WORLD TRADE ORGANIZATION

Moratorium on electronic transmission: overview of the debate on economic and tariff revenue effects

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Background of debate on moratorium on electronic transmission (ET)

- Moratorium: non-imposition of customs duties on electronic transmission
- Economic debates on the moratorium on two topics:
  1. What is the impact of the moratorium on **tariff revenues** and broader tax revenues? Two debates are relevant:
     a. How large is the shift of trade in digitizable goods to digitized trade?
     b. What could be the impact of new technologies such as 3D printing on digitized trade?
  2. What are the effects of the moratorium on **trade and welfare**?
     a. Positive: standard welfare effects of tariffs: loss tariff revenues outweighed by gains for consumers
     b. Positive: beneficial productivity effects of imports of digitized goods
     c. Negative: the moratorium limits the policy space to conduct industrial policy and could raise monopoly power of big players in digital markets

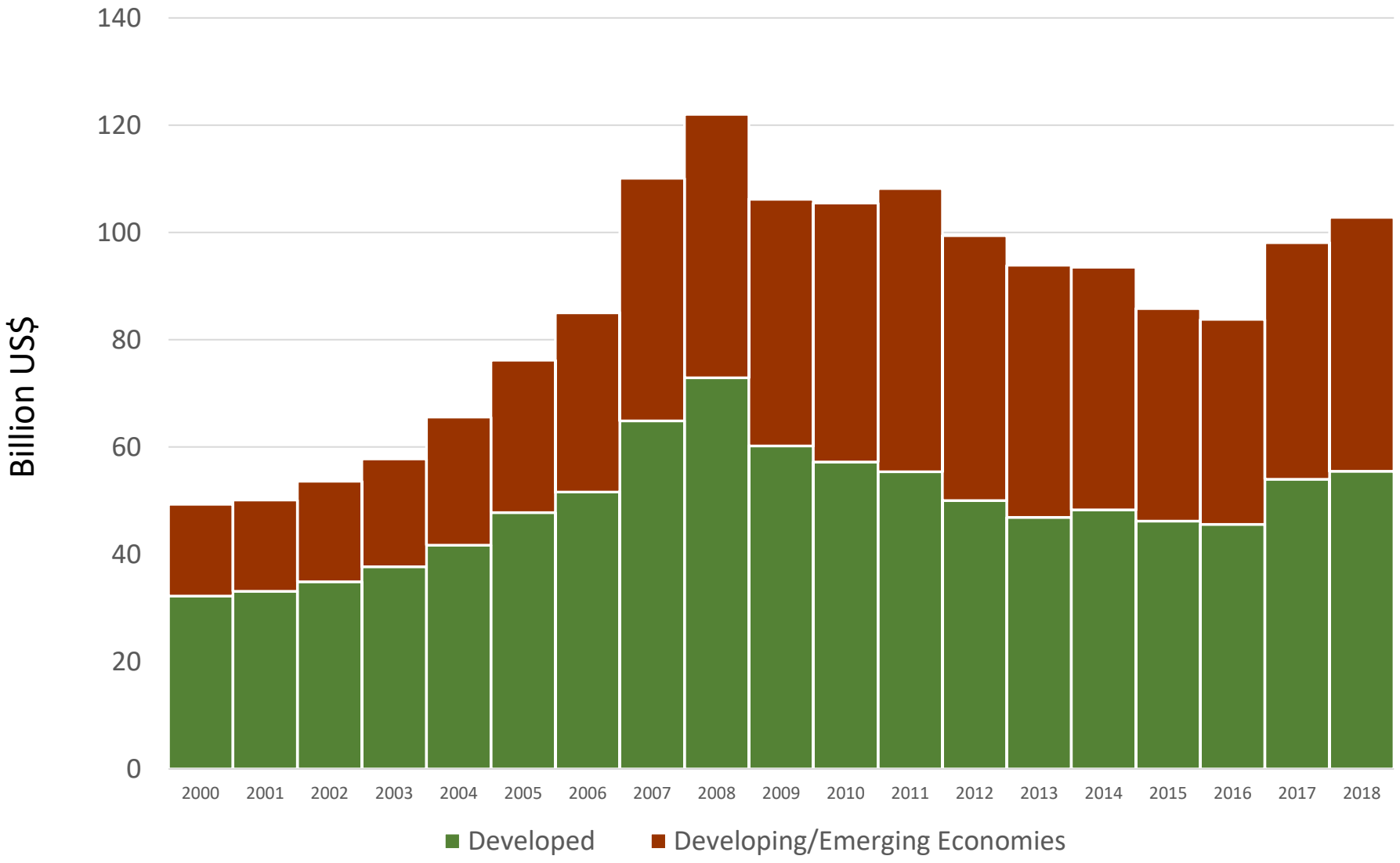
Background of debate on moratorium on electronic transmission (ET)

- This presentation: provide overview of findings and positions by different researchers on trade, welfare and tariff and tax revenue effects of moratorium, drawing from:
  - WTO (2016). Fiscal implications of the customs moratorium on electronic transmissions: the case of digitisable goods. JOB/JC/114.
  - Rashmi Banga (2019). Growing trade in electronic transmissions: implications for the South. UNCTAD Research Paper No. 29
  - Hosuk-Lee Makiyama and Badri Narayanan (2019). The economic losses from ending the WTO moratorium on electronic transmissions.
  - Andrea Andrenelli and Javier Lopez-Gonzalez (2019). Electronic tranmissions and international trade – shedding new light on the moratorium debate. OECD Trade Policy Paper No. 233.
  - Caroline Freund, Alen Mulabdic and Michele Ruta (2020). Is 3D printing a threat to global trade. World Bank Policy Research Paper 9024.
  - Andrea Andrenelli and Javier Lopez-Gonzalez (2021). 3D printing and international trade: what is the evidence to date. OECD Trade Policy Paper No. 256.
  - Unpublished work Economic Research and Statistics Division. WTO Secretariat.

