

Challenges to the Trade System: The Potential Quantitative Impact of Trends in Global Trade Policy

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Roadmap of the talk...

- Update on global trade developments
- Overview of drivers of trade growth and trade's contribution to growth
- WTO Global Trade Model baseline development
- Trade policy scenarios
- China 2030 rebalancing
- Concluding remarks

Real time indicator...slower trade growth..



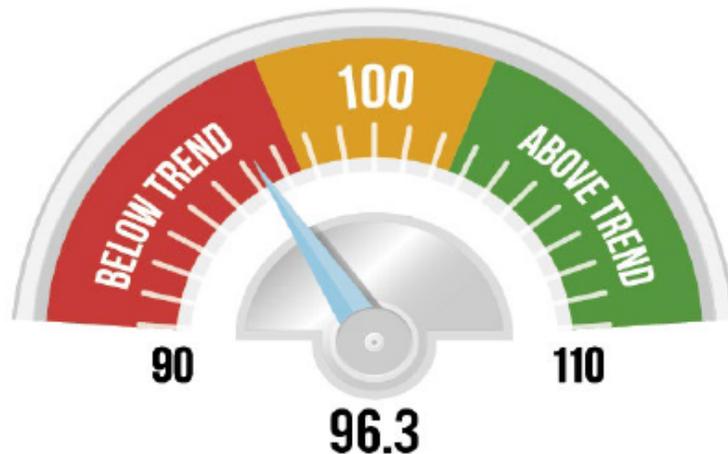
World Trade Outlook Indicator

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World Trade Outlook Indicator

96.3

(Index, trend = 100)



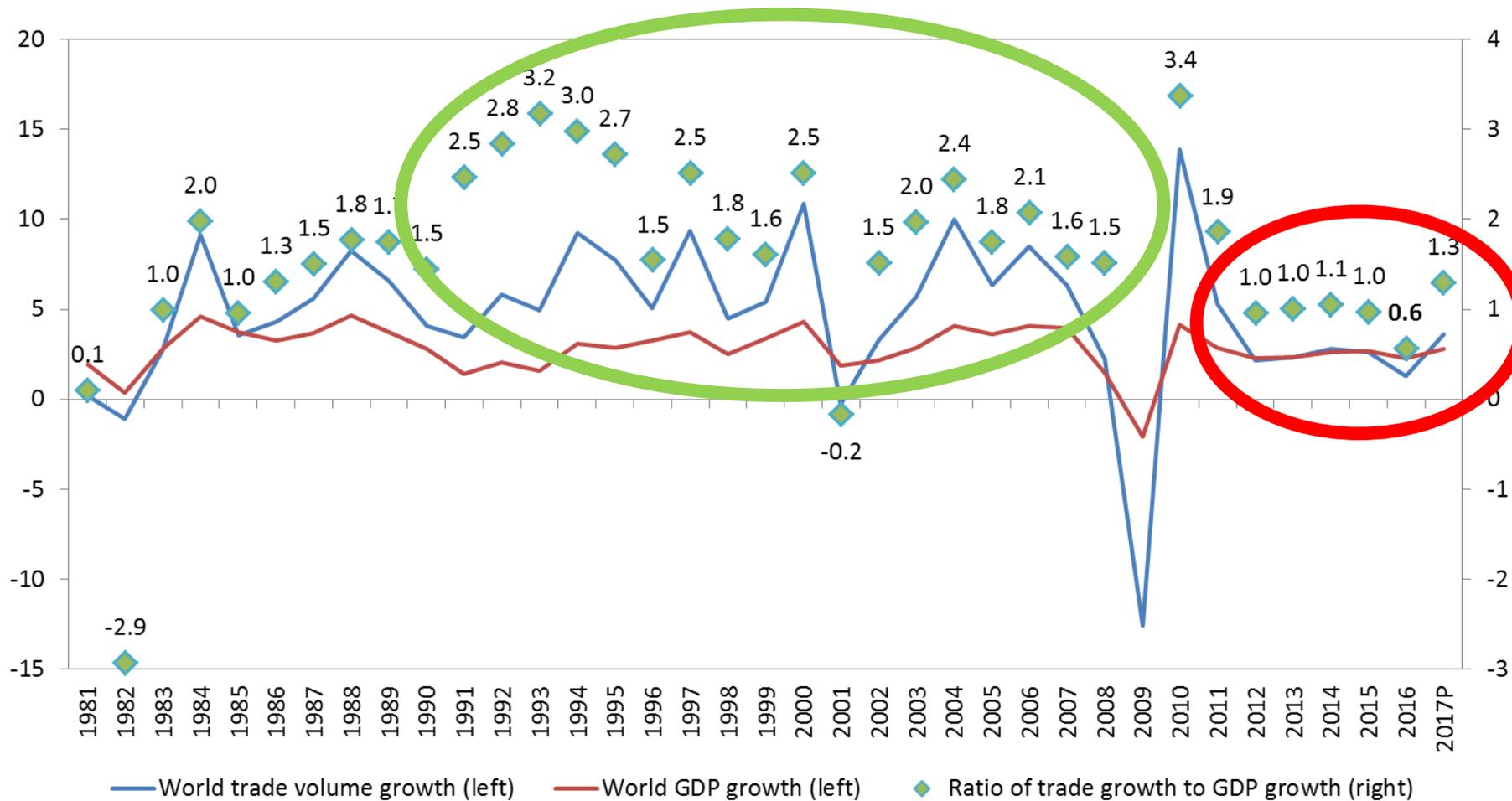
Drivers of trade

	Level of Index	Direction of change
Merchandise trade volume (Q3)	101.9	↑
Export orders	95.3	↓
International air freight (IATA)	96.8	↓
Container port throughput	100.3	→
Automobile production and sales	92.5	↓
Electronic components	88.7	↓
Agricultural raw materials	94.3	↓

WTOI points to slower trade growth into first quarter of 2019



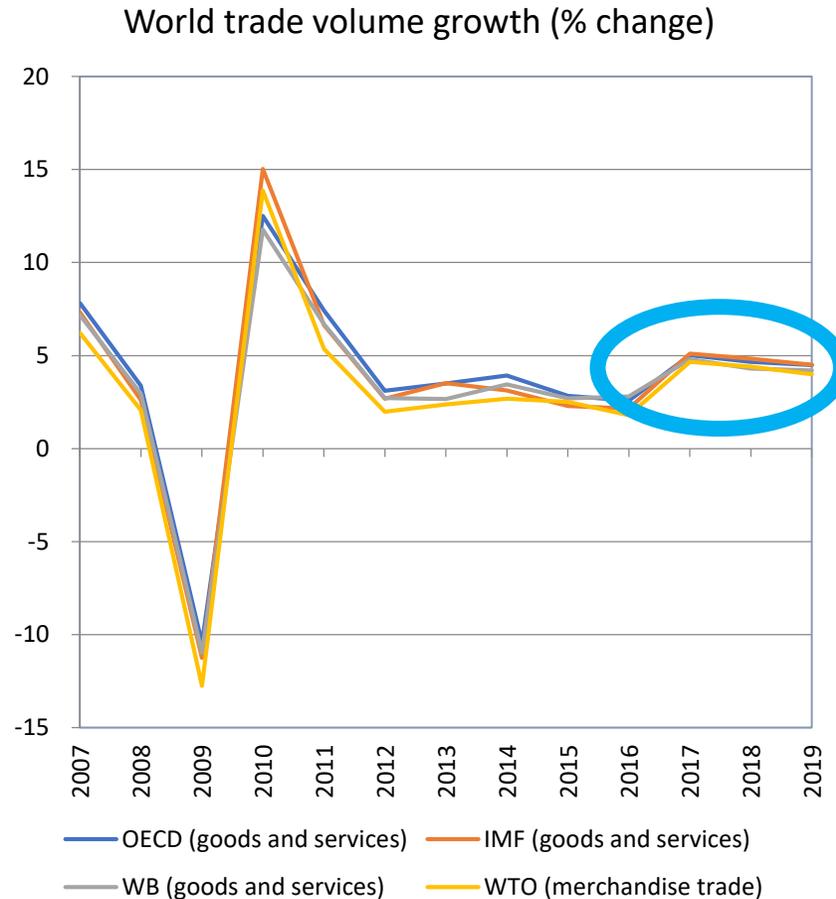
Ratio: merchandise trade volume growth to real GDP growth, world, 1981-2017



Source: WTO (2017), % change and ratio.



There is broad agreement across international organizations on the short term outlook for world trade



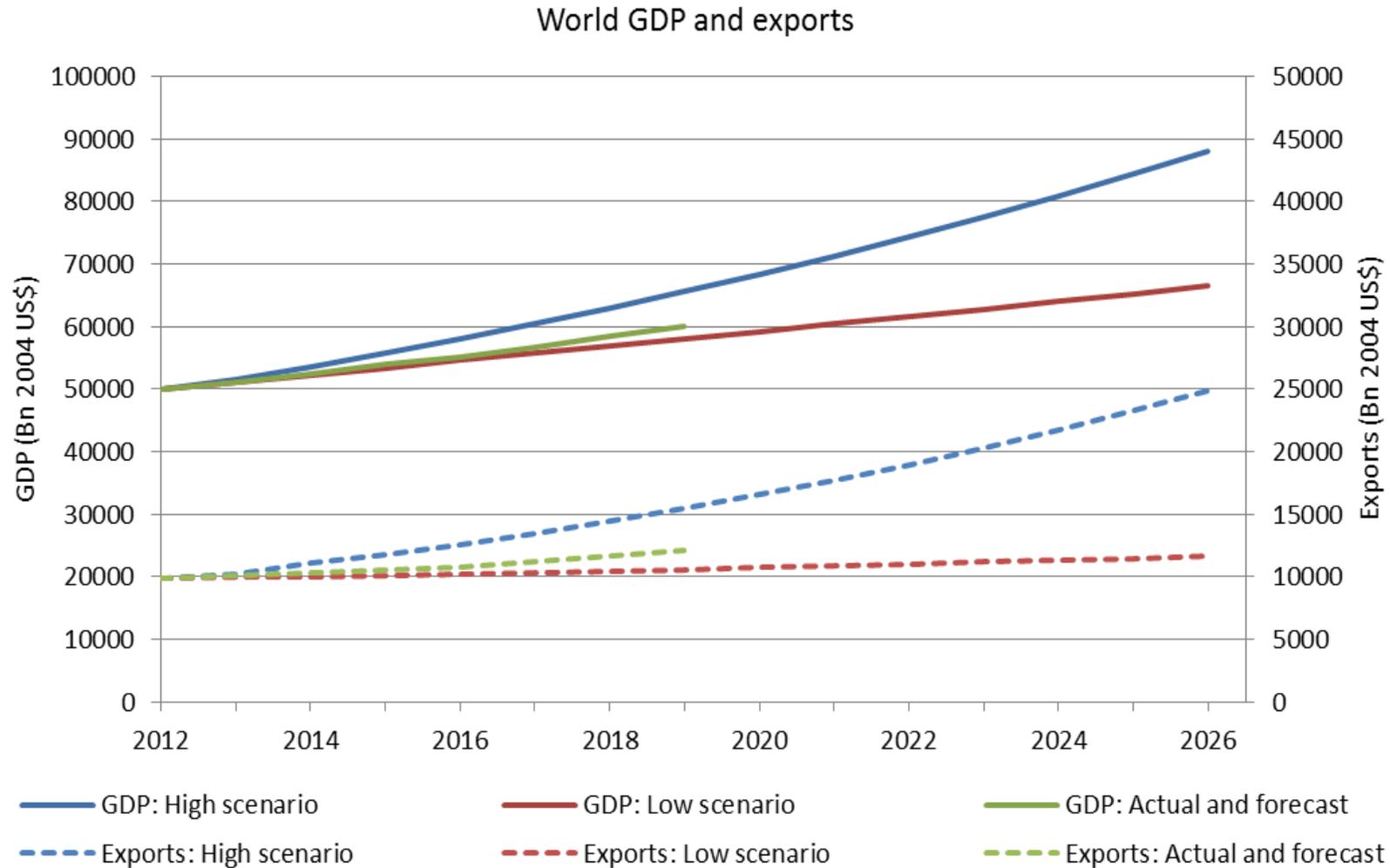
- Trade volume data are not directly comparable across organizations due to different methodologies (e.g. merchandise vs. goods and services.)
- Despite these differences, there is broad agreement on the short term outlook for trade.
- WTO expects merchandise trade volume growth to moderate from 4.7% in 2017 to 4.4% in 2018 and 4.0% in 2019 (April press release).
- This is an improvement from 2011-2016 when trade grew 2.8% on average, but it is still below the 4.8% average since 1990.
- ***Rising trade tensions and increased use of trade measures make forecasts for trade and output less certain. Downside risks are rising.***

