The Impact of COVID-19 on Global Trade Relations

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Economics of a health crisis

Theoretical considerations

The impact of pandemic on global trade relations

- **Pandemic is a health crisis**
- **The economic impact to a large extent depends on the reaction to the crisis taken by states as well as changes in behavior of economic agents**
- **It thus can be perceived as a simultaneous supply and demand shock affecting trade (both exports and imports)**
- The direct trade effects of COVID19 (Baldwin & Toimura, 2020):
  - **Direct supply disruptions** hindering production (lockdown/stoppages)
  - **Supply-chains contagion effect** amplifying the direct supply shocks - manufacturing sectors in less-affected nations find it harder and/or more expensive to acquire the necessary imported inputs from the hard-hit nations, and subsequently from each other
  - **Demand disruptions** due to a decrease in the aggregate demand (recession), and precautionary or wait-and-see purchase delays (delayed purchases & investments)
- Additional factors to be taken into account:
  - **Increased overall uncertainty levels**
  - **Decrease in the level of investments** by firms – dynamic consequences (lower accumulation, lower growth rates)
  - **Potential recession** – lower demand for imports
  - **Adverse impact on public finances** – potentially a W-crisis scenario

The impact of pandemic on global trade relations

- **The impact will depend critically on the duration, severity and spatial pattern of the pandemic**
- Countries most adversely affected by COVID-19 will be the nations struck the most by the pandemic itself as well as countries most dependent on the trade with these nations through exports/imports linkages
- **The severity of containment efforts taken by individual countries are key not to the countries themselves, but their trade partners as well**
- **If certain measures adopted by states are elongated, we are likely to observe more pronounced adjustments to GVC/trade patterns (trade diversion effects)**
- **Increased defragmentation of production chains increased the susceptibility of the global economy to the shock** – the impact is asymmetric due to the nature of individual value-added chains
- The crisis is asymmetric in product dimension – certain manufacturing industries and market services sectors can actually gain on it

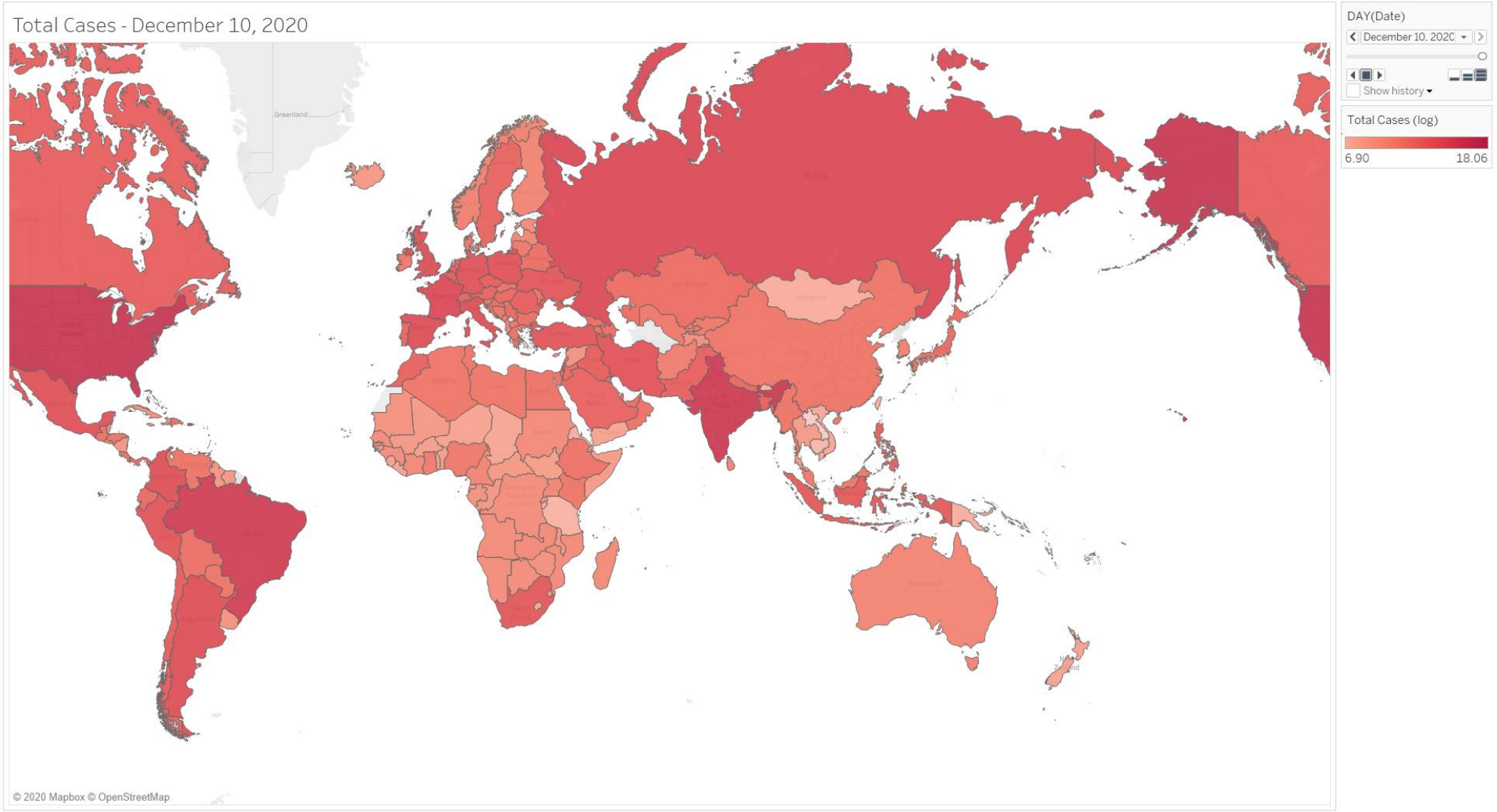
Piror shocks to the global economic system

- the oil-shock recession of 1974-75
- the inflation-defeating recession of 1982-83
- .com recession of 2001-02
- Global Financial Crisis of 2008-09 which led to **Great Trade Collapse (Q3 2008 - Q2 2009)** - a deep, sudden and synchronized decrease in global trade

The time-path of COVID-19

Theoretical considerations

Spread of COVID19 – total cases



Spread of COVID19 – Total cases per million

The spread of COVID-19

- COVID – 19 initially affected China and spread to nearby countries such as South Korea and Japan
- By March it affected major economies of the eurozone and then became global

- The cumulative number of confirmed cases of COVID-19 globally is close to **62 million and 1.45 million deaths** (WHO Weekly epidemiological update from 1 December 2020).
- **The number of new cases reported daily in December exceeds 562,000 on average**, which represents a rise of 6% from November
- Weekly deaths continued to rise, with over 69 000 new deaths reported globally.

- The cumulative number of cases is the highest in
  - > US (12.9 million)
  - > India (9.4 million)
  - > Brazil (6.2 million),
  - > Russia (2.3 million)
  - > France (2.2 million)
  - > the UK (1.6 million)
  - > Spain (1.6 million)
  - > Italy (1.5 million)
  - > Argentina (1.4 million)
  - > Columbia (1.3 million)
  - > Mexico (1.1 million)
  - > Germany & Poland (1.0 million each).
- **13 countries have already registered more than 1 million cases of COVID-19**

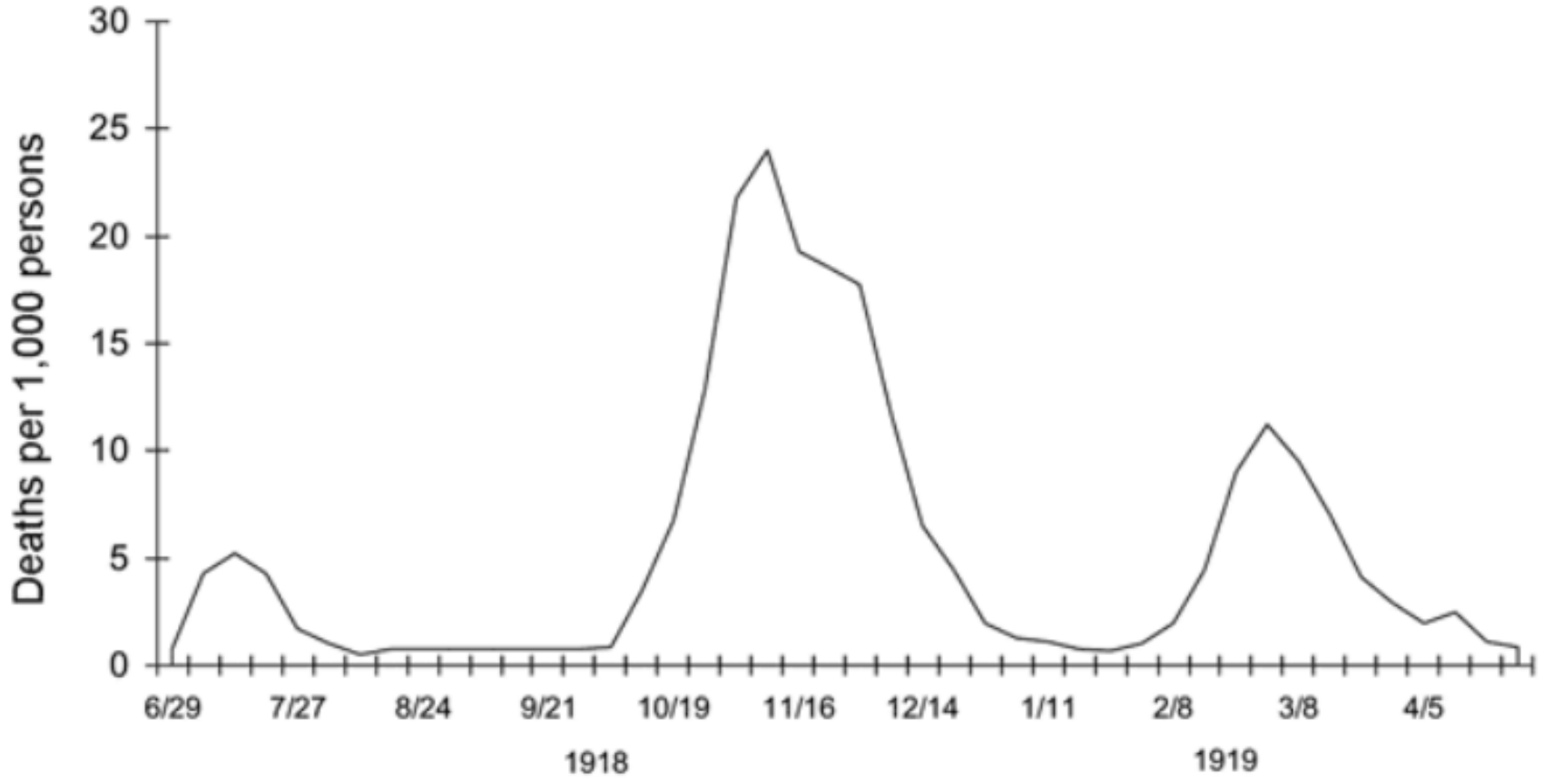
COVID-19 early impact

- **COVID-19 impact is already more severe than of SARS or MERS**
- COVID-19 resembles to same extent Spanish flu pandemic of 1918-20
- Spanish flu pandemic occurred in three main waves:
  - the first in early 1918
  - the second and most deadly from September 1918 to January 1919
  - the third from February - December 1919

- **Likelihood of second/third waves of COVID19 is high unless effective vaccine is effectively introduced (70% + of population to be vaccinated twice)**
- **Vaccination will be a major challanege to the global health**
- **This increases possibility of the double/triple hit scenario for global economy with potentially severe repercussions**

Evidence on Spanish flu: weekly combined influenza and pneumonia mortality, UK, 1918–19

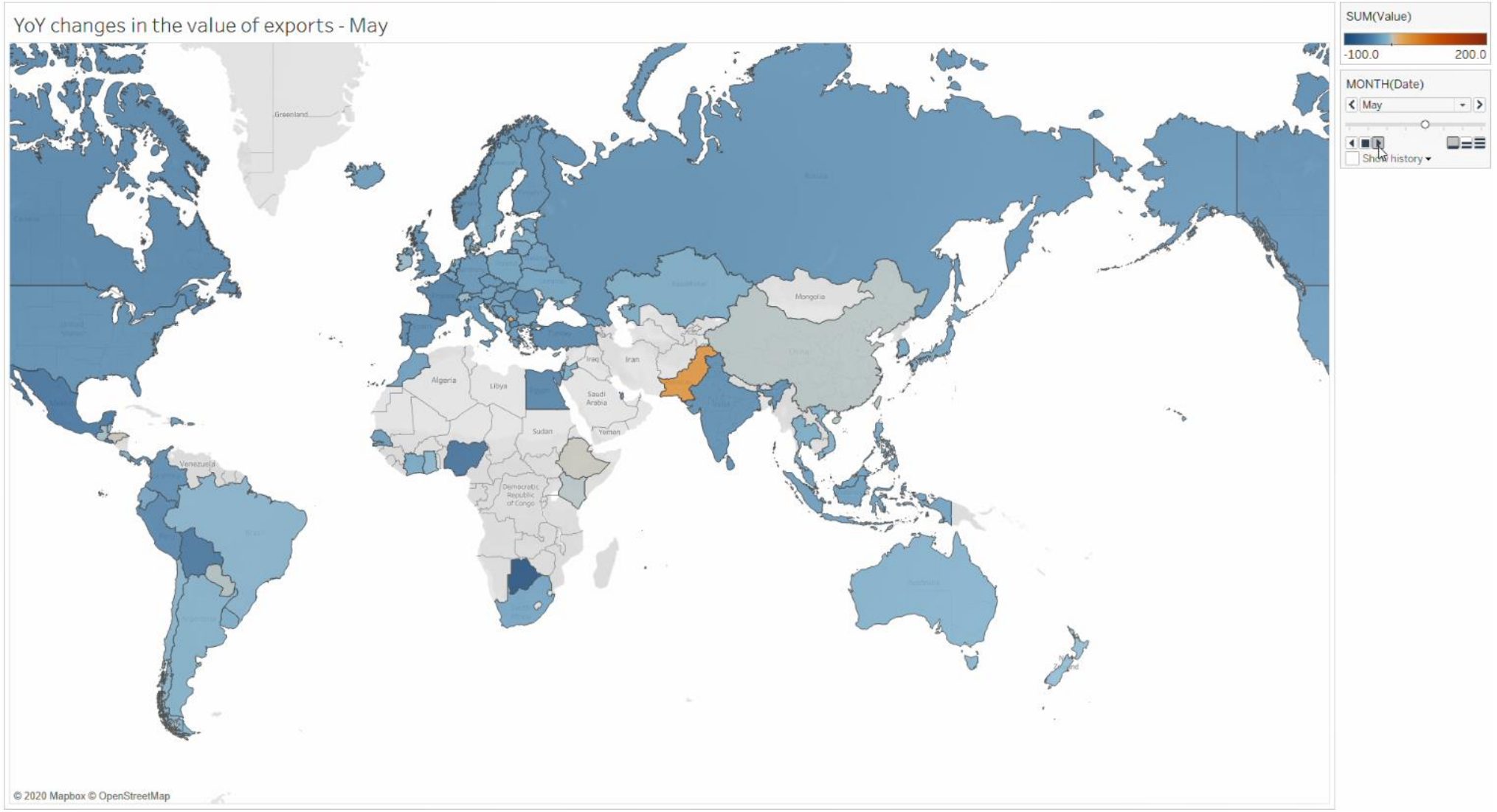
Source: Taubenberger, J. K., & Morens, D. M. (2006). 1918 Influenza: the mother of all pandemics. *Revista Biomedica*, 17(1), 69-79.



The timepath and asymmetry of the great trade collapse of 2020

Tracking the impact using IHS Markit Global Trade Atlas

Changes in the value of exports year on year - January to August 2020 (GTA)



Changes in the value of exports year on year - January to August 2020 (GTA) – **asymmetry of reaction at country level**

Year on year changes in the value of exports, selected economies

Reporters	Jan	Feb	Mar	April	May	June	July	Aug	Change Jan-May 2020 to Jan - May 2019
Australia	-8.5	-11.9	-0.1	-11.8	-20.2	-12.1	-16.9	:	-10.7
Brazil	-19.4	-1.0	5.3	-8.7	-14.9	-4.9	-3.3	-9.8	-8.2
Canada	3.8	3.4	-11.1	-37.0	-40.9	-21.3	-14.4	:	-17.7
China mainland	-32.8	8.2	-6.8	3.5	-3.3	0.3	7.2	:	-7.7
France	-7.7	-6.3	-18.0	-44.6	-42.8	-19.1	-17.2	:	-24.1
Germany	-4.8	-3.6	-9.9	-33.3	-31.5	-9.7	:	:	-16.6
Hong Kong SAR	-22.8	0.5	-4.2	0.9	1.6	5.1	4.4	:	-5.4
India	-2.1	3.1	-34.5	-60.5	-35.7	:	:	:	-26.4
Indonesia	-2.1	12.0	-0.4	-3.6	-29.5	1.8	-11.3	:	-5.4
Italy	-1.6	2.1	-15.8	-43.4	-32.3	:	:	:	-18.7
Japan	-2.8	-1.1	-9.3	-19.1	-26.0	-26.1	-17.9	:	-11.6
Macau SAR	-26.7	-2.7	-10.8	-28.6	-26.8	-17.7	3.3	:	-19.6
Malaysia	-1.7	7.7	-11.3	-29.0	-28.9	:	:	:	-13.4
New Zealand	4.8	-2.9	-8.0	-13.4	-12.7	0.1	-1.5	:	-7.0
Philippines	9.7	3.4	-23.2	-48.8	-26.3	-11.9	:	:	-17.8
Russia	3.5	-10.9	-16.3	-33.3	-34.8	-23.3	:	:	-19.0
Singapore	-5.1	-0.2	-5.4	-16.8	-26.5	-6.4	-9.6	:	-11.1
South Korea	-6.6	3.6	-1.7	-25.6	-23.8	-10.8	-7.1	:	-11.3
Taiwan	-6.9	23.3	-0.4	-1.4	-3.2	-3.8	:	:	1.2
Thailand	-0.6	-8.3	3.5	2.9	-21.6	-23.2	:	:	-5.1
United Kingdom	-0.1	-7.4	-17.7	-29.7	-35.0	-23.0	:	:	-18.4
United States	-0.4	1.6	-9.4	-29.0	-36.3	-23.8	-15.4	:	-15.0
Vietnam	-18.2	52.0	5.2	-15.0	-18.1	4.1	5.8	:	-2.8
Grand Total	**-7.5**	**0.2**	**-9.0**	**-24.0**	**-25.1**	**-11.3**	**-6.7**	**-9.8**	**-13.4**