Tariff and tax revenue effects: size of trade and tariff revenues digitizable goods

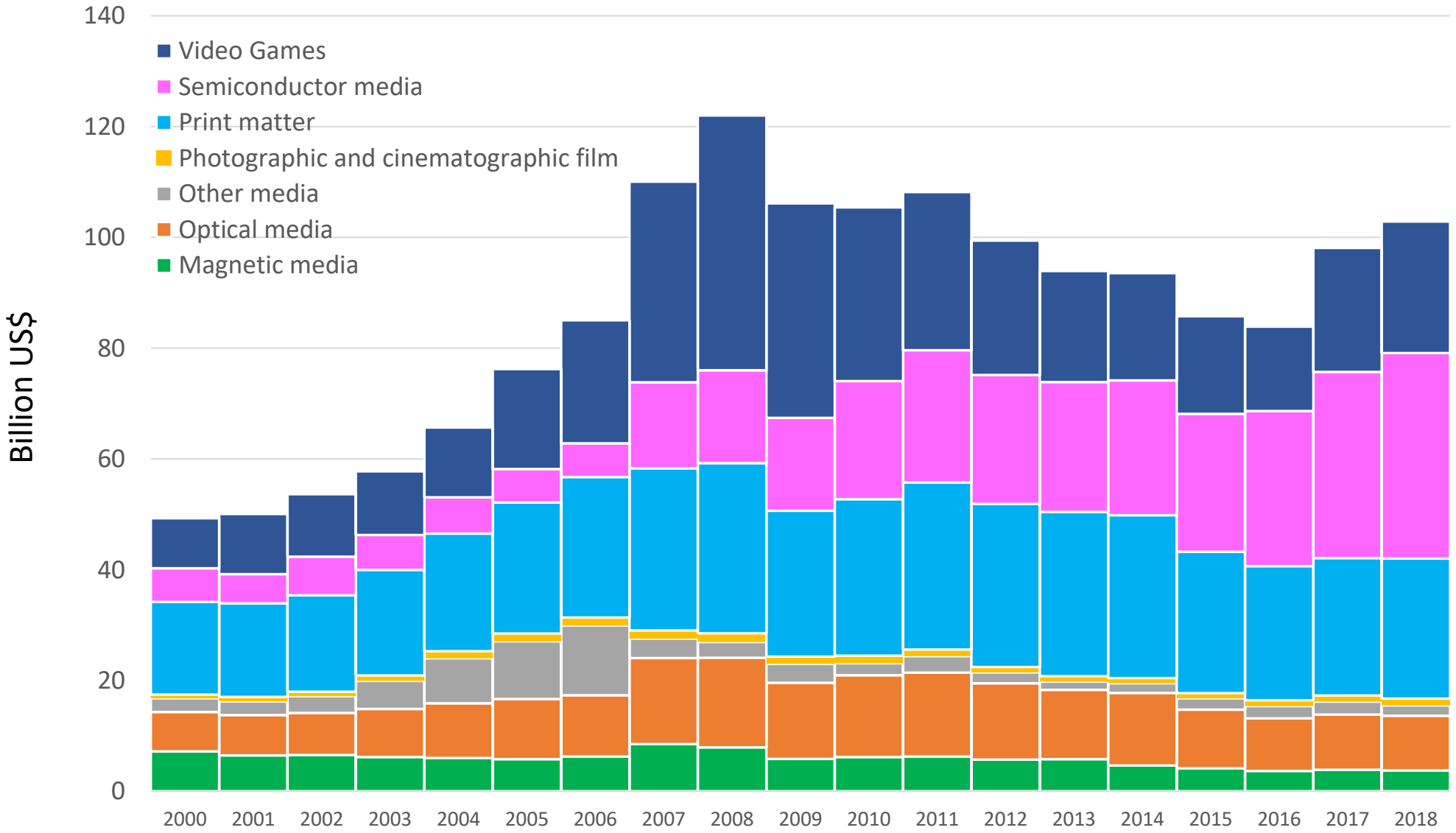
- WTO (2016), building on earlier work, compiles a list of digitizable goods, calculating the actual trade and tariff revenues in digitizable goods, such as:
  - Video games
  - Semiconductor media
  - Print matter
  - Photographic and cinematographic film
  - Optical, magnetic, and other media
- Updating the list based on Banga (2019), ERSD WTO finds that trade in digitizable goods is about $100 billion
- Tariff revenues on imports of digitizable goods are $1 billion ($1,000 million)

Yearly imports of digitizable goods, by country group, 2000-2018



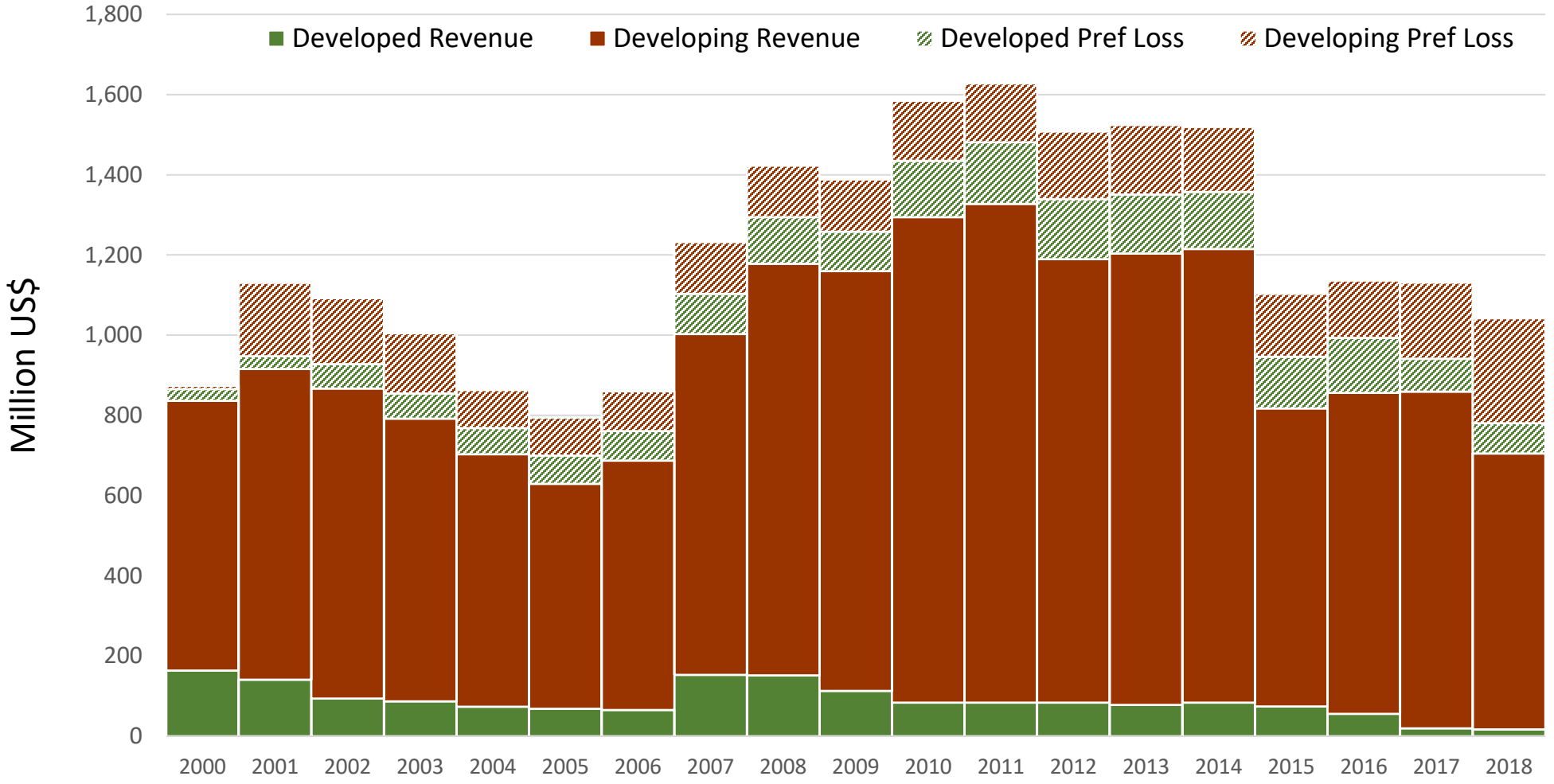
- Extend list of goods compared to Job/GC/114, following and refining Banga (UNCTAD, 2019) covering 4 HS-Chapters
  - Photographic and cinematographic films
  - Printed matter
  - Media for sound, video, software or other phenomena
  - Video games