Trade and Growth – a lot has happened in the past 35 years

- Integration has slowed compared to rapid pace of “long 1990’s”.
- Multilateral, regional and unilateral liberalization in this period exceptional. Rapid trade growth and integration.
- But best measures of trade growth suggest openness policies accounted for roughly 25% of that growth. Most growth was due to fundamental and reasonably synchronized macro growth, falling trade costs, technology.
- Counts of “protectionist” measures have not yet translated into significant “measured rise” in trade costs.
- Trade growth driven by fundamental macro factors, uncertainty?
- But recovered in 2017, despite all the rhetoric. But 2018 and 2019 show worrying signs.
- 2018 saw a number of major trade policy actions between WTO members.
- What might be impact?
 - Short term not likely overly dramatic on macro indicators unless accompanied by other policy. Lessons from Great Depression and Great Recession.
 - Sector and Trade shifting.
 - Longer term? Some large countries could slowly fall behind global technology frontier.

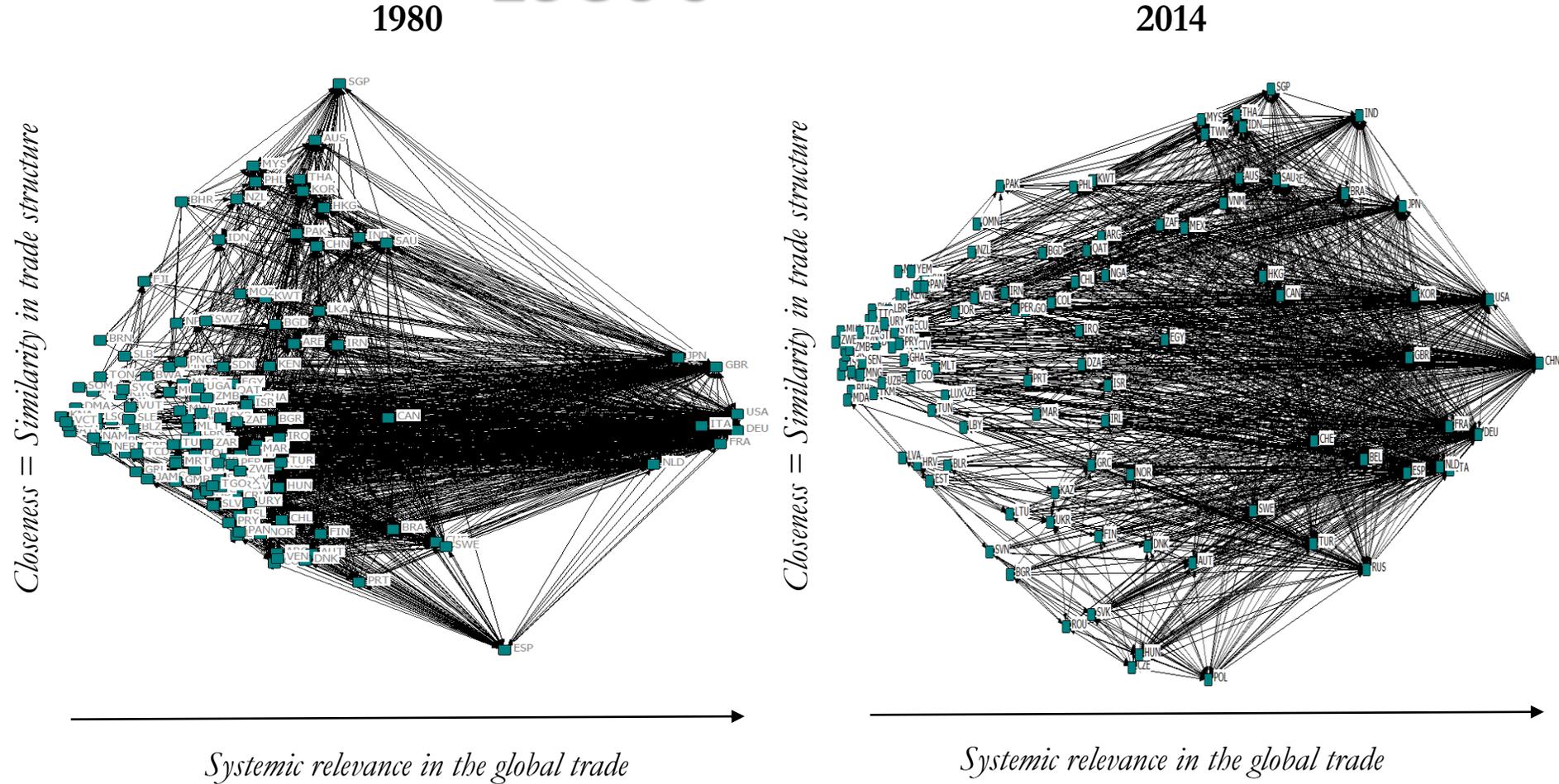


Projected GDP and exports 2012-26



Source: Fontagné, Fouré and Keck (2017), WTO (2016) and WTO (2013), in billion constant 2004 US\$.

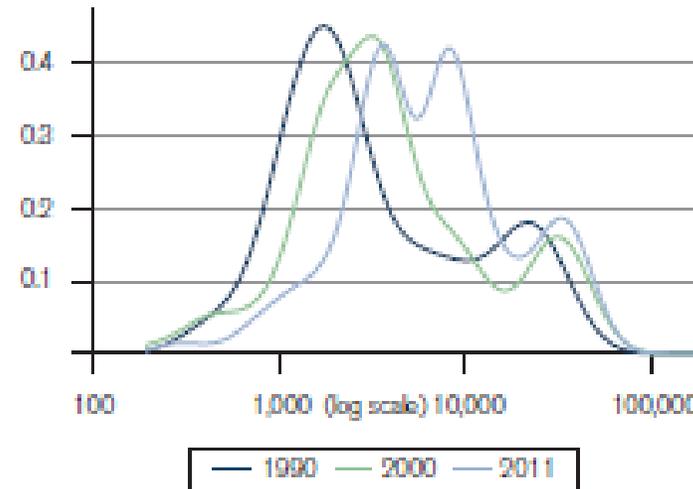
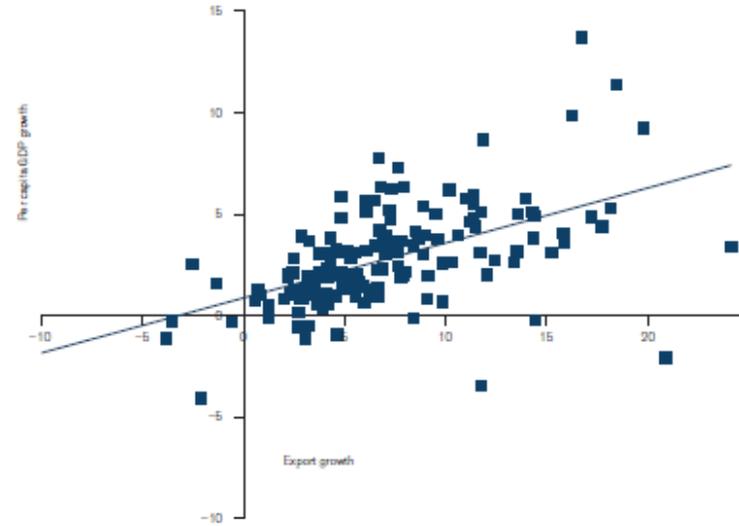
Global trade integration has evolved significantly since the 1980's





Trade and GDP growth

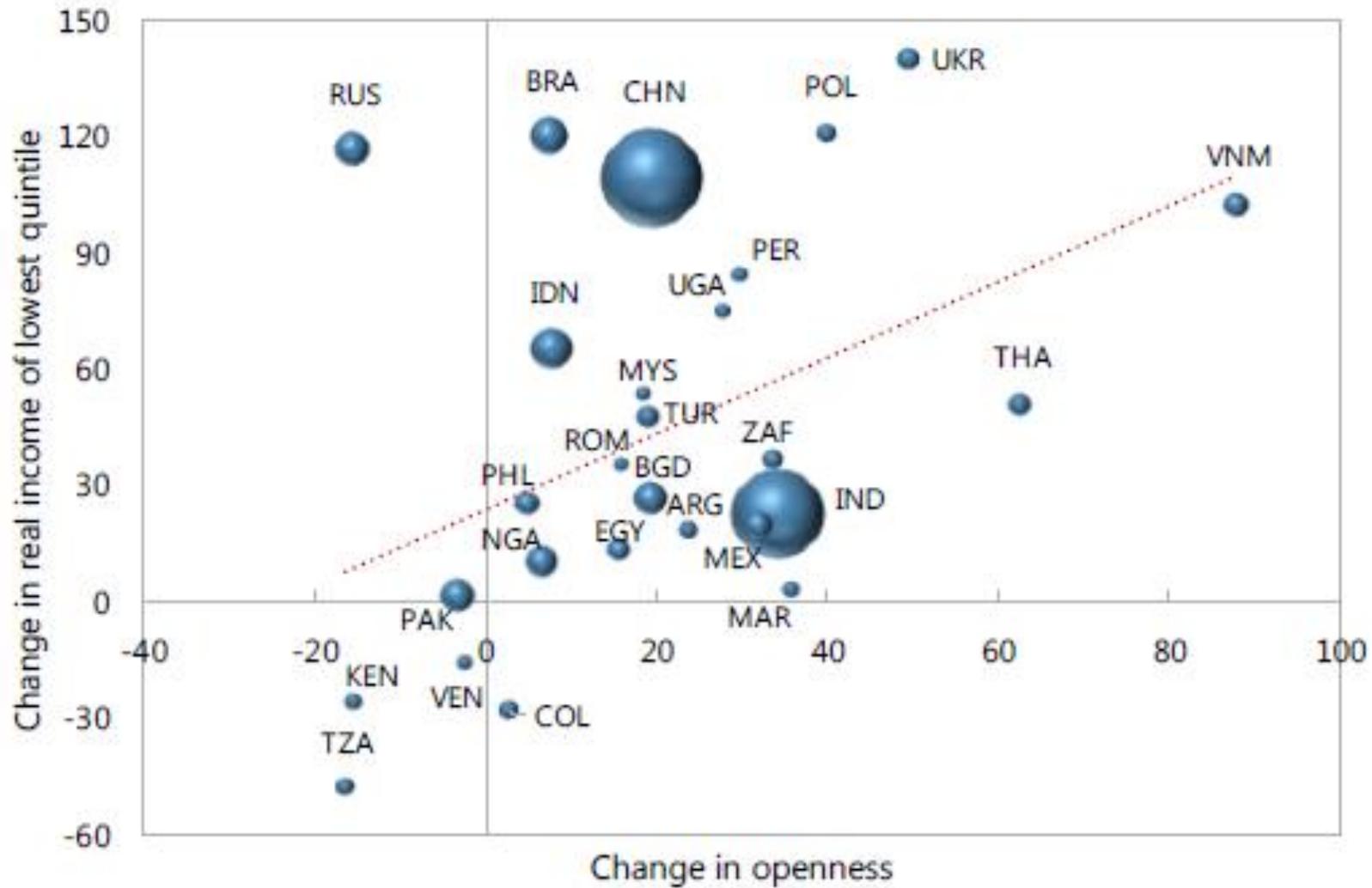
- GDP growth has moved hand in hand with integration in the world economy.
- Although this relationship does not show causation, we know trade increases growth through various channels.
- Kernel density of real GDP at PPP weighted by population shows evidence of convergence.



