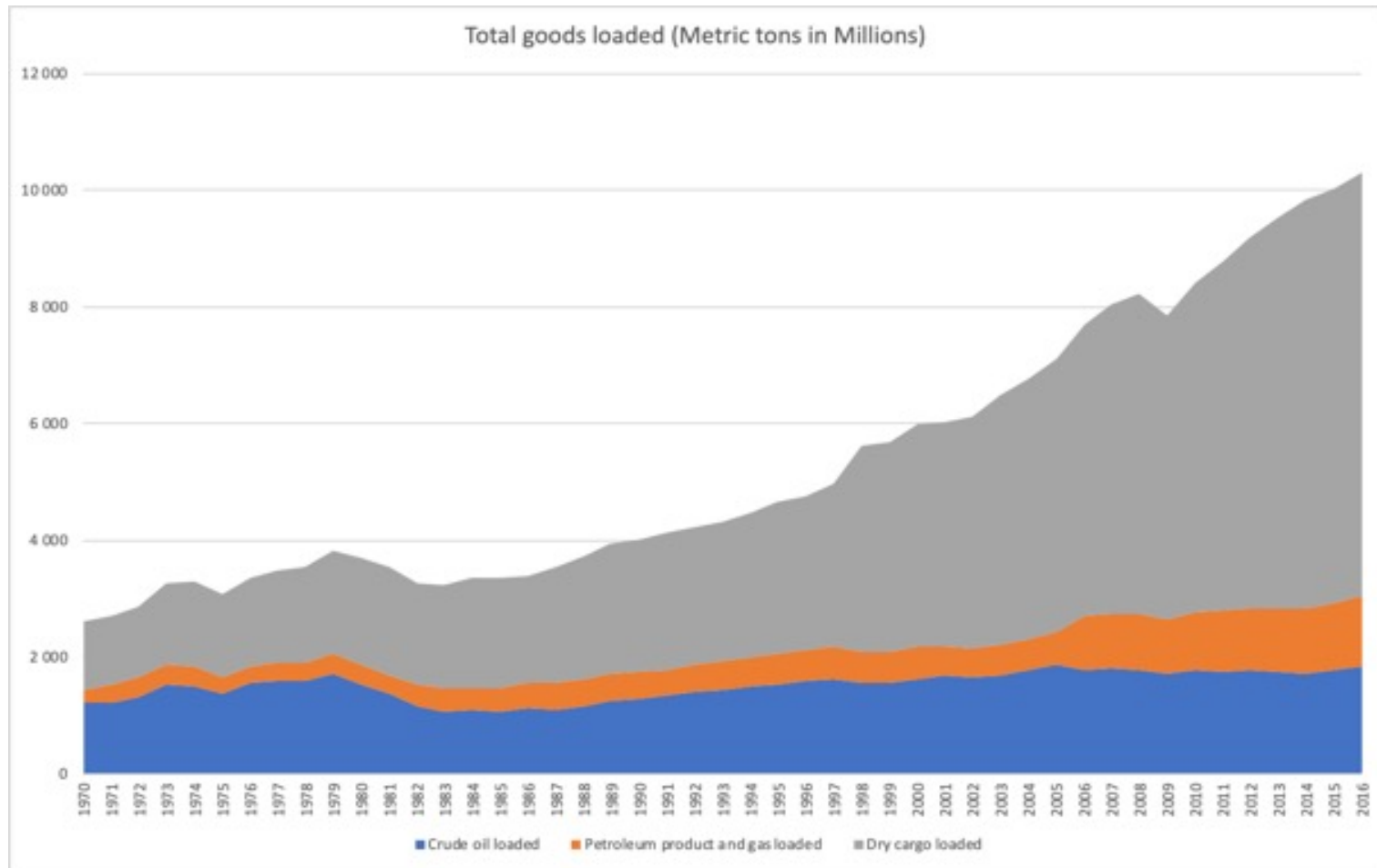


Changing demand for maritime trades - Report summary -

Professor Pierre Cariou
15-16 April 2019

MARITIME TRADES SINCE 1970



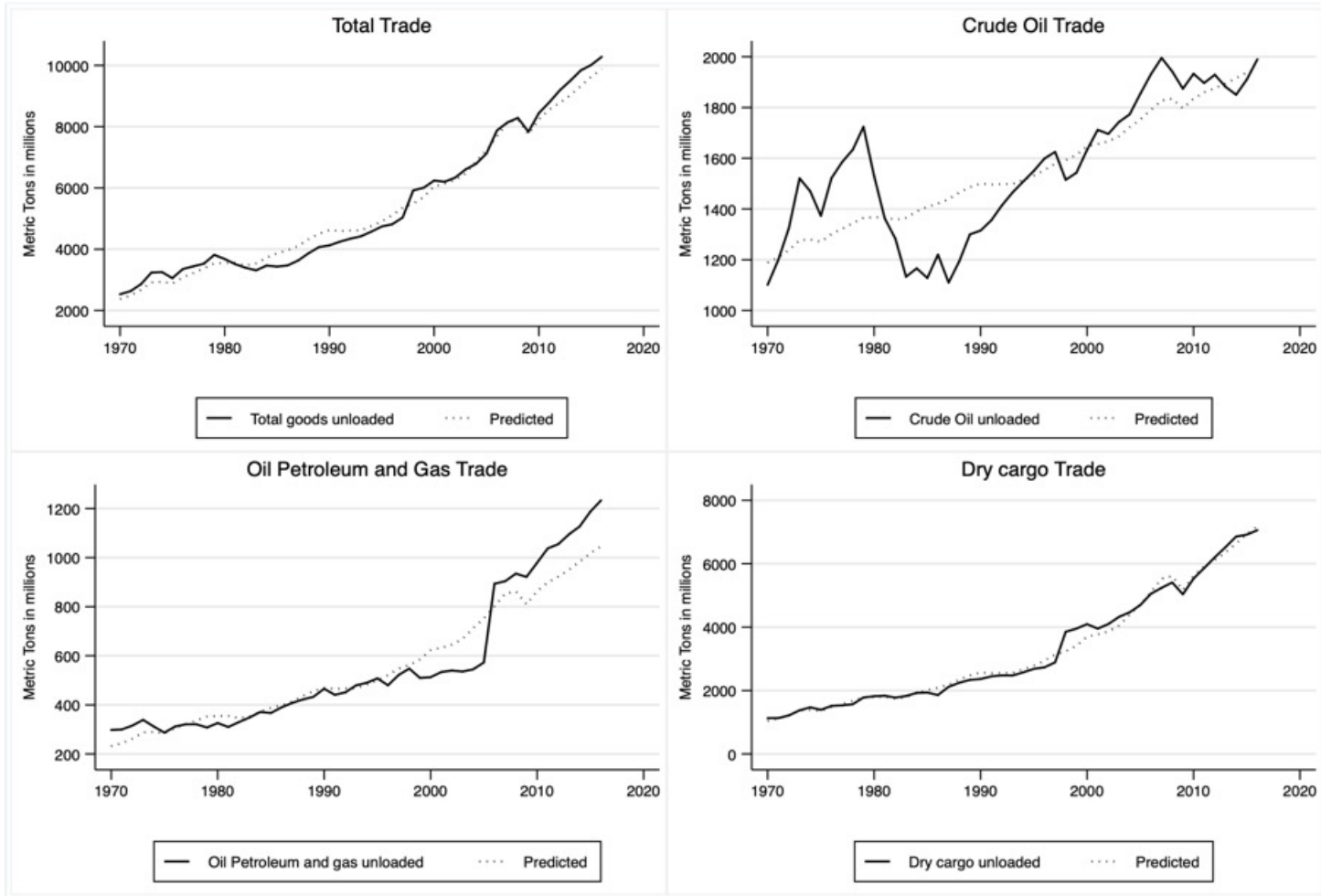
TWO QUESTIONS CAN BE RAISED:

1. is the decrease of the share of energy trades in total maritime transportation (from roughly 60% in 1970 to 30% in 2017) likely to continue and are these trades going to decrease in absolute value?
2. is the rise in dry bulk cargoes and container trades, that was supported by developing countries since 2000, going to continue in the future?