Yearly imports of digitisable goods, by product group, 2000-2018

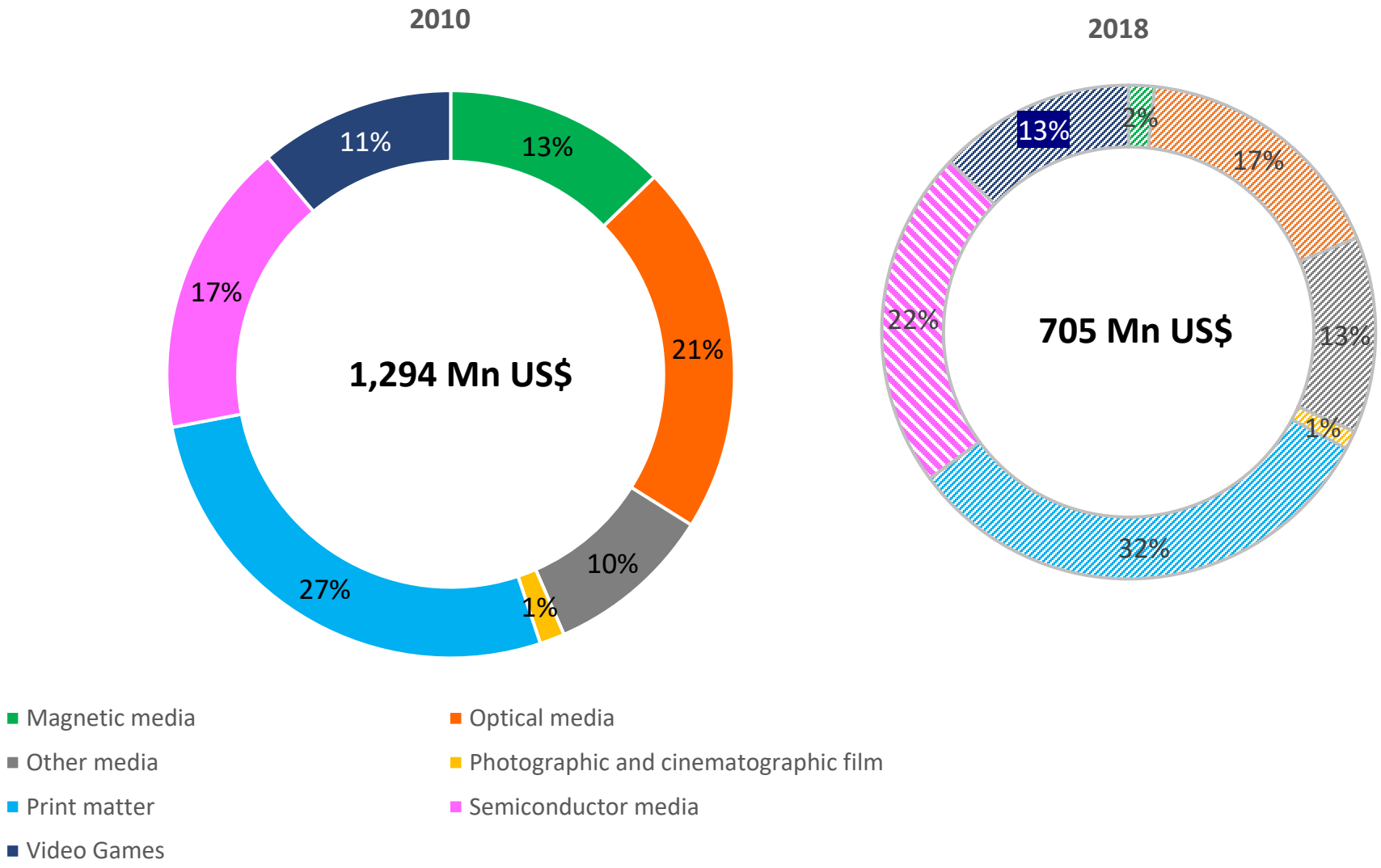


(Trade weighted) Applied MFN tariff rates on digitizable products

Imports tariff revenue on digitizable goods, by country group, 2000-2018



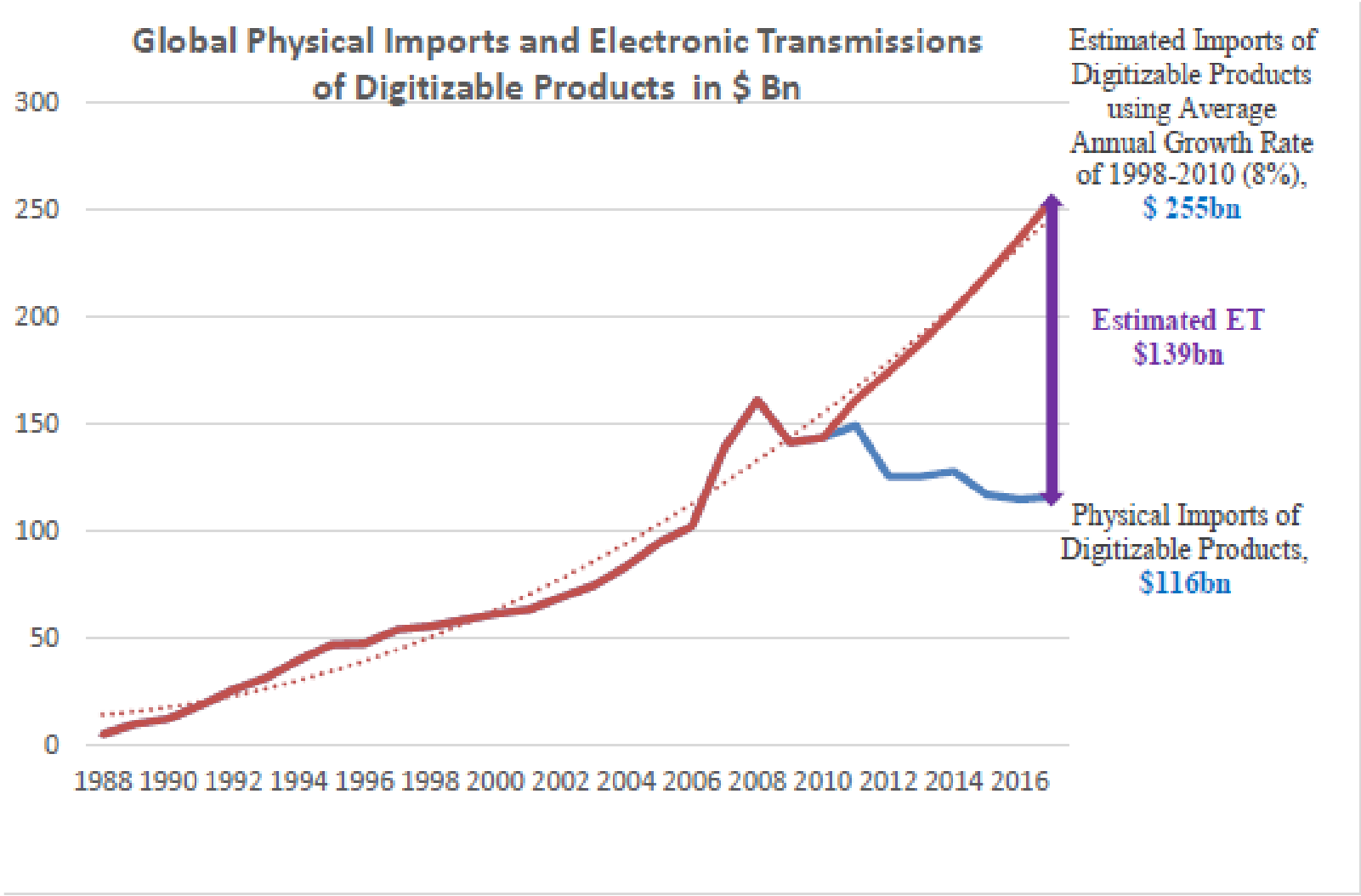
Comparison of shares in duty collected, 2010 and 2018



Tariff and tax revenue effects: which approach to follow? Banga's approach

- Banga (2019): the moratorium is on digitized trade and not on digitizable trade
  - Digitizable trade is physical trade which can be replaced by electronically transmitted trade, also called digitized trade or electronic transmission
- Using the current tariff revenues on digitizable trade is thus a very imperfect proxy for potential tariff revenue losses because of the moratorium
- Banga (2019) observes that trade in digitizable goods has been stagnating since 2008 and uses the difference between counterfactual trade in digitizable goods if it would have continued growing according to the trend from earlier years and actual trade in digitizable goods as a proxy for digitized trade