Changes in the value of exports year on year - January to August 2020 (GTA) **asymmetry of reaction at HS2 commodity level**

Changes in the value of global exports by commodity group, Jan - Apr 2020

		Value of exports in USD billion			Year-on-year changes (in %)				
HS2 Code	Description	Jan-Apr 2019	Jan-Apr 2020	Overall change	Jan-20	Feb-20	Mar-20	Apr-20	Jan - Apr 2020
63	Made-up textile articles nesoi; needlecraft sets; worn clothing and worn textile articles; rags	18.1	27.0	8.9	-12.3	35.2	15.9	161.1	**49.4**
14	Vegetable plaiting materials and vegetable products	0.3	0.3	0.1	6.6	22.6	40.3	16.8	**22.3**
30	Pharmaceutical products	200.3	224.2	23.9	6.5	8.9	21.0	10.7	**11.9**
15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	26.8	29.2	2.3	1.4	13.1	8.3	12.9	**8.8**
2	Meat and edible meat offal	39.8	43.2	3.4	20.1	13.7	8.6	-6.1	**8.6**
86	Railway or tramway locomotives, rolling stock, track fixtures and fittings, and parts thereof; mechanical etc. Traffic signal equipment of all kinds	12.0	9.6	-2.4	-14.4	-11.7	-16.2	-36.5	**-20.1**
53	Vegetable textile fibers nesoi; yarns and woven fabrics of vegetable textile fibers nesoi and paper	1.4	1.1	-0.3	-16.9	0.7	-18.3	-56.4	**-22.3**
79	Zinc and articles thereof	5.2	4.1	-1.2	-12.5	-21.2	-17.5	-36.6	**-22.4**
89	Ships, boats and floating structures	36.6	28.3	-8.3	-21.9	2.2	-27.3	-40.3	-22.6
47	Pulp of wood or other fibrous cellulosic material; recovered (waste and scrap) paper and paperboard	17.3	13.4	-4.0	-26.3	-23.1	-21.6	-19.7	**-22.8**
50	Silk, including yarns and woven fabrics thereof	0.6	0.4	-0.1	-21.1	-1.3	-12.8	-55.7	**-23.1**
87	Vehicles, other than railway or tramway rolling stock, and parts and accessories thereof	476.5	364.6	-111.9	-4.2	-2.0	-18.2	-67.0	**-23.5**
42	Articles of leather; saddlery and harness; travel goods, handbags and similar containers; articles of gut (other than silkworm gut)	25.5	19.5	-6.0	-19.3	5.9	-24.2	-52.3	**-23.6**
88	Aircraft, spacecraft, and parts thereof	104.6	79.5	-25.1	-11.3	-0.1	-23.7	-57.8	-24.0
80	Tin and articles thereof	1.7	1.3	-0.4	-16.6	-8.7	-35.8	-34.4	**-24.7**
91	Clocks and watches and parts thereof	16.1	11.8	-4.3	-8.4	-4.9	-22.9	-68.2	-26.6
41	Raw hides and skins (other than furskins) and leather	6.4	4.6	-1.7	-15.0	-9.1	-22.7	-59.3	**-27.2**
58	Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery	4.1	2.9	-1.1	-28.9	2.2	-22.9	-51.8	**-28.1**
51	Wool and fine or coarse animal hair, including yarns and woven fabrics thereof; horsehair yarn and woven fabric	4.3	2.9	-1.4	-20.2	-22.4	-30.1	-56.1	**-33.2**
97	Works of art, collectors' pieces and antiques	11.0	7.2	-3.9	11.2	1.6	-49.8	-88.0	-34.9
93	Arms and ammunition; parts and accessories thereof	6.3	4.0	-2.3	-4.4	-68.0	-18.7	7.0	-36.0
43	Furskins and artificial fur; manufactures thereof	2.0	1.2	-0.8	-40.5	17.3	-47.9	-59.2	**-40.5**
77	Country specific special hs classification	0.0	0.0	0.0	-71.0	342.1	-49.9	-90.1	**-40.5**
0	Country specific special hs classification	20.8	10.5	-10.2	-42.5	-55.5	-49.7	-49.4	-49.3
	Grand total	**5,551.9**	**5,000.4**	**-551.5**	**-7.6**	**0.2**	**-8.1**	**-23.3**	**-9.9**

Agro-food trade in 2020 – globally and for the US

Tracking the impact using IHS Markit Global Trade Atlas

Agro-food trade in 2020 – global exports year-on-year changes (in %)

HS	Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1	Live Animals	12.3	5.2	9.7	-12.2	-16.0	-0.3	-3.5	1.4
2	Meat And Edible Meat Offal	18.6	12.4	6.5	-8.5	-8.9	-2.4	-2.1	-3.2
3	Fish And Crustaceans, Molluscs And Other Aquatic Invertebrates	-10.9	1.2	-15.7	-23.9	-20.6	-8.0	-12.7	-11.4
4	Dairy Produce; Birds' Eggs; Natural Honey; Edible Products Of Animal Origin, Nesoi	0.2	-0.4	-1.6	-7.3	-8.4	5.7	-0.6	-0.2
5	Products Of Animal Origin, Nesoi	-14.0	-8.6	-7.6	-15.0	-22.7	-15.9	-13.3	-12.4
6	Live Trees And Other Plants; Bulbs, Roots And The Like; Cut Flowers And Ornamental Foliage	3.1	2.4	-18.0	-28.0	-7.9	12.8	9.8	4.3
7	Edible Vegetables And Certain Roots And Tubers	-4.5	2.3	3.8	-1.5	-3.6	-2.1	-8.9	-4.3
8	Edible Fruit And Nuts; Peel Of Citrus Fruit Or Melons	-1.1	11.1	8.1	1.3	0.5	1.6	-6.4	-3.9
9	Coffee, Tea, Mate And Spices	-7.8	6.6	-3.1	-4.1	-11.0	3.6	3.4	-0.5
10	Cereals	-6.5	-0.6	9.3	9.7	2.0	10.1	-2.0	3.8
11	Milling Industry Products; Malt; Starches; Inulin; Wheat Gluten	-9.7	-3.9	-1.5	-8.8	-15.0	-3.6	-8.4	-9.6
12	Oil Seeds And Oleaginous Fruits; Miscellaneous Grains, Seeds And Fruits	-1.9	-4.7	9.2	26.4	15.2	21.8	5.3	6.3
13	Lac; Gums; Resins And Other Vegetable Saps And Extracts	-11.2	-9.8	7.4	2.8	-5.4	-0.8	-1.9	-4.9
14	Vegetable Plaiting Materials And Vegetable Products, Nesoi	2.9	14.0	30.3	8.5	-38.0	-45.5	-1.6	-21.0
15	Animal Or Vegetable Fats And Oils And Their Cleavage Products; Prepared Edible Fats	0.6	11.9	6.6	11.0	-2.6	17.9	14.8	8.1
16	Edible Preparations Of Meat, Fish, Crustaceans, Molluscs Or Other Aquatic Invertebrates	-11.4	7.5	1.6	-7.7	-9.6	1.9	1.4	6.1
17	Sugars And Sugar Confectionary	5.2	6.8	3.1	-2.5	-0.3	1.3	9.9	5.2
18	Cocoa And Cocoa Preparations	4.9	9.7	-7.0	-13.7	-11.2	-1.3	-7.1	-3.0
19	Preparations Of Cereals, Flour, Starch Or Milk; Bakers' Wares	-0.7	5.3	4.5	-2.9	-11.1	5.4	-0.6	0.4
20	Preparations Of Vegetables, Fruit, Nuts, Or Other Parts Of Plants	-5.4	-0.1	7.6	-3.1	-14.0	-4.5	-8.7	-6.0
21	Miscellaneous Edible Preparations	0.8	3.0	0.1	3.5	-8.4	3.1	5.2	7.8
22	Beverages, Spirits And Vinegar	0.9	-2.2	-6.9	-22.2	-30.1	-10.4	-4.0	-0.9
23	Residues And Waste From The Food Industries; Prepared Animal Feed	-9.6	0.5	-2.0	2.6	1.1	7.9	2.3	6.3
24	Tobacco And Manufactured Tobacco Substitutes	-12.5	-7.0	-6.6	-24.4	-22.3	-0.7	-9.3	-5.6
	Total agrofood	**-1.7**	**3.4**	**1.1**	**-3.9**	**-8.2**	**2.3**	**-1.6**	**-0.2**

Agro-food trade in 2020 – global imports year-on-year changes (in %)

HS	Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1	Live Animals	9.9	6.7	-2.5	-18.7	-15.7	-0.8	-6.5	-5.7
2	Meat And Edible Meat Offal	9.5	22.8	21.6	-5.7	-10.0	6.0	1.6	-2.9
3	Fish And Crustaceans, Molluscs And Other Aquatic Invertebrates	-8.2	-0.5	-9.2	-22.3	-21.2	-4.7	-11.1	-12.8
4	Dairy Produce; Birds' Eggs; Natural Honey; Edible Products Of Animal Origin, Nesoi	-3.8	6.9	0.6	-10.5	-10.1	8.6	-6.0	-4.1
5	Products Of Animal Origin, Nesoi	-18.6	-7.7	-11.6	-21.5	-24.4	-8.2	-21.7	-13.2
6	Live Trees And Other Plants; Bulbs, Roots And The Like; Cut Flowers And Ornamental Foliage	2.5	3.5	-15.8	-28.5	-11.5	9.7	7.9	6.0
7	Edible Vegetables And Certain Roots And Tubers	0.5	2.4	5.0	-2.3	-5.6	8.6	-1.5	-2.1
8	Edible Fruit And Nuts; Peel Of Citrus Fruit Or Melons	0.0	13.6	7.4	-1.6	-0.8	5.6	-0.5	-4.6
9	Coffee, Tea, Mate And Spices	-6.1	-4.4	3.0	-3.9	-9.6	13.1	-0.3	-5.1
10	Cereals	-18.5	-6.8	-3.7	-2.4	1.3	15.4	-2.5	-8.2
11	Milling Industry Products; Malt; Starches; Inulin; Wheat Gluten	-10.2	-5.6	5.6	-3.3	-10.9	3.5	-5.7	-4.4
12	Oil Seeds And Oleaginous Fruits; Miscellaneous Grains, Seeds And Fruits; Industrial Or Medicinal Plants; Straw And Fodder	-14.6	8.0	6.2	-5.3	13.6	35.0	13.4	2.8
13	Lac; Gums; Resins And Other Vegetable Saps And Extracts	-6.8	-2.0	1.9	-3.4	-12.9	12.0	-0.5	-7.5
14	Vegetable Plaiting Materials And Vegetable Products, Nesoi	18.1	11.6	10.4	-7.9	-13.0	0.2	4.4	16.5
15	Animal Or Vegetable Fats And Oils And Their Cleavage Products; Prepared Edible Fats; Animal Or Vegetable Waxes	2.2	10.9	5.1	8.0	2.5	10.9	12.5	9.1
16	Edible Preparations Of Meat, Fish, Crustaceans, Molluscs Or Other Aquatic Invertebrates	-2.1	-0.8	6.1	-7.5	-12.0	3.0	-0.3	-2.4
17	Sugars And Sugar Confectionary	-3.5	13.3	3.7	1.0	-4.7	18.8	-3.3	3.4
18	Cocoa And Cocoa Preparations	-0.8	7.4	5.9	-7.7	-14.8	3.2	-4.1	-3.0
19	Preparations Of Cereals, Flour, Starch Or Milk; Bakers' Wares	-0.6	2.5	6.1	-4.1	-9.2	5.9	-1.0	0.4
20	Preparations Of Vegetables, Fruit, Nuts, Or Other Parts Of Plants	-3.2	-0.2	5.1	-4.2	-12.4	0.3	-4.1	-2.3
21	Miscellaneous Edible Preparations	0.5	3.3	0.6	-2.7	-2.9	8.4	-0.8	1.2
22	Beverages, Spirits And Vinegar	-1.8	2.3	-2.9	-16.4	-26.2	-10.9	-9.9	-0.9
23	Residues And Waste From The Food Industries; Prepared Animal Feed	-8.7	-5.2	-2.6	3.4	-6.9	13.8	5.3	-0.2
24	Tobacco And Manufactured Tobacco Substitutes	-13.1	-13.6	-11.9	-16.1	-21.5	14.0	-5.8	-1.2
	Total agrofood	**-3.9**	**4.2**	**2.3**	**-6.8**	**-8.6**	**7.1**	**-1.3**	**-2.4**

US agro-food exports in 2020 –year-on-year changes (in %)

HS	Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	Live Animals	21.4	8.3	-30.4	-13.9	-21.0	-18.8	10.7	-17.9	30.3
2	Meat And Edible Meat Offal	25.6	34.9	23.5	8.0	-12.7	-19.7	-12.3	-7.0	-1.8
3	Fish And Crustaceans, Molluscs And Other Aquatic Invertebrates	-7.2	-11.7	-20.6	-6.2	-13.6	-15.9	-20.6	-37.5	-20.5
4	Dairy Produce; Birds' Eggs; Natural Honey; Edible Products Of Animal Origin, Nesoi	32.2	18.3	14.3	8.2	10.0	22.1	19.8	12.6	-3.9
5	Products Of Animal Origin, Nesoi	-6.8	-1.1	-6.8	-4.2	-28.2	-18.4	-10.8	-15.1	-21.0
6	Live Trees And Other Plants; Bulbs, Roots And The Like; Cut Flowers And Ornamental Foliage	-8.7	10.8	-10.9	-40.1	-17.1	33.6	-7.6	-3.6	5.0
7	Edible Vegetables And Certain Roots And Tubers	-0.5	0.9	-3.3	-3.6	1.3	-0.4	0.4	8.8	15.0
8	Edible Fruit And Nuts; Peel Of Citrus Fruit Or Melons	-2.8	5.2	-0.6	-11.6	-7.8	-11.0	-9.7	-10.1	-2.2
9	Coffee, Tea, Mate And Spices	0.6	0.5	3.0	-12.6	-7.2	-15.7	-2.1	-7.2	-2.9
10	Cereals	-26.5	7.2	2.4	-3.8	7.1	25.2	20.8	15.7	39.0
11	Milling Industry Products; Malt; Starches; Inulin; Wheat Gluten	-0.2	1.5	4.3	-4.7	-2.4	-7.5	-4.9	8.1	1.6
12	Oil Seeds And Oleaginous Fruits; Miscellaneous Grains, Seeds And Fruits; Industrial Or Medic	7.3	-28.6	-23.9	-6.6	-8.8	-32.2	-28.0	-4.3	87.8
13	Lac; Gums; Resins And Other Vegetable Saps And Extracts	-15.3	-33.9	3.4	15.8	-17.4	-1.8	13.0	-21.8	-12.4
14	Vegetable Plaiting Materials And Vegetable Products, Nesoi	-20.3	0.3	3.4	-11.8	-5.2	24.3	5.1	50.9	91.5
15	Animal Or Vegetable Fats And Oils And Their Cleavage Products; Prepared Edible Fats; Anima	-11.8	73.3	7.6	34.7	24.1	15.5	10.0	23.9	24.5
16	Edible Preparations Of Meat, Fish, Crustaceans, Molluscs Or Other Aquatic Invertebrates	-3.6	1.1	3.4	-8.3	-22.1	-19.9	-4.9	1.6	-10.3
17	Sugars And Sugar Confectionary	-3.1	4.3	-12.5	-15.3	-19.2	-14.8	-11.7	-5.2	5.4
18	Cocoa And Cocoa Preparations	-10.9	4.9	-6.4	-24.4	-30.6	-27.6	-18.5	-10.7	-6.9
19	Preparations Of Cereals, Flour, Starch Or Milk; Bakers' Wares	5.8	7.1	0.2	-7.8	-14.3	-0.4	4.1	-5.1	7.0
20	Preparations Of Vegetables, Fruit, Nuts, Or Other Parts Of Plants	-5.5	0.4	-9.2	-14.4	-20.6	-17.7	-13.0	-17.6	-7.4
21	Miscellaneous Edible Preparations	-2.2	0.3	1.8	-3.6	-11.0	-5.8	-3.6	-4.7	1.7
22	Beverages, Spirits And Vinegar	20.3	38.0	3.6	-11.8	-14.0	-18.9	-16.9	-5.3	-6.1
23	Residues And Waste From The Food Industries; Prepared Animal Feed	-8.8	19.2	5.7	-4.2	-6.9	15.4	9.8	-8.0	5.9
24	Tobacco And Manufactured Tobacco Substitutes	-39.6	-37.3	-23.3	-31.2	-49.4	-64.5	-50.6	-30.7	-63.3
	Total	**0.3**	**4.7**	**-1.4**	**-4.3**	**-7.5**	**-8.4**	**-6.8**	**-4.8**	**16.1**

Modelling the impact of COVID-19 at IHS Markit

Economic & Country Risk Global Link Model

About the ECR Global Link Model
A powerful macroeconometric model for scenario analysis and forecasting

