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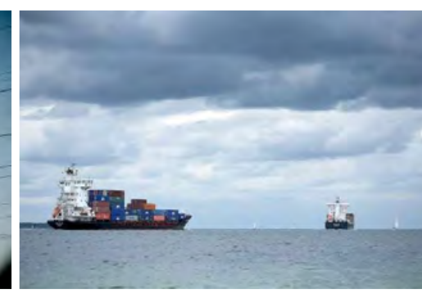
Impact of slow steaming for bulk carriers

Assessment of the impacts on transport costs for different ship sizes

GHG mitigation strategies in international aviation and maritime transport
SB 50 Side Event, 22/06/2019, Bonn

Dr. Martin Cames



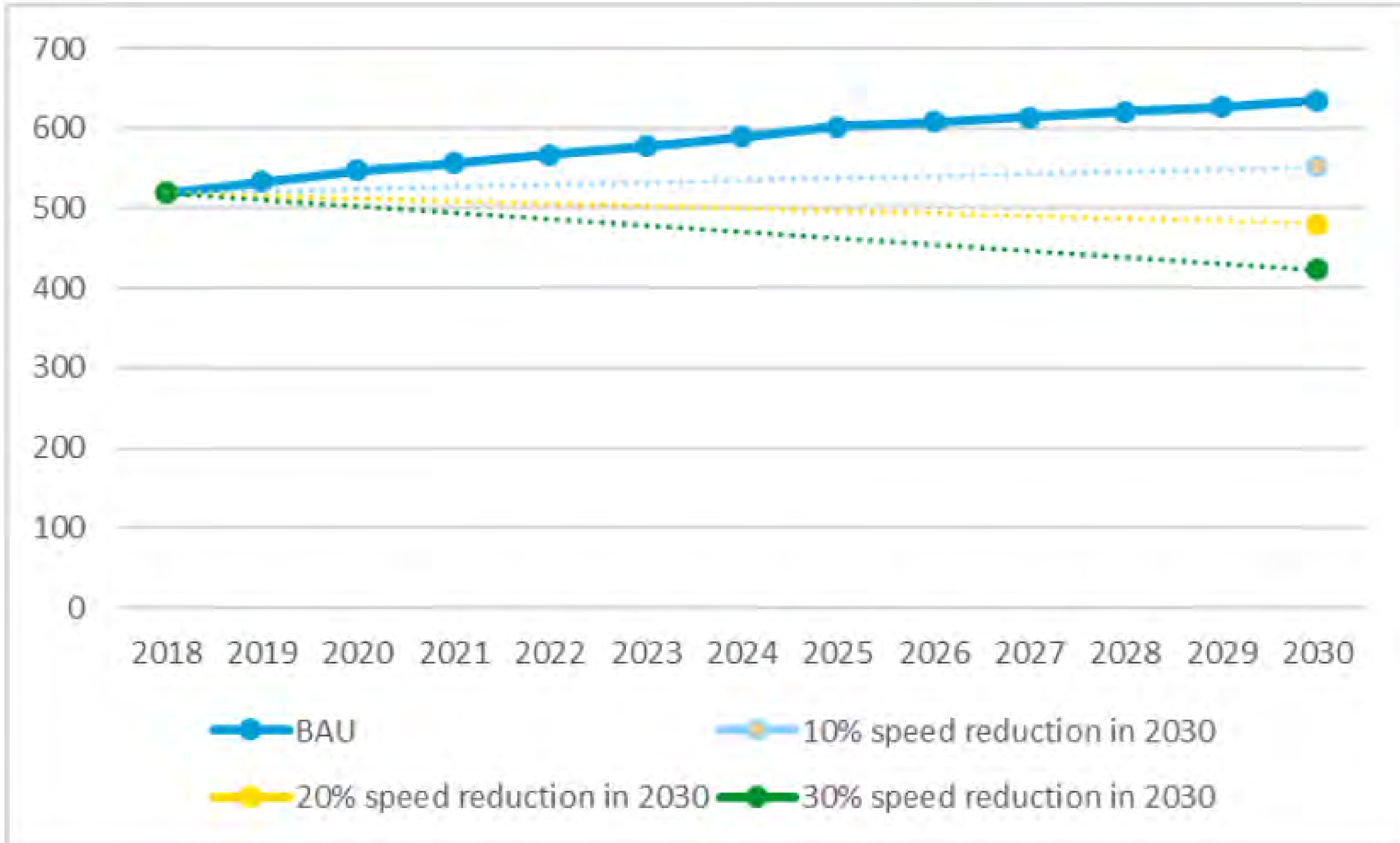
Background

- Initial IMO GHG strategy:
  - 50% reduction compared to 2008 by 2050
  - Peaking as soon as possible
  - “use of speed optimization and speed reduction as a measure”
- Relationship between slower speeds and fuel consumption follows a cubic function:

Speed reduction	5%	10%	15%	20%	25%	30%
Fuel savings	14%	27%	39%	49%	58%	66%

- Slow steaming most promising high-impact short-term measure to reduce GHG emissions from shipping

Impact of slow steaming on GHG emissions (dry bulk, oil tanker and container fleet)



Source: CE Delft (2017): Regulating speed: a short-term measure to reduce maritime GHG emissions.

Slow steaming and transport costs

- Crucial questions for
  - Exporting countries/industries: how will slow steaming impact their market position?
  - Importing countries (and especially SIDS): how will slow steaming impact consumer prices?
- Most studies assess the impact of CO_2 prices on the sector and nations (e.g. World Bank 2019, Vivid Economics 2010)
- Case studies have assessed the impact of slow steaming on exporting nations (e.g. CE Delft 2017)
- This study assess the impact of slow steaming on transport costs which affect both exporter's market position as well as consumer prices

Slow steaming and transport costs

- Main contributors to transport costs:
  - Capital costs (purchasing or leasing of vessel)
  - Operational costs (crew, insurance, repairs, …)
  - Voyage costs (fuel, port charges, …)
  - Earnings of ship owner
- Longer transport times will lead to higher costs/trip for:
  - Capital costs, operational costs, earnings (proportional increase with time at sea)
  - Fuel costs for auxiliary engines (proportional increase with time at sea)
- Fuel costs savings (main engines) depend on the speed reduction (cubic relationship)

