New Zealand’s productivity story – more questions than answers

Understanding productivity growth – new insights, new questions
OECD, 22-23 October 2014

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Outline

1. Aggregate and industry productivity

2. International comparisons

3. The productivity distribution – why so wide?
Aggregate (measured sector) productivity performance
Multi-factor productivity growth

MFP growth strong in 1990s compared with other periods, but has weakened in 2000s.

Source: SNZ; authors’ calculations
NZ’s long-run growth dynamics

Output growth

Percent per year

Source: SNZ
New Zealand’s productivity growth by industry
Industry contributions to aggregate growth

1996-2011

- Capital deepening
- MFP
- Labour productivity

Ag, forestry, fishing
Mining
Manufacturing
EGWWS
Construction
Wholesale
Retail trade
Acom & food
Transp, post, warehsg
Info media & telecomms
Finance & insurance
Rental, hire, real est.
Prof, scientific, technical
Admin & support
Arts & rec
Other services
Industry contributions vs. GDP share

MFP growth: 1996-2011

Contribution to growth (ppt)

Industry share of GDP

Agg. MFP growth

MFP growth: 1996-2011

- Wholesale trade
- Info, media, telecoms
- Other Services
- Rental, hire, real est
- Retail trade
- Ag, forestry & fishing
- Manufacturing
- Transport
- Construction
- Prof, Scientific & Technical
- Accom & food
- Arts & rec
- EGWW
- Admin & support
- Mining
Industry contributions by GDP share

Labour productivity growth: 1996-2011

Aggregate labour productivity growth

Contribution to growth (ppt)

Industry share of GDP (%)
New Zealand’s productivity performance compared
Employment grows, productivity slows
No evidence of productivity catch up
Productivity at the micro level
Distance to which frontier?

Frontier country – the US

Advanced/low competition country – NZ?

Lagging country

Firm productivity

The technology frontier
The LP distribution – all firms

Productivity ratio

Legend:
- All - 10/90
- All - 25/75
- All industry - 10/90
- All industry - 25/75

Categories:
- Agg, Forest, Fish
- Mining
- Manufacturing
- EGWWS
- Construction
- Wholesale Trade
- Retail Trade
- Acc & Food
- Warehouse
- Info Media
- Telecoms
- Financa Insurance
- Rental, Hiring Real Estate
- Prof, Science Tech Services
- Admin Support Services
- Arts and Recreation Services
- Other Services
New Zealand firms are tiny
Productivity dispersion vs. firm size

Firm size vs. productivity dispersion

Average Firm Size (employment)

25/75 productivity gap

- Agg forest fish
- rental realestate
- finance insurance
- prof sci tech
- construction
- arts rec
- info media tele
- admin
- transport w’house
- retail
- other services
- acc food
- manufacturing
The LP distribution – firms > 5 employees
Local markets are small

Domestic tradability index by 1-digit industry

- Health Care and Social Assistance
- Retail trade; Accommodation and food services
- Rental, Hiring and Real Estate Services
- Construction
- Arts and Recreation Services; Other Services
- Education and Training
- Prof, Sci and Tech Services; Admin and Support Services
- Transport, Postal and Warehousing
- Information Media and Telecommunications
- Wholesale Trade
- Electricity, Gas, Water and Waste Services
- Financial and Insurance Services
- Public Administration and Safety
- Agriculture, Forestry and Fishing
- Manufacturing
- Mining

Gini index
New Zealand doesn’t trade much

“...any successful economic development strategy must ultimately raise the share of international trade in GDP” Harrison and Rodriguez-Clare (Handbook of Development Economics)
Competition and productivity distributions
Modelling firm catch up by industry

• Based on the ‘distance to which frontier’ methodology
  – Strong evidence of convergence
• Faster productivity growth in firms that:
  – export
  – FDI recipients
  – In more competitive industries
NZ income should be higher (based on comparative policy settings)
Thank you

Questions, comments, suggestion most welcome:

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Industry contributions to the 2000s slowdown

Percentage point difference – 1990s vs. the 2000s

- Ag, forestry, fishing
- Mining
- Manufacturing
- EGWWS
- Construction
- Wholesale
- Retail
- Accom & food
- Transp., post, warehsg
- Info media & telecomms
- Finance & insurance

MFP growth
Capital deepening
Labour productivity growth
Evidence new entrants don’t catch up...

<table>
<thead>
<tr>
<th>Industry</th>
<th>2001 entrant vs. incumbent in 2008</th>
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<tbody>
<tr>
<td></td>
<td>Relative size</td>
</tr>
<tr>
<td>Farm, agriculture services &amp; hunting</td>
<td>94%</td>
</tr>
<tr>
<td>Fishing, forestry</td>
<td>97%</td>
</tr>
<tr>
<td>Quarrying &amp; mining</td>
<td>56%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>47%</td>
</tr>
<tr>
<td>Construction</td>
<td>49%</td>
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<tr>
<td>Whole sales</td>
<td>36%</td>
</tr>
<tr>
<td>Retail</td>
<td>40%</td>
</tr>
<tr>
<td>Café, rest, accommodation</td>
<td>51%</td>
</tr>
<tr>
<td>Transport &amp; storage</td>
<td>26%</td>
</tr>
<tr>
<td>Post and communications</td>
<td>12%</td>
</tr>
<tr>
<td>Finance and insurance</td>
<td>34%</td>
</tr>
<tr>
<td>Property &amp; business services</td>
<td>54%</td>
</tr>
<tr>
<td>Cultural and recreational services</td>
<td>47%</td>
</tr>
<tr>
<td>Personal &amp; other services</td>
<td>61%</td>
</tr>
<tr>
<td>Education</td>
<td>64%</td>
</tr>
<tr>
<td>Health &amp; community services</td>
<td>62%</td>
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<tr>
<td>Overall</td>
<td>50%</td>
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## The New Zealand Productivity Commission

### Our organisation
- independent Crown entity
- three Commissioners
- ~15 staff, plus contractors

### Our work
- 2 inquiries per year chosen by Govt.
- in-depth analysis taking ~12 months
- public engagement/consultation
- real-world, practical policy advice to government
- Non-inquiry research agenda
• A cross-agency group designed to:
  – Shape research agendas
  – Connect people
  – Disseminate evidence

• Soon to publish a ‘Forward Looking Agenda for Research’
Why a poor productivity performance?

