Updates to Fajgelbaum et al. (2020) with 2019 tariff waves

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Fajgelbaum et al. (2020) use U.S. trade data through April 2019 to assess the impacts of the 2018 tariff waves on the U.S. economy. That paper estimates an aggregate annualized loss to the U.S. economy of $7.2 billion in 2016 US dollars, which can be decomposed into U.S. consumer losses of $51.0 billion, U.S. producer gains of $9.4 billion, and U.S. government tariff revenue gains of $34.3 billion. In this note, we update the results from that paper to include the 2019 tariff waves through September 2019. We use the same event-study specifications and quantitative framework to update Tables I and VIII, and Figures II and III of Fajgelbaum et al. (2020).

Table 1 updates summary statistics to include the U.S. tariff waves and foreign retaliations from 2018 and 2019. Average import tariffs increased from 3.7% to 25.8% on 17,495 products covering $420.6 billion (17.6%) of 2017 U.S. imports, of which $352.5 billion targeted imports from China. In response, trade partners imposed retaliatory tariffs on U.S. exports. These counter-measures increased tariffs from 8.7% to 20.8% on 8,400 export products covering $133.9 billion (8.7%) of annual 2017 U.S. exports.

Figures 1 and 2 present updated event studies, allowing us to trace the impacts of the tariffs for up to 12 months after they were initially enacted.[1] The figures reveal that imports and exports of targeted varieties remain below their pre-war trends. Additionally, we continue to observe no evidence of declines in before-tariff import prices, implying that U.S. consumers have borne the full incidence of U.S. tariffs.[2] These findings are consistent with the longer-run analysis recently performed by Amiti et al. (2020).

Table 2 shows our estimates of the aggregate costs of the 2018-19 trade war on the U.S. economy, along with the decomposition into aggregate real income changes of U.S. consumers (i.e., buyers of U.S. imports, including both firms and final consumers), producers, and the U.S. government. These aggregate effects are measured as annualized shares of 2016 GDP and measure the costs for each full year that the tariffs are in place.[3] We use the same model elasticities as Fajgelbaum et al. (2020) and compute confidence intervals for each component using 1,000 bootstrapped parameter estimates.

[1] For the 2019 waves, the event studies capture impacts through September 2019.

[2] As we noted in Fajgelbaum et al. (2020), our estimation controls for country-time and product-time effects, and therefore is unable to capture import price declines due to relative wage changes across countries or sectors. In other words, the results do not imply that the U.S. is a small open economy unable to affect world prices, as terms-of-trade effects may occur through wage adjustments at the country-sector level.

[3] These numbers are based on a first-order approximation to the exact aggregate effects implied by the model. This approximation may become less reliable as the size of tariff shock increases. As discussed in Section V of Fajgelbaum et al. (2020), we can benchmark the aggregate impacts with a back-of-envelope calculation from a neoclassical trade model that that assumes: 1) no terms of trade impacts on U.S. import and export prices; 2) the economy starts from free trade; and 3) no tariff retaliation from trade partners. In this environment, the (second-order) approximation to the aggregate costs of the 2018-19 tariff waves on the U.S. economy is $32.9 billion (0.18% of GDP).

The first column, EV^M, shows that buyers of U.S. imports lost in aggregate $114 billion (0.61% of GDP) on a 2016 annual basis. In essence, this term is the product of three terms: the import share of value-added (15.3%), the fraction of U.S. imports targeted by tariff increases (18.7%), and the average import price increase among targeted varieties (21.9%). The second column, EV^X, shows that U.S. domestic producers gained in aggregate $24.3 billion (0.13% of GDP). This term depends on the export price changes implied by the general equilibrium model. The third column, ΔR, reports tariff revenue gains of $65 billion (0.35% of GDP). The overall impact on the U.S. economy is the sum of the three terms, shown in column 4. We estimate an aggregate annualized loss of $24.8 billion, or 0.13% of GDP. This loss is statistically different from zero based on 90% confidence intervals.

The bottom panel reports the counterfactual impact of U.S. tariffs under an assumption that trade partners do not retaliate. As explained in Fajgelbaum et al. (2020), since the producer gains in this scenario would be larger, the aggregate loss to the U.S. economy is lower–$16.4 billion.

References

Amiti, M., S. J. Redding, and D. E. Weinstein (2020): "Who's Paying for the US Tariffs? A Longer-Term Perspective," Working Paper 26610, National Bureau of Economic Research.