Methodology to model impact of slow steaming on transport costs

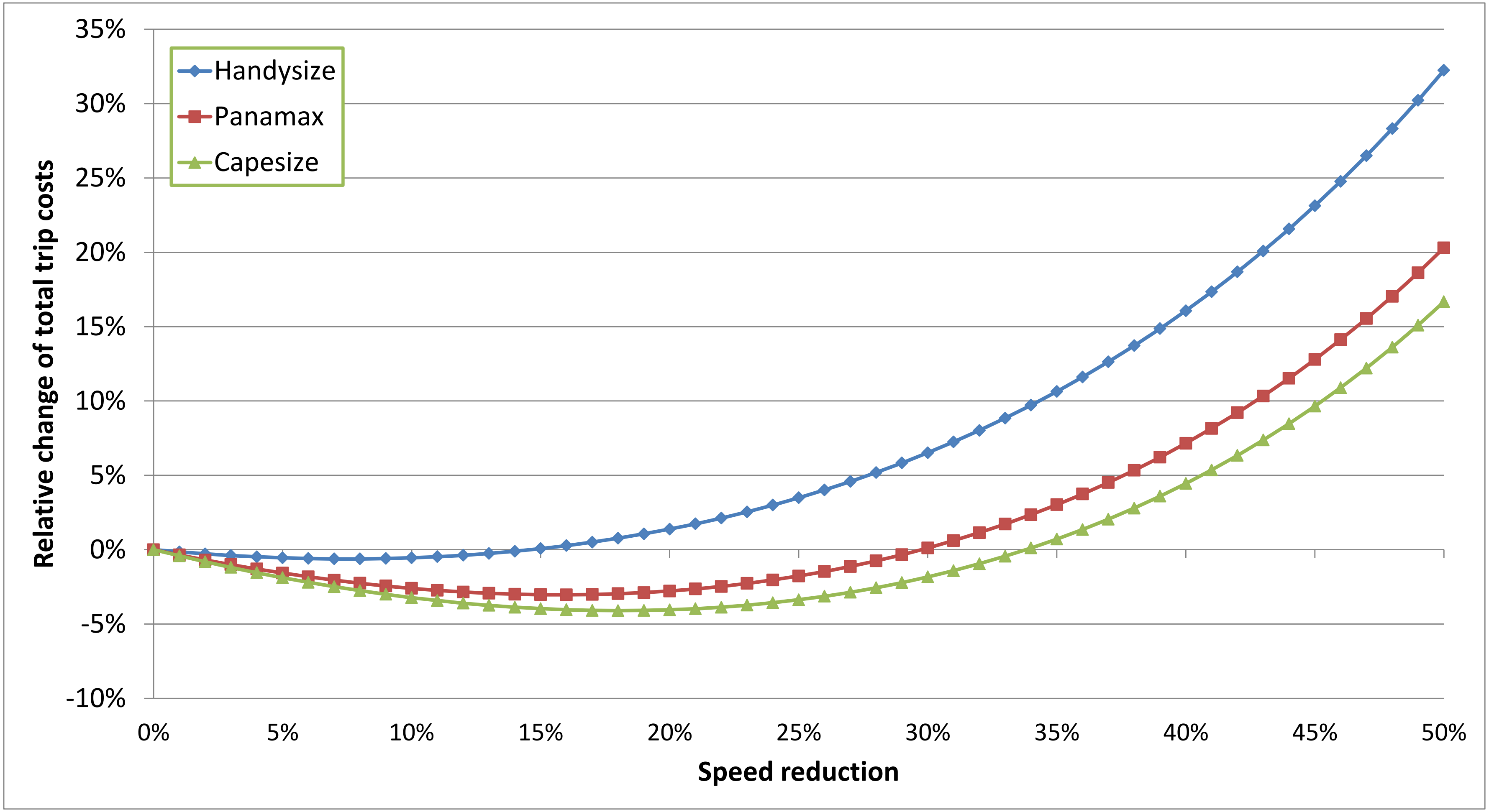
- Model calculates relative change of transport costs per trip
- All parameters are calculated as daily rates
- Distance does not affect relative results;
  absolute costs strongly depend on distance.
- Modelling for three different ship types and ranges for some parameters:

Ship type	Fuel consumption	Auxiliary fuel consumption	Speed	Operation costs	Capital costs	Earnings
	[t/day]	[%]	[kn]	[$/day]	[$/day]	[$/day]
Panamax	37.7	10 (5 – 15)	13.8	5 700	2 700	10 000 (5 000 – 15 000)
Handysize	22.2	10 (5 – 15)	12.7	5 000	2 200	7 500 (4 000 – 12 000)
Capesize	55.5	10 (5 – 15)	13.6	6 700	5 500	12 500 (5 000 – 20 000)