Coverage

- 68 countries
- 10 regions and world aggregates

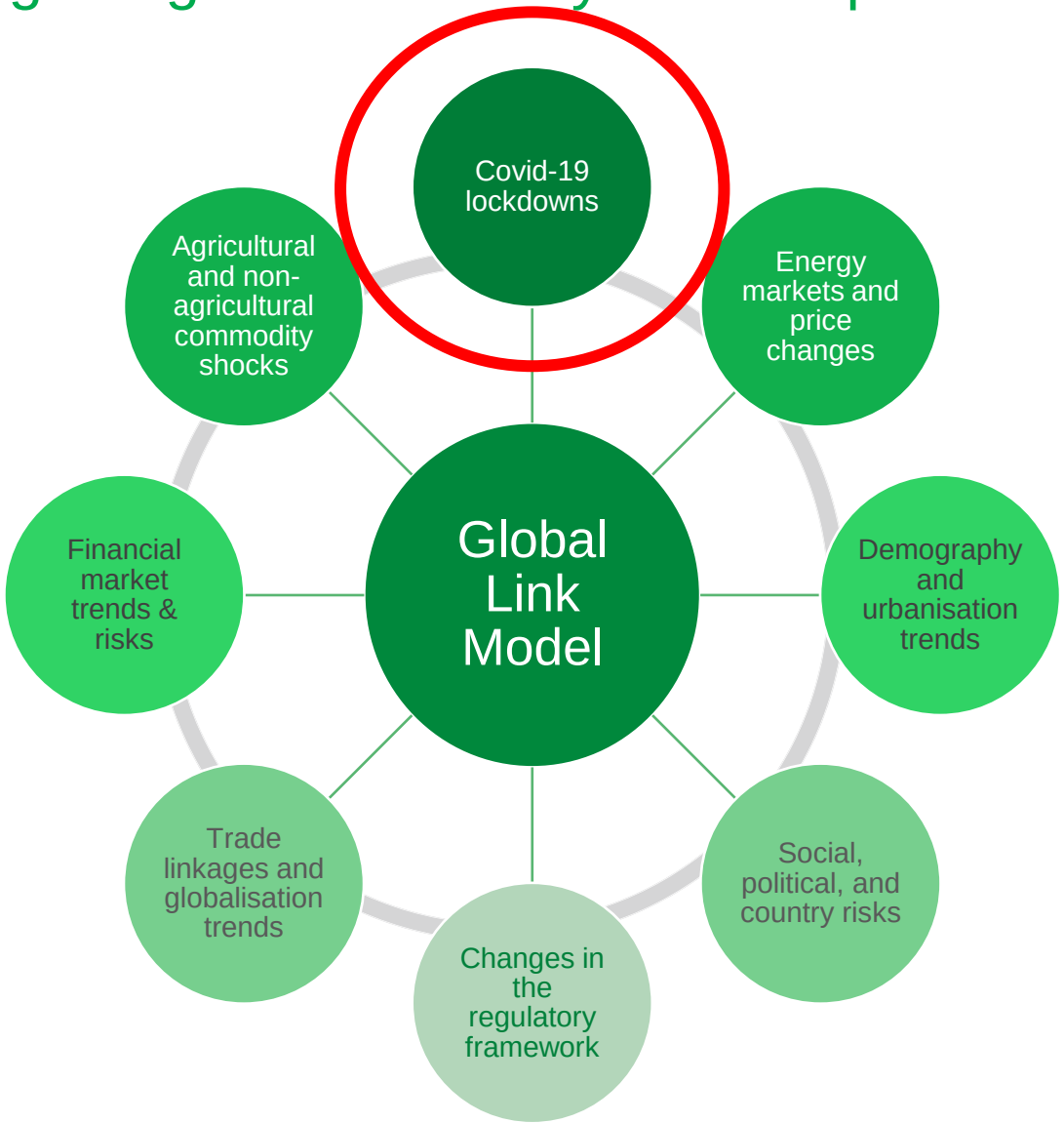
Data and analytics

- 250 – 500 indicators per country
- Quarterly and annual frequency
- More than 7,000 estimated equations
- Full system model with feedbacks between variables
- Up to 30 years outlook
- Bottom-up and top-down scenarios analysis

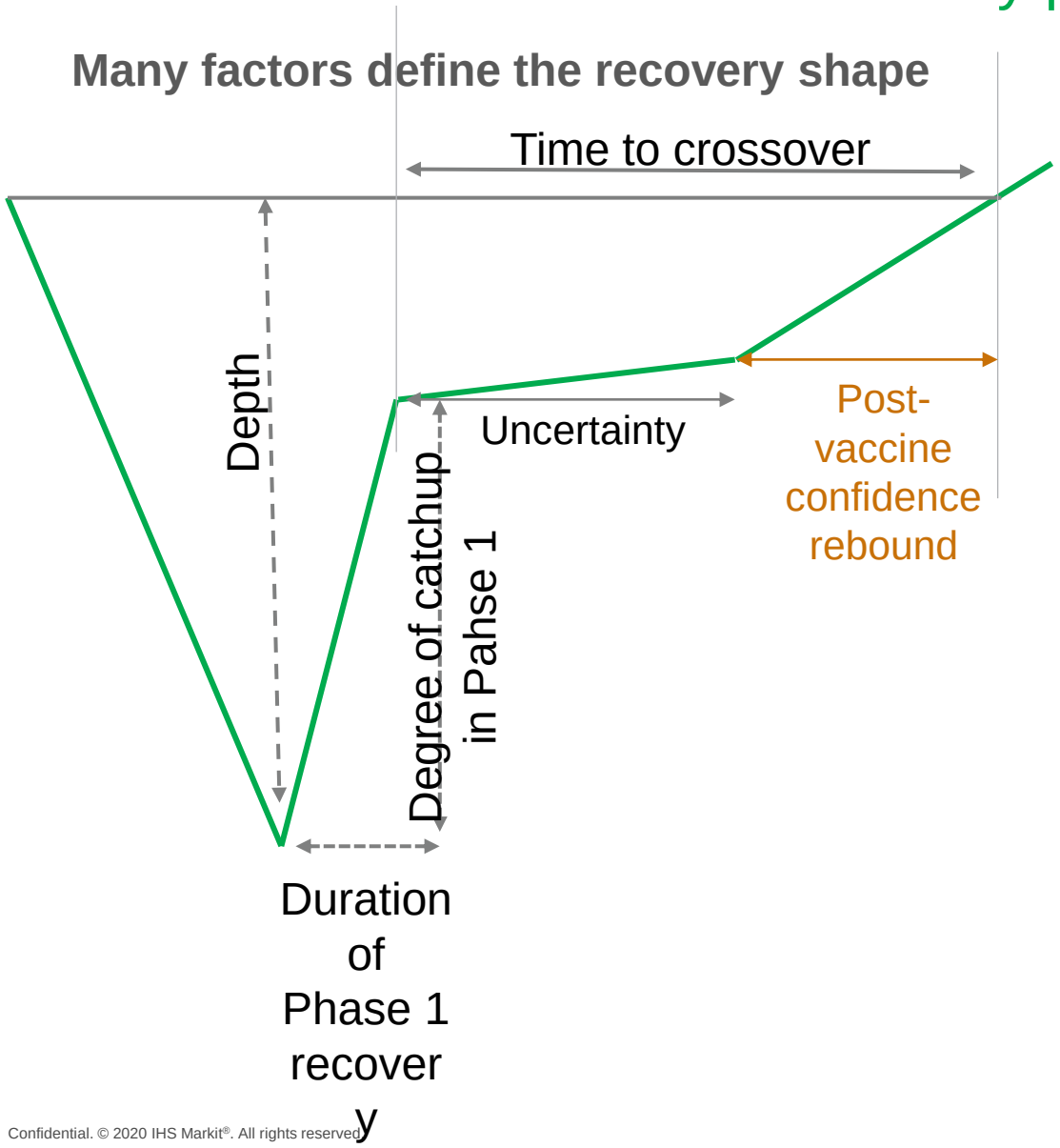
Capability

- Three detailed scenarios per quarter with assumptions, outputs and narratives.
- Technical support

Many changes impacting the global economy can be quantified at a macro and sectoral level



Several factors influence the recovery path



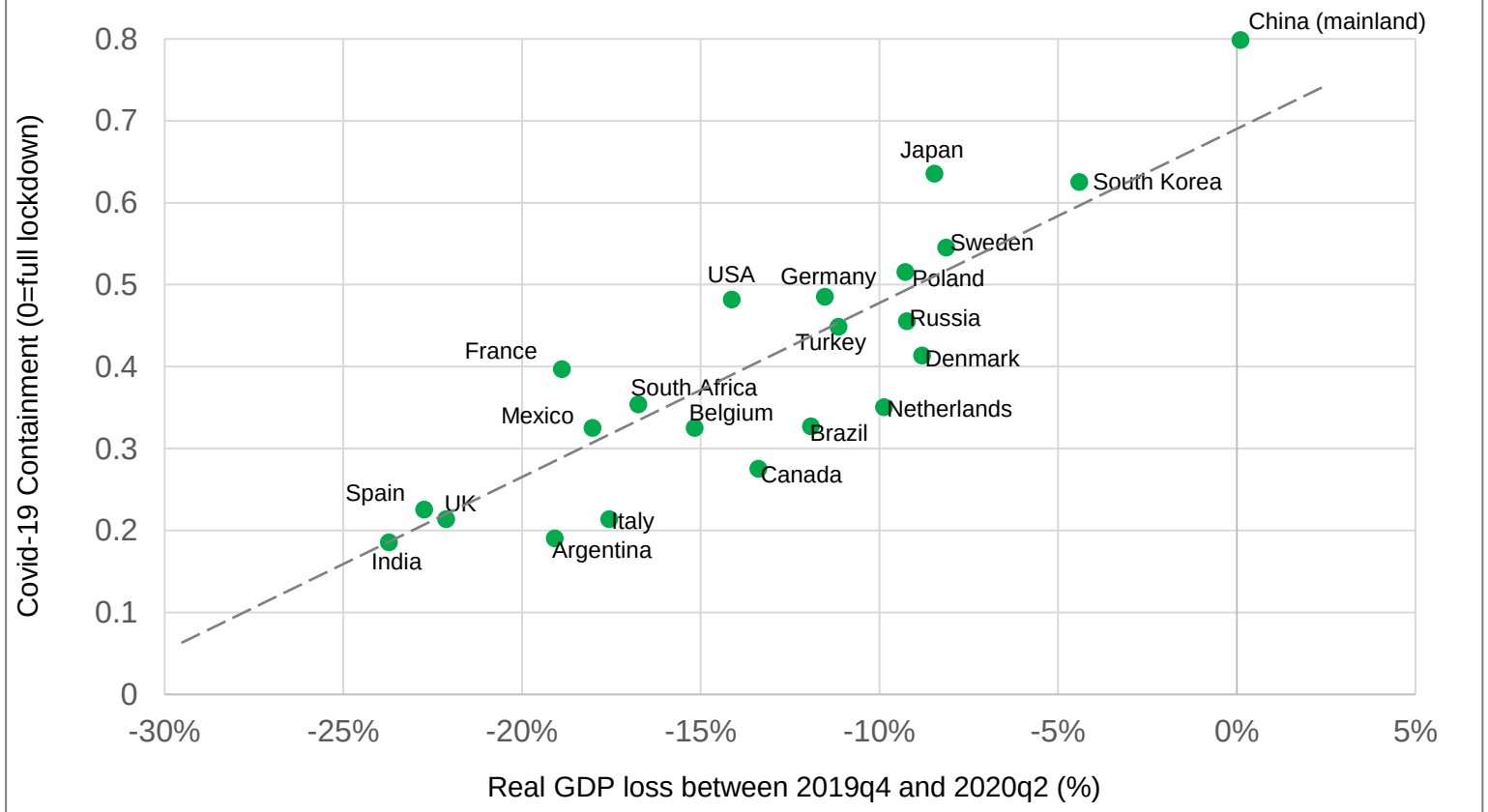
- Trends in the pandemic
- Severity of lockdown measures/compliance thereto
- Fiscal policy support
- Monetary policy support
- Industrial fabric & sector mix
- Migration

IHS Markit has introduced a “severity of containment score” which takes into account several factors

Category		✓	✓✓	✓✓✓
1) Schools / childcare	All schools and childcare facilities open	Most childcare facilities and schools open or fully functioning online	Some schools and childcare facilities open or beginning to open	All schools and childcare facilities closed
2) Restaurants / bars	All restaurants, bars, cafes open with no restrictions	All or most restaurants, bars, cafes open, subject to new rules	Most restaurants, bars, cafes closed or severely restricted	All restaurants, bars, cafes closed
3) Non-essential shops / services	All non-essential shops, including large shopping malls, and services open without restrictions	Most non-essential shops and services open, subject to new rules	Most non-essential shops, including large shopping malls, and services closed	All non-essential shops and services closed
4) Public gatherings	All gatherings, including festivals and indoor concerts, allowed	Gatherings of up to 500 people allowed	Gatherings of up to 50 people allowed	Gatherings of up to 5 people allowed
5) Internal mobility	No restrictions on movement internally	Some restrictions / guidance to limit movement in/out of immediate area	Severe restrictions on movement in/out of immediate area	Strict stay at home orders, except for necessities
6) External borders	All air, land, sea borders open	Some restrictions on who can enter country and how	Severe restrictions on who can enter country and how	External borders effectively closed, special provisions for nationals
7) Other	No other supply-side or demand-side restrictions	Reduced hours across sectors or guidance to work from home and/or facemasks advised	Offical curfew and/or facemasks mandated in public or closed spaces	Non-essential production stopped and/or strict rules on facemasks enforced
Local / regional lockdown	No local or regional restrictions on activity	Severe restrictions on activity in local context(s)	Severe restrictions on activity affecting a region and/or several locations	Severe restrictions on activity affecting major population centres

The severity of lockdowns explains the fall in activity in Q2, but it is not the only factor

Real GDP loss in Q2 vs 2019Q4 versus Covid-19 containment score



Source: IHS Markit

- The stronger the lockdown (vertical axis close to zero), the deepest the drop in activity.
- By 2020q2, China had largely lifted the restrictions and its real GDP came back to the 2019q4 level.
- In France and the USA, activity fell more than justified by the sole degree of restriction.
- In Italy, Canada, the Netherlands or Denmark, activity fell comparatively less than the lockdowns would have justified.
- Policy measures will take time to fully filter through. They will continue to impact the recovery path.

Different scenarios were run, quantifying the impact of different vaccine timelines

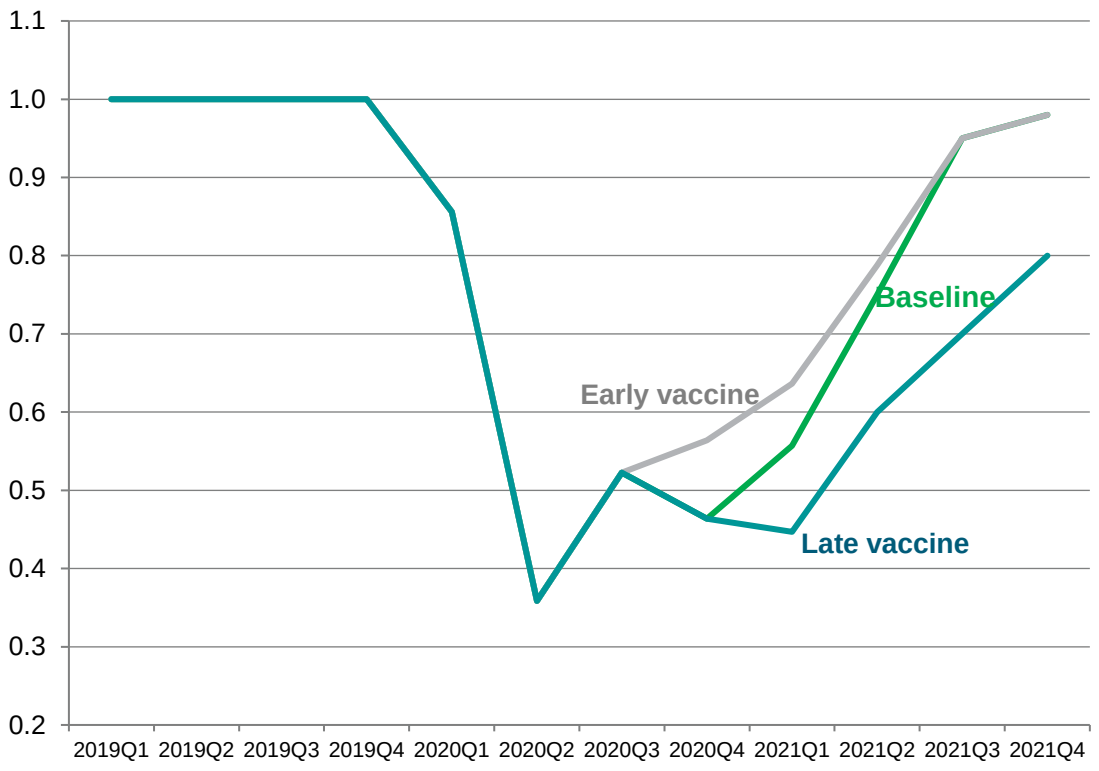
- The baseline assumes that vaccines are broadly available from Q3-2020
- Economies go through episodic lockdowns until then, depending on the epidemiological situation
- The economic recovery beyond that resumes slowly as support measures progressively fade

- The “early vaccine” scenario assumes that the vaccine is distributed very quickly in advanced economies, so that by end of Q1-2020 they are immune to Covid and confidence returns quickly
- Economies start to recover but support measures stay in place until the recovery is well anchored
- Emerging countries only see broad based vaccine distribution from Q3-2021

- The late vaccine scenario assumes that resistance to vaccination, virus mutations or other factors delay the time at which sufficient immunity is achieved
- Countries continue in stop&go mode throughout most of 2021…
- … leading to sharp rises in bankruptcies and lasting economic damages

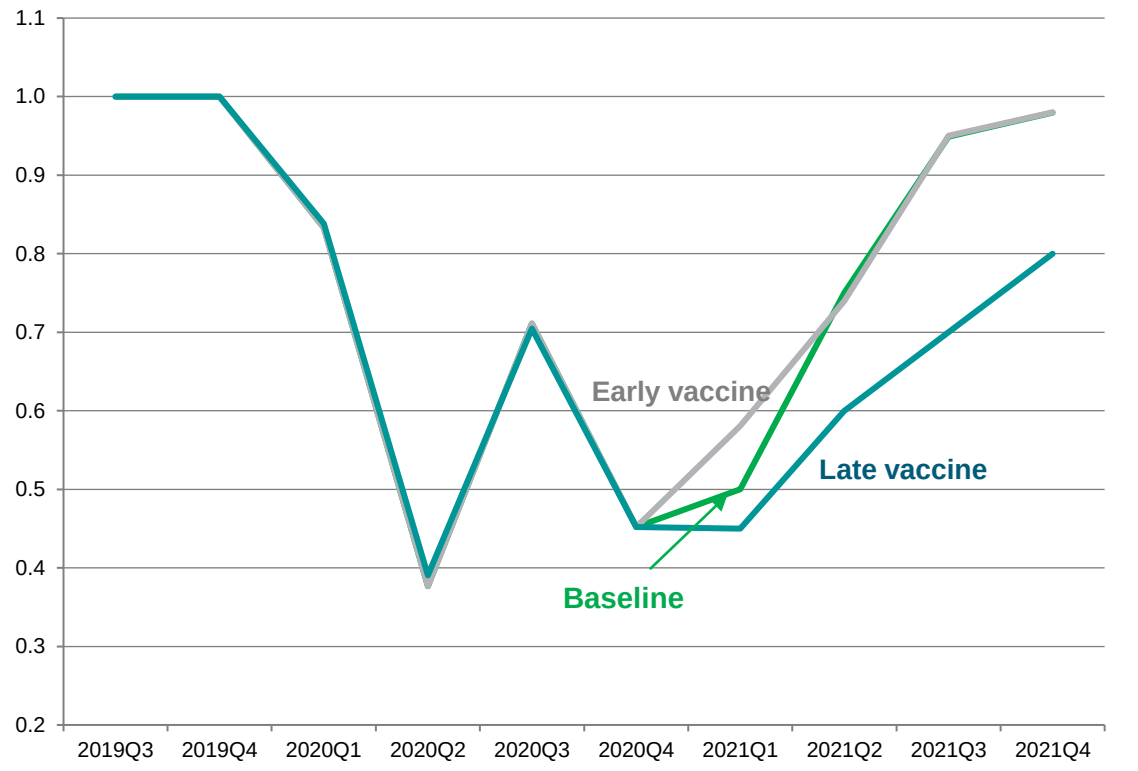
In the **late vaccines' scenario**, the delays in delivering vaccines to a broadbased population in order to achieve sufficient immunity creates a need for additional lockdowns in 2021

