global flows in a digital age. Retrieved from <http://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/global-flows-in-a-digital-age>.

Includes MGI Connectedness Index, which includes a measure on how connected countries are with respect to data and communications.

References and other literature (cont.)

Meltzer, J. Brookings Institute. (2014, October). The Importance of the Internet and Transatlantic Data Flows for U.S. and EU Trade and Investment. Retrieved from <http://www.brookings.edu/research/papers/2014/10/internet-transatlantic-data-flows-meltzer>.

National Foreign Trade Council. Promoting Cross-Border Data Flows: Priorities for the Business Community. Retrieved from <http://googlepublicpolicy.blogspot.com/2011/11/advancing-free-flow-of-information.html>.

Nicholson, J. & Noonan, R. Office of the Chief Economist, Economics and Statistics Administration, U.S. Department of Commerce. (2014, January). Digital Economy and Cross-Border Trade: The Value of Digitally-Deliverable Services. Retrieved from <http://www.esa.doc.gov/sites/default/files/digitaleconomyandtrade2014-1-27final.pdf>.

Updated statistics: Noonan, R. Office of the Chief Economist, Economics and Statistics Administration, U.S. Department of Commerce. (2015, May 28). Digitally Deliverable Services Remain an Important Component of U.S. Trade. Economic Briefing blog. Retrieved from <http://esa.doc.gov/economic-briefings/digitally-deliverable-services-remain-important-component-us-trade>.

Organization for Economic Cooperation and Development. (2015, November 12). Economic and Social Benefits of Internet Openness. Draft background paper for Ministerial Panel 1.1, DSTI/ICCP(2015)17.

Organization for Economic Cooperation and Development. (2015, November). Emerging Policy Issues: Localising Data in a Globalised World – Methodology. Working Party of the Trade Committee. TAD/TC/WP(2015)24.

References and other literature (cont.)

Organization for Economic Cooperation and Development. (2015, May 12). Emerging Policy Issues: Localisation Barriers to Trade. Working Party of the Trade Committee. TAD/TC/WP(2014)FINAL. Retrieved from

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/TC/WP\(2014\)17/FINAL&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/TC/WP(2014)17/FINAL&docLanguage=En).

Pélessié du Rausas, M., Manyika, J., Hazan, E., Bughin, J., Chui, M., & Said, R. McKinsey Global Institute. McKinsey & Company. (2011, May). Internet Matters: The Net's sweeping impact on growth, jobs, and prosperity. Retrieved from <http://www.mckinsey.com/industries/high-tech/our-insights/internet-matters>.

United Nations Conference on Trade and Development (UNCTAD). Information Economy Report Series. Retrieved from <http://unctad.org/en/Pages/Publications/InformationEconomyReportSeries.aspx>.

Latest: Information Economy Report 2015: Unlocking the Potential of E-commerce for Developing Countries. (2015, March 25)

U.S. Chamber of Commerce & Hunton & Williams LLC. (2014). Business Without Borders: The Importance of Cross-Border Data Transfers to Global Prosperity. Retrieved from

https://www.uschamber.com/sites/default/files/021384_BusinessWOBorders_final.pdf.

United States International Trade Commission (USITC). (2013, July). Digital Trade in the U.S. and Global Economies, Part 1, Publication Number 4415, Investigation number 332-531. Retrieved from

<https://www.usitc.gov/publications/332/pub4415.pdf>.

References and other literature (cont.)

United States International Trade Commission (USITC). (2014, August). Digital Trade in the U.S. and Global Economies, Part 2, Publication Number 4485, Investigation number 332-540. Retrieved from <https://www.usitc.gov/publications/332/pub4485.pdf>.

van der Marel, E. European Center for International Political Economy. (2015, July). Disentangling the Flows of Data: Inside or Outside the Multinational Company?. ECIPE Occasional Paper No. 07/2015. Retrieved from <http://ecipe.org/app/uploads/2015/07/ECIPE-Data-Flows-final.pdf>.

World Bank. (2016, January). World Development Report 2016: Digital Dividends. Retrieved from <http://www.worldbank.org/en/publication/wdr2016>.