

# Lessons for New Zealand from spatial economics

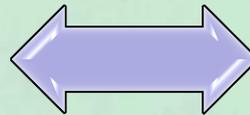
*NZ productivity hub symposium:  
Unpicking New Zealand's productivity paradox*

July 2, 2013  
Te Papa, Wellington

Scale



Specialisation



Diversification



# Is NZ special? No

## Increasing urbanisation

### Urban peaks in density, rents, wages & productivity

- Stillman & Lewis – high wage and high returns to skills
- Maré & Graham – high productivity in dense areas

## Urban sorting

- Knowledge industries & skilled workers
  - Grimes & Le Vaillant-Coates



# Is NZ special? Yes

- “no other OECD member has such a striking combination of small size and remoteness” (Guillemette, 2009)

## High urbanisation and primacy

- “Prosperous countries tend to be built around large affluent agglomerations, but New Zealand has only one large agglomeration, Auckland, and by international standards even it is not very large” (ibid)

## Mid-ranked (5<sup>th</sup>) in Australasian system of cities

## High rates of mobility

- Internal and external migration



# Spatial economics and New Zealand's productivity paradox

- “If we adopt an economic geography perspective, there is nothing really paradoxical about New Zealand’s productivity performance.”
  - McCann, P (2009) “Economic geography, globalisation and New Zealand's productivity paradox” *NZEP*

Costs of distance have declined for:

- Transport
- Transmitting codified knowledge

Rewards to proximity have grown

- For non-codified knowledge
- Communication technology is complementary with face-to-face contact



# Proximity

Spatial nearness is only one dimension of proximity

- Similarity of science base
- Similarity of industry
- Similarity of products
- Similarity of culture

Networks reflect proximity, and can operate across space

How isolated is NZ? How is NZ isolated?



# Our connections to the world

## Trade flows

- NZ is a small open economy, but our trade is slightly less than expected for our size (*Stevens, 2010*)
  - but maybe not for our distance from major markets

## Migration flows

- High immigrant share (especially in Auckland)

## Capital flows

- Relatively low levels of foreign direct investment in NZ
  - Auckland gets the lion's share (over 600 international companies)
- Even lower levels of NZ investment overseas