Source: WTO (2014)



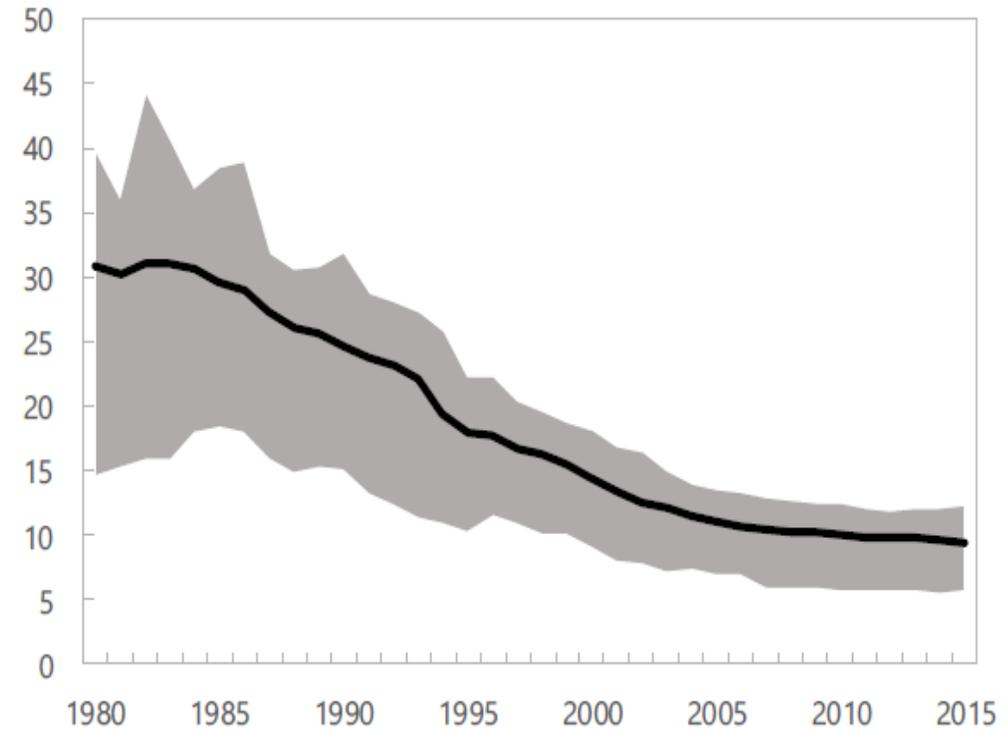
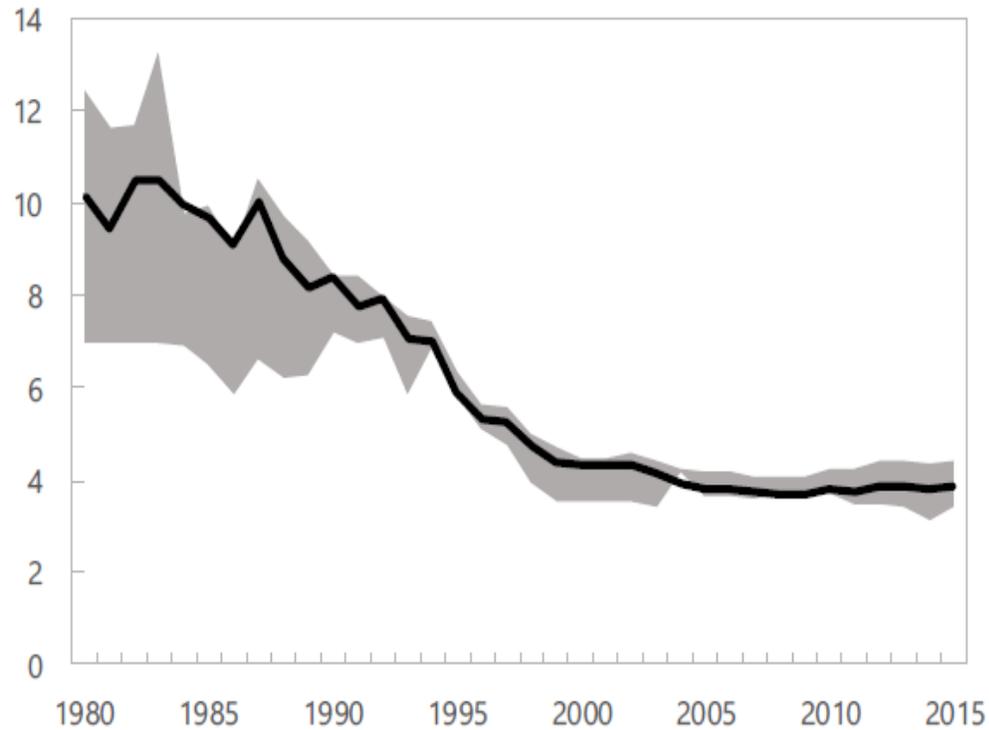
Trade and poverty



Source: IMF, WB and WTO (2017), based on Lakner-Milanovic (2013), World Panel Income Distribution dataset and World Development Indicators.

Tariffs have come down but reform stalled since the early 2000s

Tariffs in advanced economies (left) and emerging market and developing economies (right)



US trade costs and trade growth, Novy, 2009 and USITC

Table 1: U.S. Bilateral Trade Costs

Partner country	Tariff equivalent τ in %		
	1970	2000	Percentage change
CANADA	50	25	-50
GERMANY	95	70	-26
JAPAN	85	65	-24
KOREA	107	70	-35
MEXICO	96	33	-66
UK	95	63	-34
<i>Plain average</i>	88	54	-38
<i>Trade-weighted average</i>	74	42	-44

All numbers are in percent and rounded off to integers.

Countries listed are the six biggest U.S. export markets as of 2000.

Computations based on equation (8).

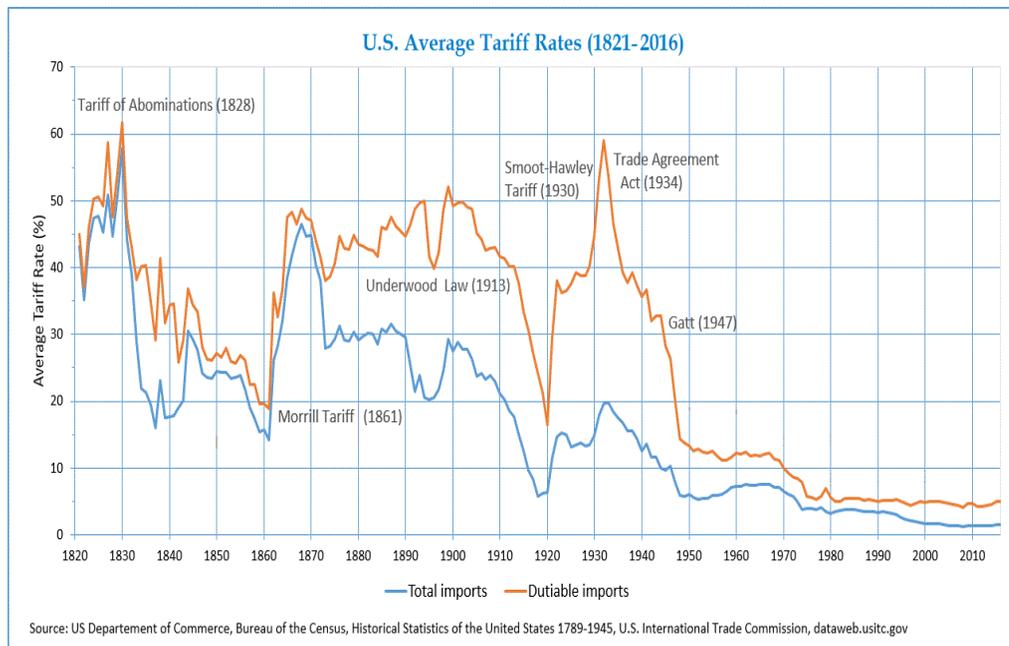
Table 2: Decomposing the Growth of U.S. Bilateral Trade

Partner country	Growth in trade	Contribution of the growth in income	Contribution of the decline in bilateral trade costs	Contribution of the decline in multilateral resistance	Total
CANADA	609	65.3	+ 42.3	- 7.6	= 100
GERMANY	526	67.1	+ 36.4	- 3.5	= 100
JAPAN	580	79.3	+ 28.3	- 7.6	= 100
KOREA	832	92.3	+ 33.5	- 25.8	= 100
MEXICO	944	54.8	+ 57.4	- 12.2	= 100
UK	578	55.9	+ 43.8	+ 0.3	= 100

Growth between 1970 and 2000. All numbers in percent.

Countries listed are the six biggest U.S. export markets as of 2000.

Computations based on equation (16). Also see the Technical Appendix.



Some current in-process estimates of trade costs following Head & Reiss (2001).

$$\text{ave}_{ijjs} = \tau_{ijjs} - 1 = \left(\frac{X_{ijjs} X_{jjs}}{X_{iis} X_{jjs}} \right)^{\frac{1}{2(\sigma-1)}} - 1$$