THREE CRITICAL FACTORS

1. Future changes in population/GDP/trade
2. Pathways to energy transition.
3. Additional future drivers of maritime trades

1. FUTURE CHANGE IN POPULATION/GDP/TRADE



1. FUTURE CHANGE IN POPULATION/GDP/TRADE

Table 5 . World Population outlook 2010-2100 in Billion and Annual Growth Rate*

Source: Author's elaboration based on Samir et al. (2017)

	SSP1	SSP2	SSP3	SSP4	SSP5
2010	6 871	6 871	6 871	6 871	6 871
2050	8 461	9 166	9 951	9 122	8 559
2100	6 881	9 000	12 627	9 267	7 363
2010-2050*	0.5%	0.7%	0.9%	0.7%	0.6%
2050-2100*	-0.4%	0.0%	0.5%	0.0%	-0.3%

Table 7. Annual average GDP per capita growth rates

Source: Author's elaboration based on Leimbach et al. (2017).

	SSP1			SSP2			SSP3		
	2010-2040	2040-2100	2010-2100	2010-2040	2040-2100	2010-2100	2010-2040	2040-2100	2010-2100
High income countries	1.3%	0.9%	1.0%	1.4%	0.9%	1.1%	1.1%	0.4%	0.6%
Middle income countries	4.4%	1.9%	2.8%	4.0%	1.9%	2.7%	3.4%	0.9%	1.8%
Low income countries	4.2%	3.9%	4.1%	3.7%	3.3%	3.5%	2.7%	1.0%	1.6%
World	3.0%	1.8%	2.2%	2.7%	1.7%	2.0%	1.9%	0.5%	1.0%
	SSP4			SSP5					
	2010-2040	2040-2100	2010-2100	2010-2040	2040-2100	2010-2100			
High income countries	1.5%	0.9%	1.1%	1.5%	1.7%	1.6%			
Middle income countries	4.3%	1.8%	2.7%	4.5%	2.6%	3.3%			
Low income countries	3.3%	1.8%	2.3%	4.0%	4.5%	4.4%			
World	2.7%	1.1%	1.7%	3.1%	2.5%	2.8%			

Table 10. World trade to income elasticity (goods)

Source: Fontagné et Fouré (2013)

1950-59	1960-69	1970-79	1980-89	1990-09	2000-09	1950-2009	2012-2035
1.62	1.54	1.31	1.19	2.82	1.42	1.64	0.7-1.4

2. PATHWAYS TO ENERGY TRANSITION

Table 9. Forecasted Total Primary Energy Demand (Mtoe)

Source: IEA (2019)

	2000	2017	2040 NPS	2040 SDS	AAGR 17-40	AAGR 17-40 NPS	AAGR 17-40 SDS
Oil	3 665	4 435	4 894	3 156	1.1%	0.4%	-1.5%
Coal	2 308	3 750	3 808	1 597	2.9%	0.1%	-3.6%
Natural Gas	2 071	3 107	4 435	3 437	2.4%	1.6%	0.4%
Bioenergy	1 022	1 385	1 850	1 503	1.8%	1.3%	0.4%
Nuclear	675	687	971	1 292	0.1%	1.5%	2.8%
Hydro	225	353	531	601	2.7%	1.8%	2.3%
Other Renewable	60	253	1 222	2 131	8.8%	7.1%	9.7%
Total	10 026	13 970	17 711	13 717	2.0%	1.0%	-0.1%

Table 11. DNV Forecasts to 2050

	Million tonnes per year				AAGR		
	2015	2030	2040	2050	2015-2030	2030-2040	2040-2050
Crude oil	1 870	2 250	1 990	1 540	1.2%	-1.2%	-2.5%
Oil products	1 020	1 330	1 220	1 030	1.8%	-0.9%	-1.7%
Natural Gas	330	640	700	770	4.5%	0.9%	1.0%
Bulk	4 820	6 080	6 330	6 640	1.6%	0.4%	0.5%
Container	1 660	2 660	3 390	4 040	3.2%	2.5%	1.8%
Other Cargo	1 120	1 650	1 940	2 260	2.6%	1.6%	1.5%
Total	10 820	14 610	15 570	16 280	2.0%	0.6%	0.4%

