United Nations Conference on Trade and Development

TRADE AND DEVELOPMENT COMMISSION
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Item 6: Progress report on promoting and strengthening synergies among the three pillars

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Liner Shipping Connectivity

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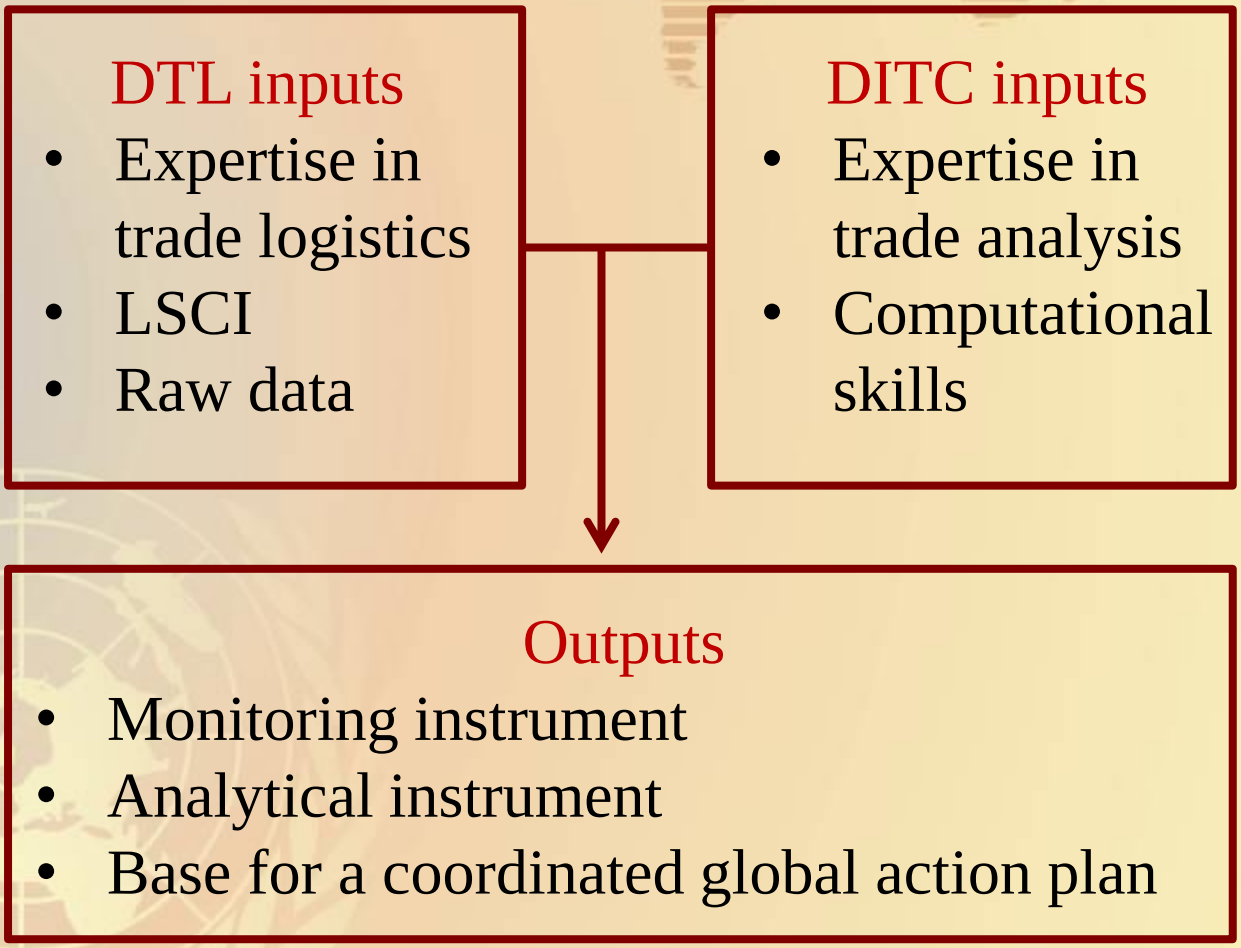
May 2015

LSBCI: an inter-divisional value chain



- Why does it matter
- Measuring trends and characteristics of the liner shipping network
- The UNCTAD LSBCI

- Why does it matter
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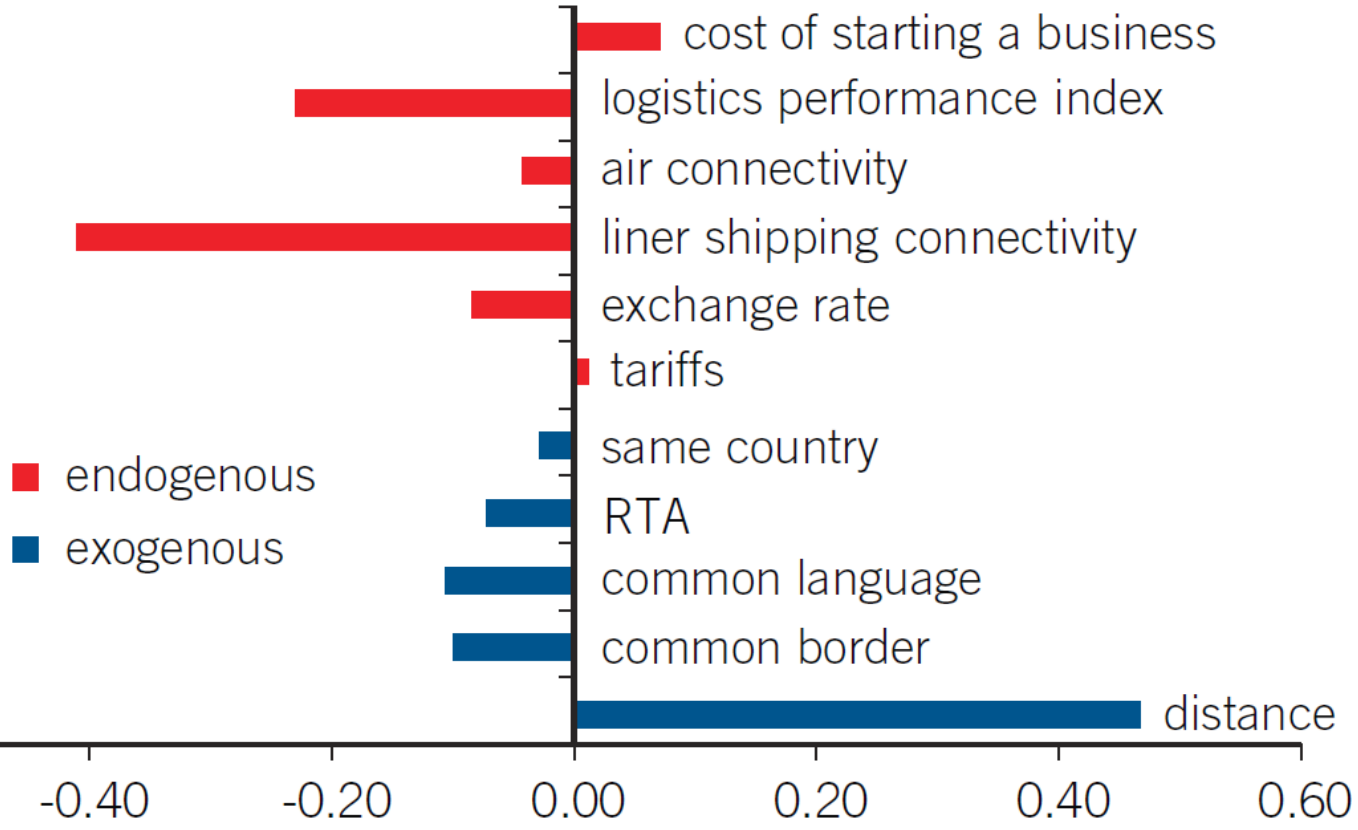
Higher Liner Shipping Connectivity leads to lower trade costs

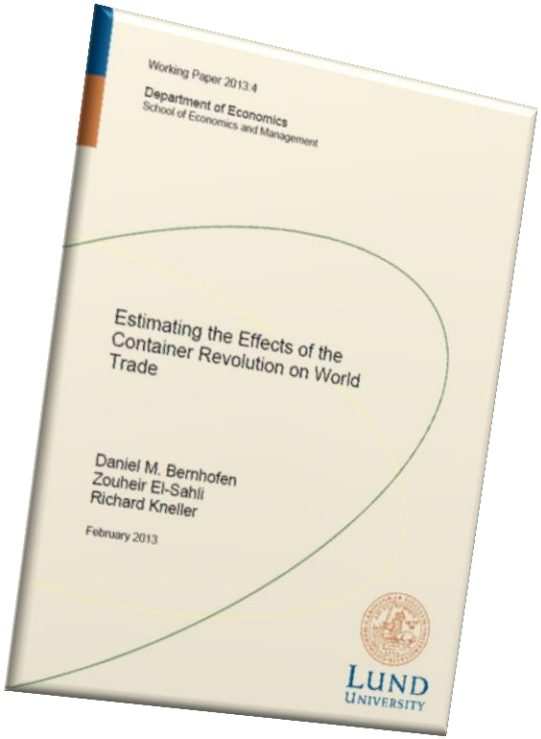
Figure 1. Relative Impact of Different Sources of Trade Costs