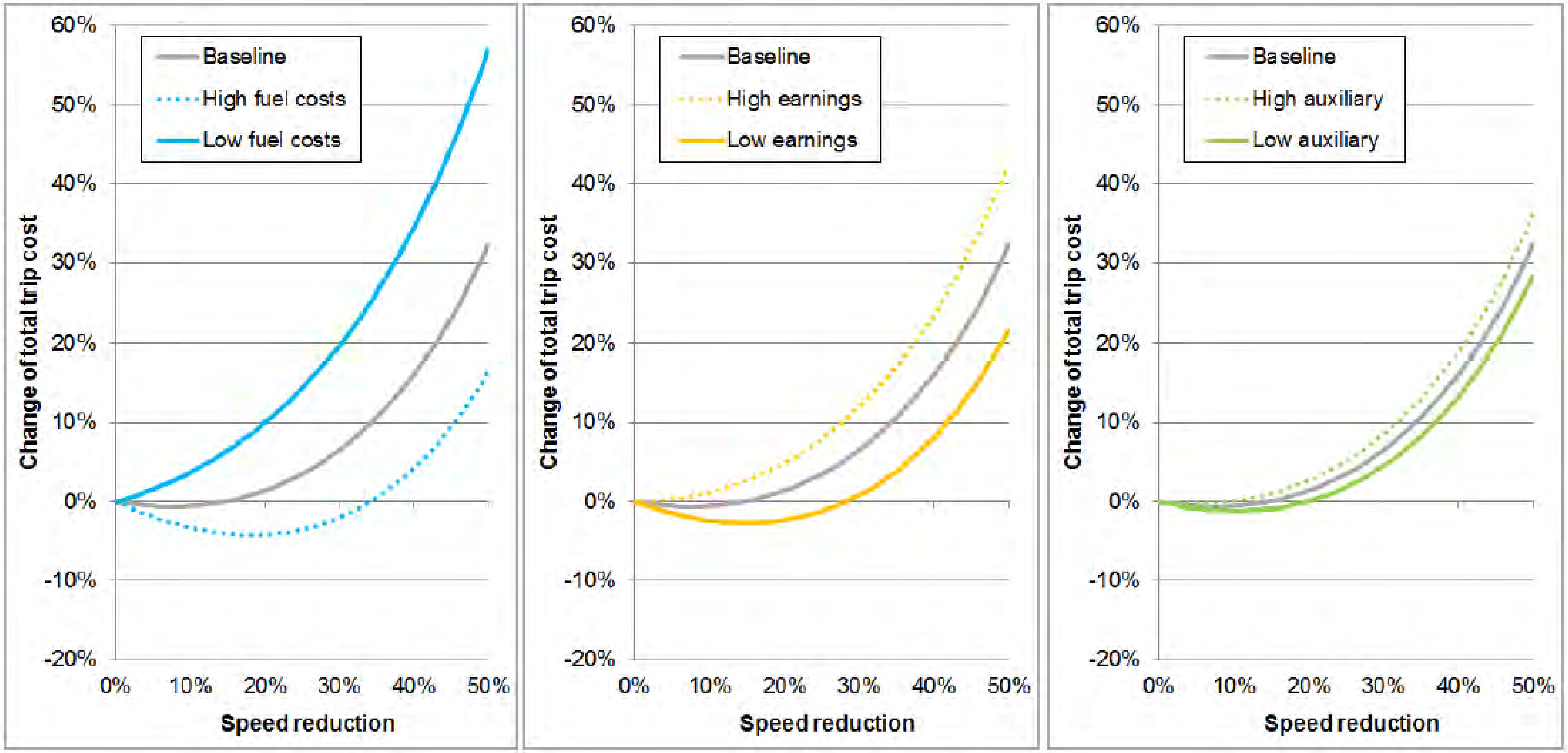
Source: IMO (2014); Greiner (2017); Kemene (2018); UNCTAD (2018)