Tariff and tax revenue effects: Banga (2019): counterfactual digitized trade



- Banga argues that physical imports of digitizable products have been stagnating and replaced by digitized trade (ET)
- Estimated ET would be $139bn

Tariff and tax revenue effects: Banga (2019): foregone tariff revenues

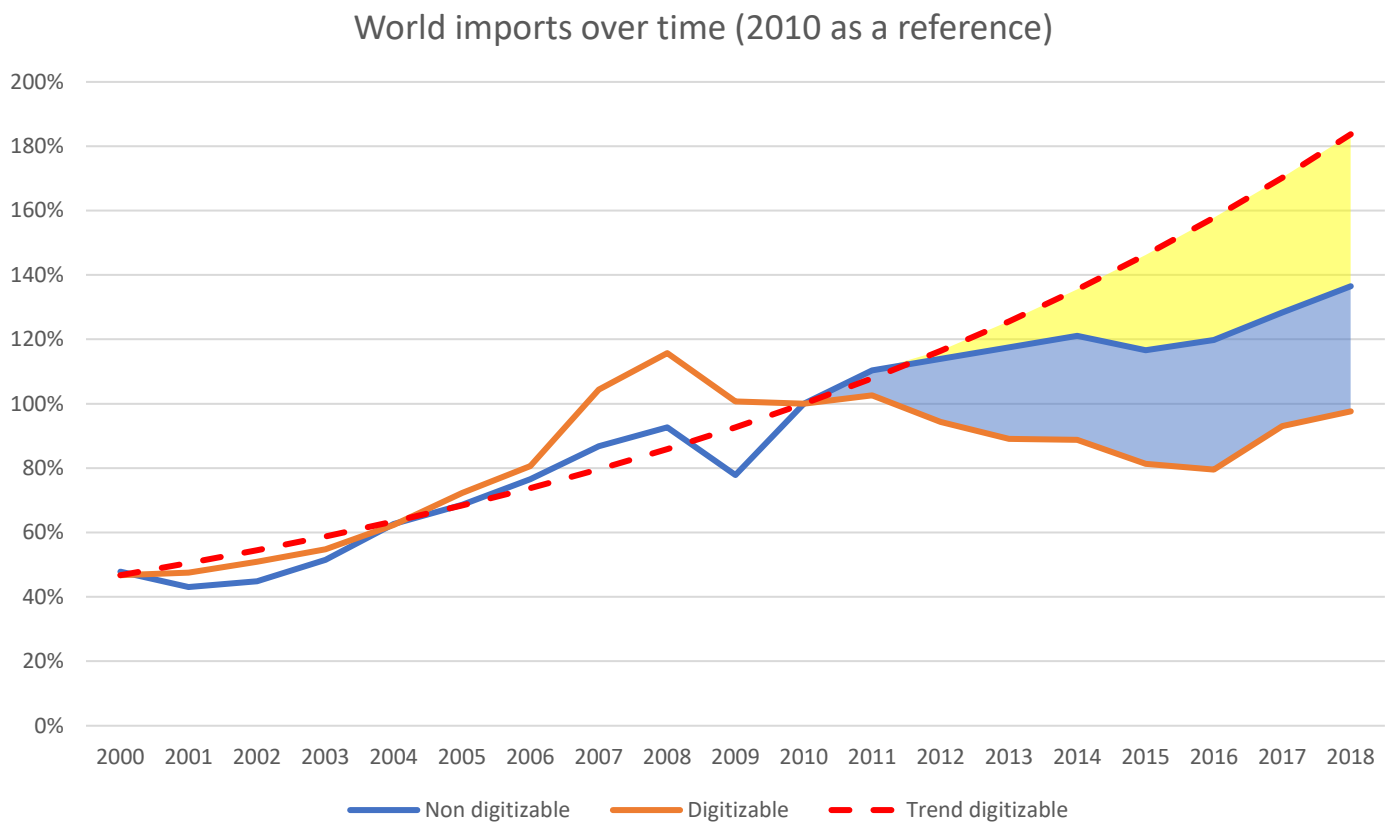
	Physical Imports of Digitizable Products ($Mn)	Estimated On-Line Imports or ET of Digitizable Products ($Mn)	Estimated Total Imports of Digitizable Products ($Mn)	Simple Average of Bound Duties in 2017 (%)	Simple Average of MFN Duties in 2017 (%)	Potential Tariff Revenue Loss using Average Bound Duties ($Mn)	Potential Tariff Revenue Loss using Average MFN Duties ($Mn)
WTO Developing members (excluding LDCs)	28 399	51 558	79 957	12.6	6.5	**10 075**	**5 197**
WTO High-Income	81 604	62 962	144 566	0.2	0.2	289	289
Sub-Saharan Africa	1195	4474	5669	46.4	10.9	2 630	618
Middle East - North Africa	1 011	4 360	5 371	18.9	8.43	1 015	453
WTO LDC members (31)	191	2 804	2 995	50.3	11.5	1 506	344