- Why doesn’t technology diffuse into or within New Zealand?
  - Economic geography?
  - Trade?
  - Regulation?
  - Services?
  - The macro picture?

Small relatively closed markets implying a serious lack of competition and scale?
• New entrants in our services sector don’t seem to catch up and they don’t get as big as incumbents.

• Low barriers to starting a business but high barriers to getting big/increasing market share?
NZ’s regulatory advantage has eroded
What are we doing about it?

The Productivity Commission and Productivity Hub
Apply yourself

Internship: New Zealand Productivity Commission

The New Zealand Productivity Commission - Te Kōmihana Whai Hua o Aotearoa - is an independent Crown Entity which provides advice to the Government on improving productivity to support the overall well-being of New Zealanders. Our economists and policy analysts carry out inquiries and research relating to productivity. Recent topics include housing, freight, trans-tasman integration and local government.

**Current or intending post-graduate students:** Kick-start your career in applied economics/policy analysis with a paid internship this summer, working closely with our Research Director and Advisors. Topics could include who benefits from productivity gains - the relationship between productivity and real income in New Zealand, productivity of the services sector, or you are welcome to propose a topic linked to your field of interest.

You will produce a report and a presentation summarising your findings, and share the knowledge gained with our team. You will gain valuable exposure to public sector research across a range of related issues, as well as get a foothold in the Wellington job market.

Location: Wellington
Start date: flexible

To apply, send your CV and a cover letter telling us why you want to work for us to: info@productivity.govt.nz
PMR is linked with GDP per capita

Product market regulation and GDP per capita

Correlation coefficient = -0.80
T-statistic = -8.53
....especially in business services
How does PMR influence LP growth?

• Policies promoting access to markets, competition and good governance can facilitate productivity improvements at the firm-level by:
  – eliminating slack in use of resources
  – encouraging the adoption of most efficient technologies and increasing the speed of catch up
  – fostering innovative effort

• And indirectly by:
  – Reducing inefficiencies in the provision of intermediate inputs (eg, non-manufacturing → manufacturing)
Impacts from a profound policy shift

• The OECD/IMF poster child has been a disappointing youth

• Reforms have yielded real benefits:
  – Greater resilience (GFC etc)
  – The relative decline in GDP per capita stabilised from the early 1990s at about 15-20% below the OECD average

• But no sign of convergence back to the levels of more advanced OECD economies

• Gap vs Australia has continued to widen
Policy implications?

- **Enablers of scale, specialisation and competition**
- **Domestic:**
  - Infrastructure, transport and communications linkages
  - Get regulation of intangible assets right
- **International – integration:**
  - Make ‘non-tradables’ as small as possible
  - Enhance foreign investment and labour mobility
Open questions

The link between **input use and productivity**

A **deeper understanding** of industries that have contributed to lower MFP growth.

**ICT:** What is the New Zealand story?

**The paradox** - which is bigger:

- low diffusion of technology **into** NZ?
- low diffusion of technology **within** NZ?
It adds up to limited competition

- Little work on competition in NZ
- But:
  - Competition is found to be particularly weak in some service sectors
  - Productivity dispersion is large in sectors with weak competition
  - Implies that the forces of creative destruction are weak
The rise of the services sector

GDP and employment sector shares

- Services GDP
- Goods-producing GDP
- Primary GDP
- Goods-producing employment
- Services employment
- Primary employment
Source of NZ’s income growth

Productivity is key to income growth: Labour productivity has accounted for 55% of NZ’s income growth since the early-1990s.

Source: SNZ; authors’ calculations
Productivity levels by industry

Source: SNZ; authors’ calculations
Change in productivity growth 1990s vs. 2000s
Labour productivity growth strong in late-1980s and 1990s, but weaker in 2000s.

*Source: SNZ; authors’ calculations*
New Zealand firms are tiny

Total employees:

- 0
- 1 to 5
- 6 to 9
- 10 to 19
- 20+

Bar chart showing the distribution of employees across different industries in New Zealand.
Summary of industry results

Outperformed: Information, media & telecoms; Finance & insurance

ICT-intensive industries: some have performed well, but NZ’s overall ICT story is unclear

Underperformed: Construction; some Service industries (including Professional, scientific & technical)

Weaker MFP growth in the 2000s: cause broad-based, but particularly Agriculture; Transport; Manufacturing
Productivity growth by industry

- Capital deepening
- Labour productivity growth
- MFP growth
- Aggregate labour productivity growth
NZ’s industry performance compared - growth


Percent per year

-10 -8 -6 -4 -2 0 2 4 6 8

Agriculture, forestry, fishing  Mining & quarrying  Manufacturing  Electricity, gas & water supply  Construction  Wholesale & retail trade  Hotels & restaurants  Finance, insurance, bus. services  Business sector services

OECD  New Zealand

Capital input  Labour input  MFP  Output
Same labour increase, more output in AUS

GDP and hours worked - NZ and Australia
Labour productivity levels, Australia vs. NZ

NZ has higher LP levels

NZ has lower LP levels

Source: Mason (2013)
... or participate in global value chains