(normalized regression coefficients ["betas"] against the indicator measuring the cost component)



(Arvis et al, 2013)

Introducing containerization leads to more trade



(Bernhofen et al, 2013)

The Economist

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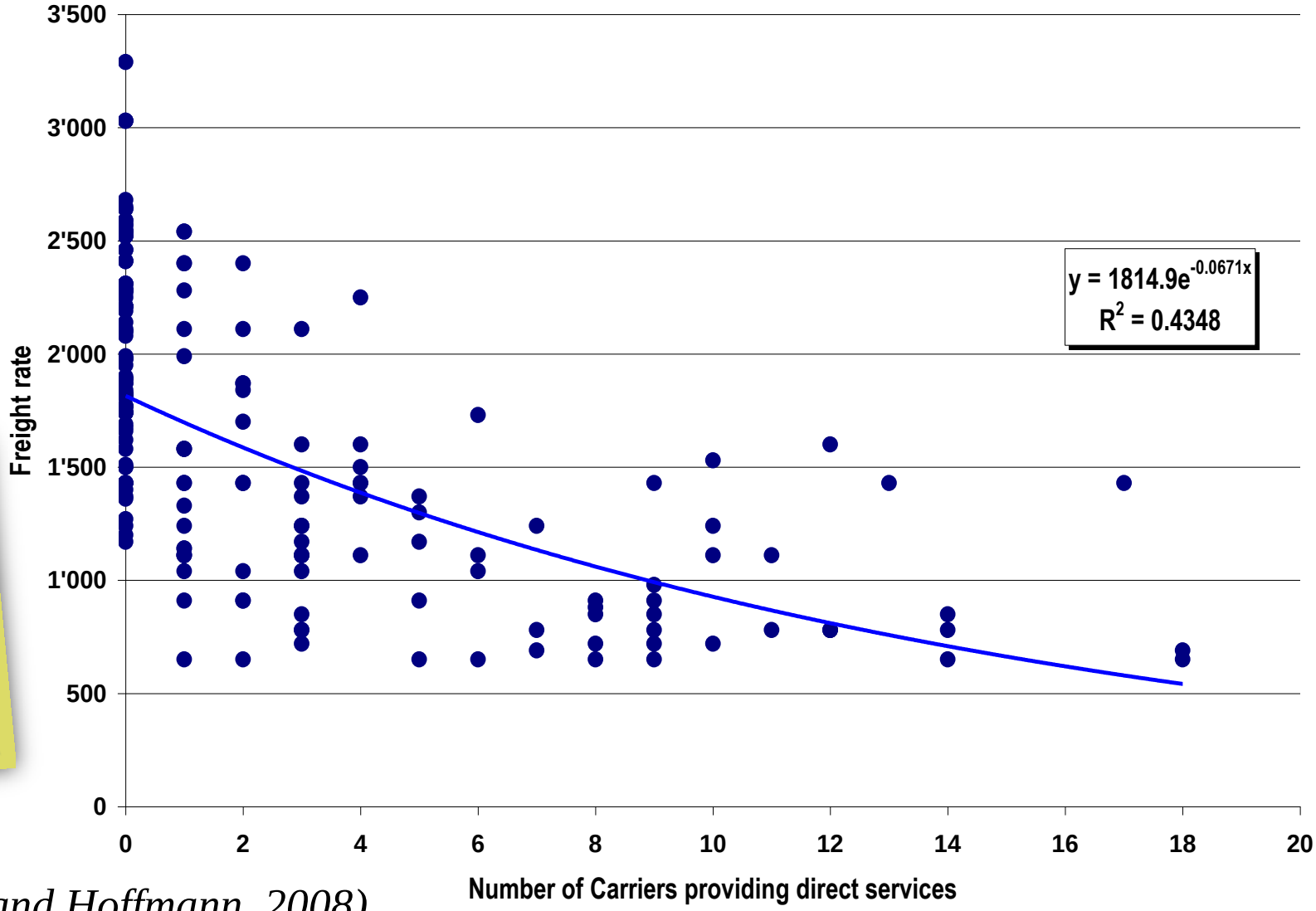
Free exchange

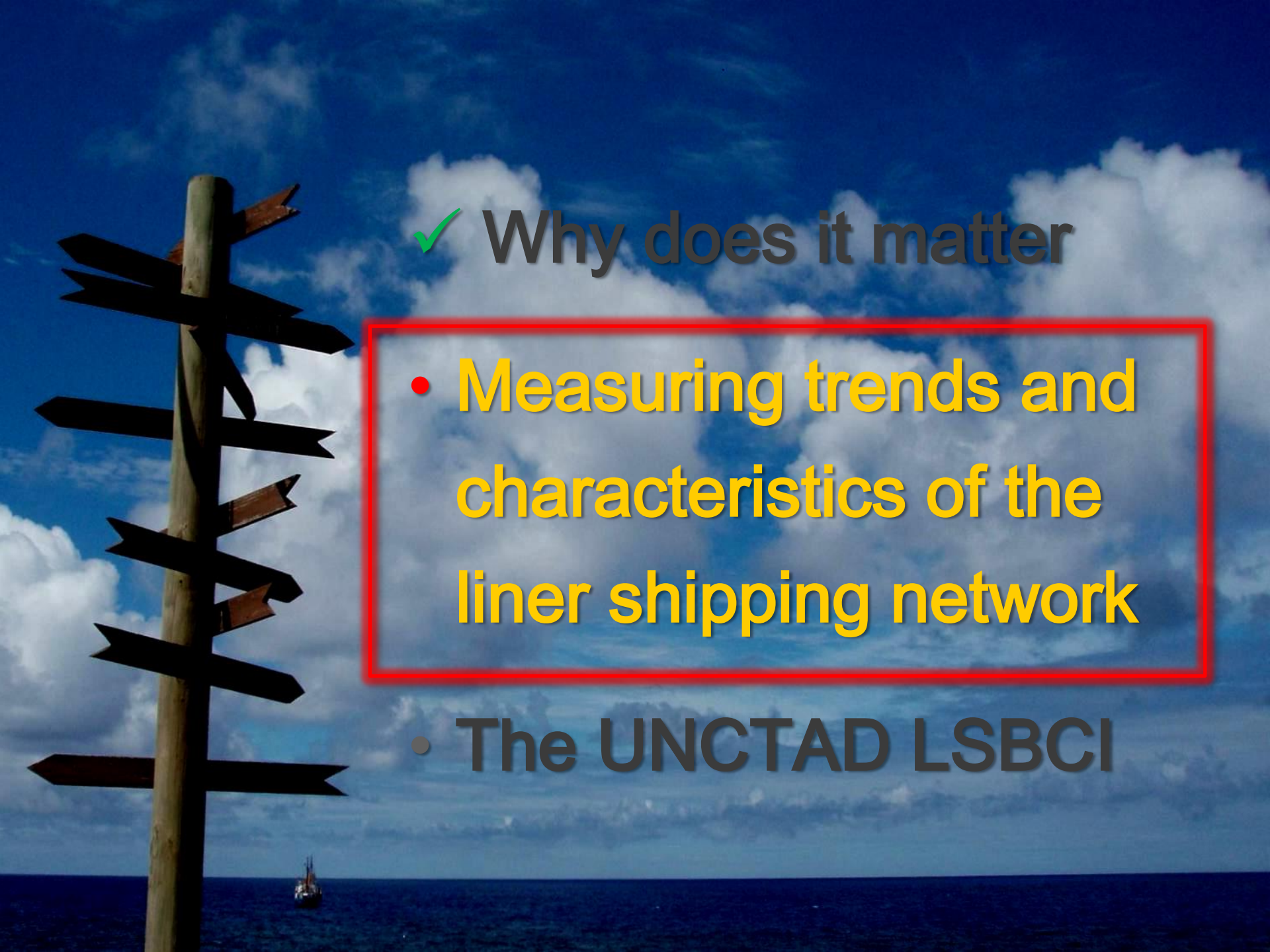
The humble hero

Containers have been more important for globalisation than freer trade

More competition leads to lower freight rates



(Wilmsmeier and Hoffmann, 2008)


✓ Why does it matter
• Measuring trends and characteristics of the liner shipping network
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Containerization of trade, and access to containerized transport services are important determinants of countries' trade competitiveness