- Multiplying the calculated counterfactual digitized trade with bound or MFN tariffs, the potential tariff revenue in developing members is between 5000 and 10,000 mn, a factor 5 to 10 bigger than WTO (2016)

Tariff and tax revenue effects: which approach to follow? ERSD's approach

- The approach in Banga can be improved in various ways:
  1. To calculate an appropriate counterfactual for digitizable trade, a simple trend is not appropriate. Rather, digitizable trade growth should be compared with the growth in non-digitizable trade
  2. In practice countries impose applied tariffs and not MFN or bound tariffs
  3. The introduction of tariffs leads to behavioural changes, so digitized trade cannot simply be multiplied with tariff rates. Rather an economic model should be employed to build a counterfactual

Development of digitizable and non digitizable goods trade and calculation of digitized trade



- Digitizable trade grows faster than comparable trade (in same HS chapters) until 2009 and then stagnates

- Two approaches to proxy for digitized trade
  - Use trend until 2010 (conservatively) and assume growth of digitizable goods continues in electronic form (Banga, 2019; UNCTAD): digitized trade is 85% of the size of digitizable trade
  - Use difference between digitizable and comparable non-digitizable trade based on econometric estimation: digitizable trade 66% of digitized trade

Tariff, revenue and trade effects: general equilibrium exercise

Employ WTO Global Trade Model: computable general equilibrium (CGE) model, using 2014 base-data projected to 2018 (WTO Staff Paper ERSD 2019-10)

Use of CGE model with calibration to real-world base-data makes it necessary to locate electronic transmission somewhere: digitized trade is part of Business services (Communications) in study based on inspecting description NAICS sectors

- We introduce separate sectors for digitized trade in the model

Size of digitized trade is proxied by stagnated growth in digitizable trade (previous slide)

- Historical trend approach: 85% of digitizable trade ($103 billion)
- Difference-in-difference estimation with control group: 66% of digitizable trade ($80 billion)

Policy experiment: lifting of Moratorium by introducing import taxes on digitized trade, equal to Actual or Applied MFN tariff rates in corresponding HS lines digitizable trade using data from WTO IDB

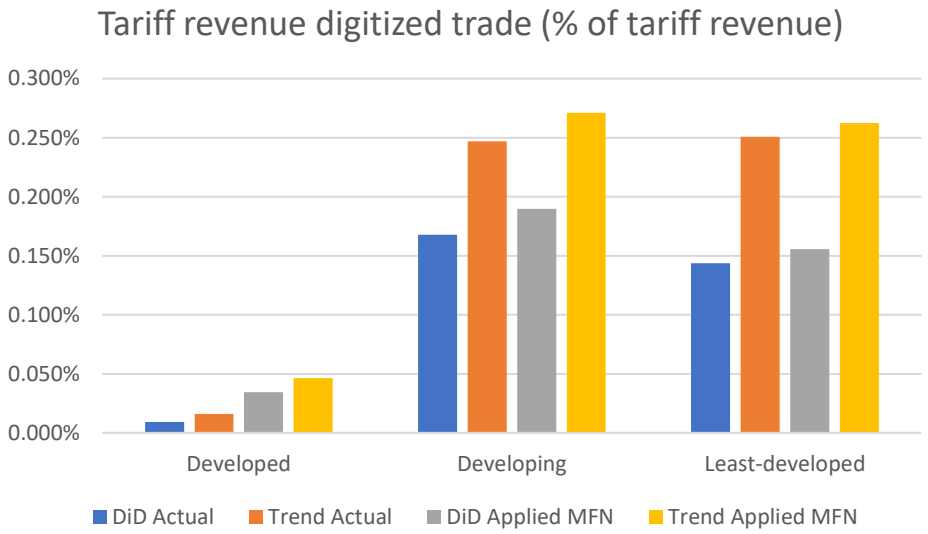
Fiscal revenue and economic effects of Moratorium on electronic transmission (ET)

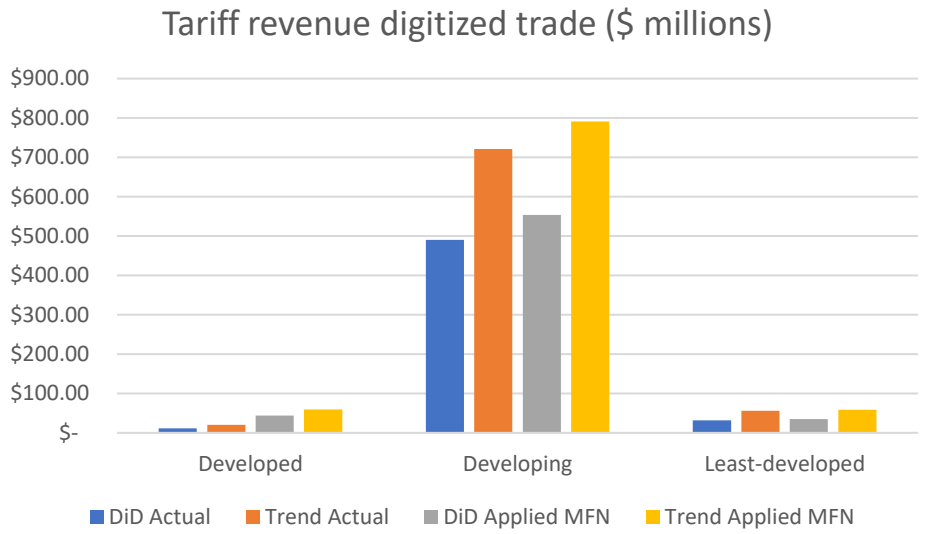
1. Tariff revenue effects of lifting Moratorium are projected to be positive:
   - Between 0.15% and 0.25% of total tariff revenues for developing countries and least developed countries, LDCs (respectively between appr. $500 and $800 million for developing countries and between $ 32 and $58 million for LDCs, which is about 10 times smaller than Banga)