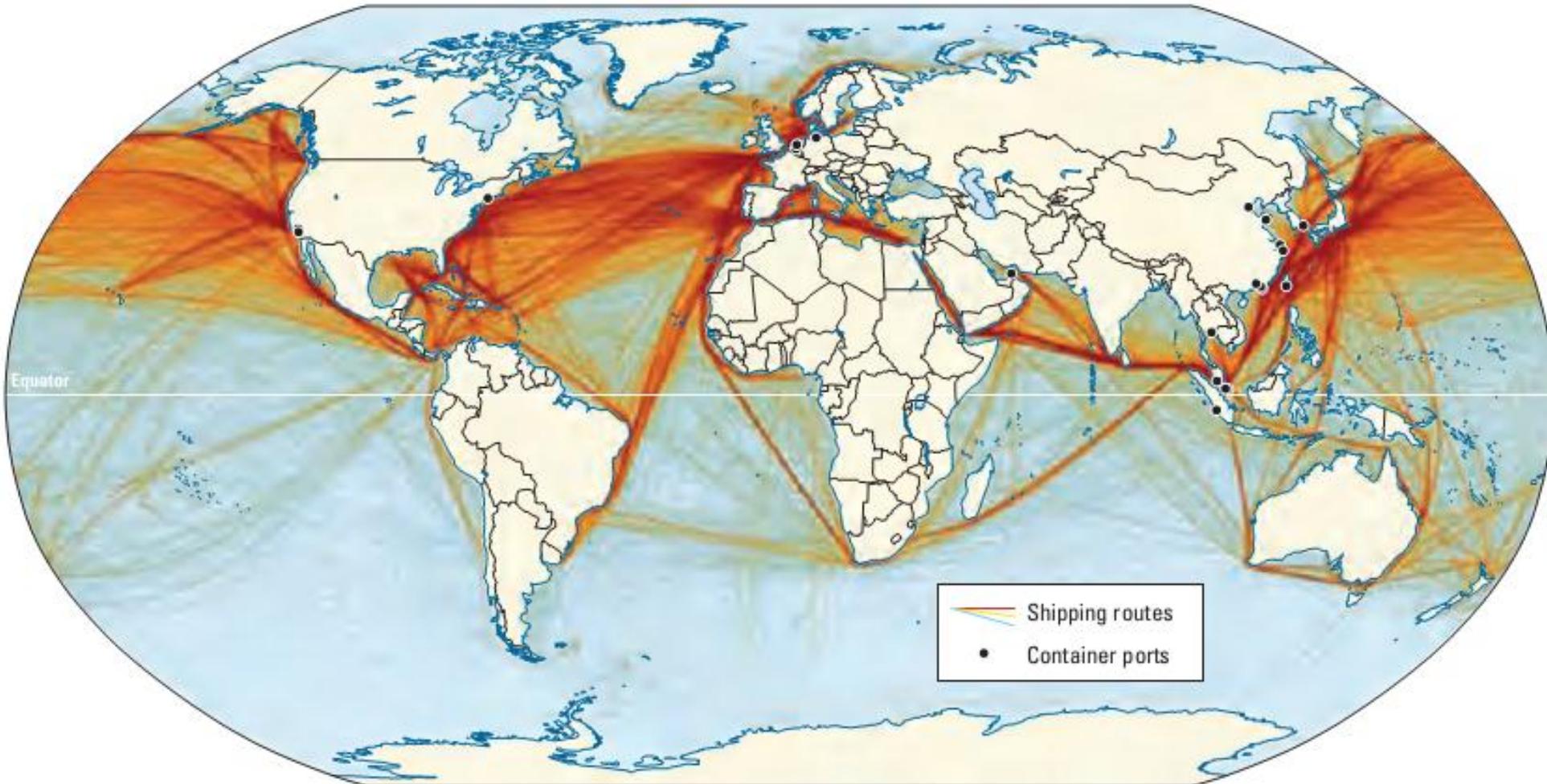
## How much integration accompanies these flows?

- Knowledge Matrix Asia Pacific (2009) refers to 'Predatory acquisition'



# Shipping trade routes

**Map 6.1 Busy seafaring in the North, little landfall in the South**  
Intensity of shipping routes during one year beginning October 2004



*Sources:* Data from the World Meteorological Organization (WMO) Voluntary Observing Ships' (VOS) scheme, processed by Halpern and others 2008.  
*Note:* Container ports shown are the 20 largest by TEU of total containers handled in 2005 (Heideloff and Zachcial 2006).