3. ADDITIONAL FUTURE DRIVERS

- For DNV (2017): decarbonization, circular economy and new routes (One Belt One Road for rail; Arctic shipping).
- For McKinsey (2018): new technology. For instance electric vehicles (only 20 to 30 moving parts in their drivetrains, compared to 130 to 170 in an internal combustion engine), additive manufacturing, 3D printing and robots.

3. ADDITIONAL FUTURE DRIVERS

- Danish ship finance (2017): A shift towards different vessel types, smaller parcel sizes and fewer cargoes is expected, due to the combined effects of the fourth industrial revolution (e.g. artificial intelligence, robotics, the internet of things, 3D printing and digitalisation) and the ageing consumer base.
- McKinsey (2019): GVCs changes in trade intensity.

Archetypes	Trade intensity, 2017 ¹	Change in trade intensity ¹ Percentage points		
		2000-07	2007-17	
Global innovations	Chemicals	27.4	7.8	-5.5
	Transport equipment	38.0	11.0	-6.2
	Auto	29.1	8.9	-7.9
	Electrical machinery	27.9	6.2	-8.3
	Machinery and equipment	29.5	7.3	-8.9
	Computers and electronics	43.8	13.0	-12.4
Labor-intensive goods	Furniture and other manufacturing	24.2	7.3	-0.8
	Textile and apparel	27.3	8.2	-10.3
Regional processing	Paper and printing	15.6	3.7	0.3
	Fabricated metal products	17.8	5.5	-0.6
	Rubber and plastics	22.8	7.6	-0.9
	Food and beverage	12.7	2.4	-0.9
	Glass, cement, ceramics	8.7	2.2	-3.2
Resource-intensive goods	Agriculture	8.4	0.6	-0.7
	Energy	20.6	7.4	-1.2
	Basic metals	19.6	5.1	-6.2
	Mining	25.0	11.4	-14.4
Labor-intensive services	Wholesale and retail trade	10.7	3.5	2.4
	Healthcare	0.5	0	0.1
	Transport and storage	14.6	1.7	-2.5
Knowledge-intensive services	IT services	18.4	5.6	4.9
	Professional services	9.8	2.3	0.1
	Financial intermediation	8.0	3.6	-0.8

¹ Trade intensity defined as gross exports as a percentage of gross output.

SOURCE: World Input-Output Database; McKinsey Global Institute analysis

3. ADDITIONAL FUTURE DRIVERS

- The need for time-to-market with **more intra-regional trades** could lead to a profound move toward **back-shoring or re-shoring** (Kinkel 2012, 2104).
- Kinkel (2014) stresses that around 400 to 700 German companies would back-shore production capacities per year. Tate (2014) survey of 320 US companies indicated that forty percent of these companies perceived a trend toward reshoring to the United States.
- Gadde et al. (2019) tend to point into a similar direction. Investigating the 2025 outlook for the Swedish textile industry in offshoring and reshoring, the analysis of a sample of 119 Swedish buyers of textiles and apparels.

CONCLUSIONS

1. Shipping remains a derived demand and future demand will still continue to largely depend on the world economy, world population and GDP.
2. The substantial growth rates in maritime trades, that were explained by the process of globalization and by the increase in developing countries GDP per capita, are not likely to continue.
3. The general trend towards a decarbonization of the world economy is impacting the two largest commodities transported at sea: crude oil and coal.

CONCLUSIONS

4. The relocation of production near consumption centers could reduce demand.
5. Innovations in the shipping industry, through steamships and containerization, were the main drivers of world trades development.

Now, the key question is whether or not new maritime innovations (fast/Autonomous/zero emission ships?) will take place to tackle the challenges of the new era of digitally enabled trade.

WORKSHOP

1. Do you agree with the report main conclusions?
2. What is missing in the report or should be improved?