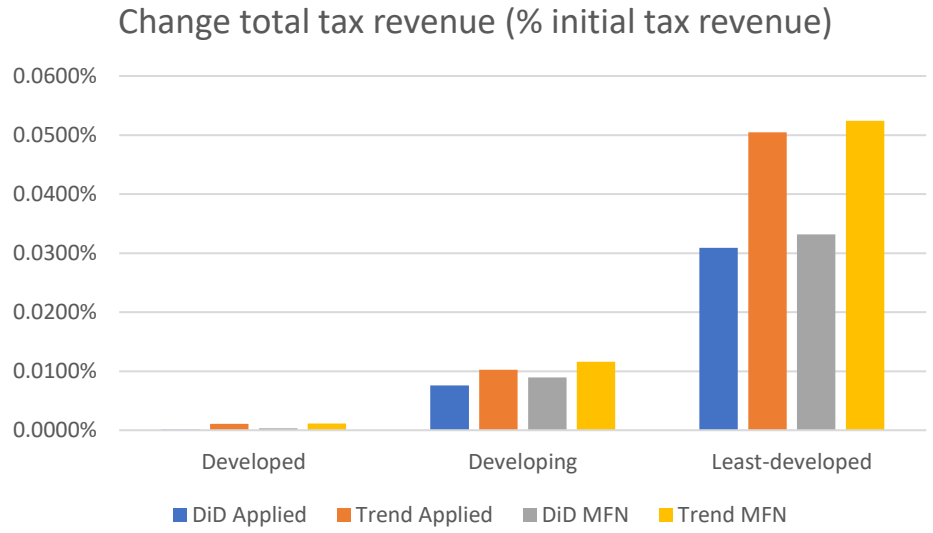
2. Impact on total tax revenues also projected to be positive

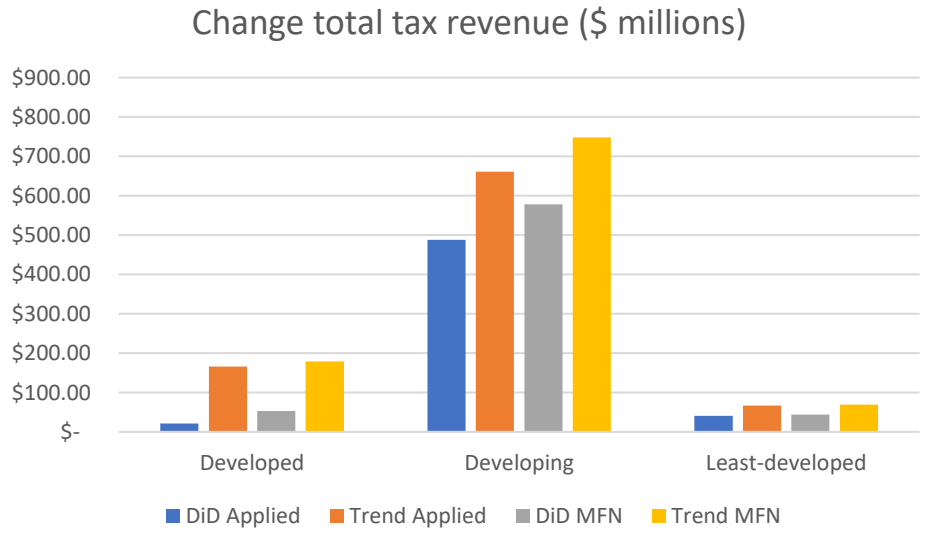
3. Negative projected effect on trade of lifting moratorium
   - Reduction in real imports between 2.6% and 3.1% of initial imports in digitized trade of developing countries and 10.4% and 11.7% of initial imports for LDCs

