

Munich, Jan 10th, 2019

The trade dispute between the US and China – Who wins? Who loses?

by Gabriel Felbermayr and Marina Steininger

This report offers a brief, quantitative analysis of the potential effects of the US-China trade dispute. The analysis is based on Aichele et al. (2014) und Aichele et al. (2016) and simulates different counterfactual scenarios, which are based on the tariff measures that the US and China have already imposed on each other or are threatening to impose. The first four scenarios (S1a to S4a) include different stages of unilateral US-tariff increases on Chinese products. The remaining four scenarios (S1b to S4b) additionally model different retaliation measures of China on US-products. The simulation analysis provides us with general equilibrium consistent effects on real income (i.e., GDP), bilateral trade, and sectoral value added for the US, China and also the EU28. The quantitative framework accounts for national and international production networks by incorporating a global input-output table. The analysis covers more than 90 percent of global value added and trade.

China and the US are currently in the process of negotiating an exit from the escalation spiral set in motion last year. Here we quantify what effects the existing measures have had so far and what the consequences of further escalation would be for the United States, China, the EU28 and the rest of the EU. How will this play out in the modern world of fragmented global value chains, and what are the stakes? Does this conflict matter for outsiders? How much of the global downturn in economic activity can be plausibly explained by the trade conflict? This report sheds light on these questions.

We study the following scenarios based on goods trade**Scenario 1a**

25% tariff on 10% of US imports from China, worth ~50 billion USD

Scenario 2a

25% tariff on 10% of US imports from China, worth ~50 billion USD; additional 10% tariff on 40% of US imports from China, worth ~200 billion USD.

Scenario 3a

25% tariff on 50% of US imports from China, worth ~260 billion USD

Scenario 4a

25% tariff on 100% of US imports from China, worth 520 billion USD

Scenario 1b

25% tariff on 10% of US imports from China, worth ~50 billion USD; 25% tariff on 40% of Chinese imports from the USA, worth ~50 billion USD.

Scenario 2b

25% tariff on 10% of US imports from China, worth ~50 billion USD; 10% tariff for additional 40% of US imports from China, worth ~200 billion USD; 25% tariff on 40% of Chinese imports from the USA, worth ~50 billion USD; additional 10% tariff on 50% of Chinese imports from the USA, worth 60 billion USD.

Scenario 3b

25% tariff on 50% of US imports from China, worth ~50 billion USD; additional 25% tariff on 90% of Chinese imports from the USA, worth ~100 billion USD.

Scenario 4b

25% tariff on 100% of US imports from China, worth 520 billion USD; 25% tariff on 100% of Chinese imports from the USA, worth 120 billion USD.

Table 1 shows the change in real income (i.e., GDP) for the US, China, the EU28 and the rest of the world. This number reflects factor income as well as tariff income of the government.

Scenarios 1a to 4a show that, under the assumption that China does not retaliate, the US can hope for an increase in GDP if it does not overplay its hand. The point is that unilateral US tariffs lead to an improvement of US terms-of-trade which benefits producers (but damages consumers and other users of imports) and raise US government income. That gain amounts to 3.5 billion Euro in S2a – which corresponds to the current status quo without Chinese retaliation, but it turns negative when the US imposes high tariffs on all imports from China (scenario S4a). China, in contrast, loses 9.3 billion Euro in GDP under scenario S2a; a loss, that would go up to a whopping 34 billion Euro if the US cover all goods imports from China with tariffs of 25%

Table 1: Change in Real Income, in Million Euro

	Change in Real Income, in Million Euro							
	S1a	S2a	S3a	S4a	S1b	S2b	S3b	S4b
Germany	-22	43	102	191	132	264	428	495
France	-3	74	103	217	9	14	123	193
Italy	93	108	215	352	103	46	239	347
Rest of EU	27	36	115	179	-12	21	74	149
EU28	95	260	534	939	233	345	864	1184
USA	1697	3468	2864	-2236	-2911	-2585	-4032	-9458
China	-5197	-9298	-21282	-33749	-1920	-5698	-17789	-30350
RoW	509	854	3083	5293	1097	1428	2481	5409

Source: ifo simulations. Scenario S2b models the status quo of the current trade conflict. The aggregate Rest of EU excludes Germany, Italy and France. The detailed results for all EU28 countries can be retrieved from the Appendix.