# Fonterra's trade flows

Fonterra's Trade Flows



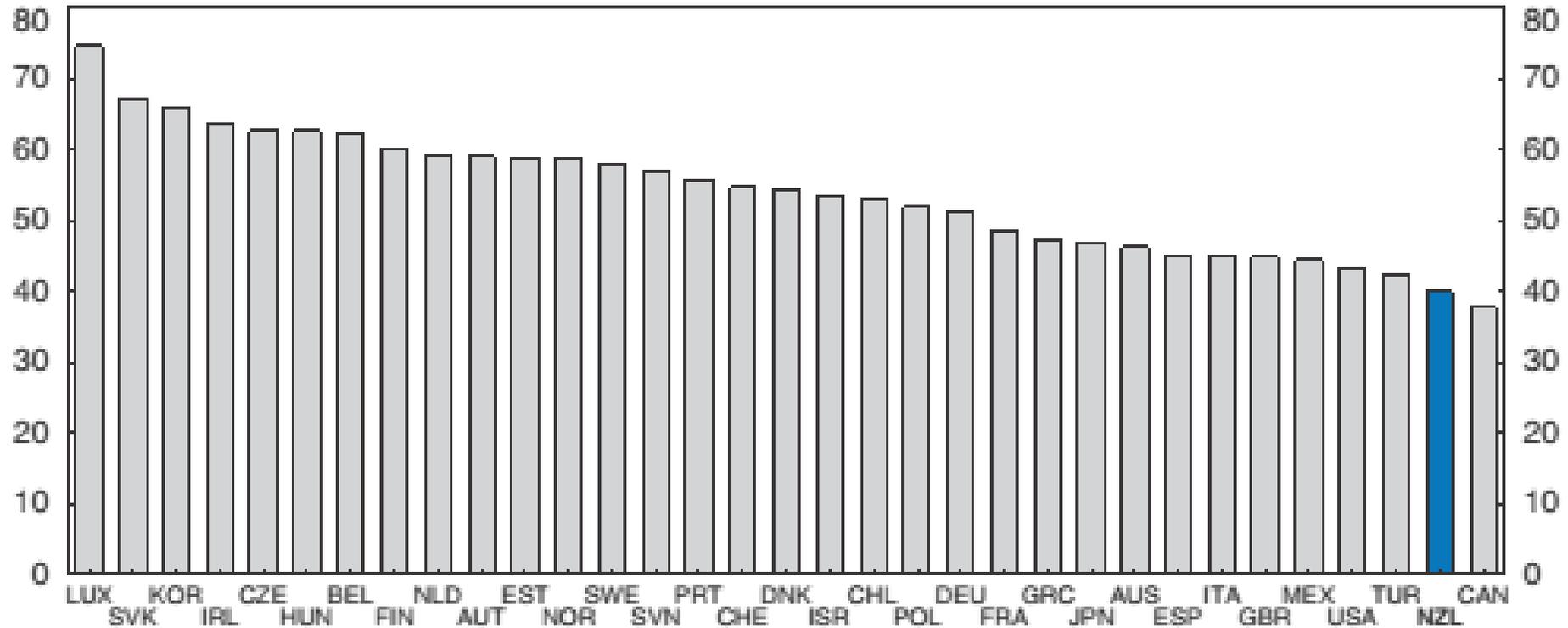
.....> <10,000 MT  
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Flow within Region

Source: Fonterra 2006

Figure 1.3. **Global value chain participation index in OECD countries**

2008



Source: OECD (2012), *Policy Dialogue on Aid for Trade, Mapping Global Value Chains*.

The participation index is calculated as the sum of:

i) the share of foreign inputs in overall exports; and

ii) the share of gross exports that are used as inputs in other countries' exports

Source: OECD *Economic Surveys: NZ 2013*

# Measuring network connectedness

## Globalization and World Cities (GaWC) research network

- Examines locations of 175 professional service firms across 525 cities
  - 75 Financial Services;
  - 25 each from Accountancy Services, Advertising, Legal Services, Management Consultancy



# Measuring network connectedness (2)

The strength of a city's connectivity is measured as a function of the connectedness of the professional service firms in the city

- How many multinational professional service firms in the city?
- Where else do they operate?
- Strength of links is weighted by the size of local presence

Focus on network links

- Correlated with city performance and attractiveness, as measured by various other ranking indices



# Connectivity of Australasian cities

	Overall	Fin. Serv	Acc	Advert	Legal Serv	Mgmt Cons	Local*	Eur*	Nth Amer*
<b>Sydney</b>	71 [1]	77 [1]	69 [1]	63 [1]	25 [1]	43 [1]	-52 [9]	63 [1]	-29 [6]
<b>Auckland</b>	46 [2]	33 [3]	59 [2]	37 [3]	07 [3]	31 [4]	08 [8]	42 [5]	-64 [9]
<b>Melbourne</b>	44 [3]	38 [2]	47 [3]	38 [2]	17 [2]	34 [3]	54 [7]	14 [6]	-14 [3]
<b>Brisbane</b>	28 [4]	17 [5]	44 [4]	12 [5]	07 [3]	16 [6]	99 [4]	52 [3]	-15 [4]
<b>Perth</b>	24 [5]	19 [4]	37 [5]	05 [6]	07 [3]	11 [8]	128 [3]	-62 [7]	22 [2]
<b>Wellington</b>	22 [6]	13 [6]	26 [9]	13 [4]	07 [3]	34 [2]	83 [6]	-98 [8]	217 [1]
<b>Adelaide</b>	20 [7]	08 [7]	33 [6]	05 [6]	07 [3]	16 [7]	144 [2]	48 [4]	-38 [7]
<b>Canberra</b>	16 [8]	02 [9]	28 [7]	04 [8]	07 [3]	19 [5]	151 [1]	62 [2]	-22 [5]
<b>Christchurch</b>	14 [9]	05 [8]	28 [8]	00 [9]	00 [9]	08 [9]	97 [5]	-157 [9]	-51 [8]