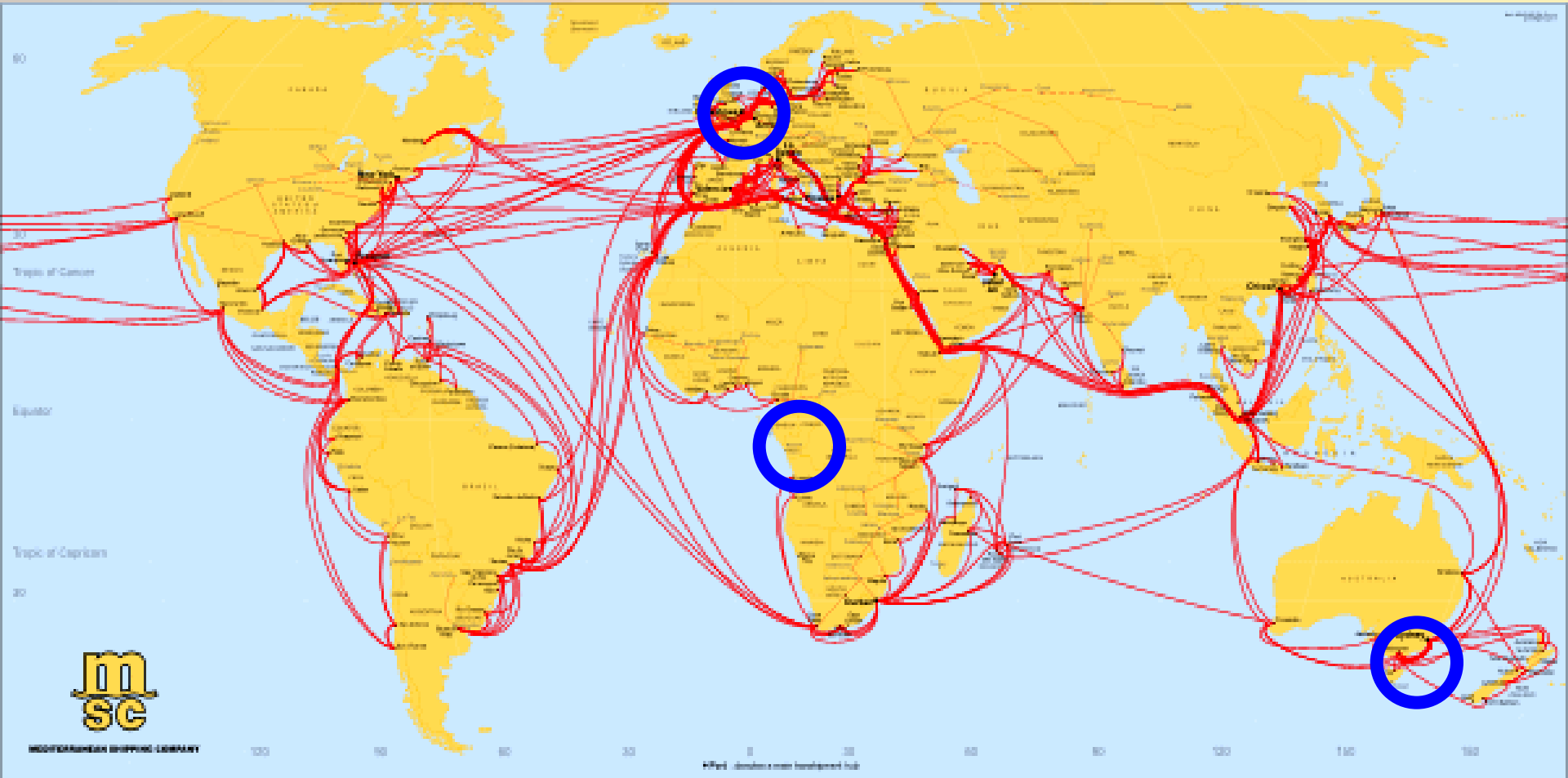
How can we measure this?

“Connectivity”

1) Per country – in a “point”
2) Per route – between pairs of countries

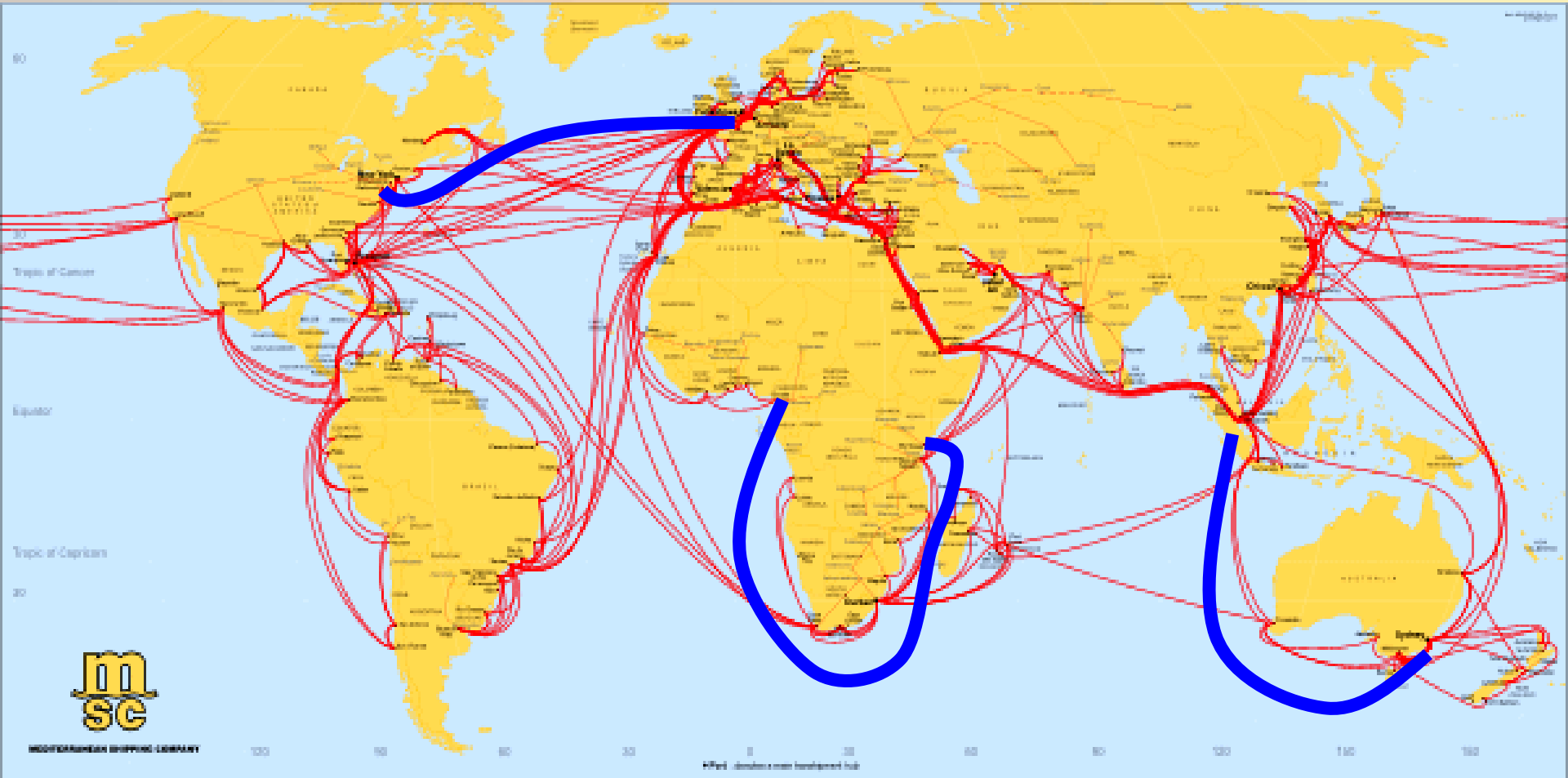
“Connectivity”

1) Per country – in a “point” (159)
2) Per route – between pairs of countries



“Connectivity”

1) Per country – in a “point” (159)
2) Per route – between countries (159*158/2=12561)