Change in tariff and total tax revenues of lifting of moratorium



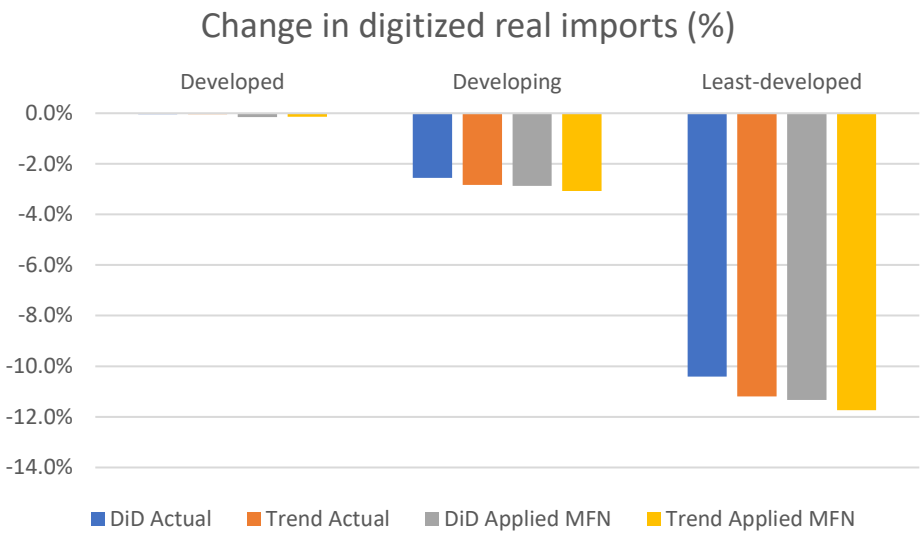


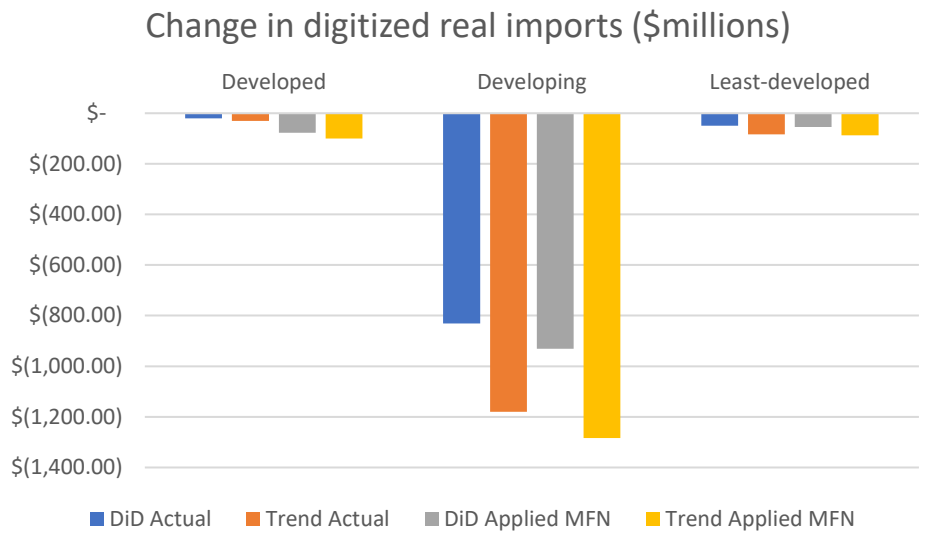


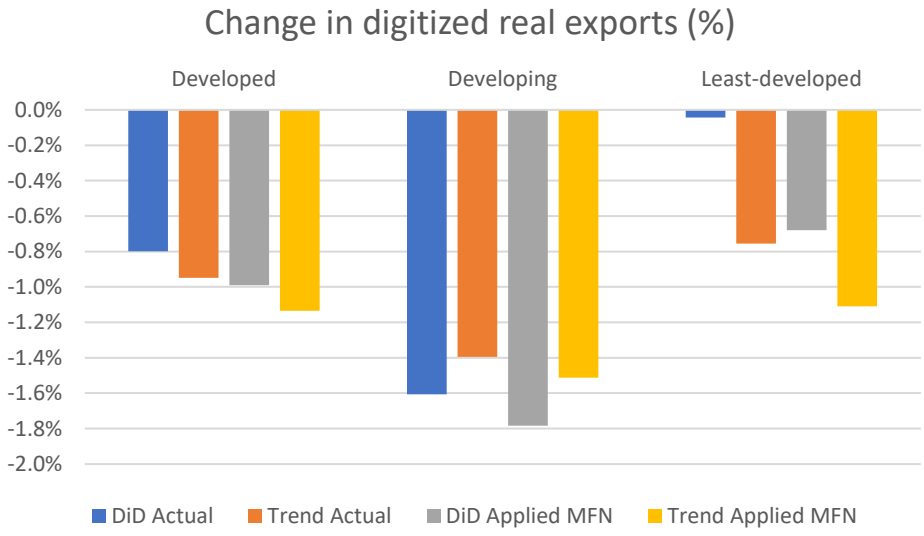


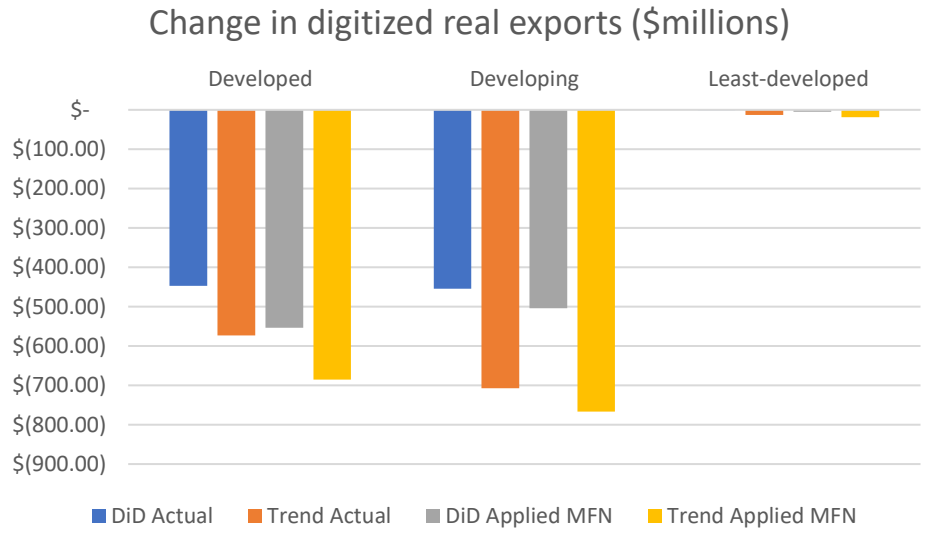
- Tariff revenues of developing and LDCs (distinct groups) rises by 0.15%-0.25% of total tariff revenues
- Impact on total tax revenue also positive
- Larger effect on share of total tax revenue for LDCs: tariff revenues larger share of total tax revenues

Change in real exports and imports of lifting of moratorium









- Reduction of imports in per cent is largest in LDCs and in millions of dollars in developing countries
- Stronger negative impact on exports of developed countries than on their imports: reflects size of tariff increases and comparative advantage

Tariff, revenue and trade effects: the ECIPE estimates

- Makiyama and Narayanan (2019) also use CGE modelling to calculate the economic and tax revenue effects of lifting the moratorium
- They assume tariffs are introduced in various services sectors, with digitized trade consisting of the following activities:
  - Online retailing services
  - Internet publishing, web search portals, directories and information services
  - Motion picture and video industries; sound recordings
  - Software publishing, programming
  - Data hosting, processing, systems and data communications
  - Advertising
- They find that although positive tariff revenues would be generated if the moratorium were lifted, the impact on total tax revenues would be negative, because GDP and thus the tax base would fall substantially

Tariff, revenue and trade effects: the ECIPE estimates

- Problems ECIPE estimates:
  1. They assume fixed real wages for low-skilled workers and adjusting employment, which is not realistic in the long-run
     - This assumption raises GDP and thus tax revenue losses, because of reduction in employment
  2. They assume a substitutability of zero between domestic and imported goods, which is not appropriate for this topic.
     - A small (though not zero) elasticity is only justifiable in the short-run

Effects on trade and welfare: Andrenelli and Lopez-Gonzalez (OECD) put debate in perspective

1. Tariffs also come with costs and the welfare gains for consumers outweigh the tariff revenue losses for the government
2. The alternative to tariffs on digitized trade is to efficiently organize value added taxes (VAT) and goods and services taxes (GST) on digitized trade, making sure that electronic transmission is taxed appropriately
3. Firm-level evidence: digital technologies such as webpages or digital delivery enable firms in developing countries, including SMEs to become exporters, boosting long-run growth (see table from paper)