Fajgelbaum, P. D., P. K. Goldberg, P. J. Kennedy, and A. K. Khandelwal (2020): "The Return to Protectionism," *The Quarterly Journal of Economics*, 135, 1–55.

Table 1: The 2018-19 Trade War

Panel A: Tariffs on U.S. Imports Enacted by U.S.

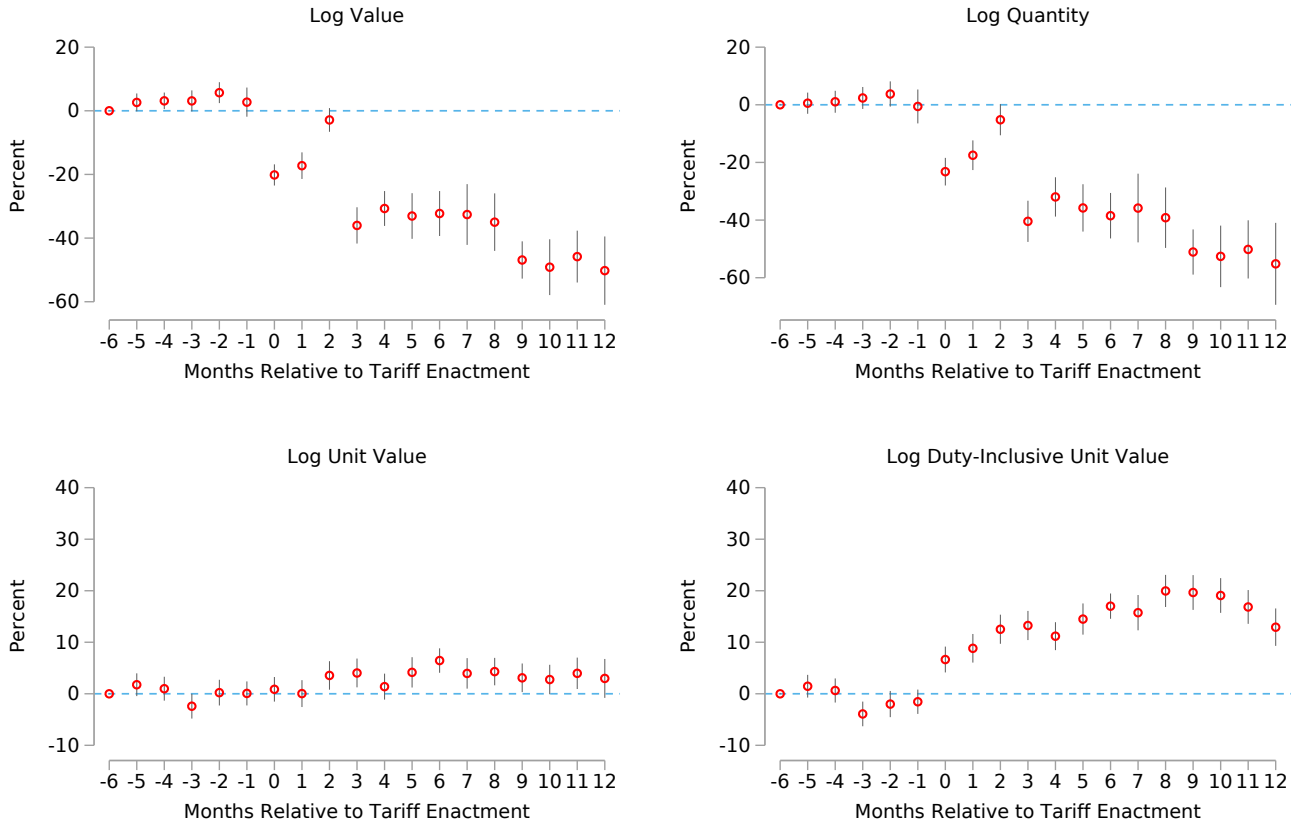
Tariff Wave	Date Enacted	Products	2017 Imports		Tariff (%)	
		(# HS-10)	(mil USD)	(%)*	2017	Post-War
Solar Panels	Feb 7, 2018	8	5,782	0.2	0.0	30.0
Washing Machines	Feb 7, 2018	8	2,105	0.1	1.3	32.2
Aluminum	Mar-Jun, 2018	93	17,685	0.7	2.0	12.0
Iron and Steel	Mar-Jun, 2018	757	30,655	1.3	0.0	25.0
European Union	Oct 18, 2019	226	11,819	0.5	4.8	28.7
China	Jul '18 - Sep '19	16,403	352,563	14.7	4.1	26.4
Total		**17,495**	**420,608**	**17.6**	**3.7**	**25.8**

