

# Australian education (mostly higher education) in global context

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## The presentation

- Overview of education issues
- Tertiary funding
- Education exports
- Tertiary participation
- Research in comparative context
- Federal-state

## Education investment is average

	Public investment as % of GDP 2003	Private investment as % of GDP 2003	Total investment as % of GDP 2003
USA	5.4	2.1	7.5
Korea	4.6	2.9	7.5
Finland	6.0	0.1	6.1
UK	5.1	1.0	6.1
Canada	4.6	1.3	5.9
Australia	4.3	1.5	5.8
Germany	4.4	0.9	5.3
Netherlands	4.6	0.4	5.0
<i>OECD average</i>	<i>5.2</i>	<i>0.7</i>	<i>5.9</i>

## Areas of weakness (in rough order of importance)

1. Early learning prior to primary school
2. Vocational and Technical Education
3. Long term weakening of basic research capacity in universities
4. Lack of top research universities
5. Tertiary student financial support
6. Retention rate in secondary schools
7. Downgrading of government schooling
8. Resourcing of university teaching places

## Weakness in early learning

	% of GDP spent on pre-school education 2003	Enrolment rate of 3-4 year olds (% of population) 2004
France	0.7	100
Korea	0.2	94
Germany	0.5	77
UK	0.4	77
USA	0.4	53
Finland	0.4	42
<b>Australia</b>	<b>0.1</b>	<b>42</b>
Netherlands	0.4	37
<i>OECD average</i>	<i>0.5</i>	<i>66</i>

## Comparative standards: soft in the tail

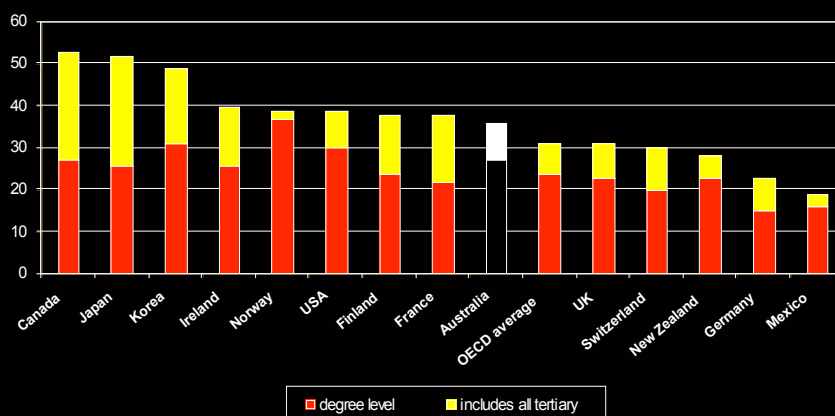
Mathematics achievement at age 15 years			
	Mean PISA score	10th percentile	90th percentile
Finland	544	438	652
Korea	542	423	659
Netherlands	538	415	657
Canada	533	419	644
<b>Australia</b>	<b>524</b>	<b>399</b>	<b>645</b>
France	511	389	628
Germany	503	363	632
USA	483	357	607
<i>OECD average</i>	<i>500</i>	<i>369</i>	<i>628</i>

## Too many drop outs

country	proportion (%) of 25-64 year olds reached degree programs 2004	proportion (%) of 15-19 year olds enrolled in education 2004
Korea	22	97
Canada	22	91
Finland	17	89
USA	30	87
Germany	15	85
Netherlands	27	80
Australia	22	77
UK	18	70
<i>OECD average</i>	<i>19</i>	<i>77</i>

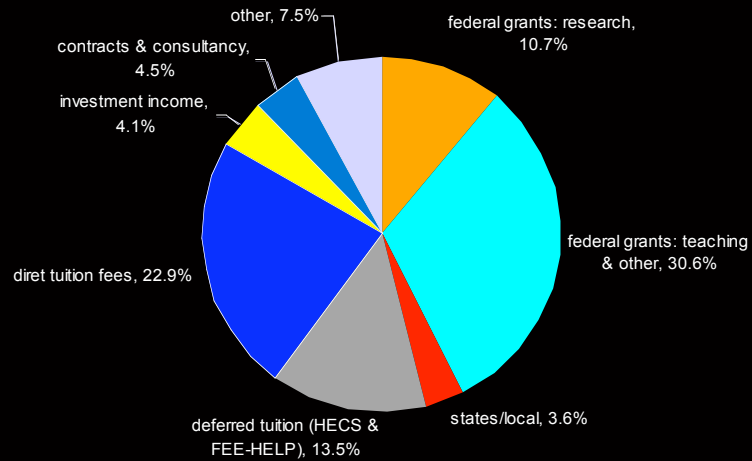
## Proportion of 25-34 year olds who have reached tertiary education