Table 3.3. Role of digital technologies in determining export propensities

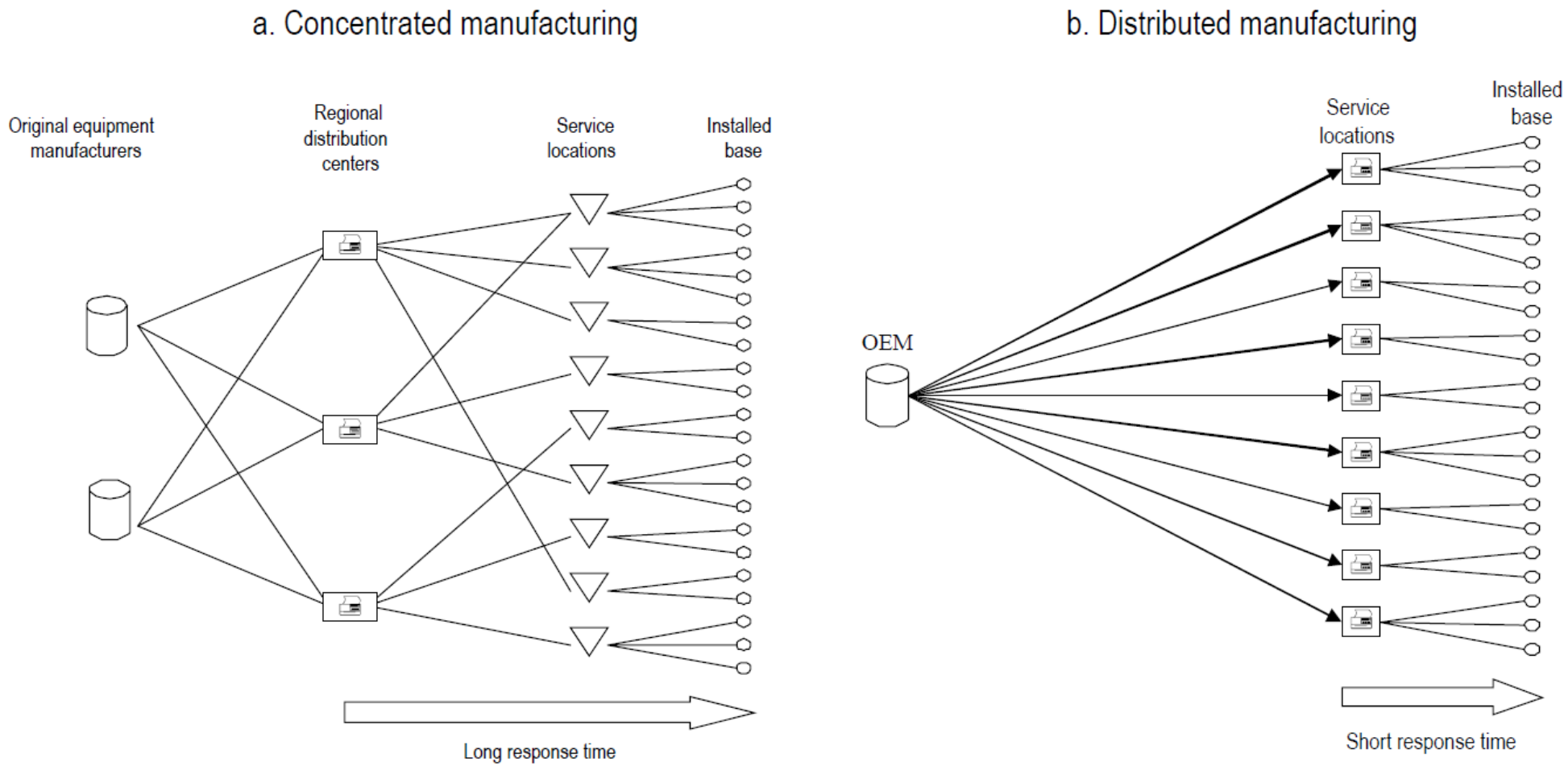
	All	SME	Large
Webpage	0.525***	0.416***	0.383***
	(0.0206)	(0.0216)	(0.0352)
Observations	58,440	44,670	13,727
Use of internet for digital delivery	0.185***	0.183***	0.198**
	(0.0525)	(0.0561)	(0.0928)
Observations	5,230	3,409	1,795

Tariff, revenue and trade effects: the debate on 3D printing

- Banga (2019) argues that 3D printing could be game-changer in the debate on the moratorium
  - Imports of physical goods could be replaced by imports of computer-aided designs (CAD), which could not be taxed under the moratorium
  - There could also be an industrial policy angle with 3D printing together with the moratorium limiting the possibilities to promote production in targeted sectors through tariffs
- Freund et al. (2020, World Bank) find that 3D printing is promoting trade instead of replacing it
  - The introduction of 3D printing in the hearing aides industry in 2009 led to an increase in trade in this product, in comparison to similar products
- Andrenelli and Lopez-Gonzalez (2021, OECD) find that more imports of 3D printers has a small positive effect on both the exports and the imports of goods produced with 3D printing
- Hence, empirical analysis indicates that so far 3D printing is not replacing but rather promoting trade, suggesting that 3D printing is following more a model of concentrated manufacturing instead of distributed manufacturing

Tariff, revenue and trade effects: the debate on 3D printing

Figure 5. Alternative deployment models of additive manufacturing in the value chain



Concluding remarks: summary and discussion

Lifting the moratorium would generate moderate additional tariff revenues, though at the same time exert negative economic effects

- Lifting the moratorium and introducing import taxes on electronic transmission would raise tariff and total tax revenues:
  - Between 0.15% and 0.25% of total tariff revenues for developing countries and LDCs (respectively between approximately $500 and $800 million for developing countries and between $ 32 and $58 million for LDCs)
- Consumers would be adversely affected through higher prices
- Productivity effects in downstream sectors using inputs from digitized trade are positive. Entry into exporting by SMEs is promoted by the availability of digitized inputs. Lifting the moratorium would reduce these gains

More study needed to further assess economic effects of moratorium

- Although current trade patterns suggest that 3D printing is a complement with trade rather than a substitute, application of this technology on a larger scale might change the relation with trade in the future
- The question is how industrial policy should be designed in the digital age with larger positive knowledge spillovers from trade on the one hand, but also larger monopoly positions in winner-takes-all markets on the other hand?
- Better analysis would start with more information about the size of digitized trade (electronic transmission)
  - Further definition of coverage electronic transmission
  - Explicit data on digitized trade