Panel B: Retaliatory Tariffs on U.S. Exports Enacted by Trading Partners

Retaliating Country	Date Enacted	Products	2017 Exports		Tariff (%)	
		(# HS-10)	(mil USD)	(%)*	2017	Post-war
Mexico	Jun 5, 2018	232	6,746	0.4	9.4	27.9
Turkey	Jun 21, 2018	248	1,554	0.1	8.8	31.6
European Union	Jun 22, 2018	303	8,244	0.5	4.4	28.9
Canada	Jul 1, 2018	325	17,818	1.2	2.1	20.2
Russia	Aug 6, 2018	165	268	0.0	5.2	37.2
India	Jun 16, 2019	65	1,280	0.1	13.2	27.5
China	Apr '18 - Sep '19	7,757	98,016	6.3	8.7	19.5
Total		**8,400**	**133,926**	**8.7**	**7.7**	**20.8**

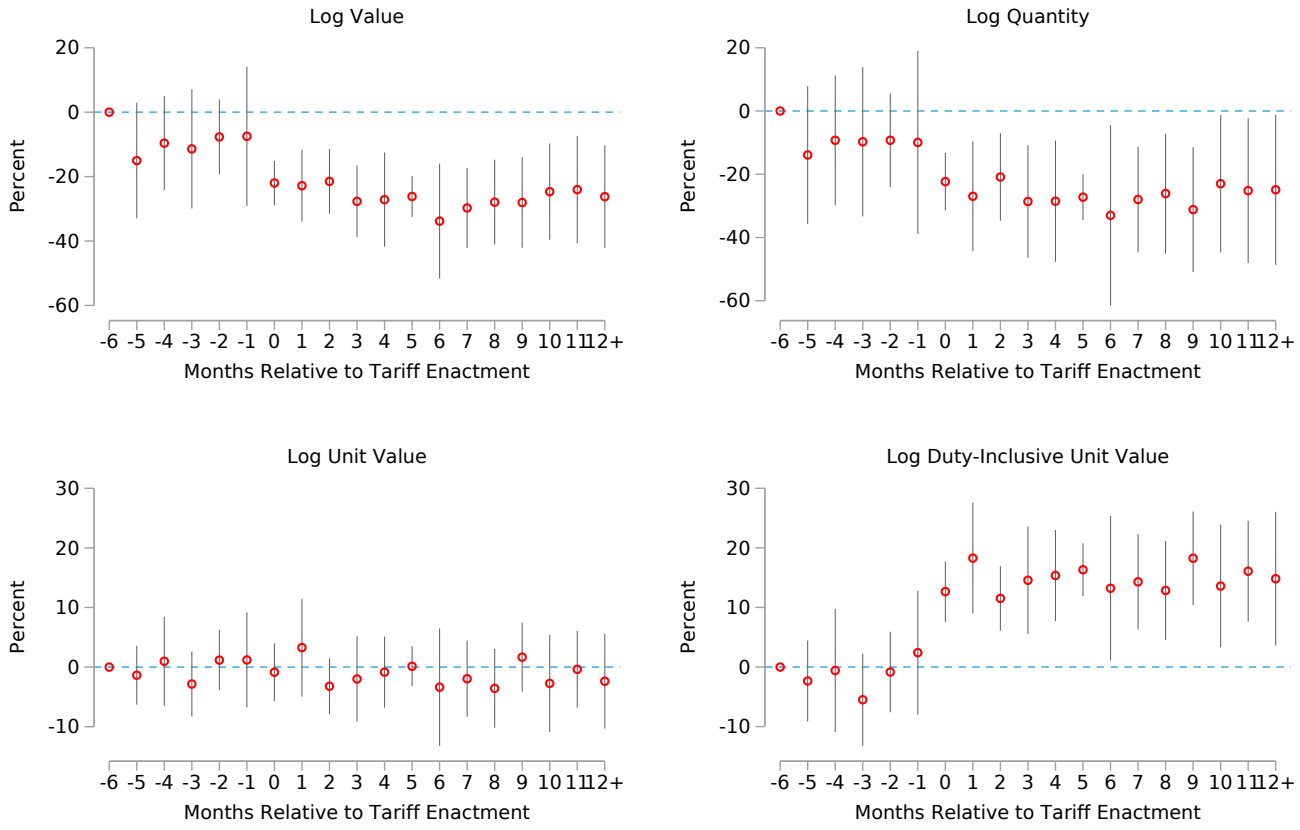
Notes: "*" Values indicate percentage point tariff increases. Panels display unweighted monthly HS10-country average statutory tariff rates. 2017 tariff rates computed as the annual average; 2018 tariff rates computed using data from December 2018. Total tariff rates are computed as the trade-weighted average of table row values. The denominator for import (export) share is the total 2017 annual USD value of all U.S. imports (exports). The U.S. government announced import tariffs on aluminum and steel products on March 23, 2018 but granted exemptions for Canada, Mexico, and the European Union; those exemptions were lifted on June 1, 2018. Steel tariffs on Canada and Mexico were removed on May 19, 2019. The dates of U.S. tariffs on China in 2018 are June 6, August 23, and September 23 in 2018, May 1 and September 1 in 2019. The dates of Chinese retaliations are: April 6, July 2, August 23 and September 24 in 2018, and May 1 and September 1 in 2019. See Fajgelbaum et al. (2020) for data sources. This table does not include tariff increases on U.S. imports of Indian varieties resulting from the U.S. decision in June 2019 to terminate India's designation as a beneficiary developing nation under the Generalized System of Preferences trading program.