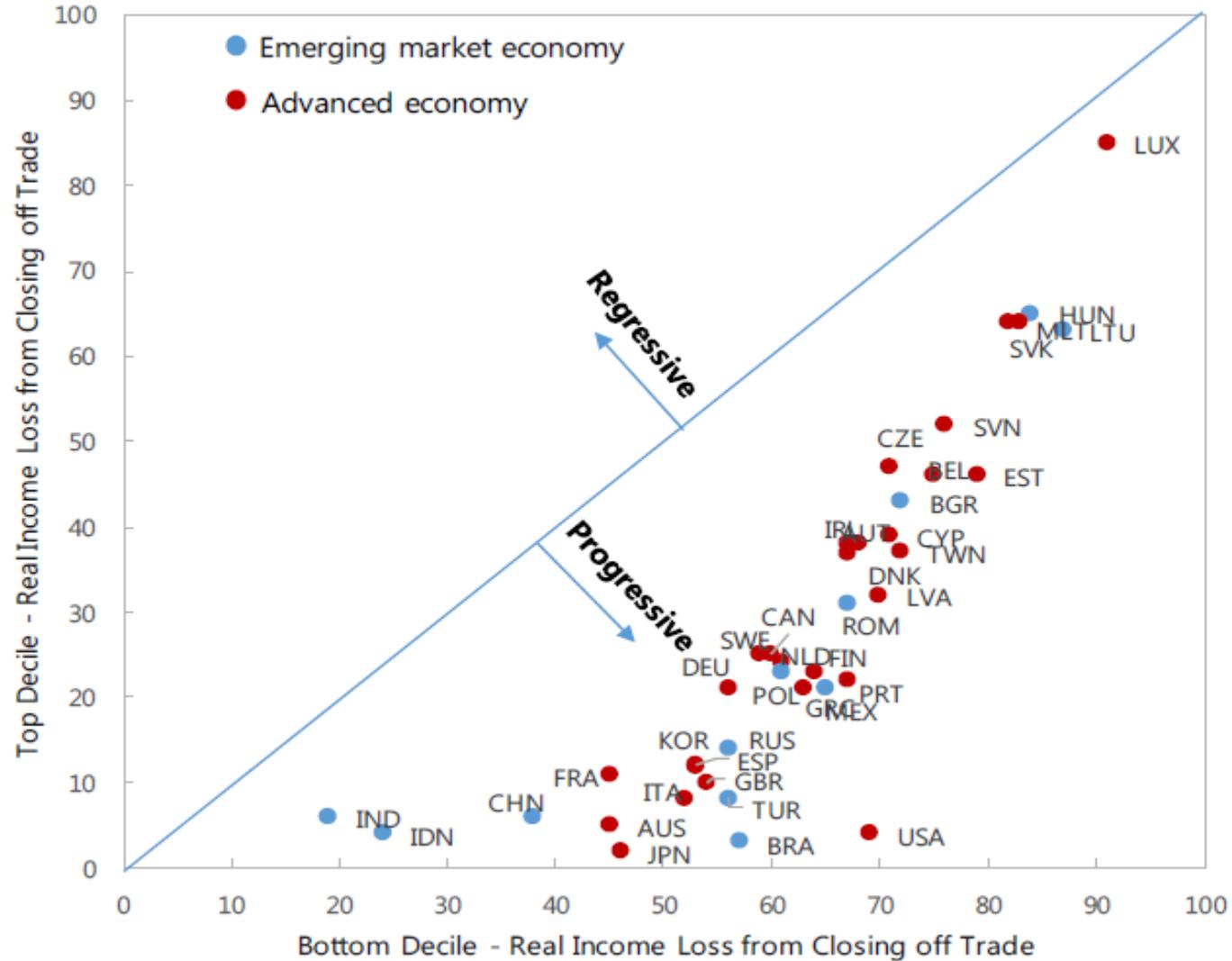
Table 1 Ad valorem trade costs using Head and Ries methodology and GTAP10 data

Sectors	Average	Developed-developed	Deveveloped-developing	Developing-developing
<i>Broad sectors</i>				
Agriculture	163%	125%	178%	220%
Manufacturing	104%	89%	112%	140%
Natural resources	148%	138%	153%	161%
Services	202%	182%	229%	271%
<i>Detailed services sectors</i>				
Air transport	100%	84%	121%	166%
Business services nec	172%	163%	187%	215%
Communication	202%	178%	237%	298%
Construction	290%	254%	321%	427%
Electricity	202%	152%	314%	260%
Financial services nec	160%	139%	238%	327%
Gas manufacture, distribution	251%	224%	260%	314%
Insurance	156%	137%	189%	195%
PubAdmin/Defence/Health/Educ	275%	251%	307%	394%
Recreation and other services	201%	181%	230%	285%
Sea transport	70%	58%	83%	113%
Trade	228%	217%	236%	309%
Transport nec	174%	153%	195%	240%
Water	322%	294%	349%	409%

Table 2 Contribution to explained variation of trade costs using Shapley decomposition

Sector	Grav ity	Credit- contract	Comm languan	Logs eff	Customs procs	Bband subscr	GDP per capita	Unexpla ined
<i>Broad sectors</i>								
Agriculture	18%	4%	1%	14%	1%	7%	5%	51%
Manufacturing	22%	4%	2%	18%	2%	8%	6%	39%
Natural resources	13%	1%	0%	5%	0%	2%	3%	75%
Services	11%	7%	1%	14%	2%	7%	9%	49%
<i>Detailed services sectors</i>								
Air transport	5%	8%	1%	10%	2%	9%	10%	56%
Business services nec	6%	2%	0%	12%	1%	5%	10%	65%
Communication	5%	4%	0%	8%	2%	6%	7%	69%
Construction	10%	5%	2%	5%	1%	5%	6%	66%
Electricity	12%	5%	0%	0%	2%	8%	1%	71%
Financial services nec	6%	7%	0%	8%	1%	9%	12%	58%
Gas man, distribution	8%	6%	0%	3%	1%	13%	9%	60%
Insurance	5%	4%	0%	10%	0%	4%	8%	68%
PAdmin/Def/Health/Educ	3%	3%	1%	8%	0%	1%	5%	79%
Recreation and other services	4%	8%	0%	12%	1%	11%	8%	57%
Sea transport	9%	6%	1%	12%	1%	8%	10%	52%
Trade	5%	8%	0%	9%	1%	14%	14%	49%
Transport nec	10%	12%	1%	8%	1%	8%	7%	54%
Water	4%	10%	0%	5%	1%	11%	9%	60%

Hypothetical loss from closing off trade: Bottom and top deciles



Some basic trade facts...

- Global trade 2017 \$22 Trillion - \$17 goods and \$5 services
- US-China Trade 3%
- Global automobile trade 8%
- Total trade under WTO MFN – 75%, of which $\frac{3}{4}$ is MFN = 0, trade under preferential tariffs is 25%.

Further escalation in trade tensions could affect confidence and the global economic significantly

- Simulations indicate that a combination of higher import tariffs by the United States and retaliatory measures by its trading partners **could take a toll on growth, particularly if they were to reduce confidence and thus investment**
- A sustained escalation of trade actions would also **risk undermining the multilateral WTO framework**. The consequences would be dire and would disrupt global supply chains, severely reduce the chances of further reduction in global trade barriers, and hurt consumers—especially low-income households—by raising the price of imported goods
- **Excessive global imbalances would also remain unaddressed**
- **KEEP IN MIND SIMULATIONS ARE NOT FORECASTS/PREDICTIONS.**
 - They illustrate the likely direct economic effects of specific trade policy measures.
 - They can be overwhelmed by other economic forces affecting trade – see 3rd bullet on slide 6.

Various scenarios have been assessed by IOs and academics

- The results depend on specific tariff scenarios, the design of the economic model, and the potential for spillover effects into the macro economy (business and consumer confidence).
- Traditional direct tariff analysis typically shows results ranging from 0.1% to over 2.2% global GDP losses compared to a baseline growth scenario.
- These results will depend crucially on size and extent of tariff scenarios (larger tariffs, more sectors and countries affected, larger impacts) and whether or not the models include effects such as productivity losses (Melitz) to consumer variety losses (love of variety models).
- If analysis includes examining potential effects on investment (business confidence) the effects can increase quite substantially.
- Models typically cannot account for potential interaction between real and financial sectors, thus if tariff policies reinforce potential adverse effects from existing financial sector risks the effects could be bigger.

Some scenario simulations – Methodology: Model and baseline

- WTO Global Trade Model to project the impact of possible future trade policy events
- Recursive dynamic computable general equilibrium (CGE) model, suitable to calculate detailed effects at the country and sectoral level of trade policy measures
- Takes into account the intermediate production and trade linkages between sectors, capital accumulation, and international investment flows.
- GTAP10p2 baseline data from 2014 (aggregated to 18 regions, 15 sectors, 5 production factors) are projected to 2035 using:
 - UN projections on population and labor force growth
 - IMF projections on economic growth per capita until 2022
 - OECD SSP2 projections on economic growth per capita from 2023
 - Own WTO-calculations on various types of structural change
 - Differential productivity growth across sectors
 - Adjusting savings rates based on lifecycle determinants
 - Changing preferences of private households away from food and manufacturing towards services
 - Falling trade costs as a result of new digital technologies

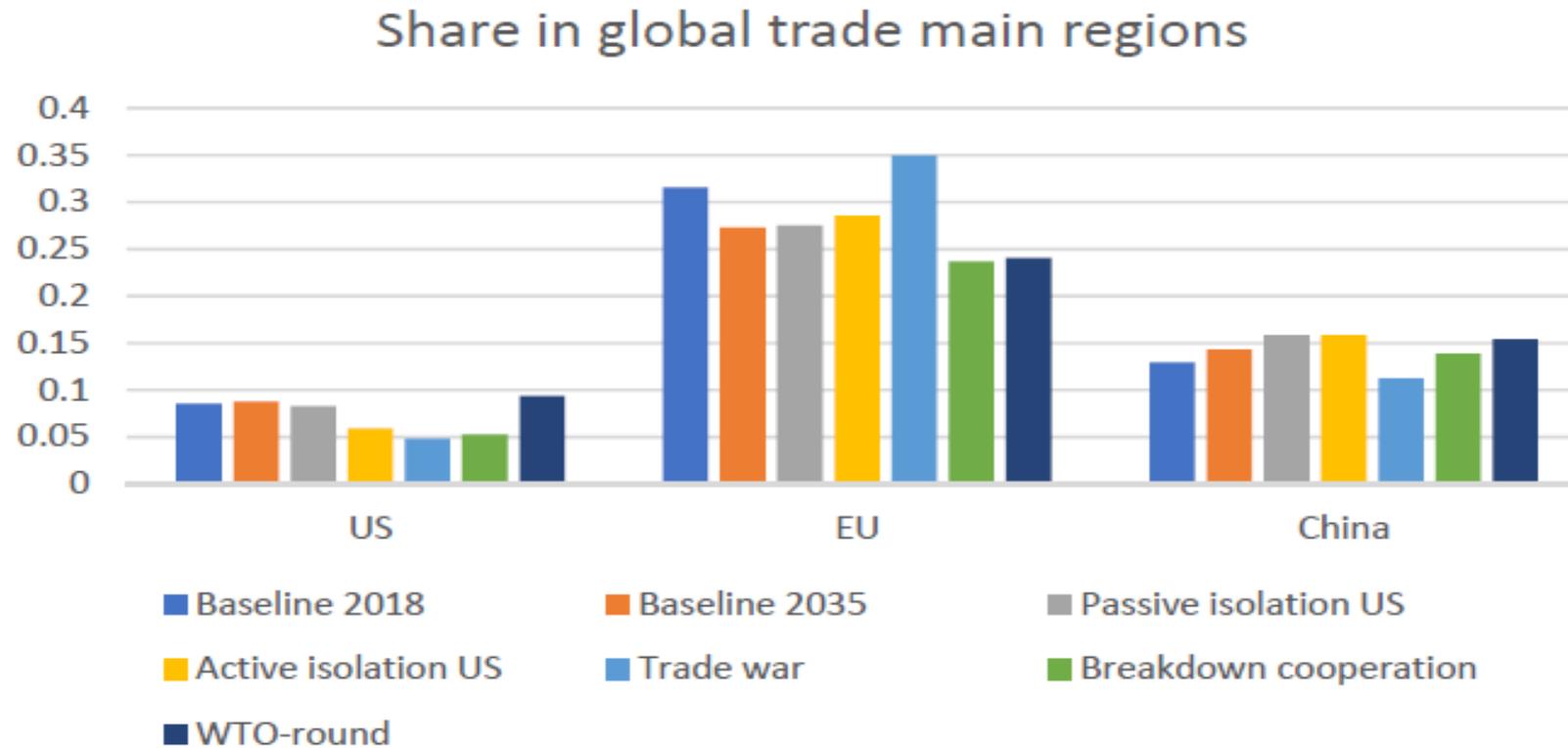
Some hypothetical scenarios around trade conflict...remember illustrating certain economic forces at play – NOT A FORECAST.