China's retaliating tariffs, however, then turn the American plus into losses of 2.6 billion Euros, while China's loss narrows to 5.7 billion Euros; see scenario S2b, the representation of the current status quo of the US-China trade conflict. Thus, Chinese real income is still shrinking about twice as much as the American. The EU28 can be seen as the winner of this spiral of tariff increases, despite the fact that the gains are very small. Germany is the main country profiting in the EU28. These effects are driven by increase in EU28's exports towards the US and China. One has to be aware

that this analysis does not include the increase in economic uncertainty and potential to diminish the positive effects. But it also shows that the trade dispute alone can only explain the current downturn of the global economy to a small extent.

Table 2: Change in Sectoral Value Added, in Percent

Change in Sectoral Value Added, in Percent								
USA	S1a	S2a	S3a	S4a	S1b	S2b	S3b	S4b
Manufacturing	0.09	0.21	0.42	0.75	-0.06	0.04	0.23	0.56
Services	-0.02	-0.03	-0.08	-0.16	-0.02	-0.04	-0.09	-0.17
Agri-Food	-0.15	-0.29	-0.62	-0.95	-0.30	-0.48	-0.88	-1.22
Total	-0.01	-0.02	-0.06	-0.10	-0.04	-0.05	-0.10	-0.14

Change in Sectoral Value Added, in Percent								
China	S1a	S2a	S3a	S4a	S1b	S2b	S3b	S4b
Manufacturing	-0.10	-0.18	-0.41	-0.64	-0.19	-0.30	-0.55	-0.78
Services	-0.02	-0.04	-0.09	-0.14	-0.05	-0.09	-0.15	-0.20
Agri-Food	0.05	0.09	0.18	0.26	0.10	0.16	0.27	0.35
Total	-0.03	-0.05	-0.12	-0.19	-0.06	-0.09	-0.18	-0.25

Change in Sectoral Value Added, in Percent								
EU28	S1a	S2a	S3a	S4a	S1b	S2b	S3b	S4b
Manufacturing	-0.01	-0.01	-0.03	-0.04	0.02	0.02	0.02	0.00
Services	0.00	0.00	0.01	0.02	0.00	0.00	0.01	0.01
Agri-Food	0.00	-0.01	-0.01	-0.02	-0.01	-0.01	-0.02	-0.03
Total	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01

Source: ifo simulations. Scenario S2b models the status quo of the current trade conflict. The detailed value added effects for all EU28 member states can be retrieved from the Appendix.

Table 2 shows the sectoral value-added changes of the USA, China and the EU28. Both, the US and China will be confronted with a decrease in value added in all scenarios. The negative extent increases in the number of products hit by a tariff increase. The US value added will suffer from the retaliation measures of China. Similar to this trend, the Chinese value added will also be worse off when they retaliate against the USA. The already implemented tariffs (S2b) increase the US sectoral value added of the manufacturing industry by 0.04 percent, while the agri-food sec-

tor's value-added shrinks by 0.48 percent and the services are confronted with a decrease of 0.04 percent. These trends increase with the extent of the retaliation scenario (S3b and S4b).

Next, one can take a closer look on the changes of the trade structure. The upper part of table 3 shows the change in bilateral trade between the USA, China and EU28. The lower part of the table shows the change in domestic sales of the respective countries and the EU28.

The US exports to China decrease in all scenarios (between -1.4 bn. Euro and 51.0 bn. Euro). The retaliation measures of China decrease the exports even further. The US exports to the EU28 also shrink, but to a much lower extent than the ones towards China (between -0.2 bn. Euro and -11.3 bn. Euro). Chinese exports to the USA decrease with the intensity of the trade dispute. A similar picture is evident on the import side. Retaliation measures worsen this downturn. China partly compensates the decrease of exports to the US with new trade linkages with the EU28. The USA are able to compensate the decrease in exports and imports with an increase in domestic sales. The bottom line: in the status quo situation (scenario S2b) the US trade deficit in goods with China falls by about 15 billion US-dollar (4 percent of current deficit) a full-fledged trade war, the US trade deficit in goods with China in goods goes down by some 120 billion US-dollar (33% of current deficit).