NAFTA - Assumptions on new restriction measures due to the delay/inefficacity in vaccines



Source: IHS Markit

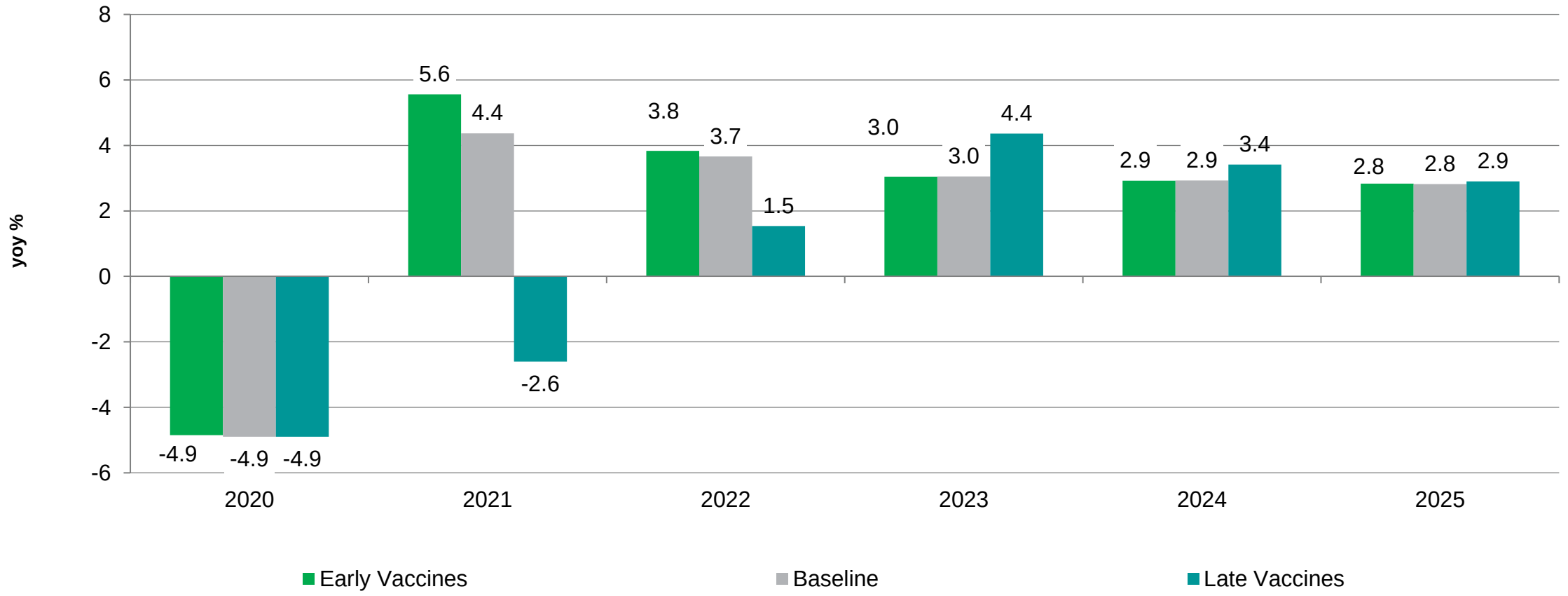
European union - Assumptions on new restriction measures due to the delay in vaccines



Source: IHS Markit

World real GDP growth rates in three scenarios

World - Real GDP growth rate, in yoy %



Note: Add here or delete
Source: IHS Markit

Impact of COVID-19 using the gravity model approach

Tracking the impact using IHS Markit Global Trade Atlas

Empirical strategy

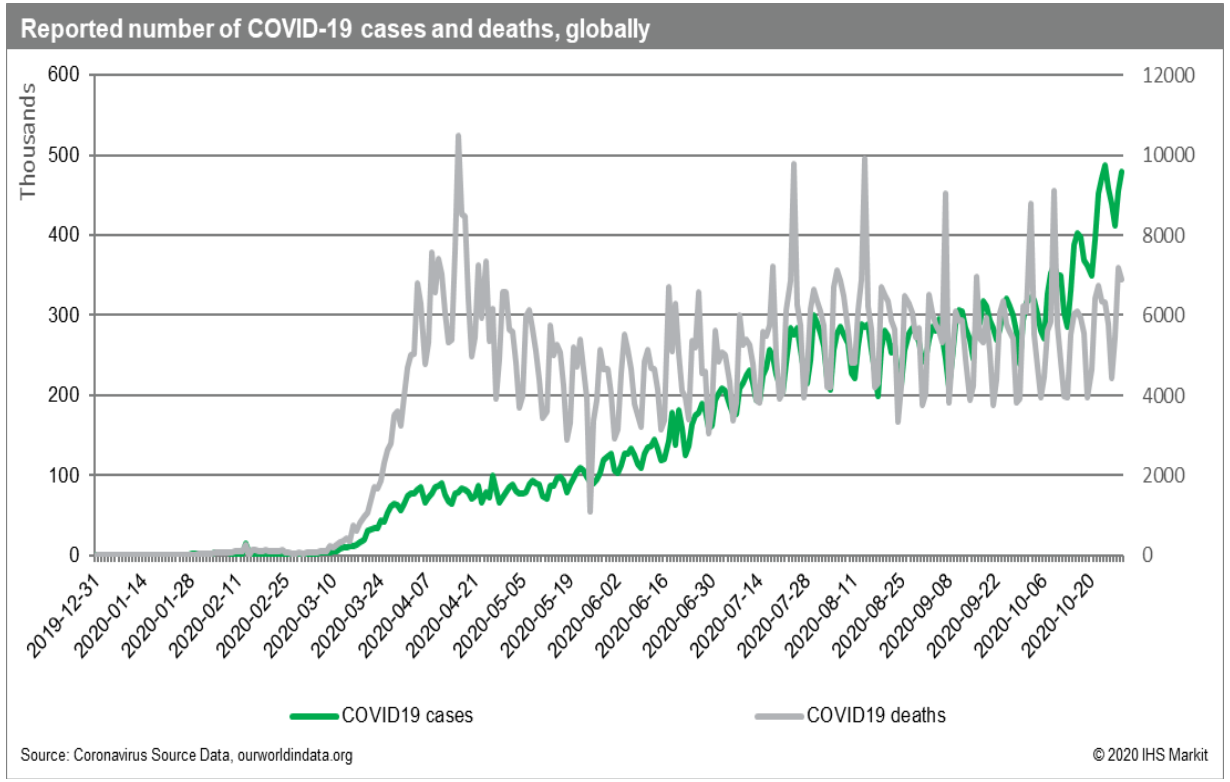
- We construct standard gravity model for exports between a given exporter and importer for monthly data 2019M1 – 2020M3
- We estimation a semi-mixed effect model (Lombardia & Sperlich, 2011), with the PPML estimator, in order to obtain unbiased results and escape some of the standard problems such as the heteroscedasticity and zero trade flows adjustment
- Model estimated with the use of random effects with addition of clustering variable (fixed effect) - Proenca et al. (2015) & time effects as suggested by (Silva & Teneyro 2006):

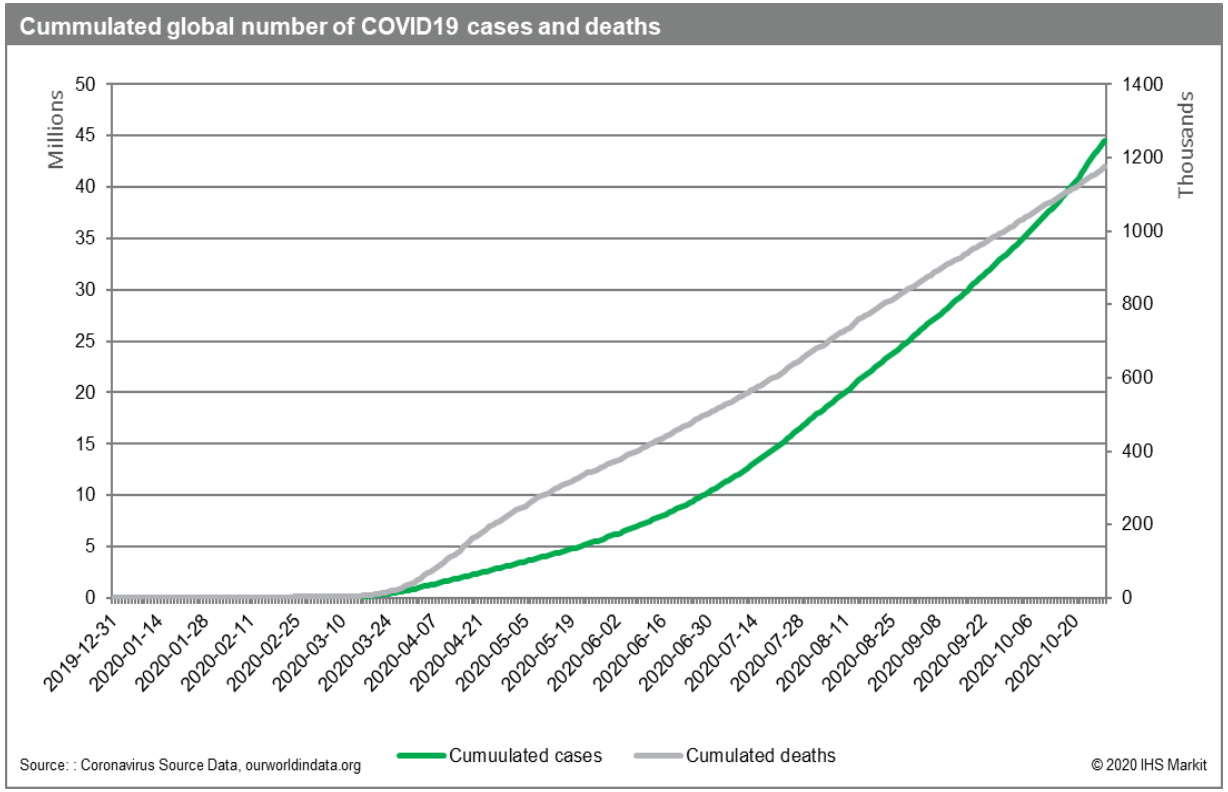
$$T_{ijt} = \exp[\ln \alpha_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \gamma \ln Z_{ij} + \alpha \ln X_{ijt} + \delta D_{ij} + v_t + \eta_{ij}]\varepsilon_{ijt}$$

- The model is augmented with variables approximating the impact of COVID-19 simultaneously on exporter's and importer' side:
  - Log of new COVID-19 cases
  - Log of new COVID-19 deaths
  - Average value of Oxford COVID-19 Government Response Tracker (OxCGRT)
  - IHS Markit ECR's stringency of containment index
  - Data sources: GTAF monthly historical data, CEPII gravity model data, IHS Markit MWO & ECR, OXcGRT, COVID19 data from Our World in Data

COVID 19 new cases and deaths daily & cumulated

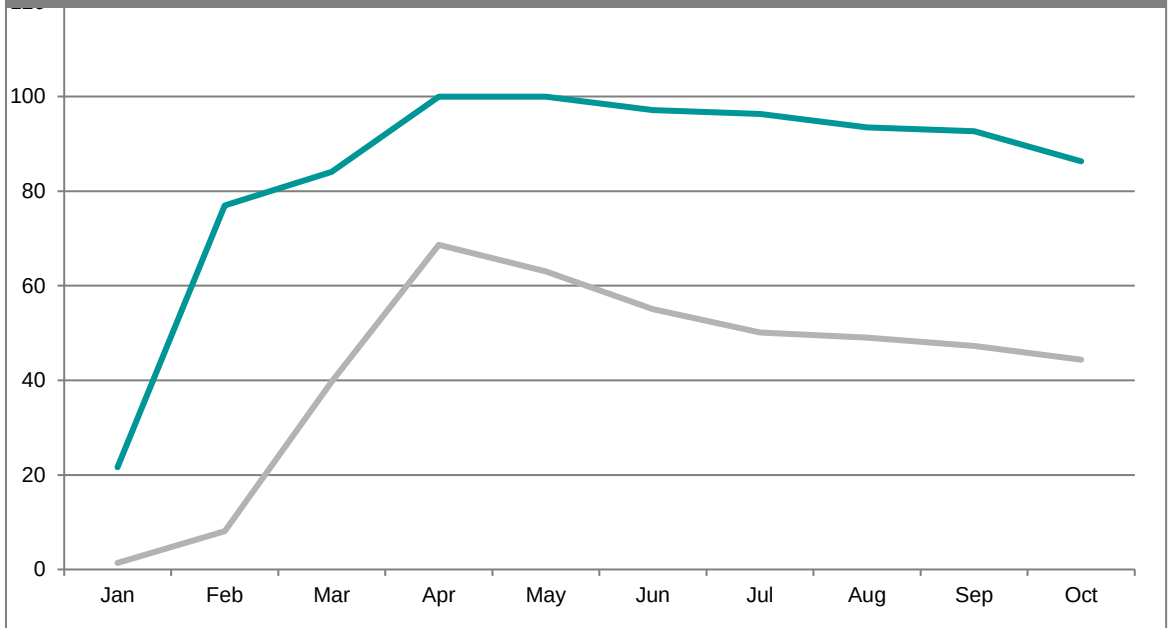
Source: https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker





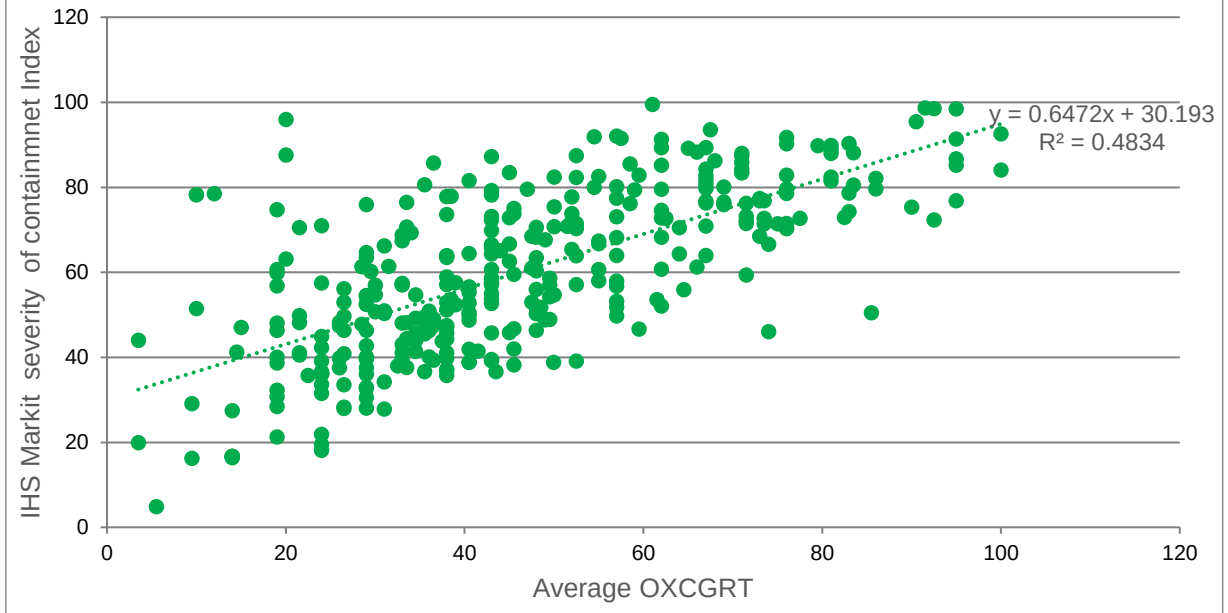
Oxford's OxCGRT – mean/maximum level globally vs. IHS Markit ECR's GCI

Averege policy stringency in reaction to COVID-19, globally, 2020 Jan - Oct 2020 (0-100%)



Source: https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker

Correlation between average monthly Oxford's OxCGRT stringency index and IHS Markit government containment index from ECR (2020M3-2020M8)



Source: IHS Markit

Effects of COVID 19 as measured by log of montly new cases and deaths - globally

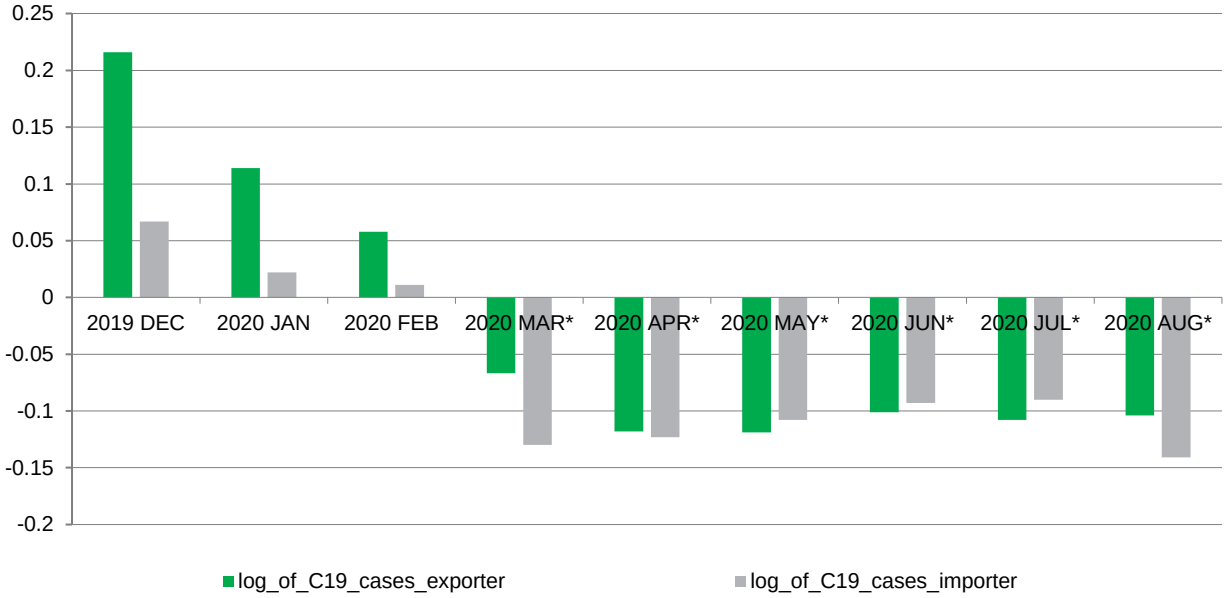
Estimates of the gravity model using PPML method