- Generate baseline of global economy for next 20 years approximately (until 2035), taking into account the potential impact of digital technologies on trade costs
- Construct five scenarios
 - ① Passive isolation of the US: other regions conclude (deep) free trade agreements (FTAs) expected to reduce the role of the US in global trade
 - ② Active isolation by the US: on top of scenario (1), the US raises import tariffs with trading partners responding
 - ③ Global trade war: instead of signing new deep FTAs, the measures taken by the US spread to other countries. Tariffs increase globally between different regions
 - ④ Breakdown of international trade cooperation (nationalism): on top of scenario (3), main deep FTAs such as the EU and ASEAN also break down
 - ⑤ Comeback of multilateralism: conclusion of new round of negotiations within the WTO (unrelated to previous scenarios)

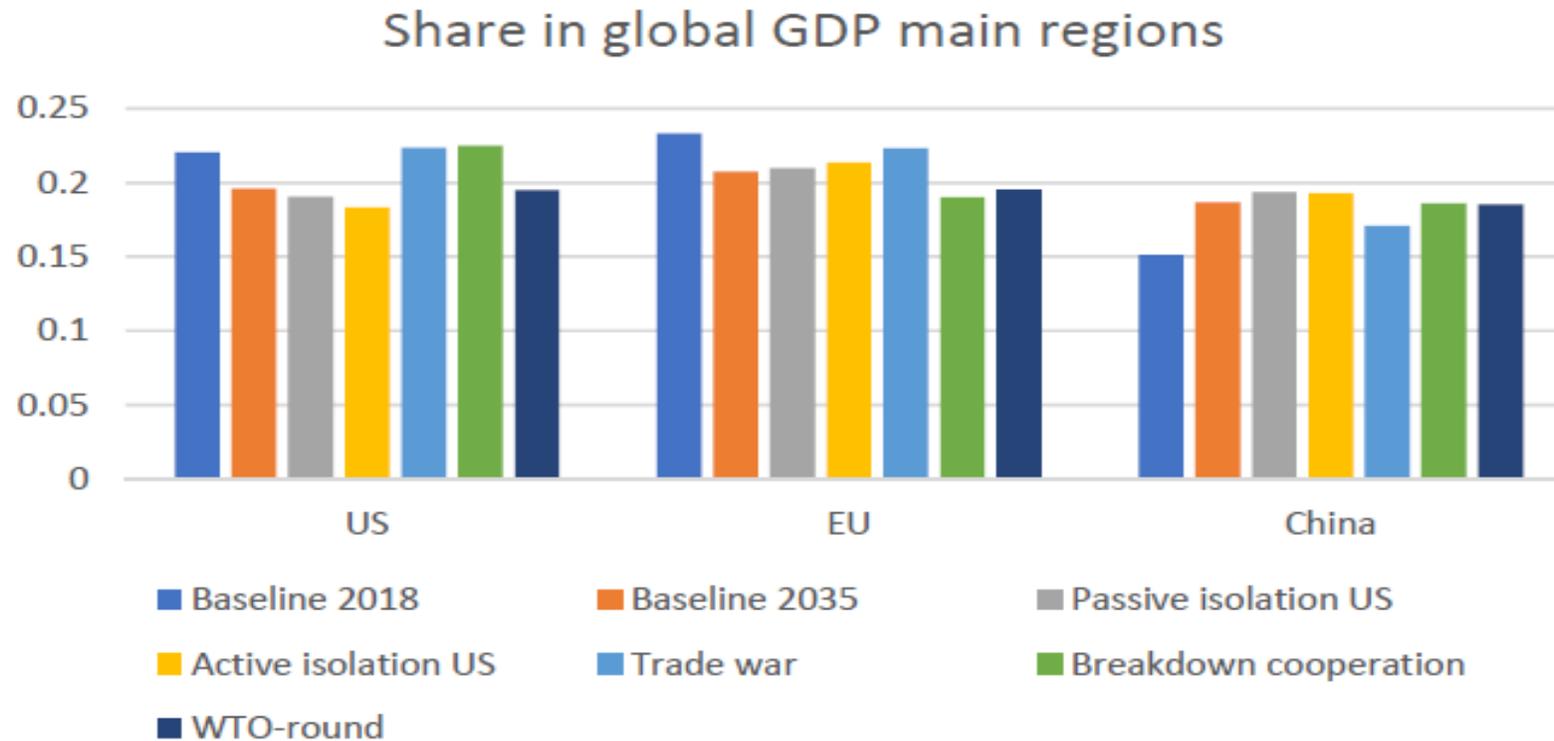
5 scenarios – all hypothetical

- ① Passive isolation of the US: other regions conclude deep FTAs
 - Japan-EU, Japan-ASEAN, ASEAN-EU, China-EU, Mercosur-EU
 - Tariff liberalization and reduction in non-tariff barriers based on gravity estimates of the impact of deep FTAs in Egger et al. (2015, EP)
- ② Active isolation of the US
 - On top of Scenario (1), the US raises tariffs by 25 pp on imports from China and 10 pp on other regions' imports. Other regions retaliate proportionally
- ③ Global trade war
 - All regions (except ASEAN and EU) raise import tariffs from the current cooperative to the non-cooperative level based on Nicita et al. (2018, JPE)
- ④ Breakdown of international trade cooperation
 - On top of Scenario (3), tariffs are also increased within EU and ASEAN
 - Non-tariff barriers rise based on deep FTA estimates in Egger et al. (2015) with separate estimate for effect of disappearance of the EU
- ⑤ Resurrection of multilateralism: conclusion of new WTO negotiation round
 - Full implementation of Trade Facilitation Agreement
 - Reduction agricultural and manufacturing tariffs, based on PIIE (2009)
 - Reduction non-tariff barriers services by 10%, based on PIIE (2009)