Table 3: Change in Trade, in billion Euro

Change in bilateral trade, in bn. Euro									
Exports	Imports	S1a	S2a	S3a	S4a	S1b	S2b	S3b	S4b
USA	China	-1.4	-2.6	-5.6	-8.7	-29.0	-37.1	-47.5	-51.0
USA	EU28	-1.9	-3.4	-7.4	-11.3	0.7	-0.2	-3.4	-7.4
China	EU28	2.3	4.1	9.5	15.4	0.1	1.4	6.0	11.6
China	USA	-25.8	-46.8	-105.6	-167.9	-30.4	-52.1	-110.7	-171.3
EU28	China	-2.2	-4.0	-9.1	-14.2	0.4	-0.6	-4.9	-10.0
EU28	USA	4.0	7.1	16.3	26.1	0.4	2.5	10.5	19.9

Change in domestic sales, in bn. Euro									
		S1a	S2a	S3a	S4a	S1b	S2b	S3b	S4b
USA		45.2	81.0	180.7	280.2	1.3	25.4	110.6	207.3
China		-52.5	-94.1	-214.2	-339.3	8.6	-16.8	-118.1	-239.0
EU28		-1.8	-3.6	-6.5	-8.8	8.8	9.7	10.0	8.1

Source: ifo simulations. Scenario S2b models the status quo of the current trade conflict. The results for all EU28 member states can be retrieved from the Appendix.

Literatur

Aichele, R., Felbermayr, G. und I. Heiland, 2014. Going Deep: The Trade and Welfare Effects of TTIP. CESifo Working Paper 5150.

Aichele, R., Felbermayr, G. und I. Heiland, 2016. Going Deep: The Trade and Welfare Effects of TTIP Revised. ifo Working Paper 219.

Caliendo, L. und F. Parro, 2015. Estimates of the Trade and Welfare Effects of NAFTA. Review of Economic Studies 82 (1), 1-44.

Appendix

Table A1: Change in Real Income of EU28 member states, in Million Euro

	Change in Real Income, in Million Euro							
	S1a	S2a	S3a	S4a	S1b	S2b	S3b	S4b
Austria	-0.07	0.07	0.49	0.84	0.62	0.23	0.67	1.10
Belgium	0.14	0.28	0.48	0.83	0.40	0.91	1.25	1.59
Bulgaria	0.01	0.03	0.09	0.15	-0.03	-0.02	0.03	0.09
Croatia	0.02	0.02	0.06	0.10	0.00	0.01	0.02	0.07
Cyprus	0.00	0.01	0.02	0.03	0.00	0.00	0.01	0.01
Czech Republic	0.34	0.25	0.82	1.62	0.53	0.48	1.08	1.78
Denmark	0.07	0.28	0.53	0.95	0.25	0.28	0.70	1.07
Estonia	0.00	0.01	0.02	0.03	0.00	0.00	0.01	0.03
Finland	0.14	0.18	0.29	0.54	0.28	0.10	0.42	0.53
France	-3.30	74.14	102.77	217.33	9.25	13.58	122.86	192.71
Germany	-21.74	42.67	102.10	190.67	131.59	264.35	428.02	495.47
Greece	0.31	0.51	0.86	1.36	-0.11	0.22	0.23	0.85
Hungary	0.18	0.39	0.91	1.37	0.16	0.22	1.03	1.43
Ireland	-0.14	-0.42	-1.01	-1.35	1.05	1.18	0.95	0.46
Italy	92.57	107.63	214.60	351.80	103.49	46.38	239.35	346.92
Latvia	0.00	0.01	0.02	0.03	-0.01	0.00	0.01	0.02
Lithuania	0.01	0.02	0.05	0.09	0.00	0.01	0.04	0.07
Luxembourg	-0.02	-0.04	-0.09	-0.13	0.02	0.01	-0.02	-0.06
Malta	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Netherlands	1.54	2.23	6.31	11.44	2.55	5.59	9.29	13.80
Poland	2.90	4.12	9.38	14.79	2.51	5.16	7.62	12.60
Portugal	0.24	0.19	0.48	0.85	-0.19	0.13	0.26	0.46
Romania	0.08	0.64	1.24	1.54	0.28	0.90	0.93	1.77
Slovakia	0.01	0.01	0.05	0.09	0.05	0.06	0.15	0.18
Slovenia	0.01	0.03	0.06	0.10	0.01	0.03	0.05	0.09
Spain	11.95	10.87	30.19	32.43	1.62	15.58	13.90	29.17
Sweden	0.15	0.19	0.58	1.04	0.90	0.93	1.51	2.00
United Kingdom	9.36	15.90	63.08	110.40	-22.69	-10.84	33.39	79.74
EU28	95	260	534	939	233	345	864	1184