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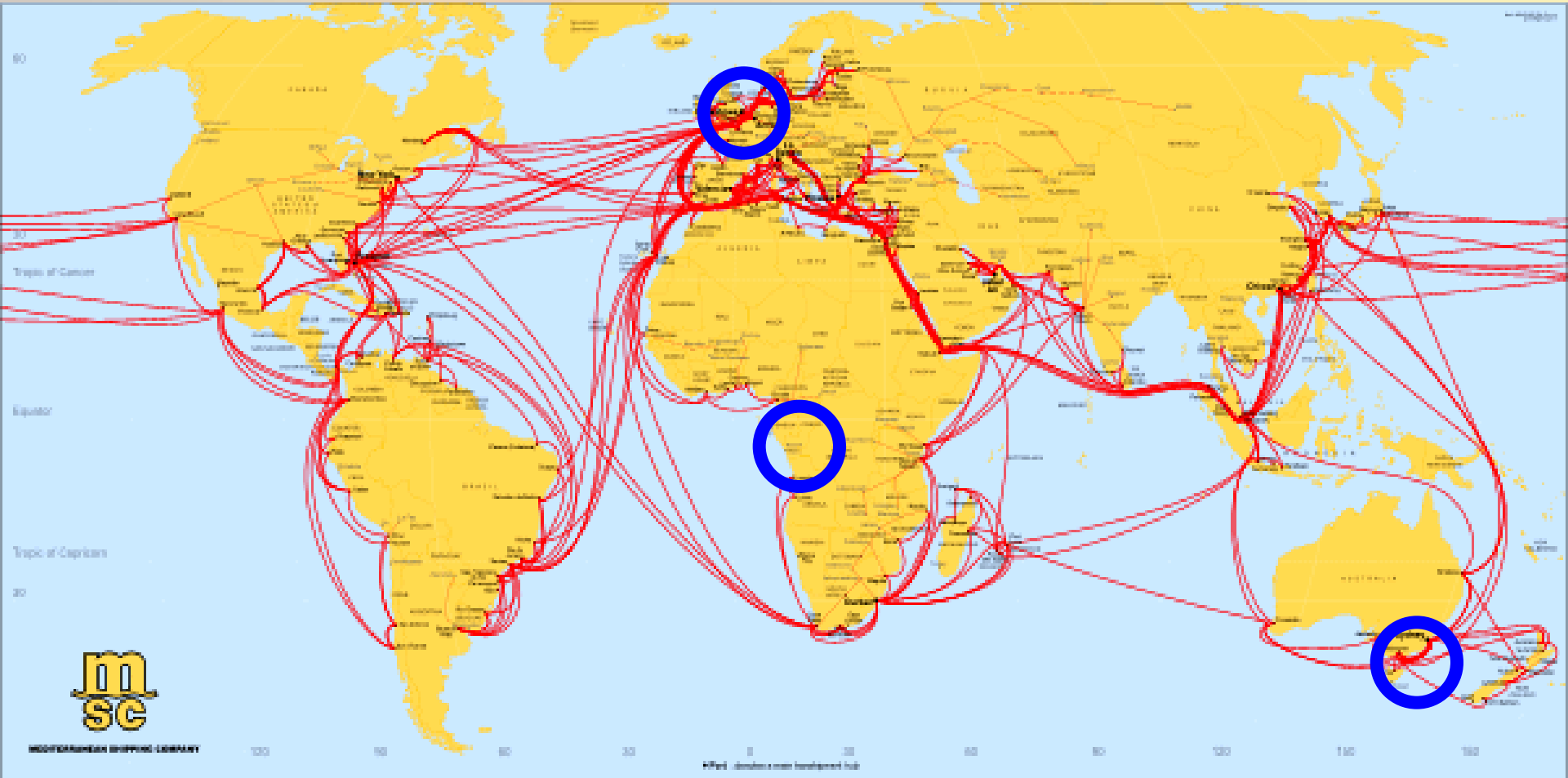


"Maritime connectivity"

UNCTAD's "Liner Shipping Connectivity Index" (LSCI):
An indicator for the supply of liner shipping services

5 components, on the deployment of the world's container ships:

- Ships
- TEU capacity
- Shipping companies
- Services
- Maximum ship sizes

Data from: Lloyd's List Intelligence

“Maritime connectivity”

UNCTADSTAT
UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

HOME DATA CENTER DOCUMENTATION

Reports | Table | Chart

Actions

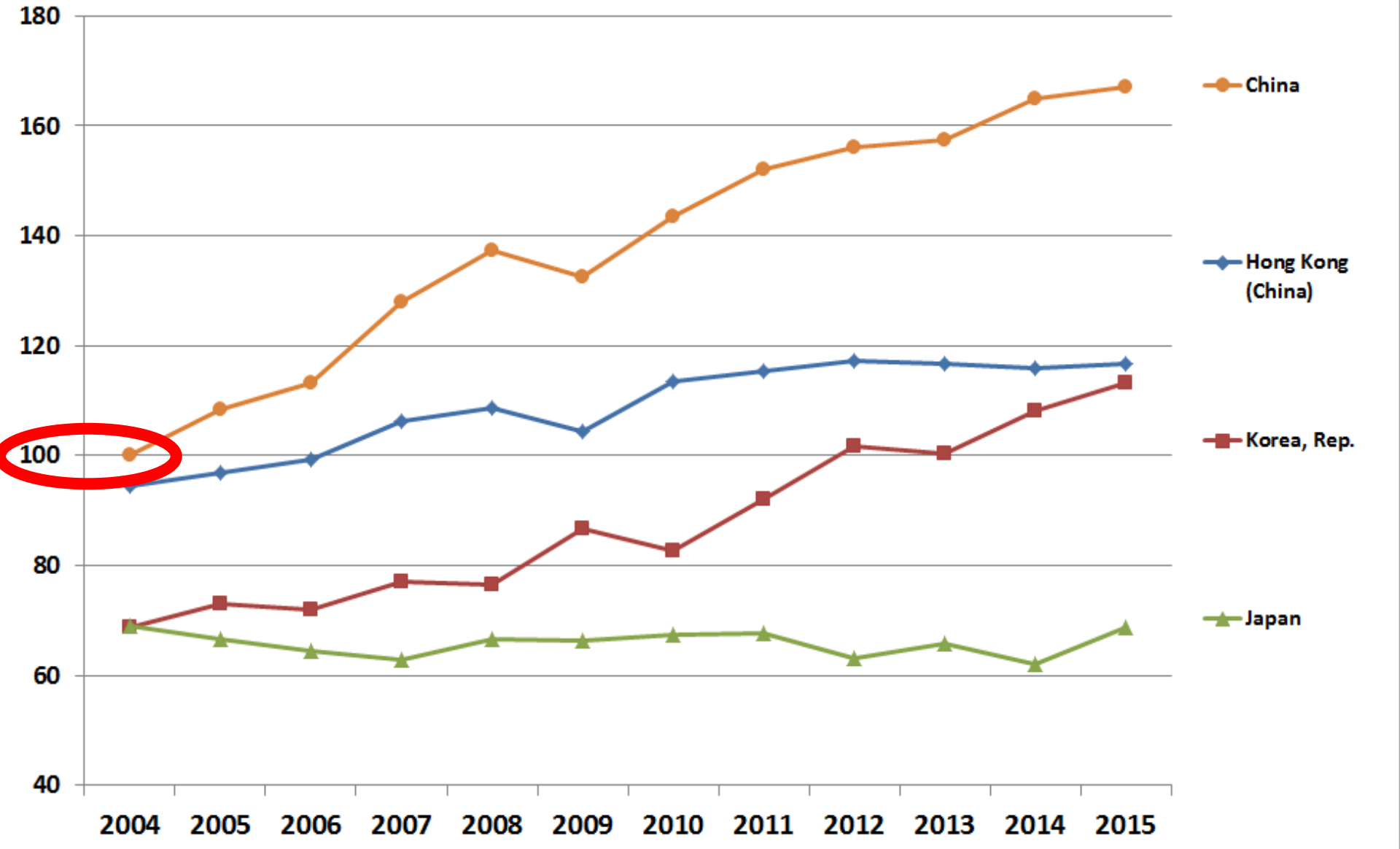
Liner shipping connectivity index, annual, 2004-2014

Other: MEASURE - Index (Maximum 2004=100)

YEAR / ECONOMY	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Afghanistan	..	..	..	..	..	..	..	..	..	..	..
Albania	0.40	0.40	0.40	2.28	1.98	2.30	4.34	4.54	0.53	4.43	4.11
Algeria	10.00	9.72	8.70	7.86	7.75	8.37	31.45	31.06	7.80	6.91	6.94
American Samoa	5.17	5.30	4.86	6.28	6.44	4.60	4.85	4.56	4.39	4.19	4.42
Andorra	..	..	..	..	..	..	..	..	..	..	..
Angola	9.67	10.46	9.46	9.90	10.22	11.31	10.71	11.27	13.95	13.80	19.28
Anguilla	..	..	..	..	..	..	..	..	..	..	..
Antigua and Barbuda	2.33	2.56	2.43	3.76	3.82	2.66	2.40	2.40	2.41	2.43	4.07
Argentina	20.09	24.95	25.58	25.63	25.70	25.99	27.61	30.62	34.21	33.51	37.69
Armenia	..	..	..	..	..	..	..	..	..	..	..
Aruba	7.37	7.52	7.53	5.09	5.09	3.52	5.34	6.21	6.03	6.30	6.14
Australia	26.58	28.02	26.96	26.77	38.21	28.80	28.11	28.34	28.81	29.87	31.29
Austria	..	..	..	..	..	..	..	..	..	..	..
Azerbaijan	..	..	..	..	..	..	..	..	..	..	..
Bahamas	17.49	15.70	16.19	16.45	16.35	19.26	25.71	25.18	27.06	26.41	26.70
Bahrain	5.39	4.34	4.44	5.99	5.75	8.04	7.83	9.77	17.86	17.90	27.01
Bangladesh	5.20	5.07	5.29	6.36	6.40	7.91	7.55	8.15	8.02	7.96	8.39
Barbados	5.47	5.77	5.34	5.79	5.36	4.75	4.20	5.85	4.82	5.18	4.71