- Fuel price assumption: 500 (250-750) USD/ton

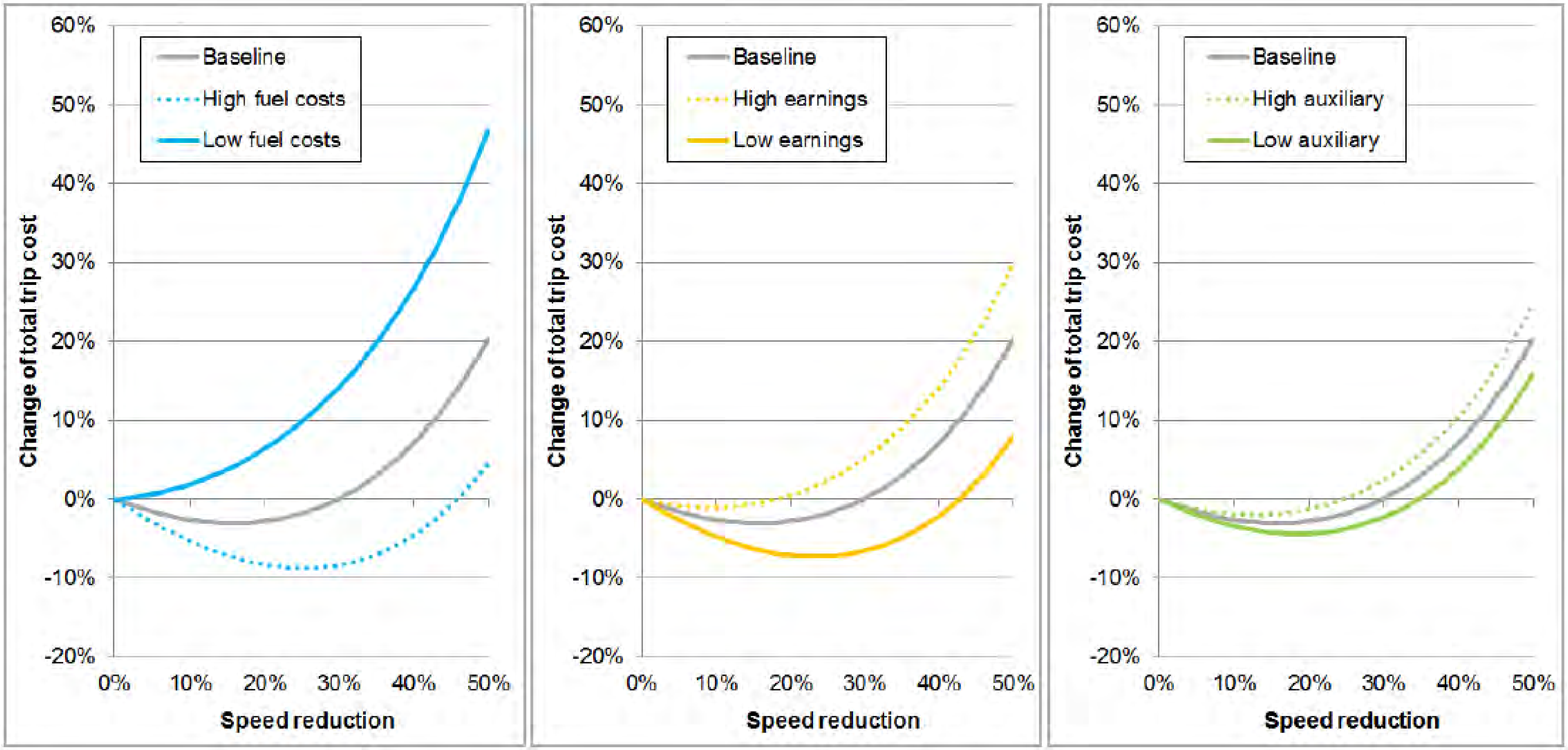
Impact of slow steaming on transport costs in the reference case