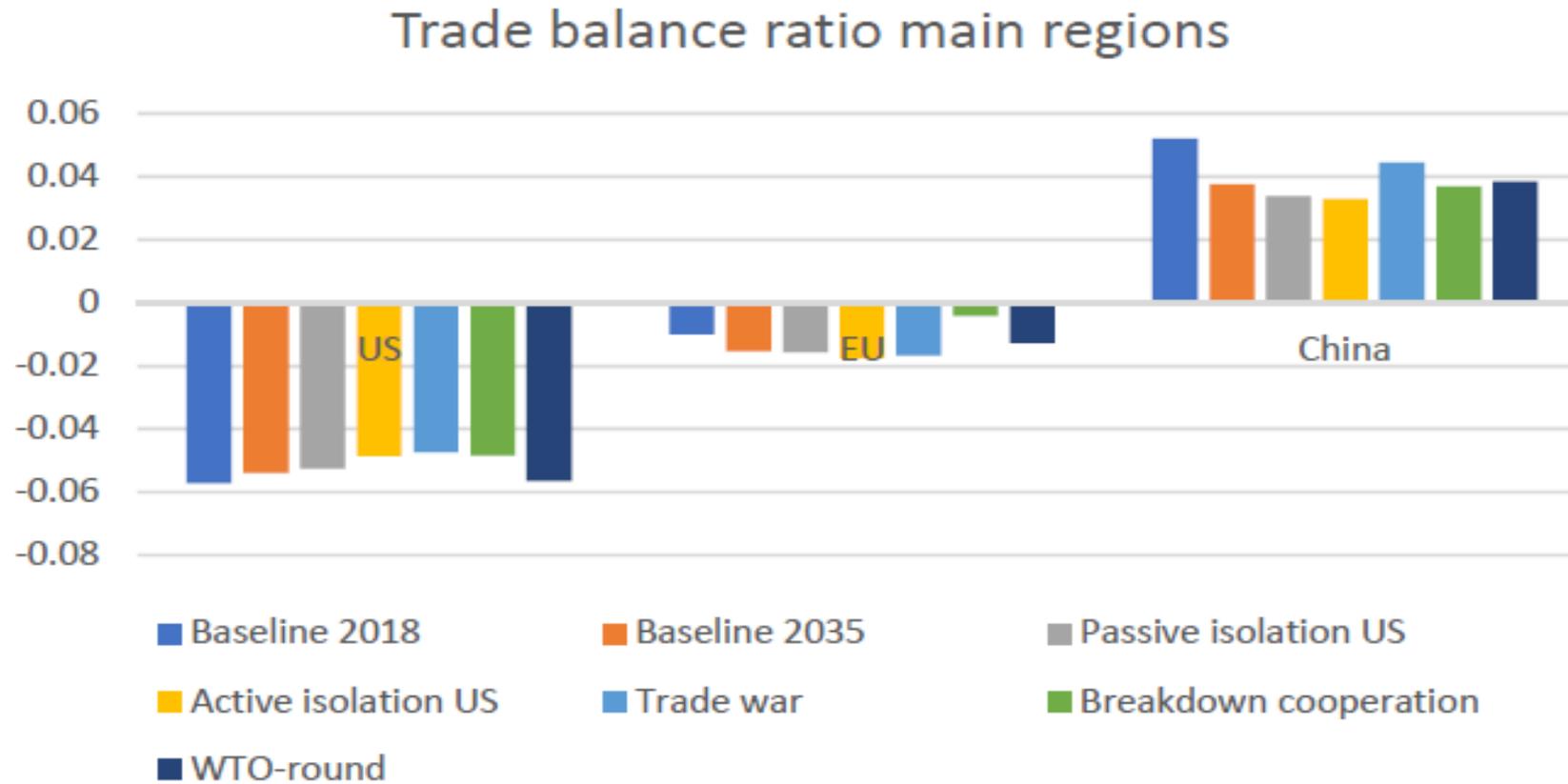
Simulated global trade impacts



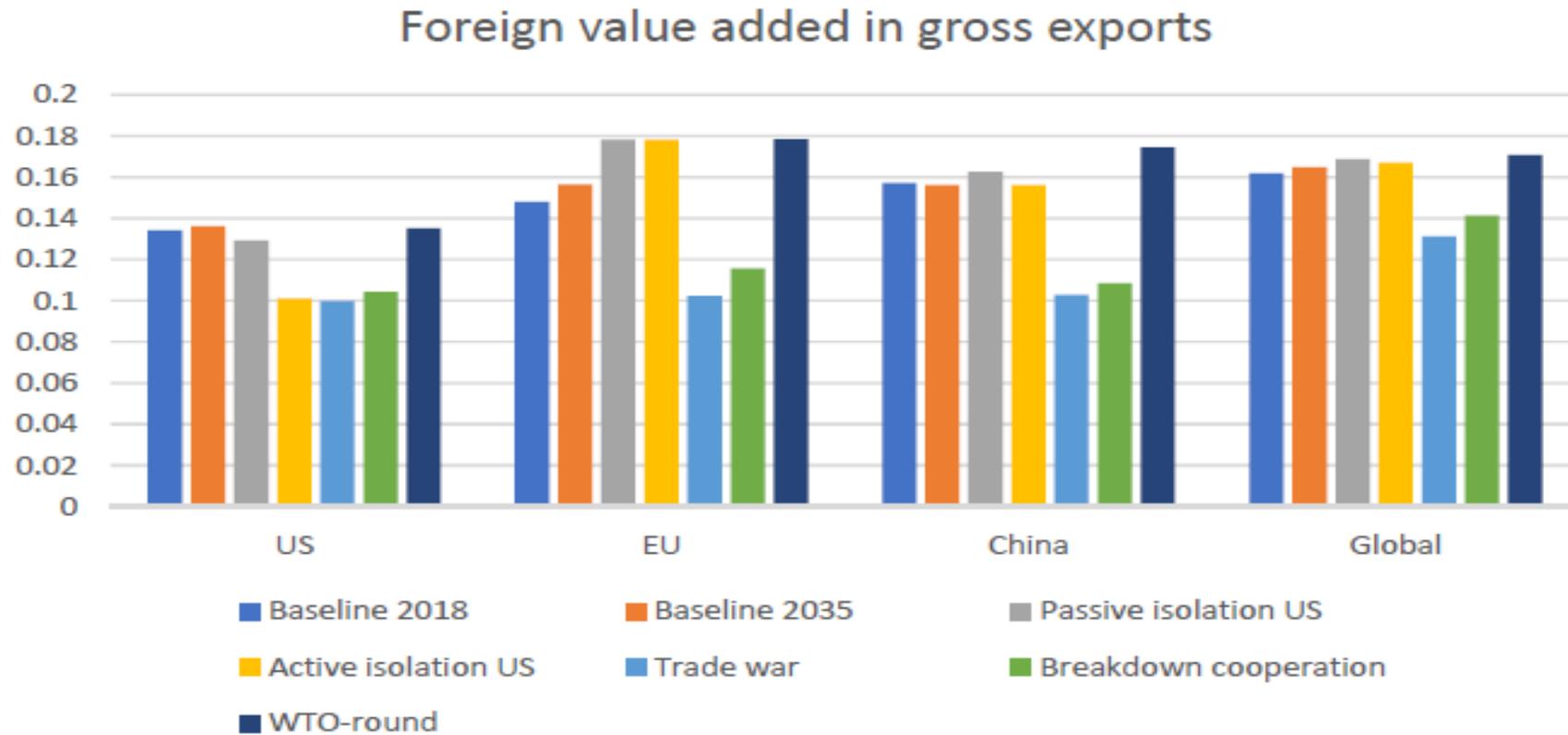
Share in global GDP



Trade balance as share of GDP



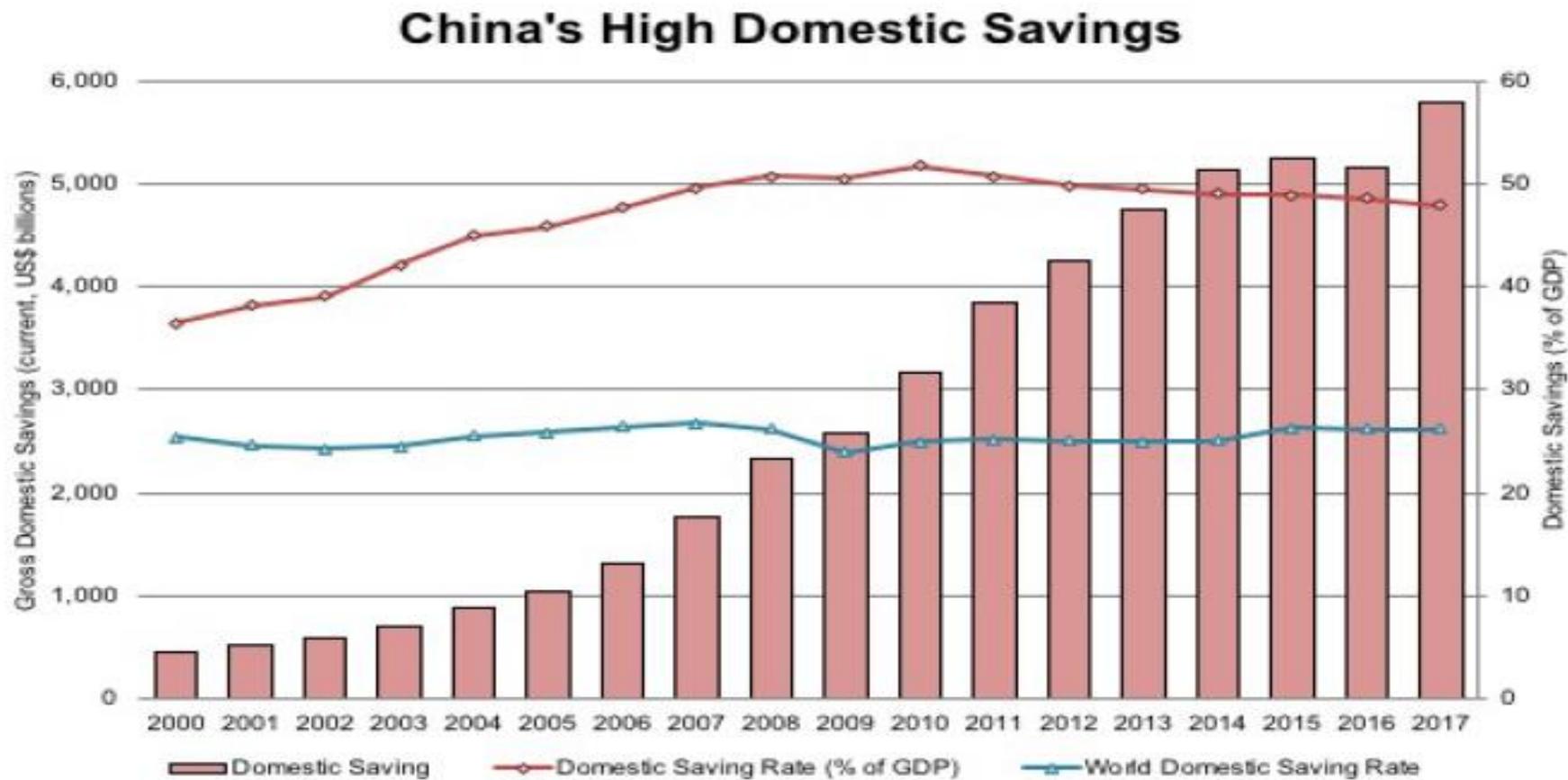
Foreign value added in gross exports



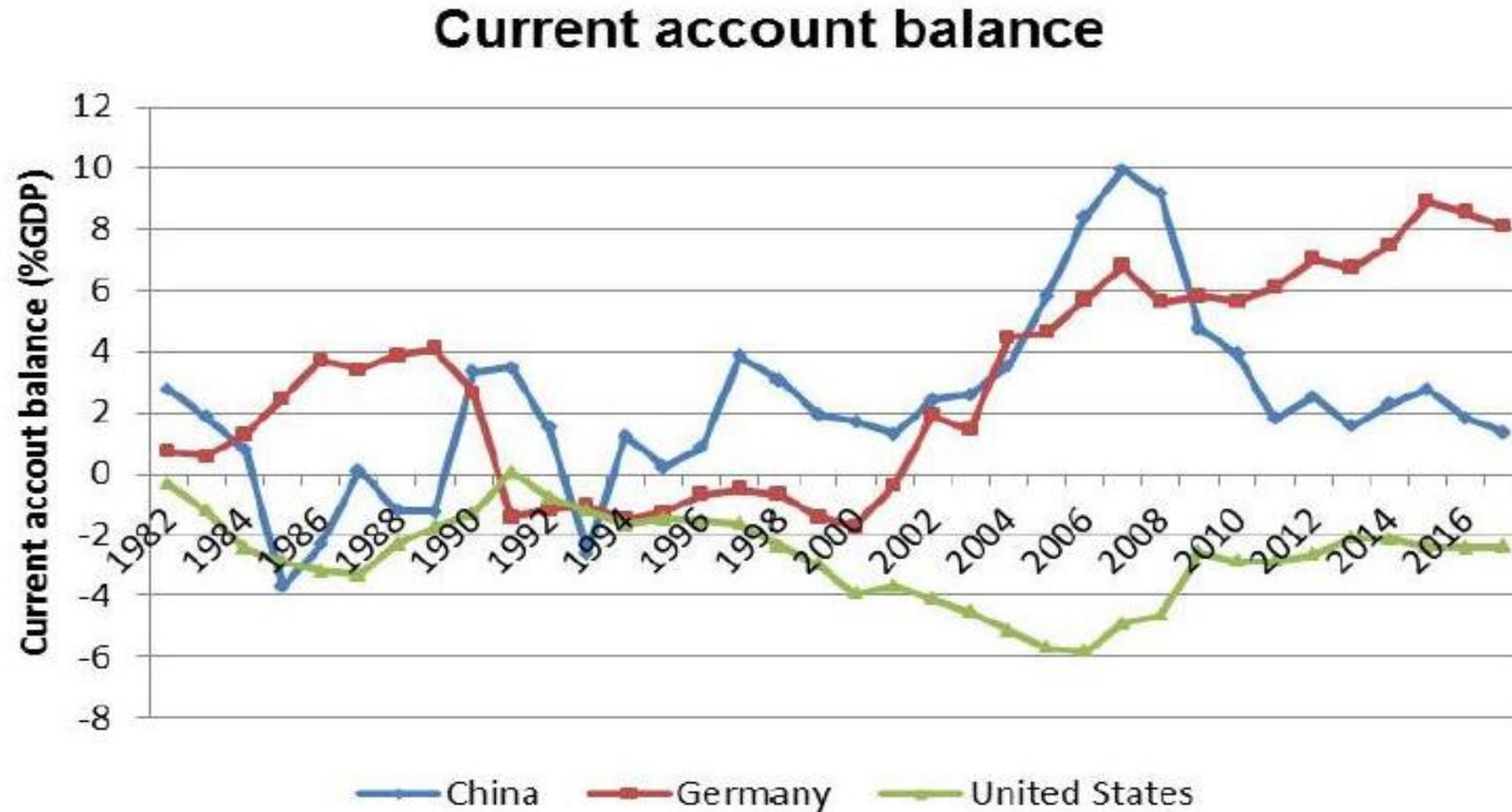
Let's look at a different question – potential implications of broad economic change in China...China 2025, 2030, 2040

- Large changes Chinese economy in the last 40 years
 - ① Spectacular GDP growth leading to the status of a middle-income country
 - ② Large number of workers moving from agriculture into manufacturing and services.
 - ③ Extraordinary export growth making China the largest exporter in the world with most of the exports in manufacturing
- Three remarkable features characterize the Chinese economy.
 - ① A very high savings rate in comparison to other main economies
 - ② A high share of production and exports in manufacturing
 - ③ A considerable current account surplus
 - In particular, the bilateral trade surplus with the United States has drawn attention

Historical high savings rate...



Current account balances....