Stories over the last 12 years…

LSCI - Liner Shipping Connectivity Index



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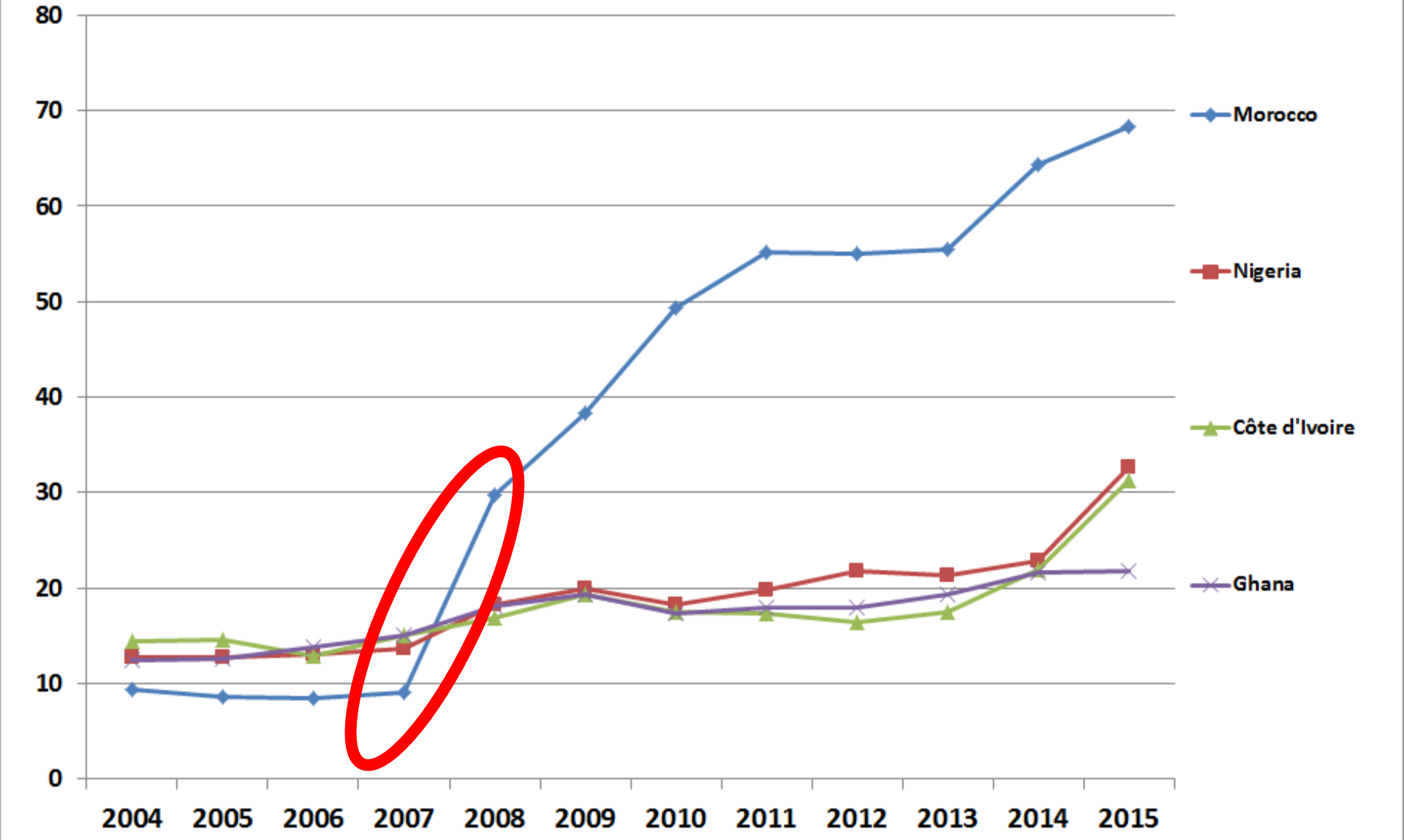

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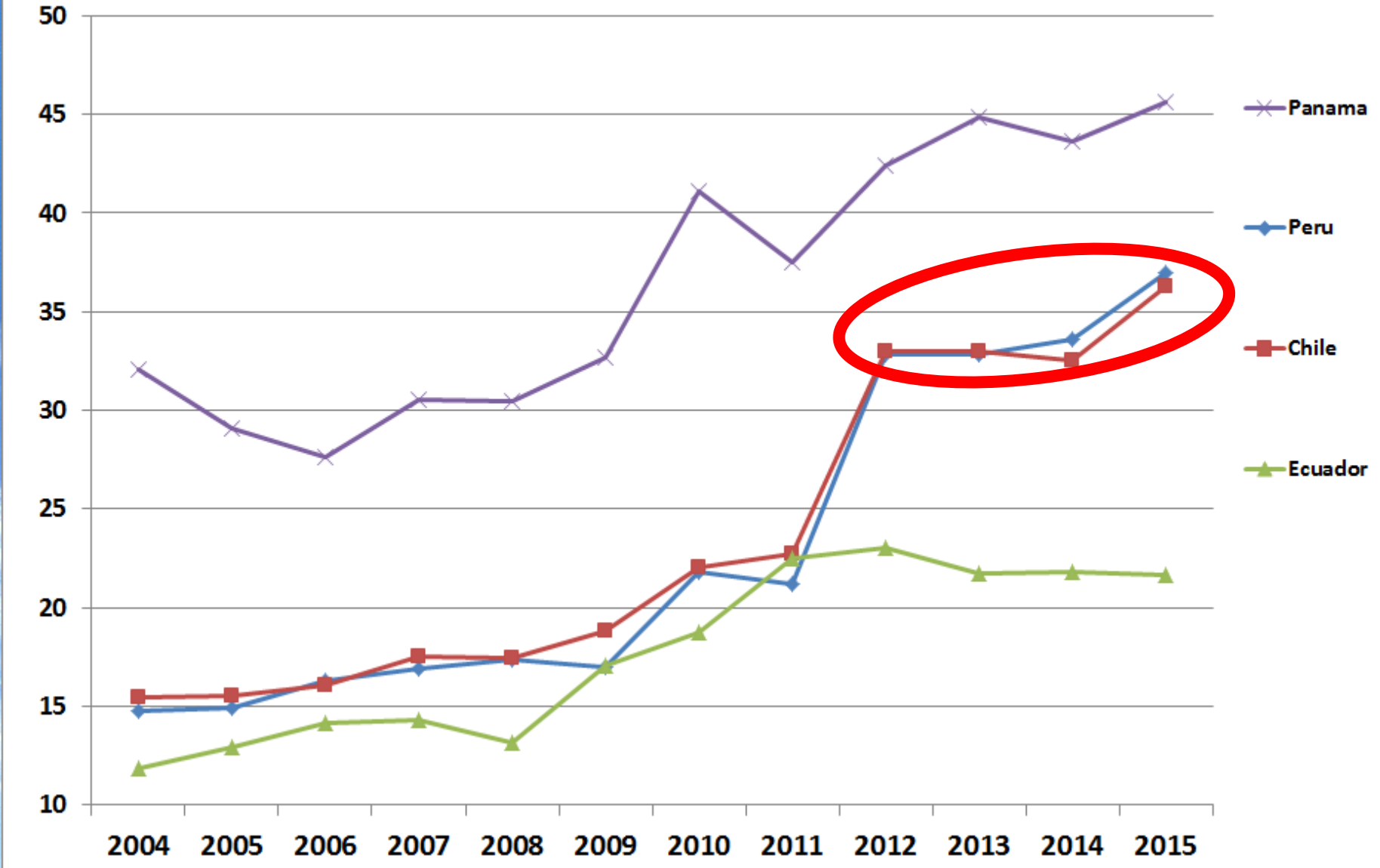
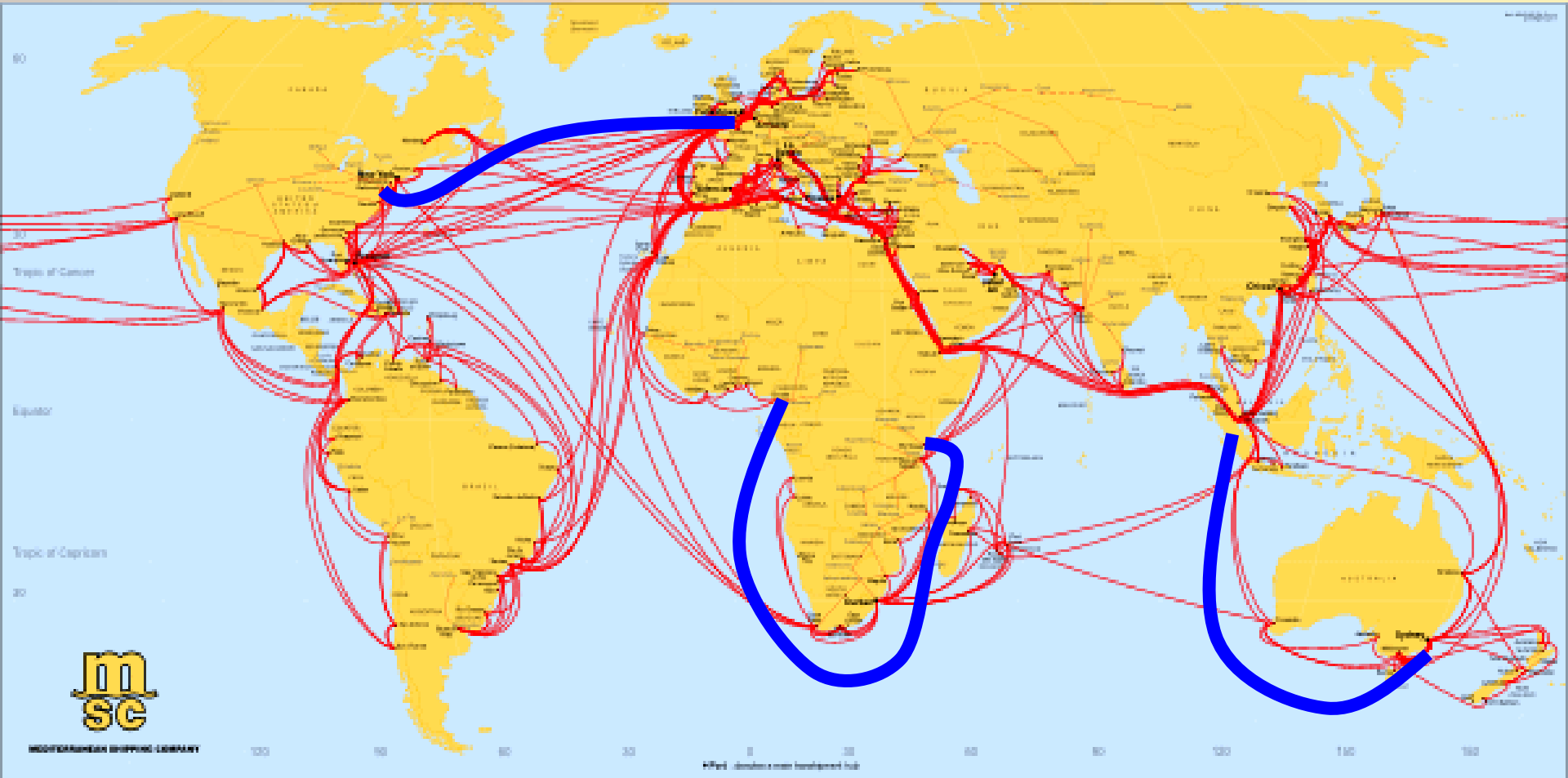
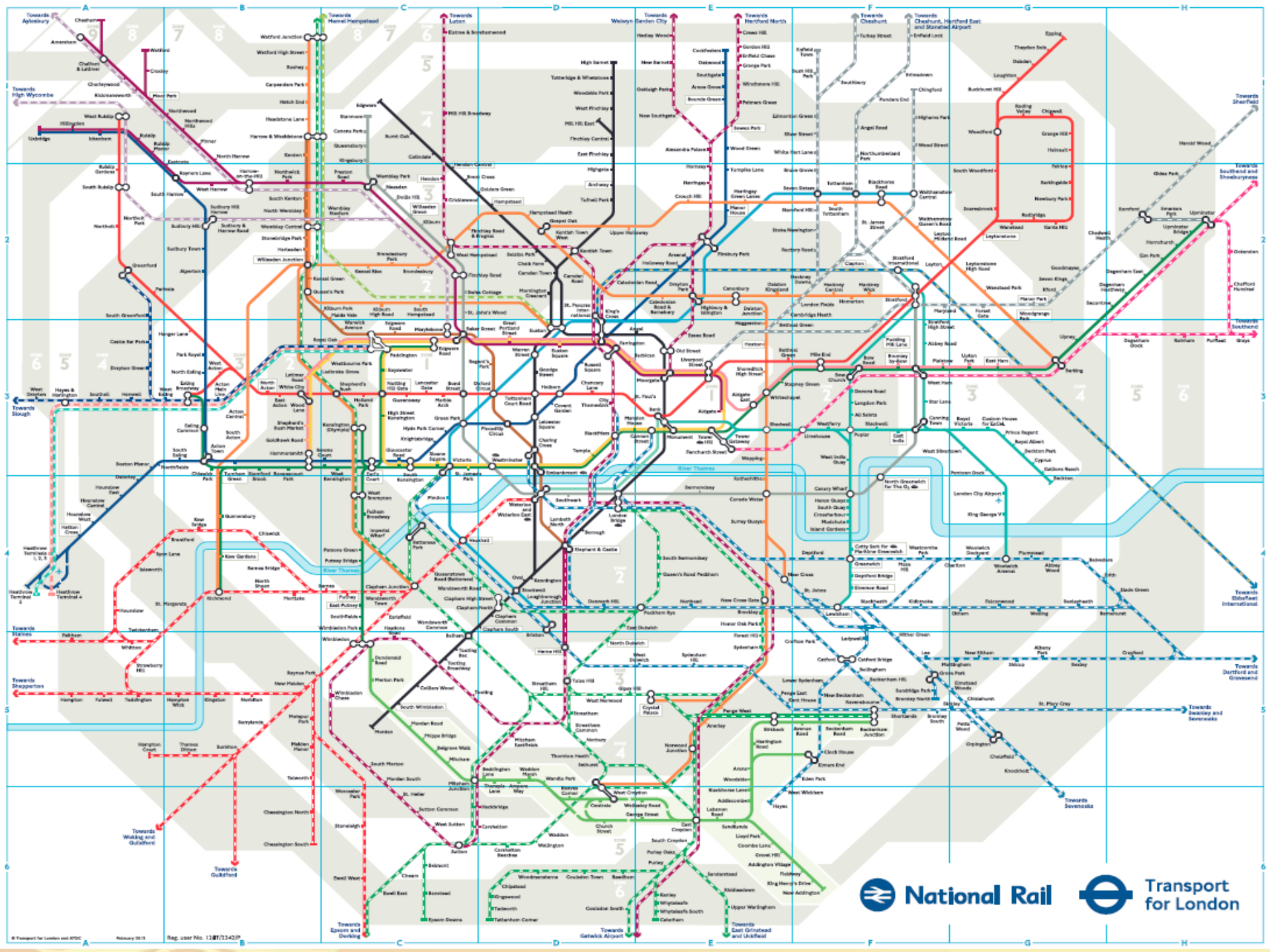