Table A2: Change in Sectoral Value Added of EU28 members states, in Percent

	Change in Sectoral Value Added, in Percent							
	S1a	S2a	S3a	S4a	S1b	S2b	S3b	S4b
Austria	0.001	0.002	0.004	0.007	0.005	0.001	0.005	0.007
Belgium	0.000	0.000	0.000	-0.001	0.000	0.002	0.002	0.003
Bulgaria	0.000	0.000	0.002	0.003	-0.001	-0.001	0.001	0.003
Cyprus	0.004	0.007	0.017	0.027	0.001	-0.002	0.008	0.016
Czech R.	0.003	0.005	0.012	0.021	0.005	0.002	0.011	0.020
Germany	0.001	0.001	0.003	0.006	0.002	0.003	0.007	0.009
Denmark	0.002	0.004	0.009	0.015	0.001	0.001	0.008	0.013
Spain	0.003	0.005	0.010	0.014	0.001	0.004	0.007	0.012
Estonia	0.005	0.007	0.016	0.028	0.002	0.004	0.012	0.023
Finland	0.001	0.002	0.005	0.007	0.005	0.002	0.006	0.010
France	0.000	0.001	0.003	0.006	0.002	0.000	0.005	0.006
UK	0.001	0.003	0.009	0.015	-0.002	0.000	0.006	0.012
Greece	0.001	0.002	0.005	0.009	-0.003	0.002	0.003	0.006
Croatia	0.002	0.003	0.007	0.011	-0.001	0.001	0.003	0.008
Hungary	0.003	0.005	0.015	0.026	0.005	0.005	0.015	0.024
Ireland	-0.009	-0.016	-0.035	-0.052	0.012	0.011	0.004	0.020
Italy	0.001	0.003	0.006	0.012	0.005	0.001	0.006	0.011
Lithuania	0.002	0.005	0.010	0.017	-0.002	0.001	0.006	0.013
Luxem- bourg	-0.015	-0.029	-0.062	-0.093	0.009	0.002	-0.03	-0.05
Latvia	0.002	0.003	0.008	0.013	-0.002	0.000	0.003	0.010
Malta	0.003	0.007	0.015	0.025	0.001	0.006	0.013	0.023
Nether- lands	0.002	0.005	0.012	0.020	0.001	0.006	0.013	0.019
Poland	0.003	0.005	0.012	0.021	0.001	0.005	0.009	0.016
Portugal	0.000	0.001	0.003	0.006	-0.001	0.002	0.003	0.005
Romania	0.001	0.002	0.005	0.008	0.003	0.004	0.004	0.008
Slovakia	0.000	0.001	0.002	0.004	0.002	0.002	0.007	0.007
Slovenia	0.004	0.007	0.017	0.027	0.002	0.006	0.012	0.021
Sweden	0.000	0.001	0.002	0.004	0.004	0.003	0.006	0.007

Source: ifo simulations. Scenario S2b models the status quo of the current trade conflict.