OECD 2004



## Government 41%, students 36%

Funding of higher education 2005 [DEST]

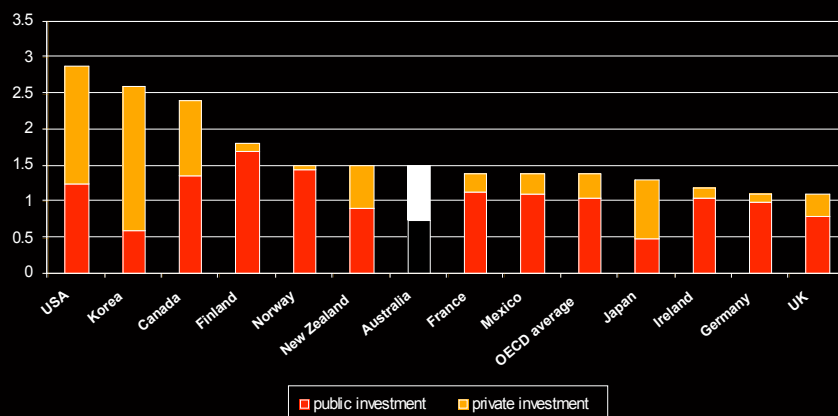


## Investment in tertiary education

[OECD]	Public investment as % of GDP 2003	Private investment as % of GDP 2003	Total investment as % of GDP 2003
USA	1.2	1.6	2.9
Korea	0.6	2.0	2.6
Canada	1.3	1.0	2.4
Finland	1.7	0.1	1.8
<b>Australia</b>	<b>0.8</b>	<b>0.8</b>	<b>1.5</b>
Netherlands	1.1	0.3	1.3
Germany	1.0	0.1	1.1
UK	0.8	0.3	1.1
<i>OECD average</i>	<i>1.1</i>	<i>0.4</i>	<i>1.4</i>

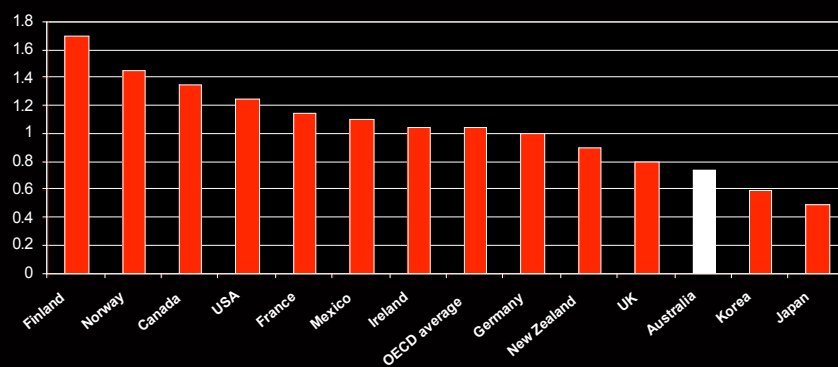
## Public and private investment in tertiary education as % of GDP

OECD 2004



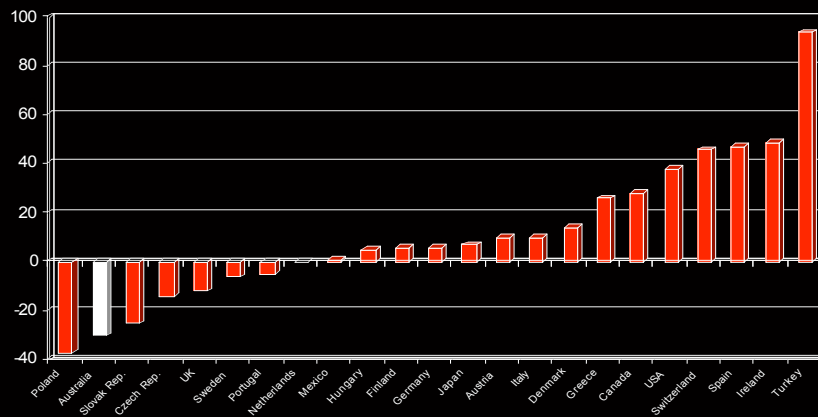
## Public investment only (= source of basic research capacity)