“Connectivity”

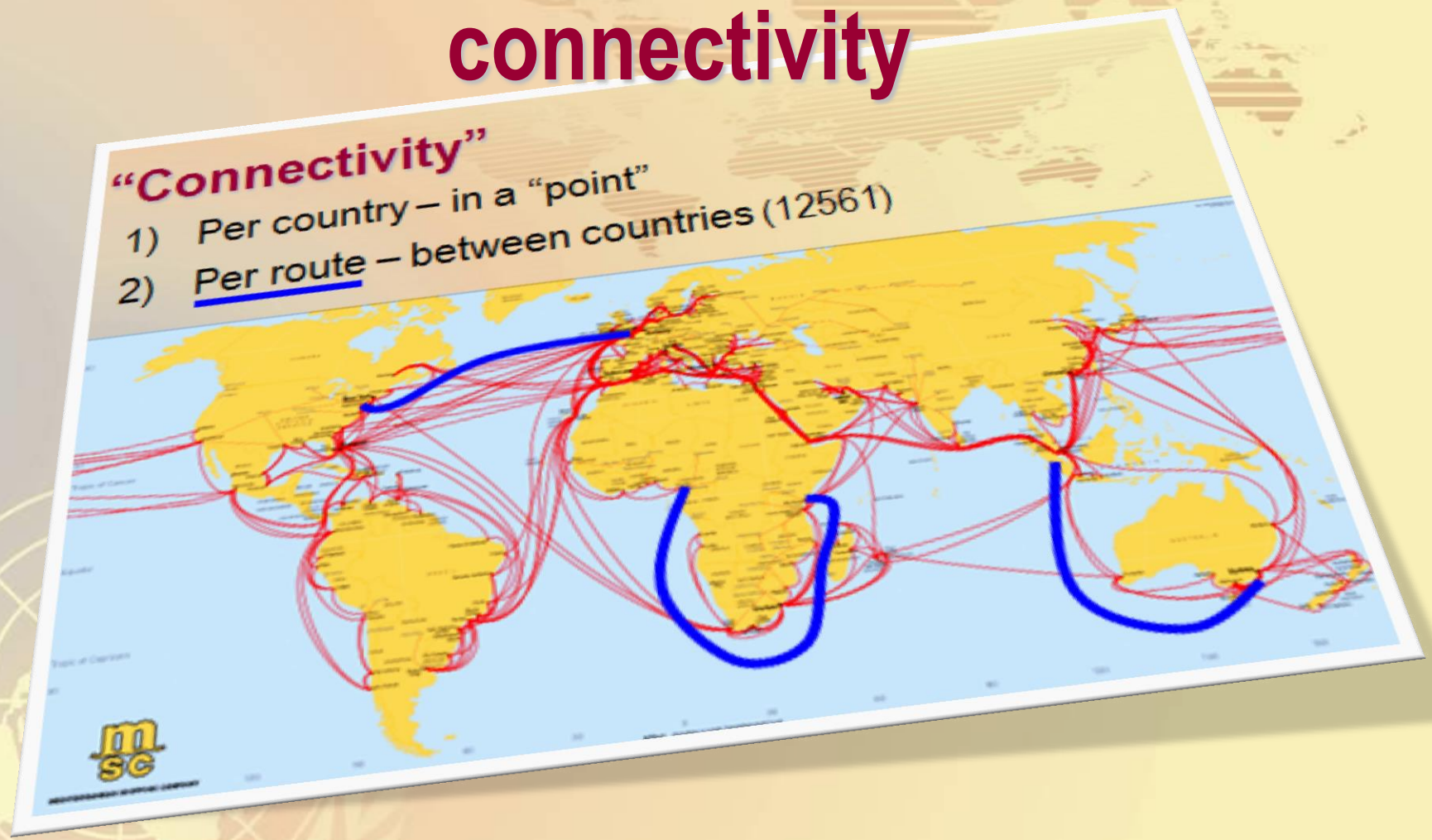
1) Per country – in a “point” ✓

2) Per route – between countries (12561)