	1	2	3	4	5	6	7	8	9	10	11
VARIABLES	**GENERAL - NEW CASES**	**GENERAL - NEW DEATHS**	**2019 DEC**	**2020 JAN**	**2020 FEB**	**2020 MAR**	**2020 APR**	**2020 MAY**	**2020 JUN**	**2019 JUL**	**2019 AUG**
l_x_rgdp	0.855***	0.865***	0.793***	0.732***	0.751***	0.913***	0.993***	0.985***	0.951***	0.965***	0.881***
	(0.00547)	(0.00544)	(0.0175)	(0.0194)	(0.0219)	(0.0292)	(0.0364)	(0.0363)	(0.0326)	(0.0328)	(0.0401)
l_m_rgdp	0.839***	0.839***	0.808***	0.810***	0.797***	0.987***	0.970***	0.941***	0.914***	0.925***	0.919***
	(0.00602)	(0.00576)	(0.0220)	(0.0242)	(0.0282)	(0.0366)	(0.0315)	(0.0271)	(0.0252)	(0.0275)	(0.0541)
l_distance_cap	-0.558***	-0.564***	-0.547***	-0.579***	-0.564***	-0.629***	-0.588***	-0.588***	-0.582***	-0.467***	-0.450***
	(0.0104)	(0.0104)	(0.0449)	(0.0426)	(0.0439)	(0.0413)	(0.0377)	(0.0390)	(0.0432)	(0.0482)	(0.0698)
contig	0.577***	0.572***	0.536***	0.512***	0.616***	0.473***	0.338***	0.433***	0.531***	0.747***	0.517**
	(0.0316)	(0.0315)	(0.142)	(0.132)	(0.132)	(0.131)	(0.130)	(0.116)	(0.139)	(0.167)	(0.201)
comlang_off	0.0609**	0.0569**	0.179	0.103	0.0811	0.0184	0.0747	0.0676	0.0271	-0.0659	-0.149
	(0.0278)	(0.0279)	(0.118)	(0.100)	(0.108)	(0.116)	(0.108)	(0.103)	(0.107)	(0.126)	(0.249)
colony	0.00282	0.00843	0.0995	0.117	0.0930	0.0773	0.124	0.0918	0.133	0.0892	-0.246
	(0.0239)	(0.0238)	(0.0902)	(0.0834)	(0.0892)	(0.0844)	(0.0944)	(0.0996)	(0.0922)	(0.102)	(0.252)
rta	0.432***	0.437***	0.490***	0.521***	0.481***	0.562***	0.568***	0.504***	0.566***	0.522***	0.397***
	(0.0176)	(0.0174)	(0.0838)	(0.0708)	(0.0740)	(0.0797)	(0.0779)	(0.0745)	(0.0764)	(0.0736)	(0.144)
x_l_newc	**-0.0165****		**0.216*****	**0.114*****	**0.0586*****	**-0.0668*****	**-0.118*****	**-0.119*****	**-0.101*****	**-0.108*****	**-0.104*****
	(0.00695)		**(0.0439)**	**(0.0128)**	**(0.0134)**	**(0.0215)**	**(0.0288)**	**(0.0273)**	**(0.0253)**	**(0.0270)**	**(0.0318)**
m_l_newc	**-0.0437*****		0.0677	0.0227	0.0113	**-0.138*****	**-0.123*****	**-0.108*****	**-0.0934*****	**-0.0900*****	**-0.141*****
	(0.00954)		(0.0454)	(0.0161)	(0.0141)	**(0.0293)**	**(0.0265)**	**(0.0227)**	**(0.0193)**	**(0.0226)**	**(0.0244)**
x_l_newd		**-0.0527*****									
		(0.00675)									
m_l_newd		**-0.0532*****									
		(0.00850)									
Constant	-19.58***	-19.72***	-18.17***	-16.51***	-16.86***	-23.57***	-24.98***	-24.01***	-22.66***	-24.20***	-21.29***
	(0.253)	(0.252)	(0.917)	(0.999)	(1.090)	(1.123)	(1.186)	(1.242)	(1.168)	(1.291)	(2.085)
TIME EFFECTS	**yes**	**yes**	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**no**
Observations	**305,265**	**305,265**	16,273	16,217	16,132	16,052	15,026	15,304	15,528	13,345	2,467
R-squared	0.671	0.669	0.717	0.760	0.732	0.704	0.685	0.671	0.678	0.712	0.774

Source: IHS Markit. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

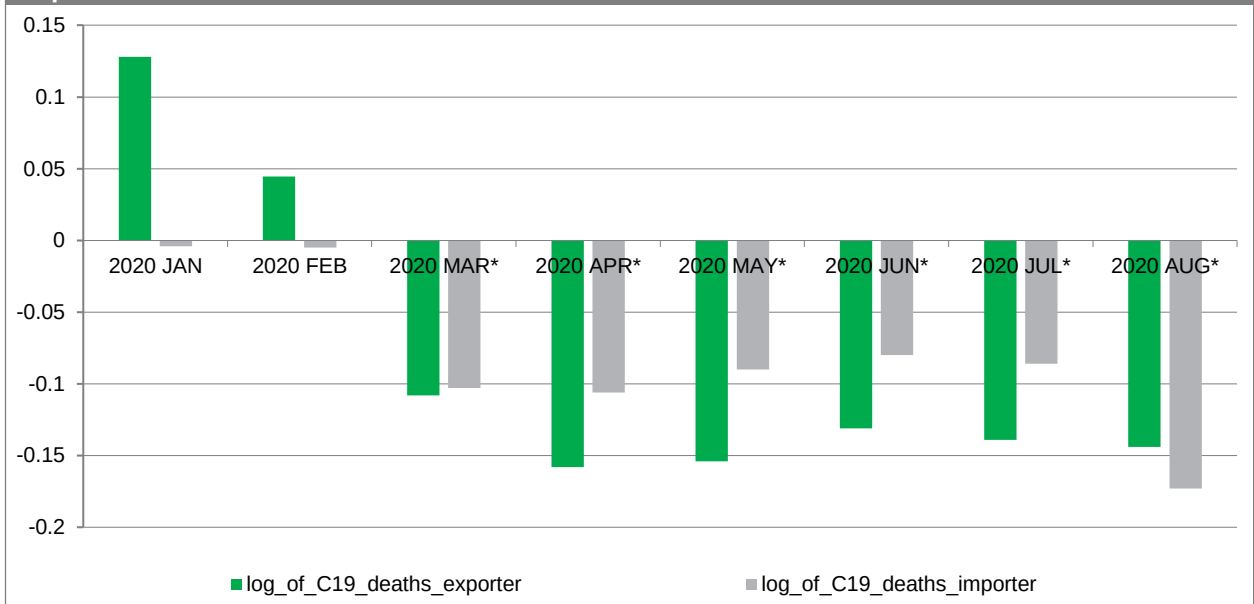
Effects of COVID 19 as measured by log of montly new cases and deaths

The impact of COVID19 new cases in exporter and importer by months, ceteris paribus, on exports



Source: IHS Markit

The impact of COVID19 new cases in exporter and importer by months, ceteris paribus, on exports



Source: IHS Markit

Effects of COVID 19 as measured by log of montly new cases and deaths - globally

Estimates of the models using PPML method for selected exporters

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
VARIABLES	**USA**	**CHN**	**JPN**	**KOR**	**CAN**	**IND**	**BRA**	**RUS**	**GBR**	**DEU**	**FRA**	**ITA**	**ESP**	**POL**	**AUS**
l_x_rgdp															
l_m_rgdp	0.832***	0.901***	0.911***	0.704***	1.015***	0.777***	0.920***	0.796***	0.847***	0.894***	0.749***	0.880***	0.792***	0.806***	1.140***
	(0.0106)	(0.00816)	(0.0235)	(0.0290)	(0.0110)	(0.0166)	(0.0196)	(0.0119)	(0.0132)	(0.00895)	(0.00838)	(0.0116)	(0.0147)	(0.0104)	(0.0129)
l_distance_cap	-0.0877***	-0.322***	-0.553***	-0.948***	-0.0504	-1.018***	0.553***	-0.874***	-0.648***	-0.633***	-0.474***	-0.878***	-1.048***	-1.032***	-2.574***
	(0.0298)	(0.0167)	(0.0568)	(0.0677)	(0.0688)	(0.0916)	(0.0939)	(0.0311)	(0.0270)	(0.0217)	(0.0150)	(0.0186)	(0.0370)	(0.0283)	(0.0532)
contig	1.485***	0.478***			1.404***	-0.958***	1.026***	0.486***	0.630***	0.306***	0.907***	0.0887***	0.426***	0.906***	
	(0.0568)	(0.0702)			(0.185)	(0.145)	(0.138)	(0.0526)	(0.0749)	(0.0517)	(0.0291)	(0.0294)	(0.0603)	(0.0560)	
comlang_off	-0.0454	1.011***			0.134**	0.675***	-0.0623	0.398***	-0.240**	0.355***	-0.109**	0.153***	0.769***		-0.453***
	(0.0367)	(0.0771)			(0.0623)	(0.0563)	(0.127)	(0.0950)	(0.106)	(0.0443)	(0.0532)	(0.0243)	(0.0721)		(0.0729)
colony	0.182***	-0.163*	0.746***	-0.853***	0.432***	-0.657***	1.052***	0.215***	0.813***	0.360***	0.621***	0.570***	0.0210	-0.598***	1.448***
	(0.0496)	(0.0924)	(0.132)	(0.0491)	(0.125)	(0.0635)	(0.175)	(0.0820)	(0.0941)	(0.0387)	(0.0381)	(0.0965)	(0.0567)	(0.0514)	(0.131)
rta	0.838***	0.655***	0.609***	0.706***	0.428***	-0.0458	1.862***	0.861***	0.144***	0.373***	0.391***	0.229***	0.495***	0.946***	-0.161***
	(0.0367)	(0.0502)	(0.0737)	(0.0984)	(0.0662)	(0.0846)	(0.140)	(0.101)	(0.0553)	(0.0350)	(0.0404)	(0.0379)	(0.0503)	(0.0570)	(0.0586)
x_l_newc	0.0196*	0.0124	0.0196	**0.0764****	**0.0412****	-0.0294*	0.0118	-0.0618	0.0252	0.00466	0.0246*	0.0365*	-0.00855	**-0.0463****	0.0373**
	(0.0109)	(0.0189)	(0.0250)	**(0.0315)**	**(0.0166)**	(0.0165)	(0.0179)	(0.0442)	(0.0231)	(0.0118)	(0.0129)	(0.0207)	(0.0138)	**(0.0180)**	(0.0176)
m_l_newc	**-0.0389*****	**-0.0338*****	**-0.0722*****	**-0.0730*****	**-0.0390*****	0.00534	0.0150	0.0253*	**-0.0495****	-0.00266	-0.0131	-0.0148	0.0175	0.000241	0.00557
	(0.0132)	**(0.0114)**	**(0.0228)**	**(0.0211)**	**(0.00785)**	(0.0164)	(0.0196)	(0.0138)	**(0.0228)**	(0.0102)	(0.0112)	(0.0179)	(0.0129)	(0.0130)	(0.0133)
Constant	0.0211	0.941***	1.273	9.471***	-7.300***	8.115***	-10.23***	6.186***	2.841***	2.479***	3.683***	3.809***	6.925***	5.430***	13.46***
	(0.363)	(0.293)	(1.061)	(1.268)	(0.621)	(0.665)	(1.279)	(0.394)	(0.457)	(0.305)	(0.277)	(0.306)	(0.532)	(0.363)	(0.642)
TIME EFFECTS	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**
Observations	3,570	3,536	3,494	3,693	3,349	3,413	3,577	2,845	3,476	3,479	3,447	3,261	3,463	3,314	3,162
R-squared	0.950	0.879	0.841	0.834	0.998	0.751	0.821	0.806	0.872	0.929	0.951	0.918	0.882	0.974	0.956

Source: IHS Markit. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Effects of stringency of policy response to COVID-19 as measured by monthly average of OxCGRT

Estimation of the models with the average government response stringency index

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
VARIABLES	**GENERAL**	**USA**	**CHN**	**JPN**	**KOR**	**CAN**	**IND**	**BRA**	**RUS**	**GBR**	**DEU**	**FRA**	**ITA**	**ESP**	**POL**	**AUS**
l_x_rgdp	0.848***															
	(0.00814)															
l_m_rgdp	0.832***	0.847***	0.879***	0.885***	0.676***	1.014***	0.776***	0.909***	0.825***	0.821***	0.898***	0.740***	0.900***	0.817***	0.811***	1.163***
	(0.00922)	(0.0144)	(0.0128)	(0.0378)	(0.0499)	(0.0158)	(0.0268)	(0.0292)	(0.0201)	(0.0214)	(0.0144)	(0.0125)	(0.0174)	(0.0255)	(0.0183)	(0.0220)
l_distance_cap	-0.554***	-0.0896*	-0.342***	-0.707***	-0.988***	-0.115	-0.913***	0.697***	-0.833***	-0.670***	-0.625***	-0.479***	-0.918***	-1.079***	-1.010***	-2.497***
	(0.0173)	(0.0541)	(0.0319)	(0.107)	(0.111)	(0.123)	(0.151)	(0.145)	(0.0559)	(0.0451)	(0.0367)	(0.0284)	(0.0328)	(0.0658)	(0.0494)	(0.0865)
contig	0.575***	1.412***	0.503***			1.121***	-0.809***	1.110***	0.437***	0.468***	0.330***	0.932***	0.0949*	0.436***	0.900***	
	(0.0534)	(0.111)	(0.118)			(0.321)	(0.244)	(0.215)	(0.0980)	(0.123)	(0.0897)	(0.0531)	(0.0514)	(0.103)	(0.101)	
comlang_off	0.0702	-0.0465	1.031***			0.207*	0.620***	-0.109	0.467***	-0.136	0.378***	-0.105	0.0963*	0.810***		-0.400***
	(0.0488)	(0.0642)	(0.122)			(0.112)	(0.0976)	(0.188)	(0.175)	(0.174)	(0.0712)	(0.0897)	(0.0538)	(0.163)		(0.117)
colony	-0.0199	0.176**	-0.366**	0.461*	-0.916***	0.381*	-0.679***	1.493***	0.281*	0.778***	0.361***	0.667***	1.166***	-0.0412	-0.561***	1.443***
	(0.0420)	(0.0854)	(0.151)	(0.244)	(0.104)	(0.206)	(0.116)	(0.264)	(0.155)	(0.152)	(0.0634)	(0.0673)	(0.136)	(0.108)	(0.0958)	(0.266)
rta	0.423***	0.851***	0.618***	0.571***	0.743***	0.400***	-0.0325	1.764***	0.877***	0.173*	0.381***	0.476***	0.211***	0.451***	0.901***	-0.138
	(0.0292)	(0.0621)	(0.0887)	(0.118)	(0.164)	(0.115)	(0.140)	(0.208)	(0.186)	(0.0980)	(0.0578)	(0.0661)	(0.0660)	(0.0929)	(0.0990)	(0.111)
asi_x	0.000170	0.00344*	-0.00255	**0.0153****	0.000794	0.00184	**-0.00664*****	-0.00580	-0.00314	0.00567*	-0.00155	**-0.00394****	0.00174	-0.00363	8.44e-05	**0.00895*****
	(0.00103)	(0.00209)	(0.00348)	**(0.00711)**	(0.00383)	(0.00204)	**(0.00242)**	(0.00356)	(0.00256)	(0.00327)	(0.00194)	**(0.00158)**	(0.00233)	(0.00233)	(0.00175)	**(0.00190)**
asi_m	**-0.00303*****	**-0.00648*****	-0.000134	**-0.0104*****	-0.00317	**-0.00656******	0.00136	**0.01000*****	0.000174	**-0.00768*****	-0.00173	-0.000249	**-0.00672*****	-0.000135	**-0.00315****	-0.000898
	(0.000869)	**(0.00148)**	(0.00203)	**(0.00315)**	(0.00244)	**(0.00170)**	(0.00268)	**(0.00274)**	(0.00245)	**(0.00231)**	(0.00154)	(0.00136)	**(0.00221)**	(0.00195)	**(0.00158)**	(0.00201)
Constant	-19.74***	-0.359	1.683***	3.259*	10.64***	-6.672***	7.362***	-11.28***	4.975***	3.528***	2.310***	4.015***	3.728***	6.566***	5.171***	11.89***
	(0.402)	(0.545)	(0.471)	(1.796)	(2.159)	(1.062)	(1.068)	(1.922)	(0.648)	(0.735)	(0.486)	(0.432)	(0.476)	(0.910)	(0.672)	(1.007)
TIME EFFECTS	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**
Observations	104,372	1,216	1,187	1,199	1,366	1,175	1,078	1,316	917	1,214	1,212	1,213	1,032	1,201	1,160	1,069
R-squared	0.661	0.946	0.872	0.850	0.833	0.998	0.780	0.861	0.806	0.837	0.924	0.946	0.927	0.875	0.973	0.960