OECD 2004



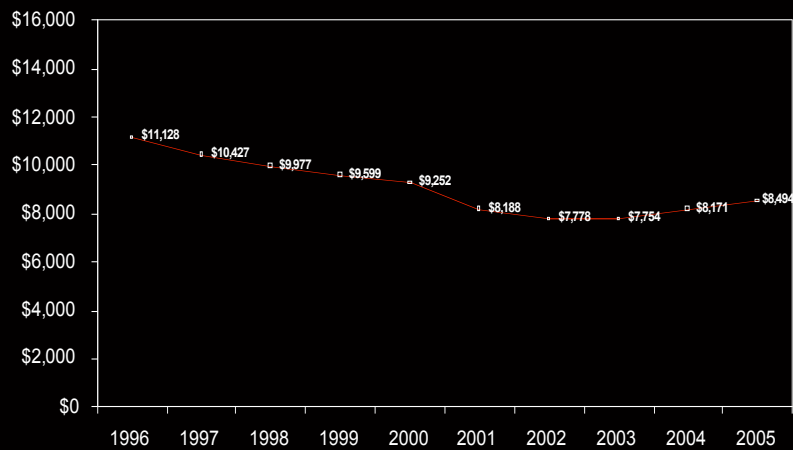
## Looking out the back door

% change in public investment per tertiary student  
1995-2003, OECD nations [OECD]



## But it's good for fiscal policy

Public funding per subsidized place 1996-2005 [NTEU/DEST]



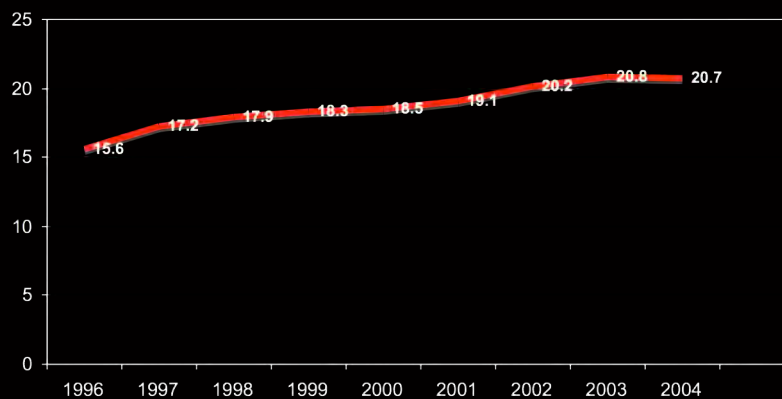
## And it hasn't hurt academic salaries

2006-2007 comparison

[Association of Commonwealth Universities]	Lecturer midpoint \$US	Professor bottom of scale \$US
Australia	54,729	94,711
UK	56,396	93,456
New Zealand	43,983	74,996
Canada	57,036	71,987
South Africa	26,957	37,365

## But class sizes have blown out

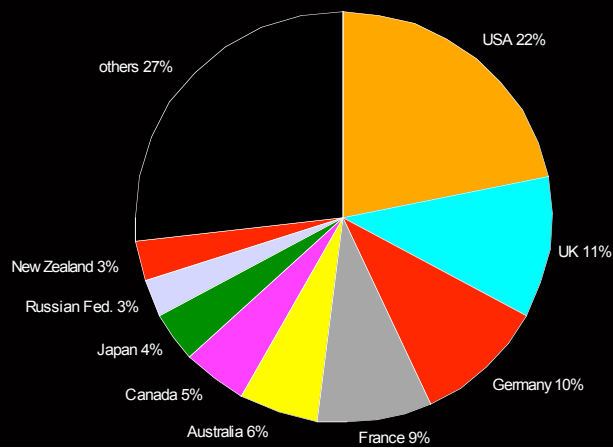
Average student-staff ratio 1996-2004 [AVCC/UA]



## Education exports are booming

### Distribution of education exports by exporting nation [OECD]

In 2005-2006 education exports (\$9.5 billion) were fourth largest after coal, iron ore, tourism