Notes: All measures relative to London's connectivity (London=100); \* = regional concentration

Source: Mould, Oli (2011) "Australasian Cities in globalization" Chapter 6 of Taylor, Peter J; Ni, Pengfei; Derudder, Ben; Hoyler, Michael; Huang, Jin; Witlox, Frank. Global urban analysis: A survey of cities in globalization Earthscan, London pp. 63-70.

# Proximity and innovation

- Hendy & Callaghan (2013-forthcoming)  
*Get off the grass: Kickstarting New Zealand's Innovation Economy*
  - Emphasise the need for knowledge interactions within NZ
  - Can New Zealand learn to innovate like a city of four million people?
    - cf: McCann: NZ cannot maintain a broadly-based research agenda
  - start exporting knowledge rather than nature



# Proximity in innovation networks

- Bigger cities produce more patents per capita
  - Reflects density of networks
- Innovation networks strengthen as *related* fields connect
- More connections emerge between *similar* products

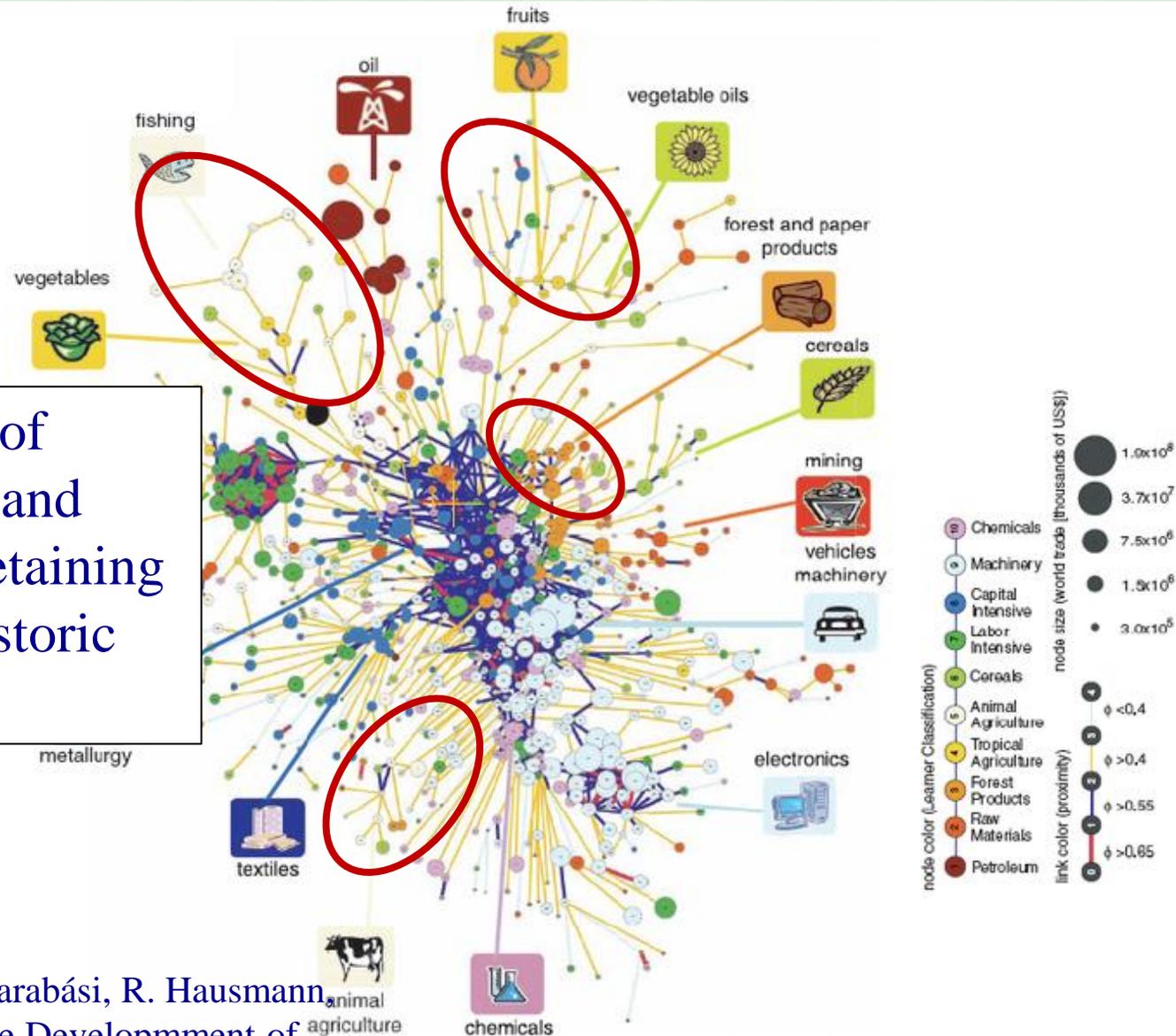


Hendy, Shaun C, and Catriona M Sissons. "Innovators, Innovation and Increasing Returns to Scale: Solving New Zealand's Productivity Paradox." *New Zealand Science Review* 68, no. 1 (n.d.): 28–32.