Source: IHS Markit. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

*Effects of stringency of policy response to COVID-19 as measured by IHS SCI

	GENERAL - IHS	USA	CHN	JPN	KOR	CAN	IND	BRA	RUS	GBR	DEU	FRA	ITA	ESP	POL	AUS
l_x_rgdp	0.821***															
	(0.0111)															
l_m_rgdp	0.855***	0.843***	0.889***	1.029***	0.901***	1.005***	0.823***	0.992***	0.749***	0.775***	0.836***	0.701***	0.881***	0.835***	0.755***	1.186***
	(0.0140)	(0.0311)	(0.0182)	(0.0337)	(0.0349)	(0.0317)	(0.0369)	(0.0400)	(0.0393)	(0.0333)	(0.0213)	(0.0222)	(0.0262)	(0.0364)	(0.0226)	(0.0511)
l_distance_cap	-0.512***	-0.0974	-0.276***	-0.314***	-0.465***	-0.0400	-0.802***	0.648***	-0.718***	-0.607***	-0.559***	-0.484***	-0.937***	-1.024***	-0.918***	-2.775***
	(0.0206)	(0.0781)	(0.0409)	(0.0707)	(0.0604)	(0.230)	(0.166)	(0.248)	(0.0790)	(0.0595)	(0.0400)	(0.0345)	(0.0520)	(0.100)	(0.0632)	(0.252)
contig	0.574***	1.416***	-0.342***			1.220**	-0.382	3.039***	0.286**	0.214	0.315***	1.014***	0.0554	0.432***	0.893***	
	(0.0690)	(0.163)	(0.123)			(0.572)	(0.287)	(0.331)	(0.129)	(0.157)	(0.106)	(0.0658)	(0.0636)	(0.133)	(0.117)	
comlang_of	0.0404	-0.104	1.504***			0.167	0.912***	1.525***	0.531**	-0.0216	0.346***	-0.323**	0.134	0.433***		0.00238
	(0.0656)	(0.0944)	(0.105)			(0.210)	(0.182)	(0.259)	(0.212)	(0.169)	(0.0875)	(0.128)	(0.0899)	(0.160)		(0.191)
colony	0.0214	0.143		1.034***	-0.488***	0.412	-0.783***		0.232	0.907***	0.332***	0.574***		0.159	-0.381***	1.827***
	(0.0455)	(0.121)		(0.126)	(0.0498)	(0.328)	(0.172)		(0.182)	(0.136)	(0.0803)	(0.0885)		(0.116)	(0.120)	(0.291)
rta	0.571***	0.897***	-0.224***	0.543***	0.173*	0.537**	0.229		0.885***	0.510***	0.408***	0.265***	0.200*	0.644***	0.856***	-0.0826
	(0.0418)	(0.0799)	(0.0807)	(0.142)	(0.0922)	(0.226)	(0.184)		(0.193)	(0.138)	(0.0684)	(0.0968)	(0.104)	(0.157)	(0.134)	(0.102)
ihs_s_x	**-0.0105*** **	**-0.00860** **	**-0.0119*** **	-0.00420	0.000912	-0.00785	-0.00429	0.00118	-0.00350	0.000441	-0.00239	**-0.00610*** **	-0.00230	-0.00245	0.00445	0.00127
	(0.00120)	**(0.00353)**	**(0.00289)**	(0.00727)	(0.00321)	(0.00672)	(0.00280)	(0.00308)	(0.00284)	(0.00450)	(0.00175)	**(0.00164)**	(0.00292)	(0.00349)	(0.00419)	(0.00471)
ihs_s_imp	**-0.00196***	0.000713	**-0.00531*** **	**-0.00556** **	-0.00272	-0.000567	0.00275	-0.0121***	**-0.00670** **	**-0.00532** **	**-0.00387*** **	-0.000356	2.97e-05	**-0.00598***	0.00202	-0.00599
	(0.00103)	(0.00174)	**(0.00177)**	**(0.00267)**	(0.00216)	(0.00251)	(0.00392)	(0.00451)	**(0.00303)**	**(0.00266)**	**(0.00148)**	(0.00151)	(0.00276)	**(0.00337)**	(0.00161)	(0.00409)
Constant	-19.69***	0.185	1.344**	-3.986***	0.303	-6.771***	4.658***	-12.43***	6.395***	4.259***	3.666***	5.412***	4.624***	5.855***	5.280***	13.91***
	(0.604)	(1.135)	(0.541)	(1.418)	(1.345)	(2.089)	(1.530)	(2.981)	(0.934)	(1.091)	(0.587)	(0.679)	(0.763)	(1.417)	(0.768)	(3.016)
Time effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	16,633	300	295	302	345	300	286	335	263	300	300	300	244	298	283	286
R-squared	0.761	0.951	0.950	0.965	0.977	0.998	0.911	0.916	0.759	0.809	0.913	0.943	0.905	0.881	0.973	0.965

Results

- The impact of COVID-19 on bilateral trade is statistically significant and adverse, ceteris paribus, on both the exporter's and importer's side
- The result holds for both monthly-reported new COVID-19 cases as well as new COVID-19 related deaths as a proxy for the severity of pandemic
- The impact is found to be asymmetric at the level of individual states as could have been expected taking into account the time-path and gravity of the pandemic
- The models re-estimated on a monthly basis show that the impact becomes adverse and statistically significant globally in March 2020 and the effect endures. This coincides with the escalation of COVID-19 from Asia to Western Europe
- The stringency of governments response to the COVID-19 pandemic as measured by Oxford COVID-19 Government Response Tracker index has a statistically significant and negative impact on the importer's side only in a global sample model which could be indicative of the creation of significant hindrance to trade and weaker consumer demand

Results

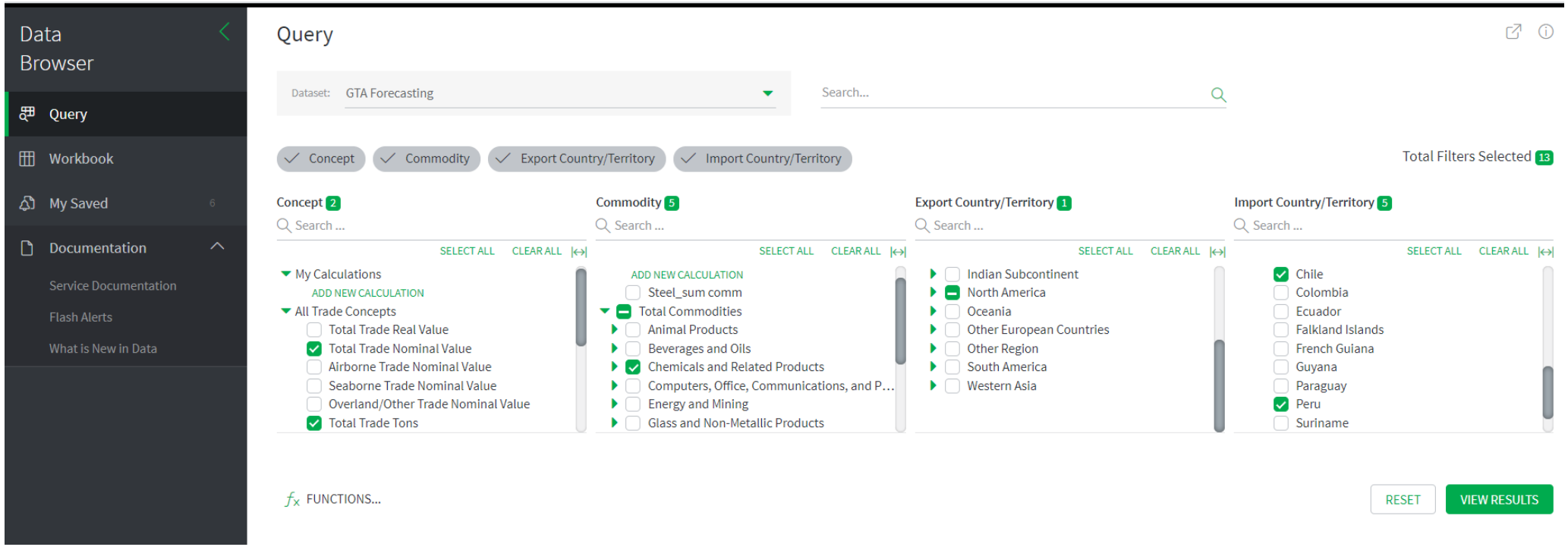
- The stringency of containment effort due to the COVID-19 pandemic as measured by the stringency of containment effort index by IHS Markit ECR has a statistically significant and negative impact on both the exporters and importer's side, still is asymmetric
- The impact of COVID-19 is the most visible and stable in the group of advanced exporters followed by emerging states, it’s less stable in the group of developing nations
- The use of lagged COVID-19 proxies is statistically significant for policy response & new COVID-19 related deaths, it disappears for new COVID-19 related deaths

The new GTA Forecasting estimates

(4 Dec 2020)

Data Browser tool on IHS Markit Connect platform

Annual database updated on a quarterly basis providing bilateral trade forecast up to year 2035, including 16 trade concepts, 248 export and import country/territory and 270 commodities based on HS4 classification



In Data Browser you can make your query online, create your own aggregates for concepts, commodities, export and import country/territory, save your calculations and queries for later, as well as export data to excel or csv file.

GTA Forecasting content and historical data source

GTA Forecasting database content:

- Annual bilateral trade database updated each quarter
  - Historical period: 2000-2019
  - Forecast period: 2020-2035
- 16 trade concepts
- 248 countries/territories by ISO code
- 270 commodities aggregated from HS4-digit categories

Historical data source: Global Trade Atlas (GTA) –providing data directly from national government agencies

The following GTA Modules used:

GTA EDF United States Ports - US monthly data with information about modes of transport breakdown

GTA Main Module - Monthly data for 86 countries/territories (not counting the US)

GTA Annual Module - Annual data for all other countries/territories

GTA Forecasting

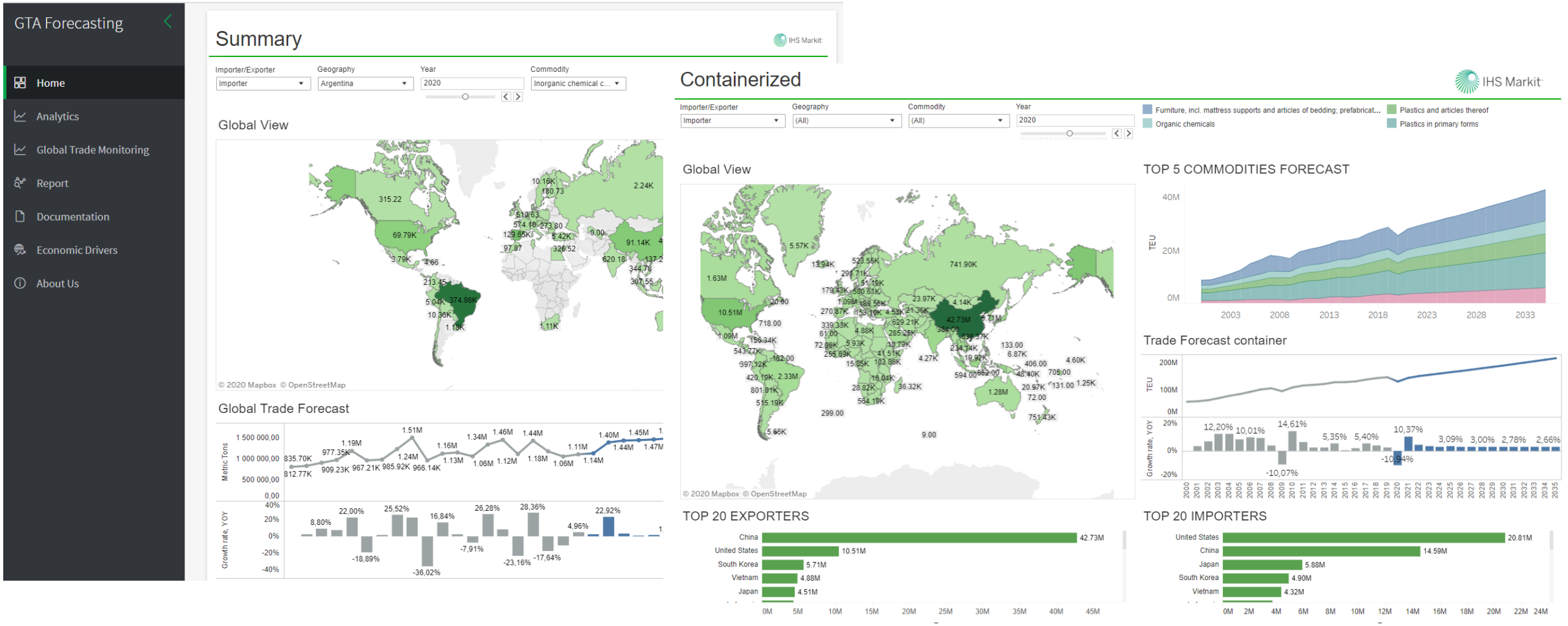
Trade Concepts in GTA Forecasting

Nominal Value	Value of trade in US dollars
Real Value	Value of trade in prices form year 2010
Total Trade Tons	Volume of trade in metric tons
Airborne Trade Nominal Value	Value of trade that is via air
Seaborne Trade Nominal Value	Value of trade that is via sea
Overland/Other Trade Nominal Value	Value of overland trade and special cases of self-propelled vehicles
Airborne Metric Tons	Tonnage of trade that is via air
Seaborne Metric Tons	Tonnage of trade that is via sea
Overland/Other Trade Metric Tons	Tonnage of overland trade and special cases of self-propelled vehicles

Dry Bulk	Loose/dry cargo tonnage. Seaborne trade only
Liquid Bulk	Liquid cargo tonnage. Seaborne trade only
General Cargo	Cargo transported not in bulk or containers. Seaborne only
Containerized Tons	Tons of cargo transported in Containers
20 ft. Containers	Number of 20 ft. Containers. Seaborne trade only
40 ft. Containers	Number of 40 ft. Containers. Seaborne trade only
TEUs	Twenty-foot equivalent units. Empty TEUs are not included. Seaborne trade only

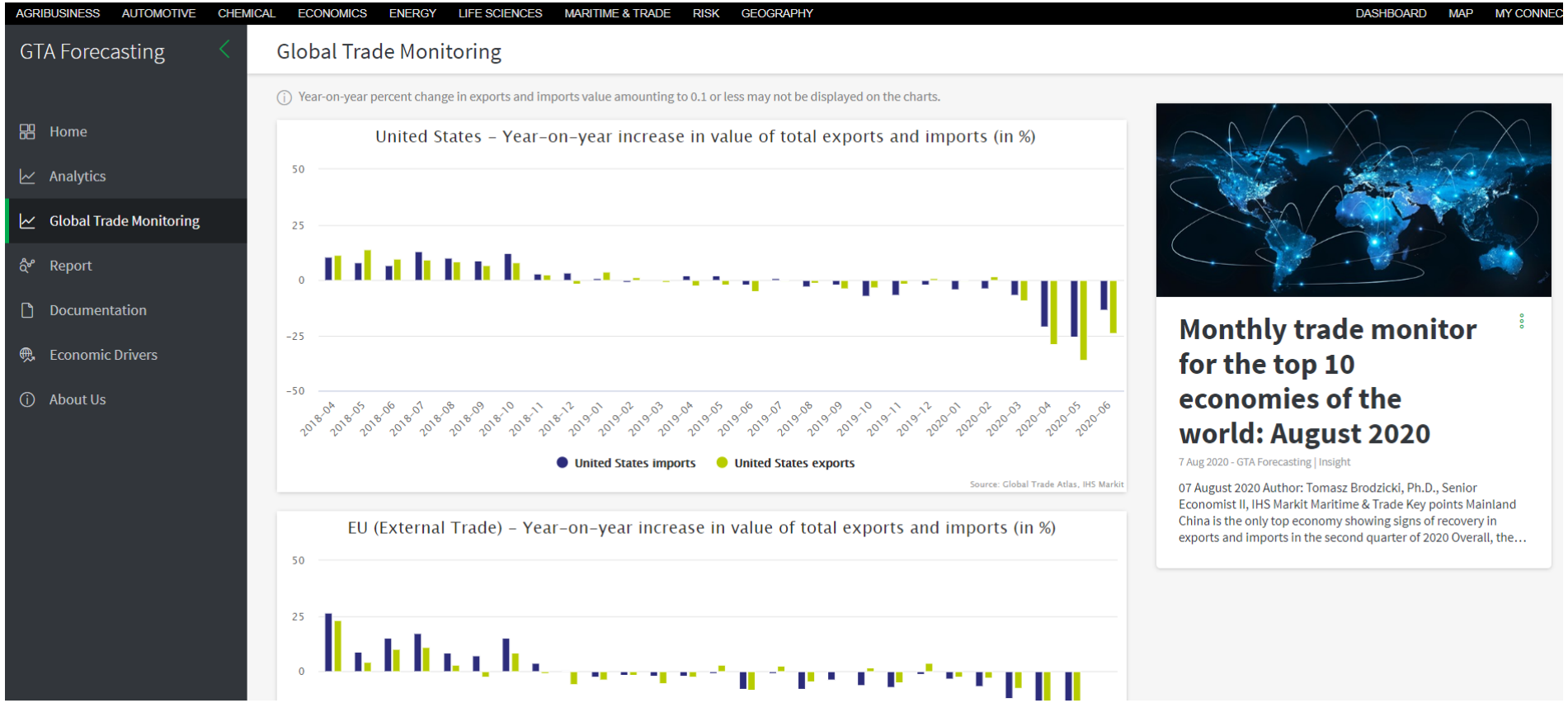
Interactive dashboard

Data visualizations on maps and charts which you can easily export and use in your own reports and presentations