## Cross-border student market

exports of tertiary education (includes non-degree), UNESCO

	1999	2005	increase 1999-2005
USA	451,935	590,158	30.6 %
UK	232,540	318,399	36.9 %
Germany	178,195	259,797	45.8 %
France	130,952	236,518	80.6 %
Australia	117,485	207,264	76.4 %
Canada	40,033	n.a.	n.a.
<b>New Zealand</b>	<b>6900</b>	<b>40,774</b>	<b>490.9 %</b>
Japan	56,522	125,917	122.3 %

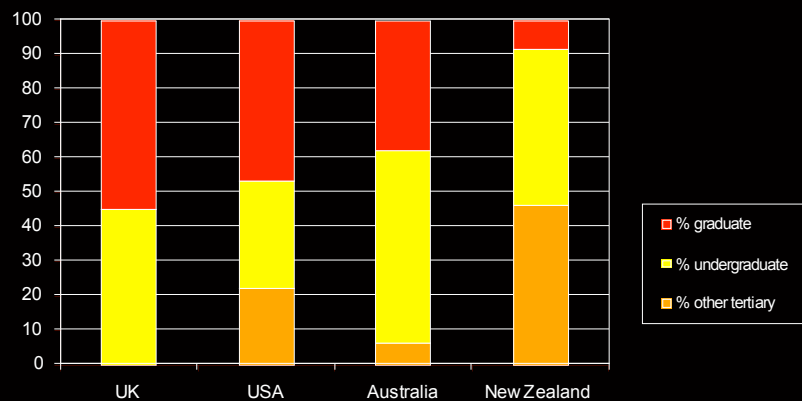
## Export revenues, main English-speaking export countries

World Bank paper (Sajitha Bashir, March 2007)

	1999 \$s million	2005 \$s million	change 1999-2005
USA	9620	14,120	47 %
UK	4101	6064	48%
Australia	2038	5563	173 %
Canada	568	1573	177 %
<b>New Zealand</b>	<b>273</b>	<b>1000</b>	<b>265 %</b>
total of above	16,600	28,320	71 %

## Distribution of international students between levels of study, 2005 (%)

World Bank paper (Sajitha Bashir, March 2007)



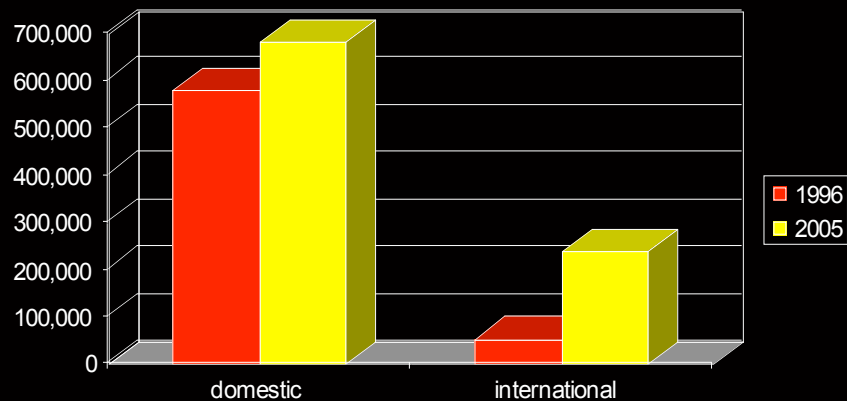
## The tail is wagging the dog

The largest university exporters are locked into high dependency on foreign student fees. In all 15% of total university income is from this source.

Institution	International students 2005	International student fee revenues 2005 \$s million	Proportion of total university revenues 2005
1 Monash U	17,168	174.3	19.0%
2 U Melbourne	8936	168.1	15.5%
3 U Sydney	9003	136.8	13.2%
4 Central Queensland U	13,837	132.1	45.7%
5 RMIT U	15,017	129.8	25.4%
6 U NSW	9481	124.7	16.1%
7 Curtin UT	16,092	108.2	24.5%
8 U Queensland	6330	104.1	12.0%
9 Macquarie U	9556	97.9	26.5%

## Enrolments 1996 and 2005

number of students [DEST]



## Declining throughput from year 12, Australia 1997-2004 [Hansard]

Year 12 leavers entering	1997	1998	1999	2000	2001	2002	2003	2004
	%	%	%	%	%	%	%	%
higher education	39.9	40.4	37.6	37.5	36.3	36.9	33.4	31.8
VET	36.5	37.5	37.2	41.9	38.5	39.5	39.6	37.9
all tertiary education	76.4	77.9	74.8	79.4	74.8	76.4	72.8	69.7