Table A3: Change of EU28 Exports to USA, in billion Euro

	Change of EU28 Exports to the USA, in billion Euros							
	S1a	S2a	S3a	S4a	S1b	S2b	S3b	S4b
Austria	0.10	0.18	0.41	0.66	0.02	0.08	0.28	0.52
Belgium	0.14	0.25	0.57	0.91	-0.03	0.04	0.31	0.63
Bulgaria	0.00	0.01	0.02	0.03	0.00	0.00	0.01	0.03
Cyprus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Czech R.	0.04	0.08	0.17	0.27	0.01	0.04	0.12	0.22
Germany	1.30	2.25	5.38	8.61	0.18	0.82	3.55	6.64
Denmark	0.08	0.16	0.34	0.54	0.01	0.06	0.21	0.41
Spain	0.13	0.23	0.53	0.85	-0.01	0.05	0.30	0.61
Estonia	0.01	0.01	0.02	0.03	0.00	0.01	0.02	0.03
Finland	0.07	0.14	0.30	0.49	0.01	0.06	0.20	0.38
France	0.36	0.66	1.49	2.39	0.02	0.23	0.94	1.80
UK	0.57	1.04	2.33	3.70	0.01	0.33	1.42	2.73
Greece	0.01	0.01	0.02	0.04	0.00	0.00	0.01	0.03
Croatia	0.01	0.01	0.02	0.03	0.00	0.00	0.01	0.02
Hungary	0.05	0.09	0.21	0.34	0.01	0.04	0.15	0.27
Ireland	0.22	0.42	0.91	1.43	-0.01	0.12	0.53	1.03
Italy	0.44	0.77	1.86	3.03	0.10	0.33	1.29	2.42
Lithuania	0.01	0.02	0.05	0.09	0.00	0.00	0.03	0.06
Luxembourg	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01
Latvia	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01
Malta	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01
Netherlands	0.17	0.32	0.71	1.12	0.00	0.11	0.43	0.83
Poland	0.04	0.08	0.18	0.29	0.01	0.03	0.12	0.23
Portugal	0.03	0.04	0.11	0.18	0.00	0.02	0.07	0.13
Romania	0.02	0.03	0.07	0.12	0.00	0.02	0.05	0.09
Slovakia	0.01	0.02	0.06	0.10	0.00	0.01	0.04	0.07
Slovenia	0.01	0.01	0.03	0.04	0.00	0.01	0.02	0.03
Sweden	0.13	0.23	0.52	0.83	0.03	0.11	0.35	0.65

Source: ifo simulations. Scenario S2b models the status quo of the current trade conflict. Further bi-lateral trade changes can be retrieved from the authors.

Table A4: Change of EU28 Imports from USA, in billion Euro

	Change of EU28 Imports from the USA, in billion Euros							
	S1a	S2a	S3a	S4a	S1b	S2b	S3b	S4b
Austria	-0.03	-0.05	-0.10	-0.16	0.01	0.00	-0.05	-0.11
Belgium	-0.11	-0.21	-0.45	-0.69	0.04	-0.01	-0.21	-0.45
Bulgaria	0.00	-0.01	-0.01	-0.02	0.00	0.00	-0.01	-0.01
Cyprus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Czech R.	-0.02	-0.03	-0.07	-0.10	0.00	0.00	-0.03	-0.07
Germany	-0.39	-0.72	-1.55	-2.40	0.13	-0.06	-0.75	-1.58
Denmark	-0.02	-0.04	-0.09	-0.14	0.01	0.00	-0.04	-0.09
Spain	-0.08	-0.15	-0.31	-0.48	0.03	-0.01	-0.15	-0.32
Estonia	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	-0.01
Finland	-0.02	-0.04	-0.10	-0.15	0.01	0.00	-0.04	-0.09
France	-0.28	-0.51	-1.10	-1.69	0.10	-0.03	-0.51	-1.10
UK	-0.32	-0.59	-1.27	-1.96	0.09	-0.07	-0.63	-1.31
Greece	-0.01	-0.01	-0.03	-0.04	0.00	0.00	-0.01	-0.03
Croatia	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	-0.01
Hungary	-0.02	-0.03	-0.06	-0.10	0.01	0.00	-0.03	-0.06
Ireland	-0.11	-0.19	-0.42	-0.64	0.07	0.03	-0.15	-0.37
Italy	-0.11	-0.20	-0.44	-0.67	0.04	-0.01	-0.21	-0.44
Lithuania	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	-0.01
Luxembourg	-0.04	-0.07	-0.15	-0.23	0.02	0.01	-0.05	-0.13
Latvia	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00
Malta	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	-0.01
Netherlands	-0.21	-0.38	-0.83	-1.28	0.08	-0.02	-0.39	-0.83
Poland	-0.02	-0.04	-0.09	-0.15	0.01	-0.01	-0.05	-0.10
Portugal	-0.01	-0.01	-0.02	-0.04	0.00	0.00	-0.01	-0.02
Romania	-0.01	-0.01	-0.03	-0.04	0.00	0.00	-0.01	-0.03
Slovakia	0.00	-0.01	-0.02	-0.03	0.00	0.00	-0.01	-0.02
Slovenia	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	-0.01
Sweden	-0.05	-0.08	-0.18	-0.28	0.02	0.00	-0.08	-0.18

Source: ifo simulations. Scenario S2b models the status quo of the current trade conflict. Further bi-lateral trade changes can be retrieved from the authors.