O'Neale, Dion R J, and Shaun C Hendy. "Power Law Distributions of Patents as Indicators of Innovation." *PLoS ONE* 7, no. 12 (2012).

# NZ is isolated in product space too

discovery of new areas of comparative advantage and diversification versus retaining the focus on areas of historic comparative advantage,

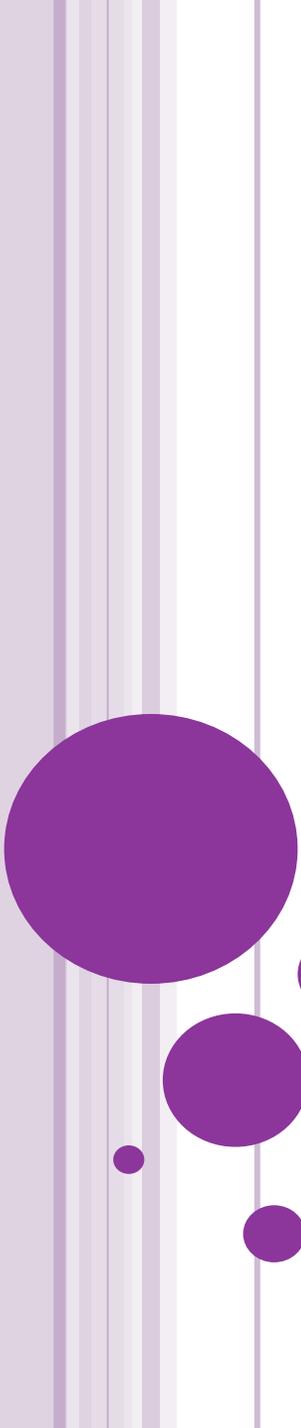


C.A. Hidalgo, B. Klinger, A.-L. Barabási, R. Hausmann, "The Product Space Conditions the Development of Nations," *Science* 317 (2007).

# Far away, so close!

- New Zealand needs to strengthen its *proximity* to other economies, to promote productivity-enhancing interactions and innovation
- The ‘death of distance’ helps us ship goods internationally; but
- We need to develop/ enhance ‘proximity ‘
  - Within NZ – to overcome low scale and density
  - Internationally – to be embedded in rich networks
  - Diversify into dense areas of product space
  - Linked *into*, not just linked *to*





**SYMPOSIUM:**  
**UNPICKING**  
**NEW ZEALAND'S**  
**PRODUCTIVITY PARADOX**

2 July 2013, Oceania, Te Papa Tongarewa