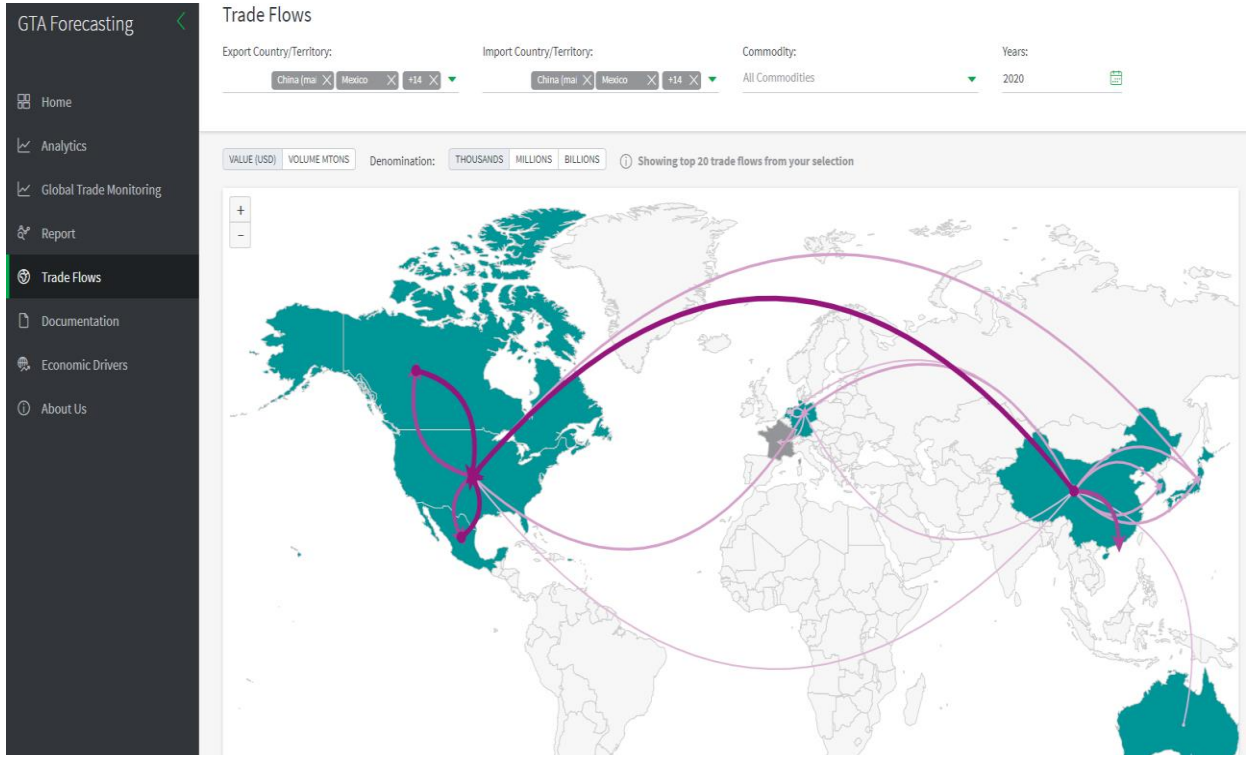
Global Trade Monitoring tab

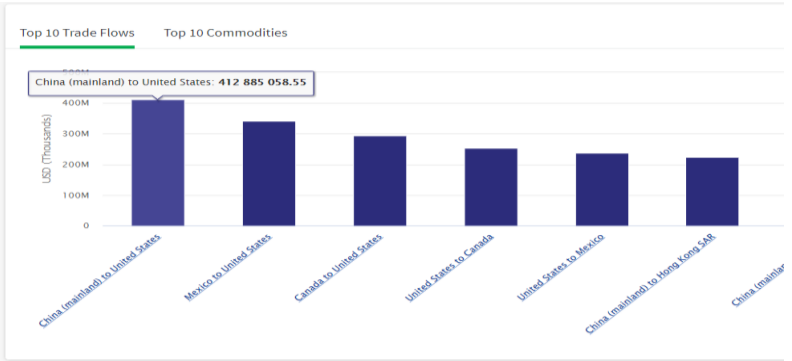
Showing most recent monthly historical data for top 10 economies of the world together with written analysis updated every month by our economists



Trade Flows tab

Interactive map showing top 20 trade flows from your selection of export and import country/territory and commodity and drill down charts displaying top 10 trade flows and top 10 commodities





Headline Analysis and *Trends in the World Economy and Trade* report written by our analysts

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    - Seaborne trade by cargo type
    - Seaborne long-range forecast exports
    - Seaborne long-range forecast imports
  - Comparison with Previous Quarter Forecast

Seaborne trade by cargo type - Seaborne Trade Outlook: Trends in the World Economy and Trade

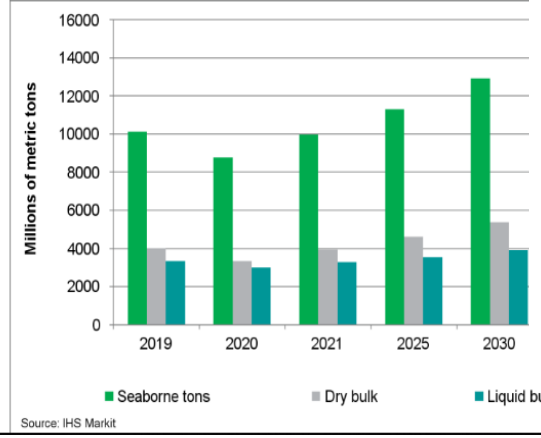
10 Jul 2020 - GTA Forecasting | Strategic Report

Bulk traded commodities are the dominant goods shipped by sea in terms of volume. Bulk trade accounted for 72.5% of seaborne 2019, a decline from 76.3% in 2005. The role of bulk trade will continue to diminish in the long run, contracting to 71.7% by 2035. I absolute terms, bulk volumes will climb significantly during our forecast period, from 7.3 billion metric tons in 2019 to 10.6 billion 2035.

In 2005–10, the seaborne trade volume was dominated by liquid bulk trade (42.4% in 2005). Because dry bulk shipments grew fast 6.2%) than liquid bulk shipments (with a CAGR of 1.7%) on average in the above period, dry bulk volume exceeded liquid bulk volu onwards. The gap between dry and liquid bulk volumes widened between 2011 and 2019. During this period, the CAGR of dry bulk was 3.6%, higher than the liquid bulk growth rate of 1.4% on average per year. Dry bulk accounted for 39.6% of total seaborne trac while liquid bulk was 32.9%. In the long run, the dry bulk share is likely to increase to 42.1% and the liquid bulk share is likely to sl 29.6%, by the end of our forecast period.

The share of containerized shipments in seaborne trade widened from 12.4% in 2005 to 13.5% in 2019. Our projection going forward is that the containerized trade share will slightly increase, reaching 13.7% by 2035. The general cargo share was at 13.7% in 2019, 2.6 percentage points higher than in 2005; it is expected to rise to 14.2% over the forecast period.

World bulk cargo trade



Source: IHS Markit © 2020 IHS Markit

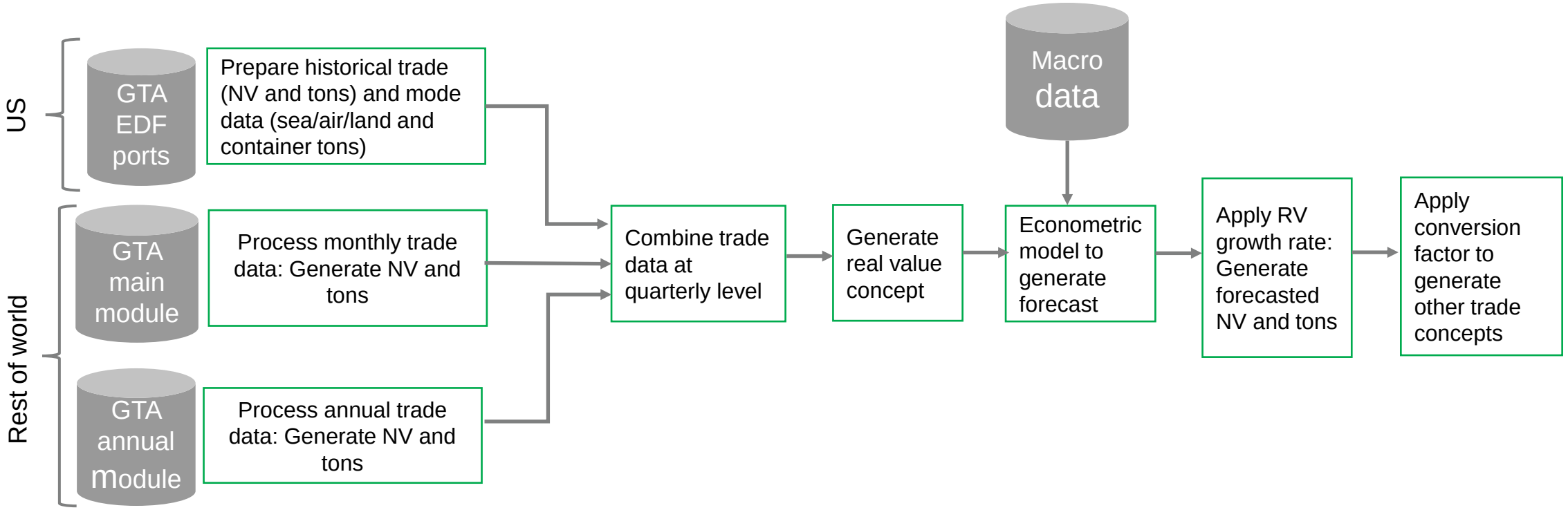
Trade in 2020 - the initial results and possible scenarios forward

22 May 2020 | Tomasz Brodzicki, Ph.D.

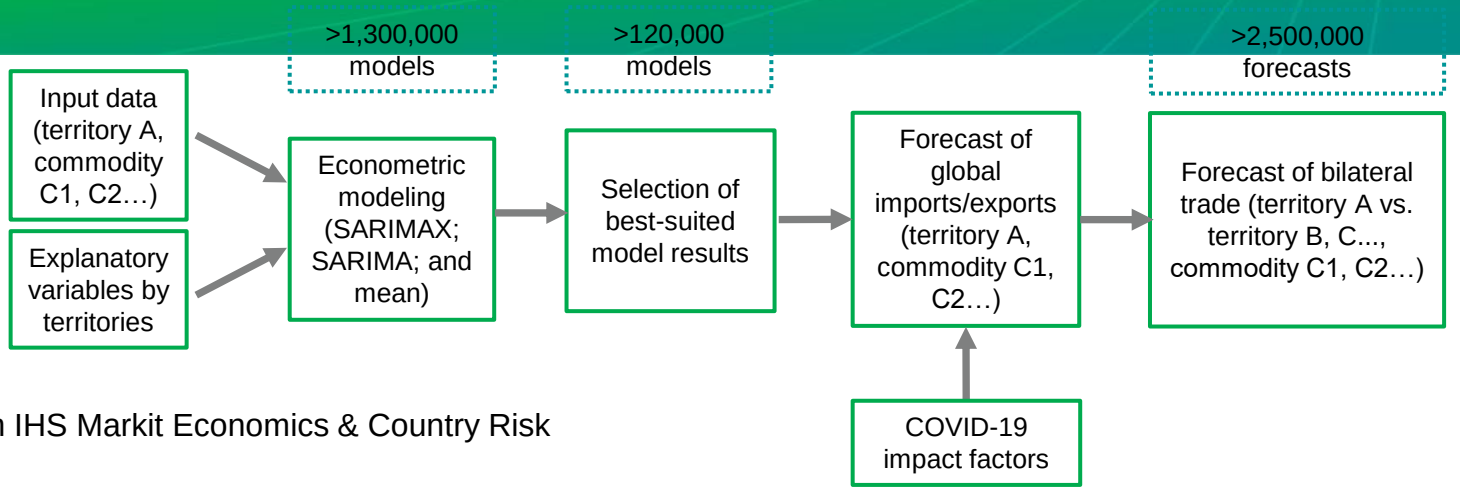
Key points:

- After an already sluggish 2019 a major upturn was expected in global trade in 2020; COVID-19 pandemic, the biggest black swan in a century, destroyed it
- World merchandise trade is expected to fall in real value by 13.6% in 2020 due to the COVID-19 pandemic
- A major recovery in trade is expected in 2021; its actual size will depend on the severity and the actual duration of the outbreak and the effectiveness of the policy responses worldwide
- The pandemic is affecting all regions; however, the severity of the impact is asymmetric with Europe being hit the hardest

GTA Forecasting: Data processing and modeling process flow



Forecasting real values



- Historical real values and a set of macroeconomic indicators from IHS Markit Economics & Country Risk Global Link Model are inputs into the GTA Forecasting model.

- The simultaneous modeling of all time-series using three different methods is used to compare, analyze and select the best-suited model results:
  - SARIMAX with PCA, based on the AIC criteria (best-fitted model selected, 2005-2019 training period)
    ~ 79% of total forecasted series
  - SARIMA (without PCA/external variables, the best-fitted model selected based on the AIC criteria, 2005-2019 training period) ~ 16% of total forecasted series
  - Mean (constant) model (for trade flows that are irregular and highly volatile) ~ 5% of total forecasted series

  More than 1,300,000 models are created, from which over 120,000 model results are selected, on the basis of which, through the reconciliation process, more than 2,500,000 forecasts are made.

- Forecasts are performed for each territory-commodity series by direction.
  - Based on a combination of all calculated series in a given commodity, territory-to-territory (bilateral) trade flows are then forecasted using import-export reconciliation process.

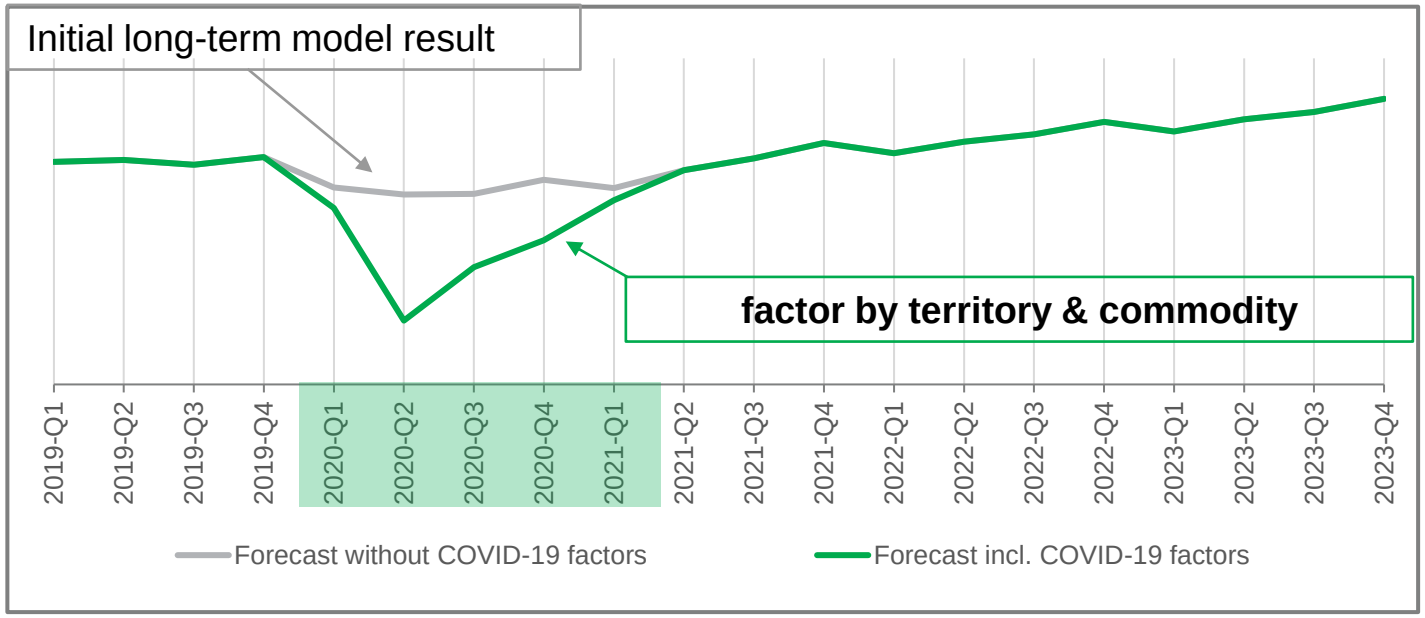
Explanatory variables

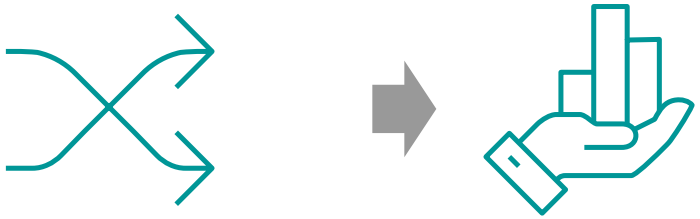
Exports	Imports
Real GDP rest of the world = real GDP world - real GDP domestic	Real GDP domestic
N/A	Real GDP per capita
Real effective exchange rate	Real effective exchange rate
Trade-weighted average tariff rate of rest of the world	Average tariff rate
Global crude oil price (Brent)	Global crude oil price (Brent)
Global natural gas price (Henry Hub)	Global natural gas price (Henry Hub)
Population of rest of the world	Population - domestic
Consumer Price Index	Consumer Price Index
Short-term nominal interest rate	Short-term nominal interest rate
Long-term nominal interest rate	Long-term nominal interest rate

Source: IHS Markit

Forecast adjustments to include COVID-19 impact

Import/export forecast by country/territory and commodity





Reconciliation
of import and export forecasts

Most recent data from the GTA & the new GTA Forecasting estimates

4 Dec 2020

Global exports – year-on-year (in %)

Year on year changes in the value of exports, Jan - Nov 2020

	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20
Brazil	-19.5	-1.0	**5.3**	-8.7	-14.8	-4.9	-3.5	-11.1	-10.1	-9.3	-1.2
Canada	**3.8**	**3.4**	-11.1	-37.0	-40.8	-21.0	-14.1	-11.4	-5.6	-6.9	:
China	-32.8	**8.2**	-6.8	**3.5**	-3.3	**0.3**	**7.2**	**9.5**	**9.8**	**11.3**	:
EU (External Trade)	-2.3	-2.7	-7.6	-30.7	-31.5	-10.0	-8.9	-8.7	:	:	:
India	-2.1	**3.1**	-34.5	-61.0	-35.7	-12.4	-10.0	-12.5	**6.0**	:	:
Japan	-2.8	-1.1	-9.3	-19.1	-26.0	-26.1	-17.9	-14.3	-2.8	**2.9**	:
Russia	**3.5**	-10.9	-16.3	-33.3	-34.8	-23.3	-27.6	-32.6	-15.2	:	:
South Korea	-6.6	**3.6**	-1.7	-25.6	-23.8	-10.9	-7.1	-10.3	**7.3**	-3.8	:
United Kingdom	0.0	-7.4	-17.5	-29.6	-35.2	-21.2	-17.1	-16.0	-16.6	:	:
United States	-0.4	**1.6**	-9.4	-29.0	-36.3	-23.8	-15.4	-14.6	-9.5	-7.0	:

Source: IHS Markit Global Trade Atlas. * Data for China using equal split between Jan & Feb 2020 due to the reporting.