National Rail
Transport for London

Ways to measure bi-lateral connectivity



Ways to measure bi-lateral connectivity (1)

- How many transshipments do I need?

  e.g., to get from Argentina to Gabon, I need at least 2 transshipments in the below example

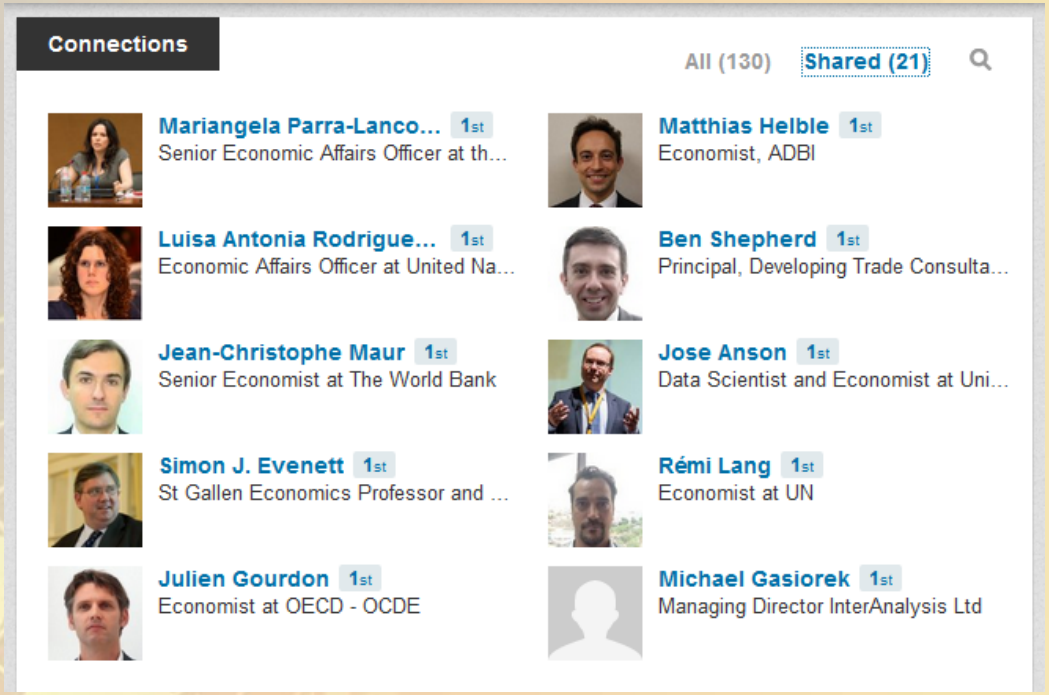
Ways to measure bi-lateral connectivity (2)

- Position in network:

  e.g. Number of options to get from A to B with one (or two) transshipment(s)
  -> number of common connections

Ways to measure bi-lateral connectivity (2)

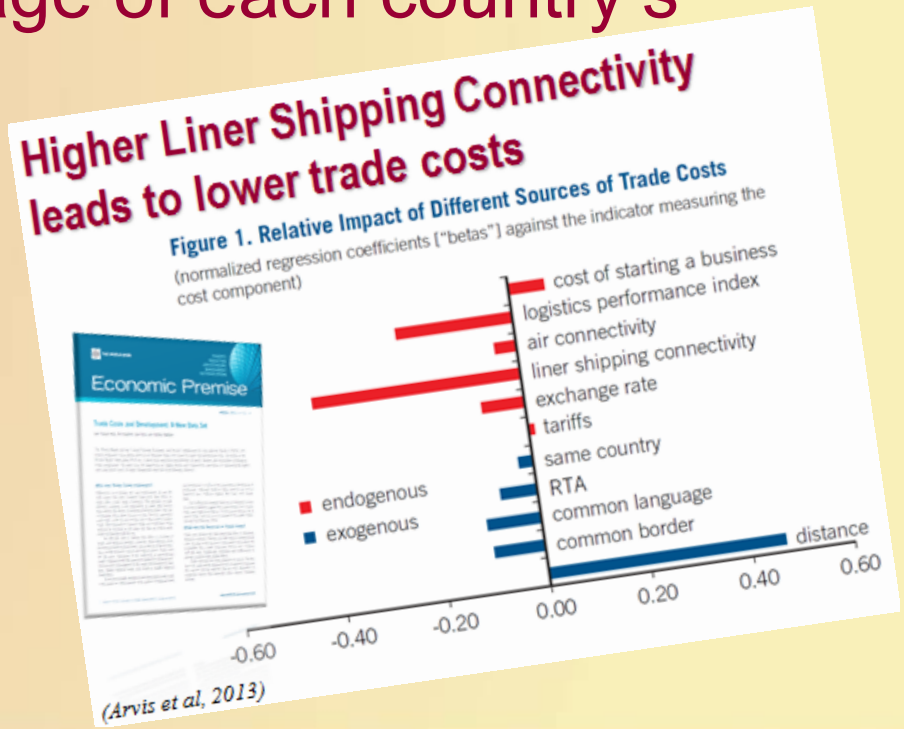
- Position in network:



Ways to measure bi-lateral connectivity (3)

- Use national-level data:

  e.g. geometric average of each country's total connections

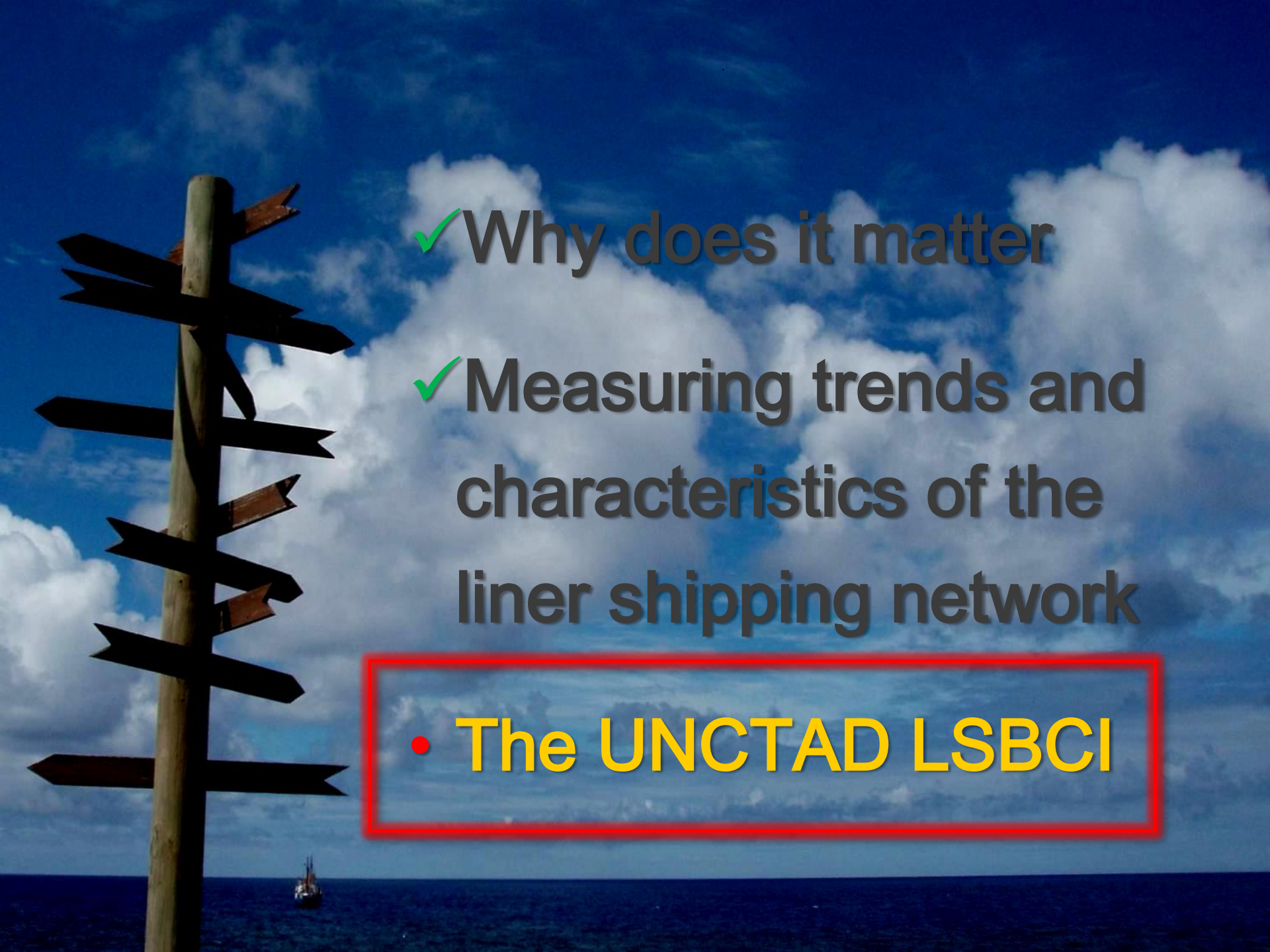


Ways to measure bi-lateral connectivity (4)