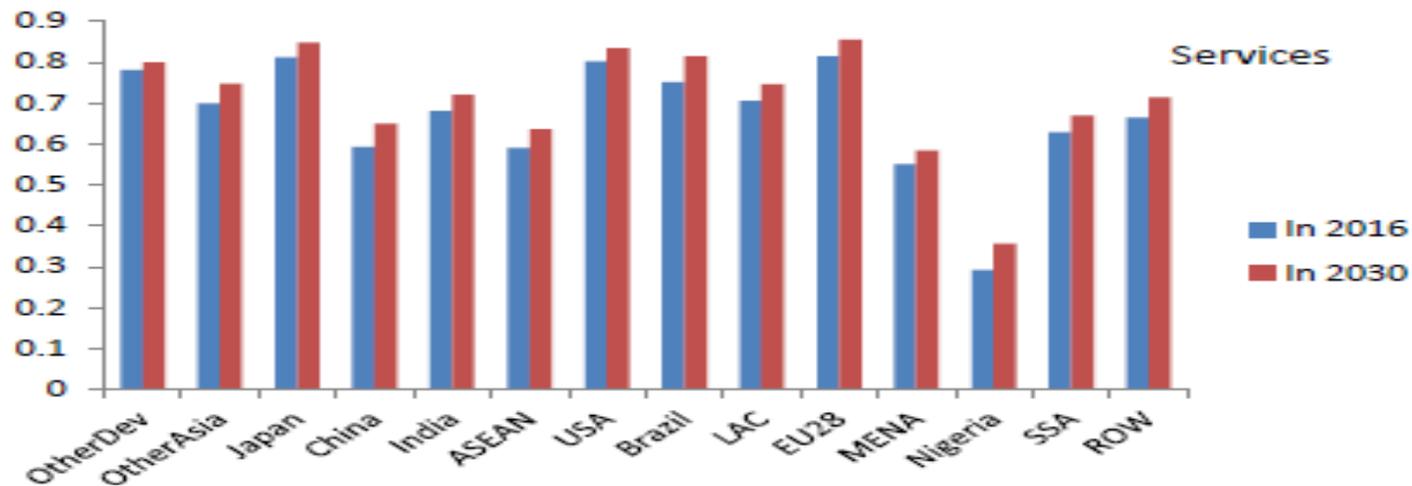
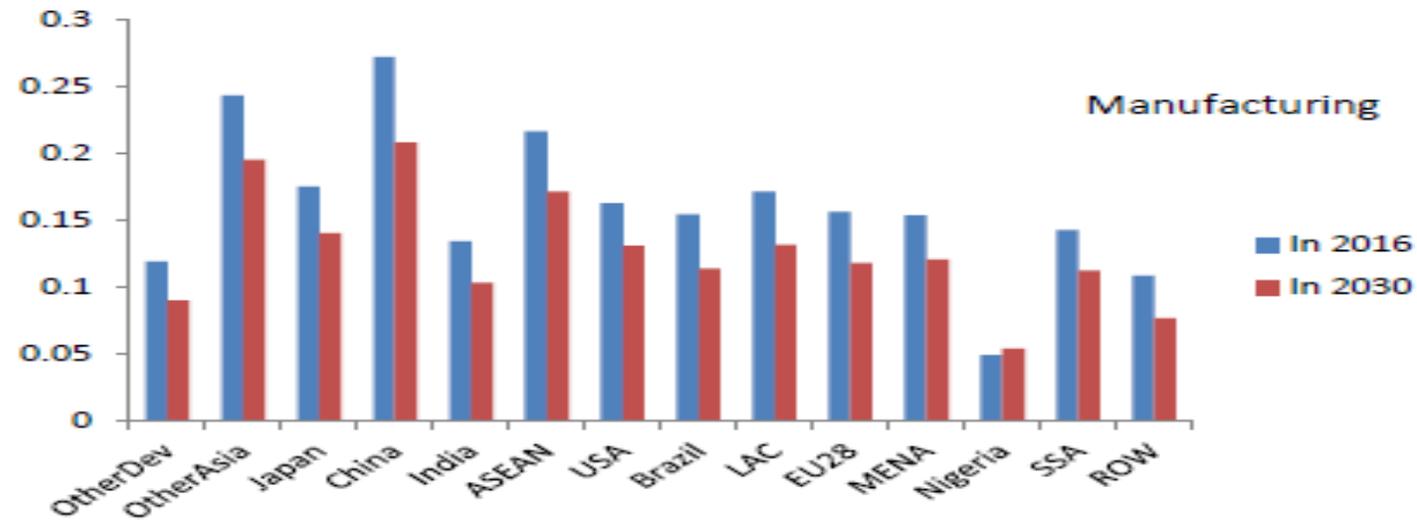


The scenarios – using WTO GTM again...

- We use the WTO Global Trade Model (GTM) to explore the impact of (i) new technologies and (ii) structural change in China on size and pattern of international trade
- Three trends related to new technologies:
 - Reallocation of tasks towards capital because of digitalization and robotization raising capital income share and productivity
 - Changes in the production structure leading to a more intensive use of ICT-services by other sectors in the economy (servicification).
 - Lower trade costs because of the improvement of customs procedures, rising efficiency of logistics, falling communication costs, falling contract enforcement costs because of blockchain
- Three trends related to structural change in China:
 - A falling savings rate because of demographic changes
 - A rising share of skilled workers because of increasing education levels
 - Faster productivity growth in technology advanced manufacturing sectors prioritized by Made in China 2025
- Disclaimer: technological developments are highly uncertain, the trends modelled indicate the directions global trade can take.

- Three main features:
 - ① Differential productivity growth raises the share of services in the economy and reduces the share of manufacturing and agriculture
 - Lower productivity growth of services (education, health care, hotels, restaurants) raises their price relative to manufacturing and agriculture
 - With limited substitution possibilities of consumers the share of services in the economy rises
 - ② The geographic distribution of trade is changing with developing countries taking over the dominant position in global trade from the developed countries:
 - Mainly because of larger income growth in emerging countries
 - ③ The sectoral distribution of trade follows the production pattern driven by structural change, featuring a rising share of services trade at the expense of manufacturing trade.

Servicification of the global economy in the baseline



Falling trade costs – remember trade costs table from earlier in presentation...

Table: Annual ad valorem equivalent trade cost reductions as a result of technological change in convergence scenario, averages across importing regions

Regions	Total	Common language	Lead time to export	Liner shipping connectivity index	Credit and contracts
SSA	-1.30	-0.34	-0.22	-0.21	-0.54
ROW	-1.05	-0.42	-0.23	-0.34	-0.08
MENA	-0.91	-0.35	-0.19	-0.16	-0.21
Nigeria	-0.87	-0.30	-0.35	-0.12	-0.10
OtherAsia	-0.85	-0.33	-0.09	-0.13	-0.30
ASEAN	-0.78	-0.35	-0.07	-0.15	-0.22
EU28	-0.78	-0.41	-0.08	-0.14	-0.15
Brazil	-0.76	-0.43	-0.14	-0.06	-0.12
LAC	-0.66	-0.21	-0.18	-0.12	-0.15
OtherDev	-0.63	-0.33	-0.04	-0.20	-0.06
India	-0.60	-0.26	-0.10	-0.06	-0.18
Japan	-0.59	-0.39	-0.10	-0.03	-0.08
China	-0.56	-0.35	-0.10	0.00	-0.12
USA	-0.43	-0.25	-0.11	-0.01	-0.06

Structural change in China...

1 Falling savings rate

- Baseline projections predict a fall to 42% in 2030
- World Bank projected in 2012 in report on structural changes in Chinese economy that gross savings rate would decrease to 33.5% by 2030.
- Continuing trend leads to further fall of the savings rate to 25%

2 Rising share of skilled workers

- World Bank predicts that the share of skilled workers in the Chinese economy will reach “advanced countries” levels by 2040.
- The share of skilled workers projected to increase to about 40% in 2040.

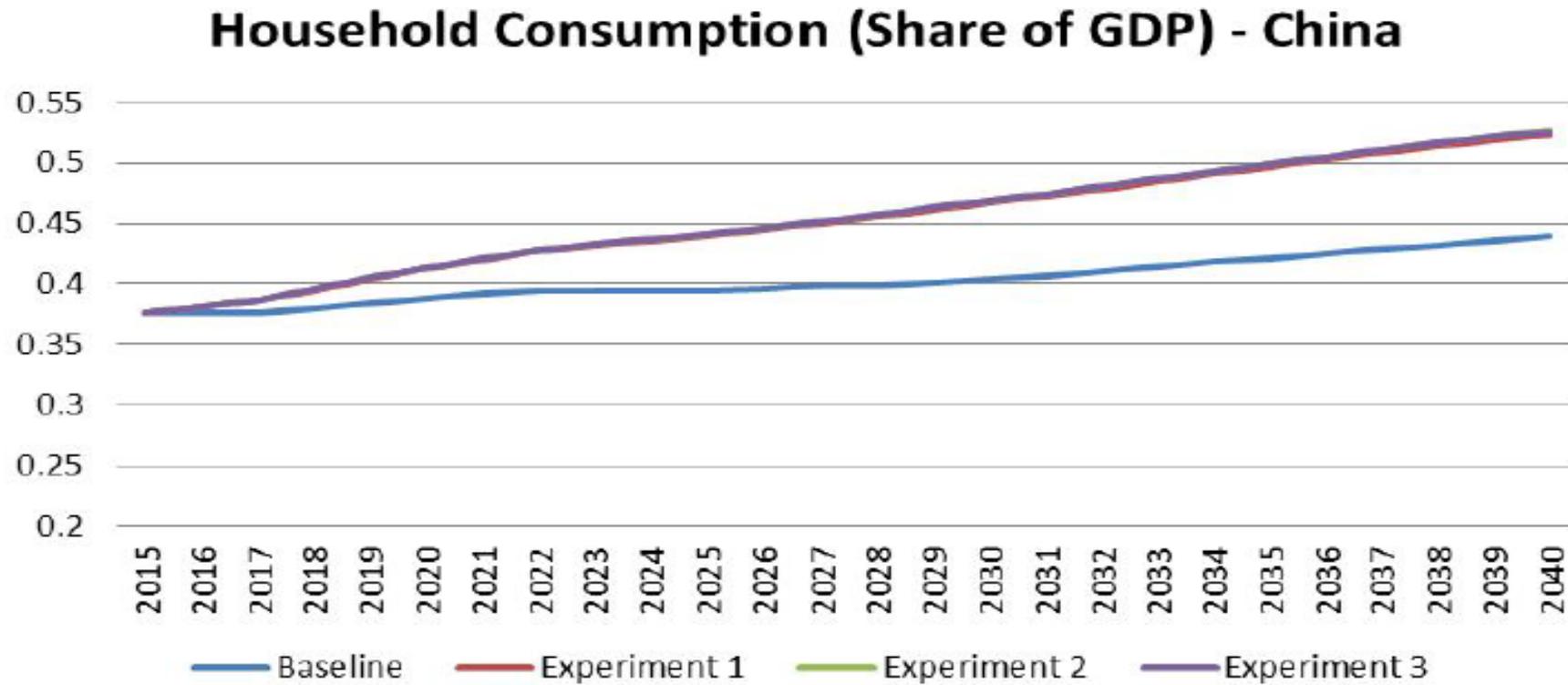
3 Rising productivity growth in targeted manufacturing sectors

- Chinese State Council presented Made in China 2025 in May 2015 aimed at promoting high-end manufacturing sectors such as aviation, maritime and rail equipment, new-energy vehicles and electronic equipment
- Concrete goal to raise self-sufficiency rates through investment in technological innovation
- Translated into target for increased domestic market share of four GTAP-sectors, motor vehicles, electronic, other transport, and machinery equipment through higher productivity growth

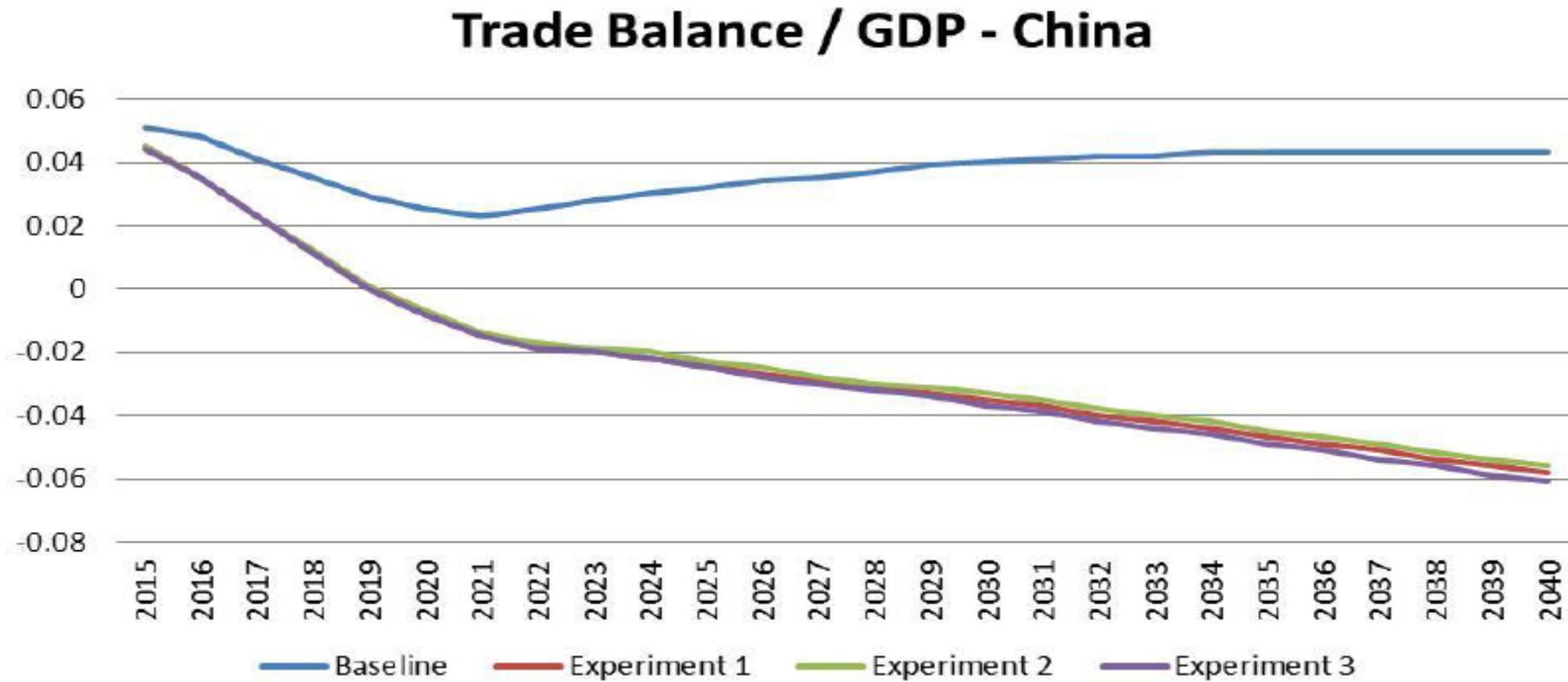
Structural change...