## Student work cuts into study

2006 AVCC survey of student finances

- Survey of 19,000 local students in all 37 public universities
- 71% of all full-time undergraduates worked during semester an average of 15 hours per week
- 40% of full-time students reported that paid work was having a detrimental effect on their studies with 22% regularly missing classes because of work commitments
- 13% regularly go without food or other necessities
- Between the 2000 and 2006 surveys, the proportion of full-time undergraduates receiving federal assistance payments dropped from 42% to 35%, earnings from work rose sharply, and the proportion of students taking out loans more than doubled

## Investment in R&D 2004

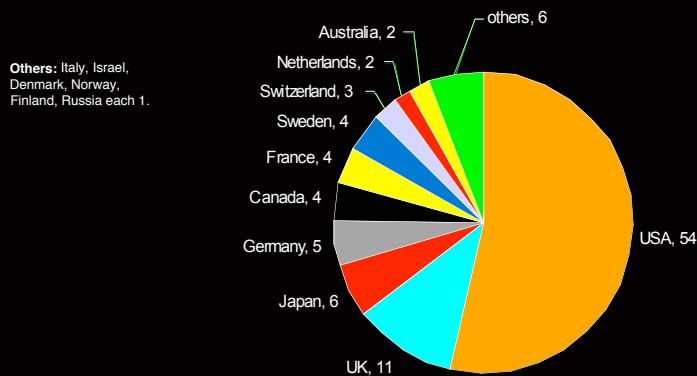
UNESCO (New Zealand data are 2003, USA 2002 for research workers per million)

	R&D spending	R&D spending per inhabitant	research workers per million inhabitants	research workers in higher education
	% of GDP	\$s USD	persons	persons
Finland	3.51 %	\$1075	7832	13,037
Switzerland	2.94 %	\$1024	3508	12,335
USA	2.68 %	\$1058	4605	n.a.
Singapore	2.24%	\$615	4999	7567
Australia	1.77 %	\$542	4099	n.a.
Norway	1.62 %	\$639	4602	7000
Ireland	1.24 %	\$481	2674	4151
New Zealand	1.14 %	\$266	3945	9701

## We lack top universities

The world's top 100 universities on the basis of research performance.  
(Australians in the top 100 are the Australian National U and the U of Melbourne).

Data source: Shanghai Jiao Tong University Institute of Higher Education



## Jiao Tong rankings: weightings

critierion	weighting
Alumni of institution: Nobel Prizes and field medals	10%
Staff of institution: Nobel Prizes and field medals	20%
High citation (HiCi) researchers	20%
Articles in <i>Nature</i> and <i>Science</i>	20%
Articles in citation indexes in science, social science, humanities	20%
Research performance (compiled as above) per head of staff	10%
<i>total</i>	100%

## Australian universities in the Jiao Tong top 500

57	Australian National University
79	Melbourne
102-150	Sydney, Queensland, Western Australia
151-202	New South Wales, Adelaide
203-304	Monash, Macquarie
305-401	Flinders, Newcastle
402-508	La Trobe, Murdoch, New England, Tasmania, Wollongong

## Discipline groups in world top 100

Jiao Tong data 2007

ANU	science (38), life science (44), social science
Melbourne	engineering, life science, medicine, social science
Queensland	life science, medicine, social science
WA	Life science (37), medicine
Sydney	engineering
NSW	engineering
Newcastle	engineering

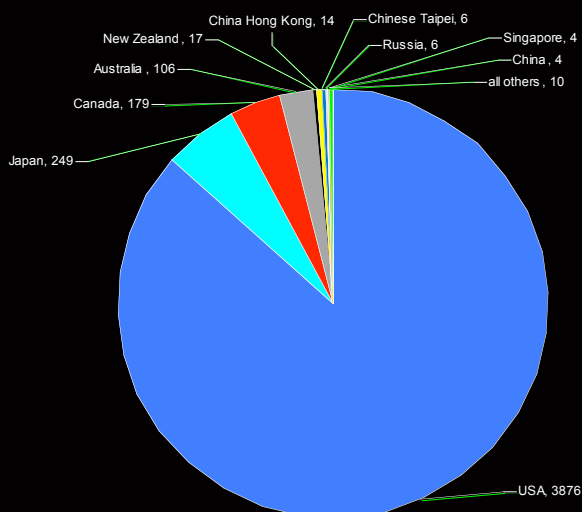
## Where the HiCi researchers are

Researchers with citations in the top 250-300 in their field. Source: Thomson-ISI