Global imports - year-on-year (in %)

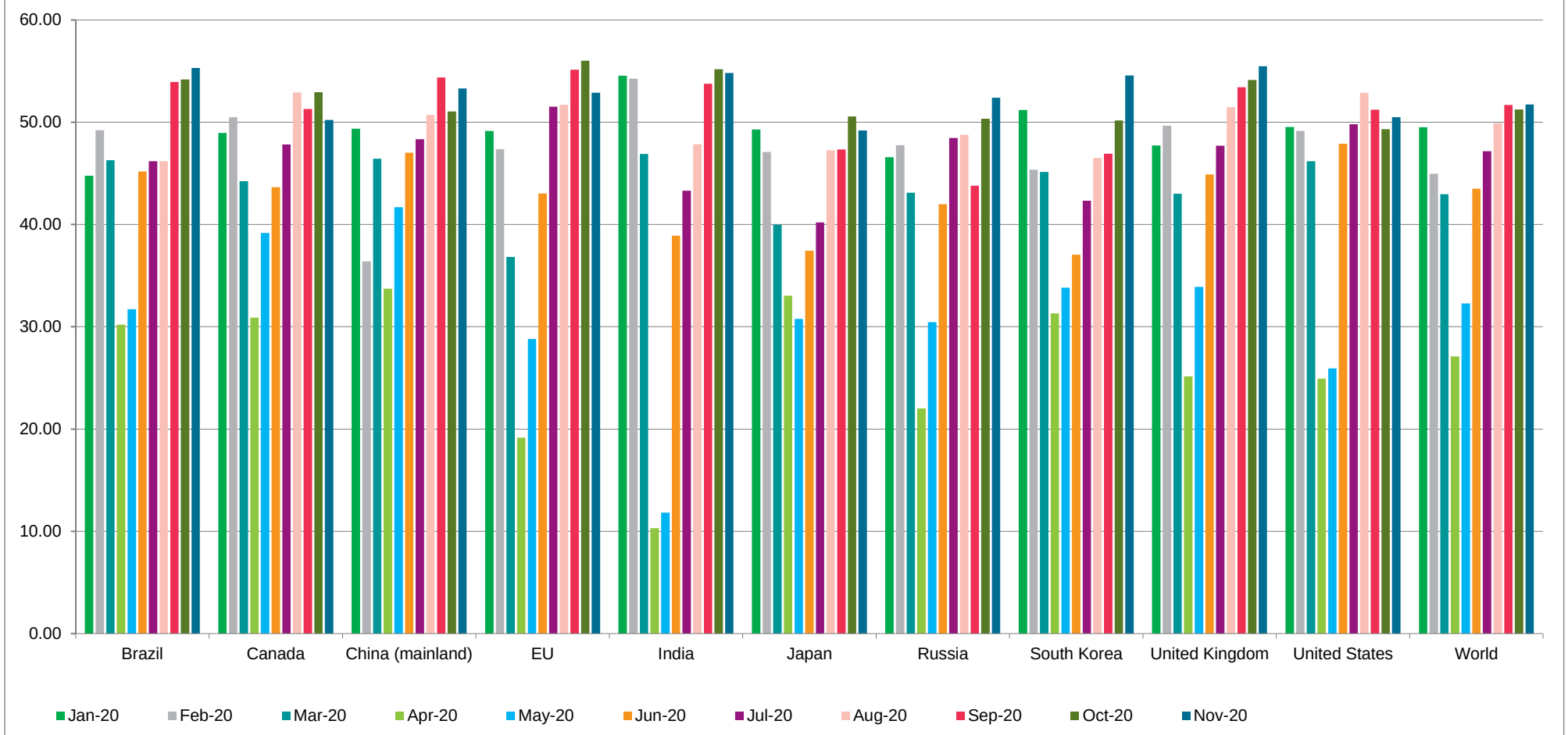
Year on year changes in the value of imports, Jan - Nov 2020

	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20
Brazil	-1.3	**5.0**	**10.5**	-14.8	-10.5	-19.8	-35.2	-28.5	-25.5	-27.3	-2.6
Canada	-3.6	-3.6	-11.6	-33.5	-38.7	-15.7	-9.1	-9.2	-1.6	-2.8	:
China	-16.1	**14.2**	-0.5	-13.8	-16.4	**3.3**	-0.9	-2.0	**13.6**	**5.2**	:
EU (External Trade)	-3.1	-6.8	-12.3	-25.4	-27.7	-13.0	-13.7	-10.1	:	:	:
India	-0.7	**3.5**	-28.2	-59.7	-51.0	-48.1	-29.6	-26.0	-19.6	:	:
Japan	-3.8	-13.6	-2.4	-3.5	-24.0	-13.7	-21.0	-20.5	-15.9	-10.7	:
Russia	**1.6**	-2.3	-4.2	-22.1	-15.7	-4.6	-13.9	-10.9	-2.9	:	:
South Korea	-5.4	**1.0**	-0.4	-15.8	-20.6	-11.1	-11.6	-15.8	**1.6**	-5.6	:
United Kingdom	-7.6	-10.8	-16.2	-34.5	-32.8	-8.5	-17.2	-14.2	**0.4**	:	:
United States	-4.0	-4.0	-6.5	-20.9	-25.7	-13.2	-8.2	-5.6	-0.2	**0.0**	:

Source: IHS Markit Global Trade Atlas. * Data for China using equal split between Jan & Feb 2020 due to the reporting.

PMI new export orders adjusted for manufacturing

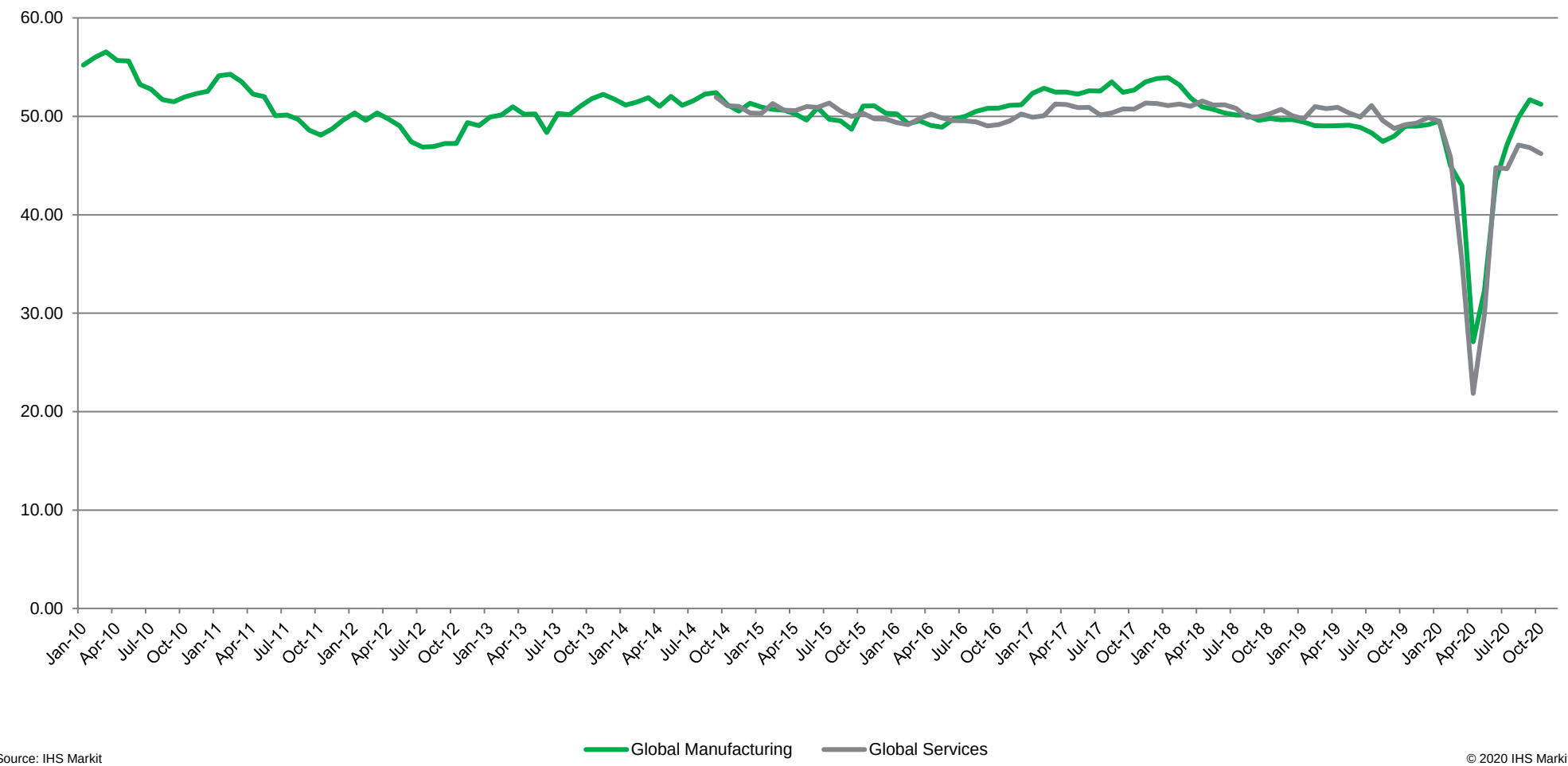
IHS Markit PMI new export orders adjusted for manufacturing, Jan - Nov 2020



Source: IHS Markit

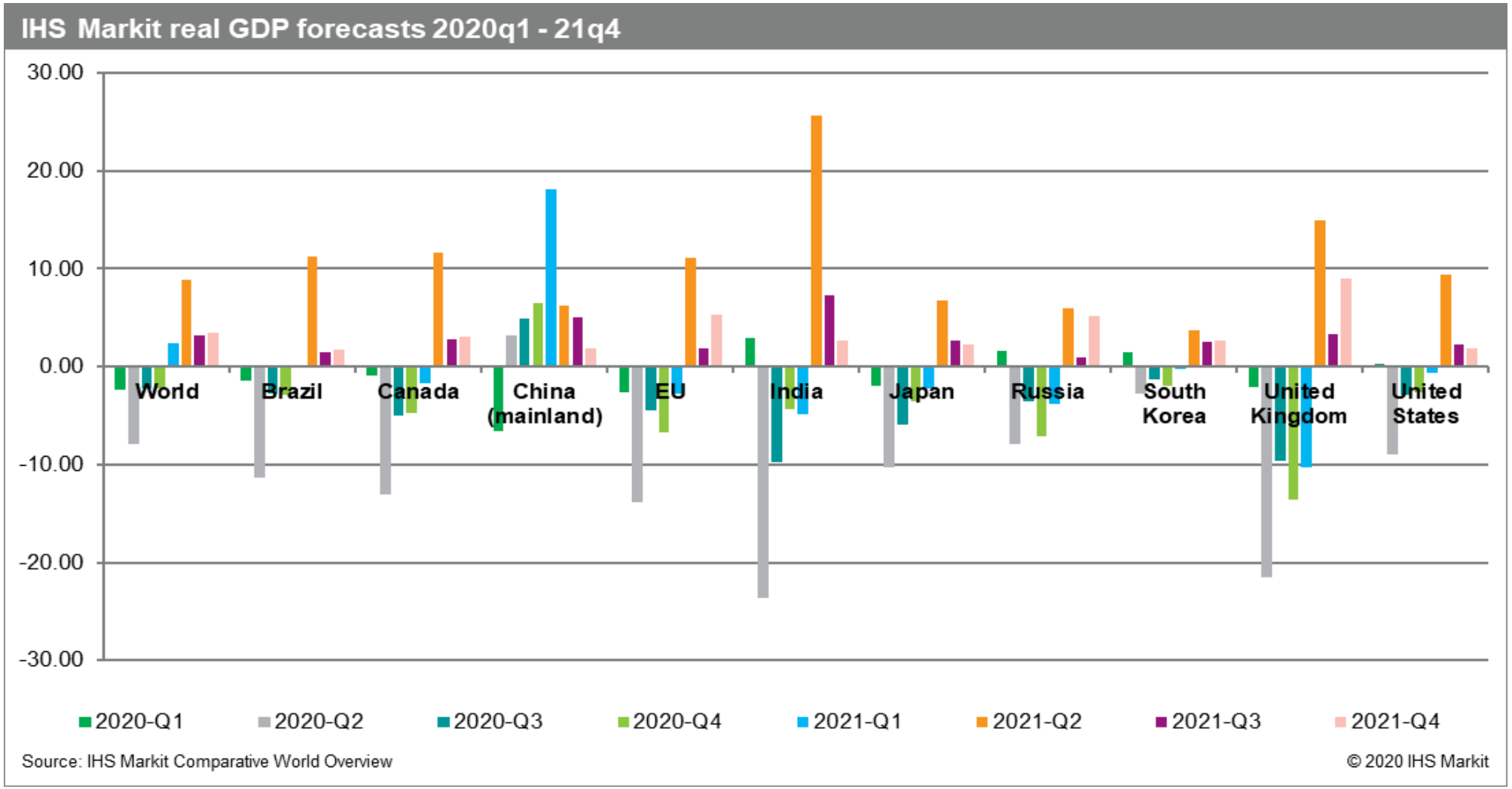
PMI new export orders adjusted for global manufacturing vs. services

PMI new export orders for global manufacturing and services, 2000M1 - 2020M11



Source: IHS Markit

GLM short-term forecasts for key economies



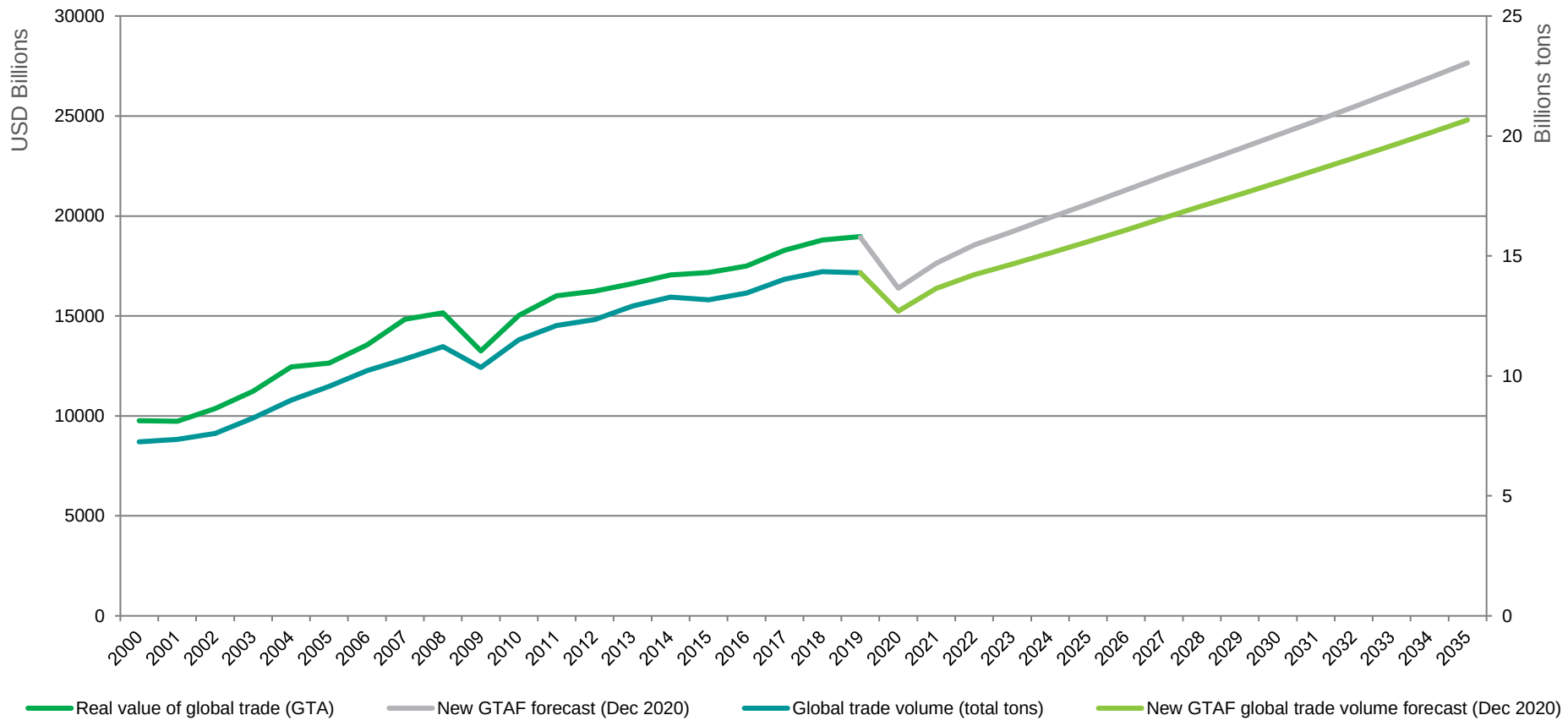
Real value of global trade 2000-19 & new GTA Forecasting estimates

The real value of global trade in comparison to 2000-08 & 2011-19 trends and the GTA Forecasting predictions from Feb 2020 and Dec 2020 (USD billions)

Source: IHS Markit GTA Forecasting

Real value and volume of global trade

Historical real value and volume of global trade (2000-19) and their GTAF forecasts (Dec 2020)



Source: IHS Markit GTA Forecasting

GTA Forecasting new release (4 Dec 2020)

- **The GTA Forecasting model shows that global merchandise trade is likely to go down in 2020 to USD 16,382 billion or -13.5% year-on-year**
- We predict a year-on-year increase in the real value of global trade by 7.6% in 2021 and 5.2% in 2022.
- **The predicted CAGR for the period 2021-2030 equals 3.5%** (and has not changed in comparison to the last release)
- **We expect the global trade volume in 2020 to go down to 12.7 billion metric tons and to increase to 13.6 billion metric tons in 2021**. Thus, we expect a decrease of approx. 11.2% in the global volume of trade in 2020 and the recovery in the forthcoming years with growth rates of 7.5% year-on-year in 2021 and 4.1% in 2022
- The forecasted **CAGR for global trade volume stands now at 3.2% for the period 2021-30**

GTA Forecasting new release (4 Dec 2020)

- The adverse impact of COVID-19 on global trade volume is larger than the impact of the global financial crisis of 2008-09 at least in the short run
- In an updated autumn report, the WTO forecasted a 9.2% decline in the volume of world merchandise trade this year, followed by a 7.2% rise in 2021. IMF projections from October show a decrease of -10.4% in 2020 and a growth of 8.3% in 2021. Therefore, the **GTA Forecasting model predicts a bit sharper decline in 2020 followed by an increase in global trade volume in 2021 in between the forecasts of WTO and IMF - closer to the projection of the WTO though.**
- Overall, the estimated contraction in global trade the entire 2020 is closer to the so-called "optimistic scenario" of the WTO from April

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