- Competition
  - Number of companies on thinnest route

Ways to measure bi-lateral connectivity (5)

- Infrastructure:
  - Largest ship


✓Why does it matter
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LSBCI: definition

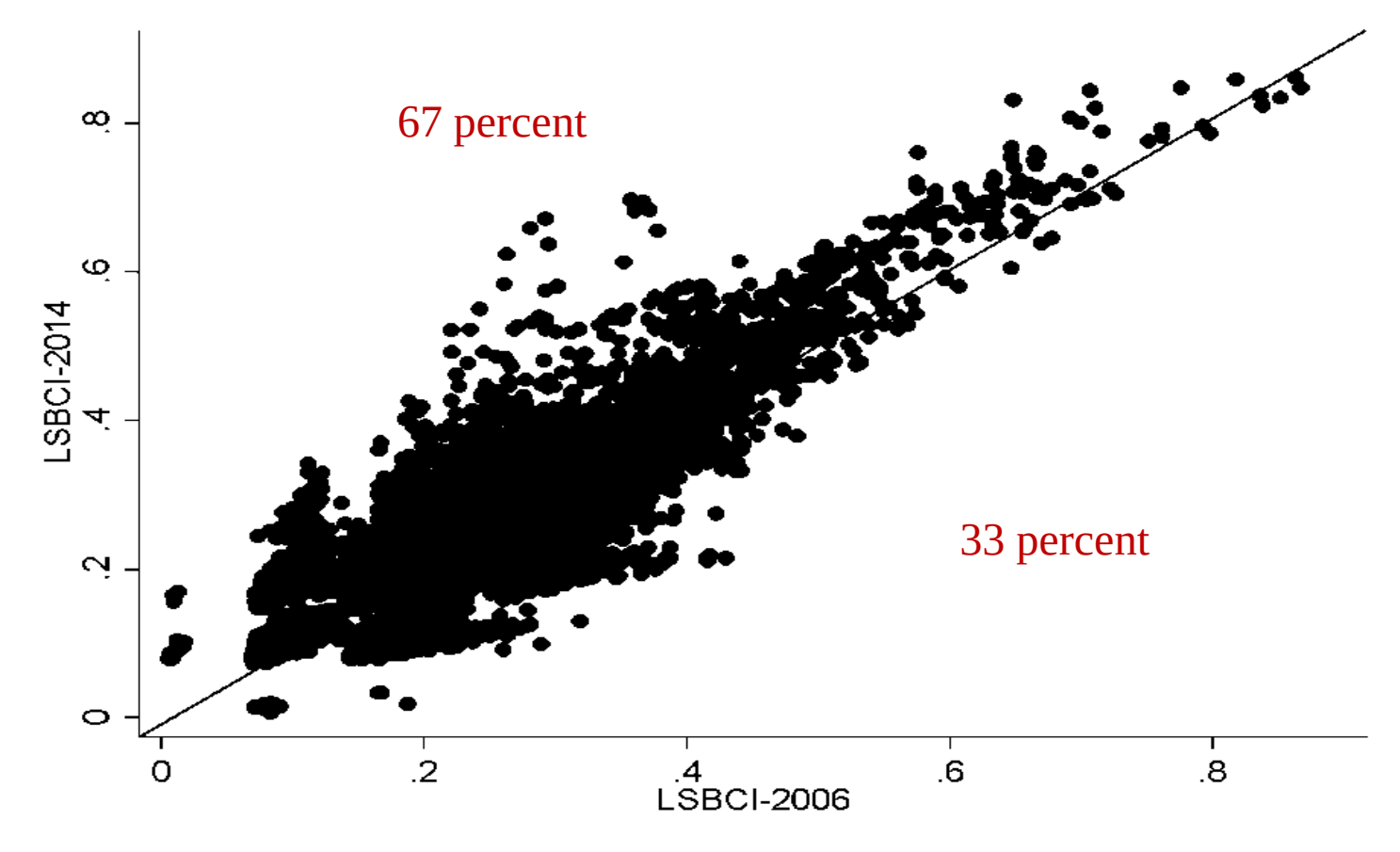
- It is equal to the arithmetic mean of a normalized version of the 5 components
- It varies between 0 (minimum) and 1 (maximum)
- Normalization of the components allows for inter-temporal comparison within and between countries: precise monitoring instrument

LSBCI: some statistics

	Mean	Median	Maximum	Standard Deviation
2006	*0.225*	*0.209*	*0.867*	*0.097*
2008	*0.230*	*0.212*	*0.875*	*0.100*
2009	*0.226*	*0.209*	*0.860*	*0.102*
2010	*0.230*	*0.211*	*0.845*	*0.104*
2011	*0.230*	*0.210*	*0.847*	*0.104*
2012	*0.236*	*0.214*	*0.866*	*0.108*
2013	*0.234*	*0.211*	*0.877*	*0.108*
2014	*0.235*	*0.213*	*0.863*	*0.110*

Note: Statistics are obtained for a sample of 155 coastal countries that is 11935 country pairs

LSBCI: 2014 *versus* 2006



LSBCI: Top 20 country pairs

year	exporter	importer	LSBCI	year	exporter	importer	LSBCI	year	exporter	importer	LSBCI
2014	NLD	GBR	0.86	**2010**	*HKG*	*CHN*	0.84	**2006**	GBR	BEL	0.87
	NLD	DEU	0.86		GBR	BEL	0.84		NLD	GBR	0.86
	GBR	BEL	0.85		NLD	GBR	0.83		DEU	BEL	0.85
	HKG	*CHN*	0.85		NLD	BEL	0.82		GBR	DEU	0.84
	KOR	*CHN*	0.85		DEU	BEL	0.81		NLD	BEL	0.84
	NLD	BEL	0.84		GBR	DEU	0.81		NLD	DEU	0.82
	DEU	BEL	0.83		NLD	DEU	0.81		FRA	BEL	0.80
	MYS	*CHN*	0.83		*SGP*	*CHN*	0.80		GBR	FRA	0.79
	GBR	DEU	0.82		GBR	FRA	0.80		*HKG*	*CHN*	0.78
	SGP	*MYS*	0.82		*SGP*	*MYS*	0.79		FRA	ESP	0.76
	SGP	*CHN*	0.81		FRA	BEL	0.79		NLD	FRA	0.76
	KOR	*HKG*	0.80		*KOR*	*CHN*	0.79		FRA	DEU	0.75
	GBR	FRA	0.80		NLD	FRA	0.78		ITA	FRA	0.73
	NLD	FRA	0.79		*KOR*	*HKG*	0.76		GBR	ESP	0.72
	ITA	ESP	0.79		*MYS*	*CHN*	0.76		ITA	ESP	0.72
	FRA	BEL	0.79		FRA	DEU	0.76		*SGP*	*MYS*	0.71
	FRA	ESP	0.78		*SGP*	*HKG*	0.75		ESP	BEL	0.71
	FRA	DEU	0.78		GBR	ESP	0.74		NLD	ESP	0.71
	MYS	*HKG*	0.77		ESP	BEL	0.73		*KOR*	*CHN*	0.71
	USA	*CHN*	0.76		GBR	*CHN*	0.73		ITA	GBR	0.70

Source: Authors Calculations

Land-locked countries

- Land-locked countries are defined by **not** having direct access to shipping networks
- Identifying the contribution of shipping connectivity to trade and trade costs also helps **identify** the remaining, un-explained part, specific to land-locked countries

Land-locked countries (cont.)

- UNCTAD's analysis will allow to better identify contributions of the trade efficiency of
  - land-locked countries and of
  - transit countries

  separately

LSBCI: DVG_LL

AFG	0.17	LSO	0.18
ARM	0.10	MLI	0.14
AZE	0.18	MNG	0.22
BDI	0.13	MWI	0.13
BFA	0.16	NER	0.15
BOL	0.17	NPL	0.18
BTN	0.18	PRY	0.18
BWA	0.18	RWA	0.13
CAF	0.14	SWZ	0.18
ETH	0.15	UGA	0.14
KAZ	0.18	ZMB	0.13
KGZ	0.22	ZWE	0.18

All 0.16 / Overall 0.235

LSBCI: DEV_LL

AUT	0.20
CHE	0.19
CZE	0.20
HUN	0.14
LUX	0.19
SVK	0.15

All 0.18 / Overall 0.235

- Differences in the LSBCI could explain differences in exports of 30%
- On average a DEV_LL country exports 6 times more than a DVG_LL


More trade
-> More shipping supply
-> More competition
-> lower freights
-> More trade


Better services
-> More trade
-> More income to finance infrastructure
-> Better services
CONTAINER TERMINAL TOLLERORT


Lower Transport Costs
-> More trade
-> Economies of scale
-> Lower Transport Costs

Liner Shipping Connectivity

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