Impact of slow steaming on Handysize bulk carriers



Impact of slow steaming on Panamax bulk carriers



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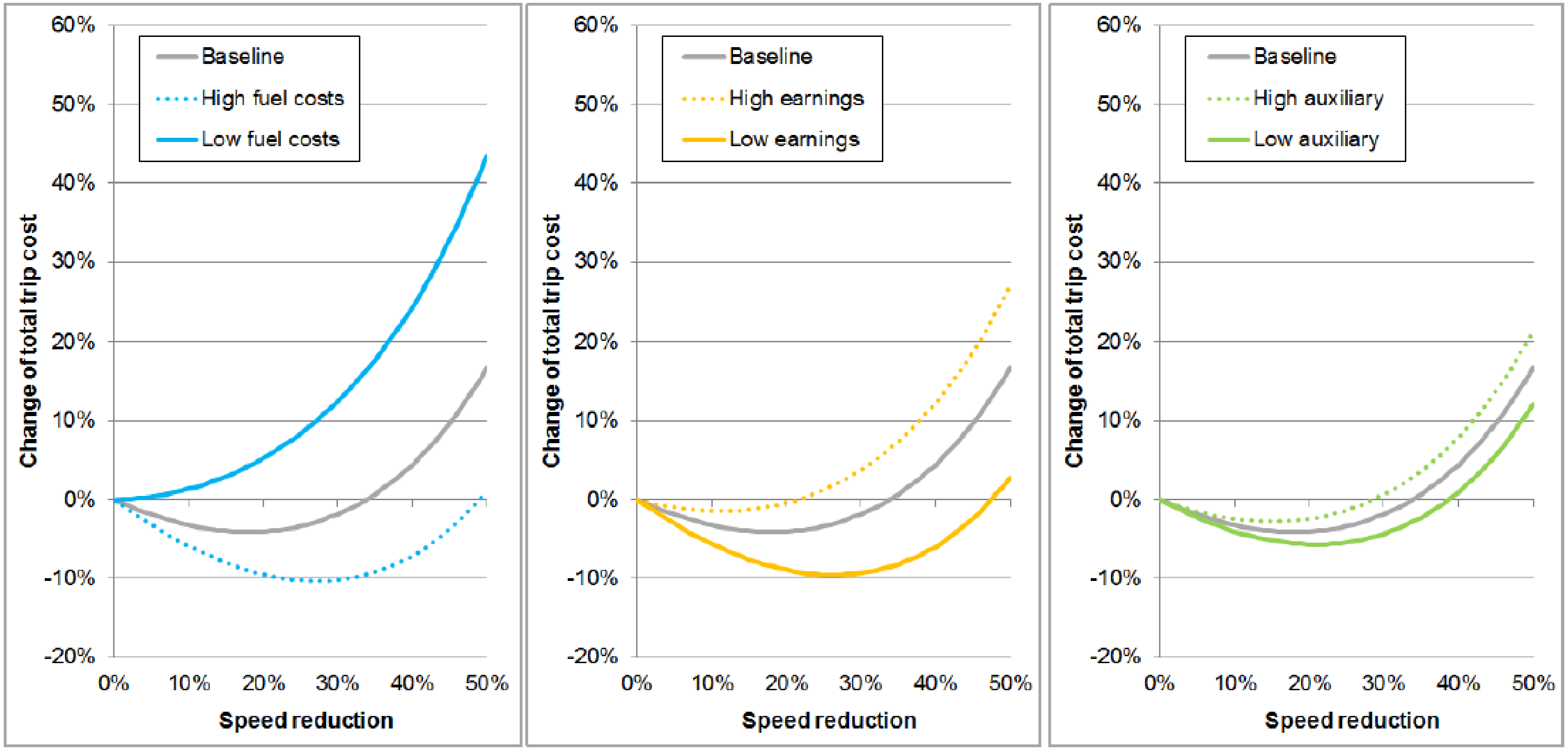
Impact of slow steaming on Capesize bulk carriers



Key messages

- For most scenarios slower steaming will bring down transport costs;
- Fuel price has highest impact on economic viability of slow steaming;
- Depending on the ship type there is a) an economically optimal speed (minimum) and b) a maximum speed reduction which would maintain transport cost (break even point);
- impact on freight rates depends on the cost-pass through and might be smaller than the actual change of transport costs;
- Maritime transport costs contribute with less than 5% to consumer prices in most cases; small changes in either direction will not have a significant impact.

Thank you for your attention!

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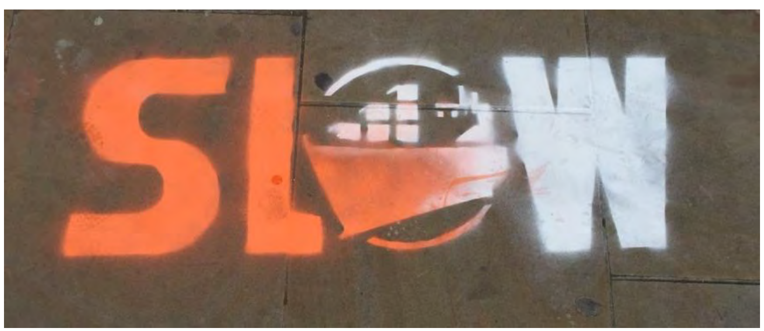


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Impact of slow steaming for different types of ships carrying bulk cargo

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