Figure 1: Variety Event Study: Imports



Notes: Figure plots event time dummies for targeted varieties relative to untargeted varieties. Regressions include country-product, product-time, and country-time fixed effects. Standard errors clustered by country and HS-8. Event periods before -6 are dropped, and event periods >=12 are binned. Error bars show 95% confidence intervals. In Appendix B of Fajgelbaum et al. (2020) we provide evidence that the temporary surge in imports during event period 2 reflects an anticipation response to additional tariff threats on a subset of Chinese varieties. Sample: Monthly variety-level import data from U.S. Census. Sample period is 2017:1 to 2019:9.

Figure 2: Variety Event Study: Exports



Notes: Figure plots event time dummies for targeted varieties relative to untargeted varieties. Regressions include country-product, product-time, and country-time fixed effects. Standard errors clustered by country and HS-6. Event periods before -6 are dropped, and event periods >=12 are binned. Error bars show 95% confidence intervals. Sample: Monthly variety-level export data from U.S. Census. Sample period is 2017:1 to 2019:9..

Table 2: Aggregate Impacts

	EV^M	EV^X	ΔR	EV
	(1)	(2)	(3)	(4)
	2018-19 Trade War			
Change ($ b)	-114.2	24.3	65.0	-24.8
	[-121.8,-106.5]	[15.4,35.2]	[59.0,70.2]	[-39.4,-8.8]
Change (% GDP)	-0.61	0.13	0.35	-0.13
	[-0.65,-0.57]	[0.08,0.19]	[0.32,0.38]	[-0.21,-0.05]
	2018-19 U.S. Tariffs and No Retaliation			
Change ($ b)	-114.1	31.8	65.9	-16.4
	[-119.8,-108.4]	[24.8,40.1]	[59.9,71.1]	[-28.5,-3.0]
Change (% GDP)	-0.61	0.17	0.35	-0.09
	[-0.64,-0.58]	[0.13,0.22]	[0.32,0.38]	[-0.15,-0.02]

Notes: We refer readers to Fajgelbaum et al. (2020) for the details behind these calculations. The table reports the aggregate impacts in column 4, and the decomposition into EV^M, EV^X, and tariff revenue (ΔR) in columns 1-3. The top panel reports the impacts from the 2018-19 tariff waves. The bottom panel simulates a hypothetical scenario where trade partners do not retaliate against U.S. tariffs. The first row in each panel reports the overall impacts of each term in billions of USD. The third row scales by 2016 GDP. The parameters used to generate these numbers are: $\{\hat{\sigma} = 2.53, \hat{\eta} = 1.53, \hat{\kappa} = 1.19, \hat{\omega}^* = -0.00, \hat{\sigma}^* = 1.04\}$. Bootstrapped 90% confidence intervals based on 1000 simulations of the estimated parameters reported in brackets.