USA	3876
UK	443
Japan	249
Germany	242
Canada	174
France	157
Australia	106

Switzerland	102
Netherlands	92
Italy	79
Sweden	58
China	18
India	11
Singapore	4

## HiCi researchers in the Asia-Pacific



## New Asia-Pacific science powers

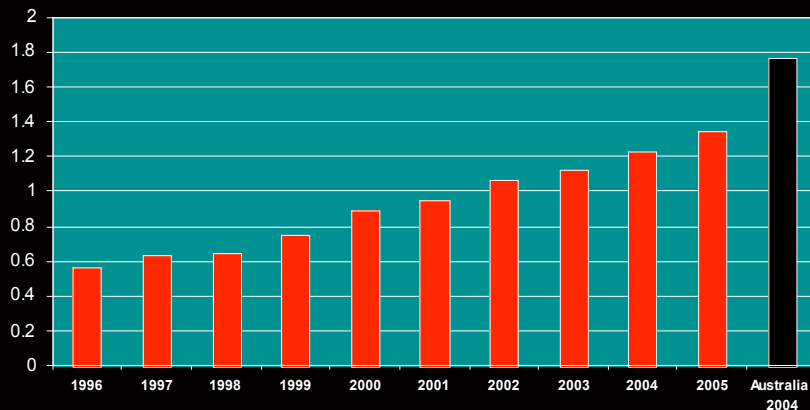
Growth in scientific papers 1988-2001 [Thomson-ISI]

	number of scientific papers in:		multiplication factor 1988-2001 (1988 = 1.0)
	1988	2001	
Korea	771	11,037	14.3
Turkey	507	4098	8.1
Singapore	410	2603	6.3
Taiwan	1414	8082	5.7
Portugal	429	2142	5.0
China	4619	20,978	4.5
Brazil	1766	7205	4.1
<b>Australia</b>	<b>9896</b>	<b>14,788</b>	<b>1.5</b>

## Can we spot a trend here?

### Investment in R&D in China as a % of GDP

UNESCO data for 1996-2005



## The federal/State relations shmuzzle

	legal after HCA 2006	public funding states incl. territories	policy leadership	policy issues
Public early learning	states	states	isn't much	severe under funding, poor provision & quality
Private early learning	federal <i>was states</i>	mixed	isn't much	poor quality & inadequate regulation
Public schools	states	largely state	states	quality in poorer districts
Private schools	??? <i>was states</i>	largely federal	federal	inadequate regulation
TAFE	federal?? <i>was states</i>	primarily state	states	severe under funding, relevance, poor quality
Private training	federal <i>was states</i>	mixed	mixed	inadequate regulation including export quality
Universities and research	federal? <i>was states</i>	federal	federal	under funding, export quality under regulated
Private Higher Ed	federal? <i>was states</i>	federal	federal	inadequate regulation including export quality

## Corporations power after Work Choices (HCA 2006)

'The regulation of the activities, functions, relationships and the business of a corporation described in that sub-section, the creation of rights, and privileges belonging to such a corporation, the imposition of obligations on it and, in respect of those matters, to the regulation of the conduct of those through whom it acts, its employees and shareholders and also, the regulation of those whose conduct is capable of affecting its activities, functions, relationships or business'.

-- Gaudron J in *Re Pacific Coal Pty Ltd; Ex parte Construction, Forestry, Mining and Energy Union* (2000) on the potential coverage of section 51 (xxx) on the federal corporations power

'This understanding of the power should be adopted'

-- para 178, Majority in Work Choices decision, HCA November 2006

## Summary

- Gaps in the education continuum (early childhood, training quality, post-compulsory participation rates)
- Public funding of tertiary is weak
- Export business model is strong but product is narrow
- Universities are over-dependant on this source
- Basic research is in long term decline and we lack very strong research universities
- Most of OECD and developing Asia is moving forward while we are standing still or going backwards
- Federal-state in education will need to be revisited



Thank you for the opportunity to speak with you

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