- 1 Falling savings rate from 0.49 in 2015 to respectively 0.38 and 0.25 in the baseline and the experiments leads to rising share of private household consumption from 0.38 in 2015 to 0.44 in the baseline and 0.52 in the experiments
 - Share of government consumption rises relatively much more, from 0.13 to 0.18 (baseline) or 0.22 (experiments)
 - Baumol disease effects strongest for government sectors
- 2 Trade surplus rises slightly in the baseline, but turns into a deficit with the experiments
 - Let us introduce one formula:
$$S - I = X - M \quad (1)$$
 - Savings fall much more than investment, since investment is determined by attractiveness to invest in China, which does not change with the shocks
 - Adjustment would be less drastic with Feldstein-Horioka closure, under which national investment largely follows national savings
- 3 Services share displays a huge increase in the baseline due to differential productivity growth
 - Shocks have counteracting effects on shares of different sectors

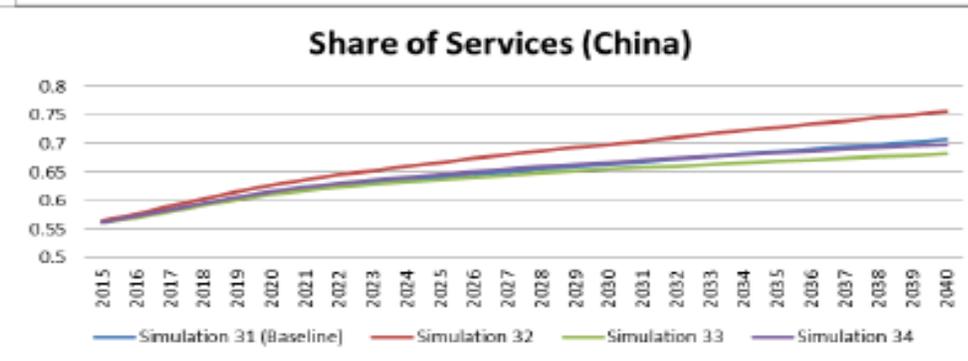
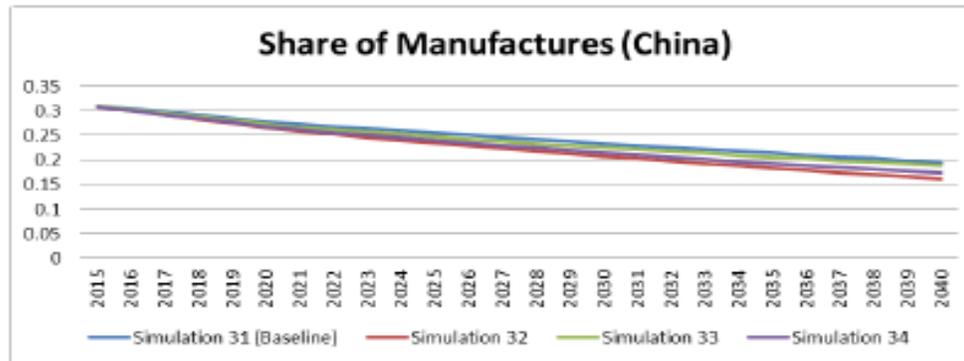
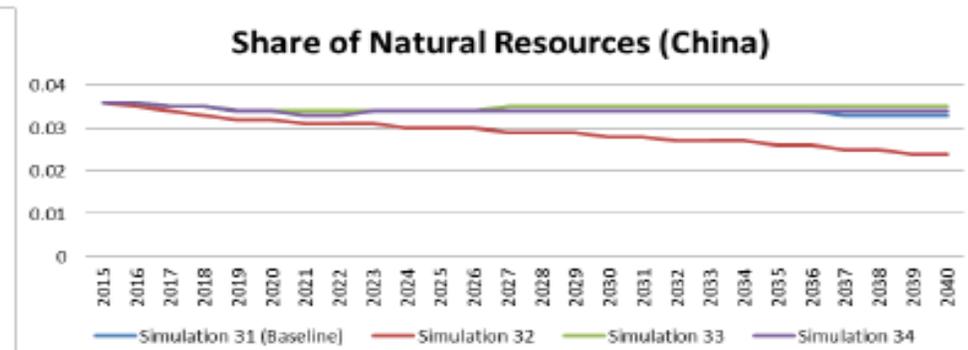
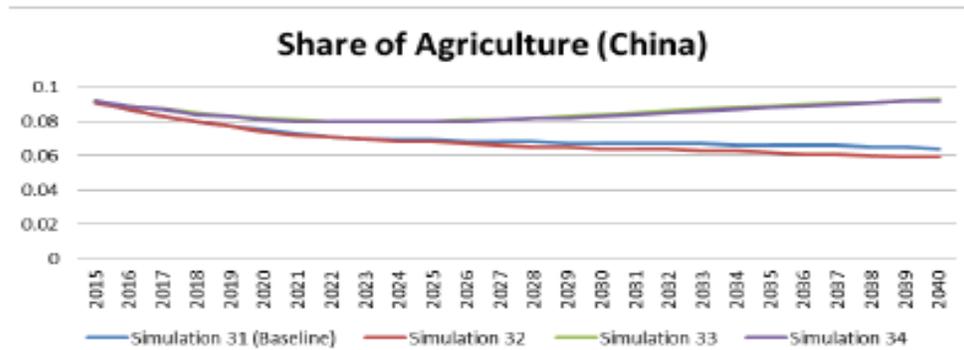
Rising consumption in China



China trade balance...net importer?



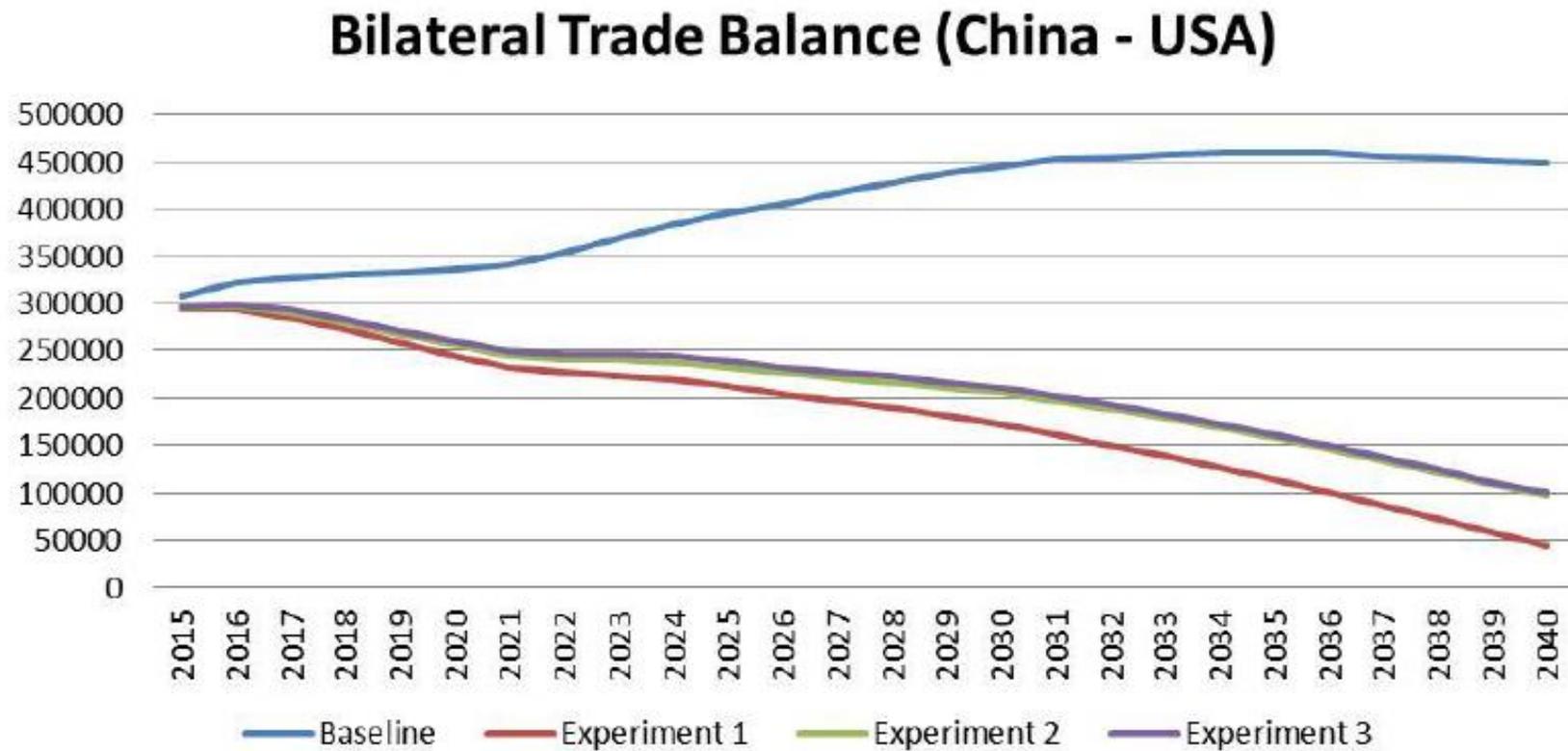
Evolution of sectoral composition....



Structural change in China: Impact on the world?

- 1 The share of Chinese exports in global exports rises in the baseline from 0.16 to 0.19, whereas it falls to 0.11 under the experiments
- 2 Market shares of Southeast Asia and SSA-MENA in Chinese exports rise, whereas the market shares of Japan, the USA, and the EU fall
- 3 Share of manufacturing exports in total exports of China falls slightly
- 4 Revealed comparative advantage changes are mainly driven by Made in China 2025 productivity shocks:
 - Fall for light and heavy manufacturing and other manufacturing (textiles for example)
 - Big increase for electronic equipment
- 5 The bilateral trade surplus of China vis-a-vis the United States rises from about 300 billion in 2015 to 450 billion in 2040 in the baseline, whereas it gets close to zero (50 billion) with falling saving rates

Bilateral trade with US?



Concluding remarks....

- Global trade has changed dramatically over the last 35 years.
- Forces driving trade are a mix of trade policy and broader macroeconomic forces.
- Trade will continue to evolve in the next 35 years.
- Trade conflict can be very costly, particularly so if it affects macro economic drivers and long term potential growth.
- Using trade costs, insights on economic fundamentals and a global simulation model to organize our thinking we can parse how some of these various forces may affect the evolution of trade flows in a time of trade conflict and rapid economic change.